

**WSR 10-13-145**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
 (Children's Administration)  
 [Filed June 23, 2010, 7:52 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 08-06-086.

Title of Rule and Other Identifying Information: Revisions to chapter 388-61A WAC, Shelters for victims of domestic violence.

Hearing Location(s): Blake Office Park East, Rose Room, 4500 10th Avenue S.E., Lacey, WA 98503 (one block north of the intersection of Pacific Avenue S.E. and Alhadeff Lane. A map or directions are available at <http://www.dshs.wa.gov/msa/rpau/docket.html> or by calling (360) 664-6094), on August 24, 2010, at 10:00 a.m.

Date of Intended Adoption: Not sooner than August 25, 2010.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on August 24, 2010.

Assistance for Persons with Disabilities: Contact Jennisha Johnson, DSHS rules consultant, by August 10, 2010, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at johnsj14@dshs.wa.gov.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department of social and health services (DSHS), children's administration, division of program and practice improvement is proposing to repeal all sections in chapter 388-61A WAC, Shelters for victims of domestic violence, and to replace them with new sections. The purpose of the chapter is to have uniform statewide standards for domestic violence shelters and supportive services funded by DSHS. These standards address issues such as adequate food, clothing, emergency housing, safety, security, and advocacy.

The proposed major changes to the chapter: New definitions and changes to existing definitions; adds new section that describes the model that must be used in providing the minimum services standards established by the proposed rule; describes the supportive services that must be provided by domestic violence agencies funded by DSHS; adds supportive services and resources for children/youth residing in emergency domestic violence shelter; describes requirements for an agency's crisis hotline; updates the requirements for cribs and bassinets, provision of food/clothing, and storing resident medications in the emergency domestic violence shelter.

Reasons Supporting Proposal: Updates, revises and augments the minimum standards that were first enacted in 1979.

Statutory Authority for Adoption: Chapter 70.123 RCW.

Statute Being Implemented: Chapter 70.123 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Susan Hannibal, 4045 Delridge Way S.W., Room 200, Seattle, 98106, (206) 923-4910.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Chapter 19.85 RCW, the Regulatory Fairness Act, requires that the economic impact of proposed regulations be analyzed in relation to small businesses. The statute defines small businesses as those businesses that employ fifty or fewer people and are independently owned and operated.

The proposed rules affect forty-three emergency domestic violence shelter agencies that DSHS/CA contracts with for client services. In a December 2009, on-line cost-benefit survey distributed to these agencies, thirty-four of the forty-three domestic violence shelter contractors responded for a response rate of seventy-nine percent. Large and small domestic violence shelter agencies were represented in the range of contractors responding to the survey. The number of individuals employed by the thirty-four survey respondents ranged from a low of four to a high of thirty-nine.

Preparation of a small business economic impact statement (SBEIS) is required when a proposed rule has the potential of placing a disproportionate economic impact on small businesses. The statute outlines information that must be included in an SBEIS. CA has analyzed the proposed rule amendments and concludes that they will not impose disproportionate costs on small businesses. All the agencies affected by the proposed rules are small businesses employing fewer than fifty full-time equivalent employees. Consequently, there is no disproportionate impact on small businesses from the proposed rule amendments. The preparation of a comprehensive SBEIS is not required.

A cost-benefit analysis is required under RCW 34.05.-328. A preliminary cost-benefit analysis may be obtained by contacting Susan Hannibal, DSHS/CA, c/o QA/Training Office, 4045 Delridge Way S.W., Room 200, Seattle, WA 98106, phone (206) 923-4910, fax (206) 923-4899, e-mail [hsus300@dshs.wa.gov](mailto:hsus300@dshs.wa.gov).

June 9, 2010

Katherine I. Vasquez  
 Rules Coordinator

## BACKGROUND

### NEW SECTION

**WAC 388-61A-0200 What is the legal basis for the domestic violence shelter program?** Chapter 70.123 RCW authorizes us to establish minimum standards for agencies that receive funding from the department of social and health services (DSHS) to provide domestic violence shelter and supportive services.

### NEW SECTION

**WAC 388-61A-0210 What is the purpose of having minimum standards for domestic violence shelters and**

**supportive services?** The purpose of these rules is to have uniform statewide standards for domestic violence shelters and supportive services funded by DSHS. Minimum standards are necessary to provide rules for agencies that contract with us to provide shelter and supportive services for domestic violence victims. These standards address issues such as food, clothing, emergency housing, safety, security, and advocacy.

#### NEW SECTION

**WAC 388-61A-0220 What definitions apply to this chapter? "Advocacy"** means that the client is involved with an advocate in individual or group sessions with a primary focus of safety planning, empowerment, and education of the client through reinforcement of the client's autonomy and self-determination. Advocacy also means speaking and acting for change or justice with, or on behalf of, another person or cause. Advocacy is survivor-centered and uses nonvictim blaming methods that include:

- Identifying barriers to, and strategies to enhance, safety, including safety planning.
- Clarifying and increasing awareness of the power and control associated with domestic violence and the options one may have to obtain resources while staying safe.
- Supporting independent decision-making based on the unique needs and circumstances of each individual.

**"Advocate"** means a trained staff person who works in a domestic violence agency and provides advocacy to clients.

**"Child care"** means the temporary care of a client's child or children by staff of the domestic violence agency at the agency's location or another location where the client is receiving confidential or individual services from the domestic violence agency or is participating in activities sponsored by the domestic violence agency, other than employment, and so long as the client remains on the premises.

**"Children/Youth Activities"** means activities other than children/youth advocacy, such as recreational and educational activities, and including child care as defined in this chapter.

**"Children/Youth Advocacy"** means an age-appropriate intervention service that strives to assist children/youth to express feelings about their exposure to domestic violence. It is an educational, rather than a therapeutic intervention, and is focused on providing education about domestic violence, safety planning, and developing or enhancing problem-solving skills. Advocacy can be provided on an individual basis and in group settings.

**"Client"** means a victim of domestic violence who is accessing services at a domestic violence agency. Client can also be referred to as a survivor, service recipient, or resident.

**"Cohabitant"** means a person who is or was married, in a state registered domestic partnership, or cohabiting with another person in an intimate or dating relationship at the present time or at some time in the past. Any person who has one or more children in common with another person, regardless of whether they have been married, were/are in a domestic partnership with each other, or have lived together at any time, must be treated as a cohabitant. Any person who is or was in a dating relationship with another person at the present

or at some time in the past, regardless of whether they lived together at any time, must be treated as a cohabitant.

**"Community education"** refers to information that is provided in community settings about domestic violence and services related to victims of domestic violence. Community education activities include: training, presentations, outreach to specific communities or geographic areas, community events, and media events.

**"Confidential communication"** means all information, oral, written or nonverbal, that is transmitted between a victim of domestic violence and an employee or supervised volunteer of a domestic violence agency in the course of their relationship and in confidence by means which, so far as the victim is aware, does not disclose the information to a third person.

**"Confidential information"** includes, but is not limited to, any information, advice, notes, reports, statistical data, memoranda, working papers, records or the like, made or given during the relationship between a victim of domestic violence and a domestic violence agency, however maintained. Confidential information includes the name, address, telephone number, social security number, date of birth, nine-digit postal (ZIP) code, physical appearance of, case file or history of, and other information that would personally identify a victim of domestic violence who seeks or has received services from a domestic violence agency.

**"Crisis hotline or helpline"** means a designated telephone line of the domestic violence agency that operates twenty-four hours a day, three hundred sixty-five days a year. A hotline/helpline provides crisis intervention, safety planning, information, and referral services.

**"Crisis intervention"** means services provided to an individual in crisis to stabilize an individual's emotions, clarify issues, and provide support and assistance to help explore options for resolution of the individual's immediate crisis and needs.

**"Department"** means the department of social and health services (DSHS).

**"Domestic violence"** is a pattern of assaultive and coercive behaviors that an adult or adolescent uses to maintain power and control over their intimate partner. Abusive tactics may include, but are not limited to the following: physical abuse, sexual abuse, intimidating tactics, physical and/or psychological isolation of the victim, repeated attacks against the victim's competence, alternating use of indulgences, control of family funds and resources, stalking, and the use of children and systems to control the victim. The abuser's use of physical force against persons or property or the use of conduct that establishes credible threat of physical harm (i.e. terrorizing tactics) combined with other controlling tactics are key elements of domestic violence. The effect of the overall pattern of assaultive and coercive behavior is to increase the abuser's power and control in the relationship. It includes, but is not limited to, the categorization of offenses defined in RCW 10.99.020(3) when committed by one cohabitant against another.

**"Domestic violence agency"** means an agency that provides shelter and advocacy for domestic violence clients in a safe and supportive environment.

**"Intimate partner violence"** focuses on the most common form of domestic violence, which is between adult or adolescent intimate partners or cohabitants, rather than on violence between non-intimate adult or adolescent household members.

**"Legal advocacy"** means personal support and assistance with victims of domestic violence to ensure their interests are represented and their rights upheld within the civil and criminal justice systems, including administrative hearings. It includes educating and assisting victims in navigating the justice systems; assisting victims in evaluating advantages and disadvantages of participating in the legal processes; facilitating victims' access and participation in the legal systems; and promoting victims' choices and rights to individuals within the legal systems.

**"Lodging unit"** means one or more rooms used for a victim of domestic violence including rooms used for sleeping or sitting.

**"Marginalized populations"** includes, but is not limited to, populations that have been historically underserved and oppressed in society because of ethnicity, race, culture or language diversity, age, sexual orientation, or disability.

**"Personally identifying information"** includes, but is not limited to, first and last name, home or other physical address, telephone number, social security number, date of birth, nine-digit postal (ZIP) code, physical appearance of, case file or history of, and other information that would personally identify a victim of domestic violence who seeks or has received services from a domestic violence agency, or such other information which, taken individually or together with other identifying information, could identify a particular individual.

**"Program"** means the DSHS domestic violence program.

**"Resident"** means a client of the domestic violence agency who is residing in a shelter as defined in this chapter.

**"Safe home"** means a shelter that has two or fewer lodging units and has a written working agreement with a domestic violence agency.

**"Safety plan"** is a process of thinking through with the victim how to increase safety for both the victim of domestic violence and any dependent children of the victim. Safety planning addresses both immediate and long term risks, barriers, or concerns regarding the victim and any dependent children. It is based on knowledge about the specific pattern of the domestic violence perpetrator's tactics and the protective factors of the victim and any dependent children. Safety planning can be done formally, informally, in writing or orally, or in any other conversational process between the victim and advocate.

**"Secretary"** means the DSHS secretary or the secretary's designee.

**"Shelter"** means a safe home or shelter home that provides temporary refuge and food and clothing offered on a twenty-four hour, seven-day-per-week basis to victims of domestic violence and their dependent children. Domestic violence agencies may use hotels and motels for victims who need safe shelter, but the domestic violence agency must also have a shelter home and/or safe home(s) that meet the requirements of this chapter.

**"Shelter home"** means a shelter that has three or more lodging units and is either a component of, or has a written working agreement with, a domestic violence agency.

**"Staff"** means persons who are paid or who volunteer to provide services to clients and are a part of a domestic violence agency.

**"Support group"** means interactive group sessions of two or more victims of domestic violence that is facilitated by trained staff on a regular basis. Participants share experiences, offer mutual support, and receive information and education around a specific topic of common interest. Support groups validate the experiences of victims, explore options, build on strengths, and respect participants' rights to make their own decisions. A shelter or house meeting where, for example, chores are discussed, and there is no advocacy provided, is not a support group.

**"Victim"** means a cohabitant who has been subjected to domestic violence.

**"We, us and our"** refers to the department of social and health services and its employees.

**"You, I and your"** refers to the domestic violence agency.

#### NEW SECTION

**WAC 388-61A-0230 What service model must be used to provide the services required by these rules?** Shelters and supportive services for victims of domestic violence are essential to provide protection to victims from further abuse and physical harm. Research demonstrates that access to supportive services that increase a survivor's knowledge of safety planning and awareness of community resources leads to increased safety and well being over time. Consequently, the model for providing services must incorporate the following practices:

(1) Services provided to victims must include access to safety, advocacy, information about options, and referrals to helping resources.

(2) Services that blame the victim for the abuse and do not hold the abuser accountable for the violence, are ineffective and will likely result in further harm to the victim, up to and including death. Therefore, minimum standards for the services and practices governed by these rules must use an empowerment model that:

(a) Promotes safety for all victims of intimate partner violence and their dependent children.

(b) Are survivor-centered and treat victims with dignity and respect.

(c) Builds on the strengths and resources of individuals and families, respecting their autonomy and self-determination.

(d) Supports the relationship between victims and their dependent children.

(e) Offers options and support for autonomous decision-making that is based on the needs and circumstances of each victim and their family.

(f) Assists individuals and families in accessing protection and services that are respectful and inclusive of cultural and community characteristics.

(g) Ensures agency accountability by involving victims in evaluating the services they receive from the domestic violence agency.

(h) Supports and engages in collaboration with other community agencies and systems for the purpose of developing a comprehensive response system for victims and their dependent children.

#### NEW SECTION

**WAC 388-61A-0240 Is DSHS required to provide funding to any domestic violence agency that requests funding?** (1) We are not obligated to disburse funds to all domestic violence agencies that comply with the minimum standards set forth in this chapter. The goal of this program is to provide funding and support for the statewide development, stability, and expansion of emergency shelter and supportive services for victims of domestic violence. Funding for this program is intended to be used to develop and maintain domestic violence agencies statewide that are:

(a) Focused on victim advocacy, safety, empowerment, maintaining confidentiality, and safety planning.

(b) Inclusive and responsive to the ethnic, cultural, racial and socioeconomic diversity of the state.

(c) Flexible and designed to meet the needs of domestic violence victims at the local level.

(2) In support of the program goal, if an agency applies to receive funding we will consider such things as:

(a) Geographic location.

(b) Population ratios.

(c) Population need for services.

(d) An agency's experience in providing domestic violence services and its ability to provide services that comply with these minimum standards.

(e) The availability of other domestic violence agencies in a community and the level of collaboration between and among existing agencies.

(f) The amount of funding we have available to maintain stability and support for existing domestic violence agencies funded by DSHS.

#### NEW SECTION

**WAC 388-61A-0250 What are the requirements for domestic violence agencies?** In order for us to contract with an agency for domestic violence services, the agency must provide emergency shelter and supportive services to victims of domestic violence. The agency must comply with the:

(1) Supportive service and administrative standards for domestic violence agencies; and

(2) General facility standards for shelter homes and safe homes; and

(3) Additional standards for shelter homes; or

(4) Additional standards for safe homes.

## SUPPORTIVE SERVICES AND ADMINISTRATIVE STANDARDS FOR DOMESTIC VIOLENCE AGENCIES

### NEW SECTION

**WAC 388-61A-0260 What supportive services must a domestic violence agency provide?** (1) Domestic violence agencies must utilize a survivor-centered and empowerment service model as described in this chapter. Such a model:

(a) Promotes safety for all victims and their dependent children.

(b) Builds on the strengths and resources of individuals and families, respecting their autonomy and self-determination.

(c) Supports the relationship between victims and their dependent children.

(d) Offers options and support for autonomous decision-making based on the needs and circumstances of each victim and their family.

(e) Assists individuals and families in accessing protection and services that are respectful of cultural and community characteristics.

(f) Ensures agency accountability by involving victims in evaluating the services they receive from the domestic violence agency.

(2) The manner in which supportive services are provided by the domestic violence agency must be in alignment with the empowerment service model described in this chapter, and must also:

(a) Include a discussion of safety and options with each victim of domestic violence seeking assistance.

(b) Be respectful and respond to each client's life situation, and respect each person's right to self-determination.

(c) Be provided in a safe and supportive environment that offers the client the opportunity to examine the events that led to the need for domestic violence services.

(d) Be provided in a private setting for the comfort of the client and to protect confidentiality of conversations.

(3) Domestic violence agencies that contract with us must provide the following supportive services:

(a) Crisis hotline or helpline.

(b) Crisis intervention.

(c) Safety planning.

(d) Emergency domestic violence shelter.

(e) A day program or drop-in service for victims who have found other shelter but who have a need for supportive services.

(f) Individual advocacy including legal advocacy.

(g) Support groups.

(h) Child care assistance during individual advocacy sessions and support groups for the adult victim.

(i) Supportive services and resources for children/youth residing in emergency domestic violence shelter.

(j) Transportation assistance or access to transportation.

(k) Information and referral.

(l) Community education activities.

(4) For clients residing in emergency domestic violence shelter you:

(a) Must provide clients with access to a trained staff person twenty-four hours a day, three hundred sixty-five days a year.

(b) Must give clients the opportunity to receive and participate in supportive services during their stay in shelter.

(c) Cannot require that clients participate in supportive services as a condition of residing in the shelter.

#### NEW SECTION

**WAC 388-61A-0270 What services and resources must be available to children/youth residing in emergency domestic violence shelter?** (1) With the permission of a parent/guardian, children/youth must be offered the opportunity to receive and participate in the following age-appropriate supportive services during their shelter residency:

(a) Orientation to the shelter.

(b) Information about domestic violence.

(c) Individual and/or group advocacy and support.

(d) Information and referral to other supportive services.

(2) The domestic violence agency must provide a safe and secure play area for children/youth residing in the emergency domestic violence shelter.

(3) The domestic violence agency must provide information to the client about resources for indoor and outdoor recreational activities in the community for children/youth residing in emergency shelter, such as outings to parks, playgrounds, movies, libraries, sports activities, youth clubs and other similar activities.

#### NEW SECTION

**WAC 388-61A-0280 What are the requirements for the crisis hotline or helpline?** (1) You must provide a crisis hotline/helpline telephone number to access services of the domestic violence agency. The telephone number must be listed in the local telephone book, and identified as the crisis hotline/helpline telephone number of the domestic violence agency. It must also be widely distributed throughout the community in which the domestic violence agency is located.

(2) The crisis hotline/helpline service must comply with the following minimum requirements:

(a) It must operate twenty-four hours a day, three hundred sixty-five days a year.

(b) It must be a dedicated telephone line that serves as the crisis hotline or helpline.

(c) Staff that answer the hotline/helpline must be trained in, and familiar with, all referral and intake practices of the domestic violence agency.

(d) In most cases, callers to the hotline/helpline must be able to speak, within fifteen minutes, to a trained staff person from whom the caller can obtain services, including access to emergency shelter.

(e) Staff must have access to TTY or similar technology, and they must be trained on its use.

(f) Safety must be addressed in every call.

(3) You must have written procedures that address the following:

(a) How crisis hotline staff will meet the needs of non-English speaking and hearing impaired callers.

(b) Steps that must be taken when a caller requests emergency shelter.

(c) If you use an answering service, or any other similar system, how you will provide training to the staff of the answering service, and how you will monitor the services provided to your agency.

(4) If you use a call-forwarding system for your domestic violence agency's hotline/helpline, answering service, or any other similar system, you must guarantee that the caller's first contact is supportive.

(5) The hotline/helpline cannot be answered by an answering machine, voice mail, or similar recording device.

#### NEW SECTION

**WAC 388-61A-0290 What are the requirements for accessing emergency domestic violence shelter?** Domestic violence agencies must meet the following requirements in providing emergency domestic violence shelter:

(1) Your agency must have written procedures regarding your shelter intake process.

(2) You must have a staff person available twenty-four hours a day, three hundred sixty-five days a year, who is able to assess requests for emergency domestic violence shelter and arrange for immediate intake into your shelter or a hotel/motel.

(3) Where an individual is eligible for emergency domestic violence shelter:

(a) A staff person must be present to admit a service recipient into the shelter home.

(b) Reasonable efforts must be made by the domestic violence agency to have a staff person present to admit a service recipient into a safe home or hotel/motel.

(4) Referrals to other services or domestic violence agencies must be provided to an individual when:

(a) Your shelter home or safe home(s) are full.

(b) A client residing in shelter must be transferred to another domestic violence agency for reasons of safety of the client.

(c) The person seeking shelter is ineligible for your services.

(d) An inappropriate referral was made to your domestic violence agency.

(e) The person seeking shelter has problems that require services of another agency or agencies before receiving domestic violence services.

#### NEW SECTION

**WAC 388-61A-0300 What information must be in a client's file?** (1) You must have a written file for clients who are served by your domestic violence agency. Client files must:

(a) Include an intake that clearly documents each client's eligibility for domestic violence services.

(b) Be brief in documenting the services provided to the client.

(c) Document only sufficient information to identify the service provided, and must not include any references to service recipient feelings, emotional or psychological assessments, diagnoses, or similar subjective observations or judgments.

ments. Documentation must not include any direct quotes from the client.

(d) Include copies of all required releases and client notices.

(2) Where supportive services are provided to child/youth of clients, the domestic violence agency must:

(a) Maintain separate documentation for each child/youth that receives supportive services. Written documentation must not be included in the file of the parent/guardian.

(b) Be brief in documenting the supportive services provided to the child/youth.

(c) Document only sufficient information to identify the service provided, and must not include any references to the child/youth's feelings, emotional or psychological assessments, diagnoses, or similar subjective observations or judgments. Documentation must not include any direct quotes from the child/youth.

#### NEW SECTION

**WAC 388-61A-0310 What information must the domestic violence agency keep confidential?** (1) Agents, employees, and volunteers of a domestic violence agency must maintain the confidentiality of all personally identifying information, confidential communications, and all confidential information as defined in this chapter. Information that individually or together with other information could identify a particular victim of domestic violence must also be kept confidential.

(2) Any reports, records, working papers, or other documentation, including electronic files that are maintained by the domestic violence agency and information provided to the domestic violence agency on behalf of the client, must be kept confidential. Any information considered privileged by statute, rule, regulation or policy that is shared with the domestic violence agency on behalf of the client must not be divulged without a valid written waiver of the privilege that is based on informed consent, or as otherwise required by law.

(3) You must comply with the provisions of this section regarding confidential communications concerning clients regardless of when the client received the services of the domestic violence agency.

#### NEW SECTION

**WAC 388-61A-0320 What information can be disclosed?** (1) You can disclose confidential information only when:

(a) The client provides informed, written consent to the waiver of confidentiality that relates only to the client or the client's dependent children.

(b) Failure to disclose is likely to result in a clear, imminent risk of serious physical injury or death of the client or other person.

(c) Disclosure is required under chapter 26.44 RCW, Abuse of Children.

(d) Release of information is otherwise required by law or court order, or following in-camera review pursuant to RCW 70.123.075, with the following additional requirements:

(i) The domestic violence agency must make reasonable attempts to provide notice to the person affected by the disclosure of the information.

(ii) If personally identifying information is or will be disclosed, the domestic violence agency must take steps necessary to protect the privacy and safety of the persons affected by the disclosure of information.

(2) Any release of information subject to any of the exceptions set forth above must be limited to the minimum necessary to meet the requirement of the exception, and such release does not void the client's right to confidentiality and privilege on any other confidential communication between the client and the domestic violence agency.

(3) In the case of an unemancipated minor, the minor and the parent or guardian must provide the written consent. Consent for release may not be given by a parent who has abused the minor or the minor's other parent. In the case of a disabled adult who has been appointed a guardian, the guardian must consent to release unless the guardian is the abuser of the disabled adult.

(4) To comply with federal, state, tribal, or territorial reporting, evaluation, or data collection requirements, a domestic violence agency may disclose aggregated nonpersonally identifying data about services provided to their clients and nonpersonally identifying demographic information.

(5) A copy of the disclosed information must be provided to the client, if requested by the client.

#### NEW SECTION

**WAC 388-61A-0330 What information must be included in a written waiver of confidentiality?** (1) To be valid, a written waiver of confidentiality must:

(a) Be voluntary.

(b) Relate only to the client or the client's dependent children.

(c) Clearly describe the scope and any limitations of the information to be released.

(d) Include an expiration date for the release.

(e) Inform the client that consent can be withdrawn at any time whether it is made orally or in writing.

(2) If the written waiver of confidentiality does not include an expiration date, it must expire ninety days after the date it was signed.

#### NEW SECTION

**WAC 388-61A-0340 What information must be provided to clients about their right to confidentiality?** (1) You must provide each client with a written "notice of rights" at the time of initial and any subsequent intake into the domestic violence agency. At a minimum, the notice of rights must inform clients of the following:

(a) The client's right to privacy and confidentiality of the information shared with the domestic violence agency.

(b) Exceptions to confidentiality as described in this chapter.

(c) That if the client signs a written waiver of confidentiality that allows their information to be shared with others, the client does not give up their right to have that information protected under other statutes, rules or laws.

(d) That the client has the right to withdraw a written waiver of confidentiality at any time.

(e) That the domestic violence agency will not condition the provision of services to the client based on a requirement that the client sign one or more releases of confidential information.

(2) Information on the "notice of rights" must be explained to the client at the time of intake into the domestic violence agency and then again, at the time the client is considering whether to sign a written waiver of confidentiality.

#### NEW SECTION

**WAC 388-61A-0350 What type of training is required for staff of the domestic violence agency?** Initial and continuing education training of domestic violence agency staff is critically important. Advocates and advocate supervisors must understand the nature and scope of domestic violence as defined by this chapter, as well as the historical and societal attitudes in which domestic violence is rooted. Training must be current and relevant to the provision of empowerment-based advocacy. In furtherance of these goals, domestic violence agency staff must meet the following minimum training requirements.

##### **Initial Training For Staff Providing Supportive Services and Staff Supervisors**

(1) A minimum of twenty hours of initial basic training that covers the following topics and skills:

- (a) Theory and implementation of empowerment-based advocacy.
- (b) The history of domestic violence.
- (c) Active listening skills.
- (d) Legal, medical, social service and systems advocacy.
- (e) Confidentiality and ethics.
- (f) Safety planning skills and barriers to safety.
- (g) Planning, clarifying issues and options, and crisis intervention.

(h) Providing services and advocacy to individuals from marginalized populations.

(i) Policies and procedures of the domestic violence agency.

##### **Continuing Education Training For Staff Providing Supportive Services and Staff Supervisors**

(2) Based on their date of hire with the domestic violence agency, staff providing supportive services and staff supervisors must obtain an annual minimum of thirty hours of continuing education training beginning in their second year with the domestic violence agency, and in every year thereafter. Continuing education training must include:

(a) A minimum of fifteen hours of training on advocacy that is directly related to serving victims of domestic violence and their children.

(b) A minimum of five hours of training on providing services and advocacy to individuals from marginalized populations.

(3) Not more than ten hours of the thirty hours of continuing education training can be obtained from video, audio, or similar self-study methods.

##### **Training for Staff Not Providing Supportive Services**

(4) Domestic violence agency staff who do not provide supportive services to clients or their dependent children are not required to obtain initial and continuing education training as described in this section. Examples of staff that are included in this category are shelter housekeeping staff, individuals providing child care assistance as defined in this chapter, and bookkeeping and accounting staff. It is recommended, however, that staff who may come into contact with clients of the domestic violence agency and their dependent children, but who do not provide supportive services, receive training on the following:

(a) Confidentiality.

(b) Relevant policies and procedures of the domestic violence agency.

(c) Mandated reporting of child abuse/neglect as required by chapter 26.44 RCW, Abuse of Children.

#### NEW SECTION

**WAC 388-61A-0360 How should training be documented?** Initial and continuing education training received by staff and supervisors of staff providing supportive services must be recorded in a training log. At a minimum the log must include:

- (1) Date(s) of training.
- (2) Title or subject matter of the training.
- (3) Individual or organization that provided the training.
- (4) Number of training hours received.
- (5) Training method (e.g. in-person, video, audio, self-study, or other method).
- (6) For continuing education training, whether the training was on advocacy or serving individuals from marginalized populations.

#### NEW SECTION

**WAC 388-61A-0370 Must supervisors of domestic violence agency staff have specific experience and training?** Supervisors of staff providing supportive services to domestic violence clients must have the following minimum experience and training requirements prior to being hired as a supervisor.

(1) At least two years of experience providing advocacy to victims of domestic violence within a domestic violence agency.

(2) A minimum of fifty hours of training on domestic violence issues and advocacy within three years prior to being hired as a supervisor.

#### NEW SECTION

**WAC 388-61A-0380 What written policies or procedures do you need to have?** The domestic violence agency must have written policies or procedures that cover the following issues:

(1) Procedures for the emergency shelter intake process, including that victims in immediate danger or immediate risk of harm will receive first priority for shelter.

(2) Confidentiality and protection of client records and communication.

(3) Nondiscrimination relating to staff, clients, and provision of services.

(4) The provision of bilingual and interpreter services to clients.

(5) Procedures for responding to calls on the crisis hotline/helpline from non-English speaking and hearing impaired callers.

(6) If you use an answering service, or any other similar system to answer your crisis hotline/helpline calls, procedures for providing training to the staff of the answering service, and how you will monitor the services provided to your agency.

(7) Procedures for responding to subpoenas and warrants.

(8) Reporting of child abuse as legally mandated.

(9) Client access to their files.

(10) Grievance procedure for clients.

(11) Emergency procedures for fire, disaster, first aid, medical and police intervention.

(12) Procedures and periods for records retention.

(13) Accounting procedures.

(14) Personnel policies and procedures that include the following:

(a) Recruitment for staff and volunteers - agencies must recruit, to the extent feasible, persons who are former victims of domestic violence to work as paid or volunteer staff.

(b) Hiring.

(c) Promotion and termination of staff.

(d) Performance evaluation.

(e) Grievance procedure for staff.

(f) Maintenance of personnel and training files, to include job descriptions for paid staff and volunteers.

### **GENERAL FACILITY STANDARDS FOR SHELTER HOMES AND SAFE HOMES**

#### NEW SECTION

**WAC 388-61A-0390 What safety requirements are shelters required to meet?** You must keep your equipment and the physical structures in the shelter, including furniture and appliances, safe and clean for the clients you serve. You must:

(1) Maintain the shelter, premises, equipment, and supplies in a clean, safe and sanitary condition, free of hazards, and in good repair.

(2) Provide guard or handrails, as necessary, for stairways, porches and balconies.

(3) Maintain swimming pools, wading pools, bathtubs, hot tubs, spas, and bathing beaches in a safe manner and in such a way that does not present a health hazard, safety problem, or nuisance.

(4) Have a method for securing all windows, doors, and other building accesses to prevent the entry of intruders.

(5) Make sure all window screens can be secured to prevent children from falling from window openings.

(6) Make sure that clients residing in shelter are able to immediately enter the shelter if they do not have the ability to independently access the facility with their own key, keycard, door code, or other device.

(7) Provide adequate lighting of exterior areas to ensure the safety of clients residing in shelter and staff during the night.

(8) Provide a way for staff to enter any area occupied by clients should there be an emergency.

(9) Secure all unused refrigerators and freezers accessible to children in such a way that prevents them from climbing in and becoming trapped.

#### NEW SECTION

**WAC 388-61A-0400 What are the requirements for bedrooms?** You must provide a bed in good condition, with a clean and comfortable mattress.

#### NEW SECTION

**WAC 388-61A-0410 What are requirements for cribs or bassinets?** If the shelter provides cribs or bassinets, the shelter must comply with each of these requirements:

(1) Cribs and bassinets must have a clean, firm mattress covered with waterproof material that is easily sanitized.

(2) Crib mattresses must fit snugly to prevent the infant from being caught between the mattress and crib side rails.

(3) Cribs must be assembled correctly, and not have any missing, loose, or broken hardware or slats. There must not be any missing, loose, broken or improperly installed screws, brackets or other hardware on the crib or mattress support.

(4) Soft objects and loose bedding, including bumper pads, cannot be used in cribs and bassinets.

(5) Cribs must be made of wood, metal, or approved plastic with secure latching devices.

(6) Cribs must have no more than two and three-eighths inches of space between vertical slats so an infant's body cannot fit through the slats. There must not be any missing or cracked slats.

(7) Cribs must not have corner posts over one-sixteenth inch high so a child's clothing cannot catch.

(8) Crib headboards and footboards must not have any cutouts that would result in a child's head getting trapped.

(9) For mesh-sided cribs and playpens:

(a) Mesh must not have any tears, holes or loose threads.

(b) Mesh must be securely attached to the top rail and floor plate.

(c) Top rail covers must not have any tears or holes.

#### NEW SECTION

**WAC 388-61A-0420 What kind of diaper changing area must I provide?** You must provide a sanitary diaper changing area. In addition, you must develop and post in view of the changing area, hygienic procedures for handling and storing diapers and sanitizing the changing area.

#### NEW SECTION

**WAC 388-61A-0430 What are kitchen requirements?** The following are the minimum general requirements for kitchen facilities:

(1) A sink for washing dishes.



(2) A refrigerator or other storage equipment capable of maintaining a consistent temperature of forty-five degrees Fahrenheit or lower.

(3) A range or stove.

(4) Covered garbage container.

(5) Eating and cooking utensils that are clean and in good repair.

(6) Counter surfaces that are clean and resistant to moisture.

#### NEW SECTION

**WAC 388-61A-0440 What are the requirements for providing food to clients residing in shelter?** (1) Your domestic violence agency must provide food and beverages for the basic sustenance of clients residing in shelter, unless other resources are immediately available.

(2) You must store food and beverages, including infant formula, at the shelter to provide to clients residing in shelter when other resources are not immediately available, and for shelter residents who are unable to safely access other food resources.

(3) Milk and infant formula must be available at all times for children residing in the shelter.

(4) You must purchase and provide only food and beverages that are of safe quality to clients residing in shelter. Storage, preparation, and serving techniques must ensure that nutrients are retained and spoilage is prevented.

(5) Food and beverages prepared for clients residing in shelter must be prepared, served and stored safely and in a sanitary manner.

(6) Food must be available to prepare school lunches, if lunch is not otherwise available to the children of shelter residents.

(7) Clients residing in shelter must be provided, or have immediate access to, food that is in accordance with their religious or cultural beliefs and personal practices.

#### NEW SECTION

**WAC 388-61A-0450 What are the requirements for providing clothing to clients residing in shelter?** (1) If an adult or child comes into shelter without adequate clothing, you must assist them with accessing clean, well-fitting clothing appropriate to the season, and the individual's age, gender and particular needs.

(2) Clothing that you provide must be clean and have been stored in a sanitary manner.

(3) Clothing that is provided to an individual becomes that person's personal property and must not be shared or retrieved from the client when they leave the shelter.

#### NEW SECTION

**WAC 388-61A-0460 What personal hygiene items do I need to provide to clients residing in shelter?** All clients residing in shelter must be provided with personal hygiene products during their residency, such as soap, hair care products, toothbrush and paste, and deodorant. Particular attention must be paid to providing items for individuals that have

special needs because of their ethnicity, disability, or medical condition.

#### NEW SECTION

**WAC 388-61A-0470 What are the requirements for toilets, sinks, and bathing facilities?** You must meet these requirements for toilets, sinks, and bathing facilities.

(1) You must provide at least one indoor flush-type toilet, one nearby sink for hand washing, and a bathtub or shower facility. These facilities must be located within the shelter building premises.

(2) You must comply with all of the following requirements for toilet and bathing facilities:

(a) Toilet and bathing facilities must allow for privacy of shelter residents.

(b) Toilets, urinals, and hand washing sinks must be the appropriate height for the children served, or have a safe and easily cleaned step stool or platform that is water resistant.

(c) Facilities for hand washing and bathing must be provided with hot and cold running water. Hot water must not exceed one hundred and twenty degrees Fahrenheit.

(d) Potty chairs and toilet training equipment for toddlers must be regularly maintained, disinfected, and kept in a sanitary condition. When in use, you must put potty chairs on washable, water resistant surfaces.

(e) You must provide soap and clean washcloths and towels, disposable towels or other hand-drying devices to shelter residents.

#### NEW SECTION

**WAC 388-61A-0480 What types of linen do I need to provide to clients?** (1) You must provide the following to clients residing in shelter:

(a) Bed linen, towels and washcloths that are clean and in good repair. After use by a client, bed linen, towels and washcloths must be laundered prior to use by another client.

(b) A clean liner for a sleeping bag unless the bag is cleaned between uses by different clients.

(2) Clients residing in shelter must be provided with changes of clean bed linen, towels and washcloths upon their request.

#### NEW SECTION

**WAC 388-61A-0490 What are the requirements for laundry facilities?** The requirements for laundry facilities at your shelter include the following:

(1) You must provide adequate laundry and drying equipment, or make other arrangements for getting laundry done on a regular basis. Laundry facilities in the shelter must be provided free to shelter residents.

(2) You must handle and store laundry in a sanitary manner.

#### NEW SECTION

**WAC 388-61A-0500 Are there requirements for drinking water?** Water supplies that are used for human consumption must be from a water system that has been

approved by the local health authority or department as safe for human consumption. This refers to both public water systems and individual systems.

NEW SECTION

**WAC 388-61A-0510 What are the requirements for sewage and liquid wastes?** You must discharge sewage and liquid wastes into a public sewer system or septic system that has been approved by the local health authority or department.

NEW SECTION

**WAC 388-61A-0520 What kind of heating system is required?** (1) Rooms used by clients in a shelter must be equipped with a safe and adequate source of heat that can keep the room at a healthful temperature during the time the room is occupied.

(2) The use of gas or oil-fired space heaters is prohibited.

NEW SECTION

**WAC 388-61A-0530 How must I ventilate the shelter?** You must ensure that your shelter is ventilated for the health and comfort of the clients residing in shelter, by meeting the following requirements:

(1) A mechanical exhaust to the outside must ventilate toilets and bathrooms that do not have windows opening to the outside.

(2) Bedrooms and communal living areas must have a window or opening to the outdoors that can be locked or secured from the inside.

(3) Gas or oil-fired water heaters and forced-air systems must be safely vented to the outside.

NEW SECTION

**WAC 388-61A-0540 How much lighting is required in the shelter?** You must locate light fixtures and provide lighting that promotes good visibility and comfort for clients residing in shelter.

NEW SECTION

**WAC 388-61A-0550 Are there any requirements about pets in the shelter?** Pets are prohibited from the kitchen during food preparation.

NEW SECTION

**WAC 388-61A-0560 What first-aid supplies must I approve?** You must keep first-aid supplies on hand and accessible to clients residing in shelter for immediate use. First-aid supplies must include at a minimum the following: First-aid instruction booklet, band-aids, sterile gauze, adhesive tape, antibiotic ointment single use packets, antiseptic wipe single use packets, hydrocortisone ointment single use packets, roller bandage, thermometer (non-mercury/non-glass), and non-latex gloves. In instances where an adult or child has ingested a potentially poisonous chemical or sub-

stance, you must call the Washington Poison Center for further instruction.

NEW SECTION

**WAC 388-61A-0570 What are the requirements for storing medications?** (1) Clients residing in shelter must be provided with a means to safely and securely store, and have direct and immediate access to, their medications such as individual lock boxes, lockers with a key or combination lock, or a similar type of secure storage.

(2) All medications, including pet medications and herbal remedies, must be stored in a way that is inaccessible to children.

NEW SECTION

**WAC 388-61A-0580 What measures must I take for pest control?** You must make reasonable attempts to keep the shelter free from pests, such as rodents, flies, cockroaches, fleas and other insects.

NEW SECTION

**WAC 388-61A-0590 What are the requirements for labeling and storing chemicals and toxic materials?** (1) Containers of chemical cleaning agents and other toxic materials must:

(a) Be clearly labeled with the contents.

(b) Bear the manufacturer's instructions and precautions for use.

(2) You must store the following items in a place that is not accessible to children:

(a) Chemical cleaning supplies.

(b) Toxic substances.

(c) Poisons.

(d) Aerosols.

(e) Items with warning labels.

(3) You must store chemical cleaning supplies, toxic substances, and poisons separately from food items, clothing, and bedding in order to prevent contamination.

NEW SECTION

**WAC 388-61A-0600 Where do I keep firearms and other dangerous weapons?** (1) You must keep firearms and other dangerous weapons in a locked storage container, gun safe, or another storage area made of strong, unbreakable material. Stored firearms must be unloaded.

(2) If the storage cabinet has a glass or another breakable front, you must secure the firearms with a locked cable or chain placed through the trigger guards.

(3) You must store ammunition in a place that is separate from the firearms or locked in a gun safe.

(4) You must allow access to firearms, weapons and ammunition only to authorized persons.

**ADDITIONAL STANDARDS FOR SHELTER HOMES**NEW SECTION

**WAC 388-61A-0620 What are the additional standards for shelter homes?** Shelter homes must meet the following additional standards in order for a domestic violence agency to contract with us:

(1) Shelter homes must provide at least one toilet, sink, and bathing facility for each fifteen clients or fraction of this number. The floors of all toilet and bathing facilities must be resistant to moisture.

(2) You must have at least one telephone at the shelter for incoming and outgoing calls. Next to the telephone in shelter homes you must post in English and other languages predominantly served by the domestic violence agency:

(a) Emergency telephone numbers.

(b) Instructions on how shelter residents can access domestic violence agency staff.

(3) In shelter homes all bathrooms, toilet rooms, laundry rooms, and janitor closets containing wet mops and brushes must have natural or mechanical ventilation in order to prevent objectionable odors and condensation.

(4) When staff serve food to clients in shelter homes, the staff must prepare the food in compliance with chapter 246-215 WAC, Temporary food service establishment.

(5) Shelter homes must request an annual fire and life safety inspection from their local fire department or fire marshal. The domestic violence agency must maintain documentation of the request as well as any report issued as a result of the inspection. Any violations noted by the inspector must be immediately corrected by the domestic violence agency.

(6) Shelter homes must meet the following requirements for bedrooms:

(a) Bedrooms must have a minimum ceiling height of seven and one-half feet.

(b) Bedrooms must provide at least fifty square feet of usable floor area per bed.

(c) Floor area where the ceiling height is less than five feet cannot be considered as usable floor area.

(7) When clients are residing in a shelter home at least one domestic violence agency staff member must be present or on-call to go to the shelter home twenty-four-hours a day, seven-days-per-week.

(8) When a shelter home is not a component of a domestic violence agency, the shelter home and domestic violence agency must have a written working agreement before the shelter home receives clients from the domestic violence agency. At a minimum, the written working agreement must include:

(a) Confirmation that the domestic violence agency has inspected the shelter home and that the shelter home complies with the general facility and additional standards for shelter homes.

(b) How supportive services will be provided to clients residing in shelter, and who will provide the supportive services.

(c) Verification that the staff providing supportive services, and staff supervisors, meet the training and experience requirements outlined in this rule.

**ADDITIONAL STANDARDS FOR SAFE HOMES**NEW SECTION

**WAC 388-61A-0630 What are the additional standards for safe homes?** Safe homes must meet the following additional standards in order for a domestic violence agency to contract with us:

(1) A prospective safe home must complete a written application to a domestic violence agency. The domestic violence agency must approve the application and provide training to the safe home staff before the home may receive clients.

(2) The domestic violence agency must maintain a written record of all safe homes. The record must include:

(a) The name and address of the person operating the safe home or an identification code for the safe home.

(b) A written safe home application.

(c) Documentation that the safe home complies with the general facility and additional standards for safe homes.

(d) Verification that safe home staff received initial basic training as outlined in this WAC by the domestic violence agency.

(3) You must have at least one telephone at the safe home for incoming and outgoing calls. You must provide the following information to clients residing in a safe home:

(a) Emergency telephone numbers.

(b) Instructions on how clients can access domestic violence agency staff.

(4) When clients are residing in a safe home at least one domestic violence agency staff member must be on-call to go to the safe home twenty-four hours a day, three hundred sixty-five days a year.

(5) Safe homes must comply with the following general fire safety requirements:

(a) Every room used by children in the safe home must have easy entry and exit, including one of these features:

(i) Two separate doors.

(ii) One door leading directly to the outside, or a window that opens to the outside and is large enough for emergency escape or rescue.

(b) Every occupied area must have access to at least one exit that does not pass through rooms or spaces that can be locked or blocked from the opposite side.

(c) No space may be lived in by a client that is accessible only by a ladder, folding stairs, or a trap door.

(d) Every bathroom door used by clients must be designed to permit the opening of the locked door from the outside.

(e) Every closet door latch must be designed to be opened from the inside.

(f) Escape and exit routes must be kept clear and must not be blocked by appliances, furniture, or other heavy objects.

(g) Flammable, combustible, or poisonous material must be stored away from exits and away from areas that are accessible to children.

(h) Open-flame devices and fireplaces, heating and cooking appliances, and products capable of igniting clothing must not be left unattended or used incorrectly.

(i) Fireplaces, wood stoves and other heating systems that have a surface hot enough to cause harm must have gates or protectors around them when in use.

(j) Multilevel dwellings must have a means of escape from an upper floor. If a fire ladder is needed to escape from an upper story window, it must be stored in a location that is easily accessible to the clients who may need it.

(k) You must place a smoke detector in good working condition in each bedroom or in areas close to where children sleep, such as a hallway. If the smoke detector is mounted on the wall, it must be twelve inches from the ceiling and a corner.

(l) If questions arise concerning fire danger, the local fire protection authority must be consulted.

**COMPLIANCE WITH STANDARDS**

NEW SECTION

**WAC 388-61A-0640 Will DSHS do an evaluation of the domestic violence agency?** (1) To measure compliance with our requirements we will conduct a biennial evaluation of each agency under contract with us to provide domestic violence services.

(2) We will inspect a random number of safe homes during on-site evaluations of domestic violence agencies to measure compliance with our requirements.

(3) If a lodging unit is occupied at the time of an on-site evaluation, the domestic violence agency must give the client an opportunity to leave the unit prior to the arrival of the evaluator.

NEW SECTION

**WAC 388-61A-0650 What will happen if I am out of compliance with the minimum standards or my contracts?** (1) If we find that the domestic violence agency is out of compliance with the standards specified in this chapter or the terms of the DSHS contract, we will give you written notice of the deficiencies. You must correct the deficiencies according to a plan of correction we approve.

(2) We may suspend or revoke the funding of a domestic violence agency if it is out of compliance with this chapter or the DSHS contract.

NEW SECTION

**WAC 388-61A-0660 What will happen if there is a complaint to DSHS about the domestic violence agency?** (1) If we receive a complaint that your domestic violence agency is out of compliance with this chapter or the DSHS contract, we will notify you and we will initiate an investigation.

(2) If the investigation requires that we be on-site at your domestic violence agency, you must give clients residing in lodging units an opportunity to leave the unit during the inspection.

(3) If we find that the domestic violence agency is out of compliance with the standards specified in this chapter or the terms of the DSHS contract, we will give you written notice

of the deficiencies. You must correct the deficiencies according to a plan of correction we approve.

(4) We may suspend or revoke the funding of a domestic violence agency if it is out of compliance with this chapter or the DSHS contract.

NEW SECTION

**WAC 388-61A-0670 Can DSHS waive any of the minimum standards of this chapter?** Under certain conditions we may waive some of the rules contained in this chapter.

(1) To request a waiver you must submit a written request that:

(a) Clearly describes the minimum standards(s) for which the waiver is requested.

(b) Describes why the domestic violence agency is unable to meet the requirements of this chapter without the waiver.

(c) Demonstrates that granting of the waiver will not jeopardize the safety or health of clients.

(d) Shows that the absence of granting the waiver will have a detrimental effect on the provision of services.

(2) If the written waiver request proposes any substitutions of procedures, materials, service, or equipment from those specified in this chapter, the substitutions must be at least equivalent to those required.

REPEALER

The following sections of the Washington Administrative Code are repealed:

WAC 388-61A-0005	What is the legal basis for the domestic violence shelter program?
WAC 388-61A-0010	What is the purpose of having minimum standards for domestic violence shelters and services?
WAC 388-61A-0015	Is DSHS required to provide funding to any domestic violence service that requests funding?
WAC 388-61A-0020	What are the facility and service requirements for domestic violence services?
WAC 388-61A-0025	What definitions apply to domestic violence shelters and services?
WAC 388-61A-0030	What safety requirements is the shelter required to meet?
WAC 388-61A-0035	What are the general requirements for bedrooms?
WAC 388-61A-0040	What kind of diaper changing area must I provide?

WAC 388-61A-0045	What are the kitchen requirements?	WAC 388-61A-0146	What information must the domestic violence service keep confidential?
WAC 388-61A-0050	Are there any restrictions on food preparation?	WAC 388-61A-0147	What information can be disclosed?
WAC 388-61A-0055	What are the requirements for providing food and clothing to shelter residents?	WAC 388-61A-0148	What information needs to be included in a written waiver of confidentiality?
WAC 388-61A-0060	What are the requirements for toilets, sinks, and bathing facilities?	WAC 388-61A-0149	What information must be provided to clients about their right to confidentiality?
WAC 388-61A-0065	What types of linen do I need to provide to clients?	WAC 388-61A-0150	What type of training is required for staff of the domestic violence service?
WAC 388-61A-0070	What are the requirements for laundry facilities?	WAC 388-61A-0155	Must supervisors of domestic violence service staff have specific experience and training?
WAC 388-61A-0075	Are there requirements for drinking water?	WAC 388-61A-0160	What written policies and procedures do you need to have?
WAC 388-61A-0080	What are the requirements for sewage and liquid wastes?	WAC 388-61A-0165	Will DSHS do an evaluation of the domestic violence service?
WAC 388-61A-0085	What kind of heating system is required?	WAC 388-61A-0170	What will happen if I am out of compliance with my contract?
WAC 388-61A-0090	How must I ventilate the shelter?	WAC 388-61A-0175	What will happen if there is a complaint to DSHS about the domestic violence service?
WAC 388-61A-0095	How much lighting is required in the shelter?	WAC 388-61A-0180	Can DSHS waive any of the minimum standards of this chapter?
WAC 388-61A-0100	Are there any requirements about pets in the shelter?		
WAC 388-61A-0105	What first-aid supplies must I provide?		
WAC 388-61A-0110	What are the requirements for storing medications?		
WAC 388-61A-0115	What measures must I take for pest control?		
WAC 388-61A-0120	What are the requirements for labeling and storing chemicals and toxic materials?		
WAC 388-61A-0125	Where do I keep firearms and other dangerous weapons?		
WAC 388-61A-0130	What are the additional requirements for a safe home?		
WAC 388-61A-0135	What are the additional requirements for a shelter home?		
WAC 388-61A-0140	What supportive services am I required to provide to clients?		
WAC 388-61A-0145	What is advocacy-based counseling?		

**WSR 10-13-158**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**SOCIAL AND HEALTH SERVICES**  
(Economic Services Administration)  
[Filed June 23, 2010, 8:36 a.m.]

Original Notice.  
Preproposal statement of inquiry was filed as WSR 10-09-074.  
Title of Rule and Other Identifying Information: The department is proposing to eliminate the use of administrative review teams, replace obsolete terminology and revise functional assessment language by revising WAC 388-448-0050 PEP step II—How we determine the severity of mental impairments, 388-448-0080 PEP step V—How we determine your ability to function in a work environment if you have a mental impairment, 388-448-0090 PEP step V—How we determine your ability to function in a work environment if

you have a physical impairment, 388-448-0100 PEP step VI—How we evaluate capacity to perform relevant past work, and 388-448-0110 PEP step VII—How we evaluate your capacity to perform other work.

Hearing Location(s): Office Building 2, Auditorium, DSHS Headquarters, 1115 Washington, Olympia, WA 98504 (public parking at 11th and Jefferson. A map is available at http://www1.dshs.wa.gov/msa/rpau/RPAU-OB-2directions.html or by calling (360) 664-6094), on August 10, 2010, at 10:00 a.m.

Date of Intended Adoption: Not earlier than August 11, 2010.

Submit Written Comments to: DSHS Rules Coordinator, P.O. Box 45850, Olympia, WA 98504-5850, delivery 4500 10th Avenue S.E., Lacey, WA 98503, e-mail DSHS RPAURulesCoordinator@dshs.wa.gov, fax (360) 664-6185, by 5 p.m. on August 10, 2010.

Assistance for Persons with Disabilities: Contact Jennisha Johnson, DSHS rules consultant, by July 27, 2010, TTY (360) 664-6178 or (360) 664-6094 or by e-mail at johnsjl4@dshs.wa.gov.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed amendments include elimination of the administrative review teams, obsolete language, and a revision of the functional assessment language.

Reasons Supporting Proposal: See above.

Statutory Authority for Adoption: RCW 74.04.050, 74.04.055, 74.04.057, 74.08.090, and 74.04.005.

Statute Being Implemented: RCW 74.04.050, 74.04.055, 74.04.057, 74.08.090, and 74.04.005.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of social and health services, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: Melissa Mathson, 712 Pear Street S.E., Olympia, WA 98503, (360) 725-4563.

No small business economic impact statement has been prepared under chapter 19.85 RCW. These proposed rules do not have an economic impact on small businesses. The proposed amendments only affect DSHS clients by clarifying the description of medical evidence requirements to determine incapacity.

A cost-benefit analysis is not required under RCW 34.05.328. These amendments are exempt as allowed under RCW 34.05.328 (5)(b)(vii) which states in-part, "[t]his section does not apply to ... rules of the department of social and health services relating only to client medical or financial eligibility and rules concerning liability for care of dependents."

June 17, 2010

Katherine I. Vasquez  
Rules Coordinator

AMENDATORY SECTION (Amending WSR 10-08-036, filed 3/31/10, effective 5/1/10)

**WAC 388-448-0050 PEP step II—How we determine the severity of mental impairments.** If you are diagnosed with a mental impairment by a professional described in

WAC 388-448-0020, we use information from the provider to determine how the impairment limits work-related activities.

(1) We review the following psychological evidence to determine the severity of your mental impairment:

- (a) Psychosocial and treatment history records;
- (b) Clinical findings of specific abnormalities of behavior, mood, thought, orientation, or perception;
- (c) Results of psychological tests; and
- (d) Symptoms observed by the examining practitioner that show how your impairment affects your ability to perform basic work-related activities.

(2) We exclude diagnosis and related symptoms of alcohol or substance abuse or addiction;

(3) ~~(We exclude disorders that don't impair thought, mood, memory, or cognition, such as:~~

~~(a) Passive behaviors.~~

~~(b) Learning deficits.~~

~~(4))~~ If you are diagnosed with mental retardation, the diagnosis must be based on the Wechsler Adult Intelligence Scale (WAIS). The following test results determine the severity rating:

Intelligence Quotient (IQ) Score	Severity Rating
<del>((76))</del> <u>85</u> or above	None (1)
<del>((65))</del> <u>71</u> to <del>((75))</del> <u>84</u>	Moderate (3)
<del>((64))</del> <u>70</u> or lower	Severe (5)

~~((5))~~ (4) If you are diagnosed with a mental impairment with physical causes, we assign a severity rating based on the most severe of the following four areas of impairment:

- (a) Short term memory impairment;
- (b) Perceptual or thinking disturbances;
- (c) Disorientation to time and place; or
- (d) Labile, shallow, or coarse affect.

~~((6))~~ (5) We base the severity of an impairment diagnosed as a mood, thought, memory, or cognitive disorder on a clinical assessment of the intensity and frequency of symptoms that:

- (a) Affect your ability to perform basic work related activities; and
- (b) Are consistent with a diagnosis of a mental impairment as listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV).

~~((7))~~ (6) We base the severity rating for a functional mental impairment on accumulated severity ratings for the symptoms in subsection (5)(a) of this section as follows:

Symptom Ratings or Condition	Severity Rating
(a) You are diagnosed with a functional disorder with psychotic features; (b) You have had two or more hospitalizations for psychiatric reasons in the past two years;	Moderate (3)

Symptom Ratings or Condition	Severity Rating
(c) You have had more than six months of continuous psychiatric inpatient or residential treatment in the past two years; (d) The objective evidence and global assessment of functional score are consistent with a significant limitation on performing work activities.	
(e) The objective evidence and global assessment of functioning score are consistent with very significant limitations on ability to perform work activities.	Marked (4)
(f) The objective evidence and global assessment of functioning score are consistent with the absence of ability to perform work activities.	Severe (5)

~~((8))~~ (7) If you are diagnosed with any combination of mental retardation, mental impairment with physical causes, or functional mental impairment, we assign a severity rating as follows:

Condition	Severity Rating
(a) Two or more disorders with moderate severity (3) ratings; or (b) One or more disorders rated moderate severity (3); and one rated marked severity (4).	Marked (4)
(c) Two or more disorders rated marked (4) severity.	Severe (5)

~~((9))~~ (8) We deny incapacity when you haven't been diagnosed with a significant physical impairment and your overall mental severity rating is one or two;

~~((10))~~ (9) We approve incapacity when you have an overall mental severity rating of severe (five).

AMENDATORY SECTION (Amending WSR 10-08-036, filed 3/31/10, effective 5/1/10)

**WAC 388-448-0080 PEP step V—How we determine your ability to function in a work environment if you have a mental impairment.** If you have a mental impairment we evaluate your cognitive and social functioning in a work setting. Functioning means your ability to perform typical tasks that would be required in a routine job setting and your ability to interact effectively while working.

(1) We evaluate cognitive and social functioning by assessing your ability to:

- (a) Understand, remember, and persist in tasks by following simple instructions of one or two steps.
- (b) Understand, remember, and persists in tasks by following complex instructions of three or more steps.
- (c) Learn new tasks.
- (d) Perform routine tasks without undue supervision.

(e) Be aware of normal hazards and take appropriate precautions.

(f) Communicate and perform effectively in a work setting with public contact.

(g) Communicate and perform effectively in a work setting with limited public contact.

(h) Maintain appropriate behavior in a work setting.

(2) We approve incapacity when we have objective medical evidence, including a mental status exam (MSE) per WAC 388-448-0050, that demonstrates you are:

(a) At least moderately impaired in your ability to understand, remember, and persist in tasks following simple instructions, and at least moderately limited in your ability to:

(i) Learn new tasks;

(ii) Be aware of normal hazards and take appropriate precautions; and

(iii) Perform routine tasks without undue supervision; or

(b) At least moderately impaired in the ability to understand, remember, and persist in task following complex instructions; and

(c) Markedly impaired in the ability to learn new tasks, aware of normal hazards and take appropriate precautions, and perform routine tasks without undue supervision.

(3) We approve incapacity when you are moderately (rated three) impaired in your ability to:

(a) Communicate and perform effectively in a work setting with public contact;

(b) Communicate and perform effectively in a work setting with limited public contact; and

(c) Markedly (rated four) impaired in your ability to maintain appropriate behavior in a work setting.

AMENDATORY SECTION (Amending WSR 10-08-036, filed 3/31/10, effective 5/1/10)

**WAC 388-448-0090 PEP step V—How we determine your ability to function in a work environment if you have a physical impairment.** In Step V of the PEP we review the medical evidence you provide and make a determination of how your physical impairment prevents you from working. This determination is then used in Steps VI and VII of the PEP to determine your ability to perform either work you have done in the past or other work.

(1) "**Exertion level**" means having strength, flexibility, and mobility to lift, carry, stand or walk as needed to fulfill job duties in the following work levels. For this section, "occasionally" means less than one-third of the time and "frequently" means one-third to two-thirds of the time.

The following table is used to determine your exertion level. Included in this table is a strength factor, which is your ability to perform physical activities, as defined in Appendix C of the Dictionary of Occupational Titles (DOT), Revised Edition, published by the U.S. Department of Labor as posted on the Occupational Information Network (O\*NET).

If you are able to:	Then we assign this exertion level
(a) Lift no more than two pounds or unable to stand or walk.	Severely limited

If you are able to:	Then we assign this exertion level
(b) Lift ten pounds maximum and frequently lift or carry lightweight articles. Walking or standing only for brief periods.	Sedentary
(c) Lift twenty pounds maximum and frequently lift or carry objects weighing up to ten pounds. Walk six out of eight hours per day or stand during a significant portion of the workday. Sitting and using pushing or/pulling arm or leg movements most of the day.	Light
(d) Lift fifty pounds maximum and frequently lift or carry up to twenty-five pounds.	Medium
(e) Lift one hundred pounds maximum and frequently lift or carry up to fifty pounds.	Heavy

(2) **"Exertionally related limitation"** means a restriction in mobility, agility or flexibility in the following twelve activities: Balancing, bending, climbing, crawling, crouching, handling, kneeling, pulling, pushing, reaching, sitting, and stooping. If you have exertionally related limitations, we consider them in determining your ability to work.

(3) **"Functional physical capacity"** means the degree of strength, agility, flexibility, and mobility you can apply to work-related activities. We consider the effect of the physical impairment on the ability to perform work-related activities when the physical impairment is assigned an overall severity rating of three or four. We determine functional physical capacity based on your exertional, exertionally related and nonexertional limitations. All limitations must be substantiated by the medical evidence and directly related to the diagnosed impairment(s).

(4) **"Nonexertional physical limitation"** means a restriction on work activities that does not affect strength, mobility, agility, or flexibility. Examples are:

(a) Environmental restrictions which could include, among other things, your inability to work in an area where you would be exposed to chemicals; and

(b) Workplace restrictions, such as impaired hearing or speech, which would limit the types of work environments you could work in.

AMENDATORY SECTION (Amending WSR 10-08-036, filed 3/31/10, effective 5/1/10)

**WAC 388-448-0100 PEP step VI—How we evaluate capacity to perform relevant past work.** If your overall severity rating is moderate (three) or marked (four) and we have reached this stage of the PEP and have not approved or denied your application, we decide if you can do the same or similar work as you have done in the past. We look at your current physical and/or mental limitations from cognitive, social, and vocational factors to make this decision. Vocational factors are education, relevant work history, and age.

(1) We evaluate education in terms of formal schooling or other training to acquire skills that enables you to meet job requirements. We classify education as:

If you	Then your education level is
(a) Can't read or write a simple communication, such as two sentences or a list of items.	Illiterate
(b) Have no formal schooling or vocational training beyond the <del>((tenth))</del> <u>ninth</u> grade; or (c) Had participated in special education in basic academic classes of reading, writing, or mathematics in high school.	Limited education
(d) Have received a high school diploma or general equivalency degree (GED); or (e) Have received skills training and were awarded a certificate, degree or license.	High school and above level of education

(2) We evaluate your work experience to determine if you have relevant past work. "Relevant past work" means work:

(a) Defined as gainful employment per WAC 388-448-0100.

(b) Has been performed in the past ~~((ten))~~ five years.

(c) You performed long enough to acquire the knowledge and skills to continue performing the job. You must meet the specific vocational preparation level as defined in Appendix C of the Dictionary of Occupational Titles.

(3) For each relevant past work situation you have had, we determine:

(a) The exertional or skill requirements of the job.

(b) Current cognitive, social, or nonexertional factors that significantly limit your ability to perform past work.

(4) After considering vocational factors, we deny incapacity when you have:

(a) The physical and mental ability to perform past work, and there is no significant cognitive, social or nonexertional limitation that would prevent you from performing past work; or

(b) Recently acquired specific work skills through completion of schooling or training, for jobs within your current physical or mental capacities.

(5) We approve incapacity when you are fifty-five years of age or older and don't have the physical or mental ability to perform past work.

AMENDATORY SECTION (Amending WSR 10-08-036, filed 3/31/10, effective 5/1/10)

**WAC 388-448-0110 PEP step VII—How we evaluate your capacity to perform other work.** If we decide you cannot do work that you've done before, we then decide if you can do any other work.

(1) We approve incapacity if you have a physical impairment and meet the vocational factors below:



Highest work level assigned by the practitioner	Your age	Your education level	<del>((Your education level))</del> Other vocational factors
Sedentary	<del>((Fifty-five and older))</del> <u>Any age</u>	<u>Any level</u>	<del>((Any level))</del> <u>Does not apply</u>
<del>((Sedentary))</del> <u>Light</u>	<del>((Any age))</del> <u>Fifty and older</u>	<u>Any level</u>	<del>((Limited education or limited English proficiency (LEP))</del> ) <u>Does not apply</u>
Light	<del>((Fifty))</del> <u>Thirty-five and older</u>	<u>Illiterate or limited English proficiency (LEP)</u>	<del>((Limited education or LEP))</del> <u>Does not apply</u>
<u>Light</u>	<u>Eighteen and older</u>	<u>Limited education</u>	<u>Does not have any past work</u>
Medium	Fifty- <del>((five))</del> and older	<u>Limited education</u>	<del>((Limited education or LEP))</del> <u>Does not have any past work</u>

(2) We approve incapacity when you have a (moderate three) or marked (four) mental health impairment and we have objective medical evidence, including a mental status exam (MSE) per WAC 388-448-0050, that demonstrates social or cognitive factors described in WAC 388-448-0080, interfere with working as follows:

- ~~((a) You have a moderate impairment in your ability to:~~
  - ~~(i) Be aware of normal hazards and take appropriate precautions.~~
  - ~~(ii) Communicate and perform effectively in a work setting with public contact.~~
  - ~~(iii) Understand, remember, and persist in tasks by following complex instructions of three or more steps.~~
- ~~(b) You have marked impairment in your ability to:~~
  - ~~(i) Be aware of normal hazards and take appropriate precautions.~~
  - ~~(ii) Communicate and perform effectively in a work setting with limited public contact.~~
- ~~(c) You have a marked impairment in your ability to:~~
  - ~~(i) Understand, remember, and persist in tasks by following simple instructions of one or two steps;~~
  - ~~(ii) Perform routine tasks without undue supervision;~~
  - ~~(iii) Communicate and perform effectively in a work setting with limited public contact.))~~

<u>Social limitation</u>	<u>Age</u>
<u>(a) Moderately impaired (rated three) in your ability to:</u> <u>(i) Communicate and perform effectively in a work setting with limited public contact; and</u> <u>(ii) Maintain appropriate behavior in a work setting.</u>	<u>Fifty years and older</u>
<u>(b) You have a severe (five) impairment in your ability to:</u> <u>(i) Communicate and perform effectively in a work setting with public contact; or</u> <u>(ii) Communicate and perform effectively in a work setting with limited public contact.</u>	<u>Any age</u>

<u>Social limitation</u>	<u>Age</u>
<u>(c) A mental disorder of marked severity (rated four):</u> <u>(i) One or more severe (rated five) mental impairment symptoms; and</u> <u>(ii) Moderately impaired (rated three) in the ability to communicate and perform effectively in a work setting with public or limited public contact.</u>	<u>Any age</u>

(3) We approve incapacity when you have ~~((at least a moderate (three) mental health impairment, a moderate (three) physical impairment and we have objective medical evidence, including a mental status exam (MSE) per WAC 388-448-0050, that demonstrate social or cognitive factors, as described in WAC 388-448-0080,))~~ both mental and physical impairments and we have objective medical evidence, including a mental status exam (MSE) per WAC 388-448-0050, that demonstrate social or cognitive factors, as described in WAC 388-448-0080 interfere with working as follows:

<del>((Work Level))</del> <u>Your age</u>	<u>Your education</u>	<u>Your other restrictions</u>
<del>((Sedentary))</del> <u>Any age</u>	<u>Any level</u>	(a) You are moderately impaired in your ability to( (i) Understand, remember, and persist in tasks by following complex instructions of three or more steps; (ii) Learn new tasks; (iii) Perform routine tasks without undue supervision)) <u>communicate and perform effectively in a</u>

<del>((Work Level))</del> <u>Your age</u>	<u>Your education</u>	<u>Your other restrictions</u>
		<del>work setting with limited public contact; and</del> <del>(b) You are markedly impaired in your ability to communicate and perform effectively in a work setting with public contact.</del>
<del>((Sedentary))</del> <u>Fifty or older</u>	<u>Limited education</u>	<del>((b) You are moderately impaired in your ability to:</del> <del>(i) Communicate and perform effectively in a work setting with public contact))</del> <del>(c) Restricted to medium work level or less.</del>
<del>((Light))</del> <u>Any age</u>	<u>Limited education</u>	<del>((e) You are markedly impaired in your ability to:</del> <del>(i) Understand, remember, and persist in tasks by following complex instructions of three or more steps;</del> <del>(ii) Learn new tasks;</del> <del>(iii) Perform routine tasks without undue supervision))</del> <del>(d) Restricted to light work level.</del>
<del>((Light))</del>		<del>((d) You are markedly impaired in your ability to:</del> <del>(i) Communicate and perform effectively in a work setting with public contact.))</del>

<del>((Work Level))</del> <u>Your age</u>	<u>Your education</u>	<u>Your other restrictions</u>
<del>((Medium))</del>		<del>((e) You are markedly impaired in your ability to:</del> <del>(i) Understand, remember, and persist in tasks by following simple instructions of one or two steps.</del> <del>(ii) Learn new tasks.</del> <del>(iii) Perform routine tasks without undue supervision.))</del>

(4) We deny incapacity if we decide you don't meet the criteria listed above.

**Reviser's note:** The typographical error in the above section occurred in the copy filed by the agency and appears in the Register pursuant to the requirements of RCW 34.08.040.

**WSR 10-14-035**  
**PROPOSED RULES**  
**OFFICE OF**  
**FINANCIAL MANAGEMENT**  
[Filed June 28, 2010, 1:05 p.m.]

Supplemental Notice to WSR 10-04-036.  
Preproposal statement of inquiry was filed as WSR 08-21-089.

Title of Rule and Other Identifying Information: Regulating health and welfare self-insurance requirements as to local governments.

Hearing Location(s): Office of Financial Management, Insurance Building, Conference Room 440, Olympia, Washington 98504, on August 11, 2010, at 10:30 a.m.

Date of Intended Adoption: October 1, 2010.

Submit Written Comments to: Roselyn Marcus, Office of Financial Management, P.O. Box 43113, Olympia, WA 98504-3113, e-mail Roselyn.Marcus@ofm.wa.gov, fax (360) [(360)] 664-2832, by August 11, 2010.

Assistance for Persons with Disabilities: Contact Lillian Austin by August 2, 2010, TTY (360) 902-0679 or (360) 902-0533.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: A hearing was held and a comment period was established to receive [receive] comments for the new chapter 82-65 WAC, the updated rules for health and welfare (H/W) programs. The purpose of this rule making was threefold: Create a separate set of rules for H/W programs; replace temporary guidelines with updated rules specific to both individual and joint H/W programs; and remove the provision for waivers from rules

and guidelines and allows the state risk manager to consistently regulate all programs. After receiving comments on the rules, changes to the proposed rules were made. The changes proposed for five of the proposed rules may result in a substantial variance from the rules as originally published. This supplemental notice is to enable an additional comment period on the five rules that are being substantially changed.

**Reasons Supporting Proposal:** The changes are responsive to the comments received by the Health and Welfare Advisory Board and from various H/W programs that are subject to the rule requirements. The contracting requirements have been changed to make the process less rigid, greater flexibility for the programs and allow the process to fit the contract being sought. In addition, the requirement to pay reassessment as a member has been removed as that should be a statutory, not a rule, requirement. The reserve requirements were reduced, consistent with program comments and a new report was added for programs that cease operations. All the changes are the direct result of comments received.

**Statutory Authority for Adoption:** RCW 48.62.061.

**Statute Being Implemented:** Chapter 48.62 RCW.

Rule is not necessitated by federal law, federal or state court decision.

**Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters:** To obtain a copy of the rules, or to submit written comments on the rules, please contact either Shannon Stuber at shannon.stuber@ofm.wa.gov, phone (360) 902-7311, or Roselyn Marcus at roselyn.marcus@ofm.wa.gov, phone (360) 902-0568.

**Name of Proponent:** Office of financial management (OFM), governmental.

**Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement:** Shannon Stuber, General Administration Building, P.O. Box 41027, Olympia, (360) 902-7311.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The implementation of these rules have no or minimal cost to small business.

A cost-benefit analysis is not required under RCW 34.05.328. OFM is not an agency listed in RCW 34.06.328 [34.05.328] (5)(a)(i). Further, OFM does not voluntarily make section 201 applicable to this rule adoption nor to date, has JARRC made section 201 applicable to this rule adoption.

June 27, 2010  
Roselyn Marcus  
Director of Legal Affairs  
Rules Coordinator

## NEW SECTION

**WAC 82-65-020 Definitions.** (1) "Actuary" means any person who is a member of the American Academy of Actuaries.

(2) "Assessment" means the moneys paid by the members to a joint self-insurance program.

(3) "Beneficiary" means any individual entitled to payment of all or part of a covered claim under a local government health and welfare self-insurance program.

(4) "Broker of record" means the insurance producer licensed in the state of Washington who, through a contractual agreement with the self-insurance program, procures insurance on behalf of the self-insurance program.

(5) "Claim" means a demand for payment for the delivery of a covered service or services.

(6) "Claim adjustment expense" means expenses, other than claim payments, incurred in the course of processing and settling claims.

(7) "Claims auditor" means a person who has the following qualifications:

(a) Has experience in auditing the same manner of claims filed against the program being audited;

(b) Provides proof of professional liability insurance; and

(c) Provides a statement that the auditor is independent from the program being audited, its brokers and third-party administrators.

(8) "Competitive solicitation" means a documented competitive selection process providing an equal and open opportunity to qualified parties and culminating in a selection based on criteria which may include such factors as the consultant's fees or costs, ability, capacity, experience, reputation, responsiveness to time limitations, responsiveness to solicitation requirements, quality of previous performance, and compliance with statutes and rules relating to contracts or services.

(9) "Consultant" means an independent individual or firm contracting with a self-insurance program to perform actuarial, claims auditing or third-party administration services, represent the program as broker of record, or render an opinion or recommendation according to the consultant's methods, all without being subject to the control of the program, except as to satisfaction of the contracted deliverables.

(10) "Contingent reserve policy" means a policy adopted by the governing body of an individual or joint program which establishes the amount of money (contingent reserves) necessary to fund the termination costs of the program and to insulate the program against unusual severity or frequency of claims.

(11) "Contingent reserves" means:

(a) For joint programs, an amount of money equal to eight weeks of program expenses as stated in the contingent reserve policy established by ordinance or resolution of the governing body;

(b) For individual programs, an amount of money equal to eight weeks of program expenses as recommended by the state risk manager or equal to a different amount as stated in the contingent reserve policy established by ordinance or resolution of the governing body.

(12) "Contribution" means the amount paid or payable by the employee into a health and welfare self-insurance program.

(13) "Governing body" means the multimember board, commission, committee, council, or other policy or rule-making body of a public agency, or any committee thereof when

the committee acts on behalf of the governing body, conducts hearings, or takes testimony or public comment.

(14) "Individual self-insurance program" means a formal program established and maintained by a local government entity to provide advance funding to self-insure health and welfare benefits on its own behalf as opposed to risk assumption, which means a decision to absorb the entity's financial exposure to a risk of financial loss without the creation of a formal program of advance funding of anticipated losses.

(15) "Interlocal agreement" means an agreement joining local government members of a self-insurance program that is established under the Interlocal Cooperation Act defined in chapter 39.34 RCW.

(16) "Joint self-insurance program" means any two or more local government entities which have entered into a cooperative risk sharing agreement pursuant to the provisions of the Interlocal Cooperation Act (chapter 39.34 RCW) and/or subject to regulation under chapter 48.62 RCW.

(17) "Member" means a local government entity that:

(a) Is a signatory to a joint insurance program's interlocal agreement;

(b) Agrees to pay assessments as part of the program's joint self-insurance program; and

(c) Is a past or present participant in a joint self-insurance program subject to regulation under chapter 48.62 RCW.

(18) "Program liability" means an amount as of fiscal year end determined by each program to be either:

(a) Eight weeks of total program expenses based on total program expenses paid during the previous year; or

(b) The program's liability as determined by an actuary.

(19) "Program reserves" means moneys set aside to pay expenses of an individual or joint self-insurance program.

(20) "Risk sharing" means a decision by the members of a joint self-insurance program to jointly absorb certain or specified financial exposures to risks of loss through the creation of a formal program of advance funding of anticipated losses; and/or joint purchase of insurance as a member of a joint self-insurance program formed under chapter 48.62 RCW.

(21) "Self-insurance program" means any individual or joint local government entity self-insurance program required by chapter 48.62 RCW to comply with this chapter.

(22) "Services" means administrative, electronic, management, training, wellness or other ongoing significant support services which do not include the participation in or purchase of the pool's commercial or self-insured insurance programs.

(23) "Stop-loss insurance" means a promise by an insurance company that it will cover losses of the entity it insures over and above an agreed-upon individual or aggregated amount.

(24) "Termination cost" means an estimate of the program's liabilities at the time the program ceases to operate, which shall include, at a minimum, final claim payments, claim adjustment expenses, unallocated loss adjustment expenses, and costs attributed to increased utilization.

(25) "Third-party administrator" means an independent association, agency, entity or enterprise which, through a contractual agreement, provides one or more of the following

ongoing services: Program management or administration services, claims administration services, risk management services, or services for the termination of an individual or joint self-insurance program.

(26) "Unallocated loss adjustment expense (ULAE)" means costs that cannot be associated with specific claims but are related to the claims adjustment process, such as administrative and internal expenses related to settlement of claims at the termination of the program.

#### NEW SECTION

**WAC 82-65-040 Standards for solvency—Program funding requirements.** (1) All individual and joint health and welfare programs self-insuring medical benefits shall:

(a) Establish program reserves in an amount equal to eight weeks of program expenses;

(b) Maintain an aggregate stop-loss insurance policy with an attachment point set at or below one hundred twenty-five percent of annual expected claim costs; and

(c) Establish by ordinance or resolution of the governing body, an additional contingency reserve in the following amounts:

(i) For joint programs, an amount equal to at least eight weeks of program expenses;

(ii) For individual programs, an amount equal to at least eight weeks of program expenses (recommended), or a different amount approved by the state risk manager in writing.

(2) In lieu of the requirements stated in WAC 82-65-040(1), all individual and joint health and welfare programs self-insuring medical benefits must obtain an independent actuarial study and fund to the actuarially determined program liability.

(3) All individual and joint health and welfare self-insurance programs providing either vision, dental or prescription drug benefit programs or any combination of programs thereof shall establish and maintain program reserves in an amount not less than eight weeks of program expenses for each program offered. An additional contingency reserve established by the governing body is recommended, but not required.

(4) All programs in existence less than one year shall establish reserves according to the initial plan submitted and approved by the state risk manager.

(5) Self-insurance programs that do not meet requirements for program reserves as of the program's year end shall notify the state risk manager of the condition. The state risk manager shall require the program submit a corrective action plan within sixty days of year end. The state risk manager will notify the program in writing of denial or approval of the corrective action plan within thirty days of submission.

(6) Failure to meet the requirements of the approved corrective action plan may result in further remedial action by the state risk manager, including the service of a cease and desist order upon the program.

#### NEW SECTION

**WAC 82-65-100 Standards for management—Standards for contracts—Third-party administrator contracts.** Before contracting for third-party administrator pro-

fessional services, all self-insurance programs shall establish and maintain written procedures for contracting with third-party administrators. Entering a contract for services shall not relieve the governing body of the self-insurance program of its ultimate governing, managerial and financial responsibilities. The procedures shall, as a minimum:

- (1) Provide a method of third-party administrator selection using a competitive solicitation process;
- (2) Require a complete written description of the services to be provided, remuneration levels, contract period and expiration date;
- (3) Provide for the confidentiality of the program's information, data and other intellectual property developed or shared during the course of the contract;
- (4) Provide for the program's ownership of the information, data, and other intellectual property developed or shared during the course of the contract;
- (5) Provide for the expressed authorization of the self-insurance program, consultants to the program, the state auditor, the state risk manager, or their designees, to enter the third-party administrator's premises to inspect and audit the records and performance of the third-party administrator which pertains to the program and to obtain such records electronically with audit travel costs can be eliminated or reduced;
- (6) Require the compliance with all applicable local, state and federal laws;
- (7) Establish a monitoring and acceptance procedure to determine compliance with third-party administrator contract requirements; and
- (8) Establish indemnification provisions and set forth insurance requirements between the parties.

#### NEW SECTION

**WAC 82-65-110 Standards for contracts—Competitive solicitation standards for consultant contracts.** Every joint self-insurance program shall use a competitive solicitation process in the selection of consultants. The process shall provide an equal and open opportunity to qualified parties and shall culminate in a selection based on preestablished criteria which may include such factors as the consultant's fees or costs, ability, capacity, experience, reputation, responsiveness to time limitations, responsiveness to solicitation requirements, quality of previous performance, and compliance with statutes and rules relating to contracts. Bid responses, solicitation documents and evidence of publication shall be retained in accordance with laws governing public records and shall be available for review by the state risk manager and state auditor.

#### NEW SECTION

**WAC 82-65-130 Standards for management and operations—State risk manager reports.** (1) Every individual and joint health and welfare self-insurance program authorized to transact business in the state of Washington shall electronically submit the annual report to the state risk manager no later than one hundred fifty days following the completion of the program's fiscal year. Programs that termi-

nate operations shall continue to submit annual reports until all claims have been paid.

(2) Joint self-insurance programs shall electronically submit financial statements in the format prescribed by the state auditor's office. Individual programs shall electronically submit the revenue, expenses and other financial data on a form provided by the state risk manager.

(3) All individual and joint self-insurance programs maintaining reserves of less than eight weeks of program expenses shall submit an actuarial study.

(4) All individual and joint self-insurance programs shall submit electronically a list of contracted consultants with the annual report to the state risk manager.

(5) Joint self-insurance programs shall submit electronically the following additional information as part of the annual report to the state risk manager:

- (a) Details of changes in articles of incorporation, bylaws or interlocal agreement;
- (b) Details of ongoing significant services provided by contract to nonmembers;
- (c) List of local government members added to or terminated from the program.

(6) All individual and joint self-insurance programs not meeting reserve requirements described in WAC 82-65-040 shall submit quarterly reports in electronic form until notified by the state risk manager that reserving standards have been met.

(7) Failure to provide required financial reports may result in corrective action by the state risk manager. Such actions may include:

- (a) Increase in frequency of examinations;
- (b) On-site monitoring by the state risk manager;
- (c) Service of a cease and desist order upon the program.

#### NEW SECTION

**WAC 82-65-290 Standards for operation—Elections of the governing body.** The governing body of every joint self-insurance program shall be elected by a majority of the members. Elections may be conducted during a regular meeting of the governing body or by mail-in ballot. If mail-in ballots are used, the ballots are to be secured and remain unopened until the next regular meeting of the governing body. The opening and counting of the ballots shall be conducted by the governing body of the joint self-insurance program during the next regular meeting and retained in compliance with public records retention laws. Each ballot shall be read orally as to the member name and vote and recorded in the meeting minutes.

#### NEW SECTION

**WAC 82-65-300 Standards for contracts—Standards for operation—Purchases of goods and services.** Joint self-insurance programs comprised of one common entity type must comply with bidding and purchasing requirements as prescribed by law or regulation for that entity type. Joint self-insurance programs comprised of multiple entity types shall use a competitive process for the purchase of goods and services. Vendor selection shall be based on

fees or costs, ability, capacity, experience, reputation, and responsiveness to time limitations.

**WSR 10-14-044**  
**WITHDRAWAL OF PROPOSED RULES**  
**PROFESSIONAL EDUCATOR**  
**STANDARDS BOARD**  
 [Filed June 29, 2010, 10:28 a.m.]

Please cancel proposal CR-102 WSR 10-12-090 filed on June 1, 2010.

David Brenna  
 Legislative and  
 Policy Coordinator

**WSR 10-14-045**  
**PROPOSED RULES**  
**PROFESSIONAL EDUCATOR**  
**STANDARDS BOARD**  
 [Filed June 29, 2010, 11:36 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 10-03-018.

Title of Rule and Other Identifying Information: Revises WAC 181-78A-110, clarifies length of approval for educator preparation programs and makes technical amendments.

Hearing Location(s): Inn at Gig Harbor, 3211 56th Street N.W., Gig Harbor, WA 98335, on September 22, 2010, at 8:30 a.m.

Date of Intended Adoption: September 22, 2010.

Submit Written Comments to: David Brenna, Legislative and Policy Coordinator, P.O. Box 47236, Olympia, WA 98504, e-mail david.brenna@k12.wa.us, fax (360) 586-4548, by September 15, 2010.

Assistance for Persons with Disabilities: Contact David Brenna by September 15, 2010, TTY (360) 664-3631 or (360) 725-6238.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Approval status remains in effect for period of time approve[d] in review. Clarifies language.

Reasons Supporting Proposal: Technical clarity.

Statutory Authority for Adoption: RCW 28A.410.210.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Professional educator standards board, governmental.

Name of Agency Personnel Responsible for Drafting, Implementation and Enforcement: David Brenna, P.O. Box 47236 [47236], Olympia, WA 98504, (360) 725-6238.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed amendment does not have an impact on small business and therefore does not meet the requirements for a statement under RCW 19.85.030 (1) or (2).

A cost-benefit analysis is required under RCW 34.05.-328. A preliminary cost-benefit analysis may be obtained by contacting David Brenna, P.O. Box 47236, Olympia, WA 98504, phone (360) 725-6238, fax (360) 586-3631, e-mail david.brenna@k12.wa.us.

June 29, 2010  
 David Brenna  
 Legislative and  
 Policy Coordinator

AMENDATORY SECTION (Amending WSR 06-24-082, filed 12/5/06, effective 1/5/07)

**WAC 181-78A-110 Length of time for which program approval status shall be granted.** (1) Existing programs. Based upon review of the program site visit report and other documentation requested, the professional educator standards board shall take one of the following actions:

- (a) One-year approval;
- (b) Five-year approval;
- (c) Seven-year approval (WAC 181-78A-100(6)); or
- (d) Disapproval (WAC 181-78A-115).

A program with full five- or seven-year approval shall not receive a disapproval rating.

(2) New programs. All new programs shall be conditionally approved for up to two years under WAC 181-78A-105.

(3) The ~~((superintendent of public instruction))~~ professional educator standards board, upon receipt of a complaint from any source or upon her or his initiative, or initiative of the professional educator standards board may review all or any part of a preparation program for compliance with the provisions of this chapter. If deviations are found, the professional educator standards board is authorized to rescind program approval until the college or university submits an acceptable compliance agreement which will bring the preparation program into compliance as soon as reasonably practicable, but no later than the commencement of the succeeding academic year or six calendar months, whichever is later.

(4) If an acceptable compliance agreement is not developed and approved by the professional educator standards board, the preparation program shall be placed on probationary status and the probationary status provision of WAC 181-78A-115 shall apply.

**WSR 10-14-059**  
**PROPOSED RULES**  
**OLYMPIC COLLEGE**  
 [Filed June 30, 2010, 9:38 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 10-10-129.

Title of Rule and Other Identifying Information: Olympic College nondiscrimination policy.

Hearing Location(s): Olympic College Board Room, College Service Center, 5th Floor, 1600 Chester Avenue, Bremerton, WA 98337, on August 11, 2010, at 10:00 a.m.

Date of Intended Adoption: September 8, 2010.

Submit Written Comments to: Thomas Oliver, Olympic College, CSC 210, 1600 Chester Avenue, Bremerton, WA 98337, e-mail [toliver@olympic.edu](mailto:toliver@olympic.edu), fax (360) 475-7505, by August 10, 2010.

Assistance for Persons with Disabilities: Contact Karen Fusco by July 28, 2010, TTY (360) 475-7543 or (360) 457-7542 [475-7542].

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of the nondiscrimination policy is to clarify and publicize the nondiscrimination standards for Olympic College.

Reasons Supporting Proposal: Nondiscrimination policies are required for all colleges under the state board for community and technical colleges. This is an update of the existing policy providing modern language.

Statutory Authority for Adoption: Chapter 28B.50 RCW.

Statute Being Implemented: Chapter 28B.50 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Linda Yerger, governmental.

Name of Agency Personnel Responsible for Drafting, Implementing and Enforcement: Linda Yerger, CSC 524, 1600 Chester Avenue, Bremerton, WA 98337, (360) 475-7305.

No small business economic impact statement has been prepared under chapter 19.85 RCW. There will be no impact on any entity other than Olympic College.

A cost-benefit analysis is not required under RCW 34.05.328. There is no significant economic impact.

June 29, 2009 [2010]

Thomas Oliver  
Rules Coordinator

## NEW SECTION

### **WAC 132C-10-160 Nondiscrimination policy. (1)**

Intent. The Olympic College board of trustees herein affirms its policy of equal opportunity to all individuals and all the communities we serve. Olympic College is committed to the principle of equal opportunity in all matters relating to employment, college-sponsored activities, and education programs and will comply with all applicable laws prohibiting discrimination including Titles VII and IX of the Civil Rights Act of 1964, and amendments; the Age Discrimination in Employment Act of 1967; section 504 of the Rehabilitation Act of 1974; the Americans with Disabilities Act of 1990; and the Washington state laws against discrimination, chapter 49.60 RCW.

(2) Policy. Olympic College is committed to the principle of equal opportunity in education and employment. Harassment and/or discrimination directed toward any individual or group on the basis of race, creed, color, national origin, sex, honorably discharged veteran or military status, age, religious preference, sexual orientation, or the presence of any sensory, mental, or physical disability or the use of a trained dog guide or service animal by a person with a disability, status as a disabled or Vietnam-era veteran, or political opinions or affiliations, or any other population designated by statute is a violation of the mission and purpose of

Olympic College and will not be tolerated. The college is committed to preventing and stopping discrimination, including harassment, on any of these unlawful bases, and any associated retaliatory behavior. All employees and students shall be allowed to work and learn in an environment free from discrimination.

(a) This policy is based on the principle that all forms of harassment and/or discrimination are unacceptable and will be dealt with promptly and effectively. Students, faculty or staff who are determined to have violated this policy (following investigatory proceedings) are subject to disciplinary action up to and including termination of employment and permanent dismissal (students).

(b) Applicants for admission or employment or any employees, students, or participants in college activities or programs who believe that they have been discriminated against may pursue an institutional complaint and/or may pursue other remedies provided by law.

(c) Administrators, supervisors and faculty members shall assist in ensuring that no retaliation occurs against persons who make complaints, persons who are complained against or persons who are involved in the investigation of complaints.

#### (3) Responsibility.

(a) The president of the college, and all administrative employees shall have ultimate responsibility for overseeing compliance with this policy at his or her respective unit of the college.

(b) In addition, each vice-president, executive officer, administrative officer, faculty member or other person with supervisory responsibility shall be required to report any complaint of discrimination, sexual harassment, or any harassment that violates this policy.

(c) All members of the college community are required to cooperate in any investigation of the discrimination/harassment complaint.

(4) Complaint procedure. Persons who believe that they have been the subject of unlawful discrimination or harassment are encouraged to bring such issues to the attention of their supervisor, instructor, or human resource services, or follow the established complaint procedures.

## **WSR 10-14-094**

### **PROPOSED RULES**

### **DEPARTMENT OF HEALTH**

[Filed July 6, 2010, 11:15 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 07-24-072.

Title of Rule and Other Identifying Information: Chapter 246-290 WAC, Group A public water supplies, federal groundwater rule.

Hearing Location(s): Department of Health, Point Plaza East, 310 Israel Road S.E., Tumwater, WA 98504, on August 10, 2010, at 10:00 a.m.

Date of Intended Adoption: August 17, 2010.

Submit Written Comments to: Theresa Phillips, Department of Health, P.O. Box 47822, Olympia, WA 98504-7822,

web site <http://www3.doh.wa.gov/policyreview/>, fax (360) 236-2253, by August 10, 2010.

Assistance for Persons with Disabilities: Contact Theresa Phillips by August 3, 2010, TTY (800) 833-6388 or 711.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The purpose of the proposed rule is to: (1) Establish a risk-targeted approach for groundwater systems that are susceptible to fecal contamination; (2) establish corrective action requirements to reduce cases of waterborne illnesses or death; and (3) make editorial changes for clarity and correct technical errors.

Reasons Supporting Proposal: The department of health (the department) has a primacy agreement with the United States Environmental Protection Agency (EPA) to assume lead responsibilities for implementing the federal Safe Drinking Water Act. As the primacy agency, the department must adopt rules no less stringent than EPA rules and regulations. The proposed rules incorporate EPA rules and are required to maintain the primacy agreement with EPA and federal funding for the drinking water program.

Statutory Authority for Adoption: RCW 43.20.050.

Statute Being Implemented: RCW 70.119A.080.

Rule is necessary because of federal law, 40 C.F.R., Parts 141 and 142.

Name of Proponent: Department of health, governmental.

Name of Agency Personnel Responsible for Drafting: Theresa Phillips, 243 Israel Road S.E., Tumwater, WA 98501, (360) 236-3147; Implementation and Enforcement: Derrick Dennis, 243 Israel Road S.E., Tumwater, WA 98501, (360) 236-3122.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Under RCW 19.85.025 and 34.05.310 (4)(c), a small business economic impact statement is not required for proposed rules that adopt or incorporate by reference - without material change - federal statutes or regulations, the rules of other Washington state agencies, or national consensus codes that generally establish industry standards.

A cost-benefit analysis is not required under RCW 34.05.328. The agency did not complete a cost benefit analysis under RCW 34.05.328. RCW 34.05.328 (5)(b)(iii) exempts rules that adopt or incorporate by reference without material change federal statutes or regulations, the rules of other Washington state agencies, or national consensus codes that generally establish industry standards.

July 6, 2010  
Mary C. Selecky  
Secretary

**AMENDATORY SECTION** (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-002 Guidance.** (1) The department has numerous guidance documents available to help purveyors comply with state and federal rules regarding drinking water. These include documents on the following subjects:

- (a) Compliance;
- (b) Consumer and public education;
- (c) Contaminants;

- (d) Cross-connection control and backflow prevention;
- (e) Emergency response and drinking water security;
- (f) Engineering design and water treatment;
- (g) Financial assistance and state revolving fund (SRF);
- (h) General information;
- (i) ~~((Ground water))~~ Groundwater protection;
- (j) Growth management;
- (k) Operations and maintenance;
- (l) Operator certification;
- (m) Planning and financial viability;
- (n) Regulations;
- (o) Small water systems;
- (p) System approval;
- (q) Water quality monitoring and source protection;
- (r) Water system planning; and
- (s) Water use efficiency.

(2) The department's guidance documents are available at minimal or no cost by contacting the office of drinking water's publication service at 360-236-3100 or 800-521-0323. Individuals can also request the documents via the internet at <http://www.doh.wa.gov/ehp/dw> or through conventional mail at P.O. Box 47822, Olympia, Washington 98504-7822.

(3) Federal guidance documents are available from the Environmental Protection Agency (EPA) for a wide range of topics. These are available from the EPA Office of Ground Water and Drinking Water web site at [www.epa.gov/safewater/index.html](http://www.epa.gov/safewater/index.html).

**AMENDATORY SECTION** (Amending WSR 09-21-045, filed 10/13/09, effective 1/4/10)

**WAC 246-290-010 Definitions, abbreviations, and acronyms.**

"**Acute**" means posing an immediate risk to human health.

"**ADD**" means an average day demand.

"**AG**" means an air gap.

"**Alternative filtration technology**" means a filtration process for substantial removal of particulates (generally > 2 log *Giardia lamblia* cysts and ≥ 2-log removal of *Cryptosporidium* oocysts) by other than conventional, direct, diatomaceous earth, or slow sand filtration processes.

"**Analogous treatment system**" means an existing water treatment system that has unit processes and source water quality characteristics that are similar to a proposed treatment system.

"**ANSI**" means the American National Standards Institute.

"**Approved air gap**" means a physical separation between the free-flowing end of a potable water supply pipe-line and the overflow rim of an open or nonpressurized receiving vessel.

To be an air gap approved by the department, the separation must be at least:

- (a) Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and



(b) Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

**"Approved atmospheric vacuum breaker (AVB)"** means an AVB of make, model, and size that is approved by the department. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the authority having jurisdiction are considered approved by the department.

**"Approved backflow preventer"** means an approved air gap, an approved backflow prevention assembly, or an approved AVB. The terms "approved backflow preventer," "approved air gap," or "approved backflow prevention assembly" refer only to those approved backflow preventers relied upon by the purveyor for the protection of the public water system. The requirements of WAC 246-290-490 do not apply to backflow preventers installed for other purposes.

**"Approved backflow prevention assembly"** means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by the department. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or other entity acceptable to the department are considered approved by the department.

**"As-built drawing"** means the drawing created by an engineer from the collection of the original design plans, including changes made to the design or to the system, that reflects the actual constructed condition of the water system.

**"Assessment source water monitoring"** means an evaluation of groundwater sources that may be at risk for fecal contamination. Assessment source water monitoring involves the collection of source water samples at regular intervals and analysis of those samples for fecal indicators as directed by the department.

**"Authority having jurisdiction"** (formerly known as local administrative authority) means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

**"Authorized agent"** means any person who:

(a) Makes decisions regarding the operation and management of a public water system whether or not he or she is engaged in the physical operation of the system;

(b) Makes decisions whether to improve, expand, purchase, or sell the system; or

(c) Has discretion over the finances of the system.

**"Authorized consumption"** means the volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to,

fire fighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.

**"AVB"** means an atmospheric vacuum breaker.

**"Average day demand (ADD)"** means the total quantity of water use from all sources of supply as measured or estimated over a calendar year divided by three hundred sixty-five. ADD is typically expressed as gallons per day (gpd) per equivalent residential unit (ERU).

**"AWWA"** means the American Water Works Association.

**"Backflow"** means the undesirable reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.

**"Backflow assembly tester"** means a person holding a valid BAT certificate issued under chapter 246-292 WAC.

**"Backpressure"** means a pressure (caused by a pump, elevated tank or piping, boiler, or other means) on the consumer's side of the service connection that is greater than the pressure provided by the public water system and which may cause backflow.

**"Backsiphonage"** means backflow due to a reduction in system pressure in the purveyor's distribution system and/or consumer's water system.

**"Bag filter"** means a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a nonrigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to outside.

**"Bank filtration"** means a water treatment process that uses a well to recover surface water that has naturally infiltrated into (~~ground water~~) groundwater through a river bed or bank(s). Infiltration is typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other well(s).

**"BAT"** means a backflow assembly tester.

**"Best available technology"** means the best technology, treatment techniques, or other means that EPA finds, after examination for efficacy under field conditions, are available, taking cost into consideration.

**"Blended sample"** means a sample collected from two or more individual sources at a point downstream of the confluence of the individual sources and prior to the first connection.

**"C"** means the residual disinfectant concentration in mg/L at a point before or at the first consumer.

**"Cartridge filter"** means a pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

**"Category red operating permit"** means an operating permit identified under chapter 246-294 WAC. Placement in this category results in permit issuance with conditions and a determination that the system is inadequate.

**"CCP"** means composite correction program.

**"CCS"** means a cross-connection control specialist.

**"CFR"** means the Code of Federal Regulations.

**"Chemical contaminant treatment facility"** means a treatment facility specifically used for the purpose of removing chemical contaminants.

**"Clarification"** means a treatment process that uses gravity (sedimentation) or dissolved air (flotation) to remove flocculated particles.

**"Closed system"** means any water system or portion of a water system in which water is transferred to a higher pressure zone closed to the atmosphere, such as when no gravity storage is present.

**"Coagulant"** means a chemical used in water treatment to destabilize particulates and accelerate the rate at which they aggregate into larger particles.

**"Coagulation"** means a process using coagulant chemicals and rapid mixing to destabilize colloidal and suspended particles and agglomerate them into flocs.

**"Combination fire protection system"** means a fire sprinkler system that:

- (a) Is supplied only by the purveyor's water;
- (b) Does not have a fire department pumper connection; and
- (c) Is constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

**"Combined distribution system"** means the interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

**"Completely treated water"** means water from a surface water source, or a ~~((ground-water))~~ groundwater source under the direct influence of surface water (GWI) source that receives filtration or disinfection treatment that fully complies with the treatment technique requirements of Part 6 of this chapter as determined by the department.

**"Composite correction program (CCP)"** means a program that consists of two elements - a comprehensive performance evaluation (CPE) and comprehensive technical assistance (CTA).

**"Composite sample"** means a sample in which more than one source is sampled individually by the water system and then composited by a certified laboratory by mixing equal parts of water from each source (up to five different sources) and then analyzed as a single sample.

**"Comprehensive monitoring plan"** means a schedule that describes both the frequency and appropriate locations for sampling of drinking water contaminants as required by state and federal rules.

**"Comprehensive performance evaluation (CPE)"** means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements.

The comprehensive performance evaluation must consist of at least the following components:

- (a) Assessment of plant performance;
- (b) Evaluation of major unit processes;

(c) Identification and prioritization of performance limiting factors;

(d) Assessment of the applicability of comprehensive technical assistance; and

(e) Preparation of a CPE report.

**"Comprehensive technical assistance (CTA)"** means ~~((technical assistance intended to identify specific steps that may help a water treatment plant overcome operational or design limitations identified during a comprehensive performance evaluation))~~ the performance improvement phase that is implemented if the CPE results indicate improved performance potential. The system must identify and systematically address plant-specific factors. The CTA is a combination of using CPE results as a basis for follow-up, implementing process control priority-setting techniques, and maintaining long-term involvement to systematically train staff and administrators.

**"Confirmation"** means to demonstrate the accuracy of results of a sample by analyzing another sample from the same location within a reasonable period of time, generally not to exceed two weeks. Confirmation is when analysis results fall within plus or minus thirty percent of the original sample results.

**"Confluent growth"** means a continuous bacterial growth covering a portion or the entire filtration area of a membrane filter in which bacterial colonies are not discrete.

**"Consecutive system"** means a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

**"Construction completion report"** means a form provided by the department and completed for each specific construction project to document:

- (a) Project construction in accordance with this chapter and general standards of engineering practice;
- (b) Physical capacity changes; and
- (c) Satisfactory test results.

The completed form must be stamped with an engineer's seal, and signed and dated by a professional engineer.

**"Consumer"** means any person receiving water from a public water system from either the meter, or the point where the service line connects with the distribution system if no meter is present. For purposes of cross-connection control, "consumer" means the owner or operator of a water system connected to a public water system through a service connection.

**"Consumer's water system,"** as used in WAC 246-290-490, means any potable ~~((and))~~ or industrial water system that begins at the point of delivery from the public water system and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing, and fixtures under the control of the consumer.

**"Contaminant"** means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

**"Contingency plan"** means that portion of the wellhead protection program section of the water system plan or small water system management program that addresses the

replacement of the major well(s) or wellfield in the event of loss due to (~~(ground water)~~) groundwater contamination.

**"Continuous monitoring"** means determining water quality with automatic recording analyzers that operate without interruption twenty-four hours per day.

**"Conventional filtration treatment"** means a series of processes including coagulation, flocculation, clarification, and filtration that together result in substantial particulate removal in compliance with Part 6 of this chapter.

**"Corrective action plan"** means specific written actions and deadlines developed by the water system or the department that the system must follow as a result of either the identification of significant deficiencies during a sanitary survey or the determination of a fecal indicator-positive sample in source water monitoring.

**"Cost-effective"** means the benefits exceed the costs.

**"Council"** means the Washington state building code council under WAC 51-04-015(2).

**"CPE"** means a comprehensive performance evaluation.

**"Critical water supply service area (CWSSA)"** means a geographical area which is characterized by a proliferation of small, inadequate water systems, or by water supply problems which threaten the present or future water quality or reliability of service in a manner that efficient and orderly development may best be achieved through coordinated planning by the water utilities in the area.

**"Cross-connection"** means any actual or potential physical connection between a public water system or the consumer's water system and any source of nonpotable liquid, solid, or gas that could contaminate the potable water supply by backflow.

**"Cross-connection control program"** means the administrative and technical procedures the purveyor implements to protect the public water system from contamination via cross-connections as required in WAC 246-290-490.

**"Cross-connection control specialist"** means a person holding a valid CCS certificate issued under chapter 246-292 WAC.

**"Cross-connection control summary report"** means the annual report that describes the status of the purveyor's cross-connection control program.

**"CT"** or **"CTcalc"** means the product of "residual disinfectant concentration" (C) and the corresponding "disinfectant contact time" (T) i.e., "C" x "T."

**"CT<sub>99.9</sub>"** means the CT value required for 99.9 percent (3 log) inactivation of *Giardia lamblia* cysts.

**"CTA"** means comprehensive technical assistance.

**"CTreq"** means the CT value a system shall provide to achieve a specific percent inactivation of *Giardia lamblia* cysts or other pathogenic organisms of health concern as directed by the department.

**"Curtailement"** means short-term, infrequent actions by a purveyor and its consumers to reduce their water use during or in anticipation of a water shortage.

**"CWSSA"** means a critical water supply service area.

**"DBPs"** means disinfection byproducts.

**"DCDA"** means a double check detector assembly.

**"DCVA"** means a double check valve assembly.

**"Dead storage"** means the volume of stored water not available to all consumers at the minimum design pressure under WAC 246-290-230 (5) and (6).

**"Demand forecast"** means an estimate of future water system water supply needs assuming historically normal weather conditions and calculated using numerous parameters, including population, historic water use, local land use plans, water rates and their impacts on consumption, employment, projected water use efficiency savings from implementation of a water use efficiency program, and other appropriate factors.

**"Department"** means the Washington state department of health or health officer as identified in a joint plan of operation under WAC 246-290-030(1).

**"Design and construction standards"** means department design guidance and other peer reviewed documents generally accepted by the engineering profession as containing fundamental criteria for design and construction of water facility projects. Design and construction standards are comprised of performance and sizing criteria and reference general construction materials and methods.

**"Diatomaceous earth filtration"** means a filtration process for substantial removal of particulates (> 2 log *Giardia lamblia* cysts) in which:

(a) A precoat cake of graded diatomaceous earth filter media is deposited on a support membrane (septum); and

(b) Water is passed through the cake on the septum while additional filter media, known as body feed, is continuously added to the feed water to maintain the permeability of the filter cake.

**"Direct filtration"** means a series of processes including coagulation, flocculation, and filtration (but excluding sedimentation) that together result in substantial particulate removal in compliance with Part 6 of this chapter.

**"Direct service connection"** means a service hookup to a property that is contiguous to a water distribution main and where additional distribution mains or extensions are not needed to provide service.

**"Disinfectant contact time (T in CT)"** means:

(a) When measuring the first or only C, the time in minutes it takes water to move from the point of disinfectant application to a point where the C is measured; and

(b) For subsequent measurements of C, the time in minutes it takes water to move from one C measurement point to the C measurement point for which the particular T is being calculated.

**"Disinfection"** means the use of chlorine or other agent or process the department approves for killing or inactivating microbiological organisms, including pathogenic and indicator organisms.

**"Disinfection profile"** means a summary of *Giardia lamblia* inactivation through a surface water treatment plant.

**"Distribution coliform sample"** means a sample of water collected from a representative location in the distribution system at or after the first service and analyzed for coliform presence in compliance with this chapter.

**"Distribution-related projects"** means distribution projects such as storage tanks, booster pump facilities, transmission mains, pipe linings, and tank coating. It does not

mean source of supply (including interties) or water quality treatment projects.

**"Distribution system"** means all piping components of a public water system that serve to convey water from transmission mains linked to source, storage and treatment facilities to the consumer excluding individual services.

**"Domestic or other nondistribution system plumbing problem,"** means contamination of a system having more than one service connection with the contamination limited to the specific service connection from which the sample was taken.

**"Dual sample set"** means a set of two samples collected at the same time and same location, with one sample analyzed for TTHM and the other sample analyzed for HAA5. Dual sample sets are collected for the purposes of conducting an IDSE under WAC 246-290-300 (6)(b)(i)(F) and determining compliance with the TTHM and HAA5 MCLs under WAC 246-290-310(4).

**"Duplicate (verification) sample"** means a second sample collected at the same time and location as the first sample and used for verification.

**"DVGW"** means Deutsche Vereinigung des Gas und Wasserfaches.

**"Elected governing board"** means the elected officers with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system.

**"Emergency"** means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety.

**"Emergency source"** means any source that is approved by the department for emergency purposes only, is not used for routine or seasonal water demands, is physically disconnected, and is identified in the purveyor's emergency response plan.

**"Engineering design review report"** means a form provided by the department and completed for a specific distribution-related project to document:

(a) Engineering review of a project report and/or construction documents under the submittal exception process in WAC 246-290-125(3); and

(b) Design in accordance with this chapter and general standards of engineering practice.

(c) The completed form must be stamped with engineer's seal, and signed and dated by a professional engineer.

**"EPA"** means the Environmental Protection Agency.

**"Equalizing storage"** means the volume of storage needed to supplement supply to consumers when the peak hourly demand exceeds the total source pumping capacity.

**"Equivalent residential unit (ERU)"** means a system-specific unit of measure used to express the amount of water consumed by a typical full-time single family residence.

**"ERU"** means an equivalent residential unit.

**"Existing service area"** means a specific area within which direct service or retail service connections to customers of a public water system are currently available.

**"Expanding public water system"** means a public water system installing additions, extensions, changes, or alterations to their existing source, transmission, storage, or distribution facilities that will enable the system to increase

in size its existing service area and/or its number of approved service connections. Exceptions:

(a) A system that connects new approved individual retail or direct service connections onto an existing distribution system within an existing service area; or

(b) A distribution system extension in an existing service area identified in a current and approved water system plan or project report.

**"Filter profile"** means a graphical representation of individual filter performance in a direct or conventional surface water filtration plant, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

**"Filtration"** means a process for removal of particulate matter from water by passage through porous media.

**"Financial viability"** means the capability of a water system to obtain sufficient funds to construct, operate, maintain, and manage a public water system, on a continuing basis, in full compliance with federal, state, and local requirements.

**"Finished water"** means water introduced into a public water system's distribution system and is intended for distribution and consumption without further treatment, except as treatment necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

**"Finished water storage facility"** means a water storage structure that is integrated with a water system's distribution network to provide for variable system demands including, but not limited to, daily equalizing storage, standby storage, or fire reserves, or to provide for disinfectant contact time.

**"Fire flow"** means the maximum rate and duration of water flow needed to suppress a fire under WAC 246-293-640 or as required under local fire protection authority standards.

**"Fire suppression storage"** means the volume of stored water available during fire suppression activities to satisfy minimum pressure requirements per WAC 246-290-230.

**"First consumer"** means the first service connection associated with any source (i.e., the point where water is first withdrawn for human consumption, excluding connections where water is delivered to another water system covered by these regulations).

**"Flocculation"** means a process enhancing agglomeration and collection of colloidal and suspended particles into larger, more easily settleable or filterable particles by gentle stirring.

**"Flowing stream"** means a course of running water flowing in a definite channel.

**"Flow-through fire protection system"** means a fire sprinkler system that:

(a) Is supplied only by the purveyor's water;

(b) Does not have a fire department pumper connection;

(c) Is constructed of approved potable water piping and materials to which sprinkler heads are attached; and

(d) Terminates at a connection to a toilet or other plumbing fixture to prevent stagnant water.

**"Forecasted demand characteristics"** means the factors that may affect a public water system's projected water needs.

**"Future service area"** means a specific area a public water system plans to provide water service. This is determined by a written agreement between purveyors under WAC 246-293-250 or by the purveyor's elected governing board or governing body if not required under WAC 246-293-250.

**"GAC"** means granular activated carbon.

**"GAC10"** means granular activated carbon filter beds with an empty-bed contact time of ten minutes based on average daily flow and a carbon reactivation frequency of every one hundred eighty days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with MCLs under WAC 246-290-310(4) shall be one hundred twenty days.

**"GAC20"** means granular activated carbon filter beds with an empty-bed contact time of twenty minutes based on average daily flow and a carbon reactivation frequency of every two hundred forty days.

**"Governing body"** means the individual or group of individuals with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system.

**"gph"** means gallons per hour.

**"gpm"** means gallons per minute.

**"Grab sample"** means a water quality sample collected at a specific instant in time and analyzed as an individual sample.

**"Groundwater system"** means all public water systems that use groundwater including:

(a) Consecutive systems receiving finished groundwater;  
or

(b) Surface water systems with groundwater sources except those systems that combine all sources prior to treatment.

**"(~~Ground-water~~) Groundwater under the direct influence of surface water (GWI)"** means any water beneath the surface of the ground that the department determines has the following characteristics:

(a) Significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or, *Cryptosporidium*; or

(b) Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH closely correlating to climatological or surface water conditions where natural conditions cannot prevent the introduction of surface water pathogens into the source at the system's point of withdrawal.

**"Guideline"** means a department document assisting the purveyor in meeting a rule requirement.

**"GWI"** means (~~(ground-water)~~) groundwater under the direct influence of surface water.

**"GWR"** means groundwater rule.

**"HAA5"** means haloacetic acids (five).

**"Health officer"** means the health officer of the city, county, city-county health department or district, or an authorized representative.

**"Heterotrophic Plate Count (HPC)"** means a procedure to measure a class of bacteria that use organic nutrients for growth. The density of these bacteria in drinking water is measured as colony forming units per milliliter and is referred to as the HPC.

**"High health cross-connection hazard"** means a cross-connection involving any substance that could impair the quality of potable water and create an actual public health hazard through injury, poisoning, or spread of disease.

**"HPC"** means heterotrophic plate count.

**"Human consumption"** means the use of water for drinking, bathing or showering, hand washing, food preparation, cooking, or oral hygiene.

**"Hydraulic analysis"** means the study of a water system's distribution main and storage network to determine present or future adequacy for provision of service to consumers within the established design parameters for the system under peak flow conditions, including fire flow. The analysis is used to establish any need for improvements to existing systems or to substantiate adequacy of design for distribution system components such as piping, elevated storage, booster stations or similar facilities used to pump and convey water to consumers.

**"IAPMO"** means the International Association of Plumbing and Mechanical Officials.

**"IDSE"** means an initial distribution system evaluation.

**"Inactivation"** means a process which renders pathogenic microorganisms incapable of producing disease.

**"Inactivation ratio"** means the ratio obtained by dividing CTcalc by CTreq.

**"Incompletely treated water"** means water from a surface or GWI source that receives filtration and/or disinfection treatment that does not fully comply with the treatment technique requirements of Part 6 of this chapter as determined by the department.

**"In-line filtration"** means a series of processes, including coagulation and filtration (but excluding flocculation and sedimentation) that together result in particulate removal.

**"In-premises protection"** means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises by the installation of an approved air gap or backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

**"Intertie"** means an interconnection between public water systems permitting the exchange or delivery of water between those systems.

**"kPa"** means kilo pascal (SI units of pressure).

**"Lake or reservoir"** means a natural or man-made basin or hollow on the earth's surface in which water collects or is stored that may or may not have a current or single direction of flow.

**"Legionella"** means a genus of bacteria containing species which cause a type of pneumonia called Legionnaires' Disease.

**"Limited alternative to filtration"** means a process that ensures greater removal and/or inactivation efficiencies of pathogenic organisms than would be achieved by the combination of filtration and chlorine disinfection.

**"Local plans and regulations"** means any comprehensive plan or development regulation adopted under chapter 36.70A RCW or any other applicable comprehensive plan, land use plan, or development regulation adopted by a city, town, or county for the applicable service area.

**"Locational running annual average (LRAA)"** means the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

**"Low cross-connection hazard"** means a cross-connection that could impair the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of potable waters for domestic use.

**"LRAA"** means the locational running annual average.

**"Major project"** means all construction projects subject to the State Environmental Policy Act (SEPA) under WAC 246-03-030 (3)(a) and include all surface water source development, all water system storage facilities greater than one-half million gallons, new transmission lines longer than one thousand feet and larger than eight inches in diameter located in new rights of way and major extensions to existing water distribution systems involving use of pipes greater than eight inches in diameter, that are designed to increase the existing service area by more than one square mile.

**"Mandatory curtailment"** means curtailment required by a public water system of specified water uses and consumer classes for a specified period of time.

**"Marginal costs"** means the costs incurred by producing the next increment of supply.

**"Maximum contaminant level (MCL)"** means the maximum permissible level of a contaminant in water the purveyor delivers to any public water system user, measured at the locations identified under WAC 246-290-300, Table 3.

**"Maximum contaminant level violation"** means a confirmed measurement above the MCL and for a duration of time, where applicable, as outlined under WAC 246-290-310.

**"Maximum day demand (MDD)"** means the highest actual or estimated quantity of water that is, or is expected to be, used over a twenty-four hour period, excluding unusual events or emergencies. MDD is typically expressed as gallons per day per ERU (gpd/ERU).

**"MCL"** means the maximum contaminant level.

**"MDD"** means the maximum day demand.

**"Membrane filtration"** means a pressure or vacuum driven separation process in which particulate matter larger than 1 micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. This definition includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

**"mg/L"** means milligrams per liter (1 mg/L = 1 ppm).

**"mL"** means a milliliter.

**"mm"** means a millimeter.

**"Monitoring waiver"** means an action taken by the department under WAC 246-290-300 (4)(g) or (8)(f) to allow a water system to reduce specific monitoring requirements

based on a determination of low source vulnerability to contamination.

**"MRDL"** means the maximum residual disinfectant level.

**"MRDLG"** means the maximum residual disinfectant level goal.

**"MTTP"** means maximum total trihalomethane potential.

**"Municipal water supplier"** means an entity that supplies water for municipal water supply purposes.

**"Municipal water supply purposes"** means a beneficial use of water:

(a) For residential purposes through fifteen or more residential service connections or for providing residential use of water for a nonresidential population that is, on average, at least twenty-five people for at least sixty days a year;

(b) For governmental or governmental proprietary purposes by a city, town, public utility, district, county, sewer district, or water district; or

(c) Indirectly for the purposes in (a) or (b) of this definition through the delivery of treated or raw water to a public water system for such use.

(i) If water is beneficially used under a water right for the purposes listed in (a), (b), or (c) of this definition, any other beneficial use of water under the right generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes.

(ii) If a governmental entity holds a water right that is for the purposes listed in (a), (b), or (c) of this definition, its use of water or its delivery of water for any other beneficial use generally associated with the use of water within a municipality is also for "municipal water supply purposes," including, but not limited to, beneficial use for commercial, industrial, irrigation of parks and open spaces, institutional, landscaping, fire flow, water system maintenance and repair, or related purposes.

**"Nested storage"** means one component of storage is contained within the component of another.

**"Nonacute"** means posing a possible or less than immediate risk to human health.

**"Nonresident"** means a person having access to drinking water from a public water system, but who lives elsewhere. Examples include travelers, transients, employees, students, etc.

**"Normal operating conditions"** means those conditions associated with the designed, day-to-day provision of potable drinking water that meets regulatory water quality standards and the routine service expectations of the system's consumers at all times, including meeting fire flow demands. Operation under conditions such as power outages, floods, or unscheduled transmission or distribution disruptions, even if considered in the system design, are considered abnormal.

**"NSF"** means NSF International (formerly known as the National Sanitation Foundation (NSF)).

**"NTNC"** means nontransient noncommunity.

**"NTU"** means a nephelometric turbidity unit.

**"ONORM"** means Osterreichisches Normungsinstitut.

**"Operational storage"** means the volume of distribution storage associated with source or booster pump normal cycling times under normal operating conditions and is additive to the equalizing and standby storage components, and to fire flow storage if this storage component exists for any given tank.

**"PAA"** means a project approval application.

**"pCi/L"** means picocuries per liter.

**"Peak hourly demand (PHD)"** means the maximum rate of water use, excluding fire flow, that can be expected to occur within a defined service area over a continuous sixty minute time period. PHD is typically expressed in gallons per minute (gpm).

**"Peak hourly flow"** means, for the purpose of CT calculations, the greatest volume of water passing through the system during any one hour in a day.

**"Performance criteria"** means the level at which a system shall operate in order to maintain system reliability compliance, in accordance with WAC 246-290-420, and to meet consumers' reasonable expectations.

**"Permanent residence"** means any dwelling that is, or could reasonably be expected to be, occupied on a continuous basis.

**"Permanent source"** means a public water system supply source that is used regularly each year, and based on expected operational requirements of the system, will be used more than three consecutive months in any twelve-month period. For seasonal water systems that are in operation for less than three consecutive months per year, their sources shall also be considered to be permanent.

**"PHD"** means peak hourly demand.

**"Plant intake"** means the works or structures at the head of a conduit through which water is diverted from a source (e.g., river or lake) into the treatment plant.

**"Point of disinfectant application"** means the point where the disinfectant is added, and where water downstream of that point is not subject to contamination by untreated surface water.

**"Population served"** means the number of persons, resident and nonresident, having immediate access to drinking water from a public water system, whether or not persons have actually consumed water from that system. The number of nonresidents shall be the average number of persons having immediate access to drinking water on days access was provided during that month. In the absence of specific population data, the number of residents shall be computed by multiplying the number of active services by two and one-half.

**"Potable"** means water suitable for drinking by the public.

**"Potential GWI"** means a source identified by the department as possibly under the influence of surface water, and includes, but is not limited to, all wells with a screened interval fifty feet or less from the ground surface at the well-head and located within two hundred feet of a surface water, and all Ranney wells, infiltration galleries, and springs.

**"ppm"** means parts per million (1 ppm = 1 mg/L).

**"Premises isolation"** means a method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the ser-

vice connection or alternative location acceptable to the purveyor to isolate the consumer's water system from the purveyor's distribution system.

**"Presedimentation"** means a preliminary treatment process used to remove gravel, sand, and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a treatment plant.

**"Pressure filter"** means an enclosed vessel containing properly sized and graded granular media through which water is forced under greater than atmospheric pressure.

**"Primary disinfection"** means a treatment process for achieving inactivation of *Giardia lamblia* cysts, viruses, or other pathogenic organisms of public health concern to comply with the treatment technique requirements of Part 6 of this chapter.

**"Primary standards"** means standards based on chronic, nonacute, or acute human health effects.

**"Primary turbidity standard"** means an accurately prepared formazin solution or commercially prepared polymer solution of known turbidity (prepared in accordance with "standard methods") that is used to calibrate bench model and continuous turbidimeters (instruments used to measure turbidity).

**"Project approval application (PAA)"** means a department form documenting ownership of water system, design engineer for the project, and type of project.

**"Protected ((ground-water)) groundwater source"** means a ((ground-water)) groundwater source the purveyor shows to the department's satisfaction as protected from potential sources of contamination on the basis of hydrogeologic data and/or satisfactory water quality history.

**"psi"** means pounds per square inch.

**"Public forum"** means a meeting open to the general public that allows for their participation.

**"Public water system"** is defined and referenced under WAC 246-290-020.

**"Purchased source"** means water a purveyor purchases from a public water system not under the control of the purveyor for distribution to the purveyor's consumers.

**"Purveyor"** means an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents of these entities.

**"PVBA"** means a pressure vacuum breaker assembly.

**"RAA"** means the running annual average.

**"Reclaimed water"** means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for beneficial use or a controlled use that would not otherwise occur, and it is no longer considered wastewater.

**"Record drawings"** means the drawings bearing the seal and signature of a professional engineer that reflect the modifications made to construction documents, documenting actual constructed conditions of the water system facilities.

**"Recreational tract"** means an area that is clearly defined for each occupant, but has no permanent structures with internal plumbing, and the area has been declared in the

covenants or on the recorded plat in order to be eligible for reduced design considerations.

**"Regional public water supplier"** means a water system that provides drinking water to one, or more, other public water systems.

**"Regularly"** means four hours or more per day for four days or more per week.

**"Removal credit"** means the level (expressed as a percent or log) of *Giardia* and virus removal the department grants a system's filtration process.

**"Repeat sample"** means a sample collected to confirm the results of a previous analysis.

**"Resident"** means an individual living in a dwelling unit served by a public water system.

**"Residual disinfectant concentration"** means the analytical level of a disinfectant, measured in milligrams per liter, that remains in water following the application (dosing) of the disinfectant after some period of contact time.

**"Retail service area"** means the specific area defined by the municipal water supplier where the municipal water supplier has a duty to provide service to all new service connections. This area must include the municipal water supplier's existing service area and may also include areas where future water service is planned if the requirements of RCW 43.20.260 are met.

**"RPBA"** means reduced pressure backflow assembly.

**"RPDA"** means reduced pressure detector assembly.

**"SAL"** means state advisory level.

**"Same farm"** means a parcel of land or series of parcels that are connected by covenants and devoted to the production of livestock or agricultural commodities for commercial purposes and does not qualify as a **Group A** public water system.

**"Sanitary survey"** means a review, inspection, and assessment of a public water system, by the department or department designee (~~(including, but not limited to)~~), to determine the adequacy of the system and its operation for producing and distributing safe and reliable drinking water. Each survey includes, but is not limited to, an evaluation of the following components:

(a) Source;

(b) ~~(Facilities;)~~ Treatment;

(c) ~~(Equipment;)~~ Distribution system;

(d) ~~(Administration and operation;)~~ Finished water storage;

(e) ~~(Maintenance procedures;)~~ Pump, pump facilities, and controls;

(f) Monitoring, reporting, and data verification;

(g) ~~(Recordkeeping;)~~ System management and operation; and

(h) ~~(Planning documents and schedules; and~~

~~(i) Management practices;))~~ Operator compliance.

**"Satellite system management agency (SMA)"** means a person or entity that is approved by the department to own or operate public water systems on a regional or county-wide basis without the necessity for a physical connection between the systems.

**"SCA"** means a sanitary control area.

**"SDWA"** means the Safe Drinking Water Act.

**"Seasonal source"** means a public water system source used on a regular basis, that is not a permanent or emergency source.

**"Secondary standards"** means standards based on factors other than health effects.

**"SEPA"** means the State Environmental Policy Act.

**"Service area"** means the specific area or areas a water system currently serves or plans to provide water service. This may be comprised of the existing service area, retail service area, future service area, and include areas where water is provided to other public water systems.

**"Service connection"** means a connection to a public water system designed to provide potable water to a single family residence, or other residential or nonresidential population. When the connection provides water to a residential population without clearly defined single family residences, the following formulas shall be used in determining the number of services to be included as residential connections on the WFI form:

(a) Divide the average population served each day by two and one-half; or

(b) Using actual water use data, calculate the total ERUs represented by the service connection in accordance with department design guidance.

(c) In no case shall the calculated number of services be less than one.

**"Severe health cross-connection hazard"** means a cross-connection which could impair the quality of potable water and create an immediate, severe public health hazard through poisoning or spread of disease by contaminants from radioactive material processing plants, nuclear reactors, or wastewater treatment plants.

~~("Significant noncomplier" means a system that is violating or has violated department rules, and the violations may create, or have created an imminent or a significant risk to human health.~~

~~The violations include, but are not limited to:~~

~~(a) Repeated violations of monitoring requirements;~~

~~(b) Failure to address an exceedance of permissible levels of regulated contaminants; or~~

~~(c) Failure to comply with treatment technique standards or requirements;))~~

**"Simple disinfection"** means any form of disinfection that requires minimal operational control in order to maintain the disinfection at proper functional levels, and that does not pose safety concerns that would require special care, equipment, or expertise. Examples include hypochlorination, UV-light, contactor chlorination, or any other form of disinfection practice that is safe to use and easy to routinely operate and maintain.

**"Slow sand filtration"** means a process involving passage of source water through a bed of sand at low velocity (generally less than 0.10 gpm/ft<sup>2</sup>) that results in substantial particulate removal (> 2 log *Giardia lamblia* cysts) by physical and biological mechanisms.

**"SMA"** means a satellite system management agency.

**"SOC"** means a synthetic organic chemical.

**"Societal perspective"** means:

A point of view that includes a broad spectrum of public benefits, including, but not limited to:



- (a) Enhanced system reliability;
- (b) Savings that result from delaying, deferring, or minimizing capital costs; and
- (c) Environmental benefits such as increased water in streams, improvements in aquifer recharge and other environmental factors.

"**Source meter**" means a meter that measures total output of a water source over specific time periods.

"**Source water**" means untreated water that is not subject to recontamination by surface runoff and:

- (a) For unfiltered systems, enters the system immediately before the first point of disinfectant application; and
- (b) For filtered systems, enters immediately before the first treatment unit of a water treatment facility.

"**SPI**" means a special purpose investigation.

"**Special purpose investigation (SPI)**" means on-site inspection of a public water system by the department or designee to address a potential public health concern, regulatory violation, or consumer complaint.

"**Special purpose sample**" means a sample collected for reasons other than the monitoring compliance specified in this chapter.

"**Spring**" means a source of water where an aquifer comes in contact with the ground surface.

"**SRF**" means the state revolving fund.

"**SSNC**" means state significant noncomplier.

"**Standard methods**" means the book, titled *Standard Methods for the Examination of Water and Waste Water*, jointly published by the American Public Health Association, American Water Works Association (AWWA), and Water Pollution Control Federation. This book is available through public libraries or may be ordered from AWWA, 6666 West Quincy Avenue, Denver, Colorado 80235. The edition to be used is that specified by EPA for the relevant drinking water parameter in 40 CFR Part 141.

"**Standby storage**" means the volume of stored water available for use during a loss of source capacity, power, or similar short-term emergency.

"**State advisory level (SAL)**" means a level established by the department and state board of health for a contaminant without an existing MCL. The SAL represents a level that when exceeded, indicates the need for further assessment to determine if the chemical is an actual or potential threat to human health.

"**State board of health**" and "**board**" means the board created by RCW 43.20.030.

"**State building code**" means the codes adopted by and referenced in chapter 19.27 RCW; the state energy code; and any other codes so designated by the Washington state legislature as adopted and amended by the council.

"**State revolving fund (SRF)**" means the revolving loan program financed by the state and federal governments and managed by the state for the purpose of assisting water systems to meet their capital needs associated with complying with the federal Safe Drinking Water Act under chapter 246-296 WAC.

"**State significant noncomplier**" means a system that is violating or has violated department rules, and the violations may create, or have created an imminent or a significant risk to human health.

The violations include, but are not limited to:

- (a) Repeated violations of monitoring requirements;
- (b) Failure to address an exceedance of permissible levels of regulated contaminants;
- (c) Failure to comply with treatment technique standards or requirements;
- (d) Failure to comply with waterworks operator certification requirements; or
- (e) Failure to submit to a sanitary survey.

"**Subpart H System**" see definition for "**surface water system.**"

"**Surface water**" means a body of water open to the atmosphere and subject to surface runoff.

"**Surface water system**" means a public water system that uses in whole, or in part, source water from a surface supply, or GWI supply. This includes systems that operate surface water treatment facilities, and systems that purchase "completely treated water" (as defined in this subsection). A "surface water system" is also referred to as a "Subpart H System" in some federal regulatory language adopted by reference and the two terms are considered equivalent for the purposes of this chapter.

"**Susceptibility assessment**" means the completed Susceptibility Assessment Survey Form developed by the department to evaluate the hydrologic setting of the water source and assess its contribution to the source's overall susceptibility to contamination from surface activities.

"**SUVA**" means specific ultraviolet absorption.

"**SVBA**" means spill resistant vacuum breaker assembly.

"**SWTR**" means the surface water treatment rule.

"**Synthetic organic chemical (SOC)**" means a manufactured carbon-based chemical.

"**System capacity**" means the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with all relevant local, state, and federal plans and regulations.

"**System physical capacity**" means the maximum number of service connections or equivalent residential units (ERUs) that the system can serve when considering the limitation of each system component such as source, treatment, storage, transmission, or distribution, individually and in combination with each other.

"**T**" means disinfectant contact time in minutes.

"**Time-of-travel**" means the time required for (~~ground~~ water) groundwater to move through the water bearing zone from a specific point to a well.

"**TNC**" means transient noncommunity.

"**TNTC**" means too numerous to count.

"**TOC**" means total organic carbon.

"**Too numerous to count (TNTC)**" means the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

"**Tracer study**" means a field study conducted to determine the disinfectant contact time, T, provided by a water system component, such as a clearwell or storage reservoir, used for *Giardia lamblia* cyst and virus inactivation. The study involves introducing a tracer chemical at the inlet of the contact basin and measuring the resulting outlet tracer concentration as a function of time.

**"Transmission line"** means pipes used to convey water from source, storage, or treatment facilities to points of distribution or distribution mains, and from source facilities to treatment or storage facilities. This also can include transmission mains connecting one section of distribution system to another section of distribution system as long as this transmission main is clearly defined on the plans and no service connections are allowed along the transmission main.

**"Treatment technique requirement"** means a department-established requirement for a public water system to provide treatment, such as filtration or disinfection, as defined by specific design, operating, and monitoring requirements. A "treatment technique requirement" is established in lieu of a primary MCL when monitoring for the contaminant is not economically or technologically feasible.

**"Triggered source water monitoring"** means collection of groundwater source samples as a result of a total coliform-positive routine sample in the distribution system under WAC 246-290-300(3).

**"Trihalomethane (THM)"** means one of a family of organic compounds, named as derivatives of methane, where three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure. THMs may occur when chlorine, a halogen, is added to water containing organic material and are generally found in water samples as disinfection byproducts.

**"TTHM"** means total trihalomethane.

**"Turbidity event"** means a single day or series of consecutive days, not to exceed fourteen, when one or more turbidity measurement each day exceeds 5 NTU.

**"Two-stage lime softening"** means a process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.

**"T10"** means the time it takes ten percent of the water passing through a system contact tank intended for use in the inactivation of *Giardia lamblia* cysts, viruses, and other microorganisms of public health concern, as determined from a tracer study conducted at peak hourly flow or from published engineering reports or guidance documents for similarly configured tanks.

**"ug/L"** means micrograms per liter.

**"UL"** means the Underwriters Laboratories, Inc.

**"umhos/cm"** means micromhos per centimeter.

**"Unapproved auxiliary water supply"** means a water supply (other than the purveyor's water supply) on or available to the consumer's premises that is either not approved for human consumption by the health agency having jurisdiction or is not otherwise acceptable to the purveyor.

**"Uncovered finished water storage facility"** means a tank, reservoir, or other facility used to store water, which will undergo no further treatment to reduce microbial pathogens except residual disinfection and is directly open to the atmosphere without a suitable water-tight roof or cover.

**"Uniform Plumbing Code"** means the code adopted under RCW 19.27.031(4) and implemented under chapter 51-56 WAC. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

**"UPC"** means the Uniform Plumbing Code.

**"Used water"** means water which has left the control of the purveyor.

**"UTC"** means the utilities and transportation commission.

**"Verification"** means to demonstrate the results of a sample to be precise by analyzing a duplicate sample. Verification occurs when analysis results fall within plus or minus thirty percent of the original sample.

**"Virus"** means a virus of fecal origin which is infectious to humans and transmitted through water.

**"VOC"** means a volatile organic chemical.

**"Volatile organic chemical (VOC)"** means a manufactured carbon-based chemical that vaporizes quickly at standard pressure and temperature.

**"Voluntary curtailment"** means a curtailment of water use requested, but not required of consumers.

**"WAC"** means the Washington Administrative Code.

**"Waterborne disease outbreak"** means the significant occurrence of acute infectious illness, epidemiologically associated with drinking water from a public water system, as determined by the appropriate local health agency or the department.

**"Water demand efficiency"** means minimizing water use by the public water system's consumers through purveyor sponsored activities that may include, but are not limited to distributing water saving devices, providing rebates or incentives to promote water efficient technologies or by providing water audits to homes, businesses, or landscapes.

**"Water facilities inventory (WFI) form"** means the department form summarizing each public water system's characteristics.

**"Water right"** means a permit, claim, or other authorization, on record with or accepted by the department of ecology, authorizing the beneficial use of water in accordance with all applicable state laws.

**"Water right self-assessment"** means an evaluation of the legal ability of a water system to use water for existing or proposed usages in conformance with state water right laws. The assessment may be done by a water system, a purveyor, the department of ecology, or any combination thereof.

**"Watershed"** means the region or area that:

(a) Ultimately drains into a surface water source diverted for drinking water supply; and

(b) Affects the physical, chemical, microbiological, and radiological quality of the source.

**"Water shortage"** means a situation during which the water supplies of a system cannot meet normal water demands for the system, including peak periods.

**"Water shortage response plan"** means a plan outlining policies and activities to be implemented to reduce water use on a short-term basis during or in anticipation of a water shortage.

**"Water supply characteristics"** means the factors related to a public water system's source of water supply that may affect its availability and suitability to provide for both short-term and long-term needs.

Factors include, but are not limited to:

(a) Source location;

(b) Name of any body of water and water resource inventory area from which water is diverted or withdrawn;

- (c) Production capacity;
- (d) The source's natural variability;
- (e) The system's water rights for the source;
- (f) Other legal demands on the source such as water rights for other uses;
- (g) Conditions established to protect species listed under the Endangered Species Act in 50 CFR 17.11;
- (h) Instream flow restrictions established under Title 173 WAC; and
- (i) Any conditions established by watershed plans approved under chapter 90.82 RCW and RCW 90.54.040(1) or salmon recovery plans under chapter 77.85 RCW.

**"Water supply efficiency"** means increasing a public water system's transmission, storage and delivery potential through activities that may include, but are not limited to:

- (a) System-wide water audits;
- (b) Documenting authorized uses;
- (c) Conducting leak surveys; and
- (d) Repairs on:
  - (i) Meters;
  - (ii) Lines;
  - (iii) Storage facilities; and
  - (iv) Valves.

**"Water use efficiency (WUE)"** means increasing water supply efficiency and water demand efficiency to minimize water withdrawals and water use.

**"Water use efficiency program"** means policies and activities focusing on increasing water supply efficiency and water demand efficiency to minimize water withdrawals and water use.

**"Well field"** means a group of wells one purveyor owns or controls that:

- (a) Draw from the same aquifer or aquifers as determined by comparable inorganic chemical analysis and comparable static water level and top of the open interval elevations; and
- (b) Discharge water through a common pipe and the common pipe shall allow for collection of a single sample before the first distribution system connection.

**"Wellhead protection area (WHPA)"** means the portion of a well's, wellfield's or spring's zone of contribution defined using WHPA criteria established by the department.

**"WFI"** means a water facilities inventory form.

**"Wholesale system"** means a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

**"WHPA"** means a wellhead protection area.

**"WUE"** means water use efficiency.

**"Zone of contribution"** means the area surrounding a pumping well or spring that encompasses all areas or features that supply (~~(ground-water)~~) groundwater recharge to the well or spring.

AMENDATORY SECTION (Amending WSR 09-21-045, filed 10/13/09, effective 1/4/10)

**WAC 246-290-025 Adoption by reference.** The following sections and subsections of Title 40 Code of Federal Regulations (CFR) Part 141 National Primary Drinking Water Regulations revised as of July 1, 2009, and including all amendments and modifications thereto effective as of the date of adoption of this chapter are adopted by reference:

141.2 Definitions. Only those definitions listed as follows:

Action level;  
 Corrosion inhibitor;  
 Effective corrosion inhibitor residual;  
 Enhanced coagulation;  
 Enhanced softening;  
 Haloacetic acids (five) (HAA5);  
 First draw sample;  
 Large water system;  
 Lead service line;  
 Maximum residual disinfectant level (MRDL);  
 Maximum residual disinfectant level goal (MRDLG);  
 Medium-size water system;  
 Optimal corrosion control treatment;  
 Service line sample;  
 Single family structure;  
 Small water system;  
 Specific ultraviolet absorption (SUVA); and  
 Total Organic Carbon (TOC).

141.12 Maximum contaminant levels for organic chemicals.  
 141.13 Maximum contaminant levels for turbidity.  
 141.21 Coliform monitoring.  
 141.22 Turbidity sampling and analytical requirements.  
 141.23(a) - 141.23(j), Inorganic chemical sampling, excluding (i)(2)  
 141.23(m) - 141.23(o)  
 141.24(a) - 141.24(d), Organic chemicals other than total trihalomethanes.  
 141.24 (f)(1) - 141.24 (f)(15),  
 141.24 (f)(18), 141.24 (f)(19),  
 141.24 (f)(21), 141.24 (f)(22)  
 141.24 (g)(1) - 141.24 (g)(9),  
 141.24 (g)(12) - 141.24 (g)(14),  
 141.24 (h)(1) - 141.24 (h)(11),  
 141.24 (h)(14) - 141.24 (h)(17)  
 141.24 (h)(20)  
 141.25(a), 141.25 (c) - (d), Analytical methods for radioactivity.

141.26	Monitoring frequency and compliance for radioactivity in community water systems.	<del>((Enhanced Filtration – Reporting and Recordkeeping))</del>
141.31(d)	Reporting of public notices and compliance certifications.	<u>Subpart O - Consumer Confidence Reports</u>
141.33(e)	Record maintenance of public notices and certifications.	<u>141.153 (h)(6)Contents of the reports.</u>
141.40	<u>Monitoring</u> requirements for unregulated contaminants.	<u>Enhanced Filtration - Reporting and Recordkeeping</u>
141.61	Maximum contaminant levels for organic contaminants.	141.175(b) Individual filter reporting and follow-up action requirements for systems treating surface water with conventional, direct, or in-line filtration and serving at least 10,000 people.
141.62, excluding (b)	Maximum contaminant levels for inorganic chemical and physical contaminants.	Subpart Q - Public Notification
141.64	Maximum contaminant levels and Best Available Technologies (BATs) for disinfection byproducts.	141.201, General public notification requirements, excluding (3)(ii) of Table 1
141.65(c)	Best Available Technologies (BATs) for Maximum Residual Disinfectant Levels.	141.202, Tier 1 Public Notice - Form, manner, and frequency of notice, excluding (3) of Table 1
141.66	Maximum contaminant levels for radionuclides.	141.203 Tier 2 Public Notice - Form, manner, and frequency of notice.
Control of Lead and Copper		141.204 Tier 3 Public Notice - Form, manner, and frequency of notice.
141.80	General requirements.	141.205 Content of the public notice.
141.81	Applicability of corrosion control treatment steps to small, medium-size and large water systems.	141.206 Notice to new billing units or new customers.
141.82(a) -	141.82(h) Description of corrosion control treatment requirements.	141.207 Special notice of the availability of unregulated contaminant monitoring results.
141.83	Source water treatment requirements.	141.208 Special notice for exceedances of the SMCL for fluoride.
141.84	Lead service line replacement requirements.	141.211 Special notice for <i>Cryptosporidium</i> monitoring failure.
141.85	Public education and supplemental monitoring requirements.	Appendix A - NPDWR violations and situations requiring PN
141.86 (a) - (f)	Monitoring requirements for lead and copper in tap water.	Appendix B - Standard health effects language for PN
141.87	Monitoring requirements for water quality parameters.	<u>Appendix C - List of acronyms used in PN regulation</u>
141.88	Monitoring requirements for lead and copper in source water.	<u>141.400 General requirements and applicability.</u>
141.89	Analytical methods for lead and copper testing.	<u>141.402(c) Groundwater source microbial monitoring and analytical methods.</u>
141.90, excluding (a)(4)	Reporting requirements.	<u>141.403 Treatment technique requirements for groundwater systems.</u>
141.91	Recordkeeping requirements.	Subpart T - Enhanced Filtration and Disinfection - Systems Serving Fewer Than 10,000 People
Disinfectants and Disinfection Byproducts (D/DBP)		141.530 - Disinfection profile and benchmark.
141.130	General requirements.	141.544
141.131	Analytical requirements.	141.563 Follow-up actions required.
141.132	Monitoring requirements.	141.570, Reporting requirements, excluding (c)
141.133	Compliance.	Subpart U and V - Initial Distribution System Evaluations and Stage 2 Disinfection Byproducts Requirements.
141.134	Reporting and recordkeeping.	141.600 - Initial distribution system evaluations.
141.135	Treatment technique for control of disinfection byproduct precursors.	141.605
		141.620 - Stage 2 Disinfection Byproducts Requirements.
		141.629

Subpart W - Enhanced Treatment for *Cryptosporidium*141.700-722 Enhanced Treatment for *Cryptosporidium*

## Part 143 - National Secondary Drinking Water Regulations

- 143.1 Purpose.
- 143.2 Definitions.
- 143.3 Secondary maximum contaminant levels.
- 143.4 Monitoring.

Copies of the incorporated sections and subsections of Title 40 CFR are available from the Department of Health, P.O. Box 47822, Olympia, Washington 98504-7822, or by calling the department's drinking water hotline at 800-521-0323.

**AMENDATORY SECTION** (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-100 Water system plan.** (1) The purpose of this section is to establish a uniform process for purveyors to:

(a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations;

(b) Demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans;

(c) Establish eligibility for funding under chapter 246-296 WAC.

(2) Purveyors of the following categories of community public water systems shall submit a water system plan for review and approval by the department:

(a) Systems having one thousand or more services;

(b) Systems required to develop water system plans under the Public Water System Coordination Act of 1977 (chapter 70.116 RCW);

(c) Any system experiencing problems related to planning, operation, and/or management as determined by the department;

(d) All new systems;

(e) Any expanding system; and

(f) Any system proposing to use the document submittal exception process in WAC 246-290-125.

(3) The purveyor shall work with the department to establish the level of detail for a water system plan. In general, the scope and detail of the plan will be related to size, complexity, water supply characteristics, forecasted demand characteristics, past performance, and use of the water system. Project reports may be combined with a water system plan.

(4) In order to demonstrate system capacity, the water system plan shall address the following elements, as a minimum, for a period of at least twenty years into the future:

(a) Description of the water system, including:

(i) Ownership and management, including the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system;

(ii) System history and background;

(iii) Related plans, such as coordinated water system plans, abbreviated coordinated water system plans, local land use plans, (~~(ground-water))~~ groundwater management plans, and basin plans;

(iv) Service area maps, characteristics, agreements, and policies. Water systems must include their existing service area and future service area. Municipal water suppliers must define their retail service area and meet the requirements under WAC 246-290-106. Municipal water suppliers must identify where their water rights place of use will be expanded to their service area if the requirements under WAC 246-290-107 have been met; and

(v) Satellite management, if applicable.

(b) Basic planning data, including:

(i) Current population, service connections, water use, and equivalent residential units; and

(ii) Sufficient water production and consumption data to identify trends including the following elements:

(A) Monthly and annual production totals for each source, including water purchased from another public water system;

(B) Annual usage totals for each customer class as determined by the purveyor;

(C) Annual usage totals for water supplied to other public water systems; and

(D) For systems serving one thousand or more total connections, a description of the seasonal variations in consumption patterns of each customer class defined by the purveyor.

(iii) Designated land use, zoning, future population, and water demand for a consecutive six-year and twenty-year planning period within the water system's service area.

(c) Demand forecasts, developed under WAC 246-290-221, for a consecutive six-year and twenty-year planning period. These shall show future use with and without savings expected from the system's water use efficiency program.

(d) For systems serving one thousand or more total connections, a demand forecast projecting demand if the measures deemed cost-effective per WAC 246-290-810 were implemented.

(e) System analysis, including:

(i) System design standards;

(ii) Water quality analysis;

(iii) System inventory description and analysis; and

(iv) Summary of system deficiencies.

(f) Water resource analysis, including:

(i) A water use efficiency program. Municipal water suppliers must meet the requirements in WAC 246-290-810;

(ii) Source of supply analysis, which includes:

(A) An evaluation of water supply alternatives if additional water rights will be pursued within twenty years; and

(B) A narrative description of the system's water supply characteristics and the foreseeable effect from current and future use on the water quantity and quality of any body of water from which its water is diverted or withdrawn based on existing data and studies;

(iii) A water shortage response plan as a component of the reliability and emergency response requirements under WAC 246-290-420;

(iv) Water right self-assessment;

(v) Water supply reliability analysis;

- (vi) Interties; and
- (vii) For systems serving one thousand or more total connections, an evaluation of opportunities for the use of reclaimed water, where they exist, as defined in RCW 90.46.010(4).
  - (g) Source water protection under WAC 246-290-135.
  - (h) Operation and maintenance program under WAC 246-290-415 and 246-290-654(5), as applicable.
  - (i) Improvement program, including a six-year capital improvement schedule.
  - (j) Financial program, including demonstration of financial viability by providing:
    - (i) A summary of past income and expenses;
    - (ii) A one-year balanced operational budget for systems serving one thousand or more connections or a six-year balanced operational budget for systems serving less than one thousand connections;
    - (iii) A plan for collecting the revenue necessary to maintain cash flow stability and to fund the capital improvement program and emergency improvements; and
    - (iv) An evaluation that has considered:
      - (A) The affordability of water rates; and
      - (B) The feasibility of adopting and implementing a rate structure that encourages water demand efficiency.
  - (k) Other documents, such as:
    - (i) Documentation of SEPA compliance;
    - (ii) Agreements; and
    - (iii) Comments from each local government with jurisdiction and adjacent utilities.
- (5) Purveyors intending to implement the project report and construction document submittal exceptions authorized under WAC 246-290-125 must include:
  - (a) Standard construction specifications for distribution mains; and/or
  - (b) Design and construction standards for distribution-related projects, including:
    - (i) Description of project report and construction document internal review procedures, including engineering design review and construction completion reporting requirements;
    - (ii) Construction-related policies and requirements for external parties, including consumers and developers;
    - (iii) Performance and sizing criteria; and
    - (iv) General reference to construction materials and methods.
  - (6) The department, at its discretion, may require reports from purveyors identifying the progress in developing their water system plans.
  - (7) Purveyors shall transmit water system plans to adjacent utilities and each local government with jurisdiction, to assess consistency with ongoing and adopted planning efforts.
  - (8) Prior to department approval of a water system plan or a water system plan update, the purveyor shall:
    - (a) Hold an informational meeting for the water system consumers and notify consumers in a way that is appropriate to the size of the water system; and
    - (b) Obtain the approval of the water system plan from the purveyor's governing body or elected governing board.

(9) Department approval of a water system plan shall be in effect for six years from the date of written approval unless:

- (a) Major projects subject to SEPA as defined in WAC 246-03-030 (3)(a) are proposed that are not addressed in the plan;
  - (b) Changes occur in the basic planning data significantly affecting system improvements identified; or
  - (c) The department requests an updated plan or plan amendment.
- (10) The purveyor shall update the plan and obtain department approval at least every six years. If the system no longer meets the conditions of subsection (2) of this section, the purveyor shall as directed by the department, either:
- (a) Submit a water system plan amendment for review and approval with the scope to be determined by the department; or
  - (b) Meet the requirements under WAC 246-290-105.

AMENDATORY SECTION (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-107 Place of use expansion.** The place of use of a surface or (~~ground-water~~) groundwater right may be expanded to include any portion of the approved service area that was not previously within the place of use for the water right when documented in an approved planning or engineering document under chapter 43.20 RCW or in accordance with procedures adopted under chapter 70.116 RCW. This occurs as an effect of the department's approval of a service area identified in a water system plan, water system plan amendment, small water system management program, engineering document, or as an effect of the local legislative authority's approval of a service area as part of a coordinated water system plan.

(1) The following conditions must be met:

- (a) The municipal water supplier is in compliance with the terms of the water system plan or small water system management program, including those regarding water use efficiency.
  - (b) The alteration of the place of use is not inconsistent regarding an area added to the place of use with any local plans and regulations.
  - (c) The alteration of the place of use is not inconsistent regarding an area added to the place of use with any watershed plan approved under chapter 90.82 RCW or a comprehensive watershed plan approved under RCW 90.54.040(1) after September 3, 2003, if such a watershed plan has been approved for the area.
- (2) As part of the planning or engineering document, municipal water suppliers must:
- (a) Identify the portions of the service area where the place of use will be expanded.
  - (b) Document that subsection (1)(a) and (c) of this section are met.
  - (c) Meet the requirements of WAC 246-290-108 for the portions of the service area where the place of use will be expanded.

AMENDATORY SECTION (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-130 Source approval.** (1) Every purveyor shall obtain drinking water from the highest quality source feasible. No new source, previously unapproved source, or modification of an existing source shall be used as a public water supply without department approval. No intake or other connection shall be maintained between a public water system and a source of water not approved by the department.

(2) Before initiating source development or modification, the purveyor shall contact the department to identify submittal requirements.

(3) Any party seeking source approval shall provide the department sufficient documentation, in a project report, construction documents, or in supplemental documents, that the source:

(a) Is reasonable and feasible for the type and size of the system;

(b) May legally be used in conformance with state water rights laws;

(c) Supplies water that is physically and reliably available in the necessary quantities, as shown in:

(i) A hydrogeologic assessment of the proposed source;

(ii) A general description of the watershed, spring, and/or aquifer recharge area affecting the quantity or quality of flow, which includes seasonal variation and upstream water uses that may significantly affect the proposed source;

(iii) For (~~ground-water~~) groundwater and spring sources, well source development data that are available from a pump test at the maximum design rate and duration, or are available from other sources of information, that establish pump settings (depth) in the well and demonstrate adequacy of water quantity to meet design criteria while not leading to water quality problems;

(iv) For (~~ground-water~~) groundwater and spring sources, installation of a source meter or other equivalent device that reliably measures volume of flow into the system;

(d) Is, or is not, a GWI under WAC 246-290-640, and meets or can meet the applicable requirements for GWI sources as described in that section including treatment;

(e) Adequately provides for source protection, as shown in:

(i) For surface water and GWI sources, the watershed control program identified under WAC 246-290-135 and Part 6 of this chapter;

(ii) For wells, a preliminary department susceptibility assessment or equivalent information, and preliminary WHPA delineation and contaminant inventory, under the requirements for sanitary control and wellhead protection under WAC 246-290-135;

(f) Is designed and constructed in conformance with this chapter, and relevant requirements of chapter 173-160 WAC (department of ecology well construction standards);

(g) Meets water quality standards under WAC 246-290-310, as shown in an initial water quality analysis that includes, at a minimum, the following:

(i) Bacteriological;

(ii) Complete inorganic chemical and physical except that the MCL for arsenic under WAC 246-290-310 does not apply to TNC systems;

(iii) Complete VOC;

(iv) Radionuclides, if source approval is requested for a community system;

(v) SOC, except where waived or not required under WAC 246-290-310; and

(vi) Any other information required by the department relevant to the circumstances of the particular source.

Sources that otherwise would not meet water quality standards may be approved if treatment is provided.

(4) The required documentation under subsection (3) of this section shall include, at a minimum:

(a) A water right self-assessment;

(b) A map showing the project location and vicinity;

(c) A map depicting topography, distances to the surface water intake, well or spring from existing property lines, buildings, potential sources of contamination, ditches, drainage patterns, and any other natural or man-made features affecting the quality or quantity of water;

(d) The dimensions, location, and legal documentation of the SCA under WAC 246-290-135;

(e) A copy of the on-site inspection form completed by the department or local health department representative;

(f) A copy of the water well report including the unique well identification tag number, depth to open interval or top of screened interval, overall depth of well from the top of the casing, vertical elevation, and location (both plat location and latitude/longitude); and

(g) Documentation of source meter installation. The purveyor may utilize other documents, such as a water system plan, susceptibility assessment, wellhead protection program, project report, or construction documents, to provide the documentation and information to the department, provided that the documents are current, and the purveyor indicates the location in the document of the relevant information.

(5) If treatment of a source is necessary to meet water quality standards, the purveyor may be required to meet the provisions of WAC 246-290-250 and Part 6 of this chapter, if applicable, prior to or as a condition of approval.

(6) An intertie must be adequately described in a written agreement between the purveyor and the supplier of the water, and otherwise meet the requirements of WAC 246-290-132.

(7) The purveyor shall not construct facilities for source development and use without prior approval of the department pursuant to the provisions of WAC 246-290-120.

(8) The purveyor may request a conditional source approval, such as one that sets limits on use or requires interim treatment, if further analysis of the quality of the source is required before final approval.

(9) For sources or supplies of water used by bottled water or ice plants to produce bottled water or ice:

(a) If the bottled water or ice plant is a Group A community water system and the plant uses the system's source for the water that is bottled or made into ice, the source and supply used for the bottled water and ice shall meet the applicable Group A requirements;

(b) If the bottled water or ice plant uses its own source for the water that is bottled or made into ice, and the plant is not a Group A community water system, the owner or operator shall obtain source approval from the department, and the source water shall meet the ongoing source water quality monitoring requirements for a Group A community system;

(c) If the bottled water or ice plant purchases the water for bottling or making ice from another source or supply, the water shall meet the minimum requirements for a Group A community water system, and the owner or operator of the plant shall ensure that the water meets the requirements;

(d) The source or supply for the water that is bottled or made into ice shall be protected from contamination prior to the bottling or ice making process; and

(e) In addition to the requirements imposed under this subsection, the processing of bottled water shall be subject to regulation by the state department of agriculture and the United States Food and Drug Administration.

**AMENDATORY SECTION** (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-135 Source water protection.** (1) The department may require monitoring and controls in addition to those specified in this section if ~~(-in the opinion of)~~ the department ~~(-)~~ determines a potential risk exists to the water quality of a source.

(2) SCA.

(a) The purveyor shall maintain an SCA around all sources for the purpose of protecting them from existing and potential sources of contamination.

(b) For wells and springs, the minimum SCA shall have a radius of one hundred feet (thirty meters) and two hundred feet (sixty meters) respectively, unless engineering justification demonstrates that a smaller area can provide an adequate level of source water protection. The justification shall address geological and hydrological data, well construction details, mitigation measures, and other relevant factors necessary to assure adequate sanitary control.

(c) The department may require a larger SCA than specified in (b) of this subsection, or additional mitigation measures if land use, geological, ~~(and)~~ or hydrological data support the decision. It shall be the purveyor's responsibility to obtain the protection needed.

(d) The purveyor shall prohibit the construction, storage, disposal, or application of any source of contamination within the SCA without the permission of the purveyor.

(e) The SCA shall be owned by the purveyor in fee simple, or the purveyor shall have the right to exercise complete sanitary control of the land through other legal provisions.

(f) A purveyor, owning all or part of the SCA in fee simple or having possession and control, shall send to the department copies of legal documentation, such as a duly recorded declaration of covenant, restricting the use of the land. This legal documentation shall state:

(i) Constructing, storing, disposing, or applying any source of contamination is prohibited without the permission of the purveyor; and

(ii) If any change in ownership of the system or SCA is considered, all affected parties shall be informed of these requirements.

(g) Where portions of the control area are in the possession and control of another, the purveyor shall obtain a duly recorded restrictive covenant which shall run with the land, restricting the use of the land in accordance with this chapter and provide the department with copies of the appropriate documentation.

(3) Wellhead protection.

(a) Purveyors of water systems using ~~((ground water))~~ groundwater or spring sources shall develop and implement a wellhead protection program.

(b) The wellhead protection program shall be part of the water system plan required under WAC 246-290-100 or the small water system management program required under WAC 246-290-105.

(c) The purveyor's wellhead protection program shall contain, at a minimum, the following elements:

(i) A completed susceptibility assessment or equivalent information;

(ii) WHPA delineation for each well, wellfield, or spring with the six month, one, five and ten year time of travel boundaries marked, or boundaries established using alternate criteria approved by the department in those settings where ~~((ground water))~~ groundwater time of travel is not a reasonable delineation criteria. WHPA delineations shall be done in accordance with recognized methods such as those described in the following sources:

(A) Department guidance on wellhead protection; or

(B) EPA guidance for delineation of wellhead protection areas;

(iii) An inventory, including identification of site locations and owners/operators, of all known and potential ~~((ground water))~~ groundwater contamination sources located within the defined WHPA(s) having the potential to contaminate the source water of the well(s) or spring(s). This list shall be updated every two years;

(iv) Documentation of purveyor's notification to all owners/operators of known or potential sources of ~~((ground water))~~ groundwater contamination listed in (c)(B)(iii) of this subsection;

(v) Documentation of purveyor's notification to regulatory agencies and local governments of the boundaries of the WHPA(s) and the findings of the WHPA inventory;

(vi) A contingency plan to ensure consumers have an adequate supply of potable water in the event that contamination results in the temporary or permanent loss of the principal source of supply (major well(s) or wellfield); and

(vii) Documentation of coordination with local emergency incident responders (including police, fire and health departments), including notification of WHPA boundaries, results of susceptibility assessment, inventory findings, and contingency plan.

(4) Watershed control program.

(a) Purveyors of water systems using surface water or GWI sources shall develop and implement a watershed control program under Part 6 of chapter 246-290 WAC as applicable.



(b) The watershed control program shall be part of the water system plan required in WAC 246-290-100 or the small water system management program required in WAC 246-290-105.

(c) The purveyor's watershed control program shall contain, at a minimum, the following elements:

(i) Watershed description and inventory, including location, hydrology, land ownership and activities that may adversely affect source water quality;

(ii) An inventory of all potential surface water contamination sources and activities, including identification of site locations and owner/operators, located within the watershed and having the significant potential to contaminate the source water quality;

(iii) Watershed control measures, including documentation of ownership and relevant written agreements, and monitoring of activities and water quality;

(iv) System operation, including emergency provisions; and

(v) Documentation of water quality trends.

(d) The purveyor shall submit the watershed control program to the department for approval. Following department approval, the purveyor shall implement the watershed control program as approved.

(e) Purveyors of systems using unfiltered surface or GWI sources and meeting the criteria to remain unfiltered as specified in WAC 246-290-690 shall submit an annual report to the department that summarizes the effectiveness of the watershed control program. Refer to WAC 246-290-690 for further information about this report.

(f) The purveyor shall update the watershed control program at least every six years, or more frequently if required by the department.

**AMENDATORY SECTION** (Amending WSR 99-07-021, filed 3/9/99, effective 4/9/99)

**WAC 246-290-250 Treatment design.** (1) Treatment systems or devices shall be piloted and designed to ensure finished water quality conforms to water quality standards established in WAC 246-290-310.

(2) Treatment systems or devices for surface water or GWI sources shall be designed in accordance with the provisions of Part 6 of this chapter and the applicable provisions herein.

(3) Predesign studies, including pilot studies as appropriate, shall be required for proposed surface water and GWI sources (~~and those ground water sources requiring treatment~~) and those groundwater sources requiring treatment. The goal of the predesign study shall be to establish the most effective method, considering economics, to produce satisfactory finished water quality meeting the requirements of this chapter and complying with the treatment technique requirements in Part 6 of chapter 246-290 WAC. The predesign study shall be included as part of the project report under WAC 246-290-110. Refer to WAC 246-290-676 for requirements relating specifically to the filtration facility pilot study. The purveyor shall not establish nor maintain a bypass to divert water around any feature of a treatment process, except by written permission of the department.

(4) All well and spring sources not determined to be GWI's shall have continuous disinfection that meets the (~~operational~~) requirements of WAC 246-290-451 (~~((3) and (4))~~). The department may modify the requirement for disinfection for public water systems that demonstrate the well or spring sources (not confirmed as GWI's) have satisfactory bacteriological histories at the source and have SCAs in accordance with WAC 246-290-135.

(5) Purveyors shall use appropriate treatment technologies, such as those outlined in department guidance on water treatment, and shall address water treatment facilities in their water system plans pursuant to WAC 246-290-100.

(6) Project reports for the design of treatment facilities shall meet the requirements of WAC 246-290-110.

(7) Construction specifications for treatment facilities shall meet the requirements of WAC 246-290-120.

**AMENDATORY SECTION** (Amending WSR 09-21-045, filed 10/13/09, effective 1/4/10)

**WAC 246-290-300 Monitoring requirements.** (1) General.

(a) The monitoring requirements specified in this section are minimums. The department may require additional monitoring when:

(i) Contamination is present or suspected in the water system;

(ii) A (~~ground-water~~) groundwater source is determined to be a potential GWI;

(iii) The degree of source protection is not satisfactory;

(iv) Additional monitoring is needed to verify source vulnerability for a requested monitoring waiver;

(v) Under other circumstances as identified in a department order; or

(vi) Additional monitoring is needed to evaluate continuing effectiveness of a treatment process where problems with the treatment process may exist.

(b) Special purpose samples collected by the purveyor shall not count toward fulfillment of the monitoring requirements of this chapter unless the quality of data and method of sampling and analysis are acceptable to the department.

(c) The purveyor shall ensure samples required by this chapter are collected, transported, and submitted for analysis according to EPA-approved methods. The analyses shall be performed by a laboratory accredited by the state. Qualified water utility, accredited laboratory, health department personnel, and other parties approved by the department may conduct measurements for pH, temperature, residual disinfectant concentration, alkalinity, bromide, chlorite, TOC, SUVA, (~~and~~) turbidity, calcium, conductivity, orthophosphate, and silica as required by this chapter, provided, these measurements are made (~~in accordance with~~) according to EPA approved methods.

(d) Compliance samples required by this chapter shall be taken at locations listed in Table 3 of this section.

(e) Purveyors failing to comply with a monitoring requirement shall notify:

(i) The department under WAC 246-290-480; and

(ii) The owner or operator of any consecutive system served and the appropriate water system users under 40 CFR 141.201 and Part 7, Subpart A of this chapter.

(2) Selling and receiving water.

(a) Source monitoring. Purveyors, with the exception of those that "wheel" water to their consumers (i.e., sell water that has passed through another purchasing purveyor's distribution system), shall conduct source monitoring under this chapter for the sources under their control. The level of monitoring shall satisfy the monitoring requirements associated with the total population served by the source.

(b) Distribution system monitoring. The purveyor of a system that receives and distributes water shall perform distribution-related monitoring requirements. Monitoring shall include, but not be limited to, the following:

(i) Collect coliform samples under subsection (3) of this section;

(ii) Collect disinfection byproduct samples as required by subsection (6) of this section;

(iii) Perform the distribution system residual disinfectant concentration monitoring under subsection (6) of this section, and as required under WAC 246-290-451 or 246-290-694. Systems with fewer than one hundred connections shall measure residual disinfectant concentration at the same time and location that a routine or repeat coliform sample is collected, unless the department determines that more frequent monitoring is necessary to protect public health;

(iv) Perform lead and copper monitoring required under 40 CFR 141.86, 141.87, and 141.88;

(v) Perform the distribution system monitoring under 40 CFR 141.23(b) for asbestos if applicable;

(vi) Other monitoring as required by the department.

(c) Reduced monitoring for regional programs. The receiving purveyor may receive reductions in the coliform, lead and copper, disinfection byproduct (including THMs and HAA5) and distribution system disinfectant residual concentration monitoring requirements, provided the receiving system:

(i) Purchases water from a purveyor that has a department-approved regional monitoring program;

(ii) Has a written agreement with the supplying system or regional water supplier that is acceptable to the department, and which identifies the responsibilities of both the supplying and receiving system(s) with regards to monitoring, reporting and maintenance of the distribution system; and

(iii) Has at least one compliance monitoring location for disinfection byproducts, if applicable.

(d) Periodic review of regional programs. The department may periodically review the sampling records of public water systems participating in a department-approved monitoring program to determine if continued reduced monitoring is appropriate. If the department determines a change in the monitoring requirements of the receiving system is appropriate:

(i) The department shall notify the purveyor of the change in monitoring requirements; and

(ii) The purveyor shall conduct monitoring as directed by the department.

(3) Bacteriological.

(a) The purveyor shall be responsible for collection and submittal of coliform samples from representative points throughout the distribution system. Samples shall be collected after the first service and at regular time intervals each month the system provides water to consumers. Samples shall be collected that represent normal system operating conditions.

(i) Systems providing disinfection treatment shall ~~(when taking a)~~ measure the residual disinfectant concentration within the distribution system at the same time and location of routine ~~((or))~~ and repeat samples ~~(, measure residual disinfectant concentration within the distribution system at the same time and location and comply with the residual disinfection monitoring requirements under WAC 246-290-451)~~.

(ii) Systems providing disinfection treatment shall assure that disinfectant residual concentrations are measured and recorded on all coliform sample report forms submitted for compliance purposes.

(b) Coliform monitoring plan.

(i) The purveyor shall prepare a written coliform monitoring plan and base routine monitoring upon the plan. The plan shall include coliform sample collection sites and a sampling schedule.

(ii) The purveyor shall:

(A) Keep the coliform monitoring plan on file with the system and make it available to the department for inspection upon request;

(B) Revise or expand the plan at any time the plan no longer ensures representative monitoring of the system, or as directed by the department; and

(C) Submit the plan to the department for review and approval when requested and as part of the water system plan required under WAC 246-290-100.

(c) Monitoring frequency. The number of required routine coliform samples is based on total population served.

(i) Purveyors of **community** systems shall collect and submit for analysis no less than the number of routine samples listed in Table 1 during each calendar month of operation;

(ii) Unless directed otherwise by the department, purveyors of **noncommunity** systems shall collect and submit for analysis no less than the number of samples required in Table 1, and no less than required under 40 CFR 141.21. Each month's population shall be based on the average daily population and shall include all residents and nonresidents served during that month. During months when the average daily population served is less than twenty-five, routine sample collection is not required when:

(A) Using only protected ~~((ground water))~~ groundwater sources;

(B) No coliform were detected in samples during the previous month; and

(C) One routine sample has been collected and submitted for analysis during one of the previous two months.

(iii) Purveyors of systems serving both a resident and a nonresident population shall base their minimum sampling requirement on the total of monthly populations served, both

resident and nonresident as determined by the department, but no less than the minimum required in Table 1; and

(iv) Purveyors of systems with a nonresident population lasting two weeks or less during a month shall sample as directed by the department. Sampling shall be initiated at least two weeks prior to the time service is provided to consumers.

(v) Purveyors of TNC systems shall not be required to collect routine samples in months where the population served is zero or the system has notified the department of an unscheduled closure.

(d) Invalid samples. When a routine or repeat coliform sample is determined invalid under WAC 246-290-320 (2)(d), the purveyor shall:

(i) Not include the sample in the determination of monitoring compliance; and

(ii) Take follow-up action as defined in WAC 246-290-320 (2)(d).

(e) Assessment source water monitoring. If directed by the department, a groundwater system must conduct assessment source water monitoring which may include, but is not limited to, collection of at least one representative groundwater source sample each month the source provides groundwater to the public, for a minimum of twelve months.

(i) Sampling must be conducted as follows:

(A) Source samples must be collected at a location prior to any treatment. If the water system's configuration does not allow sampling at the source itself, the department may approve an alternative source sampling location representative of the source water quality.

(B) Source samples must be at least 100 mL in size and must be analyzed for *E. coli* using one of the analytical methods under 40 CFR 141.402(c).

(ii) A groundwater system may use a triggered source water sample collected under WAC 246-290-320 (2)(g) to meet the requirements for assessment source water monitoring.

(iii) Groundwater systems with an *E. coli* positive assessment source water sample that is not invalidated under WAC 246-290-320 (2)(g)(vii), and consecutive systems receiving water from this source must:

(A) Provide Tier 1 public notice under Part 7, Subpart A of this chapter and special notification under WAC 246-290-71005 (4) and (5); and

(B) Take corrective action as required under WAC 246-290-453(1).

(iv) The purveyor of a groundwater system that fails to conduct assessment source water monitoring as directed by the department shall provide Tier 2 public notice under Part 7, Subpart A of this chapter.

(f) The purveyor using a surface water or GWI source shall collect representative source water samples for bacteriological density analysis under WAC 246-290-664 and 246-290-694 as applicable.

TABLE 1  
MINIMUM MONTHLY ROUTINE COLIFORM  
SAMPLING REQUIREMENTS

Population Served <sup>1</sup>	Minimum Number of Routine Samples/Calendar Month	
	When NO samples with a coliform presence were collected during the previous month	When ANY samples with a coliform presence were collected during the previous month
During Month		
1 - 1,000	1*	5
1,001 - 2,500	2*	5
2,501 - 3,300	3*	5
3,301 - 4,100	4*	5
4,101 - 4,900	5	5
4,901 - 5,800	6	6
5,801 - 6,700	7	7
6,701 - 7,600	8	8
7,601 - 8,500	9	9
8,501 - 12,900	10	10
12,901 - 17,200	15	15
17,201 - 21,500	20	20
21,501 - 25,000	25	25
25,001 - 33,000	30	30
33,001 - 41,000	40	40
41,001 - 50,000	50	50
50,001 - 59,000	60	60
59,001 - 70,000	70	70
70,001 - 83,000	80	80
83,001 - 96,000	90	90
96,001 - 130,000	100	100
130,001 - 220,000	120	120
220,001 - 320,000	150	150
320,001 - 450,000	180	180
450,001 - 600,000	210	210
600,001 - 780,000	240	240
780,001 - 970,000	270	270
970,001 - 1,230,000 <sup>3</sup>	300	300

<sup>1</sup> Does not include the population of a consecutive system that purchases water. The sampling requirement for consecutive systems is a separate determination based upon the population of that system.

<sup>2</sup> Noncommunity systems using only protected ((ground-water)) groundwater sources and serving less than 25 individuals, may collect and submit for analysis, one sample every three months.

<sup>3</sup> Systems serving populations larger than 1,230,000 shall contact the department for the minimum number of samples required per month.

\*In addition to the provisions of subsection (1)(a) of this section, if a system of this size cannot show evidence of having been subject to a sanitary survey

on file with the department, or has been determined to be at risk to bacteriological concerns following a survey, the minimum number of samples required per month may be increased by the department after additional consideration of factors such as monitoring history, compliance record, operational problems, and water quality concerns for the system.

(4) Inorganic chemical and physical.

(a) A complete inorganic chemical and physical analysis shall consist of the primary and secondary chemical and physical substances.

(i) Primary chemical and physical substances are antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate (as N), nitrite (as N), selenium, sodium, thallium, and for unfiltered surface water, turbidity. (Except that the MCL for arsenic under WAC 246-290-310 does not apply to TNC systems.)

(ii) Secondary chemical and physical substances are chloride, color, hardness, iron, manganese, specific conductivity, silver, sulfate, total dissolved solids\*, and zinc.

\* Required only when specific conductivity exceeds seven hundred micromhos/centimeter.

(b) Purveyors shall monitor for all primary and secondary chemical and physical substances identified in Table 4 and Table 5. Samples shall be collected in accordance with the monitoring requirements referenced in 40 CFR 141.23 introductory text, 141.23(a) through 141.23(j), excluding (i)(2), and 40 CFR 143.4, except for composite samples for systems serving less than three thousand three hundred one persons. For these systems, compositing among different systems may be allowed if the systems are owned or operated by a department-approved satellite management agency.

(c) Samples required by this subsection shall be taken at designated locations under 40 CFR 141.23(a) through 141.23(j), excluding (i)(2), and 40 CFR 143.4, and Table 3 herein.

(i) Wellfield samples shall be allowed from department designated wellfields; and

(ii) Under 40 CFR 141.23 (a)(3), alternate sampling locations may be used if approved by the department. The process for determining these alternate sites is described in department guidance. Purveyors of community and NTNC systems may ask the department to approve an alternate sampling location for multiple sources within a single system that are blended prior to entry to the distribution system. Alternate sampling plans shall address the following:

- (A) Source vulnerability;
- (B) Individual source characteristics;
- (C) Previous water quality information;
- (D) Status of monitoring waiver applications; and
- (E) Other information deemed necessary by the department.

(d) Composite samples:

(i) Under 40 CFR 141.23 (a)(4), purveyors may ask the certified lab to composite samples representing as many as five individual samples from within one system. Sampling procedures and protocols are outlined in department guidance; and

(ii) For systems serving a population of less than three thousand three hundred one, the department may approve composite sampling between systems when those systems are part of an approved satellite management agency.

(e) When the purveyor provides treatment for one or more inorganic chemical or physical contaminants, the department may require the purveyor to sample before and after treatment. The department shall notify the purveyor if and when this additional source sampling is required.

(f) Inorganic monitoring plans.

(i) Purveyors of community and NTNC systems shall prepare an inorganic chemical monitoring plan and base routine monitoring on the plan.

(ii) The purveyor shall:

(A) Keep the monitoring plan on file with the system and make it available to the department for inspection upon request;

(B) Revise or expand the plan at any time the plan no longer reflects the monitoring requirements, procedures or sampling locations, or as directed by the department; and

(C) Submit the plan to the department for review and approval when requested and as part of the water system plan required under WAC 246-290-100.

(g) Monitoring waivers.

(i) Purveyors may request in writing, a monitoring waiver from the department for any nonnitrate/nitrite inorganic chemical and physical monitoring requirements identified in this chapter.

(ii) Purveyors requesting a monitoring waiver shall comply with applicable subsections of 40 CFR 141.23 (b)(3), and 141.23 (c)(3).

(iii) Purveyors shall update and resubmit requests for waiver renewals as applicable during each compliance cycle or period or more frequently as directed by the department.

(iv) Failure to provide complete and accurate information in the waiver application shall be grounds for denial of the monitoring waiver.

(h) The department may require the purveyor to repeat sample for confirmation of results.

(i) Purveyors with emergency and seasonal sources shall monitor those sources when they are in use.

(5) Lead and copper. Monitoring for lead and copper shall be conducted in accordance with 40 CFR 141.86 (a) - (f), 141.87, and 141.88.

(6) Disinfection byproducts (DBP), disinfectant residuals, and disinfection byproduct precursors (DBPP). Purveyors of community and NTNC systems providing water treated with chemical disinfectants and TNC systems using chlorine dioxide shall monitor as follows:

(a) General requirements.

(i) Systems shall collect samples during normal operating conditions.

(ii) All monitoring shall be conducted in accordance with the analytical requirements in 40 CFR 141.131.

(iii) Systems may consider multiple wells drawing from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, with department approval in accordance with department guidance.

(iv) Systems required to monitor under this subsection shall prepare and implement a monitoring plan in accordance with 40 CFR 141.132(f) or 40 CFR 141.622, as applicable.

(A) Community and NTNC surface water and GWI systems that deliver water that has been treated with a disinfectant

tant other than ultraviolet light and serve more than three thousand three hundred people shall submit a monitoring plan to the department.

(B) The department may require submittal of a monitoring plan from systems not specified in subsection (6)(a)(iv)(A) of this section, and may require revision of any monitoring plan.

(C) Failure to monitor for TTHM, HAA5, or bromate will be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages (~~and the systems' failure to monitor makes it impossible to determine compliance with MCL's or MRDL's~~).

(D) Failure to monitor for chlorine and chloramine residuals will be treated as a violation for the entire period covered by the annual average where compliance is based on a running annual average of monthly or quarterly samples or averages and the systems' failure to monitor makes it impossible to determine compliance with the MRDLs.

(b) Disinfection byproducts - **Community** and NTNC systems only.

(i) TTHMs and HAA5.

(A) Systems shall monitor for TTHM and HAA5 in accordance with 40 CFR 141.132 (b)(1)(i) until the dates set in Table 2. On and after the dates set in Table 2, the systems shall monitor in accordance with 40 CFR 141.620, 141.621, and 141.622.

Table 2

Population Served	Routine Monitoring Start Date <sup>1</sup>
100,000 or more	April 1, 2012
50,000 - 99,999	October 1, 2012
10,000 - 49,999	October 1, 2013
Less than 10,000	October 1, 2013 <sup>2</sup>
	October 1, 2014 <sup>3</sup>

<sup>1</sup> Systems that have nonemergency interties with other systems must comply with the dates associated with the largest system in their combined distribution system.

<sup>2</sup> Surface water and GWI systems that did not have to do *Cryptosporidium* monitoring under 40 CFR 141.701 (a)(4).

<sup>3</sup> Surface water and GWI systems that also did *Cryptosporidium* monitoring under 40 CFR 141.701 (a)(4).

(B) With department approval, systems may reduce monitoring in accordance with 40 CFR 141.132 (b)(1)(ii) and (iii), or 40 CFR 141.623, as applicable.

(C) Systems on department-approved reduced monitoring schedules may be required to return to routine monitoring, or initiate increased monitoring in accordance with 40 CFR 141.132 (b)(1)(iv), 40 CFR 141.625, or 40 CFR 141.627, as applicable.

(D) The department may return systems on increased monitoring to routine monitoring if, after one year, annual average results for TTHMs and HAA5 are less than or equal to 0.060 mg/L and 0.045 mg/L, respectively, or monitoring results are consistently below the MCLs indicating that increased monitoring is no longer necessary. After the dates set in Table 2, systems must meet requirements of 40 CFR

141.628 and 40 CFR 141.625(c) to return to routine monitoring.

(E) After the dates set in Table 2, systems must calculate operational evaluation levels each calendar quarter and take action, as needed, in accordance with 40 CFR 141.626.

(F) NTNC systems serving ten thousand or more people and community systems must comply with the provisions of 40 CFR Subpart U - Initial Distribution System Evaluation at:

- 40 CFR 141.600 General requirements.
- 40 CFR 141.601 Standard monitoring.
- 40 CFR 141.602 System specific studies.
- 40 CFR 141.603 40/30 certification.
- 40 CFR 141.604 Very small system waivers.
- 40 CFR 141.605 Subpart V compliance monitoring location recommendations.

(ii) Chlorite - Only systems that use **chlorine dioxide**.

(A) Systems using chlorine dioxide shall conduct daily and monthly monitoring in accordance with 40 CFR 141.132 (b)(2)(i) and additional chlorite monitoring in accordance with 40 CFR 141.132 (b)(2)(ii).

(B) With department approval, monthly monitoring may be reduced in accordance with 40 CFR 141.132 (b)(2)(iii)(B). Daily monitoring at entry to distribution required by 40 CFR 141.132 (b)(2)(i)(A) may not be reduced.

(iii) Bromate - Only systems that use **ozone**.

(A) Systems using ozone for disinfection or oxidation must conduct bromate monitoring in accordance with 40 CFR 141.132 (b)(3)(i).

(B) With department approval, monthly bromate monitoring may be reduced to once per quarter in accordance with 40 CFR 141.132 (b)(3)(ii)(B).

(c) Disinfectant residuals.

(i) Chlorine and chloramines. Systems that deliver water continuously treated with chlorine or chloramines, including consecutive systems, shall monitor and record the residual disinfectant level in the distribution system under WAC 246-290-300 (2)(b), 246-290-451(~~((6))~~) (7), 246-290-664(6), or 246-290-694(8), but in no case less than as required by 40 CFR 141.74 (b)(6), 40 CFR 141.74 (c)(3), 40 CFR 141.132(c), or 40 CFR 141.624.

(ii) Chlorine dioxide. Community, NTNC, or TNC systems that use chlorine dioxide shall monitor in accordance with 40 CFR 141.132 (c)(2) and record results.

(d) Disinfection byproducts precursors.

Community and NTNC surface water or GWI systems that use conventional filtration with sedimentation as defined in WAC 246-290-660(3) shall monitor under 40 CFR 141.132(d), and meet the requirements of 40 CFR 141.135.

(7) Organic chemicals.

(a) Purveyors of community and NTNC water systems shall comply with monitoring requirements under 40 CFR 141.24 (a) - (d), 141.24 (f)(1) - (f)(15), 141.24 (f)(18) - (19), 141.24 (f)(21), 141.24 (g)(1) - (9), 141.24 (g)(12) - (14), 141.24 (h)(1) - (11), and 141.24 (h)(14) - (17).

(b) Sampling locations shall be as defined in 40 CFR 141.24(f), 141.24(g), and 141.24(h).

(i) Wellfield samples shall be allowed from department designated wellfields; and

(ii) Under 40 CFR 141.24 (f)(3) and 141.24 (h)(3), alternate sampling locations may be allowed if approved by the department. These alternate locations are described in department guidance. Purveyors may ask the department to approve an alternate sampling location for multiple sources within a single system that are blended prior to entry to the distribution system. The alternate sampling location shall consider the following:

- (A) Source vulnerability;
- (B) An updated organic monitoring plan showing location of all sources with current and proposed sampling locations;
- (C) Individual source characteristics;
- (D) Previous water quality information;
- (E) Status of monitoring waiver applications; and
- (F) Other information deemed necessary by the department.

(c) Composite samples:

(i) Purveyors may ask the certified lab to composite samples representing as many as five individual samples from within one system. Sampling procedures and protocols are outlined in department guidance;

(ii) For systems serving a population of less than three thousand three hundred one, the department may approve composite sampling between systems when those systems are part of an approved satellite management agency.

(d) The department may require the purveyor to sample both before and after treatment for one or more organic contaminants. The department shall notify the purveyor if and when this additional source sampling is required.

(e) Organic chemical monitoring plans.

(i) Purveyors of community and NTNC systems shall prepare an organic chemical monitoring plan and base routine monitoring on the plan.

(ii) The purveyor shall:

(A) Keep the monitoring plan on file with the system and make it available to the department for inspection upon request;

(B) Revise or expand the plan at any time the plan no longer reflects the monitoring requirements, procedures or sampling locations, or as directed by the department; and

(C) Submit the plan to the department for review and approval when requested and as part of the water system plan required under WAC 246-290-100.

(f) Monitoring waivers.

(i) Purveyors may request in writing, a monitoring waiver from the department for any organic monitoring requirement except those relating to unregulated VOCs;

(ii) Purveyors requesting a monitoring waiver shall comply with 40 CFR 141.24 (f)(7), 141.24 (f)(10), 141.24 (h)(6), and 141.24 (h)(7);

(iii) Purveyors shall update and resubmit requests for waiver renewals as directed by the department; and

(iv) Failure to provide complete and accurate information in the waiver application shall be grounds for denial of the monitoring waiver.

(g) Purveyors with emergency and seasonal sources shall monitor those sources under the applicable requirements of

this section when they are actively providing water to consumers.

(8) Radionuclides. Monitoring for radionuclides shall be conducted under 40 CFR 141.26.

(9) *Cryptosporidium* and *E. coli* source monitoring. Purveyors with surface water or GWI sources shall monitor the sources in accordance with 40 CFR 141.701 and 702.

(10) Other substances.

On the basis of public health concerns, the department may require the purveyor to monitor for additional substances.

TABLE 3  
MONITORING LOCATION

Sample Type	Sample Location
Asbestos	One sample from distribution system or if required by department, from the source.
Bacteriological	From representative points throughout distribution system.
<i>Cryptosporidium</i> and <i>E. coli</i> (Source Water) - WAC 246-290-630(16)	Under 40 CFR 141.703.
Complete Inorganic Chemical & Physical	From a point representative of the source, after treatment, and prior to entry to the distribution system.
Lead/Copper	From the distribution system at targeted sample tap locations.
Nitrate/Nitrite	From a point representative of the source, after treatment, and prior to entry to the distribution system.
Disinfection Byproducts - TTHMs and HAA5 - WAC 246-290-300(6)	Under 40 CFR 141.132 (b)(1) (Subpart L of the CFR).
Disinfection Byproducts - TTHMs and HAA5 - WAC 246-290-300(7)	Under 40 CFR 141.600 - 629 (IDSE and LRAA in Subparts U and V of the CFR).
Disinfection Byproducts - Chlorite (Systems adding chlorine dioxide)	Under 40 CFR 141.132 (b)(2).
Disinfection Byproducts - Bromate (Systems adding ozone)	Under 40 CFR 141.132 (b)(3).
Disinfectant Residuals - Chlorine and Chloramines	Under 40 CFR 141.132 (c)(1).
Disinfectant Residuals - Chlorine dioxide	Under 40 CFR 141.132 (c)(2).
Disinfection Precursors - Total Organic Carbon (TOC)	Under 40 CFR 141.132(d).
Disinfection Precursors - Bromide (Systems using ozone)	From the source before treatment.
Radionuclides	From a point representative of the source, after treatment and prior to entry to distribution system.

Sample Type	Sample Location
Organic Chemicals (VOCs & SOCs)	From a point representative of the source, after treatment and prior to entry to distribution system.
Other Substances (unregulated chemicals)	From a point representative of the source, after treatment, and prior to entry to the distribution system, or as directed by the department.

**AMENDATORY SECTION** (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-320 Follow-up action.** (1) General.

(a) When an MCL or MRDL violation or exceedance occurs, the purveyor shall take follow-up action as described in this section.

(b) When a primary standard violation occurs, the purveyor shall:

(i) Notify the department under WAC 246-290-480;

(ii) Notify the consumers served by the system and the owner or operator of any consecutive system served in accordance with 40 CFR 141.201 through 208, and Part 7, Subpart A of this chapter;

(iii) Determine the cause of the contamination; and

(iv) Take action as directed by the department.

(c) When a secondary standard violation occurs, the purveyor shall notify the department and take action as directed by the department.

(d) The department may require additional sampling for confirmation of results.

(2) Bacteriological.

(a) When coliform bacteria are present in any sample and the sample is not invalidated under (d) of this subsection, the purveyor shall ensure the following actions are taken:

(i) The sample is analyzed for fecal coliform or *E. coli*. When a sample with a coliform presence is not analyzed for *E. coli* or fecal coliforms, the sample shall be considered as having a fecal coliform presence for MCL compliance purposes;

(ii) Repeat samples are collected in accordance with (b) of this subsection;

(iii) Triggered source water monitoring is conducted in accordance with (g) of this subsection unless the department determines and documents in writing that the total coliform positive sample collected was caused by a distribution system deficiency;

(iv) The department is notified in accordance with WAC 246-290-480; and

~~((iv))~~ (v) The cause of the coliform presence is determined and corrected.

(b) Repeat samples.

(i) The purveyor shall collect repeat samples in order to confirm the original sample results and to determine the cause of the coliform presence. Additional treatment, such as batch or shock chlorination, shall not be instituted prior to the collection of repeat samples unless prior authorization by the department is given. Following collection of repeat samples, and before the analytical results are known, there may be a

need to provide interim precautionary treatment or other means to insure public health protection. The purveyor shall contact the department to determine the best interim approach in this situation.

(ii) The purveyor shall collect and submit for analysis a set of repeat samples for every sample in which the presence of coliforms is detected. A set of repeat coliform samples consists of:

(A) Four repeat samples for systems collecting one routine coliform sample each month; or

(B) Three repeat samples for all systems collecting more than one routine coliform sample each month.

(iii) The purveyor shall collect repeat sample sets according to Table 7;

(iv) The purveyor shall collect one set of repeat samples for each sample with a coliform presence. All samples in a set of repeat samples shall be collected on the same day and submitted for analysis within twenty-four hours after notification by the laboratory of a coliform presence, or as directed by the department.

(v) When repeat samples have coliform presence, the purveyor shall:

(A) Contact the department and collect a minimum of one additional set of repeat samples as directed by the department; or

(B) Collect one additional set of repeat samples for each sample where coliform presence was detected.

(vi) The purveyor of a system providing water to consumers via a single service shall collect repeat samples from the same location as the sample with a coliform presence. The set of repeat samples shall be collected:

(A) On the same collection date;

(B) Over consecutive days with one sample collected each day until the required samples in the set of repeat samples are collected; or

(C) As directed by the department.

(vii) If a sample with a coliform presence was collected from the first two or last two active services, the purveyor shall monitor as directed by the department;

(viii) The purveyor may change a previously submitted routine sample to a sample in a set of repeat samples when the purveyor:

(A) Collects the sample within five active adjacent service connections of the location from which the initial sample with a coliform presence was collected;

(B) Collects the sample after the initial sample with a coliform presence was submitted for analysis;

(C) Collects the sample on the same day as other samples in the set of repeat samples, except under (b)(iv) of this subsection; and

(D) Requests and receives approval from the department for the change.

(ix) The department may determine that sets of repeat samples specified under this subsection are not necessary during a month when a nonacute coliform MCL violation is determined for the system.

**Table 7**  
**REPEAT SAMPLE REQUIREMENTS**

# OF ROUTINE SAMPLES COLLECTED EACH MONTH	# OF SAMPLES IN A SET OF REPEAT SAMPLES	LOCATIONS FOR REPEAT SAMPLES (COLLECT AT LEAST ONE SAMPLE PER SITE)
1	4	<ul style="list-style-type: none"> <li>◆ Site of previous sample with a coliform presence</li> <li>◆ Within 5 active services upstream of site of sample with a coliform presence</li> <li>◆ Within 5 active services downstream of site of sample with a coliform presence</li> <li>◆ At any other active service or from a location most susceptible to contamination (i.e., well or reservoir)</li> </ul>
more than 1	3	<ul style="list-style-type: none"> <li>◆ Site of previous sample with a coliform presence</li> <li>◆ Within 5 active services upstream of site of sample with a coliform presence</li> <li>◆ Within 5 active services downstream of site of sample with a coliform presence</li> </ul>

(c) Monitoring frequency following a coliform presence. Systems having one or more coliform presence samples that were not invalidated during the previous month shall collect and submit for analysis the minimum number of samples shown in the last column of Table 2.

(i) The purveyor may obtain a reduction in the monitoring frequency requirement when one or more samples with a coliform presence were collected during the previous month, if the purveyor proves to the satisfaction of the department;

(A) The cause of the sample with a coliform presence; and

(B) The problem is corrected before the end of the next month the system provides water to the public.

(ii) If the monitoring frequency requirement is reduced, the purveyor shall collect and submit at least the minimum number of samples required when no samples with a coliform presence were collected during the previous month.

(d) Invalid samples. Routine and repeat coliform samples may be determined to be invalid under any of the following conditions:

(i) A certified laboratory determines that the sample results show:

(A) Multiple tube technique cultures that are turbid without appropriate gas production;

(B) Presence-absence technique cultures that are turbid in the absence of an acid reaction;

(C) Occurrence of confluent growth patterns or growth of TNTC (too numerous to count) colonies without a surface sheen using a membrane filter analytic technique;

(ii) The analyzing laboratory determines there is excess debris in the sample.

(iii) The analyzing laboratory establishes that improper sample collection or analysis occurred;

(iv) The department determines that a nondistribution system problem has occurred as indicated by:

(A) All samples in the set of repeat samples collected at the same location, including households, as the original coliform presence sample also are coliform presence; and

(B) All other samples from different locations (households, etc.) in the set of repeat samples are free of coliform.

(v) The department determines a coliform presence result is due to a circumstance or condition that does not reflect water quality in the distribution system.

(e) Follow-up action when an invalid sample is determined. The purveyor shall take the following action when a coliform sample is determined to be invalid:

(i) Collect and submit for analysis an additional coliform sample from the same location as each invalid sample within twenty-four hours of notification of the invalid sample; or

(ii) In the event that it is determined that the invalid sample resulted from circumstances or conditions not reflective of distribution system water quality, collect a set of samples in accordance with Table 7; and

(iii) Collect and submit for analysis samples as directed by the department.

(f) Invalidated samples shall not be included in determination of the sample collection requirement for compliance with this chapter.

(g) Triggered source water monitoring.

(i) All groundwater systems with their own groundwater source(s) must conduct triggered source water monitoring unless the following conditions exist:

(A) The system has submitted a project report and received approval that it provides at least 4-log treatment of viruses (using inactivation, removal, or a department approved combination of 4-log virus inactivation and removal) before or at the first customer for each groundwater source; and

(B) The system is conducting compliance monitoring under WAC 246-290-453(2).

(ii) Any groundwater source sample required under this subsection must be collected at the source prior to any treatment unless otherwise approved by the department.

(iii) Any source sample collected under this subsection must be at least 100 mL in size and must be analyzed for *E. coli* using one of the analytical methods under 40 CFR 141.402(c).

(iv) Groundwater systems must collect at least one sample from each groundwater source in use at the time a routine sample collected under WAC 246-290-300(3) is total coliform-positive and not invalidated under (d) of this subsection. These source samples must be collected within twenty-four hours of notification of the total coliform-positive sample. The following exceptions apply:

(A) The twenty-four hour time limit may be extended if granted by the department and will be determined on a case-by-case basis. If an extension is granted, the system must sample by the deadline set by the department.

(B) Systems with more than one groundwater source may meet the requirements of (g)(iv) of this subsection by sampling a representative groundwater source or sources. The system must have an approved triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the system's coliform monitoring plan under WAC 246-290-300



(3)(b). This plan must be approved by the department before representative sampling will be allowed.

(C) Groundwater systems serving one thousand people or fewer may use a repeat sample collected from a groundwater source to meet the requirements of (b) and (g)(iv) of this subsection. If the repeat sample collected from the groundwater source is *E. coli* positive, the system must comply with (g)(v) of this subsection.

(v) Groundwater systems with an *E. coli* positive source water sample that is not invalidated under (g)(vii) of this subsection, must:

(A) Provide Tier 1 public notice under Part 7, Subpart A of this chapter and special notification under WAC 246-290-71005 (4) and (5);

(B) If directed by the department, take corrective action as required under WAC 246-290-453(1); and

(C) Systems that are not directed by the department to take corrective action must collect five additional samples from the same source within twenty-four hours of being notified of the *E. coli* positive source water sample. If any of the five additional samples are *E. coli* positive, the system must take corrective action under WAC 246-290-453(1).

(vi) Any consecutive groundwater system that has a total coliform-positive routine sample collected under WAC 246-290-300(3) and not invalidated under (d) of this subsection, must notify each wholesale system it receives water from within twenty-four hours of being notified of the total coliform-positive sample and comply with (g) of this subsection.

(A) A wholesale groundwater system that receives notice from a consecutive system under (g)(vi) of this subsection must conduct triggered source water monitoring under (g) of this subsection unless the department determines and documents in writing that the total coliform-positive sample collected was caused by a distribution system deficiency in the consecutive system.

(B) If the wholesale groundwater system source sample is *E. coli* positive, the wholesale system must notify all consecutive systems served by that groundwater source within twenty-four hours of being notified of the results and must meet the requirements of (g)(v) of this subsection.

(C) Any consecutive groundwater system receiving water from a source with an *E. coli* positive sample must notify all their consumers as required under (g)(v)(A) of this subsection.

(vii) An *E. coli* positive groundwater source sample may be invalidated only if the following conditions apply:

(A) The system provides the department with written notice from the laboratory that improper sample analysis occurred; or

(B) The department determines and documents in writing that there is substantial evidence that the *E. coli* positive groundwater sample is not related to source water quality.

(viii) If the department invalidates an *E. coli* positive groundwater source sample, the system must collect another source water sample within twenty-four hours of being notified by the department of its invalidation decision and have it analyzed using the same analytical method. The department may extend the twenty-four hour time limit under (g)(iv)(A) of this subsection.

(ix) Groundwater systems that fail to meet any of the monitoring requirements of (g) of this subsection must conduct Tier 2 public notification under Part 7, Subpart A of this chapter.

(3) Inorganic chemical and physical follow-up monitoring shall be conducted in accordance with the following:

(a) For nonnitrate/nitrite primary inorganic chemicals, 40 CFR 141.23 (a)(4), 141.23 (b)(8), 141.23 (c)(7), 141.23 (c)(9), 141.23 (f)(1), 141.23(g), 141.23(m) and 141.23(n);

(b) For nitrate, 40 CFR 141.23 (a)(4), 141.23 (d)(2), 141.23 (d)(3), 141.23 (f)(2), 141.23(g), 141.23(m), 141.23(n), and 141.23(o);

(c) For nitrite, 40 CFR 141.23 (a)(4), 141.23 (e)(3), 141.23 (f)(2), and 141.23(g); or

(d) The purveyor of any public water system providing service that has secondary inorganic MCL exceedances shall take follow-up action as required by the department. Follow-up action shall be commensurate with the degree of consumer acceptance of the water quality and their willingness to bear the costs of meeting the secondary standard. For new community water systems and new nontransient noncommunity water systems without active consumers, treatment for secondary contaminant MCL exceedances will be required.

(4) Lead and copper follow-up monitoring shall be conducted in accordance with 40 CFR 141.85(d), 141.86 (d)(2), 141.86 (d)(3), 141.87(d) and 141.88(b) through 141.88(d).

(5) Turbidity.

Purveyors monitoring turbidity in accordance with Part 6 of this chapter shall provide follow-up under WAC 246-290-634.

(6) Organic chemicals. Follow-up monitoring shall be conducted in accordance with the following:

(a) For VOCs, 40 CFR 141.24 (f)(11) through 141.24 (f)(15), and 141.24 (f)(22); or

(b) For SOCs, 40 CFR 141.24(b), 141.24(c) and 141.24 (h)(7) through 141.24 (h)(11), and 141.24 (h)(20).

(7) Radionuclide follow-up monitoring shall be conducted under 40 CFR 141.26 (a)(2)(iv), 141.26 (a)(3)(ii) through (v), 141.26 (a)(4), 141.26 (b)(6), and 141.26 (c)(5).

(8) The department shall determine the purveyor's follow-up action when a substance not included in this chapter is detected.

AMENDATORY SECTION (Amending WSR 99-07-021, filed 3/9/99, effective 4/9/99)

**WAC 246-290-415 Operations and maintenance. (1)**

The purveyor shall ensure that the system is operated in accordance with the operations and maintenance program as established in the approved water system plan required under WAC 246-290-100 or the small water system management program under WAC 246-290-105.

(2) The operations and maintenance program shall include the following elements as applicable:

(a) Water system management and personnel;

(b) Operator certification;

(c) Comprehensive monitoring plan for all contaminants under WAC 246-290-300;

(d) Emergency response program;

(e) Cross-connection control program; and

(f) Maintenance of service reliability in accordance with WAC 246-290-420.

(3) The purveyor shall ensure that the system is operated in accordance with good operations procedures such as those available in texts, handbooks, and manuals available from the following sources:

(a) American Water Works Association (AWWA), 6666 West Quincy Avenue, Denver, Colorado 80235;

(b) American Society of Civil Engineers (ASCE), 345 East 47th Street, New York, New York 10017-2398;

(c) Ontario Ministry of the Environment, 135 St. Clair Avenue West, Toronto, Ontario M4V1B5, Canada;

(d) The Chlorine Institute, 2001 "L" Street NW, Washington, D.C. 20036;

(e) California State University, 600 "J" Street, Sacramento, California 95819;

(f) Health Research Inc., Health Education Services Division, P.O. Box 7126, Albany, New York 12224; and

(g) Any other standards acceptable to the department.

(4) The purveyor shall not establish or maintain a bypass to divert water around any feature of a treatment process, except by written approval from the department.

(5) The purveyor shall take preventive or corrective action as directed by the department when results of an inspection conducted by the department indicate conditions which are currently or may become a detriment to system operation.

(6) The purveyor of a system using surface water or GWI shall meet operational requirements specified in Part 6 of this chapter.

(7) The purveyor shall have a certified operator if required under chapter 70.119 RCW and chapter 246-292 WAC.

(8) The purveyor shall at all times employ reasonable security measures to assure the raw water intake facilities, water treatment processes, water storage facilities, and the distribution system are protected from possible damage or compromise by unauthorized persons, animals, vegetation, or similar intruding agents. Such measures include elements such as locks on hatches, fencing of facilities, screening of reservoir vents or openings, and other recommendations as may be found in the current edition of the *Recommended Standards for Water Works, A Committee Report of the Great Lakes - Upper Mississippi River Board of State Public Health and Environmental Managers*.

(9) All purveyors utilizing ~~((ground water))~~ groundwater wells shall monitor well levels from ground level to the static water level on a seasonal basis, including low demand and high demand periods, to document the continuing availability of the source to meet projected, long-term demands. Purveyors shall maintain this data and provide it to the department upon request.

(10) All operation and maintenance practices shall conform to Part 5 of this chapter.

**AMENDATORY SECTION** (Amending WSR 03-08-037, filed 3/27/03, effective 4/27/03)

**WAC 246-290-416 Sanitary surveys.** (1) All public water systems shall submit to a sanitary survey conducted by

the department, or the department's designee, based upon the following schedule:

(a) For community ~~((and nontransient noncommunity))~~ water systems, every ~~((five))~~ three years ~~((, or more frequently as determined by the department. The sanitary surveys shall be consistent with the schedules presented in 40 CFR 141.21; and))~~. In accordance with 40 CFR 141.21(d)(3), community water systems may qualify to be surveyed every five years if the system meets the following criteria:

(i) Provides at least 4-log treatment of viruses (using inactivation, removal, or a department-approved combination of 4-log inactivation and removal) before or at the first customer for all its groundwater sources; or

(ii) Has no total coliform MCL violations since the last sanitary survey;

(iii) Has no more than one total coliform monitoring violation since the last sanitary survey; and

(iv) Has no unresolved significant deficiencies from the current sanitary survey.

(b) For transient noncommunity and nontransient noncommunity water systems, every five years ~~((unless the system uses only disinfected ground water and has an approved wellhead protection program, in which case the survey shall be every ten years. The sanitary surveys shall be conducted consistent with schedules presented in 40 CFR 141.21)).~~

(c) For community ~~((public))~~ water systems that use a surface water or GWI source, every three years. Sanitary surveys may be reduced to every five years upon written approval from the department.

(d) The department may schedule a sanitary survey or increases the frequency of surveys if it determines a public health threat exists or is suspected.

(2) All public water system purveyors shall be responsible for:

(a) Ensuring cooperation in scheduling sanitary surveys with the department, or its designee; ~~((and))~~

(b) At the department's request, provide any existing information that will enable the department to conduct a sanitary survey;

(c) Ensuring the unrestricted availability of all facilities and records at the time of ~~((the))~~ a sanitary survey or special purpose investigation; and

(d) Taking preventive or corrective action as directed by the department when results of a sanitary survey indicate conditions which are currently or may become a detriment to system operation or public health.

(3) All public water systems that use a surface water or GWI source shall, within forty-five days following receipt of a sanitary survey report that identifies significant deficiencies, identify in writing to the department how the system will correct the deficiencies and propose a schedule to complete the corrections. The department may modify the schedule if necessary to protect the health of water system users.

(4) A groundwater system with significant deficiencies must meet the treatment technique requirements of WAC 246-290-453(1) and the special notification requirements under WAC 246-290-71005 (4) and (5) except where the department determines that the significant deficiency is in a portion of the distribution system that is served solely by surface water or GWI.

AMENDATORY SECTION (Amending WSR 03-08-037, filed 3/27/03, effective 4/27/03)

**WAC 246-290-451 Disinfection of drinking water.** (1)

No portion of a public water system containing potable water shall be put into service, nor shall service be resumed until the facility has been effectively disinfected.

(a) In cases of new construction, drinking water shall not be furnished to the consumer until satisfactory bacteriological samples have been analyzed by a laboratory certified by the state; and

(b) In cases of existing water mains, when the integrity of the main is lost resulting in a significant loss of pressure that places the main at risk to cross-connection contamination, the purveyor shall use standard industry practices such as flushing, disinfection, and/or bacteriological sampling to ensure adequate and safe water quality prior to the return of the line to service;

(c) If a cross-connection is confirmed, the purveyor shall satisfy the reporting requirements as described under WAC 246-290-490(8).

(2) The procedure used for disinfection shall conform to standards published by the American Water Works Association, or other industry standards acceptable to the department.

(3) The purveyor of a system using surface water or GWI shall meet disinfection requirements specified in Part 6 of this chapter.

~~(4) The purveyor of a system using ((ground water and required to disinfect, shall meet the following disinfection requirements, unless otherwise directed by the department:~~

~~(a) Minimum contact time at a point at or before the first consumer of:~~

~~(i) Thirty minutes if 0.2 mg/L free chlorine residual is maintained;~~

~~(ii) Ten minutes if 0.6 mg/L free chlorine residual is maintained; or~~

~~(iii) Any combination of free chlorine residual concentration (C), measured in mg/L, and contact time (T), measured in minutes, that results in a CT product (C X T) of greater than or equal to six; or~~

~~(iv) Contact time (T) for surface water or GWI sources shall be determined in accordance with WAC 246-290-636.~~

~~(b) Detectable residual disinfectant concentration in all active parts of the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide;~~

~~(c) Water in the distribution system with an HPC level less than or equal to 500 organisms/mL is considered to have a detectable residual disinfectant concentration.~~

~~(4) The department may require the purveyor to provide longer contact times, higher chlorine residuals, or additional treatment to protect the health of consumers served by the public water system.~~

~~(5) The purveyor of a system using surface water or GWI shall meet disinfection requirements specified in Part 6 of this chapter.~~

~~(6) The purveyor of a system adding a chemical disinfectant shall monitor residual disinfectant concentration at representative points in the system on a daily basis, and at the same time and location of routine and repeat coliform sample collection. Frequency of disinfection residual monitoring may be reduced upon written request to the department if it can be~~

~~shown that disinfection residuals can be maintained on a reliable basis without the provision of daily monitoring, but shall be no less frequent than specified in WAC 246-290-300 (3)(a)(i).~~

~~(7) The analyses shall be conducted in accordance with "standard methods." To assure adequate monitoring of chlorine residual, the department may require the use of continuous chlorine residual analyzers and recorders)) groundwater shall meet the requirements under subsection (6) of this section if required by the department to disinfect for any of the following reasons:~~

~~(a) Determination that the groundwater source is in hydraulic connection to surface water under WAC 246-290-640(4);~~

~~(b) A history of unsatisfactory source coliform sampling; or~~

~~(c) A microbiological contaminant threat within the sanitary control area as defined in WAC 246-290-135.~~

~~(5) The purveyor of a groundwater system that is required to disinfect as a result of becoming a SSNC due to repeated total coliform MCL or major repeat violations shall meet the requirements under subsection (7) of this section.~~

~~(6) If disinfection is required under subsection (4) of this section, the following requirements must be met:~~

~~(a) Provide a minimum contact time at or before the first customer of:~~

~~(i) Thirty minutes if 0.2 mg/L free chlorine residual is maintained;~~

~~(ii) Ten minutes if 0.6 mg/L free chlorine residual is maintained; or~~

~~(iii) Any combination of free chlorine residual concentration (C), measured in mg/L and contact time (T), measured in minutes, that result in a CT product (C x T) of greater than or equal to six; and~~

~~(b) Maintain a detectable residual disinfectant concentration in all active parts of the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide.~~

~~(c) The department may require the purveyor to provide longer contact times, higher chlorine residuals, or additional treatment to protect the health of consumers served by the water system.~~

~~(d) To demonstrate the required level of treatment is maintained, the purveyor shall:~~

~~(i) Monitor the residual disinfectant concentration at the point of entry to the distribution system, or at a department-approved location, at least once every Monday through Friday (except holidays) that water is supplied;~~

~~(ii) Calculate the daily CT value at or before the first customer; and~~

~~(iii) Submit monthly groundwater treatment reports to the department using a department-approved form by the tenth day of the following month.~~

~~(e) All analyses required in this subsection shall be conducted in accordance with EPA standard methods.~~

~~(f) The purveyor may be required to monitor the residual disinfectant concentration each calendar day water is supplied to the distribution system if the department considers treatment operation is unreliable.~~

(g) The department may require the use of continuous residual analyzers and recorders to assure adequate monitoring of residual concentrations.

(7) If disinfection is required under subsection (5) of this section, or a chemical disinfectant is added to a groundwater source for any other reason, the following requirements must be met:

(a) Monitor residual disinfectant concentration at representative points throughout the distribution system once each day, excluding weekends and holidays, and at the same time and location of routine and repeat coliform sample collection. Frequency of disinfection residual monitoring may be reduced upon written request to the department if it can be shown that disinfection residuals can be maintained on a reliable basis without the provision of daily monitoring.

(b) Maintain a detectable residual disinfectant concentration in all active parts of the distribution system, measured as total chlorine, free chlorine, combined chlorine, or chlorine dioxide. Water in the distribution system with an HPC level less than or equal to 500 organisms/mL is considered to have a detectable residual disinfectant concentration.

(c) The department may require the purveyor to provide higher chlorine residuals, or additional treatment to protect the health of consumers served by the water system.

(d) All analyses required in this subsection shall be conducted in accordance with EPA standard methods.

(e) The department may require the use of continuous residual analyzers and recorders to assure adequate monitoring of residual concentrations.

#### NEW SECTION

**WAC 246-290-453 Treatment techniques for groundwater systems.** (1) Groundwater systems with significant deficiencies identified under WAC 246-290-416, or source fecal contamination as determined under WAC 246-290-320 (2)(g)(v)(C) or 246-290-300 (3)(e), or as directed by the department under WAC 246-290-320 (2)(g)(v)(B) must:

(a) Take one or more of the following corrective actions:

(i) Correct all significant deficiencies;

(ii) Provide an alternate source of water;

(iii) Eliminate the source of contamination; or

(iv) Provide treatment that reliably achieves at least 4-log treatment of viruses (using inactivation, removal, or a department-approved combination of 4-log virus inactivation and removal) before or at the first customer for the groundwater source.

(b) Consult with the department regarding appropriate corrective action within thirty days unless otherwise directed by the department to implement a specific corrective action.

(c) Complete corrective action as directed by the department or be in compliance with an approved corrective action plan within one hundred twenty days (or earlier if directed by the department) of receiving written notice from the department of a significant deficiency or source fecal contamination under this subsection. Any modifications of a corrective action plan must be approved by the department.

(2) When treatment is installed to provide at least 4-log treatment of viruses under subsection (1)(a)(iv) of this section, compliance monitoring must be conducted as follows:

(a) For chemical disinfection, conduct compliance monitoring under 40 CFR 141.403 (b)(3)(i).

(i) For groundwater systems serving greater than three thousand three hundred people, conduct compliance monitoring under 40 CFR 141.403 (b)(3)(i)(A).

(ii) For groundwater systems serving three thousand three hundred or fewer people, conduct compliance monitoring under 40 CFR 141.403 (b)(3)(i)(B).

(b) For membrane filtration, conduct compliance monitoring under 40 CFR 141.403 (b)(3)(ii).

(c) For alternative treatment, conduct compliance monitoring under 40 CFR 141.403 (b)(3)(iii).

(d) For new sources, conduct compliance monitoring under 40 CFR 141.403 (b)(2)(i) through (iii).

(3) A groundwater system may discontinue 4-log treatment of viruses installed under subsection (1)(a)(iv) of this section or WAC 246-290-451(4) if the department determines and documents in writing that 4-log treatment of viruses is no longer necessary for that groundwater source. A system that discontinues 4-log treatment of viruses is subject to the triggered source water monitoring requirements under WAC 246-290-320 (2)(g).

(4) Failure to meet the compliance monitoring requirements under subsection (2) of this section is a monitoring violation and requires Tier 3 public notification under Part 7, Subpart A of this chapter.

(5) Failure to provide 4-log treatment of viruses under subsection (1)(a)(iv) of this section is a treatment technique violation if the failure is not corrected within four hours of the time the purveyor determines that at least 4-log treatment of viruses is not maintained and requires Tier 2 public notification under Part 7, Subpart A of this chapter.

(6) Failure to complete corrective action as directed by the department or be in compliance with an approved corrective action plan within one hundred twenty days (or earlier if directed by the department) of receiving notice from the department of a significant deficiency or an *E. coli* positive groundwater sample that is not invalidated under WAC 246-290-320 (2)(g)(vii) is a treatment technique violation and requires Tier 2 public notification under Part 7, Subpart A of this chapter.

**AMENDATORY SECTION** (Amending WSR 09-21-045, filed 10/13/09, effective 1/4/10)

**WAC 246-290-480 Recordkeeping and reporting.** (1) Records. The purveyor shall keep the following records of operation and water quality analyses:

(a) Bacteriological and turbidity analysis results shall be kept for five years. Chemical analysis results shall be kept for as long as the system is in operation. Records of source meter readings shall be kept for ten years. Other records of operation and analyses required by the department shall be kept for three years. All records shall bear the signature of the operator in responsible charge of the water system or his or her representative. Systems shall keep these records available for inspection by the department and shall send the records to the department if requested. Actual laboratory reports may be kept or data may be transferred to tabular summaries, provided the following information is included:

(i) The date, place, and time of sampling, and the name of the person collecting the sample;

(ii) Identification of the sample type (routine distribution system sample, repeat sample, source or finished water sample, or other special purpose sample);

(iii) Date of analysis;

(iv) Laboratory and person responsible for performing analysis;

(v) The analytical method used; and

(vi) The results of the analysis.

(b) Records of action taken by the system to correct violations of primary drinking water standards. For each violation, records of actions taken to correct the violation, and copies of public notifications shall be kept for no less than ~~((three))~~ ten years after the last corrective action taken.

(c) Copies of any written reports, summaries, or communications relating to sanitary surveys or SPIs of the system conducted by system personnel, by a consultant or by any local, state, or federal agency, shall be kept for ten years after completion of the sanitary survey or SPI involved.

(d) Copies of project reports, construction documents and related drawings, inspection reports and approvals shall be kept for the life of the facility.

(e) Where applicable, records of the following shall be kept for a minimum of three years:

(i) Chlorine residual;

(ii) Fluoride level;

(iii) Water treatment plant performance including, but not limited to:

(A) Type of chemicals used and quantity;

(B) Amount of water treated;

(C) Results of analyses; and

(iv) Other information as specified by the department.

(f) The purveyor shall retain copies of public notices made under Part 7, Subpart A of this chapter and certifications made to the department under 40 CFR 141.33(e) for a period of at least three years after issuance.

(g) Purveyors using conventional, direct, or in-line filtration that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes within their treatment plant shall, beginning no later than June 8, 2004, collect and retain on file the following information for review and evaluation by the department:

(i) A copy of the recycle notification and information submitted to the department under WAC 246-290-660(4)(a)(i).

(ii) A list of all recycle flows and the frequency with which they are returned.

(iii) Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.

(iv) Typical filter run length and a written summary of how filter run length is determined.

(v) The type of treatment provided for the recycle flow.

(vi) Data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.

(h) Purveyors required to conduct disinfection profiling and benchmarking under 40 CFR 141.530 through 141.544 shall retain the results on file indefinitely.

(i) Copies of monitoring plans developed under this chapter shall be kept for the same period of time as the records of analyses taken under the plan are required to be kept under (a) of this subsection.

(j) Purveyors using surface water or GWI sources must keep the records required by 40 CFR 141.722.

(2) Reporting.

(a) Unless otherwise specified in this chapter, the purveyor shall report to the department within forty-eight hours the failure to comply with any national primary drinking water regulation (including failure to comply with any monitoring requirements) as set forth in this chapter. For violations assigned to Tier 1 in WAC 246-290-71001, the department must be notified as soon as possible, but no later than twenty-four hours after the violation is known.

(b) The purveyor shall submit to the department reports required by this chapter, including tests, measurements, and analytic reports. Monthly reports are due before the tenth day of the following month, unless otherwise specified in this chapter.

(c) The purveyor shall submit to the department copies of any written summaries or communications relating to the status of monitoring waivers during each monitoring cycle or as directed by the department.

(d) Source meter readings shall be made available to the department.

(e) Water facilities inventory form (WFI).

(i) Purveyors of **community** and **NTNC** systems shall submit an annual WFI update to the department;

(ii) Purveyors of **TNC** systems shall submit an updated WFI to the department as requested;

(iii) Purveyors shall submit an updated WFI to the department within thirty days of any change in name, category, ownership, or responsibility for management of the water system, or addition of source or storage facilities; and

(iv) At a minimum the completed WFI shall provide the current names, addresses, and telephone numbers of the owners, operators, and emergency contact persons for the system.

(f) Bacteriological. The purveyor shall notify the department of the presence of:

(i) Coliform in a sample, within ten days of notification by the laboratory; and

(ii) Fecal coliform or *E. coli* in a sample, by the end of the business day in which the purveyor is notified by the laboratory. If the purveyor is notified of the results after normal close of business, then the purveyor shall notify the department before the end of the next business day.

(g) Systems monitoring for disinfection byproducts under WAC 246-290-300(6) shall report information to the department as specified in ~~(a) and (b) of this subsection, and 40 CFR 141.134(b)~~.

(h) Systems monitoring for disinfectant residuals under WAC 246-290-300(6) shall report information to the department as specified in ~~((subsection (2))) (a) and (b) of this ((section)) subsection, and 40 CFR 141.134((b)) (c)~~.

(i) Systems required to monitor for disinfection byproduct precursor removal under WAC 246-290-300(6) shall

report information to the department as specified in (a) and (b) of this subsection, and 40 CFR 141.134(d).

(j) Systems required to monitor for disinfection byproducts under WAC 246-290-300(6) shall report information to the department as specified in (a) and (b) of this subsection, and 40 CFR 141.600 - 629.

(k) Systems subject to the enhanced treatment requirements for *Cryptosporidium* under WAC 246-290-630(4) shall report information to the department as specified in 40 CFR 141.706 and 141.721.

(l) Systems that use acrylamide and epichlorohydrin in the treatment of drinking water, must certify annually in writing to the department that the combination (or product) of dose and monomer level does not exceed the levels specified in (l)(i) and (ii) of this subsection. Certifications shall reference maximum use levels established by an ANSI-accredited listing organization approved by the department.

(i) Acrylamide = 0.05 percent dosed at 1 ppm (or equivalent); and

(ii) Epichlorohydrin = 0.01 percent dosed at 20 ppm (or equivalent).

(m) Use of products that exceed the specified levels constitutes a treatment technique violation and the public must be notified under the public notice requirements under Part 7, Subpart A of this chapter.

(n) Systems shall submit to the department, in accordance with 40 CFR 141.31(d), a certification that the system has complied with the public notification regulations (Part 7, Subpart A of this chapter) when a public notification is required. Along with the certification, the system shall submit a representative copy of each type of notice.

#### NEW SECTION

**WAC 246-290-485 Recordkeeping and reporting for groundwater systems.** (1) Records. In addition to the requirements of WAC 246-290-480, the purveyor shall keep the following records:

(a) Records of corrective actions. For each action, records shall be kept for at least ten years.

(b) Records of public notification as required under WAC 246-290-71005 (4) and(5) and shall be kept for at least three years.

(c) Records of invalidation of groundwater source samples under WAC 246-290-320 (2)(g)(vii), and shall be kept for at least five years.

(d) For consecutive systems, records of notification to the wholesale system of total-coliform positive routine samples that are not invalidated under WAC 246-290-320 (2)(d), and shall be kept for at least five years.

(e) For all systems that are required to perform compliance monitoring under WAC 246-290-453:

(i) Records of department-specified minimum disinfectant residual, and shall be kept for at least ten years.

(ii) Records of the lowest residual disinfectant concentration, and the date and duration of any failure to maintain the department-prescribed minimum residual disinfectant concentration for a period of more than four hours, and shall be kept for at least five years.

(iii) Records of department-specified compliance requirements for membrane filtration and of department-specified parameters for department-approved alternative treatment, and shall be kept for at least five years.

(iv) Records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours, and shall be kept for at least five years.

(2) Reporting. In addition to the requirements of WAC 246-290-480:

(a) Systems conducting compliance monitoring under WAC 246-290-453(2) must notify the department any time the system fails to meet department-specified requirements as soon as possible, but no later than the next business day, for the following requirements:

(i) Minimum residual disinfectant concentration;

(ii) Membrane operating criteria or membrane integrity; and

(iii) Alternative treatment operating criteria, if operation in accordance with the criteria or requirements is not restored within four hours.

(b) The system must notify the department within thirty days of completing corrective action under WAC 246-290-453(1).

AMENDATORY SECTION (Amending WSR 99-07-021, filed 3/9/99, effective 4/9/99)

**WAC 246-290-620 Applicability of surface water treatment requirements.** (1) The requirements of Part 6 of this chapter apply to water systems that:

(a) Use surface sources or (~~ground water~~) groundwater sources under the direct influence of surface water (GWI); or

(b) Purchase surface or GWI water from an approved public water system or other entity acceptable to the department.

(2) The requirements of Part 6 of this chapter do not apply to water systems that use unfiltered surface or GWI sources as emergency sources, provided the source is physically disconnected from the system at all times until it is needed, and the purveyor meets the following conditions:

(a) Has a department-approved emergency response plan; and

(b) Provides disinfection treatment that meets the requirements under WAC 246-290-662 (2)(d).

(3) The requirements of WAC 246-290-640 apply to **Group A** systems that use sources potentially under the influence of surface water as determined by the department.

AMENDATORY SECTION (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-630 General requirements.** (1) The purveyor shall ensure that treatment is provided for surface and GWI sources consistent with the treatment technique requirements specified in Part 6 of chapter 246-290 WAC.

(2) The purveyor shall install and properly operate water treatment processes to ensure at least:

(a) 99.9 percent (3 log) removal and/or inactivation of *Giardia lamblia* cysts;

(b) 99.99 percent (4 log) removal and/or inactivation of viruses; and

(c) 99 percent (2 log) removal of *Cryptosporidium* oocysts if required to filter.

(3) The purveyor shall ensure that the requirements of subsection (2) of this section are met between a point where the source water is not subject to contamination by untreated surface water and a point at or before the first consumer.

(4) The department may require higher levels of removal and/or inactivation of *Giardia lamblia* cysts, *Cryptosporidium* oocysts, and viruses than specified in subsection (2) of this section if deemed necessary to protect the health of consumers served by the system.

(5) The purveyor shall ensure that personnel operating a system subject to Part 6 of chapter 246-290 WAC meet the requirements under chapter 70.119 RCW and chapter 246-292 WAC.

(6) The purveyor of a **Group A community** system serving water from a surface or GWI source to the public before January 1, 1991, shall comply with applicable minimum treatment requirements. The purveyor shall meet either:

(a) The filtration and disinfection requirements under WAC 246-290-660 and 246-290-662 respectively;

(b) The criteria to remain unfiltered under WAC 246-290-690 and the disinfection requirements under WAC 246-290-692; or

(c) The criteria to provide a limited alternative to filtration under WAC 246-290-691 and the disinfection requirements under WAC 246-290-692.

(7) The purveyor of a **Group A noncommunity** system serving water from a surface or GWI source, shall meet either:

(a) The filtration and disinfection requirements under WAC 246-290-660 and 246-290-662, respectively; or

(b) The criteria to provide a limited alternative to filtration under WAC 246-290-691 and the disinfection requirements under WAC 246-290-692.

(8) The purveyor of a **Group A** system first serving water from a surface or GWI source to the public after December 31, 1990, shall meet either:

(a) The filtration and disinfection requirements under WAC 246-290-660 and 246-290-662, respectively; or

(b) The criteria to provide a limited alternative to filtration under WAC 246-290-691 and the disinfection requirements under WAC 246-290-692.

(9) The purveyor of a system required to install filtration may choose to provide a limited alternative to filtration or abandon the surface or GWI source as a permanent or seasonal source and develop an alternate, department-approved source. Purveyors that develop alternate (~~ground water~~) groundwater sources or purchase water from a department-approved public water system using a (~~ground water~~) groundwater source shall no longer be subject to Part 6 of chapter 246-290 WAC, once the alternate source is approved by the department and is on line.

(10) A purveyor that chooses to provide a limited alternative to filtration shall submit an application to the department that contains the information necessary to determine whether the source can meet the criteria.

(11) If a limited alternative to filtration is provided, then the purveyor shall install and properly operate treatment processes to ensure greater removal and/or inactivation efficiencies of *Giardia lamblia* cysts, viruses, or other pathogenic organisms of public health concern (including *Cryptosporidium* oocysts) than would be achieved by the combination of filtration and chlorine disinfection.

(12) Systems that were required to develop a disinfection profile under 40 CFR 141.172 shall provide that profile and a calculated disinfection benchmark, as described in 40 CFR 141.172 (c)(2) and (3), along with other project information specified in WAC 246-290-110, when proposing any change to the disinfection treatment system. The proposal for change shall include an analysis of how the proposed change will affect the current level of disinfection. The profile must also be available for inspection during routine sanitary surveys conducted under WAC 246-290-416.

(13) Community and nontransient noncommunity systems serving less than ten thousand persons must meet the disinfection profiling and benchmarking provisions required under 40 CFR 141.530 through 141.544.

(14) Systems required to develop a disinfection profile under 40 CFR 141.530 shall provide that profile and a calculated disinfection benchmark, as described in 40 CFR 141.543 along with other project information specified in WAC 246-290-110, when proposing any change to the disinfection treatment system. The proposal for change shall include an analysis of how the proposed change will affect the current level of disinfection. The profile must also be available for inspection during routine sanitary surveys conducted under WAC 246-290-416.

(15) A system using conventional, direct, or in-line filtration that must arrange for the conduct of a CPE, under 40 CFR 141.175 (b)(4) or 40 CFR 141.563, may be required to arrange for CTA. The department will determine the need for CTA on a case-by-case basis.

(16) Water systems subject to the requirements of Part 6 of this chapter must also comply with the enhanced treatment requirements for *Cryptosporidium* under 40 CFR Subpart W. The requirements are in addition to the requirements of Part 6 of this chapter and include:

(a) General requirements under 40 CFR 141.700;

(b) Source monitoring requirements under 40 CFR 141.701-707;

(c) Disinfection profiling and benchmarking requirements under 40 CFR 141.708-709;

(d) Treatment technique requirements under 40 CFR 141.710-714;

(e) Requirements for microbial toolbox components under 40 CFR 141.715-720; and

(f) Reporting and recordkeeping requirements under 40 CFR 141.721-722.

(17) Water systems using UV reactors to obtain treatment credit for *Cryptosporidium* removal must:

(a) Validate the reactors using the validation testing procedures specified under 40 CFR 141.720 (d)(2); or

(b) Validate the reactor under Austrian ONORM Standards or German DVGW Standards.

AMENDATORY SECTION (Amending WSR 03-08-037, filed 3/27/03, effective 4/27/03)

**WAC 246-290-634 Follow-up to treatment technique violations.** When a treatment technique violation occurs, the purveyor:

- (1) Shall report to the department in accordance with:
  - (a) WAC 246-290-666 for purveyors providing filtration or required to filter;
  - (b) WAC 246-290-674 for purveyors installing filtration; or
  - (c) WAC 246-290-696 for purveyors meeting the criteria to remain unfiltered or providing a limited alternative to filtration;
- (2) Shall notify the public in accordance with Part 7, Subpart A of this chapter;
- (3) Shall determine the cause of the violation;
- (4) Shall take action as directed by the department which may include conducting a CCP. A CCP may include both a CPE and CTA; ((and))
- (5) Shall identify and systematically address plant-specific factors identified in the CPE during the CTA, if required; and
- (6) May be subject to enforcement under WAC 246-290-050.

AMENDATORY SECTION (Amending WSR 99-07-021, filed 3/9/99, effective 4/9/99)

**WAC 246-290-640 Determination of GWI sources.**

(1) Until the department has made a source GWI determination, the purveyor shall monitor in accordance with the requirements for ~~((ground water))~~ groundwater sources in WAC 246-290-300 or as directed by the department and provide follow-up in accordance with WAC 246-290-320.

(2) The purveyor, after being notified by the department that one or more of the system sources have been classified as potential GWI, may elect to seek approval from the department to modify the potential GWI source to mitigate surface water influences prior to compliance with subsection (3) of this section, and if so, shall:

(a) Complete a project report, for departmental approval, that describes the proposed source-related modifications, including the schedule for their completion and an explanation of why the source should be reclassified upon completion of the source modifications; and

(b) Demonstrate compliance, if directed by the department, with the requirements of subsection (3) of this section upon completion of the source-related modifications.

(3) The purveyor using a source identified as a potential GWI shall provide to the department all information necessary to determine whether the source is under direct surface water influence. Information shall include, but not be limited to:

- (a) Site-specific source water quality data, including temperature, conductivity, ~~((and))~~ or other appropriate parameters as determined by the department;
- (b) Documentation of source construction characteristics;
- (c) Documentation of hydrogeology;
- (d) Distance to surface water; and

(e) Water quality results from nearby surface water(s), including temperature, conductivity, and/or other appropriate parameters as determined by the department.

(4) Upon a determination by the department that one or more potential GWI source(s) being used are in hydraulic connection to a surface water, the purveyor shall:

(a) Secure the services of a professional engineer to direct further evaluation and actions regarding the source;

(b) Provide disinfection treatment of the source in accordance with WAC 246-290-451; and

(c) Provide microscopic particulate analyses (MPA) results for review by the department based upon a sampling plan approved by the department.

(5) A purveyor notified by the department that one or more GWI sources are in use shall:

(a) Within ninety days of notification submit a project report to the department that includes an implementation schedule for compliance with the treatment techniques specified in Part 6 of this chapter;

(b) Notify consumers served by the system; and

(c) Comply with the applicable requirements of WAC 246-290-670.

(6) After completion of the requirements in subsection (3) of this section, the purveyor may modify a GWI source to mitigate direct surface influence. In such cases, the purveyor shall:

(a) Include in a project report, for submittal to the department for approval, a description of the proposed approaches and schedule for source modification; and

(b) Comply again with subsection (3) of this section upon completion of source modifications to be considered for source reclassification.

(7) The department may reevaluate a ~~((ground water))~~ groundwater source for direct surface influence, if conditions impacting source classification have changed.

AMENDATORY SECTION (Amending WSR 99-07-021, filed 3/9/99, effective 4/9/99)

**WAC 246-290-670 Compliance requirements for existing unfiltered systems installing filtration.** (1) The purveyor of an existing unfiltered system shall:

(a) Install filtration within eighteen months after department notification; and

(b) Be subject to the interim compliance requirements as determined by the department and in conformance with 40 CFR 141.13 and WAC 246-290-632.

(2) The purveyor under an enforcement action or compliance agreement that is dated prior to the effective date of Part 6 of chapter 246-290 WAC, shall adhere to the compliance schedule for installation of filtration established in the departmental order or bilateral compliance agreement in lieu of the dates specified in subsection (1) of this section.

(3) The purveyor required to install filtration shall submit an action plan and schedule to the department for review and approval. The plan shall:

(a) Be submitted within ninety days of departmental notification; and

(b) Document the purveyor's plan and implementation schedule to comply with one of the following:



(i) Subparts A and B of Part 6 of chapter 246-290 WAC, if continuing to use the surface or GWI source as a permanent source and installing filtration;

(ii) Subparts A and D of Part 6 of chapter 246-290 WAC, if abandoning the surface or GWI source and purchasing completely treated water from a department-approved public water system using surface or GWI water; or

(iii) All other applicable sections of this chapter, if abandoning the surface or GWI source and developing an alternate department-approved (~~(ground water)~~) groundwater source.

(4) Between written departmental notification of the filtration requirement and installation of filtration, the purveyor shall meet:

(a) The interim disinfection requirements under WAC 246-290-672 or as otherwise directed by the department;

(b) The interim monitoring and reporting requirements under WAC 246-290-674; and

(c) All other applicable requirements of this chapter.

(5) The purveyor installing filtration shall ensure that when completed, the final treatment processes, consisting of filtration and disinfection, will comply with the requirements under WAC 246-290-660 and 246-290-662, respectively.

AMENDATORY SECTION (Amending WSR 99-07-021, filed 3/9/99, effective 4/9/99)

**WAC 246-290-686 Compliance requirements for unfiltered systems.** (1) The purveyor using an unfiltered surface or GWI source shall comply with:

(a) Subparts A and D of Part 6 of chapter 246-290 WAC; and

(b) All other applicable sections of this chapter.

(2) The purveyor purchasing water from a system using a surface or GWI source shall comply with:

(a) The applicable requirements of Subpart A of Part 6 of chapter 246-290 WAC;

(b) The disinfection, monitoring and reporting requirements under WAC 246-290-692 (5)(b), 246-290-694 (8)(b) and 246-290-696(4) respectively when purchasing completely treated surface or GWI water; or

(c) The treatment technique, monitoring and reporting requirements as directed by the department when the purveyor is purchasing incompletely treated surface or GWI water.

(3) The purveyor using an unfiltered GWI source shall be subject to the effective dates, compliance requirements, and violations specified in Table 12.

**Table 12**  
**COMPLIANCE REQUIREMENTS FOR**  
**SYSTEMS USING UNFILTERED GWI SOURCES**

REQUIREMENTS BECOME EFFECTIVE	APPLICABLE PART 6 REQUIREMENTS	VIOLATION TYPE	
		Turbidity MCL	Treatment Technique
Six months after GWI determination	Only Analytical, Monitoring and Reporting Requirements (WAC 246-290-638, 246-290-694 and 246-290-696 respectively)	Refer to 40 CFR 141.13 and 141.22	Not in effect yet
Eighteen months after GWI determination	Subparts A and D	No longer in effect	In effect as defined in WAC 246-290-632

(4) Purveyors of **community** systems using surface water sources had the option to remain unfiltered if they demonstrated compliance with the department's criteria to remain unfiltered by December 30, 1991.

(5) A purveyor that served water to the public before January 1, 1991, using a GWI source may have that source remain unfiltered, if, within eighteen months of GWI determination, the purveyor complies with Part 6 of this chapter and, the source water quality and site-specific conditions under WAC 246-290-690 or 246-290-691 as demonstrated through monitoring conducted in accordance with WAC 246-290-694.

(6) The purveyor with sources that are approved to remain unfiltered shall comply with the source water quality and site-specific conditions under WAC 246-290-690 or 246-290-691 as demonstrated through monitoring conducted in accordance with WAC 246-290-694.

(7) The purveyor shall install filtration when the system fails to meet one or more of the source water quality and site-specific conditions under WAC 246-290-690 and 246-290-691, or the department determines that installation of filtration is necessary to protect the health of consumers served by the water system.

(8) The purveyor, in response to a written notification by the department, shall install filtration within eighteen months.

(9) The purveyor may comply with the requirements to install filtration by:

(a) Constructing a water treatment facility that is designed, operated, and maintained in accordance with Subparts A, B, and C of Part 6 of this chapter;

(b) Satisfying the source water quality and site-specific criteria specified in WAC 246-290-691 and constructing treatment facilities that are designed, operated, and maintained to provide a limited alternative to filtration in accordance with WAC 246-290-692; or

(c) Abandoning the surface water or GWI source, and:

(i) Developing an alternate, department-approved (~~(ground water)~~) groundwater source; or

(ii) Purchasing completely treated water from a department-approved public water system.

AMENDATORY SECTION (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-71005 Special public notification requirements.** (1) The purveyor of community or NTNC water systems required to monitor under ~~((WAC 246-290-300(7)))~~ 40 CFR 141.40 shall notify the water system users of the availability of the results of monitoring for unregulated contaminants no later than twelve months after the monitoring results are known. The form and manner of the public notice to the water system users shall be in accordance with 40 CFR 141.204 (c), (d)(1), and (d)(3). The notice must also identify a person and provide the telephone number to contact for information on the monitoring results.

(2) The purveyor of a community water system that ~~((experiences a secondary MCL violation for))~~ exceeds the fluoride secondary MCL of 2.0 mg/L but does not exceed the fluoride primary MCL of 4.0 mg/L shall provide notice, in accordance with the form, manner, timing, distribution, and content requirements of 40 CFR 141.208.

(3) The purveyor of a water system using surface water or GWI sources that repeatedly fails to monitor for *Cryptosporidium* or determine the bin classification or mean *Cryptosporidium* level, must notify the public under 40 CFR 141.211.

(4) The purveyor of a community groundwater system that receives notice from the department of a significant deficiency or an *E. coli* positive groundwater source sample that is not invalidated by the department, must notify the public under WAC 246-290-72013.

(5) The purveyor of a noncommunity groundwater system with a significant deficiency that has not been corrected within twelve months of being notified or earlier if directed must notify the public under WAC 246-290-72013. The system must continue to notify the public annually until the significant deficiency is corrected. The information must include:

(a) The nature of the significant deficiency and the date it was identified by the department;

(b) A department-approved plan and schedule for correcting the significant deficiency including interim measures, progress to date, and which interim measures have been completed;

(c) In communities with a large proportion of non-English speaking consumers, the notice must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where the consumers may contact the system to obtain a translated copy of the notice or assistance with the appropriate language; and

(d) If directed by the department, a system with significant deficiencies that have been corrected must inform its customers of the significant deficiencies, how the deficiencies were corrected, and the date(s) of correction under (a) through (c) of this subsection.

AMENDATORY SECTION (Amending WSR 00-15-080, filed 7/19/00, effective 8/19/00)

**WAC 246-290-72003 Report contents—Source water.** Information on the source of the water delivered:

(1) Each report must identify the source(s) of the water delivered by the community water system by providing information on:

(a) The type of the water, for example, surface water, ~~((ground water))~~ groundwater, spring water, or purchased water; and

(b) The commonly used name (if any) and location of the body (or bodies) of water.

(2) If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information.

(3) Where a system has received a source water assessment from the department, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the department or written by the purveyor.

AMENDATORY SECTION (Amending WSR 08-03-061, filed 1/14/08, effective 2/14/08)

**WAC 246-290-72012 Regulated contaminants.**

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
<b>Microbiological Contaminants</b>						
Total Coliform Bacteria	MCL: (systems that collect ≥ 40 samples/ month more than 5% of monthly samples are positive; (systems that collect < 40 samples/ month) 2 or more positive samples per monthly sampling period	=	MCL: (systems that collect ≥ 40 samples/ month) more than 5% of monthly samples are positive; (systems that collect < 40 samples/ month) 2 or more positive samples	0	Naturally present in the environment	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
			per monthly sampling period			
Fecal coliform and <i>E. coli</i>	0	=	0	0	Human and animal fecal waste	Fecal coliforms and <i>E. coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.
Fecal indicators ( <i>E. coli</i> )	TT	=	TT	N/A	Human and animal fecal waste	<u>Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.</u>
Total organic carbon (ppm)	TT	-	TT	N/A	Naturally present in the environment	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by-products. These by-products include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these by-products in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
Turbidity (NTU)	TT((-))	-	TT	N/A	Soil runoff	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
<i>Giardia lamblia</i> Viruses <i>Cryptosporidium</i>	TT((-))	-	TT((-))	<u>N/A</u>	Human and animal fecal waste	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
Heterotrophic plate count (HPC) bacteria	TT((-))	-	TT((-))	<u>N/A</u>	HPC measures a range of bacteria that are naturally present in the environment	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
Legionella	TT((-))	-	TT((-))	<u>N/A</u>	Found naturally in water; multiplies in heating systems	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
<b>Radioactive Contaminants</b>						
Beta/photon emitters (mrem/yr)	4 mrem/yr	-	4	<u>N/A</u> 0	Decay of natural and man-made deposits	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/l)	15 pCi/l	-	15	<u>N/A</u> 0	Erosion of natural deposits	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/l)	5 pCi/l	-	5	<u>N/A</u> 0	Erosion of natural deposits	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium (pCi/l)	30 micro g/l	-	30	0	Erosion of natural deposits	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.
<b>Inorganic Contaminants</b>						
Antimony (ppb)	.006	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Arsenic (ppb) *Effective 1/23/06	.05 0.010	1000 1000	50 10	<u>N/A</u> 0	Erosion of natural deposits; Runoff from orchards; Run-off from glass and electronics production wastes	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
Asbestos (MFL)	7 MFL	-	7	7	Decay of asbestos cement water mains; Erosion of natural deposits	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2	-	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Beryllium (ppb)	.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
Cadmium (ppb)	.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
Chromium (ppb)	.1	1000	100	100	Discharge from steel and pulp mills; Erosion of natural deposits	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
Copper (ppm)	AL = 1.3	-	AL = 1.3	1.3	Corrosion of household plumbing systems; Erosion of natural deposits	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
Cyanide (ppb)	.2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Fluoride (ppm)	4	-	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
Lead (ppb)	AL = .015	1000	AL = 15	0	Corrosion of household plumbing systems; Erosion of natural deposits	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
Mercury [inorganic] (ppb)	.002	1000	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
Nitrate (ppm)	10	-	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Nitrite (ppm)	1	-	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb)	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Thallium (ppb)	.002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
<b>Synthetic Organic Contaminants including Pesticides and Herbicides</b>						
2,4-D (ppb)	.07	1000	70	70	Runoff from herbicide used on row crops	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
2,4,5-TP [Silvex](ppb)	.05	1000	50	50	Residue of banned herbicide	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
Acrylamide	TT	-	TT	0	Added to water during sewage/ wastewater treatment	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
Alachlor (ppb)	.002	1000	2	0	Runoff from herbicide used on row crops	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
Atrazine (ppb)	.003	1000	3	3	Runoff from herbicide used on row crops	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
Benzo(a)pyrene [PAH] (nanograms/l)	.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
Chlordane (ppb)	.002	1000	2	0	Residue of banned termiticide	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Dalapon (ppb)	.2	1000	200	200	Runoff from herbicide used on rights of way	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
Di(2-ethylhexyl) adipate (ppb)	.4	1000	400	400	Discharge from chemical factories	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects or reproductive difficulties.
Di(2-ethylhexyl) phthalate (ppb)	.006	1000	6	0	Discharge from rubber and chemical factories	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Dibromochloropropane (ppt)	.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
Dinoseb (ppb)	.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
Diquat (ppb)	.02	1000	20	20	Runoff from herbicide use	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
Dioxin [2,3,7,8-TCDD] (ppq)	.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
Endothall (ppb)	.1	1000	100	100	Runoff from herbicide use	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
Endrin (ppb)	.002	1000	2	2	Residue of banned insecticide	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
Epichlorohydrin	TT	-	TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.



Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Ethylene dibromide (ppt)	.00005	1,000,000	50	0	Discharge from petroleum refineries	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
Glyphosate (ppb)	.7	1000	700	700	Runoff from herbicide use	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
Heptachlor (ppt)	.0004	1,000,000	400	0	Residue of banned pesticide	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
Heptachlor epoxide (ppt)	.0002	1,000,000	200	0	Breakdown of heptachlor	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
Hexachlorobenzene (ppb)	.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
Hexachlorocyclopentadiene (ppb)	.05	1000	50	50	Discharge from chemical factories	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
Lindane (ppt)	.0002	1,000,000	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
Methoxychlor (ppb)	.04	1000	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
Oxamyl [Vydate] (ppb)	.2	1000	200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
PCBs [Polychlorinated biphenyls] (ppt)	.0005	1,000,000	500	0	Runoff from landfills; Discharge of waste chemicals	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
Pentachlorophenol (ppb)	.001	1000	1	0	Discharge from wood preserving factories	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Picloram (ppb)	.5	1000	500	500	Herbicide runoff	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
Simazine (ppb)	.004	1000	4	4	Herbicide runoff	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
Toxaphene (ppb)	.003	1000	3	0	Runoff/leaching from insecticide used on cotton and cattle	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
<b>Volatile Organic Contaminants</b>						
Benzene (ppb)	.005	1000	5	0	Discharge from factories; Leaching from gas storage tanks and landfills	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
Bromate (ppb)	.010	1000	10	0	By-product of drinking water disinfection	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Carbon tetrachloride (ppb)	.005	1000	5	0	Discharge from chemical plants and other industrial activities	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
Chloramines (ppm)	MRDL = 4	-	MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use drinking water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine (ppm)	MRDL = 4	-	MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use drinking water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorite (ppm)	1	-	1	0.8	By-product of drinking water disinfection	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant mothers who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
Chlorine dioxide (ppb)	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant mothers who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
Chlorobenzene (ppb)	.1	1000	100	100	Discharge from chemical and agricultural chemical factories	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
o-Dichlorobenzene (ppb)	.6	1000	600	600	Discharge from industrial chemical factories	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
p-Dichlorobenzene (ppb)	.075	1000	75	75	Discharge from industrial chemical factories	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
1,2-Dichloroethane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
1,1-Dichloroethylene (ppb)	.007	1000	7	7	Discharge from industrial chemical factories	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
cis-1,2-Dichloroethylene (ppb)	.07	1000	70	70	Discharge from industrial chemical factories	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
trans-1,2-Dichloroethylene (ppb)	.1	1000	100	100	Discharge from industrial chemical factories	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
Dichloromethane (ppb)	.005	1000	5	0	Discharge from pharmaceutical and chemical factories	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
1,2-Dichloropropane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene (ppb)	.7	1000	700	700	Discharge from petroleum refineries	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
Haloacetic Acids (HAA) (ppb)	.060	1000	60	n/a	By-product of drinking water disinfection	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
Styrene (ppb)	.1	1000	100	100	Discharge from rubber and plastic factories; Leaching from landfills	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
Tetrachloroethylene (ppb)	.005	1000	5	0	Discharge from factories and dry cleaners	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
1,2,4-Trichlorobenzene (ppb)	.07	1000	70	70	Discharge from textile-finishing factories	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
1,1,1-Trichloroethane (ppb)	.2	1000	200	200	Discharge from metal degreasing sites and other factories	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
1,1,2-Trichloroethane (ppb)	.005	1000	5	3	Discharge from industrial chemical factories	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
Trichloroethylene (ppb)	.005	1000	5	0	Discharge from metal degreasing sites and other factories	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
TTHMs [Total trihalomethanes] (ppb)	.080	1000	80	N/A	By-product of drinking water disinfection	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Toluene (ppm)	1	-	1	1	Discharge from petroleum factories	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
Vinyl Chloride (ppb)	.002	1000	2	0	Leaching from PVC piping; Discharge from plastics factories	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
Xylenes (ppm)	10	-	10	10	Discharge from petroleum factories; Discharge from chemical factories	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
<b><u>Treatment Technique Violations</u></b>						
Groundwater rule TT violations	TT	=	TT	N/A	=	<u>Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.</u>
<p><b>Key</b></p> <p><b>AL</b> = Action Level</p> <p><b>MCL</b> = Maximum Contaminant Level</p> <p><b>MCLG</b> = Maximum Contaminant Level Goal</p> <p><b>MFL</b> = million fibers per liter</p> <p><b>MRDL</b> = Maximum Residual Disinfectant Level</p> <p><b>MRDLG</b> = Maximum Residual Disinfectant Level Goal</p> <p><b>mrem/year</b> = millirems per year (a measure of radiation absorbed by the body)</p> <p><b>N/A</b> = Not Applicable</p>						

Contaminant (units)	traditional MCL in mg/L	to convert for CCR, multiply by	MCL in CCR units	MCLG	Major Sources in Drinking Water	Health Effects Language
<p>NTU = Nephelometric Turbidity Units (a measure of water clarity)                      pCi/l = picocuries per liter (a measure of radioactivity)                      ppm = parts per million, or milligrams per liter (mg/l)                      ppb = parts per billion, or micrograms per liter ( µg/l)                      ppt = parts per trillion, or nanograms per liter                      ppq = parts per quadrillion, or picograms per liter                      TT = Treatment Technique</p>						

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

**NEW SECTION**

**WAC 246-290-72013 Report contents—Groundwater systems.** (1) This section specifies the requirements for information to be included in each report for groundwater systems. It applies to the following situations:

- (a) A significant deficiency that is uncorrected at the time of the report;
  - (b) An *E. coli* positive groundwater sample that is not invalidated under WAC 246-290-320 (2)(g)(vii) at the time of the report.
- (2) The system must report annually the information in subsection (1)(a) and (b) of this section until the department determines the significant deficiency or *E. coli* positive groundwater sample is addressed under WAC 246-290-453(1).
- (3) Each report must include:
- (a) The nature of the significant deficiency or the source of the fecal contamination and the date the significant deficiency was identified by the department or the dates of the *E. coli* positive source water samples;
  - (b) If the fecal contamination has been addressed under WAC 246-290-453(1) and the date of such action;
  - (c) For each significant deficiency or fecal contamination that has not been addressed under WAC 246-290-453(1), the department-approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed;
  - (d) If the system receives notice as described in subsection (1)(b) of this section, the potential health effects language in WAC 246-290-72012, regulated contaminants.
- (4) If directed by the department, a system with significant deficiencies that have been corrected before the next report must inform its customers of:
- (a) The significant deficiency;
  - (b) How the significant deficiency was corrected; and
  - (c) The date of correction.

Title of Rule and Other Identifying Information: Chapter 246-221 WAC, Radiation protection standards, chapter 246-231 WAC; Packaging and transportation of radioactive material, and chapter 246-240 WAC, Radiation protection—Medical use of radioactive material.

Hearing Location(s): Department of Health, Town Center 2, Room 344, 111 Israel Road S.E., Tumwater, WA 98501, on August 16, 2010, at 10:00 a.m.

Date of Intended Adoption: August 17, 2010.

Submit Written Comments to: Traci Black, Office of Radiation Protection, Department of Health, P.O. Box 47827, Olympia, WA 98504-7827, traci.black@doh.wa.gov, web site <http://www3.doh.wa.gov/policyreview/>, fax (360) 236-2255, by August 16, 2010.

Assistance for Persons with Disabilities: Contact Joy Redman by August 9, 2010, TTY (800) 833-6388 or 711.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The International Atomic Energy Agency (IAEA) has coordinated international agreements which have resulted in new transportation requirements for radioactive material. The United States Nuclear Regulatory Commission (NRC) has amended federal transportation regulations as a result of these international agreements. The NRC has also made recent corrections and minor amendments to the rules governing the medical use of radioactive material. The proposed rule will eliminate conflicts, duplications, or gaps between the NRC and our state program.

Corrections to the table footnotes are made at the end of WAC 246-231-200. Editorial changes to match federal language are made in chapter 246-240 WAC. In addition, the proposed rules correct a typographical error in WAC 246-221-290.

Reasons Supporting Proposal: Under the formal agreement originally signed in 1966 by the governor of the state of Washington and the chairman of the Atomic Energy Commission (now the NRC), our state radiation control program is required to remain compatible with NRC's program. This is primarily done through consistency of rules from the federal to state level.

Statutory Authority for Adoption: RCW 70.98.050.

Statute Being Implemented: RCW 70.98.050.

Rule is necessary because of federal law, 69 F.R. 3697 and 71 F.R. 15005.

Name of Proponent: Department of health, governmental.

**WSR 10-14-098  
 PROPOSED RULES  
 DEPARTMENT OF HEALTH**

[Filed July 6, 2010, 11:51 a.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Name of Agency Personnel Responsible for Drafting: Traci Black, 111 Israel Road S.E., Tumwater, WA 98501, (360) 236-3259; Implementation and Enforcement: Terry Frazee, 111 Israel Road S.E., Tumwater, WA 98501, (360) 236-3213.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Under RCW 19.85.025 and 34.05.310 (4)(c), a small business economic impact statement is not required for proposed rules that adopt or incorporate by reference - without material change - federal statutes or regulations, the rules of other Washington state agencies, or national consensus codes that generally establish industry standards.

A cost-benefit analysis is not required under RCW 34.05.328. The agency did not complete a cost-benefit analysis under RCW 34.05.328. RCW 34.05.328 (5)(b)(iii) exempts rules that adopt or incorporate by reference without material change federal statutes or regulations, the rules of other Washington state agencies, or national consensus codes that generally establish industry standards.

July 6, 2010

Mary C. Selecky  
Secretary

AMENDATORY SECTION (Amending WSR 09-06-003, filed 2/18/09, effective 3/21/09)

**WAC 246-221-290 Appendix A—Annual limits on intake (ALI) and derived air concentrations (DAC) of radionuclides for occupational exposure; effluent concentrations; concentrations for release to sanitary sewerage.** For each radionuclide, Table I indicates the chemical form which is to be used for selecting the appropriate ALI or DAC value. The ALIs and DACs for inhalation are given for an aerosol with an activity median aerodynamic diameter (AMAD) of 1  $\mu\text{m}$  (micron) and for three classes (D,W,Y) of radioactive material, which refer to their retention (approximately days, weeks or years) in the pulmonary region of the lung. This classification applies to a range of clearance half-times for D if less than ten days, for W from ten to one hundred days, and for Y greater than one hundred days. Table II provides concentration limits for airborne and liquid effluents released to the general environment. Table III provides concentration limits for discharges to sanitary sewerage.

Note: The values in Tables I, II, and III are presented in the computer "E" notation. In this notation a value of 6E-02 represents a value of  $6 \times 10^{-2}$  or 0.06, 6E+2 represents  $6 \times 10^2$  or 600, and 6E+0 represents  $6 \times 10^0$  or 6.

Table I "Occupational Values"

Note that the columns in Table I of this appendix captioned "Oral Ingestion ALI," "Inhalation ALI," and "DAC," are applicable to occupational exposure to radioactive material.

The ALIs in this appendix are the annual intakes of given radionuclide by "Reference Man" which would result in either: A committed effective dose equivalent of 0.05 Sv (5 rem), stochastic ALI; or a committed dose equivalent of 0.5 Sv (50 rem) to an organ or tissue, nonstochastic ALI. The sto-

chastic ALIs were derived to result in a risk, due to irradiation of organs and tissues, comparable to the risk associated with deep dose equivalent to the whole body of 0.05 Sv (5 rem). The derivation includes multiplying the committed dose equivalent to an organ or tissue by a weighting factor,  $w_T$ . This weighting factor is the proportion of the risk of stochastic effects resulting from irradiation of the organ or tissue, T, to the total risk of stochastic effects when the whole body is irradiated uniformly. The values of  $w_T$  are listed under the definition of weighting factor in WAC 246-221-005. The nonstochastic ALIs were derived to avoid nonstochastic effects, such as prompt damage to tissue or reduction in organ function.

A value of  $w_T = 0.06$  is applicable to each of the five organs or tissues in the "remainder" category receiving the highest dose equivalents, and the dose equivalents of all other remaining tissues may be disregarded. The following portions of the GI tract — stomach, small intestine, upper large intestine, and lower large intestine — are to be treated as four separate organs.

Note that the dose equivalents for an extremity, elbows, arms below the elbows, feet and lower legs, knees, and legs below the knees, skin, and lens of the eye are not considered in computing the committed effective dose equivalent, but are subject to limits that must be met separately.

When an ALI is defined by the stochastic dose limit, this value alone is given. When an ALI is determined by the nonstochastic dose limit to an organ, the organ or tissue to which the limit applies is shown, and the ALI for the stochastic limit is shown in parentheses. Abbreviated organ or tissue designations are used:

LLI wall = lower large intestine wall;  
St. wall = stomach wall;  
Blad wall = bladder wall; and  
Bone surf = bone surface.

The use of the ALIs listed first, the more limiting of the stochastic and nonstochastic ALIs, will ensure that nonstochastic effects are avoided and that the risk of stochastic effects is limited to an acceptably low value. If, in a particular situation involving a radionuclide for which the nonstochastic ALI is limiting, use of that nonstochastic ALI is considered unduly conservative, the licensee may use the stochastic ALI to determine the committed effective dose equivalent. However, the licensee shall also ensure that the 0.5 Sv (50 rem) dose equivalent limit for any organ or tissue is not exceeded by the sum of the external deep dose equivalent plus the internal committed dose equivalent to that organ, not the effective dose. For the case where there is no external dose contribution, this would be demonstrated if the sum of the fractions of the nonstochastic ALIs ( $ALI_{ns}$ ) that contribute to the committed dose equivalent to the organ receiving the highest dose does not exceed unity, that is,  $\sum (\text{intake (in } \mu\text{Ci)})$  of each radionuclide/ $ALI_{ns}) \leq 1.0$ . If there is an external deep dose equivalent contribution of  $H_d$ , then this sum must be less than  $1 - (H_d/50)$ , instead of  $\leq 1.0$ .

The derived air concentration (DAC) values are derived limits intended to control chronic occupational exposures. The relationship between the DAC and the ALI is given by:

$$\text{DAC} = \text{ALI (in } \mu\text{Ci)} / (2000 \text{ hours per working year} \times 60 \text{ minutes/hour} \times 2 \times 10^4 \text{ ml per minute}) = [\text{ALI} / 2.4 \times 10^9] \mu\text{Ci/ml},$$

where  $2 \times 10^4$  ml per minute is the volume of air breathed per minute at work by Reference Man under working conditions of light work.

The DAC values relate to one of two modes of exposure: Either external submersion or the internal committed dose equivalents resulting from inhalation of radioactive materials. DACs based upon submersion are for immersion in a semi-infinite cloud of uniform concentration and apply to each radionuclide separately.

The ALI and DAC values include contributions to exposure by the single radionuclide named and any in-growth of daughter radionuclides produced in the body by decay of the parent. However, intakes that include both the parent and daughter radionuclides should be treated by the general method appropriate for mixtures.

The values of ALI and DAC do not apply directly when the individual both ingests and inhales a radionuclide, when the individual is exposed to a mixture of radionuclides by either inhalation or ingestion or both, or when the individual is exposed to both internal and external irradiation. See WAC 246-221-015. When an individual is exposed to radioactive materials which fall under several of the translocation classifications of the same radionuclide, such as, Class D, Class W, or Class Y, the exposure may be evaluated as if it were a mixture of different radionuclides.

It should be noted that the classification of a compound as Class D, W, or Y is based on the chemical form of the compound and does not take into account the radiological half-life of different radionuclides. For this reason, values are given for Class D, W, and Y compounds, even for very short-lived radionuclides.

#### Table II "Effluent Concentrations"

The columns in Table II of this appendix captioned "Effluents," "Air" and "Water" are applicable to the assessment and control of dose to the public, particularly in the implementation of the provisions of WAC 246-221-070. The concentration values given in Columns 1 and 2 of Table II are equivalent to the radionuclide concentrations which, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.50 mSv (0.05 rem).

Consideration of nonstochastic limits has not been included in deriving the air and water effluent concentration limits because nonstochastic effects are presumed not to occur at or below the dose levels established for individual members of the public. For radionuclides, where the nonstochastic limit was governing in deriving the occupational DAC, the stochastic ALI was used in deriving the corresponding airborne effluent limit in Table II. For this reason,

the DAC and airborne effluent limits are not always proportional as was the case in the previous Appendix A of this chapter.

The air concentration values listed in Table II, Column 1 were derived by one of two methods. For those radionuclides for which the stochastic limit is governing, the occupational stochastic inhalation ALI was divided by  $2.4 \times 10^9$ , relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of three hundred. The factor of three hundred includes the following components: A factor of fifty to relate the 0.05 Sv (5 rem) annual occupational dose limit to the 1 mSv (0.1 rem) limit for members of the public, a factor of three to adjust for the difference in exposure time and the inhalation rate for a worker and that for members of the public; and a factor of two to adjust the occupational values, derived for adults, so that they are applicable to other age groups.

For those radionuclides for which submersion, that is external dose, is limiting, the occupational DAC in Table I, Column 3 was divided by two hundred nineteen. The factor of two hundred nineteen is composed of a factor of fifty, as described above, and a factor of 4.38 relating occupational exposure for two thousand hours per year to full-time exposure (eight thousand seven hundred sixty hours per year). Note that an additional factor of two for age considerations is not warranted in the submersion case.

The water concentrations were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^7$ . The factor of  $7.3 \times 10^7$  (ml) includes the following components: The factors of fifty and two described above and a factor of  $7.3 \times 10^5$  (ml) which is the annual water intake of Reference Man.

Note 2 of this appendix provides groupings of radionuclides which are applicable to unknown mixtures of radionuclides. These groupings, including occupational inhalation ALIs and DACs, air and water effluent concentrations and releases to sewer, require demonstrating that the most limiting radionuclides in successive classes are absent. The limit for the unknown mixture is defined when the presence of one of the listed radionuclides cannot be definitely excluded as being present either from knowledge of the radionuclide composition of the source or from actual measurements.

#### Table III "Releases to Sewers"

The monthly average concentrations for release to sanitary sewerage are applicable to the provisions in WAC 246-221-190. The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^6$  (ml). The factor of  $7.3 \times 10^6$  (ml) is composed of a factor of  $7.3 \times 10^5$  (ml), the annual water intake by Reference Man, and a factor of ten, such that the concentrations, if the sewage released by the licensee were the only source of water ingested by a Reference Man during a year, would result in a committed effective dose equivalent of 5 mSv (0.5 rem).



## LIST OF ELEMENTS

Name	Symbol	Atomic Number	Name	Symbol	Atomic Number
Actinium	Ac	89	Molybdenum	Mo	42
Aluminum	Al	13	Neodymium	Nd	60
Americium	Am	95	Neptunium	Np	93
Antimony	Sb	51	Nickel	Ni	28
Argon	Ar	18	Nitrogen	N	7
Arsenic	As	33	Niobium	Nb	41
Astatine	At	85	Osmium	Os	76
Barium	Ba	56	Oxygen	O	8
Berkelium	Bk	97	Palladium	Pd	46
Beryllium	Be	4	Phosphorus	P	15
Bismuth	Bi	83	Platinum	Pt	78
Bromine	Br	35	Plutonium	Pu	94
Cadmium	Cd	48	Polonium	Po	84
Calcium	Ca	20	Potassium	K	19
Californium	Cf	98	Praseodymium	Pr	59
Carbon	C	6	Promethium	Pm	61
Cerium	Ce	58	Protactinium	Pa	91
Cesium	Cs	55	Radium	Ra	88
Chlorine	Cl	17	Radon	Rn	86
Chromium	Cr	24	Rhenium	Re	75
Cobalt	Co	27	Rhodium	Rh	45
Copper	Cu	29	Rubidium	Rb	37
Curium	Cm	96	Ruthenium	Ru	44
Dysprosium	Dy	66	Samarium	Sm	62
Einsteinium	Es	99	Scandium	Sc	21
Erbium	Er	68	Selenium	Se	34
Europium	Eu	63	Silicon	Si	14
Fermium	Fm	100	Silver	Ag	47
Fluorine	F	9	Sodium	Na	11
Francium	Fr	87	Strontium	Sr	38
Gadolinium	Gd	64	Sulfur	S	16
Gallium	Ga	31	Tantalum	Ta	73
Germanium	Ge	32	Technetium	Tc	43
Gold	Au	79	Tellurium	Te	52
Hafnium	Hf	72	Terbium	Tb	65
Holmium	Ho	67	Thallium	Tl	81
Hydrogen	H	1	Thorium	Th	90
Indium	In	49	Thulium	Tm	69
Iodine	I	53	Tin	Sn	50
Iridium	Ir	77	Titanium	Ti	22
Iron	Fe	26	Tungsten	W	74
Krypton	Kr	36	Uranium	U	92
Lanthanum	La	57	Vanadium	V	23
Lead	Pb	82	Xenon	Xe	54

LIST OF ELEMENTS

Name	Symbol	Atomic Number	Name	Symbol	Atomic Number
Lutetium	Lu	71	Ytterbium	Yb	70
Magnesium	Mg	12	Yttrium	Y	39
Manganese	Mn	25	Zinc	Zn	30
Mendelevium	Md	101	Zirconium	Zr	40
Mercury	Hg	80			

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion  ALI μCi	Inhalation  ALI μCi      DAC μCi/ml		Air μCi/ml	Water μCi/ml	
1	Hydrogen-3	Water, DAC includes skin absorption	8E+4	8E+4	2E-5	1E-7	1E-3	1E-2
Gas (HT or T <sub>2</sub> ) Submersion <sup>1</sup> : Use above values as HT and T <sub>2</sub> oxidize in air and in the body to HTO.								
4	Beryllium-7	W, all compounds except those given for Y	4E+4	2E+4	9E-6	3E-8	6E-4	6E-3
		Y, oxides, halides, and nitrates	-	2E+4	8E-6	3E-8	-	-
4	Beryllium-10	W, see <sup>7</sup> Be	1E+3	2E+2	6E-8	2E-10	-	-
		LLI wall (1E+3)	-	-	-	-	2E-5	2E-4
		Y, see <sup>7</sup> Be	-	1E+1	6E-9	2E-11	-	-
6	Carbon-11 <sup>2</sup>	Monoxide	-	1E+6	5E-4	2E-6	-	-
		Dioxide	-	6E+5	3E-4	9E-7	-	-
		Compounds	4E+5	4E+5	2E-4	6E-7	6E-3	6E-2
6	Carbon-14	Monoxide	-	2E+6	7E-4	2E-6	-	-
		Dioxide	-	2E+5	9E-5	3E-7	-	-
		Compounds	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
7	Nitrogen-13 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-
8	Oxygen-15 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-
9	Fluorine-18 <sup>2</sup>	D, fluorides of H, Li, Na, K, Rb, Cs, and Fr	5E+4	7E+4	3E-5	1E-7	-	-
		St wall (5E+4)	-	-	-	-	7E-4	7E-3
		W, fluorides of Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, As, Sb, Bi, Fe, Ru, Os, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, V, Nb, Ta, Mn, Tc, and ReY, lanthanum fluoride	-	9E+4	4E-5	1E-7	-	-
			-	8E+4	3E-5	1E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
11	Sodium-22	D, all compounds	4E+2	6E+2	3E-7	9E-10	6E-6	6E-5
11	Sodium-24	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
12	Magnesium-28	D, all compounds except those given for W W, oxides, hydroxides, carbides, halides, and nitrates	7E+2 -	2E+3 1E+3	7E-7 5E-7	2E-9 2E-9	9E-6 -	9E-5 -
13	Aluminum-26	D, all compounds except those given for W W, oxides, hydroxides, carbides, halides, and nitrates	4E+2 -	6E+1 9E+1	3E-8 4E-8	9E-11 1E-10	6E-6 -	6E-5 -
14	Silicon-31	D, all compounds except those given for W and Y W, oxides, hydroxides, carbides, and nitrates Y, aluminosilicate glass	9E+3 - -	3E+4 3E+4 3E+4	1E-5 1E-5 1E-5	4E-8 5E-8 4E-8	1E-4 - -	1E-3 - -
14	Silicon-32	D, see <sup>31</sup> Si  W, see <sup>31</sup> Si Y, see <sup>31</sup> Si	2E+3 LLI wall (3E+3) - -	2E+2 - 1E+2 5E+0	1E-7 - 5E-8 2E-9	3E-10 - 2E-10 7E-12	- 4E-5 - -	- 4E-4 - -
15	Phosphorus-32	D, all compounds except phosphates given for W W, phosphates of Zn <sup>2+</sup> , S <sup>3+</sup> , Mg <sup>2+</sup> , Fe <sup>3+</sup> , Bi <sup>3+</sup> , and lanthanides	6E+2 -	9E+2 4E+2	4E-7 2E-7	1E-9 5E-10	9E-6 -	9E-5 -
15	Phosphorus-33	D, see <sup>32</sup> P W, see <sup>32</sup> P	6E+3 -	8E+3 3E+3	4E-6 1E-6	1E-8 4E-9	8E-5 -	8E-4 -
16	Sulfur-35	Vapor D, sulfides and sulfates except those given for W  W, elemental sulfur, sulfides of Sr, Ba, Ge, Sn, Pb, As, Sb, Bi, Cu, Ag, Au, Zn, Cd, Hg, W, and Mo. Sulfates of Ca, Sr, Ba, Ra, As, Sb, and Bi	- 1E+4 LLI wall (8E+3) 6E+3 -	1E+4 2E+4 - 2E+3	6E-6 7E-6 - 9E-7	2E-8 2E-8 - 3E-9	- - 1E-4 -	- - 1E-3 -
17	Chlorine-36	D, chlorides of H, Li, Na, K, Rb, Cs, and Fr	2E+3	2E+3	1E-6	3E-9	2E-5	2E-4

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
		W, chlorides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, and Re	-	2E+2	1E-7	3E-10	-	-
17	Chlorine-38 <sup>2</sup>	D, see <sup>36</sup> Cl	2E+4	4E+4	2E-5	6E-8	-	-
		St wall (3E+4)	-	-	-	-	3E-4	3E-3
		W, see <sup>36</sup> Cl	-	5E+4	2E-5	6E-8	-	-
17	Chlorine-39 <sup>2</sup>	D, see <sup>36</sup> Cl	2E+4	5E+4	2E-5	7E-8	-	-
		St wall (4E+4)	-	-	-	-	5E-4	5E-3
		W, see <sup>36</sup> Cl	-	6E+4	2E-5	8E-8	-	-
18	Argon-37	Submersion <sup>1</sup>	-	-	1E+0	6E-3	-	-
18	Argon-39	Submersion <sup>1</sup>	-	-	2E-4	8E-7	-	-
18	Argon-41	Submersion <sup>1</sup>	-	-	3E-6	1E-8	-	-
19	Potassium-40	D, all compounds	3E+2	4E+2	2E-7	6E-10	4E-6	4E-5
19	Potassium-42	D, all compounds	5E+3	5E+3	2E-6	7E-9	6E-5	6E-4
19	Potassium-43	D, all compounds	6E+3	9E+3	4E-6	1E-8	9E-5	9E-4
19	Potassium-44 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	9E-8	-	-
		St wall (4E+4)	-	-	-	-	5E-4	5E-3
19	Potassium-45 <sup>2</sup>	D, all compounds	3E+4	1E+5	5E-5	2E-7	-	-
		St wall (5E+4)	-	-	-	-	7E-4	7E-3
20	Calcium-41	W, all compounds	3E+3	4E+3	2E-6	-	-	-
		Bone surf (4E+3)	-	Bone surf (4E+3)	-	5E-9	6E-5	6E-4
20	Calcium-45	W, all compounds	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
20	Calcium-47	W, all compounds	8E+2	9E+2	4E-7	1E-9	1E-5	1E-4
21	Scandium-43	Y, all compounds	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
21	Scandium-44m	Y, all compounds	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5
21	Scandium-44	Y, all compounds	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
21	Scandium-46	Y, all compounds	9E+2	2E+2	1E-7	3E-10	1E-5	1E-4
21	Scandium-47	Y, all compounds	2E+3	3E+3	1E-6	4E-9	-	-
		LLI wall (3E+3)	-	-	-	-	4E-5	4E-4
21	Scandium-48	Y, all compounds	8E+2	1E+3	6E-7	2E-9	1E-5	1E-4
21	Scandium-49 <sup>2</sup>	Y, all compounds	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
22	Titanium-44	D, all compounds except those given for W and Y	3E+2	1E+1	5E-9	2E-11	4E-6	4E-5
		W, oxides, hydroxides, carbides, halides, and nitrates	-	3E+1	1E-8	4E-11	-	-
		Y, SrTiO	-	6E+0	2E-9	8E-12	-	-
22	Titanium-45	D, see <sup>44</sup> Ti	9E+3	3E+4	1E-5	3E-8	1E-4	1E-3
		W, see <sup>44</sup> Ti	-	4E+4	1E-5	5E-8	-	-
		Y, see <sup>44</sup> Ti	-	3E+4	1E-5	4E-8	-	-
23	Vanadium-472	D, all compounds except those given for W	3E+4	8E+4	3E-5	1E-7	-	-
		St wall (3E+4)	-	-	-	-	4E-4	4E-3
		W, oxides, hydroxides, carbides, and halides	-	1E+5	4E-5	1E-7	-	-
23	Vanadium-48	D, see <sup>47</sup> V	6E+2	1E+3	5E-7	2E-9	9E-6	9E-5
		W, see <sup>47</sup> V	-	6E+2	3E-7	9E-10	-	-
23	Vanadium-49	D, see <sup>47</sup> V	7E+4	3E+4	1E-5	-	-	-
		LLI wall (9E+4)	-	Bone surf (3E+4)	-	5E-8	1E-3	1E-2
		W, see <sup>47</sup> V	-	2E+4	8E-6	2E-8	-	-
24	Chromium-48	D, all compounds except those given for W and Y	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
		W, halides and nitrates	-	7E+3	3E-6	1E-8	-	-
		Y, oxides and hydroxides	-	7E+3	3E-6	1E-8	-	-
24	Chromium-49 <sup>2</sup>	D, see <sup>48</sup> Cr	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
		W, see <sup>48</sup> Cr	-	1E+5	4E-5	1E-7	-	-
		Y, see <sup>48</sup> Cr	-	9E+4	4E-5	1E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
24	Chromium-51	D, see <sup>48</sup> Cr	4E+4	5E+4	2E-5	6E-8	5E-4	5E-3
		W, see <sup>48</sup> Cr	-	2E+4	1E-5	3E-8	-	-
		Y, see <sup>48</sup> Cr	-	2E+4	8E-6	3E-8	-	-
25	Manganese-51 <sup>2</sup>	D, all compounds except those given for W	2E+4	5E+4	2E-5	7E-8	3E-4	3E-3
		W, oxides, hydroxides, halides, and nitrates	-	6E+4	3E-5	8E-8	-	-
25	Manganese-52m <sup>2</sup>	D, see <sup>51</sup> Mn	3E+4	9E+4	4E-5	1E-7	-	-
		W, see <sup>51</sup> Mn	St wall (4E+4)	-	-	-	5E-4	5E-3
25	Manganese-52	D, see <sup>51</sup> Mn	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
		W, see <sup>51</sup> Mn	-	9E+2	4E-7	1E-9	-	-
25	Manganese-53	D, see <sup>51</sup> Mn	5E+4	1E+4	5E-6	-	7E-4	7E-3
		W, see <sup>51</sup> Mn	-	Bone surf (2E+4)	-	3E-8	-	-
25	Manganese-54	D, see <sup>51</sup> Mn	2E+3	9E+2	4E-7	1E-9	3E-5	3E-4
		W, see <sup>51</sup> Mn	-	8E+2	3E-7	1E-9	-	-
25	Manganese-56	D, see <sup>51</sup> Mn	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
		W, see <sup>51</sup> Mn	-	2E+4	9E-6	3E-8	-	-
26	Iron-52	D, all compounds except those given for W	9E+2	3E+3	1E-6	4E-9	1E-5	1E-4
		W, oxides, hydroxides, and halides	-	2E+3	1E-6	3E-9	-	-
26	Iron-55	D, see <sup>52</sup> Fe	9E+3	2E+3	8E-7	3E-9	1E-4	1E-3
		W, see <sup>52</sup> Fe	-	4E+3	2E-6	6E-9	-	-
26	Iron-59	D, see <sup>52</sup> Fe	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
		W, see <sup>52</sup> Fe	-	5E+2	2E-7	7E-10	-	-
26	Iron-60	D, see <sup>52</sup> Fe	3E+1	6E+0	3E-9	9E-12	4E-7	4E-6
		W, see <sup>52</sup> Fe	-	2E+1	8E-9	3E-11	-	-
27	Cobalt-55	W, all compounds except those given for Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		Y, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
27	Cobalt-56	W, see <sup>55</sup> Co	5E+2	3E+2	1E-7	4E-10	6E-6	6E-5
		Y, see <sup>55</sup> Co	4E+2	2E+2	8E-8	3E-10	-	-
27	Cobalt-57	W, see <sup>55</sup> Co	8E+3	3E+3	1E-6	4E-9	6E-5	6E-4
		Y, see <sup>55</sup> Co	4E+3	7E+2	3E-7	9E-10	-	-
27	Cobalt-58m	W, see <sup>55</sup> Co	6E+4	9E+4	4E-5	1E-7	8E-4	8E-3
		Y, see <sup>55</sup> Co	-	6E+4	3E-5	9E-8	-	-
27	Cobalt-58	W, see <sup>55</sup> Co	2E+3	1E+3	5E-7	2E-9	2E-5	2E-4
		Y, see <sup>55</sup> Co	1E+3	7E+2	3E-7	1E-9	-	-
27	Cobalt-60m <sup>2</sup>	W, see <sup>55</sup> Co	1E+6	4E+6	2E-3	6E-6	-	-
		St wall (1E+6)	-	-	-	-	2E-2	2E-1
27	Cobalt-60	Y, see <sup>55</sup> Co	-	3E+6	1E-3	4E-6	-	-
		W, see <sup>55</sup> Co	5E+2	2E+2	7E-8	2E-10	3E-6	3E-5
27	Cobalt-61 <sup>2</sup>	Y, see <sup>55</sup> Co	2E+2	3E+1	1E-8	5E-11	-	-
		W, see <sup>55</sup> Co	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
27	Cobalt-61 <sup>2</sup>	Y, see <sup>55</sup> Co	2E+4	6E+4	2E-5	8E-8	-	-
		W, see <sup>55</sup> Co	4E+4	2E+5	7E-5	2E-7	-	-
27	Cobalt-62m <sup>2</sup>	St wall (5E+4)	-	-	-	-	7E-4	7E-3
		Y, see <sup>55</sup> Co	-	2E+5	6E-5	2E-7	-	-
28	Nickel-56	D, all compounds except those given for W	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
		W, oxides, hydroxides, and carbides	-	1E+3	5E-7	2E-9	-	-
		Vapor	-	1E+3	5E-7	2E-9	-	-
28	Nickel-57	D, see <sup>56</sup> Ni	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
		W, see <sup>56</sup> Ni	-	3E+3	1E-6	4E-9	-	-
		Vapor	-	6E+3	3E-6	9E-9	-	-
28	Nickel-59	D, see <sup>56</sup> Ni	2E+4	4E+3	2E-6	5E-9	3E-4	3E-3
		W, see <sup>56</sup> Ni	-	7E+3	3E-6	1E-8	-	-
		Vapor	-	2E+3	8E-7	3E-9	-	-
28	Nickel-63	D, see <sup>56</sup> Ni	9E+3	2E+3	7E-7	2E-9	1E-4	1E-3
		W, see <sup>56</sup> Ni	-	3E+3	1E-6	4E-9	-	-
		Vapor	-	8E+2	3E-7	1E-9	-	-
28	Nickel-65	D, see <sup>56</sup> Ni	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
		W, see <sup>56</sup> Ni	-	3E+4	1E-5	4E-8	-	-
		Vapor	-	2E+4	7E-6	2E-8	-	-
28	Nickel-66	D, see <sup>56</sup> Ni	4E+2	2E+3	7E-7	2E-9	-	-
		LLI wall (5E+2)	-	-	-	-	6E-6	6E-5
		W, see <sup>56</sup> Ni	-	6E+2	3E-7	9E-10	-	-
		Vapor	-	3E+3	1E-6	4E-9	-	-
29	Copper-60 <sup>2</sup>	D, all compounds except those given for W and Y	3E+4	9E+4	4E-5	1E-7	-	-
		St wall (3E+4)	-	-	-	-	4E-4	4E-3
		W, sulfides, halides, and nitrates	-	1E+5	5E-5	2E-7	-	-
		Y, oxides and hydroxides	-	1E+5	4E-5	1E-7	-	-
29	Copper-61	D, see <sup>60</sup> Cu	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
		W, see <sup>60</sup> Cu	-	4E+4	2E-5	6E-8	-	-
		Y, see <sup>60</sup> Cu	-	4E+4	1E-5	5E-8	-	-
29	Copper-64	D, see <sup>60</sup> Cu	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
		W, see <sup>60</sup> Cu	-	2E+4	1E-5	3E-8	-	-
		Y, see <sup>60</sup> Cu	-	2E+4	9E-6	3E-8	-	-
29	Copper-67	D, see <sup>60</sup> Cu	5E+3	8E+3	3E-6	1E-8	6E-5	6E-4
		W, see <sup>60</sup> Cu	-	5E+3	2E-6	7E-9	-	-
		Y, see <sup>60</sup> Cu	-	5E+3	2E-6	6E-9	-	-
30	Zinc-62	Y, all compounds	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
30	Zinc-63 <sup>2</sup>	Y, all compounds	2E+4	7E+4	3E-5	9E-8	-	-
		St wall (3E+4)	-	-	-	-	3E-4	3E-3
30	Zinc-65	Y, all compounds	4E+2	3E+2	1E-7	4E-10	5E-6	5E-5
30	Zinc-69m	Y, all compounds	4E+3	7E+3	3E-6	1E-8	6E-5	6E-4
30	Zinc-69 <sup>2</sup>	Y, all compounds	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
30	Zinc-71m	Y, all compounds	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
30	Zinc-72	Y, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
31	Gallium-65 <sup>2</sup>	D, all compounds except those given for W	5E+4	2E+5	7E-5	2E-7	-	-



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
			St wall (6E+4)	-	-	-	9E-4	9E-3
		W, oxides, hydroxides, carbides, halides, and nitrates	-	2E+5	8E-5	3E-7	-	-
31	Gallium-66	D, see <sup>65</sup> Ga	1E+3	4E+3	1E-6	5E-9	1E-5	1E-4
		W, see <sup>65</sup> Ga	-	3E+3	1E-6	4E-9	-	-
31	Gallium-67	D, see <sup>65</sup> Ga	7E+3	1E+4	6E-6	2E-8	1E-4	1E-3
		W, see <sup>65</sup> Ga	-	1E+4	4E-6	1E-8	-	-
31	Gallium-68 <sup>2</sup>	D, see <sup>65</sup> Ga	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>65</sup> Ga	-	5E+4	2E-5	7E-8	-	-
31	Gallium-70 <sup>2</sup>	D, see <sup>65</sup> Ga	5E+4	2E+5	7E-5	2E-7	-	-
			St wall (7E+4)	-	-	-	1E-3	1E-2
		W, see <sup>65</sup> Ga	-	2E+5	8E-5	3E-7	-	-
31	Gallium-72	D, see <sup>65</sup> Ga	1E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		W, see <sup>65</sup> Ga	-	3E+3	1E-6	4E-9	-	-
31	Gallium-73	D, see <sup>65</sup> Ga	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
		W, see <sup>65</sup> Ga	-	2E+4	6E-6	2E-8	-	-
32	Germanium-66	D, all compounds except those given for W	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
		W, oxides, sulfides, and halides	-	2E+4	8E-6	3E-8	-	-
32	Germanium-67 <sup>2</sup>	D, see <sup>66</sup> Ge	3E+4	9E+4	4E-5	1E-7	-	-
			St wall (4E+4)	-	-	-	6E-4	6E-3
		W, see <sup>66</sup> Ge	-	1E+5	4E-5	1E-7	-	-
32	Germanium-68	D, see <sup>66</sup> Ge	5E+3	4E+3	2E-6	5E-9	6E-5	6E-4
		W, see <sup>66</sup> Ge	-	1E+2	4E-8	1E-10	-	-
32	Germanium-69	D, see <sup>66</sup> Ge	1E+4	2E+4	6E-6	2E-8	2E-4	2E-3
		W, see <sup>66</sup> Ge	-	8E+3	3E-6	1E-8	-	-
32	Germanium-71	D, see <sup>66</sup> Ge	5E+5	4E+5	2E-4	6E-7	7E-3	7E-2
		W, see <sup>66</sup> Ge	-	4E+4	2E-5	6E-8	-	-
32	Germanium-75 <sup>2</sup>	D, see <sup>66</sup> Ge	4E+4	8E+4	3E-5	1E-7	-	-
			St wall (7E+4)	-	-	-	9E-4	9E-3
		W, see <sup>66</sup> Ge	-	8E+4	4E-5	1E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
32	Germanium-77	D, see <sup>66</sup> Ge	9E+3	1E+4	4E-6	1E-8	1E-4	1E-3
		W, see <sup>66</sup> Ge	-	6E+3	2E-6	8E-9	-	-
32	Germanium-78 <sup>2</sup>	D, see <sup>66</sup> Ge	2E+4	2E+4	9E-6	3E-8	-	-
		W, see <sup>66</sup> Ge	St wall (2E+4)	-	-	-	3E-4	3E-3
33	Arsenic-69 <sup>2</sup>	W, all compounds	3E+4	1E+5	5E-5	2E-7	-	-
			St wall (4E+4)	-	-	-	6E-4	6E-3
33	Arsenic-70 <sup>2</sup>	W, all compounds	1E+4	5E+4	2E-5	7E-8	2E-4	2E-3
33	Arsenic-71	W, all compounds	4E+3	5E+3	2E-6	6E-9	5E-5	5E-4
33	Arsenic-72	W, all compounds	9E+2	1E+3	6E-7	2E-9	1E-5	1E-4
33	Arsenic-73	W, all compounds	8E+3	2E+3	7E-7	2E-9	1E-4	1E-3
33	Arsenic-74	W, all compounds	1E+3	8E+2	3E-7	1E-9	2E-5	2E-4
33	Arsenic-76	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
			4E+3	5E+3	2E-6	7E-9	-	-
33	Arsenic-77	W, all compounds	LLI wall (5E+3)	-	-	-	6E-5	6E-4
			8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
34	Selenium-78 <sup>2</sup>	W, all compounds	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
			2E+4	4E+4	2E-5	5E-8	1E-4	1E-3
34	Selenium-70 <sup>2</sup>	D, all compounds except those given for W	1E+4	4E+4	2E-5	6E-8	-	-
		W, oxides, hydroxides, carbides, and elemental Se	2E+4	4E+4	2E-5	6E-8	-	-
34	Selenium-73m <sup>2</sup>	D, see <sup>70</sup> Se	6E+4	2E+5	6E-5	2E-7	4E-4	4E-3
		W, see <sup>70</sup> Se	3E+4	1E+5	6E-5	2E-7	-	-
34	Selenium-73	D, see <sup>70</sup> Se	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
		W, see <sup>70</sup> Se	-	2E+4	7E-6	2E-8	-	-
34	Selenium-75	D, see <sup>70</sup> Se	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5
		W, see <sup>70</sup> Se	-	6E+2	3E-7	8E-10	-	-
34	Selenium-79	D, see <sup>70</sup> Se	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
		W, see <sup>70</sup> Se	-	6E+2	2E-7	8E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
34	Selenium-81m <sup>2</sup>	D, see <sup>70</sup> Se	4E+4	7E+4	3E-5	9E-8	3E-4	3E-3
		W, see <sup>70</sup> Se	2E+4	7E+4	3E-5	1E-7	-	-
34	Selenium-81 <sup>2</sup>	D, see <sup>70</sup> Se	6E+4	2E+5	9E-5	3E-7	-	-
		W, see <sup>70</sup> Se	St wall (8E+4)	-	-	-	1E-3	1E-2
34	Selenium-83 <sup>2</sup>	D, see <sup>70</sup> Se	4E+4	1E+5	5E-5	2E-7	4E-4	4E-3
		W, see <sup>70</sup> Se	3E+4	1E+5	5E-5	2E-7	-	-
35	Bromine-74m <sup>2</sup>	D, bromides of H, Li, Na, K, Rb, Cs, and Fr	1E+4	4E+4	2E-5	5E-8	-	-
		W, bromides of lantha- nides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Mn, Tc, and Re	St wall (2E+4)	-	-	-	3E-4	3E-3
35	Bromine-74 <sup>2</sup>	D, see <sup>74m</sup> Br	2E+4	7E+4	3E-5	1E-7	-	-
		W, see <sup>74m</sup> Br	St wall (4E+4)	-	-	-	5E-45E- 3	-
35	Bromine-75 <sup>2</sup>	D, see <sup>74m</sup> Br	3E+4	5E+4	2E-5	7E-8	-	-
		W, see <sup>74m</sup> Br	St wall (4E+4)	-	-	-	5E-4	5E-3
35	Bromine-76	D, see <sup>74m</sup> Br	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
		W, see <sup>74m</sup> Br	-	4E+3	2E-6	6E-9	-	-
35	Bromine-77	D, see <sup>74m</sup> Br	2E+4	2E+4	1E-5	3E-8	2E-4	2E-3
		W, see <sup>74m</sup> Br	-	2E+4	8E-6	3E-8	-	-
35	Bromine-80m	D, see <sup>74m</sup> Br	2E+4	2E+4	7E-6	2E-8	3E-4	3E-3
		W, see <sup>74m</sup> Br	-	1E+4	6E-6	2E-8	-	-
35	Bromine-80 <sup>2</sup>	D, see <sup>74m</sup> Br	5E+4	2E+5	8E-5	3E-7	-	-
		W, see <sup>74m</sup> Br	St wall (9E+4)	-	-	-	1E-3	1E-2
			-	2E+5	9E-5	3E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
35	Bromine-82	D, see <sup>74m</sup> Br	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
		W, see <sup>74m</sup> Br	-	4E+3	2E-6	5E-9	-	-
35	Bromine-83	D, see <sup>74m</sup> Br	5E+4	6E+4	3E-5	9E-8	-	-
		St wall (7E+4)	-	-	-	-	9E-4	9E-3
35	Bromine-84 <sup>2</sup>	W, see <sup>74m</sup> Br	-	6E+4	3E-5	9E-8	-	-
		D, see <sup>74m</sup> Br	2E+4	6E+4	2E-5	8E-8	-	-
35	Bromine-84 <sup>2</sup>	St wall (3E+4)	-	-	-	-	4E-4	4E-3
		W, see <sup>74m</sup> Br	-	6E+4	3E-5	9E-8	-	-
36	Krypton-74 <sup>2</sup>	Submersion <sup>1</sup>	-	-	3E-6	1E-8	-	-
36	Krypton-76	Submersion <sup>1</sup>	-	-	9E-6	4E-8	-	-
36	Krypton-77 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-
36	Krypton-79	Submersion <sup>1</sup>	-	-	2E-5	7E-8	-	-
36	Krypton-81	Submersion <sup>1</sup>	-	-	7E-4	3E-6	-	-
36	Krypton-83m <sup>2</sup>	Submersion <sup>1</sup>	-	-	1E-2	5E-5	-	-
36	Krypton-85m	Submersion <sup>1</sup>	-	-	2E-5	1E-7	-	-
36	Krypton-85	Submersion <sup>1</sup>	-	-	1E-4	7E-7	-	-
36	Krypton-87 <sup>2</sup>	Submersion <sup>1</sup>	-	-	5E-6	2E-8	-	-
36	Krypton-88	Submersion <sup>1</sup>	-	-	2E-6	9E-9	-	-
37	Rubidium-79 <sup>2</sup>	D, all compounds	4E+4	1E+5	5E-5	2E-7	-	-
		St wall (6E+4)	-	-	-	-	8E-4	8E-3
37	Rubidium-81m <sup>2</sup>	D, all compounds	2E+5	3E+5	1E-4	5E-7	-	-
		St wall (3E+5)	-	-	-	-	4E-3	4E-2
37	Rubidium-81	D, all compounds	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
37	Rubidium-82m	D, all compounds	1E+4	2E+4	7E-6	2E-8	2E-4	2E-3
37	Rubidium-83	D, all compounds	6E+2	1E+3	4E-7	1E-9	9E-6	9E-5
37	Rubidium-84	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air $\mu\text{Ci/ml}$	Water $\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$
				ALI $\mu\text{Ci}$	ALI $\mu\text{Ci}$			
37	Rubidium-86	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37	Rubidium-87	D, all compounds	1E+3	2E+3	6E-7	2E-9	1E-5	1E-4
37	Rubidium-88 <sup>2</sup>	D, all compounds	2E+4	6E+4	3E-5	9E-8	-	-
			St wall (3E+4)	-	-	-	4E-4	4E-3
37	Rubidium-89 <sup>2</sup>	D, all compounds	4E+4	1E+5	6E-5	2E-7	-	-
			St wall (6E+4)	-	-	-	9E-4	9E-3
38	Strontium-80 <sup>2</sup>	D, all soluble compounds except SrTiO	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
		Y, all insoluble compounds and SrTiO	-	1E+4	5E-6	2E-8	-	-
38	Strontium-81 <sup>2</sup>	D, see <sup>80</sup> Sr	3E+4	8E+4	3E-5	1E-7	3E-4	3E-3
		Y, see <sup>80</sup> Sr	2E+4	8E+4	3E-5	1E-7	-	-
38	Strontium-82	D, see <sup>80</sup> Sr	3E+2	4E+2	2E-7	6E-10	-	-
			LLI wall (2E+2)	-	-	-	3E-6	3E-5
		Y, see <sup>80</sup> Sr	2E+2	9E+1	4E-8	1E-10	-	-
38	Strontium-83	D, see <sup>80</sup> Sr	3E+3	7E+3	3E-6	1E-8	3E-5	3E-4
		Y, see <sup>80</sup> Sr	2E+3	4E+3	1E-6	5E-9	-	-
38	Strontium-85m <sup>2</sup>	D, see <sup>80</sup> Sr	2E+5	6E+5	3E-4	9E-7	3E-3	3E-2
		Y, see <sup>80</sup> Sr	-	8E+5	4E-4	1E-6	-	-
38	Strontium-85	D, see <sup>80</sup> Sr	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4
		Y, see <sup>80</sup> Sr	-	2E+3	6E-7	2E-9	-	-
38	Strontium-87m	D, see <sup>80</sup> Sr	5E+4	1E+5	5E-5	2E-7	6E-4	6E-3
		Y, see <sup>80</sup> Sr	4E+4	2E+5	6E-5	2E-7	-	-
38	Strontium-89	D, see <sup>80</sup> Sr	6E+2	8E+2	4E-7	1E-9	-	-
			LLI wall (6E+2)	-	-	-	8E-6	8E-5
		Y, see <sup>80</sup> Sr	5E+2	1E+2	6E-8	2E-10	-	-
38	Strontium-90	D, see <sup>80</sup> Sr	3E+1	2E+1	8E-9	-	-	-
			Bone surf (4E+1)	Bone surf (2E+1)	-	3E-11	5E-7	5E-6
		Y, see <sup>80</sup> Sr	-	4E+0	2E-9	6E-12	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
38	Strontium-91	D, see <sup>80</sup> Sr	2E+3	6E+3	2E-6	8E-9	2E-5	2E-4
		Y, see <sup>80</sup> Sr	-	4E+3	1E-6	5E-9	-	-
38	Strontium-92	D, see <sup>80</sup> Sr	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		Y, see <sup>80</sup> Sr	-	7E+3	3E-6	9E-9	-	-
39	Yttrium-86m <sup>2</sup>	W, all compounds except those given for Y	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
		Y, oxides and hydroxides	-	5E+4	2E-5	8E-8	-	-
39	Yttrium-86	W, see <sup>86m</sup> Y	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4
		Y, see <sup>86m</sup> Y	-	3E+3	1E-6	5E-9	-	-
39	Yttrium-87	W, see <sup>86m</sup> Y	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4
		Y, see <sup>86m</sup> Y	-	3E+3	1E-6	5E-9	-	-
39	Yttrium-88	W, see <sup>86m</sup> Y	1E+3	3E+2	1E-7	3E-10	1E-5	1E-4
		Y, see <sup>86m</sup> Y	-	2E+2	1E-7	3E-10	-	-
39	Yttrium-90m	W, see <sup>86m</sup> Y	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
		Y, see <sup>86m</sup> Y	-	1E+4	5E-6	2E-8	-	-
39	Yttrium-90	W, see <sup>86m</sup> Y	4E+2	7E+2	3E-7	9E-10	-	-
		LLI wall (5E+2)	-	-	-	-	7E-6	7E-5
		Y, see <sup>86m</sup> Y	-	6E+2	3E-7	9E-10	-	-
39	Yttrium-91m <sup>2</sup>	W, see <sup>86m</sup> Y	1E+5	2E+5	1E-4	3E-7	2E-3	2E-2
		Y, see <sup>86m</sup> Y	-	2E+5	7E-5	2E-7	-	-
39	Yttrium-91	W, see <sup>86m</sup> Y	5E+2	2E+2	7E-8	2E-10	-	-
		LLI wall (6E+2)	-	-	-	-	8E-6	8E-5
		Y, see <sup>86m</sup> Y	-	1E+2	5E-8	2E-10	-	-
39	Yttrium-92	W, see <sup>86m</sup> Y	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		Y, see <sup>86m</sup> Y	-	8E+3	3E-6	1E-8	-	-
39	Yttrium-93	W, see <sup>86m</sup> Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		Y, see <sup>86m</sup> Y	-	2E+3	1E-6	3E-9	-	-
39	Yttrium-94 <sup>2</sup>	W, see <sup>86m</sup> Y	2E+4	8E+4	3E-5	1E-7	-	-
		St wall (3E+4)	-	-	-	-	4E-4	4E-3
		Y, see <sup>86m</sup> Y	-	8E+4	3E-5	1E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
39	Yttrium-95 <sup>2</sup>	W, see <sup>86m</sup> Y	4E+4	2E+5	6E-5	2E-7	-	-
			St wall (5E+4)	-	-	-	-	7E-4
		Y, see <sup>86m</sup> Y	-	1E+5	6E-5	2E-7	-	-
40	Zirconium-86	D, all compounds except those given for W and Y	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
		W, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-
		Y, carbide	-	2E+3	1E-6	3E-9	-	-
40	Zirconium-88	D, see <sup>86</sup> Zr	4E+3	2E+2	9E-8	3E-10	5E-5	5E-4
		W, see <sup>86</sup> Zr	-	5E+2	2E-7	7E-10	-	-
		Y, see <sup>86</sup> Zr	-	3E+2	1E-7	4E-10	-	-
40	Zirconium-89	D, see <sup>86</sup> Zr	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		W, see <sup>86</sup> Zr	-	2E+3	1E-6	3E-9	-	-
		Y, see <sup>86</sup> Zr	-	2E+3	1E-6	3E-9	-	-
40	Zirconium-93	D, see <sup>86</sup> Zr	1E+3	6E+0	3E-9	-	-	-
			Bone surf (3E+3)	Bone surf (2E+1)	-	2E-11	4E-5	4E-4
		W, see <sup>86</sup> Zr	-	2E+1	1E-8	-	-	-
			-	Bone surf (6E+1)	-	9E-11	-	-
		Y, see <sup>86</sup> Zr	-	6E+1	2E-8	-	-	-
		-	Bone surf (7E+1)	-	9E-11	-	-	
40	Zirconium-95	D, see <sup>86</sup> Zr	1E+3	1E+2	5E-8	-	2E-5	2E-4
			-	Bone surf (3E+2)	-	4E-10	-	-
		W, see <sup>86</sup> Zr	-	4E+2	2E-7	5E-10	-	-
		Y, see <sup>86</sup> Zr	-	3E+2	1E-7	4E-10	-	-
40	Zirconium-97	D, see <sup>86</sup> Zr	6E+2	2E+3	8E-7	3E-9	9E-6	9E-5
		W, see <sup>86</sup> Zr	-	1E+3	6E-7	2E-9	-	-
		Y, see <sup>86</sup> Zr	-	1E+3	5E-7	2E-9	-	-
41	Niobium-88 <sup>2</sup>	W, all compounds except those given for Y	5E+4	2E+5	9E-5	3E-7	-	-
			St wall (7E+4)	-	-	-	1E-3	1E-2
		Y, oxides and hydroxides	-	2E+5	9E-5	3E-7	-	-
41	Niobium-89 <sup>2</sup> (66 min)	W, see <sup>88</sup> Nb	1E+4	4E+4	2E-5	6E-8	1E-4	1E-3
		Y, see <sup>88</sup> Nb	-	4E+4	2E-5	5E-8	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
41	Niobium-89 (122 min)	W, see <sup>88</sup> Nb	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
		Y, see <sup>88</sup> Nb	-	2E+4	6E-6	2E-8	-	-
41	Niobium-90	W, see <sup>88</sup> Nb	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
		Y, see <sup>88</sup> Nb	-	2E+3	1E-6	3E-9	-	-
41	Niobium-93m	W, see <sup>88</sup> Nb	9E+3	2E+3	8E-7	3E-9	-	-
		Y, see <sup>88</sup> Nb	LLI wall (1E+4)	-	-	-	2E-4	2E-3
41	Niobium-94	W, see <sup>88</sup> Nb	9E+2	2E+2	8E-8	3E-10	1E-5	1E-4
		Y, see <sup>88</sup> Nb	-	2E+1	6E-9	2E-11	-	-
41	Niobium-95m	W, see <sup>88</sup> Nb	2E+3	3E+3	1E-6	4E-9	-	-
		Y, see <sup>88</sup> Nb	LLI wall (2E+3)	-	-	-	3E-5	3E-4
41	Niobium-95	W, see <sup>88</sup> Nb	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
		Y, see <sup>88</sup> Nb	-	1E+3	5E-7	2E-9	-	-
41	Niobium-96	W, see <sup>88</sup> Nb	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		Y, see <sup>88</sup> Nb	-	2E+3	1E-6	3E-9	-	-
41	Niobium-97 <sup>2</sup>	W, see <sup>88</sup> Nb	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
		Y, see <sup>88</sup> Nb	-	7E+4	3E-5	1E-7	-	-
41	Niobium-98 <sup>2</sup>	W, see <sup>88</sup> Nb	1E+4	5E+4	2E-5	8E-8	2E-4	2E-3
		Y, see <sup>88</sup> Nb	-	5E+4	2E-5	7E-8	-	-
42	Molybdenum-90	D, all compounds except those given for Y	4E+3	7E+3	3E-6	1E-8	3E-5	3E-4
		Y, oxides, hydroxides, and MoS	2E+3	5E+3	2E-6	6E-9	-	-
42	Molybdenum-93m	D, see <sup>90</sup> Mo	9E+3	2E+4	7E-6	2E-8	6E-5	6E-4
		Y, see <sup>90</sup> Mo	4E+3	1E+4	6E-6	2E-8	-	-
42	Molybdenum-93	D, see <sup>90</sup> Mo	4E+3	5E+3	2E-6	8E-9	5E-5	5E-4
		Y, see <sup>90</sup> Mo	2E+4	2E+2	8E-8	2E-10	-	-
42	Molybdenum-99	D, see <sup>90</sup> Mo	2E+3	3E+3	1E-6	4E-9	-	-
		Y, see <sup>90</sup> Mo	LLI wall (1E+3)	-	-	-	2E-5	2E-4
			1E+3	1E+3	6E-7	2E-9	-	-



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concen- tration
			Oral Ingestion	Inhalation		Air $\mu\text{Ci/ml}$	Water $\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$
				ALI $\mu\text{Ci}$	ALI $\mu\text{Ci}$			
42	Molybdenum-101 <sup>2</sup>	D, see <sup>90</sup> Mo	4E+4	1E+5	6E-5	2E-7	-	-
			St wall (5E+4)	-	-	-	7E-4	7E-3
		Y, see <sup>90</sup> Mo	-	1E+5	6E-5	2E-7	-	-
43	Technetium-93m <sup>2</sup>	D, all compounds except those given for W	7E+4	2E+5	6E-5	2E-7	1E-3	1E-2
		W, oxides, hydroxides, halides, and nitrates	-	3E+5	1E-4	4E-7	-	-
43	Technetium-93	D, see <sup>93m</sup> Tc	3E+4	7E+4	3E-5	1E-7	4E-4	4E-3
		W, see <sup>93m</sup> Tc	-	1E+5	4E-5	1E-7	-	-
43	Technetium-94m <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+4	4E+4	2E-5	6E-8	3E-4	3E-3
		W, see <sup>93m</sup> Tc	-	6E+4	2E-5	8E-8	-	-
43	Technetium-94	D, see <sup>93m</sup> Tc	9E+3	2E+4	8E-6	3E-8	1E-4	1E-3
		W, see <sup>93m</sup> Tc	-	2E+4	1E-5	3E-8	-	-
43	Technetium-95m	D, see <sup>93m</sup> Tc	4E+3	5E+3	2E-6	8E-9	5E-5	5E-4
		W, see <sup>93m</sup> Tc	-	2E+3	8E-7	3E-9	-	-
43	Technetium-95	D, see <sup>93m</sup> Tc	1E+4	2E+4	9E-6	3E-8	1E-4	1E-3
		W, see <sup>93m</sup> Tc	-	2E+4	8E-6	3E-8	-	-
43	Technetium-96m <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+5	3E+5	1E-4	4E-7	2E-3	2E-2
		W, see <sup>93m</sup> Tc	-	2E+5	1E-4	3E-7	-	-
43	Technetium-96	D, see <sup>93m</sup> Tc	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4
		W, see <sup>93m</sup> Tc	-	2E+3	9E-7	3E-9	-	-
43	Technetium-97m	D, see <sup>93m</sup> Tc	5E+3	7E+3	3E-6	-	6E-5	6E-4
			-	St wall (7E+3)	-	1E-8	-	-
		W, see <sup>93m</sup> Tc	-	1E+3	5E-7	2E-9	-	-
43	Technetium-97	D, see <sup>93m</sup> Tc	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
		W, see <sup>93m</sup> Tc	-	6E+3	2E-6	8E-9	-	-
43	Technetium-98	D, see <sup>93m</sup> Tc	1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
		W, see <sup>93m</sup> Tc	-	3E+2	1E-7	4E-10	-	-
43	Technetium-99m	D, see <sup>93m</sup> Tc	8E+4	2E+5	6E-5	2E-7	1E-3	1E-2
		W, see <sup>93m</sup> Tc	-	2E+5	1E-4	3E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concen- tration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
43	Technetium-99	D, see <sup>93m</sup> Tc	4E+3	5E+3	2E-6	-	6E-5	6E-4
		W, see <sup>93m</sup> Tc	-	7E+2	3E-7	8E-9	-	-
43	Technetium-101 <sup>2</sup>	D, see <sup>93m</sup> Tc	9E+4	3E+5	1E-4	5E-7	-	-
		W, see <sup>93m</sup> Tc	-	4E+5	2E-4	5E-7	-	-
43	Technetium-104 <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+4	7E+4	3E-5	1E-7	-	-
		W, see <sup>93m</sup> Tc	-	9E+4	4E-5	1E-7	-	-
44	Ruthenium-94 <sup>2</sup>	D, all compounds except those given for W and Y	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, halides	-	6E+4	3E-5	9E-8	-	-
		Y, oxides and hydroxides	-	6E+4	2E-5	8E-8	-	-
44	Ruthenium-97	D, see <sup>94</sup> Ru	8E+3	2E+4	8E-6	3E-8	1E-4	1E-3
		W, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-	-
		Y, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-	-
44	Ruthenium-103	D, see <sup>94</sup> Ru	2E+3	2E+3	7E-7	2E-9	3E-5	3E-4
		W, see <sup>94</sup> Ru	-	1E+3	4E-7	1E-9	-	-
		Y, see <sup>94</sup> Ru	-	6E+2	3E-7	9E-10	-	-
44	Ruthenium-105	D, see <sup>94</sup> Ru	5E+3	1E+4	6E-6	2E-8	7E-5	7E-4
		W, see <sup>94</sup> Ru	-	1E+4	6E-6	2E-8	-	-
		Y, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-	-
44	Ruthenium-106	D, see <sup>94</sup> Ru	2E+2	9E+1	4E-8	1E-10	-	-
		LLI wall (2E+2)	-	-	-	-	3E-6	3E-5
		W, see <sup>94</sup> Ru	-	5E+1	2E-8	8E-11	-	-
45	Rhodium-99m	D, all compounds except those given for W and Y	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
		W, halides	-	8E+4	3E-5	1E-7	-	-
		Y, oxides and hydroxides	-	7E+4	3E-5	9E-8	-	-
45	Rhodium-99	D, see <sup>99m</sup> Rh	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
		W, see <sup>99m</sup> Rh	-	2E+3	9E-7	3E-9	-	-
		Y, see <sup>99m</sup> Rh	-	2E+3	8E-7	3E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
45	Rhodium-100	D, see <sup>99m</sup> Rh	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
		W, see <sup>99m</sup> Rh	-	4E+3	2E-6	6E-9	-	-
		Y, see <sup>99m</sup> Rh	-	4E+3	2E-6	5E-9	-	-
45	Rhodium-101m	D, see <sup>99m</sup> Rh	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
		W, see <sup>99m</sup> Rh	-	8E+3	4E-6	1E-8	-	-
		Y, see <sup>99m</sup> Rh	-	8E+3	3E-6	1E-8	-	-
45	Rhodium-101	D, see <sup>99m</sup> Rh	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
		W, see <sup>99m</sup> Rh	-	8E+2	3E-7	1E-9	-	-
		Y, see <sup>99m</sup> Rh	-	2E+2	6E-8	2E-10	-	-
45	Rhodium-102m	D, see <sup>99m</sup> Rh	1E+3	5E+2	2E-7	7E-10	-	-
		LLI wall (1E+3)	-	-	-	-	2E-5	2E-4
		W, see <sup>99m</sup> Rh	-	4E+2	2E-7	5E-10	-	-
45	Rhodium-102	D, see <sup>99m</sup> Rh	6E+2	9E+1	4E-8	1E-10	8E-6	8E-5
		W, see <sup>99m</sup> Rh	-	2E+2	7E-8	2E-10	-	-
		Y, see <sup>99m</sup> Rh	-	6E+1	2E-8	8E-11	-	-
45	Rhodium-103m <sup>2</sup>	D, see <sup>99m</sup> Rh	4E+5	1E+6	5E-4	2E-6	6E-3	6E-2
		W, see <sup>99m</sup> Rh	-	1E+6	5E-4	2E-6	-	-
		Y, see <sup>99m</sup> Rh	-	1E+6	5E-4	2E-6	-	-
45	Rhodium-105	D, see <sup>99m</sup> Rh	4E+3	1E+4	5E-6	2E-8	-	-
		LLI wall (4E+3)	-	-	-	-	5E-5	5E-4
		W, see <sup>99m</sup> Rh	-	6E+3	3E-6	9E-9	-	-
45	Rhodium-106m	D, see <sup>99m</sup> Rh	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
		W, see <sup>99m</sup> Rh	-	4E+4	2E-5	5E-8	-	-
		Y, see <sup>99m</sup> Rh	-	4E+4	1E-5	5E-8	-	-
45	Rhodium-107 <sup>2</sup>	D, see <sup>99m</sup> Rh	7E+4	2E+5	1E-4	3E-7	-	-
		St wall (9E+4)	-	-	-	-	1E-3	1E-2
		W, see <sup>99m</sup> Rh	-	3E+5	1E-4	4E-7	-	-
46	Palladium-100	D, all compounds except those given for W and Y	1E+3	1E+3	6E-7	2E-9	2E-5	2E-4
		W, nitrates	-	1E+3	5E-7	2E-9	-	-
		Y, oxides and hydroxides	-	1E+3	6E-7	2E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
46	Palladium-101	D, see <sup>100</sup> Pd	1E+4	3E+4	1E-5	5E-8	2E-4	2E-3
		W, see <sup>100</sup> Pd	-	3E+4	1E-5	5E-8	-	-
		Y, see <sup>100</sup> Pd	-	3E+4	1E-5	4E-8	-	-
46	Palladium-103	D, see <sup>100</sup> Pd	6E+3	6E+3	3E-6	9E-9	-	-
			LLI wall (7E+3)	-	-	-	1E-4	1E-3
		W, see <sup>100</sup> Pd	-	4E+3	2E-6	6E-9	-	-
		Y, see <sup>100</sup> Pd	-	4E+3	1E-6	5E-9	-	-
46	Palladium-107	D, see <sup>100</sup> Pd	3E+4	2E+4	9E-6	-	-	-
			LLI wall (4E+4)	Kidneys (2E+4)	-	3E-8	5E-4	5E-3
		W, see <sup>100</sup> Pd	-	7E+3	3E-6	1E-8	-	-
		Y, see <sup>100</sup> Pd	-	4E+2	2E-7	6E-10	-	-
46	Palladium-109	D, see <sup>100</sup> Pd	2E+3	6E+3	3E-6	9E-9	3E-5	3E-4
		W, see <sup>100</sup> Pd	-	5E+3	2E-6	8E-9	-	-
		Y, see <sup>100</sup> Pd	-	5E+3	2E-6	6E-9	-	-
47	Silver-102 <sup>2</sup>	D, all compounds except those given for W and Y	5E+4	2E+5	8E-5	2E-7	-	-
			St wall (6E+4)	-	-	-	9E-4	9E-3
		W, nitrates and sulfides	-	2E+5	9E-5	3E-7	-	-
		Y, oxides and hydroxides	-	2E+5	8E-5	3E-7	-	-
47	Silver-103 <sup>2</sup>	D, see <sup>102</sup> Ag	4E+4	1E+5	4E-5	1E-7	5E-4	5E-3
		W, see <sup>102</sup> Ag	-	1E+5	5E-5	2E-7	-	-
		Y, see <sup>102</sup> Ag	-	1E+5	5E-5	2E-7	-	-
47	Silver-104m <sup>2</sup>	D, see <sup>102</sup> Ag	3E+4	9E+4	4E-5	1E-7	4E-4	4E-3
		W, see <sup>102</sup> Ag	-	1E+5	5E-5	2E-7	-	-
		Y, see <sup>102</sup> Ag	-	1E+5	5E-5	2E-7	-	-
47	Silver-104 <sup>2</sup>	D, see <sup>102</sup> Ag	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
		W, see <sup>102</sup> Ag	-	1E+5	6E-5	2E-7	-	-
		Y, see <sup>102</sup> Ag	-	1E+5	6E-5	2E-7	-	-
47	Silver-105	D, see <sup>102</sup> Ag	3E+3	1E+3	4E-7	1E-9	4E-5	4E-4
		W, see <sup>102</sup> Ag	-	2E+3	7E-7	2E-9	-	-
		Y, see <sup>102</sup> Ag	-	2E+3	7E-7	2E-9	-	-
47	Silver-106m	D, see <sup>102</sup> Ag	8E+2	7E+2	3E-7	1E-9	1E-5	1E-4
		W, see <sup>102</sup> Ag	-	9E+2	4E-7	1E-9	-	-
		Y, see <sup>102</sup> Ag	-	9E+2	4E-7	1E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air $\mu\text{Ci/ml}$	Water $\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$
				ALI $\mu\text{Ci}$	ALI $\mu\text{Ci}$			
47	Silver-106 <sup>2</sup>	D, see <sup>102</sup> Ag	6E+4	2E+5	8E-5	3E-7	-	-
			St. wall (6E+4)	-	-	-	9E-4	9E-3
		W, see <sup>102</sup> Ag	-	2E+5	9E-5	3E-7	-	-
		Y, see <sup>102</sup> Ag	-	2E+5	8E-5	3E-7	-	-
47	Silver-108m	D, see <sup>102</sup> Ag	6E+2	2E+2	8E-8	3E-10	9E-6	9E-5
		W, see <sup>102</sup> Ag	-	3E+2	1E-7	4E-10	-	-
		Y, see <sup>102</sup> Ag	-	2E+1	1E-8	3E-11	-	-
47	Silver-110m	D, see <sup>102</sup> Ag	5E+2	1E+2	5E-8	2E-10	6E-6	6E-5
		W, see <sup>102</sup> Ag	-	2E+2	8E-8	3E-10	-	-
		Y, see <sup>102</sup> Ag	-	9E+1	4E-8	1E-10	-	-
47	Silver-111	D, see <sup>102</sup> Ag	9E+2	2E+3	6E-7	-	-	-
			LLI wall (1E+3)	Liver (2E+3)	-	2E-9	2E-5	2E-4
		W, see <sup>102</sup> Ag	-	9E+2	4E-7	1E-9	-	-
		Y, see <sup>102</sup> Ag	-	9E+2	4E-7	1E-9	-	-
47	Silver-112	D, see <sup>102</sup> Ag	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
		W, see <sup>102</sup> Ag	-	1E+4	4E-6	1E-8	-	-
		Y, see <sup>102</sup> Ag	-	9E+3	4E-6	1E-8	-	-
47	Silver-115 <sup>2</sup>	D, see <sup>102</sup> Ag	3E+4	9E+4	4E-5	1E-7	-	-
			St wall (3E+4)	-	-	-	4E-4	4E-3
		W, see <sup>102</sup> Ag	-	9E+4	4E-5	1E-7	-	-
		Y, see <sup>102</sup> Ag	-	8E+4	3E-5	1E-7	-	-
48	Cadmium-104 <sup>2</sup>	D, all compounds except those given for W and Y	2E+4	7E+4	3E-5	9E-8	3E-4	3E-3
		W, sulfides, halides, and nitrates	-	1E+5	5E-5	2E-7	-	-
		Y, oxides and hydroxides	-	1E+5	5E-5	2E-7	-	-
48	Cadmium-107	D, see <sup>104</sup> Cd	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
		W, see <sup>104</sup> Cd	-	6E+4	2E-5	8E-8	-	-
		Y, see <sup>104</sup> Cd	-	5E+4	2E-5	7E-8	-	-
48	Cadmium-109	D, see <sup>104</sup> Cd	3E+2	4E+1	1E-8	-	-	-
			Kidneys (4E+2)	Kidneys (5E+1)	-	7E-11	6E-6	6E-5
		W, see <sup>104</sup> Cd	-	1E+2	5E-8	-	-	-
		Y, see <sup>104</sup> Cd	-	Kidneys (1E+2)	-	2E-10	-	-
			-	1E+2	5E-8	2E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
48	Cadmium-113m	D, see <sup>104</sup> Cd	2E+1	2E+0	1E-9	-	-	-
			Kidneys (4E+1)	Kidneys (4E+0)	-	5E-12	5E-7	5E-6
		W, see <sup>104</sup> Cd	-	8E+0	4E-9	-	-	-
				Kidneys (1E+1)	-	2E-11	-	-
	Y, see <sup>104</sup> Cd	-	1E+1	5E-9	2E-11	-	-	
48	Cadmium-113	D, see <sup>104</sup> Cd	2E+1	2E+0	9E-10	-	-	-
			Kidneys (3E+1)	Kidneys (3E+0)	-	5E-12	4E-7	4E-6
		W, see <sup>104</sup> Cd	-	8E+0	3E-9	-	-	-
				Kidneys (1E+1)	-	2E-11	-	-
	Y, see <sup>104</sup> Cd	-	1E+1	6E-9	2E-11	-	-	
48	Cadmium-115m	D, see <sup>104</sup> Cd	3E+2	5E+1	2E-8	-	4E-6	4E-5
				Kidneys (8E+1)	-	1E-10	-	-
		W, see <sup>104</sup> Cd	-	1E+2	5E-8	2E-10	-	-
		Y, see <sup>104</sup> Cd	-	1E+2	6E-8	2E-10	-	-
48	Cadmium-115	D, see <sup>104</sup> Cd	9E+2	1E+3	6E-7	2E-9	-	-
			LLI wall (1E+3)	-	-	-	1E-5	1E-4
		W, see <sup>104</sup> Cd	-	1E+3	5E-7	2E-9	-	-
		Y, see <sup>104</sup> Cd	-	1E+3	6E-7	2E-9	-	-
48	Cadmium-117m	D, see <sup>104</sup> Cd	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
		W, see <sup>104</sup> Cd	-	2E+4	7E-6	2E-8	-	-
		Y, see <sup>104</sup> Cd	-	1E+4	6E-6	2E-8	-	-
48	Cadmium-117	D, see <sup>104</sup> Cd	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
		W, see <sup>104</sup> Cd	-	2E+4	7E-6	2E-8	-	-
		Y, see <sup>104</sup> Cd	-	1E+4	6E-6	2E-8	-	-
49	Indium-109	D, all compounds except those given for W	2E+4	4E+4	2E-5	6E-8	3E-4	3E-3
		W, oxides, hydroxides, halides, and nitrates	-	6E+4	3E-5	9E-8	-	-
49	Indium-110 <sup>2</sup> (69.1 min)	D, see <sup>109</sup> In	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>109</sup> In	-	6E+4	2E-5	8E-8	-	-
49	Indium-110 (4.9 h)	D, see <sup>109</sup> In	5E+3	2E+4	7E-6	2E-8	7E-5	7E-4
		W, see <sup>109</sup> In	-	2E+4	8E-6	3E-8	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
49	Indium-111	D, see <sup>109</sup> In	4E+3	6E+3	3E-6	9E-9	6E-5	6E-4
		W, see <sup>109</sup> In	-	6E+3	3E-6	9E-9	-	-
49	Indium-112 <sup>2</sup>	D, see <sup>109</sup> In	2E+5	6E+5	3E-4	9E-7	2E-3	2E-2
		W, see <sup>109</sup> In	-	7E+5	3E-4	1E-6	-	-
49	Indium-113m <sup>2</sup>	D, see <sup>109</sup> In	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
		W, see <sup>109</sup> In	-	2E+5	8E-5	3E-7	-	-
49	Indium-114m	D, see <sup>109</sup> In	3E+2	6E+1	3E-8	9E-11	-	-
		LLI wall (4E+2)	-	-	-	-	5E-6	5E-5
49	Indium-115m	W, see <sup>109</sup> In	-	1E+2	4E-8	1E-10	-	-
		D, see <sup>109</sup> In	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
49	Indium-115	W, see <sup>109</sup> In	-	5E+4	2E-5	7E-8	-	-
		D, see <sup>109</sup> In	4E+1	1E+0	6E-10	2E-12	5E-7	5E-6
49	Indium-115	W, see <sup>109</sup> In	-	5E+0	2E-9	8E-12	-	-
		D, see <sup>109</sup> In	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
49	Indium-116m <sup>2</sup>	W, see <sup>109</sup> In	-	1E+5	5E-5	2E-7	-	-
		D, see <sup>109</sup> In	1E+4	3E+4	1E-5	5E-8	2E-4	2E-3
49	Indium-117m <sup>2</sup>	W, see <sup>109</sup> In	-	4E+4	2E-5	6E-8	-	-
		D, see <sup>109</sup> In	6E+4	2E+5	7E-5	2E-7	8E-4	8E-3
49	Indium-117 <sup>2</sup>	W, see <sup>109</sup> In	-	2E+5	9E-5	3E-7	-	-
		D, see <sup>109</sup> In	4E+4	1E+5	5E-5	2E-7	-	-
49	Indium-119m <sup>2</sup>	St wall (5E+4)	-	-	-	-	7E-4	7E-3
		W, see <sup>109</sup> In	-	1E+5	6E-5	2E-7	-	-
50	Tin-110	D, all compounds except those given for W	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
		W, sulfides, oxides, hydroxides, halides, nitrates, and stannic phosphate	-	1E+4	5E-6	2E-8	-	-
50	Tin-111 <sup>2</sup>	D, see <sup>110</sup> Sn	7E+4	2E+5	9E-5	3E-7	1E-3	1E-2
		W, see <sup>110</sup> Sn	-	3E+5	1E-4	4E-7	-	-
50	Tin-113	D, see <sup>110</sup> Sn	2E+3	1E+3	5E-7	2E-9	-	-
		LLI wall (2E+3)	-	-	-	-	3E-5	3E-4
		W, see <sup>110</sup> Sn	-	5E+2	2E-7	8E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
50	Tin-117m	D, see <sup>110</sup> Sn	2E+3	1E+3	5E-7	-	-	-
			LLI wall (2E+3)	Bone surf (2E+3)	-	3E-9	3E-5	3E-4
		W, see <sup>110</sup> Sn	-	1E+3	6E-7	2E-9	-	-
50	Tin-119m	D, see <sup>110</sup> Sn	3E+3	2E+3	1E-6	3E-9	-	-
			LLI wall (4E+3)	-	-	-	6E-5	6E-4
		W, see <sup>110</sup> Sn	-	1E+3	4E-7	1E-9	-	-
50	Tin-121m	D, see <sup>110</sup> Sn	3E+3	9E+2	4E-7	1E-9	-	-
			LLI wall (4E+3)	-	-	-	5E-5	5E-4
		W, see <sup>110</sup> Sn	-	5E+2	2E-7	8E-10	-	-
50	Tin-121	D, see <sup>110</sup> Sn	6E+3	2E+4	6E-6	2E-8	-	-
			LLI wall (6E+3)	-	-	-	8E-5	8E-4
		W, see <sup>110</sup> Sn	-	1E+4	5E-6	2E-8	-	-
50	Tin-123m <sup>2</sup>	D, see <sup>110</sup> Sn	5E+4	1E+5	5E-5	2E-7	7E-4	7E-3
			W, see <sup>110</sup> Sn	-	1E+5	6E-5	2E-7	-
50	Tin-123	D, see <sup>110</sup> Sn	5E+2	6E+2	3E-7	9E-10	-	-
			LLI wall (6E+2)	-	-	-	9E-6	9E-5
		W, see <sup>110</sup> Sn	-	2E+2	7E-8	2E-10	-	-
50	Tin-125	D, see <sup>110</sup> Sn	4E+2	9E+2	4E-7	1E-9	-	-
			LLI wall (5E+2)	-	-	-	6E-6	6E-5
		W, see <sup>110</sup> Sn	-	4E+2	1E-7	5E-10	-	-
50	Tin-126	D, see <sup>110</sup> Sn	3E+2	6E+1	2E-8	8E-11	4E-6	4E-5
			W, see <sup>110</sup> Sn	-	7E+1	3E-8	9E-11	-
50	Tin-127	D, see <sup>110</sup> Sn	7E+3	2E+4	8E-6	3E-8	9E-5	9E-4
			W, see <sup>110</sup> Sn	-	2E+4	8E-6	3E-8	-
50	Tin-128 <sup>2</sup>	D, see <sup>110</sup> Sn	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
			W, see <sup>110</sup> Sn	-	4E+4	1E-5	5E-8	-
51	Antimony-115 <sup>2</sup>	D, all compounds except those given for W	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
		W, oxides, hydroxides, halides, sulfides, sulfates, and nitrates	-	3E+5	1E-4	4E-7	-	-



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
51	Antimony-116m <sup>2</sup>	D, see <sup>115</sup> Sb	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
		W, see <sup>115</sup> Sb	-	1E+5	6E-5	2E-7	-	-
51	Antimony-116 <sup>2</sup>	D, see <sup>115</sup> Sb	7E+4	3E+5	1E-4	4E-7	-	-
		St wall (9E+4)	-	-	-	-	1E-3	1E-2
51	Antimony-117	D, see <sup>115</sup> Sb	7E+4	2E+5	9E-5	3E-7	9E-4	9E-3
		W, see <sup>115</sup> Sb	-	3E+5	1E-4	4E-7	-	-
51	Antimony-118m	D, see <sup>115</sup> Sb	6E+3	2E+4	8E-6	3E-8	7E-5	7E-4
		W, see <sup>115</sup> Sb	5E+3	2E+4	9E-6	3E-8	-	-
51	Antimony-119	D, see <sup>115</sup> Sb	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>115</sup> Sb	2E+4	3E+4	1E-5	4E-8	-	-
51	Antimony-120 <sup>2</sup> (16 min)	D, see <sup>115</sup> Sb	1E+5	4E+5	2E-4	6E-7	-	-
		St wall (2E+5)	-	-	-	-	2E-3	2E-2
51	Antimony-120 (5.76 d)	D, see <sup>115</sup> Sb	1E+3	2E+3	9E-7	3E-9	1E-5	1E-4
		W, see <sup>115</sup> Sb	9E+2	1E+3	5E-7	2E-9	-	-
51	Antimony-122	D, see <sup>115</sup> Sb	8E+2	2E+3	1E-6	3E-9	-	-
		LLI wall (8E+2)	-	-	-	-	1E-5	1E-4
51	Antimony-124m <sup>2</sup>	D, see <sup>115</sup> Sb	3E+5	8E+5	4E-4	1E-6	3E-3	3E-2
		W, see <sup>115</sup> Sb	2E+5	6E+5	2E-4	8E-7	-	-
51	Antimony-124	D, see <sup>115</sup> Sb	6E+2	9E+2	4E-7	1E-9	7E-6	7E-5
		W, see <sup>115</sup> Sb	5E+2	2E+2	1E-7	3E-10	-	-
51	Antimony-125	D, see <sup>115</sup> Sb	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
		W, see <sup>115</sup> Sb	-	5E+2	2E-7	7E-10	-	-
51	Antimony-126m <sup>2</sup>	D, see <sup>115</sup> Sb	5E+4	2E+5	8E-5	3E-7	-	-
		St wall (7E+4)	-	-	-	-	9E-4	9E-3
51	Antimony-126	D, see <sup>115</sup> Sb	6E+2	1E+3	5E-7	2E-9	7E-6	7E-5
		W, see <sup>115</sup> Sb	5E+2	5E+2	2E-7	7E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
51	Antimony-127	D, see <sup>115</sup> Sb	8E+2	2E+3	9E-7	3E-9	-	-
			LLI wall (8E+2)	-	-	-	1E-5	1E-4
		W, see <sup>115</sup> Sb	7E+2	9E+2	4E-7	1E-9	-	-
51	Antimony-128 <sup>2</sup> (10.4 min)	D, see <sup>115</sup> Sb	8E+4	4E+5	2E-4	5E-7	-	-
			St wall (1E+5)	-	-	-	1E-3	1E-2
		W, see <sup>115</sup> Sb	-	4E+5	2E-4	6E-7	-	-
51	Antimony-128 (9.01 h)	D, see <sup>115</sup> Sb	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
		W, see <sup>115</sup> Sb	-	3E+3	1E-6	5E-9	-	-
51	Antimony-129	D, see <sup>115</sup> Sb	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		W, see <sup>115</sup> Sb	-	9E+3	4E-6	1E-8	-	-
51	Antimony-130 <sup>2</sup>	D, see <sup>115</sup> Sb	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		W, see <sup>115</sup> Sb	-	8E+4	3E-5	1E-7	-	-
51	Antimony-131 <sup>2</sup>	D, see <sup>115</sup> Sb	1E+4	2E+4	1E-5	-	-	-
			Thyroid (2E+4)	Thyroid (4E+4)	-	6E-8	2E-4	2E-3
		W, see <sup>115</sup> Sb	-	2E+4	1E-5	-	-	-
			-	Thyroid (4E+4)	-	6E-8	-	-
52	Tellurium-116	D, all compounds except those given for W	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
		W, oxides, hydroxides, and nitrates	-	3E+4	1E-5	4E-8	-	-
52	Tellurium-121m	D, see <sup>116</sup> Te	5E+2	2E+2	8E-8	-	-	-
			Bone surf (7E+2)	Bone surf (4E+2)	-	5E-10	1E-5	1E-4
		W, see <sup>116</sup> Te	-	4E+2	2E-7	6E-10	-	-
52	Tellurium-121	D, see <sup>116</sup> Te	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
		W, see <sup>116</sup> Te	-	3E+3	1E-6	4E-9	-	-
52	Tellurium-123m	D, see <sup>116</sup> Te	6E+2	2E+2	9E-8	-	-	-
			Bone surf (1E+3)	Bone surf (5E+2)	-	8E-10	1E-5	1E-4
		W, see <sup>116</sup> Te	-	5E+2	2E-7	8E-10	-	-
52	Tellurium-123	D, see <sup>116</sup> Te	5E+2	2E+2	8E-8	-	-	-
			Bone surf (1E+3)	Bone surf (5E+2)	-	7E-10	2E-5	2E-4
		W, see <sup>116</sup> Te	-	4E+2	2E-7	-	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
			-	Bone surf (1E+3)	-	2E-9	-	-
52	Tellurium-125m	D, see <sup>116</sup> Te	1E+3	4E+2	2E-7	-	-	-
			Bone surf (1E+3)	Bone surf (1E+3)	-	1E-9	2E-5	2E-4
		W, see <sup>116</sup> Te	-	7E+2	3E-7	1E-9	-	-
52	Tellurium-127m	D, see <sup>116</sup> Te	6E+2	3E+2	1E-7	-	9E-6	9E-5
			-	Bone surf (4E+2)	-	6E-10	-	-
		W, see <sup>116</sup> Te	-	3E+2	1E-7	4E-10	-	-
52	Tellurium-127	D, see <sup>116</sup> Te	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
		W, see <sup>116</sup> Te	-	2E+4	7E-6	2E-8	-	-
52	Tellurium-129m	D, see <sup>116</sup> Te	5E+2	6E+2	3E-7	9E-10	7E-6	7E-5
		W, see <sup>116</sup> Te	-	2E+2	1E-7	3E-10	-	-
52	Tellurium-129 <sup>2</sup>	D, see <sup>116</sup> Te	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
		W, see <sup>116</sup> Te	-	7E+4	3E-5	1E-7	-	-
52	Tellurium-131m	D, see <sup>116</sup> Te	3E+2	4E+2	2E-7	-	-	-
			Thyroid (6E+2)	Thyroid (1E+3)	-	2E-9	8E-6	8E-5
		W, see <sup>116</sup> Te	-	4E+2	2E-7	-	-	-
			-	Thyroid (9E+2)	-	1E-9	-	-
52	Tellurium-131 <sup>2</sup>	D, see <sup>116</sup> Te	3E+3	5E+3	2E-6	-	-	-
			Thyroid (6E+3)	Thyroid (1E+4)	-	2E-8	8E-5	8E-4
		W, see <sup>116</sup> Te	-	5E+3	2E-6	-	-	-
			-	Thyroid (1E+4)	-	2E-8	-	-
52	Tellurium-132	D, see <sup>116</sup> Te	2E+2	2E+2	9E-8	-	-	-
			Thyroid (7E+2)	Thyroid (8E+2)	-	1E-9	9E-6	9E-5
		W, see <sup>116</sup> Te	-	2E+2	9E-8	-	-	-
			-	Thyroid (6E+2)	-	9E-10	-	-
52	Tellurium-133m <sup>2</sup>	D, see <sup>116</sup> Te	3E+3	5E+3	2E-6	-	-	-
			Thyroid (6E+3)	Thyroid (1E+4)	-	2E-8	9E-5	9E-4
		W, see <sup>116</sup> Te	-	5E+3	2E-6	-	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
			-	Thyroid (1E+4)	-	2E-8	-	-
52	Tellurium-133 <sup>2</sup>	D, see <sup>116</sup> Te	1E+4	2E+4	9E-6	-	-	-
			Thyroid (3E+4)	Thyroid (6E+4)	-	8E-8	4E-4	4E-3
		W, see <sup>116</sup> Te	-	2E+4	9E-6	-	-	-
			-	Thyroid (6E+4)	-	8E-8	-	-
52	Tellurium-134 <sup>2</sup>	D, see <sup>116</sup> Te	2E+4	2E+4	1E-5	-	-	-
			Thyroid (2E+4)	Thyroid (5E+4)	-	7E-8	3E-4	3E-3
		W, see <sup>116</sup> Te	-	2E+4	1E-5	-	-	-
			-	Thyroid (5E+4)	-	7E-8	-	-
53	Iodine-120m <sup>2</sup>	D, all compounds	1E+4	2E+4	9E-6	3E-8	-	-
			Thyroid (1E+4)	-	-	-	2E-4	2E-3
53	Iodine-120 <sup>2</sup>	D, all compounds	4E+3	9E+3	4E-6	-	-	-
			Thyroid (8E+3)	Thyroid (1E+4)	-	2E-8	1E-4	1E-3
53	Iodine-121	D, all compounds	1E+4	2E+4	8E-6	-	-	-
			Thyroid (3E+4)	Thyroid (5E+4)	-	7E-8	4E-4	4E-3
53	Iodine-123	D, all compounds	3E+3	6E+3	3E-6	-	-	-
			Thyroid (1E+4)	Thyroid (2E+4)	-	2E-8	1E-4	1E-3
53	Iodine-124	D, all compounds	5E+1	8E+1	3E-8	-	-	-
			Thyroid (2E+2)	Thyroid (3E+2)	-	4E-10	2E-6	2E-5
53	Iodine-125	D, all compounds	4E+1	6E+1	3E-8	-	-	-
			Thyroid (1E+2)	Thyroid (2E+2)	-	3E-10	2E-6	2E-5
53	Iodine-126	D, all compounds	2E+1	4E+1	1E-8	-	-	-
			Thyroid (7E+1)	Thyroid (1E+2)	-	2E-10	1E-6	1E-5
53	Iodine-128 <sup>2</sup>	D, all compounds	4E+4	1E+5	5E-5	2E-7	-	-
			St wall (6E+4)	-	-	-	8E-4	8E-3

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
53	Iodine-129	D, all compounds	5E+0	9E+0	4E-9	-	-	-
			Thyroid (2E+1)	Thyroid (3E+1)	-	4E-11	2E-7	2E-6
53	Iodine-130	D, all compounds	4E+2	7E+2	3E-7	-	-	-
			Thyroid (1E+3)	Thyroid (2E+3)	-	3E-9	2E-5	2E-4
53	Iodine-131	D, all compounds	3E+1	5E+1	2E-8	-	-	-
			Thyroid (9E+1)	Thyroid (2E+2)	-	2E-10	1E-6	1E-5
53	Iodine-132m <sup>2</sup>	D, all compounds	4E+3	8E+3	4E-6	-	-	-
			Thyroid (1E+4)	Thyroid (2E+4)	-	3E-8	1E-4	1E-3
53	Iodine-132	D, all compounds	4E+3	8E+3	3E-6	-	-	-
			Thyroid (9E+3)	Thyroid (1E+4)	-	2E-8	1E-4	1E-3
53	Iodine-133	D, all compounds	1E+2	3E+2	1E-7	-	-	-
			Thyroid (5E+2)	Thyroid (9E+2)	-	1E-9	7E-6	7E-5
53	Iodine-134 <sup>2</sup>	D, all compounds	2E+4	5E+4	2E-5	6E-8	-	-
			Thyroid (3E+4)	-	-	-	4E-4	4E-3
53	Iodine-135	D, all compounds	8E+2	2E+3	7E-7	-	-	-
			Thyroid (3E+3)	Thyroid (4E+3)	-	6E-9	3E-5	3E-4
54	Xenon-120 <sup>2</sup>	Submersion <sup>1</sup>	-	-	1E-5	4E-8	-	-
54	Xenon-121 <sup>2</sup>	Submersion <sup>1</sup>	-	-	2E-6	1E-8	-	-
54	Xenon-122	Submersion <sup>1</sup>	-	-	7E-5	3E-7	-	-
54	Xenon-123	Submersion <sup>1</sup>	-	-	6E-6	3E-8	-	-
54	Xenon-125	Submersion <sup>1</sup>	-	-	2E-5	7E-8	-	-
54	Xenon-127	Submersion <sup>1</sup>	-	-	1E-5	6E-8	-	-
54	Xenon-129m	Submersion <sup>1</sup>	-	-	2E-4	9E-7	-	-
54	Xenon-131m	Submersion <sup>1</sup>	-	-	4E-4	2E-6	-	-
54	Xenon-133m	Submersion <sup>1</sup>	-	-	1E-4	6E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
54	Xenon-133	Submersion <sup>1</sup>	-	-	1E-4	5E-7	-	-
54	Xenon-135m <sup>2</sup>	Submersion <sup>1</sup>	-	-	9E-6	4E-8	-	-
54	Xenon-135	Submersion <sup>1</sup>	-	-	1E-5	7E-8	-	-
54	Xenon-138 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-
55	Cesium-125 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	-	-
			St wall (9E+4)	-	-	-	1E-3	1E-2
55	Cesium-127	D, all compounds	6E+4	9E+4	4E-5	1E-7	9E-4	9E-3
55	Cesium-129	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
55	Cesium-130 <sup>2</sup>	D, all compounds	6E+4	2E+5	8E-5	3E-7	-	-
			St wall (1E+5)	-	-	-	1E-3	1E-2
55	Cesium-131	D, all compounds	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
55	Cesium-132	D, all compounds	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
55	Cesium-134m	D, all compounds	1E+5	1E+5	6E-5	2E-7	-	-
			St wall (1E+5)	-	-	-	2E-3	2E-2
55	Cesium-134	D, all compounds	7E+1	1E+2	4E-8	2E-10	9E-7	9E-6
55	Cesium-135m <sup>2</sup>	D, all compounds	1E+5	2E+5	8E-5	3E-7	1E-3	1E-2
55	Cesium-135	D, all compounds	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
55	Cesium-136	D, all compounds	4E+2	7E+2	3E-7	9E-10	6E-6	6E-5
55	Cesium-137	D, all compounds	1E+2	2E+2	6E-8	2E-10	1E-6	1E-5
55	Cesium-138 <sup>2</sup>	D, all compounds	2E+4	6E+4	2E-5	8E-8	-	-
			St wall (3E+4)	-	-	-	4E-4	4E-3
56	Barium-126 <sup>2</sup>	D, all compounds	6E+3	2E+4	6E-6	2E-8	8E-5	8E-4
56	Barium-128	D, all compounds	5E+2	2E+3	7E-7	2E-9	7E-6	7E-5

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
56	Barium-131m <sup>2</sup>	D, all compounds	4E+5	1E+6	6E-4	2E-6	-	-
			St wall (5E+5)	-	-	-	7E-3	7E-2
56	Barium-131	D, all compounds	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
56	Barium-133m	D, all compounds	2E+3	9E+3	4E-6	1E-8	-	-
			LLI wall (3E+3)	-	-	-	4E-5	4E-4
56	Barium-133	D, all compounds	2E+3	7E+2	3E-7	9E-10	2E-5	2E-4
56	Barium-135m	D, all compounds	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
56	Barium-139 <sup>2</sup>	D, all compounds	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
56	Barium-140	D, all compounds	5E+2	1E+3	6E-7	2E-9	-	-
			LLI wall (6E+2)	-	-	-	8E-6	8E-5
56	Barium-141 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
56	Barium-142 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
57	Lanthanum-131 <sup>2</sup>	D, all compounds except those given for W	5E+4	1E+5	5E-5	2E-7	6E-4	6E-3
		W, oxides and hydroxides	-	2E+5	7E-5	2E-7	-	-
57	Lanthanum-132	D, see <sup>131</sup> La	3E+3	1E+4	4E-6	1E-8	4E-5	4E-4
		W, see <sup>131</sup> La	-	1E+4	5E-6	2E-8	-	-
57	Lanthanum-135	D, see <sup>131</sup> La	4E+4	1E+5	4E-5	1E-7	5E-4	5E-3
		W, see <sup>131</sup> La	-	9E+4	4E-5	1E-7	-	-
57	Lanthanum-137	D, see <sup>131</sup> La	1E+4	6E+1	3E-8	-	2E-4	2E-3
		W, see <sup>131</sup> La	-	Liver (7E+1)	-	1E-10	-	-
			-	3E+2	1E-7	-	-	-
			-	Liver (3E+2)	-	4E-10	-	-
57	Lanthanum-138	D, see <sup>131</sup> La	9E+2	4E+0	1E-9	5E-12	1E-5	1E-4
		W, see <sup>131</sup> La	-	1E+1	6E-9	2E-11	-	-
57	Lanthanum-140	D, see <sup>131</sup> La	6E+2	1E+3	6E-7	2E-9	9E-6	9E-5
		W, see <sup>131</sup> La	-	1E+3	5E-7	2E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
57	Lanthanum-141	D, see <sup>131</sup> La	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
		W, see <sup>131</sup> La	-	1E+4	5E-6	2E-8	-	-
57	Lanthanum-142 <sup>2</sup>	D, see <sup>131</sup> La	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
		W, see <sup>131</sup> La	-	3E+4	1E-5	5E-8	-	-
57	Lanthanum-143 <sup>2</sup>	D, see <sup>131</sup> La	4E+4	1E+5	4E-5	1E-7	-	-
		St wall (4E+4)	-	-	-	-	5E-4	5E-3
		W, see <sup>131</sup> La	-	9E+4	4E-5	1E-7	-	-
58	Cerium-134	W, all compounds except those given for Y	5E+2	7E+2	3E-7	1E-9	-	-
		LLI wall (6E+2)	-	-	-	-	8E-6	8E-5
		Y, oxides, hydroxides, and fluorides	-	7E+2	3E-7	9E-10	-	-
58	Cerium-135	W, see <sup>134</sup> Ce	2E+3	4E+3	2E-6	5E-9	2E-5	2E-4
		Y, see <sup>134</sup> Ce	-	4E+3	1E-6	5E-9	-	-
58	Cerium-137m	W, see <sup>134</sup> Ce	2E+3	4E+3	2E-6	6E-9	-	-
		LLI wall (2E+3)	-	-	-	-	3E-5	3E-4
		Y, see <sup>134</sup> Ce	-	4E+3	2E-6	5E-9	-	-
58	Cerium-137	W, see <sup>134</sup> Ce	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
		Y, see <sup>134</sup> Ce	-	1E+5	5E-5	2E-7	-	-
58	Cerium-139	W, see <sup>134</sup> Ce	5E+3	8E+2	3E-7	1E-9	7E-5	7E-4
		Y, see <sup>134</sup> Ce	-	7E+2	3E-7	9E-10	-	-
58	Cerium-141	W, see <sup>134</sup> Ce	2E+3	7E+2	3E-7	1E-9	-	-
		LLI wall (2E+3)	-	-	-	-	3E-5	3E-4
		Y, see <sup>134</sup> Ce	-	6E+2	2E-7	8E-10	-	-
58	Cerium-143	W, see <sup>134</sup> Ce	1E+3	2E+3	8E-7	3E-9	-	-
		LLI wall (1E+3)	-	-	-	-	2E-5	2E-4
Y, see <sup>134</sup> Ce	-	2E+3	7E-7	2E-9	-	-		
58	Cerium-144	W, see <sup>134</sup> Ce	2E+2	3E+1	1E-8	4E-11	-	-
		LLI wall (3E+2)	-	-	-	-	3E-6	3E-5
		Y, see <sup>134</sup> Ce	-	1E+1	6E-9	2E-11	-	-



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
59	Praseodymium-136 <sup>2</sup>	W, all compounds except those given for Y	5E+4	2E+5	1E-4	3E-7	-	-
		St wall (7E+4)	-	-	-	-	1E-3	1E-2
		Y, oxides, hydroxides, carbides, and fluorides	-	2E+5	9E-5	3E-7	-	-
59	Praseodymium-137 <sup>2</sup>	W, see <sup>136</sup> Pr	4E+4	2E+5	6E-5	2E-7	5E-4	5E-3
		Y, see <sup>136</sup> Pr	-	1E+5	6E-5	2E-7	-	-
59	Praseodymium-138m	W, see <sup>136</sup> Pr	1E+4	5E+4	2E-5	8E-8	1E-4	1E-3
		Y, see <sup>136</sup> Pr	-	4E+4	2E-5	6E-8	-	-
59	Praseodymium-139	W, see <sup>136</sup> Pr	4E+4	1E+5	5E-5	2E-7	6E-4	6E-3
		Y, see <sup>136</sup> Pr	-	1E+5	5E-5	2E-7	-	-
59	Praseodymium-142m <sup>2</sup>	W, see <sup>136</sup> Pr	8E+4	2E+5	7E-5	2E-7	1E-3	1E-2
		Y, see <sup>136</sup> Pr	-	1E+5	6E-5	2E-7	-	-
59	Praseodymium-142	W, see <sup>136</sup> Pr	1E+3	2E+3	9E-7	3E-9	1E-5	1E-4
		Y, see <sup>136</sup> Pr	-	2E+3	8E-7	3E-9	-	-
59	Praseodymium-143	W, see <sup>136</sup> Pr	9E+2	8E+2	3E-7	1E-9	-	-
		LLI wall (1E+3)	-	-	-	-	2E-5	2E-4
		Y, see <sup>136</sup> Pr	-	7E+2	3E-7	9E-10	-	-
59	Praseodymium-144 <sup>2</sup>	W, see <sup>136</sup> Pr	3E+4	1E+5	5E-5	2E-7	-	-
		St wall (4E+4)	-	-	-	-	6E-4	6E-3
		Y, see <sup>136</sup> Pr	-	1E+5	5E-5	2E-7	-	-
59	Praseodymium-145	W, see <sup>136</sup> Pr	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		Y, see <sup>136</sup> Pr	-	8E+3	3E-6	1E-8	-	-
59	Praseodymium-147 <sup>2</sup>	W, see <sup>136</sup> Pr	5E+4	2E+5	8E-5	3E-7	-	-
		St wall (8E+4)	-	-	-	-	1E-3	1E-2
		Y, see <sup>136</sup> Pr	-	2E+5	8E-5	3E-7	-	-
60	Neodymium-136 <sup>2</sup>	W, all compounds except those given for Y	1E+4	6E+4	2E-5	8E-8	2E-4	2E-3
		Y, oxides, hydroxides, carbides, and fluorides	-	5E+4	2E-5	8E-8	-	-
60	Neodymium-138	W, see <sup>136</sup> Nd	2E+3	6E+3	3E-6	9E-9	3E-5	3E-4
		Y, see <sup>136</sup> Nd	-	5E+3	2E-6	7E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
60	Neodymium-139m	W, see <sup>136</sup> Nd	5E+3	2E+4	7E-6	2E-8	7E-5	7E-4
		Y, see <sup>136</sup> Nd	-	1E+4	6E-6	2E-8	-	-
60	Neodymium-139 <sup>2</sup>	W, see <sup>136</sup> Nd	9E+4	3E+5	1E-4	5E-7	1E-3	1E-2
		Y, see <sup>136</sup> Nd	-	3E+5	1E-4	4E-7	-	-
60	Neodymium-141	W, see <sup>136</sup> Nd	2E+5	7E+5	3E-4	1E-6	2E-3	2E-2
		Y, see <sup>136</sup> Nd	-	6E+5	3E-4	9E-7	-	-
60	Neodymium-147	W, see <sup>136</sup> Nd	1E+3	9E+2	4E-7	1E-9	-	-
		LLI wall (1E+3)	-	-	-	-	2E-5	2E-4
60	Neodymium-149 <sup>2</sup>	W, see <sup>136</sup> Nd	1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
		Y, see <sup>136</sup> Nd	-	2E+4	1E-5	3E-8	-	-
60	Neodymium-151 <sup>2</sup>	W, see <sup>136</sup> Nd	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
		Y, see <sup>136</sup> Nd	-	2E+5	8E-5	3E-7	-	-
61	Promethium-141 <sup>2</sup>	W, all compounds except those given for Y	5E+4	2E+5	8E-5	3E-7	-	-
		St wall (6E+4)	-	-	-	-	8E-4	8E-3
		Y, oxides, hydroxides, carbides, and fluorides	-	2E+5	7E-5	2E-7	-	-
61	Promethium-143	W, see <sup>141</sup> Pm	5E+3	6E+2	2E-7	8E-10	7E-5	7E-4
		Y, see <sup>141</sup> Pm	-	7E+2	3E-7	1E-9	-	-
61	Promethium-144	W, see <sup>141</sup> Pm	1E+3	1E+2	5E-8	2E-10	2E-5	2E-4
		Y, see <sup>141</sup> Pm	-	1E+2	5E-8	2E-10	-	-
61	Promethium-145	W, see <sup>141</sup> Pm	1E+4	2E+2	7E-8	-	1E-4	1E-3
		Bone surf (2E+2)	-	-	-	3E-10	-	-
61	Promethium-146	W, see <sup>141</sup> Pm	2E+3	5E+1	2E-8	7E-11	2E-5	2E-4
		Y, see <sup>141</sup> Pm	-	4E+1	2E-8	6E-11	-	-
61	Promethium-147	W, see <sup>141</sup> Pm	4E+3	1E+2	5E-8	-	-	-
		LLI wall (5E+3)	-	Bone surf (2E+2)	-	3E-10	7E-5	7E-4
61	Promethium-148m	W, see <sup>141</sup> Pm	7E+2	3E+2	1E-7	4E-10	1E-5	1E-4
		Y, see <sup>141</sup> Pm	-	3E+2	1E-7	5E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concen- tration
			Oral Ingestion	Inhalation		Air $\mu\text{Ci/ml}$	Water $\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$
				ALI $\mu\text{Ci}$	ALI $\mu\text{Ci}$			
61	Promethium-148	W, see $^{141}\text{Pm}$	4E+2 LLI wall (5E+2)	5E+2	2E-7	8E-10	-	-
		Y, see $^{141}\text{Pm}$	-	5E+2	2E-7	7E-10	-	7E-5
61	Promethium-149	W, see $^{141}\text{Pm}$	1E+3 LLI wall (1E+3)	2E+3	8E-7	3E-9	-	-
		Y, see $^{141}\text{Pm}$	-	2E+3	8E-7	2E-9	-	2E-4
61	Promethium-150	W, see $^{141}\text{Pm}$	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
		Y, see $^{141}\text{Pm}$	-	2E+4	7E-6	2E-8	-	-
61	Promethium-151	W, see $^{141}\text{Pm}$	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		Y, see $^{141}\text{Pm}$	-	3E+3	1E-6	4E-9	-	-
62	Samarium-141m <sup>2</sup>	W, all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
62	Samarium-141 <sup>2</sup>	W, all compounds	5E+4 St wall (6E+4)	2E+5	8E-5	2E-7	-	-
			-	-	-	8E-4	8E-3	
62	Samarium-142 <sup>2</sup>	W, all compounds	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
62	Samarium-145	W, all compounds	6E+3	5E+2	2E-7	7E-10	8E-5	8E-4
62	Samarium-146	W, all compounds	1E+1 Bone surf (3E+1)	4E-2 Bone surf (6E-2)	1E-11	-	-	-
			-	-	9E-14	3E-7	3E-6	
62	Samarium-147	W, all compounds	2E+1 Bone surf (3E+1)	4E-2 Bone surf (7E-2)	2E-11	-	-	-
			-	-	1E-13	4E-7	4E-6	
62	Samarium-151	W, all compounds	1E+4 LLI wall (1E+4)	1E+2 Bone surf (2E+2)	4E-8	-	-	-
			-	-	2E-10	2E-4	2E-3	
62	Samarium-153	W, all compounds	2E+3 LLI wall (2E+3)	3E+3	1E-6	4E-9	-	-
			-	-	-	3E-5	3E-4	
62	Samarium-155 <sup>2</sup>	W, all compounds	6E+4 St wall (8E+4)	2E+5	9E-5	3E-7	-	-
			-	-	-	1E-3	1E-2	
62	Samarium-156	W, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
63	Europium-145	W, all compounds	2E+3	2E+3	8E-7	3E-9	2E-5	2E-4

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
63	Europium-146	W, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
63	Europium-147	W, all compounds	3E+3	2E+3	7E-7	2E-9	4E-5	4E-4
63	Europium-148	W, all compounds	1E+3	4E+2	1E-7	5E-10	1E-5	1E-4
63	Europium-149	W, all compounds	1E+4	3E+3	1E-6	4E-9	2E-4	2E-3
63	Europium-150 (12.62h)	W, all compounds	3E+3	8E+3	4E-6	1E-8	4E-5	4E-4
63	Europium-150 (34.2 y)	W, all compounds	8E+2	2E+1	8E-9	3E-11	1E-5	1E-4
63	Europium-152m	W, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
63	Europium-152	W, all compounds	8E+2	2E+1	1E-8	3E-11	1E-5	1E-4
63	Europium-154	W, all compounds	5E+2	2E+1	8E-9	3E-11	7E-6	7E-5
63	Europium-155	W, all compounds	4E+3	9E+1	4E-8	-	5E-5	5E-4
			-	Bone surf (1E+2)	-	2E-10	-	-
63	Europium-156	W, all compounds	6E+2	5E+2	2E-7	6E-10	8E-6	8E-5
63	Europium-157	W, all compounds	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
63	Europium-158 <sup>2</sup>	W, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
64	Gadolinium-145 <sup>2</sup>	D, all compounds except those given for W	5E+4	2E+5	6E-5	2E-7	-	-
			St wall (5E+4)	-	-	-	6E-4	6E-3
		W, oxides, hydroxides, and fluorides	-	2E+5	7E-5	2E-7	-	-
64	Gadolinium-146	D, see <sup>145</sup> Gd	1E+3	1E+2	5E-8	2E-10	2E-5	2E-4
		W, see <sup>145</sup> Gd	-	3E+2	1E-7	4E-10	-	-
64	Gadolinium-147	D, see <sup>145</sup> Gd	2E+3	4E+3	2E-6	6E-9	3E-5	3E-4
		W, see <sup>145</sup> Gd	-	4E+3	1E-6	5E-9	-	-
64	Gadolinium-148	D, see <sup>145</sup> Gd	1E+1	8E+3	3E-12	-	-	-
			Bone surf (2E+1)	Bone surf (2E+2)	-	2E-14	3E-7	3E-6
		W, see <sup>145</sup> Gd	-	3E-2	1E-11	-	-	-
			-	Bone surf (6E-2)	-	8E-14	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
64	Gadolinium-149	D, see <sup>145</sup> Gd	3E+3	2E+3	9E-7	3E-9	4E-5	4E-4
		W, see <sup>145</sup> Gd	-	2E+3	1E-6	3E-9	-	-
64	Gadolinium-151	D, see <sup>145</sup> Gd	6E+3	4E+2	2E-7	-	9E-5	9E-4
			-	Bone surf (6E+2)	-	9E-10	-	-
		W, see <sup>145</sup> Gd	-	1E+3	5E-7	2E-9	-	-
64	Gadolinium-152	D, see <sup>145</sup> Gd	2E+1	1E-2	4E-12	-	-	-
			Bone surf (3E+1)	Bone surf (2E-2)	-	3E-14	4E-7	4E-6
		W, see <sup>145</sup> Gd	-	4E-2	2E-11	-	-	-
			-	Bone surf (8E-2)	-	1E-13	-	-
64	Gadolinium-153	D, see <sup>145</sup> Gd	5E+3	1E+2	6E-8	-	6E-5	6E-4
			-	Bone surf (2E+2)	-	3E-10	-	-
		W, see <sup>145</sup> Gd	-	6E+2	2E-7	8E-10	-	-
64	Gadolinium-159	D, see <sup>145</sup> Gd	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
		W, see <sup>145</sup> Gd	-	6E+3	2E-6	8E-9	-	-
65	Terbium-147 <sup>2</sup>	W, all compounds	9E+3	3E+4	1E-5	5E-8	1E-4	1E-3
65	Terbium-149	W, all compounds	5E+3	7E+2	3E-7	1E-9	7E-5	7E-4
65	Terbium-150	W, all compounds	5E+3	2E+4	9E-6	3E-8	7E-5	7E-4
65	Terbium-151	W, all compounds	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
65	Terbium-153	W, all compounds	5E+3	7E+3	3E-6	1E-8	7E-5	7E-4
65	Terbium-154	W, all compounds	2E+3	4E+3	2E-6	6E-9	2E-5	2E-4
65	Terbium-155	W, all compounds	6E+3	8E+3	3E-6	1E-8	8E-5	8E-4
65	Terbium-156m (5.0 h)	W, all compounds	2E+4	3E+4	1E-5	4E-8	2E-4	2E-3
65	Terbium-156m (24.4 h)	W, all compounds	7E+3	8E+3	3E-6	1E-8	1E-4	1E-3
65	Terbium-156	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
65	Terbium-157	W, all compounds	5E+4	3E+2	1E-7	-	-	-
			LLI wall (5E+4)	Bone surf (6E+2)	-	8E-10	7E-4	7E-3

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
65	Terbium-158	W, all compounds	1E+3	2E+1	8E-9	3E-11	2E-5	2E-4
65	Terbium-160	W, all compounds	8E+2	2E+2	9E-8	3E-10	1E-5	1E-4
65	Terbium-161	W, all compounds	2E+3	2E+3	7E-7	2E-9	-	-
			LLI wall (2E+3)	-	-	-	3E-5	3E-4
66	Dysprosium-155	W, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
66	Dysprosium-157	W, all compounds	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
66	Dysprosium-159	W, all compounds	1E+4	2E+3	1E-6	3E-9	2E-4	2E-3
66	Dysprosium-165	W, all compounds	1E+4	5E+4	2E-5	6E-8	2E-4	2E-3
66	Dysprosium-166	W, all compounds	6E+2	7E+2	3E-7	1E-9	-	-
			LLI wall (8E+2)	-	-	-	1E-5	1E-4
67	Holmium-155 <sup>2</sup>	W, all compounds	4E+4	2E+5	6E-5	2E-7	6E-4	6E-3
67	Holmium-157 <sup>2</sup>	W, all compounds	3E+5	1E+6	6E-4	2E-6	4E-3	4E-2
67	Holmium-159 <sup>2</sup>	W, all compounds	2E+5	1E+6	4E-4	1E-6	3E-3	3E-2
67	Holmium-161	W, all compounds	1E+5	4E+5	2E-4	6E-7	1E-3	1E-2
67	Holmium-162m <sup>2</sup>	W, all compounds	5E+4	3E+5	1E-4	4E-7	7E-4	7E-3
67	Holmium-162 <sup>2</sup>	W, all compounds	5E+5	2E+6	1E-3	3E-6	-	-
			St wall (8E+5)	-	-	-	1E-2	1E-1
67	Holmium-164m <sup>2</sup>	W, all compounds	1E+5	3E+5	1E-4	4E-7	1E-3	1E-2
67	Holmium-164 <sup>2</sup>	W, all compounds	2E+5	6E+5	3E-4	9E-7	-	-
			St wall (2E+5)	-	-	-	3E-3	3E-2
67	Holmium-166m	W, all compounds	6E+2	7E+0	3E-9	9E-12	9E-6	9E-5
67	Holmium-166	W, all compounds	9E+2	2E+3	7E-7	2E-9	-	-
			LLI wall (9E+2)	-	-	-	1E-5	1E-4
67	Holmium-167	W, all compounds	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
68	Erbium-161	W, all compounds	2E+4	6E+4	3E-5	9E-8	2E-4	2E-3
68	Erbium-165	W, all compounds	6E+4	2E+5	8E-5	3E-7	9E-4	9E-3
68	Erbium-169	W, all compounds	3E+3	3E+3	1E-6	4E-9	-	-
			LLI wall (4E+3)	-	-	-	5E-5	5E-4
68	Erbium-171	W, all compounds	4E+3	1E+4	4E-6	1E-8	5E-5	5E-4
68	Erbium-172	W, all compounds	1E+3	1E+3	6E-7	2E-9	-	-
			LLI wall (E+3)	-	-	-	2E-5	2E-4
69	Thulium-162 <sup>2</sup>	W, all compounds	7E+4	3E+5	1E-4	4E-7	-	-
			St wall (7E+4)	-	-	-	1E-3	1E-2
69	Thulium-166	W, all compounds	4E+3	1E+4	6E-6	2E-8	6E-5	6E-4
69	Thulium-167	W, all compounds	2E+3	2E+3	8E-7	3E-9	-	-
			LLI wall (2E+3)	-	-	-	3E-5	3E-4
69	Thulium-170	W, all compounds	8E+2	2E+2	9E-8	3E-10	-	-
			LLI wall (1E+3)	-	-	-	1E-5	1E-4
69	Thulium-171	W, all compounds	1E+4	3E+2	1E-7	-	-	-
			LLI wall (1E+4)	Bone surf (6E+2)	-	8E-10	2E-4	2E-3
69	Thulium-172	W, all compounds	7E+2	1E+3	5E-7	2E-9	-	-
			LLI wall (8E+2)	-	-	-	1E-5	1E-4
69	Thulium-173	W, all compounds	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
69	Thulium-175 <sup>2</sup>	W, all compounds	7E+4	3E+5	1E-4	4E-7	-	-
			St wall (9E+4)	-	-	-	1E-3	1E-2
70	Ytterbium-162 <sup>2</sup>	W, all compounds except those given for Y Y, oxides, hydroxides, and fluorides	7E+4	3E+5	1E-4	4E-7	1E-3	1E-2
			-	3E+5	1E-4	4E-7	-	-
70	Ytterbium-166	W, see <sup>162</sup> Yb	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
		Y, see <sup>162</sup> Yb	-	2E+3	8E-7	3E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
70	Ytterbium-167 <sup>2</sup>	W, see <sup>162</sup> Yb	3E+5	8E+5	3E-4	1E-6	4E-3	4E-2
		Y, see <sup>162</sup> Yb	-	7E+5	3E-4	1E-6	-	-
70	Ytterbium-169	W, see <sup>162</sup> Yb	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
		Y, see <sup>162</sup> Yb	-	7E+2	3E-7	1E-9	-	-
70	Ytterbium-175	W, see <sup>162</sup> Yb	3E+3	4E+3	1E-6	5E-9	-	-
		LLI wall (3E+3) Y, see <sup>162</sup> Yb	-	3E+3	1E-6	5E-9	4E-5	4E-4
70	Ytterbium-177 <sup>2</sup>	W, see <sup>162</sup> Yb	2E+4	5E+4	2E-5	7E-8	2E-4	2E-3
		Y, see <sup>162</sup> Yb	-	5E+4	2E-5	6E-8	-	-
70	Ytterbium-178 <sup>2</sup>	W, see <sup>162</sup> Yb	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		Y, see <sup>162</sup> Yb	-	4E+4	2E-5	5E-8	-	-
71	Lutetium-169	W, all compounds except those given for Y	3E+3	4E+3	2E-6	6E-9	3E-5	3E-4
		Y, oxides, hydroxides, and fluorides	-	4E+3	2E-6	6E-9	-	-
71	Lutetium-170	W, see <sup>169</sup> Lu	1E+3	2E+3	9E-7	3E-9	2E-5	2E-4
		Y, see <sup>169</sup> Lu	-	2E+3	8E-7	3E-9	-	-
71	Lutetium-171	W, see <sup>169</sup> Lu	2E+3	2E+3	8E-7	3E-9	3E-5	3E-4
		Y, see <sup>169</sup> Lu	-	2E+3	8E-7	3E-9	-	-
71	Lutetium-172	W, see <sup>169</sup> Lu	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
		Y, see <sup>169</sup> Lu	-	1E+3	5E-7	2E-9	-	-
71	Lutetium-173	W, see <sup>169</sup> Lu	5E+3	3E+2	1E-7	-	7E-5	7E-4
		Bone surf (5E+2) Y, see <sup>169</sup> Lu	-	3E+2	1E-7	6E-10 4E-10	-	-
71	Lutetium-174m	W, see <sup>169</sup> Lu	2E+3	2E+2	1E-7	-	-	-
		LLI wall (3E+3) Y, see <sup>169</sup> Lu	-	2E+2	9E-8	5E-10 3E-10	4E-5	4E-4
71	Lutetium-174	W, see <sup>169</sup> Lu	5E+3	1E+2	5E-8	-	7E-5	7E-4
		Bone surf (2E+2) Y, see <sup>169</sup> Lu	-	2E+2	6E-8	3E-10 2E-10	-	-
71	Lutetium-176m	W, see <sup>169</sup> Lu	8E+3	3E+4	1E-5	3E-8	1E-4	1E-3
		Y, see <sup>169</sup> Lu	-	2E+4	9E-6	3E-8	-	-



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
71	Lutetium-176	W, see <sup>169</sup> Lu	7E+2	5E+0	2E-9	-	1E-5	1E-4
				Bone surf (1E+1)	-	2E-11	-	-
		Y, see <sup>169</sup> Lu	-	8E+0	3E-9	1E-11	-	-
71	Lutetium-177m	W, see <sup>169</sup> Lu	7E+2	1E+2	5E-8	-	1E-5	1E-4
				Bone surf (1E+2)	-	2E-10	-	-
		Y, see <sup>169</sup> Lu	-	8E+1	3E-8	1E-10	-	-
71	Lutetium-177	W, see <sup>169</sup> Lu	2E+3	2E+3	9E-7	3E-9	-	-
			LLI wall (3E+3)	-	-	-	4E-5	4E-4
		Y, see <sup>169</sup> Lu	-	2E+3	9E-7	3E-9	-	-
71	Lutetium-178m <sup>2</sup>	W, see <sup>169</sup> Lu	5E+4	2E+5	8E-5	3E-7	-	-
			St. wall (6E+4)	-	-	-	8E-4	8E-3
		Y, see <sup>169</sup> Lu	-	2E+5	7E-5	2E-7	-	-
71	Lutetium-178 <sup>2</sup>	W, see <sup>169</sup> Lu	4E+4	1E+5	5E-5	2E-7	-	-
			St wall (4E+4)	-	-	-	6E-4	6E-3
		Y, see <sup>169</sup> Lu	-	1E+5	5E-5	2E-7	-	-
71	Lutetium-179	W, see <sup>169</sup> Lu	6E+3	2E+4	8E-6	3E-8	9E-5	9E-4
		Y, see <sup>169</sup> Lu	-	2E+4	6E-6	3E-8	-	-
72	Hafnium-170	D, all compounds except those given for W	3E+3	6E+3	2E-6	8E-9	4E-5	4E-4
		W, oxides, hydroxides, carbides, and nitrates	-	5E+3	2E-6	6E-9	-	-
72	Hafnium-172	D, see <sup>170</sup> Hf	1E+3	9E+0	4E-9	-	2E-5	2E-4
				Bone surf (2E+1)	-	3E-11	-	-
		W, see <sup>170</sup> Hf	-	4E+1	2E-8	-	-	-
				Bone surf (6E+1)	-	8E-11	-	-
72	Hafnium-173	D, see <sup>170</sup> Hf	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
		W, see <sup>170</sup> Hf	-	1E+4	5E-6	2E-8	-	-
72	Hafnium-175	D, see <sup>170</sup> Hf	3E+3	9E+2	4E-7	-	4E-5	4E-4
				Bone surf (1E+3)	-	1E-9	-	-
		W, see <sup>170</sup> Hf	-	1E+3	5E-7	2E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
72	Hafnium-177m <sup>2</sup>	D, see <sup>170</sup> Hf	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
		W, see <sup>170</sup> Hf	-	9E+4	4E-5	1E-7	-	-
72	Hafnium-178m	D, see <sup>170</sup> Hf	3E+2	1E+0	5E-10	-	3E-6	3E-5
				Bone surf (2E+0)	-	3E-12	-	-
		W, see <sup>170</sup> Hf	-	5E+0	2E-9	-	-	-
				Bone surf (9E+0)	-	1E-11	-	-
72	Hafnium-179m	D, see <sup>170</sup> Hf	1E+3	3E+2	1E-7	-	1E-5	1E-4
				Bone surf (6E+2)	-	8E-10	-	-
		W, see <sup>170</sup> Hf	-	6E+2	3E-7	8E-10	-	-
72	Hafnium-180m	D, see <sup>170</sup> Hf	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
		W, see <sup>170</sup> Hf	-	3E+4	1E-5	4E-8	-	-
72	Hafnium-181	D, see <sup>170</sup> Hf	1E+3	2E+2	7E-8	-	2E-5	2E-4
				Bone surf (4E+2)	-	6E-10	-	-
		W, see <sup>170</sup> Hf	-	4E+2	2E-7	6E-10	-	-
72	Hafnium-182m <sup>2</sup>	D, see <sup>170</sup> Hf	4E+4	9E+4	4E-5	1E-7	5E-4	5E-3
		W, see <sup>170</sup> Hf	-	1E+5	6E-5	2E-7	-	-
72	Hafnium-182	D, see <sup>170</sup> Hf	2E+2	8E-1	3E-10	-	-	-
				Bone surf (4E+2)	-	2E-12	5E-6	5E-5
		W, see <sup>170</sup> Hf	-	3E+0	1E-9	-	-	-
				Bone surf (7E+0)	-	1E-11	-	-
72	Hafnium-183 <sup>2</sup>	D, see <sup>170</sup> Hf	2E+4	5E+4	2E-5	6E-8	3E-4	3E-3
		W, see <sup>170</sup> Hf	-	6E+4	2E-5	8E-8	-	-
72	Hafnium-184	D, see <sup>170</sup> Hf	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
		W, see <sup>170</sup> Hf	-	6E+3	3E-6	9E-9	-	-
73	Tantalum-172 <sup>2</sup>	W, all compounds except those given for Y	4E+4	1E+5	5E-5	2E-7	5E-4	5E-3
		Y, elemental Ta, oxides, hydroxides, halides, carbides, nitrates, and nitrides	-	1E+5	4E-5	1E-7	-	-
73	Tantalum-173	W, see <sup>172</sup> Ta	7E+3	2E+4	8E-6	3E-8	9E-5	9E-4
		Y, see <sup>172</sup> Ta	-	2E+4	7E-6	2E-8	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
73	Tantalum-174 <sup>2</sup>	W, see <sup>172</sup> Ta	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
		Y, see <sup>172</sup> Ta	-	9E+4	4E-5	1E-7	-	-
73	Tantalum-175	W, see <sup>172</sup> Ta	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
		Y, see <sup>172</sup> Ta	-	1E+4	6E-6	2E-8	-	-
73	Tantalum-176	W, see <sup>172</sup> Ta	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
		Y, see <sup>172</sup> Ta	-	1E+4	5E-6	2E-8	-	-
73	Tantalum-177	W, see <sup>172</sup> Ta	1E+4	2E+4	8E-6	3E-8	2E-4	2E-3
		Y, see <sup>172</sup> Ta	-	2E+4	7E-6	2E-8	-	-
73	Tantalum-178	W, see <sup>172</sup> Ta	2E+4	9E+4	4E-5	1E-7	2E-4	2E-3
		Y, see <sup>172</sup> Ta	-	7E+4	3E-5	1E-7	-	-
73	Tantalum-179	W, see <sup>172</sup> Ta	2E+4	5E+3	2E-6	8E-9	3E-4	3E-3
		Y, see <sup>172</sup> Ta	-	9E+2	4E-7	1E-9	-	-
73	Tantalum-180m	W, see <sup>172</sup> Ta	2E+4	7E+4	3E-5	9E-8	3E-4	3E-3
		Y, see <sup>172</sup> Ta	-	6E+4	2E-5	8E-8	-	-
73	Tantalum-180	W, see <sup>172</sup> Ta	1E+3	4E+2	2E-7	6E-10	2E-5	2E-4
		Y, see <sup>172</sup> Ta	-	2E+1	1E-8	3E-11	-	-
73	Tantalum-182m <sup>2</sup>	W, see <sup>172</sup> Ta	2E+5	5E+5	2E-4	8E-7	-	-
		St wall (2E+5)	-	-	-	-	3E-3	3E-2
73	Tantalum-182	W, see <sup>172</sup> Ta	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
		Y, see <sup>172</sup> Ta	-	1E+2	6E-8	2E-10	-	-
73	Tantalum-183	W, see <sup>172</sup> Ta	9E+2	1E+3	5E-7	2E-9	-	-
		LLI wall (1E+3)	-	-	-	-	2E-5	2E-4
73	Tantalum-184	W, see <sup>172</sup> Ta	2E+3	5E+3	2E-6	8E-9	3E-5	3E-4
		Y, see <sup>172</sup> Ta	-	5E+3	2E-6	7E-9	-	-
73	Tantalum-185 <sup>2</sup>	W, see <sup>172</sup> Ta	3E+4	7E+4	3E-5	1E-7	4E-4	4E-3
		Y, see <sup>172</sup> Ta	-	6E+4	3E-5	9E-8	-	-
73	Tantalum-186 <sup>2</sup>	W, see <sup>172</sup> Ta	5E+4	2E+5	1E-4	3E-7	-	-
		St wall (7E+4)	-	-	-	-	1E-3	1E-2
		Y, see <sup>172</sup> Ta	-	2E+5	9E-5	3E-7	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
74	Tungsten-176	D, all compounds	1E+4	5E+4	2E-5	7E-8	1E-4	1E-3
74	Tungsten-177	D, all compounds	2E+4	9E+4	4E-5	1E-7	3E-4	3E-3
74	Tungsten-178	D, all compounds	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
74	Tungsten-179 <sup>2</sup>	D, all compounds	5E+5	2E+6	7E-4	2E-6	7E-3	7E-2
74	Tungsten-181	D, all compounds	2E+4	3E+4	1E-5	5E-8	2E-4	2E-3
74	Tungsten-185	D, all compounds	2E+3	7E+3	3E-6	9E-9	-	-
			LLI wall (3E+3)	-	-	-	4E-5	4E-4
74	Tungsten-187	D, all compounds	2E+3	9E+3	4E-6	1E-8	3E-5	3E-4
74	Tungsten-188	D, all compounds	4E+2	1E+3	5E-7	2E-9	-	-
			LLI wall (5E+2)	-	-	-	7E-6	7E-5
75	Rhenium-177 <sup>2</sup>	D, all compounds except those given for W	9E+4	3E+5	1E-4	4E-7	-	-
			St wall (1E+5)	-	-	-	2E-3	2E-2
		W, oxides, hydroxides, and nitrates	-	4E+5	1E-4	5E-7	-	-
75	Rhenium-178 <sup>2</sup>	D, see <sup>177</sup> Re	7E+4	3E+5	1E-4	4E-7	-	-
			St wall (1E+5)	-	-	-	1E-3	1E-2
		W, see <sup>177</sup> Re	-	3E+5	1E-4	4E-7	-	-
75	Rhenium-181	D, see <sup>177</sup> Re	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
		W, see <sup>177</sup> Re	-	9E+3	4E-6	1E-8	-	-
75	Rhenium-182 (12.7 h)	D, see <sup>177</sup> Re	7E+3	1E+4	5E-6	2E-8	9E-5	9E-4
		W, see <sup>177</sup> Re	-	2E+4	6E-6	2E-8	-	-
75	Rhenium-182 (64.0 h)	D, see <sup>177</sup> Re	1E+3	2E+3	1E-6	3E-9	2E-5	2E-4
		W, see <sup>177</sup> Re	-	2E+3	9E-7	3E-9	-	-
75	Rhenium-184m	D, see <sup>177</sup> Re	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
		W, see <sup>177</sup> Re	-	4E+2	2E-7	6E-10	-	-
75	Rhenium-184	D, see <sup>177</sup> Re	2E+3	4E+3	1E-6	5E-9	3E-5	3E-4
		W, see <sup>177</sup> Re	-	1E+3	6E-7	2E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
75	Rhenium-186m	D, see <sup>177</sup> Re	1E+3	2E+3	7E-7	-	-	-
		W, see <sup>177</sup> Re	St wall (2E+3)	St wall (2E+3)	-	3E-9	2E-5	2E-4
			-	2E+2	6E-8	2E-10	-	-
75	Rhenium-186	D, see <sup>177</sup> Re	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
		W, see <sup>177</sup> Re	-	2E+3	7E-7	2E-9	-	-
75	Rhenium-187	D, see <sup>177</sup> Re	6E+5	8E+5	4E-4	-	8E-3	8E-2
			-	St wall (9E+5)	-	1E-6	-	-
		W, see <sup>177</sup> Re	-	1E+5	4E-5	1E-7	-	-
75	Rhenium-188m <sup>2</sup>	D, see <sup>177</sup> Re	8E+4	1E+5	6E-5	2E-7	1E-3	1E-2
		W, see <sup>177</sup> Re	-	1E+5	6E-5	2E-7	-	-
75	Rhenium-188	D, see <sup>177</sup> Re	2E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		W, see <sup>177</sup> Re	-	3E+3	1E-6	4E-9	-	-
75	Rhenium-189	D, see <sup>177</sup> Re	3E+3	5E+3	2E-6	7E-9	4E-5	4E-4
		W, see <sup>177</sup> Re	-	4E+3	2E-6	6E-9	-	-
76	Osmium-180 <sup>2</sup>	D, all compounds except those given for W and Y	1E+5	4E+5	2E-4	5E-7	1E-3	1E-2
		W, halides and nitrates	-	5E+5	2E-4	7E-7	-	-
		Y, oxides and hydroxides	-	5E+5	2E-4	6E-7	-	-
76	Osmium-181 <sup>2</sup>	D, see <sup>180</sup> Os	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>180</sup> Os	-	5E+4	2E-5	6E-8	-	-
		Y, see <sup>180</sup> Os	-	4E+4	2E-5	6E-8	-	-
76	Osmium-182	D, see <sup>180</sup> Os	2E+3	6E+3	2E-6	8E-9	3E-5	3E-4
		W, see <sup>180</sup> Os	-	4E+3	2E-6	6E-9	-	-
		Y, see <sup>180</sup> Os	-	4E+3	2E-6	6E-9	-	-
76	Osmium-185	D, see <sup>180</sup> Os	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
		W, see <sup>180</sup> Os	-	8E+2	3E-7	1E-9	-	-
		Y, see <sup>180</sup> Os	-	8E+2	3E-7	1E-9	-	-
76	Osmium-189m	D, see <sup>180</sup> Os	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
		W, see <sup>180</sup> Os	-	2E+5	9E-5	3E-7	-	-
		Y, see <sup>180</sup> Os	-	2E+5	7E-5	2E-7	-	-
76	Osmium-191m	D, see <sup>180</sup> Os	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
		W, see <sup>180</sup> Os	-	2E+4	8E-6	3E-8	-	-
		Y, see <sup>180</sup> Os	-	2E+4	7E-6	2E-8	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
76	Osmium-191	D, see <sup>180</sup> Os	2E+3	2E+3	9E-7	3E-9	-	-
		LLI wall (3E+3)	-	-	-	3E-5	3E-4	
		W, see <sup>180</sup> Os	-	2E+3	7E-7	2E-9	-	-
		Y, see <sup>180</sup> Os	-	1E+3	6E-7	2E-9	-	-
76	Osmium-193	D, see <sup>180</sup> Os	2E+3	5E+3	2E-6	6E-9	-	-
		LLI wall (2E+3)	-	-	-	2E-5	2E-4	
		W, see <sup>180</sup> Os	-	3E+3	1E-6	4E-9	-	-
		Y, see <sup>180</sup> Os	-	3E+3	1E-6	4E-9	-	-
76	Osmium-194	D, see <sup>180</sup> Os	4E+2	4E+1	2E-8	6E-11	-	-
		LLI wall (6E+2)	-	-	-	8E-6	8E-5	
		W, see <sup>180</sup> Os	-	6E+1	2E-8	8E-11	-	-
		Y, see <sup>180</sup> Os	-	8E+0	3E-9	1E-11	-	-
77	Iridium-182 <sup>2</sup>	D, all compounds except those given for W and Y	4E+4	1E+5	6E-5	2E-7	-	-
		St wall (4E+4)	-	-	-	6E-4	6E-3	
		W, halides, nitrates, and metallic iridium	-	2E+5	6E-5	2E-7	-	-
		Y, oxides and hydroxides	-	1E+5	5E-5	2E-7	-	-
77	Iridium-184	D, see <sup>182</sup> Ir	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
		W, see <sup>182</sup> Ir	-	3E+4	1E-5	5E-8	-	-
		Y, see <sup>182</sup> Ir	-	3E+4	1E-5	4E-8	-	-
77	Iridium-185	D, see <sup>182</sup> Ir	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
		W, see <sup>182</sup> Ir	-	1E+4	5E-6	2E-8	-	-
		Y, see <sup>182</sup> Ir	-	1E+4	4E-6	1E-8	-	-
77	Iridium-186	D, see <sup>182</sup> Ir	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
		W, see <sup>182</sup> Ir	-	6E+3	3E-6	9E-9	-	-
		Y, see <sup>182</sup> Ir	-	6E+3	2E-6	8E-9	-	-
77	Iridium-187	D, see <sup>182</sup> Ir	1E+4	3E+4	1E-5	5E-8	1E-4	1E-3
		W, see <sup>182</sup> Ir	-	3E+4	1E-5	4E-8	-	-
		Y, see <sup>182</sup> Ir	-	3E+4	1E-5	4E-8	-	-
77	Iridium-188	D, see <sup>182</sup> Ir	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
		W, see <sup>182</sup> Ir	-	4E+3	1E-6	5E-9	-	-
		Y, see <sup>182</sup> Ir	-	3E+3	1E-6	5E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
77	Iridium-189	D, see <sup>182</sup> Ir	5E+3	5E+3	2E-6	7E-9	-	-
			LLI wall (5E+3)	-	-	-	7E-5	7E-4
		W, see <sup>182</sup> Ir	-	4E+3	2E-6	5E-9	-	-
		Y, see <sup>182</sup> Ir	-	4E+3	1E-6	5E-9	-	-
77	Iridium-190m <sup>2</sup>	D, see <sup>182</sup> Ir	2E+5	2E+5	8E-5	3E-7	2E-3	2E-2
		W, see <sup>182</sup> Ir	-	2E+5	9E-5	3E-7	-	-
		Y, see <sup>182</sup> Ir	-	2E+5	8E-5	3E-7	-	-
77	Iridium-190	D, see <sup>182</sup> Ir	1E+3	9E+2	4E-7	1E-9	1E-5	1E-4
		W, see <sup>182</sup> Ir	-	1E+3	4E-7	1E-9	-	-
		Y, see <sup>182</sup> Ir	-	9E+2	4E-7	1E-9	-	-
77	Iridium-192m	D, see <sup>182</sup> Ir	3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
		W, see <sup>182</sup> Ir	-	2E+2	9E-8	3E-10	-	-
		Y, see <sup>182</sup> Ir	-	2E+1	6E-9	2E-11	-	-
77	Iridium-192	D, see <sup>182</sup> Ir	9E+2	3E+2	1E-7	4E-10	1E-5	1E-4
		W, see <sup>182</sup> Ir	-	4E+2	2E-7	6E-10	-	-
		Y, see <sup>182</sup> Ir	-	2E+2	9E-8	3E-10	-	-
77	Iridium-194m	D, see <sup>182</sup> Ir	6E+2	9E+1	4E-8	1E-10	9E-6	9E-5
		W, see <sup>182</sup> Ir	-	2E+2	7E-8	2E-10	-	-
		Y, see <sup>182</sup> Ir	-	1E+2	4E-8	1E-10	-	-
77	Iridium-194	D, see <sup>182</sup> Ir	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
		W, see <sup>182</sup> Ir	-	2E+3	9E-7	3E-9	-	-
		Y, see <sup>182</sup> Ir	-	2E+3	8E-7	3E-9	-	-
77	Iridium-195m	D, see <sup>182</sup> Ir	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
		W, see <sup>182</sup> Ir	-	3E+4	1E-5	4E-8	-	-
		Y, see <sup>182</sup> Ir	-	2E+4	9E-6	3E-8	-	-
77	Iridium-195	D, see <sup>182</sup> Ir	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>182</sup> Ir	-	5E+4	2E-5	7E-8	-	-
		Y, see <sup>182</sup> Ir	-	4E+4	2E-5	6E-8	-	-
78	Platinum-186	D, all compounds	1E+4	4E+4	2E-5	5E-8	2E-4	2E-3
78	Platinum-188	D, all compounds	2E+3	2E+3	7E-7	2E-9	2E-5	2E-4
78	Platinum-189	D, all compounds	1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
78	Platinum-191	D, all compounds	4E+3	8E+3	4E-6	1E-8	5E-5	5E-4

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
78	Platinum-193m	D, all compounds	3E+3 LLI wall (3E+4)	6E+3	3E-6	8E-9	-	-
78	Platinum-193	D, all compounds	4E+4 LLI wall (5E+4)	2E+4	1E-5	3E-8	-	4E-4 6E-3
78	Platinum-195m	D, all compounds	2E+3 LLI wall (2E+3)	4E+3	2E-6	6E-9	-	- 3E-4
78	Platinum-197m <sup>2</sup>	D, all compounds	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
78	Platinum-197	D, all compounds	3E+3	1E+4	4E-6	1E-8	4E-5	4E-4
78	Platinum-199 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
78	Platinum-200	D, all compounds	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4
79	Gold-193	D, all compounds except those given for W and Y W, halides and nitrates Y, oxides and hydroxides	9E+3 - -	3E+4 2E+4 2E+4	1E-5 9E-6 8E-6	4E-8 3E-8 3E-8	1E-4 - -	1E-3 - -
79	Gold-194	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	3E+3 - -	8E+3 5E+3 5E+3	3E-6 2E-6 2E-6	1E-8 8E-9 7E-9	4E-5 - -	4E-4 - -
79	Gold-195	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	5E+3 - -	1E+4 1E+3 4E+2	5E-6 6E-7 2E-7	2E-8 2E-9 6E-10	7E-5 - -	7E-4 - -
79	Gold-198m	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	1E+3 - -	3E+3 1E+3 1E+3	1E-6 5E-7 5E-7	4E-9 2E-9 2E-9	1E-5 - -	1E-4 - -
79	Gold-198	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	1E+3 - -	4E+3 2E+3 2E+3	2E-6 8E-7 7E-7	5E-9 3E-9 2E-9	2E-5 - -	2E-4 - -
79	Gold-199	D, see <sup>193</sup> Au  W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	3E+3 LLI wall (3E+3) - -	9E+3 - 4E+3 4E+3	4E-6 - 2E-6 2E-6	1E-8 - 6E-9 5E-9	- 4E-5 - -	- 4E-4 - -
79	Gold-200m	D, see <sup>193</sup> Au W, see <sup>193</sup> Au	1E+3 -	4E+3 3E+3	1E-6 1E-6	5E-9 4E-9	2E-5 -	2E-4 -



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air $\mu\text{Ci/ml}$	Water $\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$
				ALI $\mu\text{Ci}$	ALI $\mu\text{Ci}$			
		Y, see $^{193}\text{Au}$	-	2E+4	1E-6	3E-9	-	-
79	Gold-200 <sup>2</sup>	D, see $^{193}\text{Au}$	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
		W, see $^{193}\text{Au}$	-	8E+4	3E-5	1E-7	-	-
		Y, see $^{193}\text{Au}$	-	7E+4	3E-5	1E-7	-	-
79	Gold-201 <sup>2</sup>	D, see $^{193}\text{Au}$	7E+4	2E+5	9E-5	3E-7	-	-
		St wall (9E+4)	-	-	-	-	1E-3	1E-2
		W, see $^{193}\text{Au}$	-	2E+5	1E-4	3E-7	-	-
		Y, see $^{193}\text{Au}$	-	2E+5	9E-5	3E-7	-	-
80	Mercury-193m	Vapor	-	8E+3	4E-6	1E-8	-	-
		Organic D	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
		D, sulfates	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
		W, oxides, hydroxides, halides, nitrates, and sulfides	-	8E+3	3E-6	1E-8	-	-
80	Mercury-193	Vapor	-	3E+4	1E-5	4E-8	-	-
		Organic D	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		D, see $^{193\text{m}}\text{Hg}$	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see $^{193\text{m}}\text{Hg}$	-	4E+4	2E-5	6E-8	-	-
80	Mercury-194	Vapor	-	3E+1	1E-8	4E-11	-	-
		Organic D	2E+1	3E+1	1E-8	4E-11	2E-7	2E-6
		D, see $^{193\text{m}}\text{Hg}$	8E+2	4E+1	2E-8	6E-11	1E-5	1E-4
		W, see $^{193\text{m}}\text{Hg}$	-	1E+2	5E-8	2E-10	-	-
80	Mercury-195m	Vapor	-	4E+3	2E-6	6E-9	-	-
		Organic D	3E+3	6E+3	3E-6	8E-9	4E-5	4E-4
		D, see $^{193\text{m}}\text{Hg}$	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
		W, see $^{193\text{m}}\text{Hg}$	-	4E+3	2E-6	5E-9	-	-
80	Mercury-195	Vapor	-	3E+4	1E-5	4E-8	-	-
		Organic D	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
		D, see $^{193\text{m}}\text{Hg}$	1E+4	4E+4	1E-5	5E-8	2E-4	2E-3
		W, see $^{193\text{m}}\text{Hg}$	-	3E+4	1E-5	5E-8	-	-
80	Mercury-197m	Vapor	-	5E+3	2E-6	7E-9	-	-
		Organic D	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
		D, see $^{193\text{m}}\text{Hg}$	3E+3	7E+3	3E-6	1E-8	4E-5	4E-4
		W, see $^{193\text{m}}\text{Hg}$	-	5E+3	2E-6	7E-9	-	-
80	Mercury-197	Vapor	-	8E+3	4E-6	1E-8	-	-
		Organic D	7E+3	1E+4	6E-6	2E-8	9E-5	9E-4
		D, see $^{193\text{m}}\text{Hg}$	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
		W, see <sup>193m</sup> Hg	-	9E+3	4E-6	1E-8	-	-
80	Mercury-199m <sup>2</sup>	Vapor	-	8E+4	3E-5	1E-7	-	-
		Organic D	6E+4	2E+5	7E-5	2E-7	-	-
		St wall (1E+5)	-	-	-	-	1E-3	1E-2
		D, see <sup>193m</sup> Hg	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
		W, see <sup>193m</sup> Hg	-	2E+5	7E-5	2E-7	-	-
80	Mercury-203	Vapor	-	8E+2	4E-7	1E-9	-	-
		Organic D	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
		D, see <sup>193m</sup> Hg	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
		W, see <sup>193m</sup> Hg	-	1E+3	5E-7	2E-9	-	-
81	Thallium-194m <sup>2</sup>	D, all compounds	5E+4	2E+5	6E-5	2E-7	-	-
		St wall (7E+4)	-	-	-	-	1E-3	1E-2
81	Thallium-194 <sup>2</sup>	D, all compounds	3E+5	6E+5	2E-4	8E-7	-	-
		St wall (3E+5)	-	-	-	-	4E-3	4E-2
81	Thallium-195 <sup>2</sup>	D, all compounds	6E+4	1E+5	5E-5	2E-7	9E-4	9E-3
81	Thallium-197	D, all compounds	7E+4	1E+5	5E-5	2E-7	1E-3	1E-2
81	Thallium-198m <sup>2</sup>	D, all compounds	3E+4	5E+4	2E-5	8E-8	4E-4	4E-3
81	Thallium-198	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
81	Thallium-199	D, all compounds	6E+4	8E+4	4E-5	1E-7	9E-4	9E-3
81	Thallium-200	D, all compounds	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
81	Thallium-201	D, all compounds	2E+4	2E+4	9E-6	3E-8	2E-4	2E-3
81	Thallium-202	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
81	Thallium-204	D, all compounds	2E+3	2E+3	9E-7	3E-9	2E-5	2E-4
82	Lead-195m <sup>2</sup>	D, all compounds	6E+4	2E+5	8E-5	3E-7	8E-4	8E-3
82	Lead-198	D, all compounds	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
82	Lead-199 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
82	Lead-200	D, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
82	Lead-201	D, all compounds	7E+3	2E+4	8E-6	3E-8	1E-4	1E-3
82	Lead-202m	D, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
82	Lead-202	D, all compounds	1E+2	5E+1	2E-8	7E-11	2E-6	2E-5
82	Lead-203	D, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
82	Lead-205	D, all compounds	4E+3	1E+3	6E-7	2E-9	5E-5	5E-4
82	Lead-209	D, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
82	Lead-210	D, all compounds	6E-1	2E-1	1E-10	-	-	-
			Bone surf (1E+0)	Bone surf (4E-1)	-	6E-13	1E-8	1E-7
82	Lead-211 <sup>2</sup>	D, all compounds	1E+4	6E+2	3E-7	9E-10	2E-4	2E-3
82	Lead-212	D, all compounds	8E+1	3E+1	1E-8	5E-11	-	-
			Bone surf (1E+2)	-	-	-	2E-6	2E-5
82	Lead-214 <sup>2</sup>	D, all compounds	9E+3	8E+2	3E-7	1E-9	1E-4	1E-3
83	Bismuth-200 <sup>2</sup>	D, nitrates	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
		W, all other compounds	-	1E+5	4E-5	1E-7	-	-
83	Bismuth-201 <sup>2</sup>	D, see <sup>200</sup> Bi	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
		W, see <sup>200</sup> Bi	-	4E+4	2E-5	5E-8	-	-
83	Bismuth-202 <sup>2</sup>	D, see <sup>200</sup> Bi	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see <sup>200</sup> Bi	-	8E+4	3E-5	1E-7	-	-
83	Bismuth-203	D, see <sup>200</sup> Bi	2E+3	7E+3	3E-6	9E-9	3E-5	3E-4
		W, see <sup>200</sup> Bi	-	6E+3	3E-6	9E-9	-	-
83	Bismuth-205	D, see <sup>200</sup> Bi	1E+3	3E+3	1E-6	3E-9	2E-5	2E-4
		W, see <sup>200</sup> Bi	-	1E+3	5E-7	2E-9	-	-
83	Bismuth-206	D, see <sup>200</sup> Bi	6E+2	1E+3	6E-7	2E-9	9E-6	9E-5
		W, see <sup>200</sup> Bi	-	9E+2	4E-7	1E-9	-	-
83	Bismuth-207	D, see <sup>200</sup> Bi	1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
		W, see <sup>200</sup> Bi	-	4E+2	1E-7	5E-10	-	-
83	Bismuth-210m	D, see <sup>200</sup> Bi	4E+1	5E+0	2E-9	-	-	-
			Kidneys (6E+1)	Kidneys (6E+0)	-	9E-12	8E-7	8E-6

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concen- tration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
		W, see <sup>200</sup> Bi	-	7E-1	3E-10	9E-13	-	-
83	Bismuth-210	D, see <sup>200</sup> Bi	8E+2	2E+2	1E-7	-	1E-5	1E-4
			-	Kidneys (4E+2)	-	5E-10	-	-
		W, see <sup>200</sup> Bi	-	3E+1	1E-8	4E-11	-	-
83	Bismuth-212 <sup>2</sup>	D, see <sup>200</sup> Bi	5E+3	2E+2	1E-7	3E-10	7E-5	7E-4
		W, see <sup>200</sup> Bi	-	3E+2	1E-7	4E-10	-	-
83	Bismuth-213 <sup>2</sup>	D, see <sup>200</sup> Bi	7E+3	3E+2	1E-7	4E-10	1E-4	1E-3
		W, see <sup>200</sup> Bi	-	4E+2	1E-7	5E-10	-	-
83	Bismuth-214 <sup>2</sup>	D, see <sup>200</sup> Bi	2E+4	8E+2	3E-7	1E-9	-	-
			St wall (2E+4)	-	-	-	3E-4	3E-3
		W, see <sup>200</sup> Bi	-	9E-2	4E-7	1E-9	-	-
84	Polonium-203 <sup>2</sup>	D, all compounds except those given for W	3E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		W, oxides, hydroxides, and nitrates	-	9E+4	4E-5	1E-7	-	-
84	Polonium-205 <sup>2</sup>	D, see <sup>203</sup> Po	2E+4	4E+4	2E-5	5E-8	3E-4	3E-3
		W, see <sup>203</sup> Po	-	7E+4	3E-5	1E-7	-	-
84	Polonium-207	D, see <sup>203</sup> Po	8E+3	3E+4	1E-5	3E-8	1E-4	1E-3
		W, see <sup>203</sup> Po	-	3E+4	1E-5	4E-8	-	-
84	Polonium-210	D, see <sup>203</sup> Po	3E+0	6E-1	3E-10	9E-13	4E-8	4E-7
		W, see <sup>203</sup> Po	-	6E-1	3E-10	9E-13	-	-
85	Astatine-207 <sup>2</sup>	D, halides	6E+3	3E+3	1E-6	4E-9	8E-5	8E-4
		W	-	2E+3	9E-7	3E-9	-	-
85	Astatine-211	D, halides	1E+2	8E+1	3E-8	1E-10	2E-6	2E-5
		W	-	5E+1	2E-8	8E-11	-	-
86	Radon-220	With daughters removed	-	2E+4	7E-6	2E-8	-	-
		With daughters present	-	2E+1	9E-9	3E-11	-	-
				(or 12 work- ing level months)		(or 1.0 working level)		
86	Radon-222	With daughters removed	-	1E+4	4E-6	1E-8	-	-
		With daughters present	-	1E+2	3E-8	1E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concen- tration
			Oral Ingestion	Inhalation		Air μCi/ml  (or 0.33 working level)	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
87	Francium-222 <sup>2</sup>	D, all compounds	2E+3	5E+2	2E-7	6E-10	3E-5	3E-4
87	Francium-223 <sup>2</sup>	D, all compounds	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
88	Radium-223	W, all compounds	5E+0	7E-1	3E-10	9E-13	-	-
		Bone surf (9E+0)	-	-	-	-	1E-7	1E-6
88	Radium-224	W, all compounds	8E+0	2E+0	7E-10	2E-12	-	-
		Bone surf (2E+1)	-	-	-	-	2E-7	2E-6
88	Radium-225	W, all compounds	8E+0	7E-1	3E-10	9E-13	-	-
		Bone surf (2E+1)	-	-	-	-	2E-7	2E-6
88	Radium-226	W, all compounds	2E+0	6E-1	3E-10	9E-13	-	-
		Bone surf (5E+0)	-	-	-	-	6E-8	6E-7
88	Radium-227 <sup>2</sup>	W, all compounds	2E+4	1E+4	6E-6	-	-	-
		Bone surf (2E+4)	-	Bone surf (2E+4)	-	3E-8	3E-4	3E-3
88	Radium-228	W, all compounds	2E+0	1E+0	5E-10	2E-12	-	-
		Bone surf (4E+0)	-	-	-	-	6E-8	6E-7
89	Actinium-224	D, all compounds except those given for W and Y	2E+3	3E+1	1E-8	-	-	-
		LLI wall (2E+3)	-	Bone surf (4E+1)	-	5E-11	3E-5	3E-4
		W, halides and nitrates	-	5E+1	2E-8	7E-11	-	-
		Y, oxides and hydroxides	-	5E+1	2E-8	6E-11	-	-
89	Actinium-225	D, see <sup>224</sup> Ac	5E+1	3E-1	1E-10	-	-	-
		LLI wall (5E+1)	-	Bone surf (5E-1)	-	7E-13	7E-7	7E-6
		W, see <sup>224</sup> Ac	-	6E-1	3E-10	9E-13	-	-
		Y, see <sup>224</sup> Ac	-	6E-1	3E-10	9E-13	-	-
89	Actinium-226	D, see <sup>224</sup> Ac	1E+2	3E+0	1E-9	-	-	-
		LLI wall (1E+2)	-	Bone surf (4E+0)	-	5E-12	2E-6	2E-5
		W, see <sup>224</sup> Ac	-	5E+0	2E-9	7E-12	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
		Y, see <sup>224</sup> Ac	-	5E+0	2E-9	6E-12	-	-
89	Actinium-227	D, see <sup>224</sup> Ac	2E-1	4E-4	2E-13	-	-	-
		Bone surf (4E-1)		Bone surf (8E-4)		1E-15	5E-9	5E-8
		W, see <sup>224</sup> Ac	-	2E-3	7E-13	-	-	-
		Bone surf (3E-3)				4E-15	-	-
		Y, see <sup>224</sup> Ac	-	4E-3	2E-12	6E-15	-	-
89	Actinium-228	D, see <sup>224</sup> Ac	2E+3	9E+0	4E-9	-	3E-5	3E-4
		Bone surf (2E+1)				2E-11	-	-
		W, see <sup>224</sup> Ac	-	4E+1	2E-8	-	-	-
		Bone surf (6E+1)				8E-11	-	-
		Y, see <sup>224</sup> Ac	-	4E+1	2E-8	6E-11	-	-
90	Thorium-226 <sup>2</sup>	W, all compounds except those given for Y	5E+3	2E+2	6E-8	2E-10	-	-
		St wall (5E+3)					7E-5	7E-4
		Y, oxides and hydroxides	-	1E+2	6E-8	2E-10	-	-
90	Thorium-227	W, see <sup>226</sup> Th	1E+2	3E-1	1E-10	5E-13	2E-6	2E-5
		Y, see <sup>226</sup> Th	-	3E-1	1E-10	5E-13	-	-
90	Thorium-228	W, see <sup>226</sup> Th	6E+0	1E-2	4E-12	-	-	-
		Bone surf (1E+1)		Bone surf (2E-2)		3E-14	2E-7	2E-6
		Y, see <sup>226</sup> Th	-	2E-2	7E-12	2E-14	-	-
90	Thorium-229	W, see <sup>226</sup> Th	6E-1	9E-4	4E-13	-	-	-
		Bone surf (1E+0)		Bone surf (2E-3)		3E-15	2E-8	2E-7
		Y, see <sup>226</sup> Th	-	2E-3	1E-12	-	-	-
		Bone surf (3E-3)				4E-15	-	-
90	Thorium-230	W, see <sup>226</sup> Th	4E+0	6E-3	3E-12	-	-	-
		Bone surf (9E+0)		Bone surf (2E-2)		2E-14	1E-7	1E-6
		Y, see <sup>226</sup> Th	-	2E-2	6E-12	-	-	-
		Bone surf (2E-2)				3E-14	-	-
90	Thorium-231	W, see <sup>226</sup> Th	4E+3	6E+3	3E-6	9E-9	5E-5	5E-4
		Y, see <sup>226</sup> Th	-	6E+3	3E-6	9E-9	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
90	Thorium-232	W, see <sup>226</sup> Th	7E-1	1E-3	5E-13	-	-	-
			Bone surf (2E+0)	Bone surf (3E-3)	-	4E-15	3E-8	3E-7
		Y, see <sup>226</sup> Th	-	3E-3	1E-12	-	-	-
			-	Bone surf (4E-3)	-	6E-15	-	-
90	Thorium-234	W, see <sup>226</sup> Th	3E+2	2E+2	8E-8	3E-10	-	-
			LLI wall (4E+2)	-	-	-	5E-6	5E-5
		Y, see <sup>226</sup> Th	-	2E+2	6E-8	2E-10	-	-
91	Protactinium-227 <sup>2</sup>	W, all compounds except those given for Y Y, oxides and hydroxides	4E+3	1E+2	5E-8	2E-10	5E-5	5E-4
			-	1E+2	4E-8	1E-10	-	-
91	Protactinium-228	W, see <sup>227</sup> Pa	1E+3	1E+1	5E-9	-	2E-5	2E-4
			-	Bone surf (2E+1)	-	3E-11	-	-
91	Protactinium-228	Y, see <sup>227</sup> Pa	-	1E+1	5E-9	2E-11	-	-
			-	-	-	-	-	-
91	Protactinium-230	W, see <sup>227</sup> Pa	6E+2	5E+0	2E-9	7E-12	-	-
			Bone surf (9E+2)	-	-	-	1E-5	1E-4
91	Protactinium-230	Y, see <sup>227</sup> Pa	-	4E+0	1E-9	5E-12	-	-
			-	-	-	-	-	-
91	Protactinium-231	W, see <sup>227</sup> Pa	2E-1	2E-3	6E-13	-	-	-
			Bone surf (5E-1)	Bone surf (4E-3)	-	6E-15	6E-9	6E-8
		Y, see <sup>227</sup> Pa	-	4E-3	2E-12	-	-	-
91	Protactinium-231	Y, see <sup>227</sup> Pa	-	Bone surf (6E-3)	-	8E-15	-	-
			-	-	-	-	-	-
			-	-	-	-	-	-
91	Protactinium-232	W, see <sup>227</sup> Pa	1E+3	2E+1	9E-9	-	2E-5	2E-4
			-	Bone surf (6E+1)	-	8E-11	-	-
		Y, see <sup>227</sup> Pa	-	6E+1	2E-8	-	-	-
91	Protactinium-232	Y, see <sup>227</sup> Pa	-	Bone surf (7E+1)	-	1E-10	-	-
			-	-	-	-	-	-
			-	-	-	-	-	-
91	Protactinium-233	W, see <sup>227</sup> Pa	1E+3	7E+2	3E-7	1E-9	-	-
			LLI wall (2E+3)	-	-	-	2E-5	2E-4
91	Protactinium-233	Y, see <sup>227</sup> Pa	-	6E+2	2E-7	8E-10	-	-
			-	-	-	-	-	-
91	Protactinium-234	W, see <sup>227</sup> Pa	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
		Y, see <sup>227</sup> Pa	-	7E+3	3E-6	9E-9	-	-
92	Uranium-230	D, UF <sub>6</sub> , UO <sub>2</sub> F <sub>2</sub> , UO <sub>2</sub> (NO <sub>3</sub> ) <sub>2</sub>	4E+0	4E-1	2E-10	-	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
			Bone surf (6E+0)	Bone surf (6E-1)	-	8E-13	8E-8	8E-7
		W, UO <sub>3</sub> , UF <sub>4</sub> , UCl <sub>4</sub>	-	4E-1	1E-10	5E-13	-	-
		Y, UO <sub>2</sub> , U <sub>3</sub> O <sub>8</sub>	-	3E-1	1E-10	4E-13	-	-
92	Uranium-231	D, see <sup>230</sup> U	5E+3	8E+3	3E-6	1E-8	-	-
			LLI wall (4E+3)	-	-	-	6E-5	6E-4
		W, see <sup>230</sup> U	-	6E+3	2E-6	8E-9	-	-
		Y, see <sup>230</sup> U	-	5E+3	2E-6	6E-9	-	-
92	Uranium-232	D, see <sup>230</sup> U	2E+0	2E-1	9E-11	-	-	-
			Bone surf (4E+0)	Bone surf (4E-1)	-	6E-13	6E-8	6E-7
		W, see <sup>230</sup> U	-	4E-1	2E-10	5E-13	-	-
		Y, see <sup>230</sup> U	-	8E-3	3E-12	1E-14	-	-
92	Uranium-233	D, see <sup>230</sup> U	1E+1	1E+0	5E-10	-	-	-
			Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
		W, see <sup>230</sup> U	-	7E-1	3E-10	1E-12	-	-
		Y, see <sup>230</sup> U	-	4E-2	2E-11	5E-14	-	-
92	Uranium-234 <sup>3</sup>	D, see <sup>230</sup> U	1E+1	1E+0	5E-10	-	-	-
			Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
		W, see <sup>230</sup> U	-	7E-1	3E-10	1E-12	-	-
		Y, see <sup>230</sup> U	-	4E-2	2E-11	5E-14	-	-
92	Uranium-235 <sup>3</sup>	D, see <sup>230</sup> U	1E+1	1E+0	6E-10	-	-	-
			Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
		W, see <sup>230</sup> U	-	8E-1	3E-10	1E-12	-	-
		Y, see <sup>230</sup> U	-	4E-2	2E-11	6E-14	-	-
92	Uranium-236	D, see <sup>230</sup> U	1E+1	1E+0	5E-10	-	-	-
			Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
		W, see <sup>230</sup> U	-	8E-1	3E-10	1E-12	-	-
		Y, see <sup>230</sup> U	-	4E-2	2E-11	6E-14	-	-
92	Uranium-237	D, see <sup>230</sup> U	2E+3	3E+3	1E-6	4E-9	-	-
			LLI wall (2E+3)	-	-	-	3E-5	3E-4
		W, see <sup>230</sup> U	-	2E+3	7E-7	2E-9	-	-
		Y, see <sup>230</sup> U	-	2E+3	6E-7	2E-9	-	-



Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
92	Uranium-238 <sup>3</sup>	D, see <sup>230</sup> U	1E+1	1E+0	6E-10	-	-	-
			Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
		W, see <sup>230</sup> U	-	8E-1	3E-10	1E-12	-	-
		Y, see <sup>230</sup> U	-	4E-2	2E-11	6E-14	-	-
92	Uranium-239 <sup>2</sup>	D, see <sup>230</sup> U	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
		W, see <sup>230</sup> U	-	2E+5	7E-5	2E-7	-	-
		Y, see <sup>230</sup> U	-	2E+5	6E-5	2E-7	-	-
92	Uranium-240	D, see <sup>230</sup> U	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
		W, see <sup>230</sup> U	-	3E+3	1E-6	4E-9	-	-
		Y, see <sup>230</sup> U	-	2E+3	1E-6	3E-9	-	-
92	Uranium-natural <sup>3</sup>	D, see <sup>230</sup> U	1E+1	1E+0	5E-10	-	-	-
			Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
		W, see <sup>230</sup> U	-	8E-1	3E-10	9E-13	-	-
		Y, see <sup>230</sup> U	-	5E-2	2E-11	9E-14	-	-
93	Neptunium-232 <sup>2</sup>	W, all compounds	1E+5	2E+3	7E-7	-	2E-3	2E-2
			-	Bone surf (5E+2)	-	6E-9	-	-
93	Neptunium-233 <sup>2</sup>	W, all compounds	8E+5	3E+6	1E-3	4E-6	1E-2	1E-1
93	Neptunium-234	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
93	Neptunium-235	W, all compounds	2E+4	8E+2	3E-7	-	-	-
			LLI wall (2E+4)	Bone surf (1E+3)	-	2E-9	3E-4	3E-3
93	Neptunium-236 (1.15E+5 y)	W, all compounds	3E+0	2E-2	9E-12	-	-	-
			Bone surf (6E+0)	Bone surf (5E-2)	-	8E-14	9E-8	9E-7
93	Neptunium-236 (22.5 h)	W, all compounds	3E+3	3E+1	1E-8	-	-	-
			Bone surf (4E+3)	Bone surf (7E+1)	-	1E-10	5E-5	5E-4
93	Neptunium-237	W, all compounds	5E-1	4E-3	2E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	1E-14	2E-8	2E-7
93	Neptunium-238	W, all compounds	1E+3	6E+1	3E-8	-	2E-5	2E-4
			-	Bone surf (2E+2)	-	2E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration  μCi/ml
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	
				ALI μCi	ALI μCi			
93	Neptunium-239	W, all compounds	2E+3	2E+3	9E-7	3E-9	-	-
			LLI wall (2E+3)	-	-	-	2E-5	2E-4
93	Neptunium-240 <sup>2</sup>	W, all compounds	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
94	Plutonium-234	W, all compounds except PuO <sub>2</sub>	8E+3	2E+2	9E-8	3E-10	1E-4	1E-3
		Y, PuO <sub>2</sub>	-	2E+2	8E-8	3E-10	-	-
94	Plutonium-235 <sup>2</sup>	W, see <sup>234</sup> Pu	9E+5	3E+6	1E-3	4E-6	1E-2	1E-1
		Y, see <sup>234</sup> Pu	-	3E+6	1E-3	3E-6	-	-
94	Plutonium-236	W, see <sup>234</sup> Pu	2E+0	2E-2	8E-12	-	-	-
		Bone surf (4E+0)	Bone surf (4E-2)	-	5E-14	6E-8	6E-7	
		Y, see <sup>234</sup> Pu	-	4E-2	2E-11	6E-14	-	-
94	Plutonium-237	W, see <sup>234</sup> Pu	1E+4	3E+3	1E-6	5E-9	2E-4	2E-3
		Y, see <sup>234</sup> Pu	-	3E+3	1E-6	4E-9	-	-
94	Plutonium-238	W, see <sup>234</sup> Pu	9E-1	7E-3	3E-12	-	-	-
		Bone surf (2E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7	
		Y, see <sup>234</sup> Pu	-	2E-2	8E-12	2E-14	-	-
94	Plutonium-239	W, see <sup>234</sup> Pu	8E-1	6E-3	3E-12	-	-	-
		Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7	
		Y, see <sup>234</sup> Pu	-	2E-2	7E-12	-	-	
			-	Bone surf (2E-2)	-	2E-14	-	-
94	Plutonium-240	W, see <sup>234</sup> Pu	8E-1	6E-3	3E-12	-	-	-
		Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7	
		Y, see <sup>234</sup> Pu	-	2E-2	7E-12	-	-	
			-	Bone surf (2E-2)	-	2E-14	-	-
94	Plutonium-241	W, see <sup>234</sup> Pu	4E+1	3E-1	1E-10	-	-	-
		Bone surf (7E+1)	Bone surf (6E-1)	-	8E-13	1E-6	1E-5	
		Y, see <sup>234</sup> Pu	-	8E-1	3E-10	-	-	
			-	Bone surf (1E+0)	-	1E-12	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
94	Plutonium-242	W, see <sup>234</sup> Pu	8E-1	7E-3	3E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
		Y, see <sup>234</sup> Pu	-	2E-2	7E-12	-	-	-
			-	Bone surf (2E-2)	-	2E-14	-	-
94	Plutonium-243	W, see <sup>234</sup> Pu	2E+4	4E+4	2E-5	5E-8	2E-4	2E-3
		Y, see <sup>234</sup> Pu	-	4E+4	2E-5	5E-8	-	-
94	Plutonium-244	W, see <sup>234</sup> Pu	8E-1	7E-3	3E-12	-	-	-
			Bone surf (2E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
		Y, see <sup>234</sup> Pu	-	2E-2	7E-12	-	-	-
			-	Bone surf (2E-2)	-	2E-14	-	-
94	Plutonium-245	W, see <sup>234</sup> Pu	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
		Y, see <sup>234</sup> Pu	-	4E+3	2E-6	6E-9	-	-
94	Plutonium-246	W, see <sup>234</sup> Pu	4E+2	3E+2	1E-7	4E-10	-	-
			LLI wall (4E+2)	-	-	-	6E-6	6E-5
		Y, see <sup>234</sup> Pu	-	3E+2	1E-7	4E-10	-	-
95	Americium-237 <sup>2</sup>	W, all compounds	8E+4	3E+5	1E-4	4E-7	1E-3	1E-2
95	Americium-238 <sup>2</sup>	W, all compounds	4E+4	3E+3	1E-6	-	5E-4	5E-3
			-	Bone surf (6E+3)	-	9E-9	-	-
95	Americium-239	W, all compounds	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
95	Americium-240	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
95	Americium-241	W, all compounds	8E-1	6E-3	3E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
95	Americium-242m	W, all compounds	8E-1	6E-3	3E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
95	Americium-242	W, all compounds	4E+3	8E+1	4E-8	-	5E-5	5E-4
			-	Bone surf (9E+1)	-	1E-10	-	-

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
95	Americium-243	W, all compounds	8E-1	6E-3	3E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
95	Americium-244m <sup>2</sup>	W, all compounds	6E+4	4E+3	2E-6	-	-	-
			St wall (8E+4)	Bone surf (7E+3)	-	1E-8	1E-3	1E-2
95	Americium-244	W, all compounds	3E+3	2E+2	8E-8	-	4E-5	4E-4
			-	Bone surf (3E+2)	-	4E-10	-	-
95	Americium-245	W, all compounds	3E+4	8E+4	3E-5	1E-7	4E-4	4E-3
95	Americium-246m <sup>2</sup>	W, all compounds	5E+4	2E+5	8E-5	3E-7	-	-
			St wall (6E+4)	-	-	-	8E-4	8E-3
95	Americium-246 <sup>2</sup>	W, all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
96	Curium-238	W, all compounds	2E+4	1E+3	5E-7	2E-9	2E-4	2E-3
96	Curium-240	W, all compounds	6E+1	6E-1	2E-10	-	-	-
			Bone surf (8E+1)	Bone surf (6E-1)	-	9E-13	1E-6	1E-5
96	Curium-241	W, all compounds	1E+3	3E+1	1E-8	-	2E-5	2E-4
			-	Bone surf (4E+1)	-	5E-11	-	-
96	Curium-242	W, all compounds	3E+1	3E-1	1E-10	-	-	-
			Bone surf (5E+1)	Bone surf (3E-1)	-	4E-13	7E-7	7E-6
96	Curium-243	W, all compounds	1E+0	9E-3	4E-12	-	-	-
			Bone surf (2E+0)	Bone surf (2E-2)	-	2E-14	3E-8	3E-7
96	Curium-244	W, all compounds	1E+0	1E-2	5E-12	-	-	-
			Bone surf (3E+0)	Bone surf (2E-2)	-	3E-14	3E-8	3E-7
96	Curium-245	W, all compounds	7E-1	6E-3	3E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
96	Curium-246	W, all compounds	7E-1	6E-3	3E-12	-	-	-
			Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
96	Curium-247	W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 - -	- 2E-14	- 2E-8	- 2E-7
96	Curium-248	W, all compounds	2E-1 Bone surf (4E-1)	2E-3 Bone surf (3E-3)	7E-13 -	- 4E-15	- 5E-9	- 5E-8
96	Curium-249 <sup>2</sup>	W, all compounds	5E+4 -	2E+4 Bone surf (3E+4)	7E-6 -	- 4E-8	7E-4 -	7E-3 -
96	Curium-250	W, all compounds	4E-2 Bone surf (6E-2)	3E-4 Bone surf (5E-4)	1E-13 -	- 8E-16	- 9E-10	- 9E-9
97	Berkelium-245	W, all compounds	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
97	Berkelium-246	W, all compounds	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4
97	Berkelium-247	W, all compounds	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 -	- 1E-14	- 2E-8	- 2E-7
97	Berkelium-249	W, all compounds	2E+2 Bone surf (5E+2)	2E+0 Bone surf (4E+0)	7E-10 -	- 5E-12	- 6E-6	- 6E-5
97	Berkelium-250	W, all compounds	9E+3 -	3E+2 Bone surf (7E+2)	1E-7 -	- 1E-9	1E-4 -	1E-3 -
98	Californium-244 <sup>2</sup>	W, all compounds except those given for Y	3E+4 St wall (3E+4)	6E+2 -	2E-7 -	8E-10 -	- 4E-4	- 4E-3
		Y, oxides and hydroxides	-	6E+2	2E-7	8E-10	-	-
98	Californium-246	W, see <sup>244</sup> Cf	4E+2	9E+0	4E-9	1E-11	5E-6	5E-5
		Y, see <sup>244</sup> Cf	-	9E+0	4E-9	1E-11	-	-
98	Californium-248	W, see <sup>244</sup> Cf	8E+0 Bone surf (2E+1)	6E-2 Bone surf (1E-1)	3E-11 -	- 2E-13	- 2E-7	- 2E-6
		Y, see <sup>244</sup> Cf	-	1E-1	4E-11	1E-13	-	-
98	Californium-249	W, see <sup>244</sup> Cf	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 -	- 1E-14	- 2E-8	- 2E-7

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
		Y, see <sup>244</sup> Cf	-	1E-2	4E-12	-	-	-
			-	Bone surf (1E-2)	-	2E-14	-	-
98	Californium-250	W, see <sup>244</sup> Cf	1E+0	9E-3	4E-12	-	-	-
			Bone surf (2E+0)	Bone surf (2E-2)	-	3E-14	3E-8	3E-7
		Y, see <sup>244</sup> Cf	-	3E-2	1E-11	4E-14	-	-
98	Californium-251	W, see <sup>244</sup> Cf	5E-1	4E-3	2E-12	-	-	-
			Bone surf (1E+0)	Bone surf (9E-3)	-	1E-14	2E-8	2E-7
		Y, see <sup>244</sup> Cf	-	1E-2	4E-12	-	-	-
			-	Bone surf (1E-2)	-	2E-14	-	-
98	Californium-252	W, see <sup>244</sup> Cf	2E+0	2E-2	8E-12	-	-	-
			Bone surf (5E+0)	Bone surf (4E-2)	-	5E-14	7E-8	7E-7
		Y, see <sup>244</sup> Cf	-	3E-2	1E-11	5E-14	-	-
98	Californium-253	W, see <sup>244</sup> Cf	2E+2	2E+0	8E-10	3E-12	-	-
			Bone surf (4E+2)	-	-	-	5E-6	5E-5
		Y, see <sup>244</sup> Cf	-	2E+0	7E-10	2E-12	-	-
98	Californium-254	W, see <sup>244</sup> Cf	2E+0	2E-2	9E-12	3E-14	3E-8	3E-7
		Y, see <sup>244</sup> Cf	-	2E-2	7E-12	2E-14	-	-
99	Einsteinium-250	W, all compounds	4E+4	5E+2	2E-7	-	6E-4	6E-3
			-	Bone surf (1E+3)	-	2E-9	-	-
99	Einsteinium-251	W, all compounds	7E+3	9E+2	4E-7	-	1E-4	1E-3
			-	Bone surf (1E+3)	-	2E-9	-	-
99	Einsteinium-253	W, all compounds	2E+2	1E+0	6E-10	2E-12	2E-6	2E-5
99	Einsteinium-254m	W, all compounds	3E+2	1E+1	4E-9	1E-11	-	-
			LLI wall (3E+2)	-	-	-	4E-6	4E-5
99	Einsteinium-254	W, all compounds	8E+0	7E-2	3E-11	-	-	-
			Bone surf (2E+1)	Bone surf (1E-1)	-	2E-13	2E-7	2E-6
100	Fermium-252	W, all compounds	5E+2	1E+1	5E-9	2E-11	6E-6	6E-5

Atomic No.	Radionuclide	Class	Table I Occupational Values			Table II Effluent Concentration		Table III Releases to Sewers
			Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average Concentration
			Oral Ingestion	Inhalation		Air μCi/ml	Water μCi/ml	μCi/ml
				ALI μCi	ALI μCi			
100	Fermium-253	W, all compounds	1E+3	1E+1	4E-9	1E-11	1E-5	1E-4
100	Fermium-254	W, all compounds	3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
100	Fermium-255	W, all compounds	5E+2	2E+1	9E-9	3E-11	7E-6	7E-5
100	Fermium-257	W, all compounds	2E+1 Bone surf (4E+1)	2E-1 Bone surf (2E-1)	7E-11 -	- 3E-13	- 5E-7	- 5E-6
101	Mendelevium-257	W, all compounds	7E+3	8E+1 Bone surf (9E+1)	4E-8 -	- 1E-10	1E-4 -	1E-3 -
101	Mendelevium-258	W, all compounds	3E+1 Bone surf (5E+1)	2E-1 Bone surf (3E-1)	1E-10 -	- 5E-13	- 6E-7	- 6E-6
-	Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life less than 2 hours	Submersion <sup>1</sup>	-	2E+2	1E-7	1E-9	-	-
-	Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life ((less) greater than 2 hours	....	-	2E-1	1E-10	1E-12	1E-8	1E-7
-	Any single radionuclide not listed above that decays by alpha emission or spontaneous fission, or any mixture for which either the identity or the concentration of any radionuclide in the mixture is not known	....	-	4E-4	2E-13	1E-15	2E-9	2E-8

FOOTNOTES:

<sup>1</sup>"Submersion" means that values given are for submersion in a hemispherical semi-infinite cloud of airborne material.

<sup>2</sup>These radionuclides have radiological half-lives of less than 2 hours. The total effective dose equivalent received during operations with these radionuclides might include a significant contribution from external exposure. The DAC values for all radionuclides, other than those designated Class "Submersion," are based upon the committed effective dose equivalent due to the intake of the radionuclide into the body and do NOT include potentially significant contributions to dose equivalent from external exposures. The licensee may substitute 1E-7 µCi/ml for the listed DAC to account for the submersion dose prospectively, but should use individual monitoring devices or other radiation measuring instruments that measure external exposure to demonstrate compliance with the limits. (See WAC 246-221-015(5).)

<sup>3</sup>For soluble mixtures of U-238, U-234, and U-235 in air, chemical toxicity may be the limiting factor (see WAC 246-221-010(5)). If the percent by weight (enrichment) of U-235 is not greater than 5, the concentration value for a 40-hour workweek is 0.2 milligrams uranium per cubic meter of air average. For any enrichment, the product of the average concentration and time of exposure during a 40-hour workweek shall not exceed 8E-3 (SA) µCi-hr/ml, where SA is the specific activity of the uranium inhaled. The specific activity for natural uranium is 6.77E-7 curies per gram U. The specific activity for other mixtures of U-238, U-235, and U-234, if not known, shall be:

$$SA = 3.6E-7 \text{ curies/gram U, U-depleted}$$

$$SA = [0.4 + 0.38 (\text{enrichment}) + 0.0034 (\text{enrichment})^2] E-6, \text{ enrichment} \geq 0.72$$

where enrichment is the percentage by weight of U-235, expressed as percent.

NOTE:

1. If the identity of each radionuclide in a mixture is known but the concentration of one or more of the radionuclides in the mixture is not known, the DAC for the mixture shall be the most restrictive DAC of any radionuclide in the mixture.
2. If the identity of each radionuclide in the mixture is not known, but it is known that certain radionuclides specified in this appendix are not present in the mixture, the inhalation ALI, DAC, and effluent and sewage concentrations for the mixture are the lowest values specified in this appendix for any radionuclide that is not known to be absent from the mixture; or

If it is known that Ac-227-D and Cm-250-W are not present	-	7E-4	3E-13	-	-	-
If, in addition, it is known that Ac-227-W,Y, Th-229-W,Y, Th-230-W, Th-232-W,Y, Pa-231-W,Y, Np-237-W, Pu-239-W, Pu-240-W, Pu-242-W, Am-241-W, Am-242m-W, Am-243-W, Cm-245-W, Cm-246-W, Cm-247-W, Cm-248-W, Bk-247-W, Cf-249-W, and Cf-251-W are not present	-	7E-3	3E-12	-	-	-
If, in addition, it is known that Sm-146-W, Sm-147-W, Gd-148-D,W, Gd-152-D,W, Th-228-W,Y, Th-230-Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, Np-236-W, Pu-236-W,Y, Pu-238-W,Y, Pu-239-Y, Pu-240-Y, Pu-242-Y, Pu-244-W,Y, Cm-243-W, Cm-244-W, Cf-248-W, Cf-249-Y, Cf-250-W,Y, Cf-251-Y, Cf-252-W,Y, and Cf-254-W,Y are not present	-	7E-2	3E-11	-	-	-
If, in addition, it is known that Pb-210-D, Bi-210m-W, Po-210-D,W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D,W,Y, Th-227-W,Y, U-230-D,W,Y, U-232-D,W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-Y, Es-254-W, Fm-257-W, and Md-258-W are not present	-	7E-1	3E-10	-	-	-
If, in addition, it is known that Si-32-Y, Ti-44-Y, Fe-60-D, Sr-90-Y, Zr-93-D, Cd-113m-D, Cd-113-D, In-115-D,W, La-138-D, Lu-176-W, Hf-178m-D,W, Hf-182-D,W, Bi-210m-D, Ra-224-W, Ra-228-W, Ac-226-D,W,Y, Pa-230-W,Y, U-233-D,W, U-234-D,W, U-235-D,W, U-236-D,W, U-238-D,W, Pu-241-Y, Bk-249-W, Cf-253-W,Y, and Es-253-W are not present	-	7E+0	3E-9	-	-	-
If it is known that Ac-227-D,W,Y, Th-229-W,Y, Th-232-W,Y, Pa-231-W,Y, Cm-248-W, and Cm-250-W are not present	-	-	-	1E-14	-	-
If, in addition, it is known that Sm-146-W, Gd-148-D,W, Gd-152-D, Th-228-W,Y, Th-230-W,Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, U-Nat-Y, Np-236-W, Np-237-W, Pu-236-W,Y, Pu-238-W,Y, Pu-239-W,Y, Pu-240-W,Y, Pu-242-W,Y, Pu-244-W,Y, Am-241-W, Am-242m-W, Am-243-W, Cm-243-W, Cm-244-W, Cm-245-W, Cm-246-W, Cm-247-W, Bk-247-W, Cf-249-W,Y, Cf-250-W,Y, Cf-251-W,Y, Cf-252-W,Y, and Cf-254-W,Y are not present	-	-	-	1E-13	-	-
If, in addition, it is known that Sm-147-W, Gd-152-W, Pb-210-D, Bi-210m-W, Po-210-D,W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D,W,Y, Th-227-W,Y, U-230-D,W,Y, U-232-D,W, U-Nat-W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-W,Y, Es-254-W, Fm-257-W, and Md-258-W are not present	-	-	-	-	1E-12	-



If, in addition, it is known that Fe-60, Sr-90, Cd-113m, Cd-113, In-115, I-129, Cs-134, Sm-145, Sm-147, Gd-148, Gd-152, Hg-194 (organic), Bi-210m, Ra-223, Ra-224, Ra-225, Ac-225, Th-228, Th-230, U-233, U-234, U-235, U-236, U-238, U-Nat, Cm-242, Cf-248, Es-254, Fm-257, and Md-258 are not present

1E-6 1E-5

3. If a mixture of radionuclides consists of uranium and its daughters in ore dust (10 µm AMAD particle distribution assumed) prior to chemical separation of the uranium from the ore, the following values may be used for the DAC of the mixture: 6E-11 µCi of gross alpha activity from uranium-238, uranium-234, thorium-230, and radium-226 per milliliter of air; 3E-11 µCi of natural uranium per milliliter of air; or 45 micrograms of natural uranium per cubic meter of air.
4. If the identity and concentration of each radionuclide in a mixture are known, the limiting values should be derived as follows: Determine, for each radionuclide in the mixture, the ratio between the concentration present in the mixture and the concentration otherwise established in this section for the specific radionuclide when not in a mixture. The sum of such ratios for all of the radionuclides in the mixture may not exceed "1" (i.e., "unity").  
Example: If radionuclides "A," "B," and "C" are present in concentrations CA, CB, and CC, and if the applicable DACs are DAC<sub>A</sub>, DAC<sub>B</sub>, and DAC<sub>C</sub>, respectively, then the concentrations shall be limited so that the following relationship exists:

$$\frac{C_A}{DAC_A} + \frac{C_B}{DAC_B} + \frac{C_C}{DAC_C} \leq 1$$

**Reviser's note:** The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

**AMENDATORY SECTION** (Amending WSR 08-09-093, filed 4/18/08, effective 5/19/08)

**WAC 246-231-035 Deliberate misconduct.** (1) For the purpose of this chapter, deliberate misconduct by a person means an intentional act or omission that the person knows:

- (a) Would constitute a violation of a requirement, procedure, instruction, contract, purchase order, or policy; or
- (b) Causes or would cause, if not detected, (~~cause~~) a violation of any rule, regulation, or order; or any term, condition, or limitation of any license or certificate issued by the department.
- (2) This section applies to any:
  - (a) Licensee;
  - (b) Certificate holder;
  - (c) Quality assurance program approval holder;
  - (d) Applicant for a license, certificate, or quality assurance program approval;
  - (e) Contractor (including a supplier or consultant) or subcontractor, to any person identified in (d) of this subsection; or
  - (f) Employee of any person identified in (a) through (e) of this subsection.

(3) A person subject to this section who knowingly provides any components, materials, or other goods or services that relate to any activities subject to these regulations may not:

- (a) Engage in deliberate misconduct; or
- (b) Deliberately submit to the department or to a person subject to this section information that the person knows to be incomplete or inaccurate in some respect that matters to the department.

(4) A person who violates subsection (3)(a) or (b) of this section may be subject to enforcement action in accordance with the procedures in 10 CFR 2 Subpart B.

**AMENDATORY SECTION** (Amending WSR 08-09-093, filed 4/18/08, effective 5/19/08)

**WAC 246-231-200 Appendix A—Determination of A1 and A2.**

(1) Values of A1 and A2 for individual radionuclides, which are the basis for many activity limits elsewhere in these regulations, are given in this section, Table A-1. The curie (Ci) values specified are obtained by converting from the Terabecquerel (TBq) value. The Terabecquerel values are the regulatory standard. The curie values are for information only and are not intended to be the regulatory standard. Where values of A1 or A2 are unlimited, it is for radiation control purposes only. For nuclear criticality safety, some materials are subject to controls placed on fissile material.

(2)(a) For individual radionuclides whose identities are known, but which are not listed in this section, Table A-1, the A1 and A2 values contained in this section, Table A-3 may be used. Otherwise, the licensee shall obtain prior USNRC approval of the A1 and A2 values for radionuclides not listed in this section, Table A-1, before shipping the material.

(b) For individual radionuclides whose identities are known, but which are not listed in this section, Table A-2, the exempt material activity concentration and exempt consignment activity values contained in this section, Table A-3 may be used. Otherwise, the licensee shall obtain prior USNRC approval of the exempt material activity concentration and exempt consignment activity values for radionuclides not listed in this section, Table A-2, before shipping the material.

(c) The licensee shall submit requests for prior approval, described under (a) and (b) of this subsection, to the USNRC in accordance with 10 CFR 71.1.

(3) In the calculations of A1 and A2 for a radionuclide not in this section, Table A-1, a single radioactive decay chain, in which radionuclides are present in their naturally occurring proportions, and in which no daughter radionuclide has a half-life either longer than ten days, or longer than that of the parent radionuclide, shall be considered as a single radionuclide, and the activity to be taken into account, and the A1 or A2 value to be applied shall be those corresponding to the parent radionuclide of that chain. In the case of radio-

active decay chains in which any daughter radionuclide has a half-life either longer than ten days, or greater than that of the parent radionuclide, the parent and those daughter radionuclides shall be considered as mixtures of different radionuclides.

(4) For mixtures of radionuclides whose identities and respective activities are known, the following conditions apply:

(a) For special form radioactive material, the maximum quantity transported in a Type A package:

$$\sum_I \frac{B(i)}{A1(i)} \text{ less than or equal to } 1$$

Where B(i) is the activity of radionuclide I, and A1(i) is the A1 value for radionuclide I.

(b) For normal form radioactive material, the maximum quantity transported in a Type A package:

$$\sum_I \frac{B(i)}{A2(i)} \text{ less than or equal to } 1$$

Where B(i) is the activity of radionuclide I and A2(i) is the A2 value for radionuclide I.

(c) Alternatively, the A1 value for mixtures of special form material may be determined as follows:

$$A1 \text{ for mixture} = \frac{1}{\sum_I \frac{f(i)}{A1(i)}}$$

Where f(i) is the fraction of activity for radionuclide I in the mixture and A1(i) is the appropriate A1 value for radionuclide I.

(d) Alternatively, the A2 value for mixtures of normal form material may be determined as follows:

$$A2 \text{ for mixture} = \frac{1}{\sum_I \frac{f(i)}{A2(i)}}$$

Where f(i) is the fraction of activity for radionuclide I in the mixture and A2(i) is the appropriate A2 value for radionuclide I.

(e) The exempt activity concentration for mixtures of nuclides may be determined as follows:

$$\text{Exempt activity concentration for mixture} = \frac{1}{\sum_I \frac{f(i)}{[A](i)}}$$

Where f(i) is the fraction of activity concentration of radionuclide I in the mixture, and A is the activity concentration of material containing radionuclide I.

(f) The activity limit for an exempt consignment for mixtures of radionuclides may be determined as follows:

$$\text{Exempt consignment activity limit for mixture} = \frac{1}{\sum_I \frac{f(i)}{A(i)}}$$

Where f(i) is the fraction of activity of radionuclide I in the mixture, and A is the activity limit for exempt consignments for radionuclide I.

(5) When the identity of each radionuclide is known, but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped and the lowest A1 or A2 value, as appropriate, for the radionuclides in each group may be used in applying the formulas in subsection (4) of this section. Groups may be based on the total alpha activity and the total beta/gamma activity when these are known, using the lowest A1 or A2 values for the alpha emitters and beta/gamma emitters.

Table A-1.—A1 and A2 Values for Radionuclides

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Ac-225 (a)	Actinium (89)	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	6.0X10 <sup>-3</sup>	1.6X10 <sup>-1</sup>	2.1X10 <sup>3</sup>	5.8X10 <sup>4</sup>
Ac-227 (a)		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	9.0X10 <sup>-5</sup>	2.4X10 <sup>-3</sup>	2.7	7.2X10 <sup>1</sup>
Ac-228		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	8.4X10 <sup>4</sup>	2.2X10 <sup>6</sup>
Ag-105	Silver (47)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>4</sup>
Ag-108m (a)		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	9.7X10 <sup>-1</sup>	2.6X10 <sup>1</sup>
Ag-110m (a)		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.8X10 <sup>2</sup>	4.7X10 <sup>3</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Ag-111		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	5.8X10 <sup>3</sup>	1.6X10 <sup>5</sup>
Al-26	Aluminum (13)	1.0X10 <sup>-1</sup>	2.7	1.0X10 <sup>-1</sup>	2.7	7.0X10 <sup>-4</sup>	1.9X10 <sup>-2</sup>
Am-241	Americium (95)	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	1.3X10 <sup>-1</sup>	3.4
Am-242m (a)		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	3.6X10 <sup>-1</sup>	1.0X10 <sup>1</sup>
Am-243 (a)		5.0	1.4X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	7.4X10 <sup>-3</sup>	2.0X10 <sup>-1</sup>
Ar-37	Argon (18)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.7X10 <sup>3</sup>	9.9X10 <sup>4</sup>
Ar-39		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.3	3.4X10 <sup>1</sup>
Ar-41		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.5X10 <sup>6</sup>	4.2X10 <sup>7</sup>
As-72	Arsenic (33)	3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	6.2X10 <sup>4</sup>	1.7X10 <sup>6</sup>
As-73		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	8.2X10 <sup>2</sup>	2.2X10 <sup>4</sup>
As-74		1.0	2.7X10 <sup>1</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	3.7X10 <sup>3</sup>	9.9X10 <sup>4</sup>
As-76		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	5.8X10 <sup>4</sup>	1.6X10 <sup>6</sup>
As-77		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	3.9X10 <sup>4</sup>	1.0X10 <sup>6</sup>
At-211 (a)	Astatine (85)	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	7.6X10 <sup>4</sup>	2.1X10 <sup>6</sup>
Au-193	Gold (79)	7.0	1.9X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	3.4X10 <sup>4</sup>	9.2X10 <sup>5</sup>
Au-194		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.5X10 <sup>4</sup>	4.1X10 <sup>5</sup>
Au-195		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	6.0	1.6X10 <sup>2</sup>	1.4X10 <sup>2</sup>	3.7X10 <sup>3</sup>
Au-198		1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	9.0X10 <sup>3</sup>	2.4X10 <sup>5</sup>
Au-199		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	7.7X10 <sup>3</sup>	2.1X10 <sup>5</sup>
Ba-131 (a)	Barium (56)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	3.1X10 <sup>3</sup>	8.4X10 <sup>4</sup>
Ba-133		3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	9.4	2.6X10 <sup>2</sup>
Ba-133m		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.2X10 <sup>4</sup>	6.1X10 <sup>5</sup>
Ba-140 (a)		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	3.0X10 <sup>-1</sup>	8.1	2.7X10 <sup>3</sup>	7.3X10 <sup>4</sup>
Be-7	Beryllium (4)	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.3X10 <sup>4</sup>	3.5X10 <sup>5</sup>
Be-10		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	8.3X10 <sup>-4</sup>	2.2X10 <sup>-2</sup>
Bi-205	Bismuth (83)	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	1.5X10 <sup>3</sup>	4.2X10 <sup>4</sup>
Bi-206		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	3.8X10 <sup>3</sup>	1.0X10 <sup>5</sup>
Bi-207		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	1.9	5.2X10 <sup>1</sup>
Bi-210		1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	4.6X10 <sup>3</sup>	1.2X10 <sup>5</sup>
Bi-210m (a)		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	2.1X10 <sup>-5</sup>	5.7X10 <sup>-4</sup>
Bi-212 (a)		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	5.4X10 <sup>5</sup>	1.5X10 <sup>7</sup>
Bk-247	Berkelium (97)	8.0	2.2X10 <sup>2</sup>	8.0X10 <sup>-4</sup>	2.2X10 <sup>-2</sup>	3.8X10 <sup>-2</sup>	1.0
Bk-249 (a)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>-1</sup>	8.1	6.1X10 <sup>1</sup>	1.6X10 <sup>3</sup>
Br-76	Bromine (35)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	9.4X10 <sup>4</sup>	2.5X10 <sup>6</sup>
Br-77		3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	2.6X10 <sup>4</sup>	7.1X10 <sup>5</sup>
Br-82		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>4</sup>	1.1X10 <sup>6</sup>
C-11	Carbon (6)	1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.1X10 <sup>7</sup>	8.4X10 <sup>8</sup>
C-14		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0	8.1X10 <sup>1</sup>	1.6X10 <sup>-1</sup>	4.5
Ca-41	Calcium (20)	Unlimited	Unlimited	Unlimited	Unlimited	3.1X10 <sup>-3</sup>	8.5X10 <sup>-2</sup>
Ca-45		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0	2.7X10 <sup>1</sup>	6.6X10 <sup>2</sup>	1.8X10 <sup>4</sup>
Ca-47 (a)		3.0	8.1X10 <sup>1</sup>	3.0X10 <sup>-1</sup>	8.1	2.3X10 <sup>4</sup>	6.1X10 <sup>5</sup>
Cd-109	Cadmium (48)	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	9.6X10 <sup>1</sup>	2.6X10 <sup>3</sup>
Cd-113m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	8.3	2.2X10 <sup>2</sup>
Cd-115 (a)		3.0	8.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.9X10 <sup>4</sup>	5.1X10 <sup>5</sup>
Cd-115m		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	9.4X10 <sup>2</sup>	2.5X10 <sup>4</sup>
Ce-139	Cerium (58)	7.0	1.9X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	2.5X10 <sup>2</sup>	6.8X10 <sup>3</sup>
Ce-141		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.8X10 <sup>4</sup>
Ce-143		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.5X10 <sup>4</sup>	6.6X10 <sup>5</sup>
Ce-144 (a)		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	1.2X10 <sup>2</sup>	3.2X10 <sup>3</sup>
Cf-248	Californium (98)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-3</sup>	1.6X10 <sup>-1</sup>	5.8X10 <sup>1</sup>	1.6X10 <sup>3</sup>
Cf-249		3.0	8.1X10 <sup>1</sup>	8.0X10 <sup>-4</sup>	2.2X10 <sup>-2</sup>	1.5X10 <sup>-1</sup>	4.1
Cf-250		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>-3</sup>	5.4X10 <sup>-2</sup>	4.0	1.1X10 <sup>2</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Cf-251		7.0	1.9X10 <sup>2</sup>	7.0X10 <sup>-4</sup>	1.9X10 <sup>-2</sup>	5.9X10 <sup>-2</sup>	1.6
Cf-252 (h)		5.0X10 <sup>-2</sup>	1.4	3.0X10 <sup>-3</sup>	8.1X10 <sup>-2</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>
Cf-253 (a)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>-2</sup>	1.1	1.1X10 <sup>3</sup>	2.9X10 <sup>4</sup>
Cf-254		1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	3.1X10 <sup>2</sup>	8.5X10 <sup>3</sup>
Cl-36	Chlorine (17)	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.2X10 <sup>-3</sup>	3.3X10 <sup>-2</sup>
Cl-38		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	4.9X10 <sup>6</sup>	1.3X10 <sup>8</sup>
Cm-240	Curium (96)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	7.5X10 <sup>2</sup>	2.0X10 <sup>4</sup>
Cm-241		2.0	5.4X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	6.1X10 <sup>2</sup>	1.7X10 <sup>4</sup>
Cm-242		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0X10 <sup>-2</sup>	2.7X10 <sup>-1</sup>	1.2X10 <sup>2</sup>	3.3X10 <sup>3</sup>
Cm-243		9.0	2.4X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	1.9X10 <sup>-3</sup>	5.2X10 <sup>1</sup>
Cm-244		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>-3</sup>	5.4X10 <sup>-2</sup>	3.0	8.1X10 <sup>1</sup>
Cm-245		9.0	2.4X10 <sup>2</sup>	9.0X10 <sup>-4</sup>	2.4X10 <sup>-2</sup>	6.4X10 <sup>-3</sup>	1.7X10 <sup>-1</sup>
Cm-246		9.0	2.4X10 <sup>2</sup>	9.0X10 <sup>-4</sup>	2.4X10 <sup>-2</sup>	1.1X10 <sup>-2</sup>	3.1X10 <sup>-1</sup>
Cm-247 (a)		3.0	8.1X10 <sup>1</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	3.4X10 <sup>-6</sup>	9.3X10 <sup>-5</sup>
Cm-248		2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	3.0X10 <sup>-4</sup>	8.1X10 <sup>-3</sup>	1.6X10 <sup>-4</sup>	4.2X10 <sup>-3</sup>
Co-55	Cobalt (27)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	1.1X10 <sup>5</sup>	3.1X10 <sup>6</sup>
Co-56		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.1X10 <sup>3</sup>	3.0X10 <sup>4</sup>
Co-57		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	3.1X10 <sup>2</sup>	8.4X10 <sup>3</sup>
Co-58		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.2X10 <sup>3</sup>	3.2X10 <sup>4</sup>
Co-58m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.2X10 <sup>5</sup>	5.9X10 <sup>6</sup>
Co-60		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.2X10 <sup>1</sup>	1.1X10 <sup>3</sup>
Cr-51	Chromium (24)	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.4X10 <sup>3</sup>	9.2X10 <sup>4</sup>
Cs-129	Cesium (55)	4.0	1.1X10 <sup>2</sup>	4.0	1.1X10 <sup>2</sup>	2.8X10 <sup>4</sup>	7.6X10 <sup>5</sup>
Cs-131		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.8X10 <sup>3</sup>	1.0X10 <sup>5</sup>
Cs-132		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	5.7X10 <sup>3</sup>	1.5X10 <sup>5</sup>
Cs-134		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	4.8X10 <sup>1</sup>	1.3X10 <sup>3</sup>
Cs-134m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.0X10 <sup>5</sup>	8.0X10 <sup>6</sup>
Cs-135		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0	2.7X10 <sup>1</sup>	4.3X10 <sup>-5</sup>	1.2X10 <sup>-3</sup>
Cs-136		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	2.7X10 <sup>3</sup>	7.3X10 <sup>4</sup>
Cs-137 (a)		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.2	8.7X10 <sup>1</sup>
Cu-64	Copper (29)	6.0	1.6X10 <sup>2</sup>	1.0	2.7X10 <sup>1</sup>	1.4X10 <sup>5</sup>	3.9X10 <sup>6</sup>
Cu-67		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	2.8X10 <sup>4</sup>	7.6X10 <sup>5</sup>
Dy-159	Dysprosium (66)	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.1X10 <sup>2</sup>	5.7X10 <sup>3</sup>
Dy-165		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.0X10 <sup>5</sup>	8.2X10 <sup>6</sup>
Dy-166 (a)		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	3.0X10 <sup>-1</sup>	8.1	8.6X10 <sup>3</sup>	2.3X10 <sup>5</sup>
Er-169	Erbium (68)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0	2.7X10 <sup>1</sup>	3.1X10 <sup>3</sup>	8.3X10 <sup>4</sup>
Er-171		8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	9.0X10 <sup>4</sup>	2.4X10 <sup>6</sup>
Eu-147	Europium (63)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	1.4X10 <sup>3</sup>	3.7X10 <sup>4</sup>
Eu-148		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	6.0X10 <sup>2</sup>	1.6X10 <sup>4</sup>
Eu-149		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	3.5X10 <sup>2</sup>	9.4X10 <sup>3</sup>
Eu-150 (short lived)		2.0	5.4X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.1X10 <sup>4</sup>	1.6X10 <sup>6</sup>
Eu-150 (long lived)		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.1X10 <sup>4</sup>	1.6X10 <sup>6</sup>
Eu-152		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	6.5	1.8X10 <sup>2</sup>
Eu-152m		8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	8.2X10 <sup>4</sup>	2.2X10 <sup>6</sup>
Eu-154		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	9.8	2.6X10 <sup>2</sup>
Eu-155		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	1.8X10 <sup>1</sup>	4.9X10 <sup>2</sup>
Eu-156		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	2.0X10 <sup>3</sup>	5.5X10 <sup>4</sup>
F-18	Fluorine (9)	1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.5X10 <sup>6</sup>	9.5X10 <sup>7</sup>
Fe-52 (a)	Iron (26)	3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	2.7X10 <sup>5</sup>	7.3X10 <sup>6</sup>
Fe-55		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	8.8X10 <sup>1</sup>	2.4X10 <sup>3</sup>
Fe-59		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	1.8X10 <sup>3</sup>	5.0X10 <sup>4</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Fe-60 (a)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-1</sup>	5.4	7.4X10 <sup>-4</sup>	2.0X10 <sup>-2</sup>
Ga-67	Gallium (31)	7.0	1.9X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	2.2X10 <sup>4</sup>	6.0X10 <sup>5</sup>
Ga-68		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	1.5X10 <sup>6</sup>	4.1X10 <sup>7</sup>
Ga-72		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.1X10 <sup>5</sup>	3.1X10 <sup>6</sup>
Gd-146 (a)	Gadolinium (64)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	6.9X10 <sup>2</sup>	1.9X10 <sup>4</sup>
Gd-148		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>-3</sup>	5.4X10 <sup>-2</sup>	1.2	3.2X10 <sup>1</sup>
Gd-153		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	9.0	2.4X10 <sup>2</sup>	1.3X10 <sup>2</sup>	3.5X10 <sup>3</sup>
Gd-159		3.0	8.1X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.9X10 <sup>4</sup>	1.1X10 <sup>6</sup>
Ge-68 (a)	Germanium (32)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	2.6X10 <sup>2</sup>	7.1X10 <sup>3</sup>
Ge-71		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	5.8X10 <sup>3</sup>	1.6X10 <sup>5</sup>
Ge-77		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.3X10 <sup>5</sup>	3.6X10 <sup>6</sup>
Hf-172 (a)	Hafnium (72)	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	4.1X10 <sup>1</sup>	1.1X10 <sup>3</sup>
Hf-175		3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	3.9X10 <sup>2</sup>	1.1X10 <sup>4</sup>
Hf-181		2.0	5.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	6.3X10 <sup>2</sup>	1.7X10 <sup>4</sup>
Hf-182		Unlimited	Unlimited	Unlimited	Unlimited	8.1X10 <sup>-6</sup>	2.2X10 <sup>-4</sup>
Hg-194 (a)	Mercury (80)	1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.3X10 <sup>-1</sup>	3.5
Hg-195m (a)		3.0	8.1X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	1.5X10 <sup>4</sup>	4.0X10 <sup>5</sup>
Hg-197		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	9.2X10 <sup>3</sup>	2.5X10 <sup>5</sup>
Hg-197m		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	2.5X10 <sup>4</sup>	6.7X10 <sup>5</sup>
Hg-203		5.0	1.4X10 <sup>2</sup>	1.0	2.7X10 <sup>1</sup>	5.1X10 <sup>2</sup>	1.4X10 <sup>4</sup>
Ho-166	Holmium (67)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	2.6X10 <sup>4</sup>	7.0X10 <sup>5</sup>
Ho-166m		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	6.6X10 <sup>-2</sup>	1.8
I-123	Iodine (53)	6.0	1.6X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	7.1X10 <sup>4</sup>	1.9X10 <sup>6</sup>
I-124		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	9.3X10 <sup>3</sup>	2.5X10 <sup>5</sup>
I-125		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	6.4X10 <sup>2</sup>	1.7X10 <sup>4</sup>
I-126		2.0	5.4X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	2.9X10 <sup>3</sup>	8.0X10 <sup>4</sup>
I-129		Unlimited	Unlimited	Unlimited	Unlimited	6.5X10 <sup>-6</sup>	1.8X10 <sup>-4</sup>
I-131		3.0	8.1X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	4.6X10 <sup>3</sup>	1.2X10 <sup>5</sup>
I-132		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	3.8X10 <sup>5</sup>	1.0X10 <sup>7</sup>
I-133		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	4.2X10 <sup>4</sup>	1.1X10 <sup>6</sup>
I-134		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	9.9X10 <sup>5</sup>	2.7X10 <sup>7</sup>
I-135 (a)		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.3X10 <sup>5</sup>	3.5X10 <sup>6</sup>
In-111	Indium (49)	3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	1.5X10 <sup>4</sup>	4.2X10 <sup>5</sup>
In-113m		4.0	1.1X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	6.2X10 <sup>5</sup>	1.7X10 <sup>7</sup>
In-114m (a)		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	8.6X10 <sup>2</sup>	2.3X10 <sup>4</sup>
In-115m		7.0	1.9X10 <sup>2</sup>	1.0	2.7X10 <sup>1</sup>	2.2X10 <sup>5</sup>	6.1X10 <sup>6</sup>
Ir-189 (a)	Iridium (77)	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.9X10 <sup>3</sup>	5.2X10 <sup>4</sup>
Ir-190		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	2.3X10 <sup>3</sup>	6.2X10 <sup>4</sup>
Ir-192 (c)		1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.4X10 <sup>2</sup>	9.2X10 <sup>3</sup>
Ir-194		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	3.1X10 <sup>4</sup>	8.4X10 <sup>5</sup>
K-40	Potassium (19)	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	2.4X10 <sup>-7</sup>	6.4X10 <sup>-6</sup>
K-42		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	2.2X10 <sup>5</sup>	6.0X10 <sup>6</sup>
K-43		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.2X10 <sup>5</sup>	3.3X10 <sup>6</sup>
Kr-81	Krypton (36)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	7.8X10 <sup>-4</sup>	2.1X10 <sup>-2</sup>
Kr-85		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.5X10 <sup>1</sup>	3.9X10 <sup>2</sup>
Kr-85m		8.0	2.2X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	3.0X10 <sup>5</sup>	8.2X10 <sup>6</sup>
Kr-87		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	1.0X10 <sup>6</sup>	2.8X10 <sup>7</sup>
La-137	Lanthanum (57)	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	6.0	1.6X10 <sup>2</sup>	1.6X10 <sup>-3</sup>	4.4X10 <sup>-2</sup>
La-140		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	2.1X10 <sup>4</sup>	5.6X10 <sup>5</sup>
Lu-172	Lutetium (71)	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	4.2X10 <sup>3</sup>	1.1X10 <sup>5</sup>
Lu-173		8.0	2.2X10 <sup>2</sup>	8.0	2.2X10 <sup>2</sup>	5.6X10 <sup>1</sup>	1.5X10 <sup>3</sup>
Lu-174		9.0	2.4X10 <sup>2</sup>	9.0	2.4X10 <sup>2</sup>	2.3X10 <sup>1</sup>	6.2X10 <sup>2</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Lu-174m		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	2.0X10 <sup>2</sup>	5.3X10 <sup>3</sup>
Lu-177		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	4.1X10 <sup>3</sup>	1.1X10 <sup>5</sup>
Mg-28 (a)	Magnesium (12)	3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	2.0X10 <sup>5</sup>	5.4X10 <sup>6</sup>
Mn-52	Manganese (25)	3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.6X10 <sup>4</sup>	4.4X10 <sup>5</sup>
Mn-53		Unlimited	Unlimited	Unlimited	Unlimited	6.8X10 <sup>-5</sup>	1.8X10 <sup>-3</sup>
Mn-54		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	2.9X10 <sup>2</sup>	7.7X10 <sup>3</sup>
Mn-56		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	8.0X10 <sup>5</sup>	2.2X10 <sup>7</sup>
Mo-93	Molybdenum (42)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	4.1X10 <sup>-2</sup>	1.1
Mo-99 (a) (i)		1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.8X10 <sup>4</sup>	4.8X10 <sup>5</sup>
N-13	Nitrogen (7)	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	5.4X10 <sup>7</sup>	1.5X10 <sup>9</sup>
Na-22	Sodium (11)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	2.3X10 <sup>2</sup>	6.3X10 <sup>3</sup>
Na-24		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	3.2X10 <sup>5</sup>	8.7X10 <sup>6</sup>
Nb-93m	Niobium (41)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	8.8	2.4X10 <sup>2</sup>
Nb-94		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.9X10 <sup>-3</sup>	1.9X10 <sup>-1</sup>
Nb-95		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.5X10 <sup>3</sup>	3.9X10 <sup>4</sup>
Nb-97		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	9.9X10 <sup>5</sup>	2.7X10 <sup>7</sup>
Nd-147	Neodymium (60)	6.0	1.6X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.0X10 <sup>3</sup>	8.1X10 <sup>4</sup>
Nd-149		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	4.5X10 <sup>5</sup>	1.2X10 <sup>7</sup>
Ni-59	Nickel (28)	Unlimited	Unlimited	Unlimited	Unlimited	3.0X10 <sup>-3</sup>	8.0X10 <sup>-2</sup>
Ni-63		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	2.1	5.7X10 <sup>1</sup>
Ni-65		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	7.1X10 <sup>5</sup>	1.9X10 <sup>7</sup>
Np-235	Neptunium (93)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	5.2X10 <sup>1</sup>	1.4X10 <sup>3</sup>
Np-236 (short-lived)		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	4.7X10 <sup>-4</sup>	1.3X10 <sup>-2</sup>
Np-236 (long-lived)		9.0X10 <sup>0</sup>	2.4X10 <sup>2</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	4.7X10 <sup>-4</sup>	1.3X10 <sup>-2</sup>
Np-237		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>-3</sup>	5.4X10 <sup>-2</sup>	2.6X10 <sup>-5</sup>	7.1X10 <sup>-4</sup>
Np-239		7.0	1.9X10 <sup>2</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	8.6X10 <sup>3</sup>	2.3X10 <sup>5</sup>
Os-185	Osmium (76)	1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	2.8X10 <sup>2</sup>	7.5X10 <sup>3</sup>
Os-191		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	1.6X10 <sup>3</sup>	4.4X10 <sup>4</sup>
Os-191m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	4.6X10 <sup>4</sup>	1.3X10 <sup>6</sup>
Os-193		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.2X10 <sup>4</sup>	5.3X10 <sup>5</sup>
Os-194 (a)		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.1X10 <sup>1</sup>	3.1X10 <sup>2</sup>
P-32	Phosphorus (15)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	1.1X10 <sup>4</sup>	2.9X10 <sup>5</sup>
P-33		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0	2.7X10 <sup>1</sup>	5.8X10 <sup>3</sup>	1.6X10 <sup>5</sup>
Pa-230 (a)	Protactinium (91)	2.0	5.4X10 <sup>1</sup>	7.0X10 <sup>-2</sup>	1.9	1.2X10 <sup>3</sup>	3.3X10 <sup>4</sup>
Pa-231		4.0	1.1X10 <sup>2</sup>	4.0X10 <sup>-4</sup>	1.1X10 <sup>-2</sup>	1.7X10 <sup>-3</sup>	4.7X10 <sup>-2</sup>
Pa-233		5.0	1.4X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.7X10 <sup>2</sup>	2.1X10 <sup>4</sup>
Pb-201	Lead (82)	1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	6.2X10 <sup>4</sup>	1.7X10 <sup>6</sup>
Pb-202		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.2X10 <sup>-4</sup>	3.4X10 <sup>-3</sup>
Pb-203		4.0	1.1X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	1.1X10 <sup>4</sup>	3.0X10 <sup>5</sup>
Pb-205		Unlimited	Unlimited	Unlimited	Unlimited	4.5X10 <sup>-6</sup>	1.2X10 <sup>-4</sup>
Pb-210 (a)		1.0	2.7X10 <sup>1</sup>	5.0X10 <sup>-2</sup>	1.4	2.8	7.6X10 <sup>1</sup>
Pb-212 (a)		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	2.0X10 <sup>-1</sup>	5.4	5.1X10 <sup>4</sup>	1.4X10 <sup>6</sup>
Pd-103 (a)	Palladium (46)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.8X10 <sup>3</sup>	7.5X10 <sup>4</sup>
Pd-107		Unlimited	Unlimited	Unlimited	Unlimited	1.9X10 <sup>-5</sup>	5.1X10 <sup>-4</sup>
Pd-109		2.0	5.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	7.9X10 <sup>4</sup>	2.1X10 <sup>6</sup>
Pm-143	Promethium (61)	3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	1.3X10 <sup>2</sup>	3.4X10 <sup>3</sup>
Pm-144		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	9.2X10 <sup>1</sup>	2.5X10 <sup>3</sup>
Pm-145		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	5.2	1.4X10 <sup>2</sup>
Pm-147		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0	5.4X10 <sup>1</sup>	3.4X10 <sup>1</sup>	9.3X10 <sup>2</sup>
Pm-148m (a)		8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	7.9X10 <sup>2</sup>	2.1X10 <sup>4</sup>
Pm-149		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.5X10 <sup>4</sup>	4.0X10 <sup>5</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Pm-151		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.7X10 <sup>4</sup>	7.3X10 <sup>5</sup>
Po-210	Polonium (84)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	1.7X10 <sup>2</sup>	4.5X10 <sup>3</sup>
Pr-142	Praseodymium (59)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.3X10 <sup>4</sup>	1.2X10 <sup>6</sup>
Pr-143		3.0	8.1X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.5X10 <sup>3</sup>	6.7X10 <sup>4</sup>
Pt-188 (a)	Platinum (78)	1.0	2.7X10 <sup>1</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	2.5X10 <sup>3</sup>	6.8X10 <sup>4</sup>
Pt-191		4.0	1.1X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	8.7X10 <sup>3</sup>	2.4X10 <sup>5</sup>
Pt-193		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.4	3.7X10 <sup>1</sup>
Pt-193m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.8X10 <sup>3</sup>	1.6X10 <sup>5</sup>
Pt-195m		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	6.2X10 <sup>3</sup>	1.7X10 <sup>5</sup>
Pt-197		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.2X10 <sup>4</sup>	8.7X10 <sup>5</sup>
Pt-197m		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.7X10 <sup>5</sup>	1.0X10 <sup>7</sup>
Pu-236	Plutonium (94)	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.0X10 <sup>-3</sup>	8.1X10 <sup>-2</sup>	2.0X10 <sup>1</sup>	5.3X10 <sup>2</sup>
Pu-237		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	4.5X10 <sup>2</sup>	1.2X10 <sup>4</sup>
Pu-238		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	6.3X10 <sup>-1</sup>	1.7X10 <sup>1</sup>
Pu-239		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	2.3X10 <sup>-3</sup>	6.2X10 <sup>-2</sup>
Pu-240		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	8.4X10 <sup>-3</sup>	2.3X10 <sup>-1</sup>
Pu-241 (a)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-2</sup>	1.6	3.8	1.0X10 <sup>2</sup>
Pu-242		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	1.5X10 <sup>-4</sup>	3.9X10 <sup>-3</sup>
Pu-244 (a)		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	6.7X10 <sup>-7</sup>	1.8X10 <sup>-5</sup>
Ra-223 (a)	Radium (88)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	7.0X10 <sup>-3</sup>	1.9X10 <sup>-1</sup>	1.9X10 <sup>3</sup>	5.1X10 <sup>4</sup>
Ra-224 (a)		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	5.9X10 <sup>3</sup>	1.6X10 <sup>5</sup>
Ra-225 (a)		2.0X10 <sup>-1</sup>	5.4	4.0X10 <sup>-3</sup>	1.1X10 <sup>-1</sup>	1.5X10 <sup>3</sup>	3.9X10 <sup>4</sup>
Ra-226 (a)		2.0X10 <sup>-1</sup>	5.4	3.0X10 <sup>-3</sup>	8.1X10 <sup>-2</sup>	3.7X10 <sup>-2</sup>	1.0
Ra-228 (a)		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>
Rb-81	Rubidium (37)	2.0	5.4X10 <sup>1</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	3.1X10 <sup>5</sup>	8.4X10 <sup>6</sup>
Rb-83 (a)		2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	6.8X10 <sup>2</sup>	1.8X10 <sup>4</sup>
Rb-84		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.8X10 <sup>3</sup>	4.7X10 <sup>4</sup>
Rb-86		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	3.0X10 <sup>3</sup>	8.1X10 <sup>4</sup>
Rb-87		Unlimited	Unlimited	Unlimited	Unlimited	3.2X10 <sup>-9</sup>	8.6X10 <sup>-8</sup>
Rb (nat)		Unlimited	Unlimited	Unlimited	Unlimited	6.7X10 <sup>6</sup>	1.8X10 <sup>8</sup>
Re-184	Rhenium (75)	1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	6.9X10 <sup>2</sup>	1.9X10 <sup>4</sup>
Re-184m		3.0	8.1X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.6X10 <sup>2</sup>	4.3X10 <sup>3</sup>
Re-186		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.9X10 <sup>3</sup>	1.9X10 <sup>5</sup>
Re-187		Unlimited	Unlimited	Unlimited	Unlimited	1.4X10 <sup>-9</sup>	3.8X10 <sup>-8</sup>
Re-188		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	3.6X10 <sup>4</sup>	9.8X10 <sup>5</sup>
Re-189 (a)		3.0	8.1X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.5X10 <sup>4</sup>	6.8X10 <sup>5</sup>
Re (nat)		Unlimited	Unlimited	Unlimited	Unlimited	0.0	2.4X10 <sup>-8</sup>
Rh-99	Rhodium (45)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	3.0X10 <sup>3</sup>	8.2X10 <sup>4</sup>
Rh-101		4.0	1.1X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	4.1X10 <sup>1</sup>	1.1X10 <sup>3</sup>
Rh-102		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	4.5X10 <sup>1</sup>	1.2X10 <sup>3</sup>
Rh-102m		2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	2.3X10 <sup>2</sup>	6.2X10 <sup>3</sup>
Rh-103m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.2X10 <sup>6</sup>	3.3X10 <sup>7</sup>
Rh-105		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	3.1X10 <sup>4</sup>	8.4X10 <sup>5</sup>
Rn-222 (a)	Radon (86)	3.0X10 <sup>-1</sup>	8.1	4.0X10 <sup>-3</sup>	1.1X10 <sup>-1</sup>	5.7X10 <sup>3</sup>	1.5X10 <sup>5</sup>
Ru-97	Ruthenium (44)	5.0	1.4X10 <sup>2</sup>	5.0	1.4X10 <sup>2</sup>	1.7X10 <sup>4</sup>	4.6X10 <sup>5</sup>
Ru-103 (a)		2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	1.2X10 <sup>3</sup>	3.2X10 <sup>4</sup>
Ru-105		1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.5X10 <sup>5</sup>	6.7X10 <sup>6</sup>
Ru-106 (a)		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	1.2X10 <sup>2</sup>	3.3X10 <sup>3</sup>
S-35	Sulphur (16)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0	8.1X10 <sup>1</sup>	1.6X10 <sup>3</sup>	4.3X10 <sup>4</sup>
Sb-122	Antimony (51)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.5X10 <sup>4</sup>	4.0X10 <sup>5</sup>
Sb-124		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.5X10 <sup>2</sup>	1.7X10 <sup>4</sup>
Sb-125		2.0	5.4X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	3.9X10 <sup>1</sup>	1.0X10 <sup>3</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Sb-126		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	3.1X10 <sup>3</sup>	8.4X10 <sup>4</sup>
Sc-44	Scandium (21)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	6.7X10 <sup>5</sup>	1.8X10 <sup>7</sup>
Sc-46		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	1.3X10 <sup>3</sup>	3.4X10 <sup>4</sup>
Sc-47		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	3.1X10 <sup>4</sup>	8.3X10 <sup>5</sup>
Sc-48		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	5.5X10 <sup>4</sup>	1.5X10 <sup>6</sup>
Se-75	Selenium (34)	3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.5X10 <sup>4</sup>
Se-79		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0	5.4X10 <sup>1</sup>	2.6X10 <sup>-3</sup>	7.0X10 <sup>-2</sup>
Si-31	Silicon (14)	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.4X10 <sup>6</sup>	3.9X10 <sup>7</sup>
Si-32		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	3.9	1.1X10 <sup>2</sup>
Sm-145	Samarium (62)	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	9.8X10 <sup>1</sup>	2.6X10 <sup>3</sup>
Sm-147		Unlimited	Unlimited	Unlimited	Unlimited	8.5X10 <sup>-1</sup>	2.3X10 <sup>-8</sup>
Sm-151		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	9.7X10 <sup>-1</sup>	2.6X10 <sup>1</sup>
Sm-153		9.0	2.4X10 <sup>2</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.6X10 <sup>4</sup>	4.4X10 <sup>5</sup>
Sn-113 (a)	Tin (50)	4.0	1.1X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	3.7X10 <sup>2</sup>	1.0X10 <sup>4</sup>
Sn-117m		7.0	1.9X10 <sup>2</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	3.0X10 <sup>3</sup>	8.2X10 <sup>4</sup>
Sn-119m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	1.4X10 <sup>2</sup>	3.7X10 <sup>3</sup>
Sn-121m (a)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>
Sn-123		8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	3.0X10 <sup>2</sup>	8.2X10 <sup>3</sup>
Sn-125		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>3</sup>	1.1X10 <sup>5</sup>
Sn-126 (a)		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.0X10 <sup>-3</sup>	2.8X10 <sup>-2</sup>
Sr-82 (a)	Strontium (38)	2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	2.3X10 <sup>3</sup>	6.2X10 <sup>4</sup>
Sr-85		2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	8.8X10 <sup>2</sup>	2.4X10 <sup>4</sup>
Sr-85m		5.0	1.4X10 <sup>2</sup>	5.0	1.4X10 <sup>2</sup>	1.2X10 <sup>6</sup>	3.3X10 <sup>7</sup>
Sr-87m		3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	4.8X10 <sup>5</sup>	1.3X10 <sup>7</sup>
Sr-89		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.9X10 <sup>4</sup>
Sr-90 (a)		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	5.1	1.4X10 <sup>2</sup>
Sr-91 (a)		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.3X10 <sup>5</sup>	3.6X10 <sup>6</sup>
Sr-92 (a)		1.0	2.7X10 <sup>1</sup>	3.0X10 <sup>-1</sup>	8.1	4.7X10 <sup>5</sup>	1.3X10 <sup>7</sup>
T(H-3)	Tritium (1)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.6X10 <sup>2</sup>	9.7X10 <sup>3</sup>
Ta-178 (long-lived)	Tantalum (73)	1.0	2.7X10 <sup>1</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	4.2X10 <sup>6</sup>	1.1X10 <sup>8</sup>
Ta-179		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	4.1X10 <sup>1</sup>	1.1X10 <sup>3</sup>
Ta-182		9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	2.3X10 <sup>2</sup>	6.2X10 <sup>3</sup>
Tb-157	Terbium (65)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	5.6X10 <sup>-1</sup>	1.5X10 <sup>1</sup>
Tb-158		1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	5.6X10 <sup>-1</sup>	1.5X10 <sup>1</sup>
Tb-160		1.0	2.7X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	4.2X10 <sup>2</sup>	1.1X10 <sup>4</sup>
Tc-95m (a)	Technetium (43)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	8.3X10 <sup>2</sup>	2.2X10 <sup>4</sup>
Tc-96		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.2X10 <sup>4</sup>	3.2X10 <sup>5</sup>
Tc-96m (a)		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.4X10 <sup>6</sup>	3.8X10 <sup>7</sup>
Tc-97		Unlimited	Unlimited	Unlimited	Unlimited	5.2X10 <sup>-5</sup>	1.4X10 <sup>-3</sup>
Tc-97m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0	2.7X10 <sup>1</sup>	5.6X10 <sup>2</sup>	1.5X10 <sup>4</sup>
Tc-98		8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	3.2X10 <sup>-5</sup>	8.7X10 <sup>-4</sup>
Tc-99		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.3X10 <sup>-4</sup>	1.7X10 <sup>-2</sup>
Tc-99m		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	4.0	1.1X10 <sup>2</sup>	1.9X10 <sup>5</sup>	5.3X10 <sup>6</sup>
Te-121	Tellurium (52)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	2.4X10 <sup>3</sup>	6.4X10 <sup>4</sup>
Te-121m		5.0	1.4X10 <sup>2</sup>	3.0	8.1X10 <sup>1</sup>	2.6X10 <sup>2</sup>	7.0X10 <sup>3</sup>
Te-123m		8.0	2.2X10 <sup>2</sup>	1.0	2.7X10 <sup>1</sup>	3.3X10 <sup>2</sup>	8.9X10 <sup>3</sup>
Te-125m		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.7X10 <sup>2</sup>	1.8X10 <sup>4</sup>
Te-127		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	9.8X10 <sup>4</sup>	2.6X10 <sup>6</sup>
Te-127m (a)		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	3.5X10 <sup>2</sup>	9.4X10 <sup>3</sup>
Te-129		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	7.7X10 <sup>5</sup>	2.1X10 <sup>7</sup>
Te-129m (a)		8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>4</sup>



Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
Te-131m (a)		7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	3.0X10 <sup>4</sup>	8.0X10 <sup>5</sup>
Te-132 (a)		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	3.1X10 <sup>4</sup>	3.0X10 <sup>5</sup>
Th-227	Thorium (90)	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	5.0X10 <sup>-3</sup>	1.4X10 <sup>-1</sup>	1.1X10 <sup>3</sup>	3.1X10 <sup>4</sup>
Th-228 (a)		5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	3.0X10 <sup>1</sup>	8.2X10 <sup>2</sup>
Th-229		5.0	1.4X10 <sup>2</sup>	5.0X10 <sup>-4</sup>	1.4X10 <sup>-2</sup>	7.9X10 <sup>-3</sup>	2.1X10 <sup>-1</sup>
Th-230		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	7.6X10 <sup>-4</sup>	2.1X10 <sup>-2</sup>
Th-231		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	2.0X10 <sup>4</sup>	5.3X10 <sup>5</sup>
Th-232		Unlimited	Unlimited	Unlimited	Unlimited	4.0X10 <sup>-9</sup>	1.1X10 <sup>-7</sup>
Th-234 (a)		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	8.6X10 <sup>2</sup>	2.3X10 <sup>4</sup>
Th(nat)		Unlimited	Unlimited	Unlimited	Unlimited	8.1X10 <sup>-9</sup>	2.2X10 <sup>-7</sup>
Ti-44 (a)	Titanium (22)	5.0X10 <sup>-1</sup>	1.4X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	6.4	1.7X10 <sup>2</sup>
Tl-200	Thallium (81)	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	2.2X10 <sup>4</sup>	6.0X10 <sup>5</sup>
Tl-201		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	4.0	1.1X10 <sup>2</sup>	7.9X10 <sup>3</sup>	2.1X10 <sup>5</sup>
Tl-202		2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	2.0X10 <sup>3</sup>	5.3X10 <sup>4</sup>
Tl-204		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	1.7X10 <sup>1</sup>	4.6X10 <sup>2</sup>
Tm-167	Thulium (69)	7.0	1.9X10 <sup>2</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	3.1X10 <sup>3</sup>	8.5X10 <sup>4</sup>
Tm-170		3.0	8.1X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.2X10 <sup>2</sup>	6.0X10 <sup>3</sup>
Tm-171		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>
U-230 (fast lung absorption) (a)(d)	Uranium (92)	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0X10 <sup>-1</sup>	2.7	1.0X10 <sup>3</sup>	2.7X10 <sup>4</sup>
U-230 (medium lung absorption) (a)(e)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>-3</sup>	1.1X10 <sup>-1</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>4</sup>
U-230 (slow lung absorption) (a)(f)		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.0X10 <sup>-3</sup>	8.1X10 <sup>-2</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>4</sup>
U-232 (fast lung absorption) (d)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	1.0X10 <sup>-2</sup>	2.7X10 <sup>-1</sup>	8.3X10 <sup>-1</sup>	2.2X10 <sup>1</sup>
U-232 (medium lung absorption) (e)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	7.0X10 <sup>-3</sup>	1.9X10 <sup>-1</sup>	8.3X10 <sup>-1</sup>	2.2X10 <sup>1</sup>
U-232 (slow lung absorption) (f)		1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	1.0X10 <sup>-3</sup>	2.7X10 <sup>-2</sup>	8.3X10 <sup>-1</sup>	2.2X10 <sup>1</sup>
U-233 (fast lung absorption) (d)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	9.0X10 <sup>-2</sup>	2.4	3.6X10 <sup>-4</sup>	9.7X10 <sup>-3</sup>
U-233 (medium lung absorption) (e)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	3.6X10 <sup>-4</sup>	9.7X10 <sup>-3</sup>
U-233 (slow lung absorption) (f)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-3</sup>	1.6X10 <sup>-1</sup>	3.6X10 <sup>-4</sup>	9.7X10 <sup>-3</sup>
U-234 (fast lung absorption) (d)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	9.0X10 <sup>-2</sup>	2.4	2.3X10 <sup>-4</sup>	6.2X10 <sup>-3</sup>
U-234 (medium lung absorption) (e)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	2.3X10 <sup>-4</sup>	6.2X10 <sup>-3</sup>
U-234 (slow lung absorption) (f)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-3</sup>	1.6X10 <sup>-1</sup>	2.3X10 <sup>-4</sup>	6.2X10 <sup>-3</sup>
U-235 (all lung absorption types) (a), (d), (e), (f)		Unlimited	Unlimited	Unlimited	Unlimited	8.0X10 <sup>-8</sup>	2.2X10 <sup>-6</sup>
U-236 (fast lung absorption) (d)		Unlimited	Unlimited	Unlimited	Unlimited	2.4X10 <sup>-6</sup>	6.5X10 <sup>-5</sup>
U-236 (medium lung absorption) (e)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	2.0X10 <sup>-2</sup>	5.4X10 <sup>-1</sup>	2.4X10 <sup>-6</sup>	6.5X10 <sup>-5</sup>
U-236 (slow lung absorption) (f)		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	6.0X10 <sup>-3</sup>	1.6X10 <sup>-1</sup>	2.4X10 <sup>-6</sup>	6.5X10 <sup>-5</sup>

Symbol of radionuclide	Element and atomic number	A1 (TBq)	A1 (Ci) <sup>b</sup>	A2 (TBq)	A2 (Ci) <sup>b</sup>	Specific activity	
						(TBq/g)	(Ci/g)
U-238 (all lung absorption types) (d), (e), (f)		Unlimited	Unlimited	Unlimited	Unlimited	1.2X10 <sup>-8</sup>	3.4X10 <sup>-7</sup>
U (nat)		Unlimited	Unlimited	Unlimited	Unlimited	2.6X10 <sup>-8</sup>	7.1X10 <sup>-7</sup>
U (enriched to 20% or less) (g)		Unlimited	Unlimited	Unlimited	Unlimited	See Table A-4	See Table A-4
U (dep)		Unlimited	Unlimited	Unlimited	Unlimited	See Table A-4	See Table A-3
V-48	Vanadium (23)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	6.3X10 <sup>3</sup>	1.7X10 <sup>5</sup>
V-49		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.0X10 <sup>2</sup>	8.1X10 <sup>3</sup>
W-178 (a)	Tungsten (74)	9.0	2.4X10 <sup>2</sup>	5.0	1.4X10 <sup>2</sup>	1.3X10 <sup>3</sup>	3.4X10 <sup>4</sup>
W-181		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	2.2X10 <sup>2</sup>	6.0X10 <sup>3</sup>
W-185		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	3.5X10 <sup>2</sup>	9.4X10 <sup>3</sup>
W-187		2.0	5.4X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	2.6X10 <sup>4</sup>	7.0X10 <sup>5</sup>
W-188 (a)		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	3.0X10 <sup>-1</sup>	8.1	3.7X10 <sup>2</sup>	1.0X10 <sup>4</sup>
Xe-122 (a)	Xenon (54)	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.8X10 <sup>4</sup>	1.3X10 <sup>6</sup>
Xe-123		2.0	5.4X10 <sup>1</sup>	7.0X10 <sup>-1</sup>	1.9X10 <sup>1</sup>	4.4X10 <sup>5</sup>	1.2X10 <sup>7</sup>
Xe-127		4.0	1.1X10 <sup>2</sup>	2.0	5.4X10 <sup>1</sup>	1.0X10 <sup>3</sup>	2.8X10 <sup>4</sup>
Xe-131m		4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	4.0X10 <sup>1</sup>	1.1X10 <sup>3</sup>	3.1X10 <sup>3</sup>	8.4X10 <sup>4</sup>
Xe-133		2.0X10 <sup>1</sup>	5.4X10 <sup>2</sup>	1.0X10 <sup>1</sup>	2.7X10 <sup>2</sup>	6.9X10 <sup>3</sup>	1.9X10 <sup>5</sup>
Xe-135		3.0	8.1X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	9.5X10 <sup>4</sup>	2.6X10 <sup>6</sup>
Y-87 (a)	Yttrium (39)	1.0	2.7X10 <sup>1</sup>	1.0	2.7X10 <sup>1</sup>	1.7X10 <sup>4</sup>	4.5X10 <sup>5</sup>
Y-88		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	5.2X10 <sup>2</sup>	1.4X10 <sup>4</sup>
Y-90		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	2.0X10 <sup>4</sup>	5.4X10 <sup>5</sup>
Y-91		6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	9.1X10 <sup>2</sup>	2.5X10 <sup>4</sup>
Y-91m		2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	1.5X10 <sup>6</sup>	4.2X10 <sup>7</sup>
Y-92		2.0X10 <sup>-1</sup>	5.4	2.0X10 <sup>-1</sup>	5.4	3.6X10 <sup>5</sup>	9.6X10 <sup>6</sup>
Y-93		3.0X10 <sup>-1</sup>	8.1	3.0X10 <sup>-1</sup>	8.1	1.2X10 <sup>5</sup>	3.3X10 <sup>6</sup>
Yb-169	Ytterbium (70)	4.0	1.1X10 <sup>2</sup>	1.0	2.7X10 <sup>1</sup>	8.9X10 <sup>2</sup>	2.4X10 <sup>4</sup>
Yb-175		3.0X10 <sup>1</sup>	8.1X10 <sup>2</sup>	9.0X10 <sup>-1</sup>	2.4X10 <sup>1</sup>	6.6X10 <sup>3</sup>	1.8X10 <sup>5</sup>
Zn-65	Zinc (30)	2.0	5.4X10 <sup>1</sup>	2.0	5.4X10 <sup>1</sup>	3.0X10 <sup>2</sup>	8.2X10 <sup>3</sup>
Zn-69		3.0	8.1X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.8X10 <sup>6</sup>	4.9X10 <sup>7</sup>
Zn-69m (a)		3.0	8.1X10 <sup>1</sup>	6.0X10 <sup>-1</sup>	1.6X10 <sup>1</sup>	1.2X10 <sup>5</sup>	3.3X10 <sup>6</sup>
Zr-88	Zirconium (40)	3.0	8.1X10 <sup>1</sup>	3.0	8.1X10 <sup>1</sup>	6.6X10 <sup>2</sup>	1.8X10 <sup>4</sup>
Zr-93		Unlimited	Unlimited	Unlimited	Unlimited	9.3X10 <sup>-5</sup>	2.5X10 <sup>-3</sup>
Zr-95 (a)		2.0	5.4X10 <sup>1</sup>	8.0X10 <sup>-1</sup>	2.2X10 <sup>1</sup>	7.9X10 <sup>2</sup>	2.1X10 <sup>4</sup>
Zr-97 (a)		4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	4.0X10 <sup>-1</sup>	1.1X10 <sup>1</sup>	7.1X10 <sup>4</sup>	1.9X10 <sup>6</sup>

- (a) A<sub>1</sub> and/or A<sub>2</sub> values include contributions from daughter nuclides with half-lives less than ten days.
- (b) (Reserved.)
- (c) The quantity may be determined from a measurement of the rate of decay or a measurement of the radiation level at a prescribed distance from the source.
- (d) These values apply only to compounds of uranium that take the chemical form of UF<sub>6</sub>, UO<sub>2</sub>F<sub>2</sub> and UO<sub>2</sub>(NO<sub>3</sub>)<sub>2</sub> in both normal and accident conditions of transport.
- (e) These values apply only to compounds of uranium that take the chemical form of UO<sub>3</sub>, UF<sub>4</sub>, UCl<sub>4</sub> and hexavalent compounds in both normal and accident conditions of transport.
- (f) These values apply to all compounds of uranium other than those specified in notes (d) and (e) of this table.
- (g) These values apply to unirradiated uranium only.
- (h) A<sub>1</sub> = 0.1 TBq (2.7 Ci) and A<sub>2</sub> = 0.001 TBq (0.027 Ci) for Cf-252 for domestic use.
- (i) A<sub>2</sub> = 0.74 TBq (20 Ci) for Mo-99 for domestic use.

Table A-2.—Exempt Material Activity Concentrations and Exempt Consignment Activity Limits for Radionuclides

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Ac-225	Actinium (89)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Ac-227	-	1.0X10 <sup>-1</sup>	2.7X10 <sup>-12</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Ac-228	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Ag-105	Silver (47)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ag-108m (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ag-110m	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ag-111	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Al-26	Aluminum (13)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Am-241	Americium (95)	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Am-242m (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Am-243 (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Ar-37	Argon (18)	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Ar-39	-	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Ar-41	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
As-72	Arsenic (33)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
As-73	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
As-74	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
As-76	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
As-77	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
At-211	Astatine (85)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Au-193	Gold (79)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Au-194	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Au-195	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Au-198	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Au-199	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ba-131	Barium (56)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ba-133	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ba-133m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ba-140 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Be-7	Beryllium (4)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Be-10	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Bi-205	Bismuth (83)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Bi-206	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Bi-207	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Bi-210	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Bi-210m	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Bi-212 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Bk-247	Berkelium (97)	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Bk-249	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Br-76	Bromine (35)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Br-77	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Br-82	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
C-11	Carbon (6)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
C-14	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ca-41	Calcium (20)	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ca-45	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ca-47	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cd-109	Cadmium (48)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cd-113m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cd-115	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cd-115m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ce-139	Cerium (58)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ce-141	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ce-143	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Ce-144 (b)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cf-248	Californium (98)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cf-249	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Cf-250	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cf-251	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Cf-252	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cf-253	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cf-254	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Cl-36	Chlorine (17)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cl-38	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cm-240	Curium (96)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cm-241	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cm-242	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cm-243	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cm-244	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cm-245	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Cm-246	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Cm-247	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cm-248	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Co-55	Cobalt (27)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Co-56	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Co-57	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Co-58	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Co-58m	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Co-60	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cr-51	Chromium (24)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Cs-129	Cesium (55)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cs-131	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cs-132	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cs-134	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cs-134m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cs-135	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Cs-136	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Cs-137 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Cu-64	Copper (29)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Cu-67	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Dy-159	Dysprosium (66)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Dy-165	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Dy-166	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Er-169	Erbium (68)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Er-171	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-147	Europium (63)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-148	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-149	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Eu-150 (short lived)	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-150 (long lived)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-152	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-152m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-154	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Eu-155	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Eu-156	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
F-18	Fluorine (9)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Fe-52	Iron (26)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Fe-55	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Fe-59	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Fe-60	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ga-67	Gallium (31)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ga-68	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ga-72	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Gd-146	Gadolinium (64)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Gd-148	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Gd-153	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Gd-159	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ge-68	Germanium (32)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ge-71	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Ge-77	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Hf-172	Hafnium (72)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hf-175	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hf-181	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hf-182	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hg-194	Mercury (80)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hg-195m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hg-197	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Hg-197m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Hg-203	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ho-166	Holmium (67)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ho-166m	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
I-123	Iodine (53)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
I-124	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
I-125	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
I-126	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
I-129	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
I-131	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
I-132	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
I-133	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
I-134	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
I-135	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
In-111	Indium (49)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
In-113m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
In-114m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
In-115m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ir-189	Iridium (77)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ir-190	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ir-192	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Ir-194	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
K-40	Potassium (19)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
K-42	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
K-43	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Kr-81	Krypton (36)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Kr-85	-	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Kr-85m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>10</sup>	2.7X10 <sup>-1</sup>

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Kr-87	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
La-137	Lanthanum (57)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
La-140	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Lu-172	Lutetium (71)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Lu-173	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Lu-174	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Lu-174m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Lu-177	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Mg-28	Magnesium (12)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Mn-52	Manganese (25)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Mn-53	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Mn-54	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Mn-56	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Mo-93	Molybdenum (42)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Mo-99	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
N-13	Nitrogen (7)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Na-22	Sodium (11)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Na-24	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Nb-93m	Niobium (41)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Nb-94	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Nb-95	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Nb-97	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Nd-147	Neodymium (60)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Nd-149	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ni-59	Nickel (28)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Ni-63	-	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Ni-65	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Np-235	Neptunium (93)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Np-236 (short-lived)	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Np-236 (long-lived)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Np-237 (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Np-239	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Os-185	Osmium (76)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Os-191	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Os-191m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Os-193	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Os-194	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
P-32	Phosphorus (15)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
P-33	-	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Pa-230	Protactinium (91)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pa-231	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Pa-233	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pb-201	Lead (82)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pb-202	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pb-203	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pb-205	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pb-210 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Pb-212 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Pd-103	Palladium (46)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Pd-107	-	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>

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Pd-109	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pm-143	Promethium (61)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pm-144	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pm-145	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pm-147	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pm-148m	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pm-149	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pm-151	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Po-210	Polonium (84)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Pr-142	Praseodymium (59)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Pr-143	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pt-188	Platinum (78)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pt-191	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pt-193	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pt-193m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pt-195m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pt-197	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pt-197m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Pu-236	Plutonium (94)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Pu-237	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Pu-238	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Pu-239	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Pu-240	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Pu-241	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Pu-242	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Pu-244	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Ra-223 (b)	Radium (88)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ra-224 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ra-225	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Ra-226 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Ra-228 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Rb-81	Rubidium (37)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Rb-83	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Rb-84	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Rb-86	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Rb-87	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Rb (nat)	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Re-184	Rhenium (75)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Re-184m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Re-186	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Re-187	-	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Re-188	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Re-189	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Re (nat)	-	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Rh-99	Rhodium (45)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Rh-101	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Rh-102	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Rh-102m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Rh-103m	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Rh-105	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Rn-222 (b)	Radon (86)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Ru-97	Ruthenium (44)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ru-103	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ru-105	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ru-106 (b)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
S-35	Sulphur (16)	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Sb-122	Antimony (51)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Sb-124	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sb-125	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sb-126	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Sc-44	Scandium (21)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Sc-46	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sc-47	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sc-48	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Se-75	Selenium (34)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Se-79	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Si-31	Silicon (14)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Si-32	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sm-145	Samarium (62)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Sm-147	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Sm-151	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Sm-153	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sn-113	Tin (50)	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Sn-117m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sn-119m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Sn-121m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Sn-123	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sn-125	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Sn-126	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Sr-82	Strontium (38)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Sr-85	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sr-85m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Sr-87m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sr-89	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Sr-90 (b)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Sr-91	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Sr-92	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
T(H-3)	Tritium (1)	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Ta-178 (long-lived)	Tantalum (73)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Ta-179	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Ta-182	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Tb-157	Terbium (65)	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Tb-158	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tb-160	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tc-95m	Technetium (43)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tc-96	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tc-96m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Tc-97	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
Tc-97m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Tc-98	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tc-99	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Tc-99m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>



Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Te-121	Tellurium (52)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Te-121m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Te-123m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Te-125m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Te-127	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Te-127m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Te-129	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Te-129m	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Te-131m	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Te-132	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Th-227	Thorium (90)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Th-228 (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Th-229 (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Th-230	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Th-231	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Th-232	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Th-234 (b)	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Th (nat) (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
Ti-44	Titanium (22)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Tl-200	Thallium (81)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tl-201	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tl-202	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tl-204	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Tm-167	Thulium (69)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tm-170	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Tm-171	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>8</sup>	2.7X10 <sup>-3</sup>
U-230 (fast lung absorption) (b), (d)	Uranium (92)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
U-230 (medium lung absorption) (e)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-230 (slow lung absorption) (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-232 (fast lung absorption) (b), (d)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
U-232 (medium lung absorption) (e)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-232 (slow lung absorption) (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-233 (fast lung absorption) (d)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-233 (medium lung absorption) (e)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
U-233 (slow lung absorption) (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
U-234 (fast lung absorption) (d)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-234 (medium lung absorption) (e)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
U-234 (slow lung absorption) (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
U-235 (all lung absorption types) (b), (d), (e), (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-236 (fast lung absorption) (d)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U-236 (medium lung absorption) (e)	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
U-236 (slow lung absorption) (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
U-238 (all lung absorption types) (b), (d), (e), (f)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
U (nat) (b)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
U (enriched to 20% or less) (g)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
U (dep)	-	1.0	2.7X10 <sup>-11</sup>	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>
V-48	Vanadium (23)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
V-49	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
W-178	Tungsten (74)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
W-181	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
W-185	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
W-187	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
W-188	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Xe-122	Xenon (54)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Xe-123	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>9</sup>	2.7X10 <sup>-2</sup>
Xe-127	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Xe-131m	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Xe-133	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>
Xe-135	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>10</sup>	2.7X10 <sup>-1</sup>
Y-87	Yttrium (39)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Y-88	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Y-90	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Y-91	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Y-91m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Y-92	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Y-93	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>
Yb-169	Ytterbium (70)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Yb-175	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Zn-65	Zinc (30)	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Zn-69	-	1.0X10 <sup>4</sup>	2.7X10 <sup>-7</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Zn-69m	-	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Zr-88	Zirconium (40)	1.0X10 <sup>2</sup>	2.7X10 <sup>-9</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Zr-93 (b)	-	1.0X10 <sup>3</sup>	2.7X10 <sup>-8</sup>	1.0X10 <sup>7</sup>	2.7X10 <sup>-4</sup>
Zr-95	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>6</sup>	2.7X10 <sup>-5</sup>
Zr-97 (b)	-	1.0X10 <sup>1</sup>	2.7X10 <sup>-10</sup>	1.0X10 <sup>5</sup>	2.7X10 <sup>-6</sup>

(a) (Reserved)

(b) Parent nuclides and their progeny included in secular equilibrium are listed in the following:

Sr-90      Y-90  
 Zr-93      Nb-93m  
 Zr-97      Nb-97  
 Ru-106     Rh-106  
 Cs-137     Ba-137m  
 Ce-134     La-134  
 Ce-144     Pr-144  
 Ba-140     La-140  
 Bi-212     Tl-208 (0.36), Po-212 (0.64)  
 Pb-210     Bi-210, Po-210  
 Pb-212     Bi-212, Tl-208 (0.36), Po-212 (0.64)  
 Rn-220     Po-216  
 Rn-222     Po-218, Pb-214, Bi-214, Po-214  
 Ra-223     Rn-219, Po-215, Pb-211, Bi-211, Tl-207  
 Ra-224     Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)  
 Ra-226     Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210  
 Ra-228     Ac-228  
 Th-226     Ra-222, Rn-218, Po-214  
 Th-228     Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)  
 Th-229     Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209  
 Th-nat     Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)  
 Th-234     Pa-234m

- U-230 Th-226, Ra-222, Rn-218, Po-214
- U-232 Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64)
- U-235 Th-231
- U-238 Th-234, Pa-234m
- U-nat Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
- U-240 Np-240m
- Np-237 Pa-233
- Am-242m Am-242
- Am-243 Np-239

- (c) (Reserved)
- (d) These values apply only to compounds of uranium that take the chemical form of UF<sub>6</sub>, UO<sub>2</sub>F<sub>2</sub> and UO<sub>2</sub>(NO<sub>3</sub>)<sub>2</sub> in both normal and accident conditions of transport.
- (e) These values apply only to compounds of uranium that take the chemical form of UO<sub>3</sub>, UF<sub>4</sub>, UCl<sub>4</sub> and hexavalent compounds in both normal and accident conditions of transport.
- (f) These values apply to all compounds of uranium other than those specified in notes (d) and (e) of this table.
- (g) These values apply to unirradiated uranium only.

Table A-3. General Values for A1 and A2

Contents	A <sub>1</sub>		A <sub>2</sub>		Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limits for exempt consignments (Bq)	Activity limits for exempt consignments (Ci)
	(TBq)	(Ci)	(TBq)	(Ci)				
Only beta or gamma emitting radionuclides are known to be present	1 x 10 <sup>-1</sup>	2.7 x 10 <sup>0</sup>	2 x 10 <sup>-2</sup>	5.4 x 10 <sup>-1</sup>	1 x 10 <sup>1</sup>	2.7 x 10 <sup>-10</sup>	1 x 10 <sup>4</sup>	2.7 x 10 <sup>-7</sup>
Only alpha emitting radionuclides are known to be present	2 x 10 <sup>-1</sup>	5.4 x 10 <sup>0</sup>	9 x 10 <sup>-5</sup>	2.4 x 10 <sup>-3</sup>	1 x 10 <sup>-1</sup>	2.7 x 10 <sup>-12</sup>	1 x 10 <sup>3</sup>	2.7 x 10 <sup>-8</sup>
No relevant data are available	1 x 10 <sup>-3</sup>	2.7 x 10 <sup>-2</sup>	9 x 10 <sup>-5</sup>	2.4 x 10 <sup>-3</sup>	1 x 10 <sup>-1</sup>	2.7 x 10 <sup>-12</sup>	1 x 10 <sup>3</sup>	2.7 x 10 <sup>-8</sup>

Table A-4. Activity-Mass Relationships for Uranium

Uranium Enrichment <sup>1</sup> wt % U-235 present	Specific Activity	
	TBq/g	Ci/g
0.45	1.8 x 10 <sup>-8</sup>	5.0 x 10 <sup>-7</sup>
0.72	2.6 x 10 <sup>-8</sup>	7.1 x 10 <sup>-7</sup>
1	2.8 x 10 <sup>-8</sup>	7.6 x 10 <sup>-7</sup>
1.5	3.7 x 10 <sup>-8</sup>	1.0 x 10 <sup>-6</sup>
5	1.0 x 10 <sup>-7</sup>	2.7 x 10 <sup>-6</sup>
10	1.8 x 10 <sup>-7</sup>	4.8 x 10 <sup>-6</sup>
20	3.7 x 10 <sup>-7</sup>	1.0 x 10 <sup>-5</sup>
35	7.4 x 10 <sup>-7</sup>	2.0 x 10 <sup>-5</sup>
50	9.3 x 10 <sup>-7</sup>	2.5 x 10 <sup>-5</sup>
90	2.2 x 10 <sup>-6</sup>	5.8 x 10 <sup>-5</sup>
93	2.6 x 10 <sup>-6</sup>	7.0 x 10 <sup>-5</sup>
95	3.4 x 10 <sup>-6</sup>	9.1 x 10 <sup>-5</sup>

<sup>1</sup> The figures for uranium include representative values for the activity of the uranium-234 that is concentrated during the enrichment process.

**AMENDATORY SECTION** (Amending WSR 06-05-019, filed 2/6/06, effective 3/9/06)

**WAC 246-240-001 Purpose and scope.** This chapter contains the requirements and provisions for the medical use of radioactive material and for issuance of specific licenses authorizing the medical use of this material. These requirements and provisions provide for the radiation safety of workers, the general public, patients, and human research subjects. The requirements and provisions of chapters 246-220, 246-221, 246-222, 246-232, 246-235, and 246-254 WAC, apply to applicants and licensees subject to this chapter unless specifically exempted. (~~When a requirement in this chapter differs from the requirement in an existing license condition, the requirement in this chapter shall govern.~~)

**AMENDATORY SECTION** (Amending WSR 09-06-003, filed 2/18/09, effective 3/21/09)

**WAC 246-240-010 Definitions. Address of use** means the building or buildings that are identified on the license and where radioactive material may be received, prepared, used, or stored.

**Area of use** means a portion of an address of use that has been set aside for the purpose of receiving, preparing, using, or storing radioactive material.

**Authorized medical physicist** means an individual who:

(1) Meets the requirements in WAC 246-240-072 and 246-240-081; or

(2) Is identified as an authorized medical physicist or teletherapy physicist on:

(a) A specific medical use license issued by the department, the U.S. Nuclear Regulatory Commission or an agreement state;

(b) A medical use permit issued by a U.S. NRC master material licensee;

(c) A permit issued by a U.S. NRC or agreement state broad scope medical use licensee; or

(d) A permit issued by a U.S. NRC master material license broad scope medical use permittee.

**Authorized nuclear pharmacist** means a pharmacist who:

(1) Meets the requirements in WAC 246-240-075 and 246-240-081; or

(2) Is identified as an authorized nuclear pharmacist on:

(a) A specific license issued by the department, the U.S. NRC or an agreement state, that authorizes medical use or the practice of nuclear pharmacy;

(b) A permit issued by a U.S. NRC master material licensee that authorizes medical use or the practice of nuclear pharmacy;

(c) A permit issued by a U.S. NRC or agreement state broad scope medical use licensee that authorizes medical use or the practice of nuclear pharmacy; or

(d) A permit issued by a U.S. NRC master material license broad scope medical use permittee that authorizes medical use or the practice of nuclear pharmacy; or

(3) Is identified as an authorized nuclear pharmacist by a commercial nuclear pharmacy that has been authorized to identify authorized nuclear pharmacists; or

(4) Is designated as an authorized nuclear pharmacist in accordance with WAC 246-235-100(2).

**Authorized user** means a physician, dentist, or podiatrist who:

(1) Meets the requirements in WAC 246-240-081 and 246-240-154, 246-240-163, 246-240-210, 246-240-213, 246-240-216, 246-240-278, 246-240-301, or 246-240-399; or

(2) Is identified as an authorized user on:

(a) A department, U.S. NRC, or agreement state license that authorizes the medical use of radioactive material; or

(b) A permit issued by a U.S. NRC master material licensee that is authorized to permit the medical use of radioactive material; or

(c) A permit issued by a department, U.S. NRC, or agreement state specific licensee of broad scope that is authorized to permit the medical use of radioactive material; or

(d) A permit issued by a U.S. NRC master material license broad scope permittee that is authorized to permit the medical use of radioactive material.

**Brachytherapy** means a method of radiation therapy in which sources are used to deliver a radiation dose at a distance of up to a few centimeters by surface, intracavitary, intraluminal, or interstitial application.

**Brachytherapy source** means a radioactive source or a manufacturer-assembled source train or a combination of these sources that is designed to deliver a therapeutic dose within a distance of a few centimeters.

**Client's address** means the area of use or a temporary job site for the purpose of providing mobile medical service in accordance with WAC 246-240-125.

**Cyclotron** means a particle accelerator in which the charged particles travel in an outward spiral or circular path. A cyclotron accelerates charged particles at energies usually in excess of 10 megaelectron volts and is commonly used for production of short half-life radionuclides for medical use.

**Dedicated check source** means a radioactive source that is used to assure the constant operation of a radiation detection or measurement device over several months or years.

**Dentist** means an individual licensed by a state or territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to practice dentistry.

**High dose-rate remote afterloader**, as used in this chapter, means a brachytherapy device that remotely delivers a dose rate in excess of 12 gray (1200 rads) per hour at the point or surface where the dose is prescribed.

**Low dose-rate remote afterloader**, as used in this chapter, means a brachytherapy device that remotely delivers a dose rate of less than or equal to 2 gray (200 rads) per hour at the point or surface where the dose is prescribed.

**Management** means the chief executive officer or other individual having the authority to manage, direct, or administer the licensee's activities, or that person's delegate or delegates.

**Manual brachytherapy**, as used in this chapter, means a type of brachytherapy in which the brachytherapy sources (e.g., seeds, ribbons) are manually placed topically on or inserted either into the body cavities that are in close proximity to a treatment site or directly into the tissue volume.

**Medical event** means an event that meets the criteria in WAC 246-240-651.

**Medical institution** means an organization in which more than one medical discipline is practiced.

**Medical use** means the intentional internal or external administration of radioactive material or the radiation from radioactive material to patients or human research subjects under the supervision of an authorized user.

**Medium dose-rate remote afterloader**, as used in this chapter, means a brachytherapy device that remotely delivers a dose rate of greater than 2 gray (200 rads), but less than or equal to 12 grays (1200 rads) per hour at the point or surface where the dose is prescribed.

**Mobile medical service** means the transportation of radioactive material to and its medical use at the client's address.

**Output** means the exposure rate, dose rate, or a quantity related in a known manner to these rates from a brachytherapy source or a teletherapy, remote afterloader, or gamma stereotactic radiosurgery unit for a specified set of exposure conditions.

**Patient intervention** means actions by the patient or human research subject, whether intentional or unintentional, such as dislodging or removing treatment devices or prematurely terminating the administration.

**Podiatrist** means an individual licensed by a state or territory of the United States, the District of Columbia, or the Commonwealth of Puerto Rico to practice podiatry.

**Positron emission tomography (PET) radionuclide production facility** means a facility operating an accelerator for the purpose of producing PET radionuclides.

**Preceptor** means an individual who provides, directs, or verifies training and experience required for an individual to become an authorized user, an authorized medical physicist, an authorized nuclear pharmacist, or a radiation safety officer.

**Prescribed dosage** means the specified activity or range of activity of unsealed radioactive material as documented:

- (1) In a written directive; or
- (2) In accordance with the directions of the authorized user for procedures performed under WAC 246-240-151 and 246-240-157.

**Prescribed dose** means:

- (1) For gamma stereotactic radiosurgery, the total dose as documented in the written directive;
- (2) For teletherapy, the total dose and dose per fraction as documented in the written directive;
- (3) For manual brachytherapy, either the total source strength and exposure time or the total dose, as documented in the written directive; or
- (4) For remote brachytherapy afterloaders, the total dose and dose per fraction as documented in the written directive.

**Pulsed dose-rate remote afterloader**, as used in this chapter, means a special type of remote afterloading brachytherapy device that uses a single source capable of delivering dose rates in the "high dose-rate" range, but:

- (1) Is approximately one-tenth of the activity of typical high dose-rate remote afterloader sources; and
- (2) Is used to simulate the radiobiology of a low dose-rate treatment by inserting the source for a given fraction of each hour.

**Radiation safety officer** means an individual who:

- (1) Meets the requirements in WAC 246-240-069 and 246-240-081; or
- (2) Is identified as a radiation safety officer on a specific medical use license issued by the department prior to October 5, 2005, the U.S. NRC or an agreement state; or
- (3) A medical use permit issued by a commission master material licensee.

**Sealed source and device registry** means the national registry that contains all the registration certificates, generated by both the U.S. NRC and the agreement states, that summarize the radiation safety information for the sealed sources and devices and describe the licensing and use conditions approved for the product.

**Stereotactic radiosurgery** means the use of external radiation in conjunction with a stereotactic guidance device to very precisely deliver a therapeutic dose to a tissue volume.

**Structured educational program** means an educational program designed to impart particular knowledge and practical education through interrelated studies and supervised training.

**Teletherapy**, as used in this chapter, means a method of radiation therapy in which collimated gamma rays are delivered at a distance from the patient or human research subject.

**Temporary job site** means a location where mobile medical services are conducted other than those location(s) of use authorized on the license.

**Therapeutic dosage** means a dosage of unsealed radioactive material that is intended to deliver a radiation dose to a patient or human research subject for palliative or curative treatment.

**Therapeutic dose** means a radiation dose delivered from a source containing radioactive material to a patient or human research subject for palliative or curative treatment.

**Treatment site** means the anatomical description of the tissue intended to receive a radiation dose, as described in a written directive.

**Type of use** means use of radioactive material under WAC 246-240-151, 246-240-157, 246-240-201, 246-240-251, 246-240-301, 246-240-351, or 246-240-501.

**Unit dosage** means a dosage prepared for medical use for administration as a single dosage to a patient or human research subject without any further manipulation of the dosage after it is initially prepared.

**Written directive** means an authorized user's written order for the administration of radioactive material or radiation from radioactive material to a specific patient or human research subject, as specified in WAC 246-240-060.

AMENDATORY SECTION (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-069 Training for radiation safety officer.** Except as provided in WAC 246-240-078, the licensee shall require an individual fulfilling the responsibilities of the radiation safety officer under WAC 246-240-051 to be an individual who:

(1) Is certified by a specialty board whose certification process has been recognized by the department, the U.S. NRC, or an agreement state, and who meets the requirements of subsections (4) and (5) of this section. (Specialty boards whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state will be posted on the NRC's web page, at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Hold a bachelor's or graduate degree from an accredited college or university in physical science or engineering or biological science with a minimum of twenty college credits in physical science;

(b) Have five or more years of professional experience in health physics (graduate training may be substituted for no more than two years of the required experience) including at least three years in applied health physics; and

(c) Pass an examination administered by diplomates of the specialty board, which evaluates knowledge and competence in radiation physics and instrumentation, radiation protection, mathematics pertaining to the use and measurement of radioactivity, radiation biology, and radiation dosimetry; or

(i) Hold a master's or doctor's degree in physics, medical physics, other physical science, engineering, or applied mathematics from an accredited college or university;

(ii) Have two years of full-time practical training and/or supervised experience in medical physics:

(A) Under the supervision of a medical physicist who is certified in medical physics by a specialty board recognized by the commission or an agreement state; or

(B) In clinical nuclear medicine facilities providing diagnostic and/or therapeutic services under the direction of physicians who meet the requirements for authorized users in WAC 246-240-078, 246-240-163 or 246-240-210; and

(iii) Pass an examination, administered by diplomates of the specialty board, that assesses knowledge and competence in clinical diagnostic radiological or nuclear medicine physics and in radiation safety; or

(d) Obtain written certification under oath signed by a preceptor radiation safety officer that the individual has achieved a level of radiation safety knowledge sufficient to function independently as a radiation safety officer for a medical use licensee; or

(2)(a) Has completed a structured educational program consisting of both:

(i) Two hundred hours of classroom and laboratory training in the following areas:

(A) Radiation physics and instrumentation;

(B) Radiation protection;

(C) Mathematics pertaining to the use and measurement of radioactivity;

(D) Radiation biology; and

(E) Radiation dosimetry; and

(ii) One year of full-time radiation safety experience under the supervision of the individual identified as the radiation safety officer on a department or agreement state license or license issued by the U.S. NRC that authorizes similar type(s) of use(s) of radioactive material involving the following:

(A) Shipping, receiving, and performing related radiation surveys;

(B) Using and performing checks for proper operation of instruments used to determine the activity of dosages, survey meters, and instruments used to measure radionuclides;

(C) Securing and controlling radioactive material;

(D) Using administrative controls to avoid mistakes in the administration of radioactive material;

(E) Using procedures to prevent or minimize radioactive contamination and using proper decontamination procedures;

(F) Using emergency procedures to control radioactive material; and

(G) Disposing of radioactive material; or

(b) Is a medical physicist who has been certified by a specialty board whose certification process has been recognized by the department, the U.S. NRC, or an agreement state under WAC 246-240-072 and has experience in radiation safety for similar types of use of radioactive material for which the licensee is seeking the approval of the individual as radiation safety officer and who meets the requirements in subsections (4) and (5) of this section; or

(3) Is an authorized user, authorized medical physicist, or authorized nuclear pharmacist identified on the licensee's license or a medical physicist who has been certified by a specialty board whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Com-

mission or an agreement state under WAC 246-240-072 and has experience with the radiation safety aspects of similar types of use of radioactive material for which the individual has radiation safety officer responsibilities; and

(4) Has obtained written certification under oath, signed by a preceptor radiation safety officer, that the individual has satisfactorily completed the requirements in subsection (5) of this section, and in subsection (1)(a) and (b), or (c)(i) and (ii) of this section, or subsection (2)(a) or (b) of this section, or subsection (3) of this section and has achieved a level of radiation safety knowledge sufficient to function independently as a radiation safety officer for a medical use licensee; and

(5) Has training in the radiation safety, regulatory issues, and emergency procedures for the types of use for which a licensee seeks approval. This training requirement may be satisfied by completing training that is supervised by an authorized medical physicist, authorized user, authorized nuclear pharmacist, or radiation safety officer, as appropriate, who is authorized for the type(s) of use for which the licensee is seeking approval.

AMENDATORY SECTION (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-072 Training for an authorized medical physicist.** Except as provided in WAC 246-240-078, the licensee shall require the authorized medical physicist to be an individual who:

(1) Is certified by a specialty board whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state and who meets the requirements in subsections (2)(b) and (3) of this section. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Hold a master's or doctor's degree in physics, medical physics, other physical science, engineering, or applied mathematics from an accredited college or university;

(b) Have two years of full-time practical training and/or supervised experience in medical physics:

(i) Under the supervision of a medical physicist who is certified in medical physics by a specialty board recognized by the commission or an agreement state; or

(ii) In clinical radiation facilities providing high energy, external beam therapy (photons and electrons with energies greater than or equal to one million electron volts) and brachytherapy services under the direction of physicians who meet the requirements for authorized users in WAC 246-240-078, 246-240-278 or 246-240-399;

(c) Pass an examination, administered by diplomates of the specialty board, which assesses knowledge and competence in clinical radiation therapy, radiation safety, calibration, quality assurance, and treatment planning for external beam therapy, brachytherapy, and stereotactic radiosurgery; or

(2)(a) Holds a master's or doctor's degree in physics, medical physics, other physical science, engineering, or applied mathematics from an accredited college or univer-

sity; and has completed one year of full-time training in medical physics and an additional year of full-time work experience under the supervision of an individual who meets the requirements for an authorized medical physicist for the type(s) of use modalities for which the individual is seeking authorization. This training and work experience must be conducted in clinical radiation facilities that provide high energy, external beam therapy and brachytherapy services and must include:

- (i) Performing sealed source leak tests and inventories;
  - (ii) Performing decay corrections;
  - (iii) Performing full calibration and periodic spot checks of external beam treatment units, stereotactic radiosurgery units, and remote afterloading units as applicable; and
  - (iv) Conducting radiation surveys around external beam treatment units, stereotactic radiosurgery units, and remote afterloading units as applicable; and
- (b) Has obtained written certification under oath that the individual has satisfactorily completed the requirements in subsections (1)(a) and (b) and (3), or (2)(a) and (3) of this section, and has achieved a level of competency sufficient to function independently as an authorized medical physicist for each type of therapeutic medical unit for which the individual is requesting authorized medical physicist status. The written certification under oath must be signed by a preceptor authorized medical physicist who meets the requirements in WAC 246-240-072, 246-240-078, or equivalent U.S. NRC or agreement state requirements for an authorized medical physicist for each type of therapeutic medical unit for which the individual is requesting authorized medical physicist status; and
- (3) Has training for the type(s) of use in the modalities for which authorization is sought that includes hands-on device operation, safety procedures, clinical use, and the operation of a treatment planning system. This training requirement may be satisfied by satisfactorily completing either a training program provided by the vendor or by training supervised by an authorized medical physicist authorized for the type(s) of use for which the individual is seeking authorization.

**AMENDATORY SECTION** (Amending WSR 06-05-019, filed 2/6/06, effective 3/9/06)

**WAC 246-240-075 Training for an authorized nuclear pharmacist.** Except as provided in WAC 246-240-078, the licensee shall require the authorized nuclear pharmacist to be a pharmacist who:

(1) Is certified by a specialty board whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state and who meets the requirements in subsection (2)(b) of this section. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Have graduated from a pharmacy program accredited by the American Council On Pharmaceutical Education

(ACPE) or have passed the Foreign Pharmacy Graduate Examination Committee (FPGEC) examination;

(b) Hold a current, active license to practice pharmacy;

(c) Provide evidence of having acquired at least four thousand hours of training/experience in nuclear pharmacy practice. Academic training may be substituted for no more than two thousand hours of the required training and experience; and

(d) Pass an examination in nuclear pharmacy administered by diplomates of the specialty board, which assesses knowledge and competency in procurement, compounding, quality assurance, dispensing, distribution, health and safety, radiation safety, provision of information and consultation, monitoring patient outcomes, research and development; or

(2)(a) Has completed two hundred hours in a structured educational program consisting of both:

(i) Didactic training in the following areas:

(A) Radiation physics and instrumentation;

(B) Radiation protection;

(C) Mathematics pertaining to the use and measurement of radioactivity;

(D) Chemistry of radioactive material for medical use; and

(E) Radiation biology; and

(ii) Supervised practical experience in a nuclear pharmacy involving:

(A) Shipping, receiving, and performing related radiation surveys;

(B) Using and performing checks for proper operation of instruments used to determine the activity of dosages, survey meters, and, if appropriate, instruments used to measure alpha-or beta-emitting radionuclides;

(C) Calculating, assaying, and safely preparing dosages for patients or human research subjects;

(D) Using administrative controls to avoid medical events in the administration of radioactive material; and

(E) Using procedures to prevent or minimize radioactive contamination and using proper decontamination procedures; and

(b) Has obtained written certification under oath, signed by a preceptor authorized nuclear pharmacist, that the individual has satisfactorily completed the requirements in subsections (1)(a), (b), and (c) or (2)(a) of this section and has achieved a level of competency sufficient to function independently as an authorized nuclear pharmacist.

**AMENDATORY SECTION** (Amending WSR 06-05-019, filed 2/6/06, effective 3/9/06)

**WAC 246-240-078 Training for experienced radiation safety officer, teletherapy or medical physicist, authorized user, and nuclear pharmacist.** (1) An individual identified as a radiation safety officer, a teletherapy or medical physicist, or a nuclear pharmacist on a department, U.S. NRC, or agreement state license, or a permit issued by an agreement state or U.S. NRC broad scope licensee or master material license permit, or by a master material license permittee of broad scope before October 24, 2006, need not comply with the training requirements of WAC 246-240-278, 246-240-072, or 246-240-075, respectively.

(2) Physicians, dentists, or podiatrists identified as authorized users for the medical use of radioactive material on a license issued by the department or agreement state, or U.S. NRC broad scope license, or license issued before October 24, 2006, who perform only those medical uses for which they were authorized on that date need not comply with the training requirements of WAC 246-240-151 and 246-240-399.

(3) Individuals who need not comply with training requirements as described in this section may serve as preceptors for, and supervisors of, applicants seeking authorization on state of Washington radioactive materials licenses for the same uses for which these individuals are authorized.

**AMENDATORY SECTION** (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-154 Training for uptake, dilution, and excretion studies.** Except as provided in WAC 246-240-078, the licensee shall require an authorized user of unsealed radioactive material for the uses authorized under WAC 246-240-151 to be a physician who:

(1) Is certified by a medical specialty board whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state and who meets the requirements of subsection (3)(b) of this section. (Specialty boards whose certification process has been recognized by the department, the U.S. NRC or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Meet the requirements in subsection (3)(a) of this section; and

(b) Pass an examination, administered by diplomates of the specialty board, which assesses knowledge and competence in radiation safety, radionuclide handling, and quality control; or

(2) Is an authorized user under WAC 246-240-163 or 246-240-210 or equivalent agreement state or U.S. NRC requirements; or subsection (3)(a) of this section; or

(3)(a) Has completed sixty hours of training and experience, including a minimum of eight hours of classroom and laboratory training, in basic radionuclide handling techniques applicable to the medical use of unsealed radioactive material for uptake, dilution, and excretion studies. The training and experience must include:

(i) Classroom and laboratory training in the following areas:

(A) Radiation physics and instrumentation;

(B) Radiation protection;

(C) Mathematics pertaining to the use and measurement of radioactivity;

(D) Chemistry of radioactive material for medical use; and

(E) Radiation biology; and

(ii) Work experience, under the supervision of an authorized user who meets the requirements in WAC 246-240-078, 246-240-154, 246-240-163, or 246-240-210 or equivalent U.S. NRC or agreement state requirements, involving:

(A) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;

(B) Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;

(C) Calculating, measuring, and safely preparing patient or human research subject dosages;

(D) Using administrative controls to prevent a medical event involving the use of unsealed radioactive material;

(E) Using procedures to contain spilled radioactive material safely and using proper decontamination procedures; and

(F) Administering dosages of radioactive drugs to patients or human research subjects; and

(b) Has obtained written certification under oath, signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-154, 246-240-163, or 246-240-210, or equivalent agreement state or U.S. NRC requirements, that the individual has satisfactorily completed the requirements in (a) of this subsection and has achieved a level of competency sufficient to function independently as an authorized user for the medical uses authorized under WAC 246-240-151.

**AMENDATORY SECTION** (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-163 Training for imaging and localization studies.** Except as provided in WAC 246-240-078, the licensee shall require an authorized user of unsealed radioactive material for the uses authorized under WAC 246-240-157 to be a physician who:

(1) Is certified by a medical specialty board whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state and who meets the requirements in subsection (3)(b) of this section. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the U.S. NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Satisfy the requirements in subsection (3)(a) of this section; and

(b) Pass an examination, administered by diplomates of the specialty board, which assesses knowledge and competence in radiation safety, radionuclide handling, and quality control; or

(2) Is an authorized user under WAC 246-240-210 and meets the requirements in WAC 246-240-163 (3)(a)(ii)(G) and 246-240-210 or equivalent agreement state or U.S. NRC requirements; or

(3)(a) Has completed seven hundred hours of training and experience, including a minimum of eighty hours of classroom and laboratory training, in basic radionuclide handling techniques applicable to the medical use of unsealed radioactive material for imaging and localization studies. The training and experience must include, at a minimum:

(i) Classroom and laboratory training in the following areas:

(A) Radiation physics and instrumentation;



- (B) Radiation protection;
- (C) Mathematics pertaining to the use and measurement of radioactivity;
- (D) Chemistry of radioactive material for medical use;
- (E) Radiation biology; and
- (ii) Work experience, under the supervision of an authorized user, who meets the requirements in WAC 246-240-078, 246-240-163, or 246-240-210 and 246-240-163 (3)(a)(ii)(G), or equivalent agreement state or U.S. NRC requirements, involving:

- (A) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;
- (B) Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;
- (C) Calculating, measuring, and safely preparing patient or human research subject dosages;
- (D) Using administrative controls to prevent a medical event involving the use of unsealed radioactive material;
- (E) Using procedures to safely contain spilled radioactive material and using proper decontamination procedures;
- (F) Administering dosages of radioactive drugs to patients or human research subjects; and
- (G) Eluting generator systems appropriate for preparation of radioactive drugs for imaging and localization studies, measuring and testing the eluate for radionuclidic purity, and processing the eluate with reagent kits to prepare labeled radioactive drugs; and

(b) Has obtained written certification under oath, signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-163, or 246-240-210 and 246-240-163 (3)(a)(ii)(G) or equivalent agreement state or U.S. NRC requirements, that the individual has satisfactorily completed the requirements in (a) of this subsection and has achieved a level of competency sufficient to function independently as an authorized user for the medical uses authorized under WAC 246-240-151 and 246-240-157.

**AMENDATORY SECTION** (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-210 Training for use of unsealed radioactive material for which a written directive is required.** Except as provided in WAC 246-240-078, the licensee shall require an authorized user of unsealed radioactive material for the uses authorized under WAC 246-240-201 to be a physician who:

(1) Is certified by a medical specialty board whose certification process has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Successfully complete a residency training in a radiation therapy or nuclear medicine training program or a program in a related medical specialty that includes seven hundred hours of training and experience as described in subsection (2) of this section. Eligible training programs must be

approved by the Residency Review Committee of the Accreditation Council for Graduate Medical Education or Royal College of Physicians and Surgeons of Canada or the Committee on Postgraduate Training of the American Osteopathic Association;

(b) Pass an examination, administered by diplomates of the specialty board, which tests knowledge and competence in radiation safety, radionuclide handling, quality assurance, and clinical use of unsealed by-product material; and

(c) Obtain written certification under oath that the individual has achieved a level of competency sufficient to function independently as an authorized user for the medical uses authorized under WAC 246-240-201. The written certification under oath must be signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-210, or equivalent U.S. NRC or agreement state requirements. The preceptor authorized user, who meets the requirements in WAC 246-240-078 or 246-240-210 must have experience in administering dosages in the same dosage category or categories (i.e., this section) as the individual requesting authorized user status; or

(2) Has completed seven hundred hours of training and experience, including a minimum of two hundred hours of classroom and laboratory training, in basic radionuclide handling techniques applicable to the medical use of unsealed radioactive material requiring a written directive. The training and experience must include:

(a) Classroom and laboratory training in the following areas:

- (i) Radiation physics and instrumentation;
- (ii) Radiation protection;
- (iii) Mathematics pertaining to the use and measurement of radioactivity;
- (iv) Chemistry of radioactive material for medical use; and
- (v) Radiation biology; and

(b) Work experience, under the supervision of an authorized user who meets the requirements in subsection (1) or (2) of this section, or equivalent U.S. NRC or agreement state requirements. A supervising authorized user, who meets the requirements in this subsection, must also have experience in administering dosages in the same dosage category or categories (i.e., this section) as the individual requesting authorized user status. The work experience must involve:

- (i) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;
- (ii) Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;
- (iii) Calculating, measuring, and safely preparing patient or human research subject dosages;
- (iv) Using administrative controls to prevent a medical event involving the use of unsealed radioactive material;
- (v) Using procedures to contain spilled radioactive material safely and using proper decontamination procedures;
- (vi) Eluting generator systems, measuring and testing the eluate for radionuclidic purity, and processing the eluate with reagent kits to prepare labeled radioactive drugs; and
- (vii) Administering dosages of radioactive drugs to patients or human research subjects involving a minimum of

three cases in each of the following categories for which the individual is requesting authorized user status:

(A) Oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131 for which a written directive is required;

(B) Oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131. Experience with at least three cases in this also satisfies the requirement in (b)(vii)(A) of this subsection;

(C) Parenteral administration of any beta emitter, or a photon-emitting radionuclide with a photon energy less than 150 keV for which a written directive is required; and/or

(D) Parenteral administration of any other radionuclide for which a written directive is required; and

(E) Has obtained written certification under oath that the individual has satisfactorily completed the requirements in subsection (1)(a) and ~~((b))~~ (2)(b)(vii) of this section, WAC 246-240-078, and has achieved a level of competency sufficient to function independently as an authorized user for the medical uses authorized under WAC 246-240-201. The written certification under oath must be signed by a preceptor authorized user who meets the requirements in this section, or equivalent U.S. NRC or agreement state requirements. The preceptor authorized user, who meets the requirements in this subsection (2), must also have experience in administering dosages in the same dosage category or categories (i.e., this section) as the individual requesting authorized user status.

AMENDATORY SECTION (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-213 Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries).** Except as provided in WAC 246-240-078, the licensee shall require an authorized user for the oral administration of sodium iodide I-131 requiring a written directive in quantities less than or equal to 1.22 gigabecquerels (33 millicuries), to be a physician who:

(1) Is certified by a medical specialty board whose certification process includes all of the requirements in subsection (3) of this section and whose certification has been recognized by the department, the U.S. Nuclear Regulatory Commission or an agreement state. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>); or

(2) Is an authorized user under WAC 246-240-210 for uses listed in WAC 246-240-210 (2)(b)(vii)(A) and (B), 246-240-216, or equivalent agreement state or U.S. NRC requirements; or

(3)(a) Has successfully completed eighty hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:

- (i) Radiation physics and instrumentation;
- (ii) Radiation protection;
- (iii) Mathematics pertaining to the use and measurement of radioactivity;

(iv) Chemistry of radioactive material for medical use; and

(v) Radiation biology; and

(b) Has work experience, under the supervision of an authorized user who meets the requirements in WAC 246-240-078, 246-240-210, 246-240-213, 246-240-216, or equivalent agreement state or U.S. NRC requirements. A supervising authorized user who meets the requirements in WAC 246-240-210(2), must also have experience in administering dosages as specified in WAC 246-240-210 (2)(b)(vii)(A) or (B). The work experience must involve:

(i) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;

(ii) Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;

(iii) Calculating, measuring, and safely preparing patient or human research subject dosages;

(iv) Using administrative controls to prevent a medical event involving the use of radioactive material;

(v) Using procedures to contain spilled radioactive material safely and using proper decontamination procedures; and

(vi) Administering dosages to patients or human research subjects, that includes at least three cases involving the oral administration of less than or equal to 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131; and

(c) Has obtained written certification under oath that the individual has satisfactorily completed the requirements in (a) and (b) of this subsection and has achieved a level of competency sufficient to function independently as an authorized user for medical uses authorized under WAC 246-240-201. The written certification under oath must be signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-210, 246-240-213, 246-240-216, or equivalent agreement state or U.S. NRC requirements. A preceptor authorized user, who meets the requirement in WAC 246-240-210(2), must also have experience in administering dosages as specified in WAC 246-240-210 (2)(b)(vii)(A) or (B).

AMENDATORY SECTION (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-216 Training for the oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries).** Except as provided in WAC 246-240-078, the licensee shall require an authorized user for the oral administration of sodium iodide I-131 requiring a written directive in quantities greater than 1.22 gigabecquerels (33 millicuries), to be a physician who:

(1) Is certified by a medical specialty board whose certification process includes all of the requirements in subsection (3) of this section and whose certification has been recognized by the department, the U.S. NRC or an agreement state. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>); or

(2) Is an authorized user under WAC 246-240-210 for uses listed in WAC 246-240-210 (2)(b)(vii)(B), or equivalent agreement state or U.S. NRC requirements; or

(3)(a) Has successfully completed eighty hours of classroom and laboratory training, applicable to the medical use of sodium iodide I-131 for procedures requiring a written directive. The training must include:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity;

(iv) Chemistry of radioactive material for medical use; and

(v) Radiation biology; and

(b) Has work experience, under the supervision of an authorized user who meets the requirements in WAC 246-240-078, 246-240-210, 246-240-216, or equivalent agreement state or U.S. NRC requirements. A supervising authorized user, who meets the requirements in WAC 246-240-210(2), must also have experience in administering dosages as specified in WAC 246-240-210 (2)(b)(vii)(B).

The work experience must involve:

(i) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;

(ii) Performing quality control procedures on instruments used to determine the activity of dosages and performing checks for proper operation of survey meters;

(iii) Calculating, measuring, and safely preparing patient or human research subject dosages;

(iv) Using administrative controls to prevent a medical event involving the use of radioactive material;

(v) Using procedures to contain spilled radioactive material safely and using proper decontamination procedures; and

(vi) Administering dosages to patients or human research subjects, that includes at least three cases involving the oral administration of greater than 1.22 gigabecquerels (33 millicuries) of sodium iodide I-131; and

(c) Has obtained written certification under oath that the individual has satisfactorily completed the requirements in (a) and (b) of this subsection and has achieved a level of competency sufficient to function independently as an authorized user for medical uses authorized under WAC 246-240-201. The written certification under oath must be signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-210, 246-240-216, or equivalent agreement state or U.S. NRC requirements. A preceptor authorized user, who meets the requirements in WAC 246-240-210(2), must have experience in administering dosages as specified in WAC 246-240-210 (2)(b)(vii)(B).

**AMENDATORY SECTION** (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-219 Training for the parenteral administration of unsealed radioactive material requiring a written directive.** Except as provided in WAC 246-240-078, the licensee shall require an authorized user for the parenteral administration requiring a written directive, to be a physician who:

(1) Is an authorized user under WAC 246-240-210 for uses listed in WAC 246-240-210 (2)(b)(vii)(C) or (D), or equivalent agreement state or U.S. NRC requirements; or

(2) Is an authorized user under WAC 246-240-278 or 246-240-399, or equivalent agreement state or U.S. NRC requirements and who meets the requirements in subsection (4) of this section; or

(3) Is certified by a medical specialty board whose certification process has been recognized by the U.S. NRC or an agreement state under WAC 246-240-278 or 246-240-399, and who meets the requirements in subsection (4) of this section.

(4)(a) Has successfully completed eighty hours of classroom and laboratory training, applicable to parenteral administrations, for which a written directive is required, of any beta emitter or any photon-emitting radionuclide with a photon energy less than 150 keV, and/or parenteral administration of any other radionuclide for which a written directive is required. The training must include:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity;

(iv) Chemistry of radioactive material for medical use; and

(v) Radiation biology; and

(b) Has work experience, under the supervision of an authorized user who meets the requirements in WAC 246-240-078, 246-240-210, 246-240-219, or equivalent agreement state or U.S. NRC requirements, in the parenteral administration, for which a written directive is required, of any beta emitter or any photon-emitting radionuclide with a photon energy less than 150 keV, and/or parenteral administration of any other radionuclide for which a written directive is required. A supervising authorized user who meets the requirements in WAC 246-240-210 must have experience in administering dosages as specified in WAC 246-240-210 (2)(b)(vii)(C) and/or (D). The work experience must involve:

(i) Ordering, receiving, and unpacking radioactive materials safely, and performing the related radiation surveys;

(ii) Performing quality control procedures on instruments used to determine the activity of dosages, and performing checks for proper operation of survey meters;

(iii) Calculating, measuring, and safely preparing patient or human research subject dosages;

(iv) Using administrative controls to prevent a medical event involving the use of unsealed radioactive material;

(v) Using procedures to contain spilled radioactive material safely, and using proper decontamination procedures; and

(vi) Administering dosages to patients or human research subjects, that include at least three cases involving the parenteral administration, for which a written directive is required, of any beta emitter, or any photon-emitting radionuclide with a photon energy less than 150 keV and/or at least three cases involving the parenteral administration of any other radionuclide, for which a written directive is required; and

(5) Has obtained written certification under oath that the individual has satisfactorily completed the requirements in

subsection (2) or (3) of this section, and has achieved a level of competency sufficient to function independently as an authorized user for the parenteral administration of unsealed radioactive material requiring a written directive. The written certification under oath must be signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-210, 246-240-219, or equivalent agreement state or U.S. NRC requirements. A preceptor authorized user, who meets the requirements in WAC 246-240-210, must have experience in administering dosages as specified in WAC 246-240-210 (2)(b)(vii)(C) and/or (D).

AMENDATORY SECTION (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-278 Training for use of manual brachytherapy sources.** Except as provided in WAC 246-240-078, the licensee shall require an authorized user of a manual brachytherapy source for the uses authorized under WAC 246-240-251 to be a physician who:

(1) Is certified by a medical specialty board whose certification process has been recognized by the department, the U.S. NRC, or an agreement state. (Specialty boards whose certification process has been recognized by the commission or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Successfully complete a minimum of three years of residency training in a radiation oncology program approved by the Residency Review Committee of the Accreditation Council for Graduate Medical Education or Royal College of Physicians and Surgeons of Canada or the Committee on Postgraduate Training of the American Osteopathic Association;

(b) Pass an examination, administered by diplomates of the specialty board, which tests knowledge and competence in radiation safety, radionuclide handling, treatment planning, quality assurance, and clinical use of high and low dose-rate brachytherapy; and

(c) Obtain written certification under oath, signed by a preceptor authorized user who meets the requirements in WAC 246-240-278 or equivalent U.S. NRC or agreement state requirements, that the individual has achieved a level of competency sufficient to function independently as an authorized user of manual brachytherapy sources for the medical uses authorized in WAC 246-240-251; or

(2)(a) Has completed a structured educational program in basic radionuclide handling techniques applicable to the use of manual brachytherapy sources that includes:

(i) Two hundred hours of classroom and laboratory training in the following areas:

(A) Radiation physics and instrumentation;

(B) Radiation protection;

(C) Mathematics pertaining to the use and measurement of radioactivity; and

(D) Radiation biology; and

(ii) Five hundred hours of work experience, under the supervision of an authorized user who meets the requirements in WAC 246-240-078, 246-240-278 or equivalent

agreement state or U.S. NRC requirements at a medical institution, involving:

(A) Ordering, receiving, and unpacking radioactive materials safely and performing the related radiation surveys;

(B) Checking survey meters for proper operation;

(C) Preparing, implanting, and removing brachytherapy sources;

(D) Maintaining running inventories of material on hand;

(E) Using administrative controls to prevent a medical event involving the use of radioactive material;

(F) Using emergency procedures to control radioactive material; and

(b) Has completed three years of supervised clinical experience in radiation oncology, under an authorized user who meets the requirements in WAC 246-240-078, 246-240-278 or equivalent U.S. NRC or agreement state requirements, as part of a formal training program approved by the Residency Review Committee for Radiation Oncology of the Accreditation Council for Graduate Medical Education or the Royal College of Physicians and Surgeons of Canada or the Committee on Postdoctoral Training of the American Osteopathic Association. This experience may be obtained concurrently with the supervised work experience required by (a)(ii) of this subsection; and

(c) Has obtained written certification under oath, signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-278 or equivalent agreement state or U.S. NRC requirements, that the individual has satisfactorily completed the requirements in subsection (1)(a) of this section, or (a) and (b) of this subsection and has achieved a level of competency sufficient to function independently as an authorized user of manual brachytherapy sources for the medical uses authorized under WAC 246-240-251.

AMENDATORY SECTION (Amending WSR 06-05-019, filed 2/6/06, effective 3/9/06)

**WAC 246-240-281 Training for ophthalmic use of strontium-90.** Except as provided in WAC 246-240-078, the licensee shall require the authorized user of strontium-90 for ophthalmic radiotherapy to be a physician who:

(1) Is an authorized user under WAC 246-240-278 or equivalent agreement state or U.S. NRC requirements; or

(2)(a) Has completed twenty-four hours of classroom and laboratory training applicable to the medical use of strontium-90 for ophthalmic radiotherapy. The training must include:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity; and

(iv) Radiation biology; and

(b) Supervised clinical training in ophthalmic radiotherapy under the supervision of an authorized user at a medical institution that includes the use of strontium-90 for the ophthalmic treatment of five individuals.

This supervised clinical training must involve:

(i) Examination of each individual to be treated;

(ii) Calculation of the dose to be administered;

- (iii) Administration of the dose; and
- (iv) Follow up and review of each individual's case history; and
- (c) Has obtained written certification under oath, signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-278, 246-240-281, or equivalent agreement state or U.S. NRC requirements, that the individual has satisfactorily completed the requirements in subsections (1) and (2) of this section and has achieved a level of competency sufficient to function independently as an authorized user of strontium-90 for ophthalmic use.

**AMENDATORY SECTION** (Amending WSR 07-14-131, filed 7/3/07, effective 8/3/07)

**WAC 246-240-399 Training for use of remote after-loader units, teletherapy units, and gamma stereotactic radiosurgery units.** Except as provided in WAC 246-240-078, the licensee shall require an authorized user of a sealed source for a use authorized under WAC 246-240-351 to be a physician who:

(1) Is certified by a medical specialty board whose certification process has been recognized by the department, the U.S. NRC, or an agreement state. (Specialty boards whose certification process has been recognized by the NRC or an agreement state will be posted on the NRC's web page at <http://www.nrc.gov>.) To be recognized, a specialty board shall require all candidates for certification to:

(a) Successfully complete a minimum of three years of residency training in a radiation therapy program approved by the Residency Review Committee of the Accreditation Council for Graduate Medical Education or Royal College of Physicians and Surgeons of Canada or the Committee on Postgraduate Training of the American Osteopathic Association; and

(b) Pass an examination, administered by diplomates of the specialty board, which tests knowledge and competence in radiation safety, radionuclide handling, treatment planning, quality assurance, and clinical use of stereotactic radiosurgery, high and low dose-rate brachytherapy, and external beam therapy; or

(2)(a) Has completed a structured educational program in basic radionuclide techniques applicable to the use of a sealed source in a therapeutic medical unit that includes:

(i) Two hundred hours of classroom and laboratory training in the following areas:

- (A) Radiation physics and instrumentation;
- (B) Radiation protection;
- (C) Mathematics pertaining to the use and measurement of radioactivity; and
- (D) Radiation biology; and

(ii) Five hundred hours of work experience, under the supervision of an authorized user who meets the requirements in WAC 246-240-078, 246-240-399 or equivalent agreement state or U.S. NRC requirements at a medical institution, involving:

- (A) Reviewing full calibration measurements and periodic spot-checks;
- (B) Preparing treatment plans and calculating treatment doses and times;

(C) Using administrative controls to prevent a medical event involving the use of radioactive material;

(D) Implementing emergency procedures to be followed in the event of the abnormal operation of the medical unit or console;

(E) Checking and using survey meters; and

(F) Selecting the proper dose and how it is to be administered; and

(b) Has completed three years of supervised clinical experience in radiation therapy, under an authorized user who meets the requirements in WAC 246-240-078, 246-240-399 or equivalent U.S. NRC or agreement state requirements, as part of a formal training program approved by the Residency Review Committee for Radiation Oncology of the Accreditation Council for Graduate Medical Education or Royal College of Physicians and Surgeons of Canada or the Committee on Postdoctoral Training of the American Osteopathic Association. This experience may be obtained concurrently with the supervised work experience required by (a)(ii) of this subsection; and

(c) Has obtained written certification under oath that the individual has satisfactorily completed the requirements in subsection (1)(a) of this section, or (a) and (b), and (d) of this subsection and has achieved a level of competency sufficient to function independently as an authorized user of each type of therapeutic medical unit for which the individual is requesting authorized user status. The written certification under oath must be signed by a preceptor authorized user who meets the requirements in WAC 246-240-078, 246-240-399 or equivalent U.S. NRC or agreement state requirements for an authorized user for each type of therapeutic medical unit for which the individual is requesting authorized user status; and

(d) Has received training in device operation, safety procedures, and clinical use for the type(s) of use for which authorization is sought. This training requirement may be satisfied by satisfactory completion of a training program provided by the vendor for new users or by receiving training supervised by an authorized user or authorized medical physicist, as appropriate, who is authorized for the type(s) of use for which the individual is seeking authorization.

## WSR 10-14-106

### PROPOSED RULES

#### DEPARTMENT OF AGRICULTURE

[Filed July 6, 2010, 3:40 p.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Title of Rule and Other Identifying Information: Washington seed potatoes, chapter 16-520 WAC, the Washington state seed potato commission marketing order.

Hearing Location(s): Washington State Department of Agriculture, Natural Resources Building, 1111 Washington Street S.E., Conference Room 205, Olympia, WA 98504-2560, on August 12, 2010, at 10:30 a.m.

Date of Intended Adoption: October 21, 2010.

Submit Written Comments to: Kelly Frost, Commodity Commission Coordinator, P.O. Box 42560, Olympia, WA 98504-2560, e-mail [kfrost@agr.wa.gov](mailto:kfrost@agr.wa.gov), fax (360) 902-2092, by 5:00 p.m., August 13, 2010.

Assistance for Persons with Disabilities: Contact WSDA receptionist by August 2, 2010, TTY 1-800-833-6488 or (360) 902-1976.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: During past legislative sessions, significant amendments were made to the Washington state seed potato commission's enabling statute, chapter 15.66 RCW. These statutory changes prompted amendments to its marketing order, chapter 16-520 WAC. Proposed amendments expand the commission's policy and purpose statements, update definitions, add additional power and duties to benefit the industry, and update meeting and administrative procedures as well as improve the readability and clarity of the marketing order. In addition, proposed amendments change the method by which seed potato commission board members are chosen with the director of agriculture appointing a majority of board members. The number of affected producers required to sign a nominating petition is reduced from five to three. The definition of "commercial quantities" is also revised to increase the amount of seed potatoes a grower must produce in order to be subject to the marketing order.

The marketing order sections affected by the proposed amendments are:

1. Repealing WAC 16-520-002 Director's findings and final decision approving a marketing order.
2. Amending WAC 16-520-005 Marketing order—Policy and purpose.
3. New section WAC 16-520-006 Marketing order purposes.
4. Amending WAC 16-520-010 Definitions.
5. Amending WAC 16-520-020 Seed potato commission—Structure, powers, duties, and procedure.
6. New section WAC 16-520-025 Powers and duties of commission.
7. New section WAC 16-520-027 Procedures for commission.
8. Repealing WAC 16-520-030 Marketing order purposes.
9. Amending WAC 16-520-040 Assessments and assessment funds.
10. Amending WAC 16-520-050 Information reports.
11. Repealing WAC 16-520-070 Effective time.

Reasons Supporting Proposal: The proposed amendments are intended to make the marketing order consistent with the commodity commission enabling statute, chapter 15.66 RCW, and to implement the petition received from the Washington state seed potato commission in accordance with RCW 15.66.050.

Statutory Authority for Adoption: RCW 15.66.030, 15.66.053, 15.66.055, and chapter 34.05 RCW.

Statute Being Implemented: Chapter 15.66 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fis-

cal Matters: Any rule proposal that results from this rule-making process will not be adopted unless the proposed rules are also approved in a referendum of affected seed potato producers pursuant to chapter 15.66 RCW.

Name of Proponent: Washington state seed potato commission, governmental.

Name of Agency Personnel Responsible for Drafting: Kelly Frost, WSDA, Olympia, (360) 902-1802; Implementation and Enforcement: Washington State Seed Potato Commission, Lynden, (360) 354-8767.

No small business economic impact statement has been prepared under chapter 19.85 RCW. In accordance with RCW 15.66.053, the adoption of the final amendments to chapter 16-520 WAC will be determined by a referendum vote of affected parties.

A cost-benefit analysis is not required under RCW 34.05.328. The department of agriculture and the Washington seed potato commission are not named agencies in RCW 34.05.328 (5)(a)(i).

July 6, 2010

Dan Newhouse

Director

AMENDATORY SECTION (Amending Marketing Order for Washington Seed Potatoes, effective 10/1/56)

**WAC 16-520-005 Marketing order—Policy (~~and purpose~~) statement.** (~~The marketing of agricultural products within this state is affected with a public interest. It is declared to be the policy and purpose of the "act" and of this "Washington seed potato marketing order" to promote the general welfare of the state by enabling seed potato producers to help themselves in establishing orderly, fair, sound, efficient, and unhampered marketing and standardizing of the seed potatoes they produce, and in promoting and increasing the sale of such seed potatoes.~~) (1) The marketing of seed potatoes within this state is in the public interest. It is vital to the continued economic well-being of the citizens of this state and their general welfare that its seed potatoes be properly promoted by:

(a) Enabling producers of seed potatoes to help themselves in establishing orderly, fair, sound, efficient, and unhampered marketing, grading, and standardizing of the seed potatoes they produce; and

(b) Working towards stabilizing the agricultural industry by increasing consumption of seed potatoes within the state, the nation, and internationally.

(2) That it is in the overriding public interest that support for the seed potato industry be clearly expressed, that adequate protection be given to the industry and its activities and operations, and that the seed potatoes be promoted individually, and as part of a comprehensive agriculture industry to:

(a) Enhance the reputation and image of Washington state's seed potatoes.

(b) Increase the sale and use of Washington state's seed potatoes in local, domestic, and foreign markets.

(c) Protect the public by educating the public in reference to the quality, care, and methods used in the production of Washington state's seed potatoes.

(d) Increase the public's knowledge of the qualities and value of Washington state's seed potatoes.

(e) Support and engage in programs or activities that benefit the planting, production, harvesting, handling, processing, marketing, and uses of seed potatoes produced in Washington state.

(3) The director is authorized to implement, administer, and enforce chapter 15.66 RCW through this marketing order.

(4) The Washington state seed potato commission exists primarily for the benefit of the people of the state of Washington and its economy, and with oversight by the director, the commission is authorized to speak on behalf of Washington state government with regard to seed potatoes under the provisions of this marketing order.

#### NEW SECTION

**WAC 16-520-006 Marketing order purposes.** This marketing order is to promote the general welfare of the state and for the purpose of maintaining existing markets or creating new or larger local, domestic, and foreign markets; ensuring a fair regulatory environment; and increasing production efficiency of seed potatoes in Washington state. The Washington state seed potato commission is designated by the director to conduct the following programs in accordance with chapter 15.66 RCW:

(1) **Research.** The commission may research or enter into contracts or agreements for research in the production, irrigation, processing, transportation, marketing, use, or distribution of seed potatoes.

(2) **Marketing and sales promotion plans.**

(a) Subject to the provisions of the act, the commission is hereby authorized to prepare plans, administer and conduct programs and expend moneys for marketing and sales promotion for promoting the sale of seed potatoes including, but not necessarily limited to, the following:

(i) Increasing the sales of Washington produced seed potatoes through the use of the press, radio, television and all other marketing media.

(ii) Trade promotion, publicity, market development and expansion activities.

(iii) Presentation of facts to and negotiations with state, federal, or foreign governmental agencies on matters which affect the marketing of seed potatoes produced in this state, and such other activities and programs which are consistent with the objectives of this marketing order and the act.

(b) In carrying out any marketing and sales promotion plans or programs, the commission may engage or hire such marketing medias as may be necessary to accomplish the purposes of the act and this order, arrange for marketing space, display material and other advertising material, or may use any other methods consistent with the act and this marketing order which the commission considers appropriate in promoting or creating new and larger domestic or foreign markets for seed potatoes, or in maintaining existing markets. The commission may also engage in cooperative efforts in the domestic or foreign marketing of seed potato food products.

(c) Programs and plans adopted by the commission under this marketing order shall be directed towards promot-

ing the sale of seed potatoes without reference to any particular private brand or trade name. Sales promotion and marketing programs shall not disparage the value, quality, sale or use of any other agricultural commodity or make use of any unwarranted or false claims regarding seed potatoes.

(d) Marketing plans, programs and projects developed by the commission shall be submitted for director review and approval as required under RCW 15.66.141.

(3) **Labeling.**

(a) Under chapter 15.66 RCW, the commission may adopt rules, subject to the provisions of chapter 34.05 RCW, to define, establish and provide labeling requirements for improving standards and grades of seed potatoes, and may expend money for such purposes. Such requirements shall not be inconsistent with the horticultural laws of this state with respect to seed potatoes.

(b) The commission shall be authorized to cooperate with state and federal agencies or departments responsible for revising and modernizing grades and standards and labeling of seed potatoes.

(c) Nothing in this section shall be construed as authorizing the commission to set minimum grades, sizes or maturity of seed potatoes which a producer may sell, offer for sale or ship.

(4) **Unfair trade practices.** The commission may investigate and take necessary action to prevent unfair trade practices and to correct, where possible, trade practices which hinder marketing of Washington produced seed potatoes. To the extent permitted under the Public Records Act, chapter 42.56 RCW, information acquired in an investigation shall be confidential and shall be released only to the extent necessary to effectuate the purposes of the act.

(5) **Standards, grades, labels, trade practices.** The provisions covering standards, grades, labels and trade practices shall apply with respect to seed potatoes produced in Washington state.

(6) The commission is authorized to provide information and communicate on matters pertaining to the production, irrigation, processing, transportation, marketing, or uses of seed potatoes produced in Washington state to any elected official or officer or employee of any agency.

(7) **Information and education.** The commission may conduct programs for the purpose of providing information and education including:

(a) Marketing information and services for producers of seed potatoes.

(b) Information and services enabling producers to meet their resource conservation objectives.

(c) Seed potato-related education and training.

(8) The director shall approve any plans, programs, and projects concerning:

(a) The establishment, issuance, effectuation, and administration of programs authorized under this section for advertising and promotion of seed potatoes.

(b) The establishment and effectuation of market research projects, market development projects, or both to the end that marketing and utilization of seed potatoes may be encouraged, expanded, improved or made more efficient.

AMENDATORY SECTION (Amending Marketing Order, Article I, effective 10/1/56)

**WAC 16-520-010 Definitions.** ~~((As used in this marketing order, the following terms shall have the following meanings))~~ Definitions for terms used in this chapter are also found in chapter 15.66 RCW, Washington State Agricultural Commodity Commissions Act. For the purposes of the seed potato marketing order, the following definitions shall apply:

(1) "Director" means the director of agriculture of the state of Washington or ~~((his duly appointed representative))~~ any qualified person or persons designated by the director of agriculture to act for him or her concerning some matter under this marketing order or chapter 15.66 RCW;

(2) "Act" means the Washington ~~((Agricultural Enabling))~~ State Agricultural Commodity Commissions Act, ((being)) chapter 15.66 RCW;

(3) "Person" includes any individual, firm, corporation, limited liability company, trust, association, partnership, society or any other organization of individuals or any unit or agency of local or state or federal government;

(4) "Producer" means any person ~~((who is))~~ engaged in the business of producing or causing to be produced for market in the state of Washington seed potatoes in commercial quantities ~~((seed potatoes as herein defined grown in the state of Washington)).~~ "To produce" means to act as a producer;

(5) "Commercial quantities" ~~((shall))~~ means ~~((and include))~~ five thousand hundred weight or more;

(6) "Hundredweight" or "affected unit" are synonymous and mean and include each one hundred pound unit or any combination of packages making a one hundred pound unit of seed potatoes;

(7) "Seed potatoes" means and include all kinds and varieties of Irish seed potatoes grown in the state of Washington and marketed, sold or intended for use for seed purposes;

(8) "Seed potato commission" or "commission" are synonymous and mean the commission established ~~((pursuant to the provisions of))~~ under WAC 16-520-020 consistent with chapter 15.66 RCW;

(9) "Marketing season" or "fiscal year" are synonymous and mean the twelve month period beginning July 1 of any year and ending upon the last day of June, both dates inclusive;

(10) "Handler" means any person ~~((engaged in the business of handling, selling, processing, storing, shipping, or distributing seed potatoes which he has purchased or acquired from a producer, or which he is shipping for or on behalf of a producer, and shall include any lending agencies for commodity credit corporation loan to producers, but shall not include a producer engaged in transporting seed potatoes produced by him for grading, washing, sorting, sacking, or otherwise preparing for marketing or market))~~ who acts, either as principal, agent, or otherwise, in the processing, selling, marketing, or distributing of seed potatoes that are not produced by the handler. "Handler" does not include a common carrier used to transport an agricultural commodity. "To handle" means to act as a handler;

(11) "Sale" means a transaction wherein the property in or to seed potatoes ~~((it))~~ is transferred from the producer to a purchaser for consideration. "Sale" shall also include an agreement to acquire such property for a consideration;

(12) "Affected area" ~~((or "area of production" are synonymous and))~~ means and includes all of the state of Washington.

(13) "Affected producer" means any producer who is subject to this marketing order.

AMENDATORY SECTION (Amending Order 1808, filed 10/25/83, effective 12/1/83)

**WAC 16-520-020 Seed potato commission—Structure, powers, duties, and procedure.** (1) **Establishment and membership.** A seed potato commission is hereby established to administer this marketing order ~~((which)).~~ The commission shall be composed of ((five)) three members who shall be affected producers elected by the producers as provided in the act, and ((two)) four members who shall be appointed by the ((elected producer members)) director. In addition, the director shall be ((an ex-officio)) a voting member of the commission.

(a) Elected producer positions on the board shall be designated as positions 2, 3, and 4.

(b) Director-appointed positions on the board shall be designated as positions 1, 5, 6, and 7.

(c) The position representing the director shall be designated as position 8.

(2) **Membership qualifications.** Commission members shall be citizens and residents of this state, over the age of ~~((twenty-five))~~ eighteen years and producer members of the commission shall be producers of seed potatoes in the state of Washington. The qualifications of producer members of the commission as herein set forth must continue during their term of office. Members appointed by the ~~((elected producers))~~ director shall be either ~~((seed potato))~~ producers((-)) or others active in matters relating to seed potatoes ~~((or persons not so related)).~~

(3) **Term of office**~~((initial commission)).~~

(a) The term of office of commission members shall be three years from the date of their election or appointment and until their successors are elected or appointed and qualified so that one-third of the terms will commence as nearly as practicable each year ((provided, however, that the initial members of the commission shall serve from the effective date of this marketing order in terms terminating as follows: Two producer members, being positions 1 and 2 shall be elected for one year terms terminating June 30, 1957; two producer members, being positions 3 and 4 shall be elected for 2 year terms terminating June 30, 1958; and one producer member, being position 5 shall be elected for a 3 year term terminating June 30, 1959).

The appointed members of the initial commission shall be elected by a majority of the elected commissioners at the first meeting of said commission. One appointed member being position 6, shall be appointed for a two year term expiring June 30, 1958, and one appointed member, being position 7, shall be appointed for a three year term, expiring June 30, 1959).

(b) To accomplish the transition to a commodity board structure where the director appoints a majority of the board members, the names of the prior marketing order's elected board members in positions 1, 5, 6, and 7 shall be forwarded



to the director for appointment within thirty days of the effective date of this amended marketing order to serve out the remainder of their terms.

**(4) Nomination, appointment and election of commission members.** Nomination, appointment, and election of commission members shall be as set forth in the act and specified by the director. Dates for this process are as follows:

(a) Not earlier than March 19 and not later than April 3 of each year, the director shall give notice by mail to all affected producers that ~~((a vacancy or vacancies))~~ an open commission position(s) will occur in the commission and call for nominations. Nominating petitions shall be signed by ~~((five))~~ three persons qualified to vote for ~~((such))~~ the candidates. ~~((Such))~~ The notice shall state the final date for filing ~~((said))~~ nominating petitions which shall be not earlier than April 7 and not later than April 12 of such year.

(b) The director shall ~~((submit ballots))~~ conduct an election or advisory vote by mail to all affected producers in the district wherein the ~~((vacancy))~~ open commission position(s) will occur not earlier than April 17 and not later than May 2 of each year. Ballots shall be returned not later than June 1 of ~~((such))~~ each year. ~~((Such mailed ballot))~~ An election or advisory vote shall be conducted in a manner so that it shall be a secret ballot in accordance with rules ~~((and regulations to be promulgated))~~ adopted by the director. An affected producer is entitled to one vote.

(c) ~~((With respect to the initial seed potato commission, the director shall call for nominations in the notice of his decision following the hearing designated in the act. The ballot specified herein shall be forwarded to the producers at the time the director's proposed marketing order is mailed to the producers for their referendum assent.))~~ When only one nominee is nominated by the affected producers for a director-appointed position, RCW 15.66.120 shall apply.

(d) Except with respect to the initial seed potato commission, the members of the commission not elected by the producers or appointed by the director shall be elected by a majority of the commission within ninety days prior to the expiration of the term.

**(5) Vacancies.**

(a) ~~((To fill any vacancy occasioned by the failure to qualify of any person elected by the producers as a member of the commission, or in the event of the death, removal, resignation or disqualification of any member, the director shall call for nominations and conduct such election in the manner provided in subsection (4) of this section.))~~ In the event of a vacancy in an elected position, the remaining members shall select a qualified person to fill the term. The appointment shall be made at the commission's first or second meeting after the position becomes vacant.

(b) ~~((To fill nonelective vacancies caused by other reasons than the expiration of the term, the new members shall be elected by the commission at its first meeting after the occurrence of the vacancy.))~~

**(6) Powers and duties of commission.** The commission shall have the following powers and duties:

(a) To administer, enforce, direct and control the provisions of this marketing order and of the act relating thereto;

~~(b) To elect a chairman and such other officers as the commission may deem advisable; and to select subcommittees of commission members;~~

~~(c) To adopt, rescind, and amend rules and regulations reasonably necessary for the administration and operation of the commission and the enforcement of its duties under this marketing order;~~

~~(d) To employ and discharge at its discretion such administrators and additional personnel, attorneys, advertising and research agencies and other persons and firms that it may deem appropriate and pay compensation to the same;~~

~~(e) To acquire personal property and lease office space and other necessary real property and transfer and convey the same;~~

~~(f) To institute and maintain in its own name any and all legal actions, including actions by injunction, mandatory injunction or civil recovery, or proceedings before administrative tribunals or other governmental authorities necessary to carry out the provisions of the act and of this marketing order;~~

~~(g) To keep accurate records of all its receipts and disbursements, which records shall be open to inspection and audit by the department and other legal agencies of the state and make annual reports therefrom to the state auditor;~~

~~(h) To borrow money and incur indebtedness;~~

~~(i) To make necessary disbursements for routine operating expenses;~~

~~(j) To collect the assessments of producers as provided in this marketing order and to expend the same in accordance with and to effectuate the purposes of the act and this marketing order.~~

~~(k) To prepare a budget or budgets covering anticipated income and expenses to be incurred in carrying out the provisions of this marketing order during each fiscal year;~~

~~(l) To accept and receive gifts and grants and expend the same to effectuate the purposes of the act and this order;~~

~~(m) To exercise such other powers and perform such other duties as are necessary and proper to effectuate the purposes of the act and of this order.~~

**(7) Procedure for commission.**

(a) The commission may by resolution establish a headquarters which shall continue as such unless and until so changed by the commission, at which headquarters shall be kept the books, records and minutes of the commission meetings.

(b) The commission shall hold at least two regular meetings during each fiscal year with the time and date thereof to be fixed by the resolution of the commission.

(c) The commission may hold such special meetings as it may deem advisable and shall establish by resolution the time, place and manner of calling such special meetings with reasonable notice to the members, provided, however, that the notice of any special meeting may be waived by a waiver thereof signed by not less than a quorum of the membership.

(d) Any action taken by the commission shall require the majority vote of the members present provided a quorum is present.

(e) A quorum of the commission shall consist of at least four members.

(f) No members of the commission shall receive any salary or other compensation from the commission, except that each member shall be paid a specified sum to be determined by resolution of the commission, which rate shall not exceed \$20.00 per day for each day spent in actual attendance at or traveling to and from meetings of the commission or on special assignments for the commission, together with subsistence and travel expense of the rate allowed by law to state employees.

~~(8) **Limitation of liability of commission members and employees.** Obligations incurred by the commission and any other liabilities or claims against the commission shall be enforced only against the assets of the commission in the same manner as if it were a corporation and no liability for the debts or actions of the commission shall exist against either the state of Washington or any subdivision or instrumentality thereof or against any other commission established pursuant to the act or the assets thereof or against any member officer, employee or agent of the commission in his individual capacity. The members of the commission, including employees thereof, shall not be held responsible individually in any way whatsoever to any person for errors in judgment, mistakes, or other acts, either of commission or omission, as principal, agent, person, or employee, except for their own individual acts of dishonesty or crime. No such person or employee shall be held responsible individually for any act or omission of any other member of the commission. The liability of the members of the commission shall be several and not joint and no member shall be liable for the default of any other member.)~~ In the event of a vacancy in a director-appointed position, the position shall be filled as specified in chapter 15.66 RCW.

#### NEW SECTION

##### **WAC 16-520-025 Powers and duties of commission.**

The commission shall have the following powers and duties:

- (1) To administer, enforce, direct and control the provisions of this marketing order and of the act relating thereto;
- (2) To elect a chairman and such other officers as the commission may deem advisable; and to select subcommittees of commission members;
- (3) To adopt, rescind, and amend rules and regulations reasonably necessary for the administration and operation of the commission and the enforcement of its duties under this marketing order;
- (4) To employ and discharge at its discretion such administrators and additional personnel, attorneys, advertising and research agencies and other persons and firms that it may deem appropriate and pay compensation to the same;
- (5) To acquire personal property and lease office space and other necessary real property and transfer and convey the same;
- (6) To institute and maintain in its own name any and all legal actions, including actions by injunction, mandatory injunction or civil recovery, or proceedings before administrative tribunals or other governmental authorities necessary to carry out the provisions of the act and of this marketing order;

(7) To keep accurate records of all its receipts and disbursements, which records shall be open to inspection and audit by the department and other legal agencies of the state and make annual reports therefrom to the state auditor;

(8) To borrow money and incur indebtedness;

(9) To make necessary disbursements for routine operating expenses;

(10) To collect the assessments of producers as provided in this marketing order and to expend the same in accordance with and to effectuate the purposes of the act and this marketing order;

(11) To prepare a budget or budgets covering anticipated income and expenses to be incurred in carrying out the provisions of this marketing order during each fiscal year. The commission, at least sixty days prior to the beginning of its fiscal year, shall prepare and submit to the director for approval its research plan, its commodity-related education and training plan, and its budget;

(12) To accept and receive gifts and grants from private persons or private and public agencies and expend the same to effectuate the purposes of the act and this order;

(13) To work cooperatively with other local, state, and federal agencies, universities, and national organizations for the purposes set forth in this marketing order;

(14) To enter into contracts or interagency agreements with any private or public agency, whether federal, state, or local, to carry out the purposes set forth in this marketing order. Personal service contracts must comply with chapter 39.29 RCW;

(15) To enter into contracts or agreements for research in the production, irrigation, processing, transportation, marketing, use or distribution of seed potatoes;

(16) To retain in emergent situations the services of private legal counsel to conduct legal actions on behalf of the commission. The retention of a private attorney is subject to review by the office of the attorney general;

(17) To engage in appropriate fund-raising activities for the purpose of supporting activities of the commission authorized by this marketing order;

(18) To participate in international, federal, state, and local hearings, meetings, and other proceedings relating to the production, manufacture, regulation, transportation, distribution, sale, or use of seed potatoes including activities authorized under RCW 42.17.190, including the reporting of those activities to the public disclosure commission;

(19) To maintain a list of names and addresses of affected producers that may be compiled from information used to collect assessments under the provisions of this marketing order and data on the value of each producer's production for a minimum three-year period pursuant to RCW 15.66.140;

(20) To maintain a list of names and addresses of persons who handle seed potatoes within the affected area and data on the amount and value of seed potatoes handled for a minimum three-year period by each person pursuant to RCW 15.66.140;

(21) To maintain a list of names and addresses of all affected producers and the amount, by unit, of seed potatoes produced during the past three years pursuant to RCW 15.66.143;

(22) To maintain a list of all persons who handle seed potatoes and the amount of seed potatoes handled by each person during the past three years pursuant to RCW 15.66-143;

(23) To establish a foundation using commission funds as grant money for the purposes established in this marketing order;

(24) To request records and audit the records of producers or handlers of seed potatoes during normal business hours to determine whether the appropriate assessment has been paid;

(25) To acquire or own intellectual property rights, licenses, or patents and to collect royalties resulting from commission-funded research related to seed potatoes; and

(26) To exercise such other powers and perform such other duties as are necessary and proper to effectuate the purposes of the act and of this order.

#### NEW SECTION

**WAC 16-520-027 Procedure for commission.** (1) The commission may by resolution establish a headquarters which shall continue as such unless and until so changed by the commission, at which headquarters shall be kept the books, records and minutes of the commission meetings.

(2) The commission shall hold at least two regular meetings during each fiscal year with the time and date thereof to be fixed by the resolution of the commission. Notice of the time and place of regular meetings shall be published on or before January of each year in the *Washington State Register*. Notice of any change to the meeting schedule shall be provided in compliance with chapter 42.30 RCW, the Open Public Meetings Act.

(3) The commission may hold special meetings as it may deem advisable and shall establish by resolution the time, place and manner of calling such special meetings with reasonable notice to the members, provided, that the notice to a member of any special meeting may be waived by a waiver from that member of the board. Notice for special meetings shall be in compliance with chapter 42.30 RCW.

(4) Any action taken by the commission shall require the majority vote of the members present provided a quorum is present.

(5) A quorum of the commission shall consist of at least five members.

(6) No members of the commission shall receive any salary or other compensation from the commission, except that each member shall be paid a specified sum to be determined by resolution of the commission, which rate shall not exceed the compensation rate set by RCW 43.03.230 for each day spent in actual attendance at or traveling to and from meetings of the commission or on special assignments for the commission, together with subsistence and travel expenses in accordance with RCW 43.03.050 and 43.03.060. The commission may adopt by resolution provisions for reimbursement of actual travel expenses incurred by members of the commission in carrying out the provisions of this marketing order pursuant to RCW 15.66.130.

#### NEW SECTION

**WAC 16-520-035 Limitation of liability of commission members and employees.** Obligations incurred by the commission and any other liabilities or claims against the commission shall be enforced only against the assets of the commission in the same manner as if it were a corporation and no liability for the debts or actions of the commission shall exist against either the state of Washington or any subdivision or instrumentality thereof or against any other commission established pursuant to the act or the assets thereof or against any member officer, employee or agent of the commission in his or her individual capacity. The members of the commission, including employees thereof, shall not be held responsible individually in any way whatsoever to any person for errors in judgment, mistakes, or other acts, either of commission or omission, as principal, agent, person, or employee, except for his or her own individual acts of dishonesty or crime. No such person or employee shall be held responsible individually for any act or omission of any other member of the commission. The liability of the members of the commission shall be several and not joint and no member shall be liable for the default of any other member.

AMENDATORY SECTION (Amending WSR 92-22-007, filed 10/21/92, effective 12/1/92)

**WAC 16-520-040 Assessments and assessment funds.**  
**(1) Assessments levied.** (~~Beginning December 1, 1983,~~) There is hereby levied and there shall be collected by the commission, as provided in chapter 15.66 RCW, upon all seed potatoes of commercial quantities grown in the state an annual assessment which shall be paid by the producer thereof upon each and every hundredweight of seed potatoes sold, processed, delivered for sale or processing by him or her or stored or delivered for storage when such storage or delivery for storage is outside the boundaries of this state. The assessment shall be three cents per hundredweight (~~from December 1, 1983, until August 31, 1984~~). The assessment shall then be set by the seed potato commission at a regular meeting before July 15th of each year, to become effective from September 1st of the same year to August (~~commence~~) 31st of the following year. The assessment shall not be less than one cent or more than five cents per hundredweight. No assessment may be collected on the following:

(a) Seed potatoes of a producer's own production used by him or her on his or her own premises for seed, feed or personal consumption;

(b) Seed potatoes donated or shipped for relief or charitable purposes; or

(c) Sales on a producer's premises by a producer direct to a consumer of five hundred pounds or less of seed potatoes from a producer's own production.

No assessment levied or made collectable by the act under this order shall exceed three percent of the total market value of all such seed potatoes sold, processed or delivered for sale or processing by all producers of seed potatoes for the fiscal year to which the assessment applies.

**(2) Collection of assessment.**

(a) All assessments made and levied pursuant to the provisions of the act under this marketing order shall apply to the

respective producer who shall be primarily liable therefore. To collect ~~((such))~~ the assessments, the commission may require:

(i) Stamps to be known as "Washington seed potato commission stamps" to be purchased from the commission and fixed or attached to the containers, invoices, shipping documents, inspection certificates, releases or receiving receipts or tickets. Any ~~((such))~~ stamps shall be canceled immediately upon being attached or fixed and the date of ~~((such))~~ the cancellation shall be placed thereon;

(ii) Handlers receiving seed potatoes from the producer, including warehousemen and processors, to collect producer assessments from producers whose production they handle and all moneys so collected shall be paid to the commission on or before the twentieth day of the succeeding month for the previous month's collections. Each handler shall at ~~((such))~~ the times as required by rule ~~((and regulation required))~~, file with the commission a return under oath on forms to be furnished by the commission, stating the quantity of seed potatoes handled, processed, delivered and/or shipped during the period prescribed by the commission.

(iii) In the event payment of producer assessments occur before the seed potatoes are shipped off the farm or ~~((payments of assessments))~~ occur at different or later times ~~((and in))~~, such ~~((event, any))~~ person subject to the assessment shall give ~~((such))~~ adequate assurance or security for its payment as the commission shall require.

(b) The commission is authorized to make reasonable rules ~~((and regulations))~~ in accordance and conformity with the act and with this section to effectuate the collection of assessments. On or before the beginning of each marketing season, the commission shall give reasonable notice to all producers, handlers and other affected persons of the method or methods of collection to be used for that marketing season.

(c) No ~~((affected))~~ hundredweight unit or units of seed potatoes shall be transported, carried, shipped, sold, stored or otherwise handled or disposed of until every due and payable assessment ~~((herein provided for))~~ has been paid and the receipt issued or stamp canceled, but no liability ~~((hereunder shall attach))~~ or obligation applies to common carriers in the regular course of their business. When any seed potatoes for which an exemption is claimed, as provided for in subsection (1) of this section ~~((is claimed))~~, are shipped either by railroad or truck, there shall be plainly noted on the bill of lading, shipping document, container or invoice, the reasons for ~~((such))~~ the exemption(s).

(d) Any producer or handler who fails to comply with the provisions of this section as herein provided shall be guilty of a violation of this order.

### (3) Funds.

(a) Moneys collected by the seed potato commission pursuant to the act and this marketing order as assessments shall be used by the commission only for the purposes of paying for the costs or expenses arising in connection with carrying out the purposes and provisions of the act and this marketing order.

(b) At the end of each fiscal year the commission shall credit each producer with any amount paid by such producer in excess of three percent of the total market value of all seed potatoes sold, processed, delivered for sale or processing or

delivered for storage or stored when such storage or delivery for storage was outside the boundaries of this state during that period. Refund may be made only upon satisfactory proof given by the producer ~~((in accordance with reasonable rules and regulations prescribed by the director))~~ which may include, bills of lading, bills of sale or receipts.

AMENDATORY SECTION (Amending Marketing Order, Article V, effective 10/1/56)

**WAC 16-520-050 Information reports.** All persons subject to the provisions of this marketing order shall make and render ~~((such))~~ reports and furnish such information to the director or the commission as may be necessary or required under the act or this order to effectuate the purposes thereof. Any financial or commercial information and records obtained by ~~((any persons pursuant to the provisions of this section shall be confidential and))~~ the director or commission are exempted from public disclosure under the provisions of RCW 15.66.105 and 42.56.380 and shall not be ~~((by him))~~ disclosed to any other person save to a person with like right to obtain the same or any attorney employed by the director or the commission to give legal advice thereon or by court order.

### REPEALER

The following sections of the Washington Administrative Code are repealed:

WAC 16-520-002	Director's findings and final decision approving a marketing order.
WAC 16-520-030	Marketing order purposes.
WAC 16-520-070	Effective time.

### WSR 10-14-111 PROPOSED RULES BUILDING CODE COUNCIL

[Filed July 7, 2010, 8:34 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 10-09-070.

Title of Rule and Other Identifying Information: Amendment of chapter 51-11 WAC, Washington State Energy Code.

Hearing Location(s): Spokane City Council Chambers, West 808 Spokane Falls Boulevard, Spokane, WA, on September 10, 2010, at 10:00 a.m.; and at the Senate Hearing Room 2, Cherberg Building, Washington State Capitol Campus, Olympia, Washington, on September 24, 2010, at 10:00 a.m.

Date of Intended Adoption: October 15, 2010.

Submit Written Comments to: John Cochran, Council Chair, P.O. Box 41014, Olympia, WA 98504-1014, e-mail krista.braaksma@ga.wa.gov, fax (360) 586-9383, by September 24, 2010.

Assistance for Persons with Disabilities: Contact Peggy Bryden by August 26, 2010, TTY (360) 586-0772 or (360) 725-2966.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rule would delay the implementation of the 2009 amendments to the Washington State Energy Code, chapter 51-11 WAC, until January 1, 2011.

Reasons Supporting Proposal: RCW 19.27A.025 and 19.27A.045.

Statutory Authority for Adoption: RCW 19.27A.020 and 1990 c 2, 91-01-112 § 51-11-0100, filed 12/19/90, effective 7/1/91.

Statute Being Implemented: Chapters 19.27, 19.27A, and 34.05 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: The council is seeking comments on the effective date proposed in the following rules.

Name of Proponent: Washington state building code council, governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Krista Braaksma, P.O. Box 41014, Olympia, WA 98504-1014, (360) 725-2964; and Enforcement: Local jurisdictions.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This rule will change the effective date of previously adopted amendments to the Washington State Energy Code. No disproportionate economic impact on small business was identified.

A cost-benefit analysis is not required under RCW 34.05.328. The state building code council is not listed in this section as one of the agencies required to comply with this statute.

June 30, 2010  
John C. Cochran  
Council Chair

AMENDATORY SECTION (Amending WSR 91-01-112, filed 12/19/90, effective 7/1/91)

**WAC 51-11-0100 Chapter 1—Administration and enforcement.** The effective date of the 2009 amendments to the Washington State Energy Code, chapter 51-11 WAC, chapters 1 through 20, shall be January 1, 2011.

### WSR 10-14-113

#### PROPOSED RULES

#### DEPARTMENT OF ECOLOGY

[Order 09-05—Filed July 7, 2010, 8:45 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 09-16-139.

Title of Rule and Other Identifying Information: Chapter 173-152 WAC, Water rights, this rule establishes the

framework under which the department can provide for the organization of its work, prioritize basins to be assessed, conduct basin assessments, prioritize investigations of water right applications by geographic areas, and establish criteria for priority processing of applications for new water rights.

Hearing Location(s): August 10, 2010, at the Ecology Headquarters Auditorium, 300 Desmond Drive, Lacey; on August 11, 2010, at the Everett Community College, Gray Wolf Hall, Room 374, 2000 Tower Street, Everett, WA; on August 12, 2010, at the Wenatchee City Hall, Community Center Veterans Hall, 504 South Chelan Avenue, Wenatchee, WA; on August 17, 2010, at the Ecology Regional Office Spokane, 4601 North Monroe Street, 2nd Floor Conference Room, Spokane, WA; and on August 18, 2010, at the Ecology Richland Office, Conference Room 3A, River Room, 3100 Port of Benton Boulevard, Richland, WA. All hearings begin at 6:30 p.m.

Date of Intended Adoption: November 19, 2010.

Submit Written Comments to: Janet L. Rajala, Department of Ecology, Eastern Regional Office, 4601 North Monroe Street, Spokane, WA 99205-1205, e-mail [jaca461@ecy.wa.gov](mailto:jaca461@ecy.wa.gov), fax (509) 329-3529, by 5 p.m., September 1, 2010.

Assistance for Persons with Disabilities: Contact Judy Beitel by August 2, 2010. Persons with hearing loss, call 711 for Washington relay service. Persons with a speech disability, call 877-833-6341.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The proposed rule making would amend chapter 173-152 WAC to reflect the legislative amendments to chapters 90.03 and 90.90 RCW, Columbia River Basin water supply, enacted during the 2006 legislative session. The proposed language offers new language identifying how ecology will manage water rights under chapter 90.90 RCW. Proposed language amends priority processing described in WAC 173-152-050 to include the processing of chapter 90.90 RCW reservoir storage applications.

Reasons Supporting Proposal: The amended rule will provide the details as to how applications under chapter 90.90 RCW will be processed, the order in which they are processed, and the criteria used. Priority processing under the proposed WAC 173-152-050 will provide some clarity on processing applications that were acknowledged within the Supreme Court decision, in *Hillis v. Department of Ecology*, 131 Wn.2d 373, 932 P.2d 139 (1997) and clarify the changes regarding public water supply emergencies and priorities.

Statutory Authority for Adoption: RCW 43.21A.064(9), 43.27A.090(11), chapters 90.03, 90.44, and 90.54 RCW.

Statute Being Implemented: Chapters 90.03, 90.44, 90.54 and 90.90 RCW, *Hillis v. Department of Ecology*, 131 Wn.2d 373, 932 P.2d 139 (1997).

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of ecology, governmental.

Name of Agency Personnel Responsible for Drafting: Janet Rajala, Spokane, (509) 329-3421; Implementation and Enforcement: Water Resources Regional Offices, Lacey, (360) 407-6300, Bellevue, (425) 649-7000, Yakima, (509) 575-2490, and Spokane, (509) 329-3400.

No small business economic impact statement has been prepared under chapter 19.85 RCW. This is not a significant legislative rule.

A cost-benefit analysis is not required under RCW 34.05.328. This is not a significant legislative rule.

July 6, 2010

Polly Zehm

Deputy Director

AMENDATORY SECTION (Amending Order 97-14, filed 2/27/98, effective 3/30/98)

**WAC 173-152-010 Purpose.** This rule establishes the framework under which the department can:

- (1) Provide for the organization of its work( );
- (2) Prioritize basins to be assessed( );
- (3) Conduct basin assessments( );
- (4) Prioritize investigations of water right applications by geographic areas( ); and
- (5) Establish criteria for priority processing of applications for:
  - (a) New water rights ( ~~and~~ );
  - (b) Applications for change or transfer of existing water rights; and
  - (c) Applications for water supply infrastructure.

AMENDATORY SECTION (Amending Order 97-14, filed 2/27/98, effective 3/30/98)

**WAC 173-152-020 Definitions.** For the purposes of this chapter the following definitions apply:

- (1) ("~~Department~~" means the department of ecology.
- (2) "~~Public water system~~" means a water supply system as defined in RCW 70.119A.020.) "Acquisition" means, for the purposes of WAC 173-152-035, buying or leasing water rights using the Columbia River account.
- (2) "Application" means an application for either a new appropriation or a change or transfer to an existing water right or both made under chapters 90.03 and 90.44 RCW.
- (3) "Applications to change or transfer" means applications made under RCW 90.03.380 or 90.44.100.
- (4) "Columbia River account" means, for the purposes of the WAC 173-152-035, a fund that is created, funded, and spent as provided in chapter 90.90 RCW.
- (5) "Columbia River basin" means, for the purposes of WAC 173-152-035, water resource inventory areas (WRIAs) 29 through 62 located in southwest and eastern Washington where water sources flow into the Columbia River upstream of Bonneville Dam. A map of the Columbia River basin by WRIA is shown at figure 1.
- (6) "Columbia River mainstem" means, for the purposes of WAC 173-152-035, all water in the Columbia River within the ordinary high water mark of the main channel of the Columbia River between the border of the United States and Canada and the Bonneville Dam, and all ground water within one mile of the high water mark. Water is within the mainstem if it is within a straight line drawn across the mouth of each tributary to delineate the mainstem channel. The mainstem channel does not include any of the backwater areas on

tributaries nor does it include tributary surface water rights within one mile of the Columbia River.

(7) "Competing applications" means all existing applications for water right from the same water source, whether for a new water right or for a change or transfer of an existing water right.

~~((5) "Same"))~~ (8) "Department" means the department of ecology. For the purposes of WAC 173-152-035, all water in the Lower Snake River within the ordinary high water mark of the main channel of the Lower Snake River from the head of Ice Harbor pool to the confluence of the Snake and Columbia rivers, and all ground water within one mile of the high water mark. Water is within the mainstem if it is within a straight line drawn across the mouth of each tributary to delineate the mainstem channel. The mainstem channel does not include any of the backwater areas on tributaries nor does it include tributary surface water rights within one mile of the Lower Snake River.

(9) "Mitigation" means a project with a consumptive water use element compensated by allowing no significant impact on a water source or elimination of impairment.

(10) "New application" means any application for a permit made under chapters 90.03 and 90.44 RCW.

(11) "Nonconsumptive" means water use where there is no diminishment of the amount or quality of the water source.

(12) "Pool" means, for the purposes of WAC 173-152-035, a reach of the Columbia or Lower Snake River mainstems inundated and under the downstream hydraulic control of:

- (a) U.S. Army Corps of Engineers.
- (b) U.S. Bureau of Reclamation.
- (c) Any mid-Columbia public utility district.
- (13) "Public water system" means a water supply system as defined in RCW 70.119A.020.

(14) "Sources of supply developed under chapter 90.90 RCW" means new storage, modification of existing storage, conservation, pump exchanges, acquisition or any other projects designed to provide access to new water supplies.

(15) "Transfer" means a transfer, change, amendment, or other alteration of a part or all of a water right authorized under chapters 90.03, 90.38, 90.42, and 90.44 RCW.

(16) "Voluntary regional agreement" or "VRA" means an agreement entered into by the department with another entity for the purposes of providing new water for out-of-stream use, streamlining the application process, and protecting instream flow.

(17) "Water budget neutral project" means a project where diversions or withdrawals of waters of the state are proposed in exchange for at least an equivalent amount of water from other water rights, donation of water rights into trust, relinquishment of other water rights, or other mitigation projects that result in no diminishment of the source.

(18) "Water source" (~~(or "source of water")~~) means an aquifer, aquifer system, or surface water body, including a stream, stream system, lake, or reservoir and any spring water or underground water that is part of or tributary to the surface water body or aquifer( ) that the department determines to be an independent water body for the purposes of water right administration.

AMENDATORY SECTION (Amending Order 97-14, filed 2/27/98, effective 3/30/98)

**WAC 173-152-030 Organization and management of work load except under chapter 90.90 RCW.** The department will organize and manage the daily water rights workload as established in subsections (1) through (5) of this section, except for applications processed under WAC 173-152-035.

(1) The department may establish regions and maintain regional offices or field offices for the purposes of maximizing the efficiency of its work. Regional offices and their geographic jurisdictions as of the effective date of this rule are as follows:

(a) Northwest regional office serving Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties(=).

(b) Southwest regional office serving Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties(=).

(c) Central regional office serving Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties(=and).

(d) Eastern regional office serving Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties.

(2) The department will make decisions on ~~((new water right))~~ applications ~~((and applications for change or transfer of an existing water right))~~ within a region or within a regional or field office's geographic area in the order the applications ~~((was))~~ were received except as allowed under RCW 90.03.380 (5)(c), and except as provided for in subsection (3) of this section and WAC 173-152-050.

(3) The department may, based on the criteria identified in subsection ~~((4))~~ (5) of this section, conduct ~~((an))~~ investigations and make decisions on one or more ~~((water right))~~ applications for the use of water from the same water source. ~~((Within))~~ A regional office(=) may investigate more than one water source ~~((may be investigated))~~ at a time.

(4) When the department investigates numerous applications for water from the same water source ~~((are being investigated))~~, the decisions will be made in the order in which the applications were received, except all allowed under RCW 90.03.380 (5)(c). The department will consider each application ~~((will be considered))~~ individually under the requirements of chapters 90.03, 90.38, 90.42, and 90.44 RCW, as applicable.

~~((4))~~ (5) Criteria for selecting a water source include, but are not limited to:

(a) The number and age of pending applications, and the quantities of water requested(=).

(b) The ability to efficiently investigate applications because of the availability of data related to water supply and future needs, ~~((streamflow))~~ stream flow needs for instream values, and hydrogeology of the basin(=).

(c) The ability of the department to support implementation of local land use plans or implementation of water resource plans(=).

(d) The projected population and economic growth in the area(=and/or).

(e) The completion of an initial basin assessment as provided for in WAC 173-152-040(5).

#### NEW SECTION

**WAC 173-152-035 Organization and management of workload under chapter 90.90 RCW.** The department will organize and manage the daily workload as established in subsections (1) through (6) of this section for applications processed under chapter 90.90 RCW.

(1) The department implements chapter 90.90 RCW in counties or portions of counties in the central, eastern, and southwest regional offices, as shown in the map by counties in figure 2.

(2) The department processes the following types of applications under chapter 90.90 RCW:

(a) New applications proposing to divert surface water from the Columbia River between the border of the United States and Canada and the Bonneville Dam.

(b) New applications proposing to divert surface water from the Lower Snake River downstream of Lower Monumental Dam.

(c) New applications associated with a voluntary regional agreement proposing to divert or withdraw water from the Columbia River mainstem or Lower Snake River mainstem.

(d) New applications proposing to divert surface water within the Columbia River basin for storage or net water savings funded in whole or in part by the Columbia River account.

(e) New applications proposing to withdraw ground water within the Columbia River basin for storage or net water savings funded in whole or in part by the Columbia River account where the proposed well(s) use(s) can be mitigated using the same source as that of the withdrawal.

(f) Applications for water rights and trust water within the Columbia River basin associated with a project funded by the Columbia River account.

(3) Criteria for selecting a water source for processing new applications from water supplies developed in whole or in part by the department include, but are not limited to:

(a) The priorities outlined in RCW 90.90.020(3).

(b) The funding agreements and environmental reviews used to develop a project.

(c) The number and age of pending applications, and the quantities of water requested.

(d) Existence of distressed or endangered fish stocks.

(e) The location of the source to be developed.

(f) Whether the place of use must stay within the WRIA as limited under RCW 90.90.010 (2)(a).

(4) The department may, based on the criteria identified in subsection (3) of this section, conduct investigations and make decisions on one or more applications for the use of water from the same water source. The department may investigate more than one water source at the same time.

(5) When numerous applications for water from the same water source are investigated, the department may make decisions on one or more water right applications in the order in which the applications are received, whether or not the applications are processed collectively.

(6) For purposes of chapter 90.90 RCW, if the water source developed is:

(a) On the Columbia River between Bonneville Dam and Canada, the department will process applications in the order in which the applications are received, whether or not the applications are processed collectively:

(i) All new surface water applications within the same pool and downstream of the developed source of supply.

(ii) All new ground water applications where the proposed well(s) can be mitigated using the same source as that of the withdrawal.

(iii) Applications for change or transfer or trust water applications associated with development of the source if funded by the Columbia River account.

(b) On the Snake River downstream of Lower Monumental Dam, the department will process applications in the order in which the applications are received, whether or not the applications are processed collectively:

(i) All new surface water applications within the same pool and downstream of the developed source of supply.

(ii) All new ground water applications where the proposed well(s) can be mitigated by the developed source of supply.

(iii) Applications for change or transfer or trust water applications associated with development of the source if funded by the Columbia River account.

(c) On the Columbia River mainstem or Lower Snake River mainstem under a voluntary regional agreement, the department will process applications in the order in which the applications are received, whether or not the applications are processed collectively:

(i) All new surface water applications within the same pool and downstream of the developed source of supply.

(ii) All new ground water applications within one mile of the high water mark where the proposed well(s) can be mitigated using the same source as that of the withdrawal.

(iii) Applications for change or transfer to trust water applications associated with development of the source if funded by the Columbia River account.

(d) On a tributary in the Columbia River basin for a source of supply developed using Columbia River account funds, the department will process applications in the order in which the applications are received, whether or not the applications are processed collectively:

(i) All new downstream tributary surface water applications.

(ii) All new surface water applications on the Columbia River within the same pool and downstream of the developed source of supply.

(iii) All new ground water applications within the Columbia River basin where the proposed well(s) can be mitigated using the same source as that of the withdrawal.

(iv) Applications for change or transfer or trust water applications associated with development of the source if funded by the Columbia River account.

(e) Upstream of Lower Monumental Dam or on a tributary to the Lower Snake River for a source of supply developed using Columbia River account funds, the department will process applications in the order in which the applica-

tions are received, whether or not the applications are processed collectively:

(i) All new downstream tributary surface water applications.

(ii) All new surface water applications on the Lower Snake and Columbia rivers within the same pool and downstream of the developed source of supply.

(iii) All new ground water applications within the Lower Snake and Columbia river basins where the proposed well(s) can be mitigated using the same source as that of the withdrawal.

(iv) Applications for change or transfer or trust water applications associated with development of the source if funded by the Columbia River account.

(f) In the Columbia River basin using funds from the Columbia River account through acquisition or transfer of water rights in accordance with RCW 90.90.010 (2)(a), the department will process applications in the order in which the applications are received, whether or not the applications are processed collectively:

(i) All new downstream tributary surface water applications within the same WRIA.

(ii) All new surface water applications on the Lower Snake or Columbia rivers within the same WRIA.

(iii) All new ground water applications where the proposed well(s) can be mitigated using the same source as that of the withdrawal within the same WRIA.

(7) The department will consider each application individually under the requirements of chapters 90.03, 90.38, 90.42, and 90.44 RCW.

(8) Before expediting an application for new storage pursuant to WAC 173-153-050(3), the department shall provide written notification to:

(a) County legislative authorities.

(b) Watershed planning groups with jurisdiction in the location of the reservoir.

(c) The department of fish and wildlife.

(d) Affected tribal governments and federal agencies.

(9) Any notified entity identified in subsection (7) of this section may raise concerns, either verbally or in writing, to the department about the department's decision how to prioritize an application. The concern must be raised within thirty calendar days of receiving the department's notification. The department will consider the concerns as it processes the application.

**AMENDATORY SECTION** (Amending Order 97-14, filed 2/27/98, effective 3/30/98)

**WAC 173-152-040 Basin assessments.** (1) The department may conduct assessments to assemble and ~~((correlate))~~ compare information related to:

(a) Water use((:));

(b) Water availability((:));

(c) The quantity of water allocated to existing rights((:));

(d) Claims((:));

(e) Instream flow((:)); and

(f) The hydrology of a basin ~~((to use))~~.

The department will use this information in making decisions on future water resource allocation and use.



(2) The department may also enter into agreements or contracts with public or private parties to conduct assessments.

~~((Geographic areas or same water sources within a regional office service area will be identified or considered for assessment))~~ (3) In cooperation with federal, state, tribal, and local jurisdictions and other interested parties ~~((In determining a basin or same water source to assess, the department's consideration may include, but is not limited to, the following factors))~~, each regional office will consider assessing a geographic area or water source within its service area using criteria such as:

(a) The number and age of pending applications, and the quantities of water requested~~((;))~~.

(b) The projected population, growth and off-stream needs for water in the area~~((;))~~.

(c) Known water quality problems~~((;))~~.

(d) Existence of distressed or endangered fish stocks~~((;))~~.

(e) Risk of impairment to senior rights (including instream flow rights)~~((;))~~.

(f) Availability of data related to water supply and future need, ~~((streamflow))~~ stream flow needs for instream values, and hydrogeology of the basin~~((;))~~.

(g) The number of claims to water rights submitted pursuant to chapter 90.14 RCW~~((; and))~~.

(h) The ability of the department to support local land use activities.

~~((2))~~ (4) Each region may conduct multiple basin assessments ((may be conducted within a region)) at the same time. When the department determines ~~((#))~~ conducting a basin assessment is in the public interest ~~((to conduct a basin assessment))~~, it will:

(a) Publish notice of the intent to conduct a basin assessment once a week, for two consecutive weeks in a newspaper of general circulation within the geographic area~~((;))~~.

(b) ~~((Hold in abeyance))~~ Notify any Indian tribe with potential interest in the basin of the intent.

(c) Temporarily cease making decisions on all competing water right applications in the basin ((after publication of a notice to initiate a basin assessment and)) proposed for assessment until the initial basin assessment is complete and published except for applications prioritized pursuant to WAC 173-152-050~~((; and))~~.

~~((e))~~ (d) Make decisions on competing applications after the initial basin assessment is complete and published to the extent sufficient information is available.

~~((3))~~ (5) Initial basin or water source assessments will be conducted to assemble the following existing information:

(a) Physical characterization of the watershed related to:

(i) Climatic impacts to water resources~~((;))~~.

(ii) Geology~~((;))~~.

(iii) ~~((Streamflow))~~ Stream flow trends~~((;))~~.

(iv) Ground water elevation trends and the contribution of ground water to ~~((streamflows; and))~~ stream flows.

(v) Surface and ground water quality in the basin or water source.

(b) Out-of-stream water use characterization related to:

(i) Water rights, federal rights, and claims to water rights~~((;))~~.

(ii) Estimated use of water pursuant to water rights and claims to water rights~~((;))~~.

(iii) Water use pursuant to RCW 90.44.050~~((;))~~.

(iv) Extent of unauthorized water use~~((; and))~~.

(v) Potential future demands for out-of-stream water use in the basin.

(c) Instream water use characterization related to:

(i) National Pollution Discharge Elimination System permits and the need for instream flow for pollution assimilation;

(ii) Fish stocks and habitat requirements, including existing, defined or engineered, or approved restoration projects;

(iii) Wildlife habitat requirements;

(iv) Recreational requirements; and

(v) Water rights and claims to water rights.

~~((4))~~ (6) Upon completion and publication of the initial basin assessment, the department ~~((in consultation))~~ will consult with the public and federal, state, tribal, local jurisdictions and interested parties ~~((with))~~ to evaluate the basin assessment. The evaluation will assess the data, analysis, and presentation of information in the basin assessment in terms of quality, adequacy, and utility to make decisions on future water resource allocation and use.

~~((5))~~ (7) The department will make decisions on competing applications for water from a water source ~~((of water))~~ within the basin where sufficient information for water resource allocation exists. If the department determines that the information assembled and ~~((correlated))~~ compared is not sufficient, the department may withdraw the water source from appropriation pursuant to RCW 90.54.050(2). The department in consultation with the public, federal, state, tribal, local jurisdictions and interested parties will design and conduct additional investigations, to the extent resources allow, to obtain the information necessary to make future decisions on water allocation and use.

~~((6))~~ (8) The department shall make available on-line information obtained and compiled during an initial basin assessment of the water resources in a basin or water source ((will be contained in an open file technical report at the regional or field office)).

AMENDATORY SECTION (Amending Order 97-14, filed 2/27/98, effective 3/30/98)

**WAC 173-152-050 Criteria for priority processing of competing applications.** At ecology's discretion, the department may approve an application for priority processing that addresses one of the criteria below:

(1) Within each regional office, the department may prioritize an application ((may be processed prior to)) ahead of competing applications if the application resolves or alleviates either a public health or safety emergency ((caused by a failing)) that exists for:

(a) A public water supply system currently providing potable water to existing users; or

(b) Any emergency for which immediate action is necessary for preservation of public health or safety.

(2) Inadequate water rights for a public water system to serve existing hook-ups or to accommodate future population growth or other future uses do not constitute a public health

or safety emergency. The application must ~~((be filed))~~ specifically propose to correct the actual or anticipated cause(s) of the ~~((public water system failure))~~ emergency. ~~((To be considered a failing public water system, the system))~~ An emergency must meet one or more of the following conditions:

(a) ~~((The department, upon notification by and in consultation with the department of health or local health authority, determines))~~ A public water system has failed ~~((, or is in danger of failing within one year,))~~ to meet state board of health standards for the delivery of potable water to existing water system users in adequate quantity or quality to meet basic human drinking, cooking and sanitation needs~~((;))~~.

(b) The current water source has failed or will fail within one year so that the public water system is or will become incapable of exercising its existing water right to meet existing needs for drinking, cooking and sanitation purposes after all reasonable water use efficiency and conservation efforts have been implemented~~((; or))~~.

(c) A change in source is required to meet drinking water quality standards and avoid unreasonable treatment costs, or the state department of health determines that the existing source of supply is or will become unacceptable for human use.

~~((2) An application may be processed prior to))~~ (d) Immediate action is necessary for preservation of public health or safety.

(e) If a public water system or source is in danger of failing within five years, the department will prioritize processing the application to correct the anticipated cause(s) of the emergency prior to actual system failure.

(3) Within each regional office, the department may prioritize an application ahead of all competing applications, but after those applications prioritized in subsection (1) of this section, if the department determines the application:

(a) ~~((Immediate action is necessary for preservation of public health or safety; or))~~ Was filed by claimants participating in adjudication, and the court requires a prompt decision.

(b) ~~((The))~~ Is for a proposed water use that is nonconsumptive and if approved would substantially enhance or protect the quality of the natural environment~~((;~~

~~(3) An application for change or transfer to an existing water right may be processed prior to competing applications provided one or more of the following criteria are satisfied:~~

~~(a) The change or transfer if approved would substantially enhance the quality of the natural environment; or~~

~~(b) The change or transfer if approved would result in providing public water supplies to meet general needs of the public for regional areas;~~

~~(c) The change or transfer was filed by water right holders participating in an adjudication, and a decision is needed expeditiously to ensure that orders or decrees of the superior court will be representative of the current water use situation.~~

~~(4) Within each regional office, the department shall process applications satisfying the criteria in subsections (1) through (3) of this section in the following priority:~~

~~(a) Public health and safety emergencies under subsection (1) of this section;~~

~~(b) Preservation of other public health and safety concerns under subsection (2)(a) of this section;~~

~~(e) Transfers or changes under subsection (3)(a) of this section;~~

~~(d) Transfers or changes under subsection (3)(b) of this section;~~

~~(e) Transfers or changes under subsection (3)(c) of this section; and~~

~~(f) Nonconsumptive uses under subsection (2)(b) of this section))~~ including donations for instream flows or a change or transfer of water into the state trust water right program in accordance with chapter 90.38 or 90.42 RCW.

(c) Is for a change or transfer and, if approved, would result in providing public water supplies including, but not limited to, consolidation of two or more public water systems, to meet general public needs for the regional areas.

(d) Is for a seasonal water right change effective for a term of one year or less.

(e) Proposes temporary water use for a public project such as road building.

(f) Proposes a water budget neutral project as defined in WAC 173-152-020(18).

(g) Is for a new water right that relies on mitigation from a water bank or in the trust water right program in accordance with chapter 90.38 or 90.42 RCW, or is to transfer water rights from a water bank or the trust water right program to a new use.

(4) The department may prioritize ahead of competing applications, except as prioritized in subsections (1) and (2) of this section, a new application for diversionary rights into reservoirs that, if approved, would not conflict with adopted state instream flow rules, federal flow targets, or federal biological opinions, and is funded or supported pursuant to chapter 90.90 RCW.

AMENDATORY SECTION (Amending Order 97-14, filed 2/27/98, effective 3/30/98)

**WAC 173-152-060 Exceptions.** Nothing in this chapter precludes the department from processing an application~~((s or requests))~~ filed for ~~((temporary permits, preliminary permits or for emergent or emergency circumstances under RCW 43.83B.410, 90.03.383(7), or 90.03.390 and/or))~~ a project where the law provides a specific process for evaluation of ~~((an))~~ the application and issuance of a decision, or where the law provides or allows for expedited processing of an application.

## WSR 10-14-117

### PROPOSED RULES

### PUBLIC EMPLOYMENT RELATIONS COMMISSION

[Filed July 7, 2010, 9:29 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 10-10-018.

Title of Rule and Other Identifying Information:  
Amendments to chapters 391-08, 391-25, 391-35, 391-45, 391-55, and 391-65 WAC.

Hearing Location(s): 112 Henry Street, Suite 300, Olympia, WA 98504-0919, on August 24, 2010, at 10:00 a.m.

Date of Intended Adoption: September 14, 2010.

Submit Written Comments to: Cathy Callahan, 112 Henry Street, Suite 300, Olympia, WA 98504-0919, e-mail Cathy.Callahan@perc.wa.gov, fax (360) 570-7334, by August 20, 2010.

Assistance for Persons with Disabilities: Contact Diane Tucker by August 20, 2010, (360) 575-7335.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To streamline agency practices and procedures, including updating rules to reflect administrative changes in agency functions; to adopt rules governing agency records requests; and to correct drafting errors in recently amended rules.

Specifically, the amendments to WAC 391-25-030 and 391-25-440 are needed to clarify the agency's "self-determination election" process. The amendments to WAC 391-25-150 and 391-25-450 are needed to clarify the limitations on when a labor organization may withdraw a representation petition or disclaim an existing bargaining unit. The amendment to WAC 391-25-531 is needed to clarify that the rule only applies to employees who exercise collective bargaining rights under chapter 41.56 RCW. The amendment to WAC 391-55-110 is needed to clarify that documents supporting applications for membership on the agency's dispute resolution panel must be signed and dated within the last two years. The amendment to WAC 391-45-310 is needed to correct a drafting error. The amendment to WAC 391-55-200 is needed to clarify that the interest arbitration rules are applicable to certain employees.

The amendment to WAC 391-08-800, as well as new sections WAC 391-08-830 through 391-08-880, are needed to govern public records requests.

Certain amendments and new rules are needed to implement recently passed legislation. The amendments to WAC 391-08-001, 391-25-002, 391-35-002, 391-45-002, 391-55-002, and 391-65-002, as well as new sections WAC 391-25-229, 391-25-299, and 391-25-399 are needed to implement chapter 6, Laws of 2010 (providing collective bargaining rights to symphony orchestra employees). The amendment to WAC 391-25-051 is needed to implement chapter 296, Laws of 2010 (providing collective bargaining rights to language access providers). New sections WAC 391-55-0715, 391-55-072, 391-55-201, 391-55-202, and 391-55-302 are needed to implement chapter 235, Laws of 2010 (educational reform).

Statutory Authority for Adoption: For WAC 391-08-001 is RCW 28B.52.080, 41.56.090, 41.58.050, 41.59.110, 41.76.060, section 7, chapter 6, Laws of 2010; for WAC 391-08-800, 391-08-830, 391-08-840, 391-08-850, 391-08-870, and 391-08-880 is RCW 28B.52.080, 41.56.090, 41.58.050, 41.59.110, 41.76.060, 41.80.080, 42.56.040, section 7, chapter 6, Laws of 2010; for WAC 391-25-002, 391-25-030, 391-25-150, 391-25-440, and 391-25-450 is RCW 28B.52.080, 41.06.340, 41.56.090, 41.58.050, 41.59.110, 41.76.060, 41.80.080, section 7, chapter 6, Laws of 2010; for WAC 391-25-051 and 391-25-531 is RCW 41.56.060, 41.56.090, 41.58.050; for WAC 391-25-229, 391-25-299, and 391-25-399 is RCW 41.58.050, section 7, chapter 6, Laws of 2010;

for WAC 391-35-002 is RCW 28B.52.080, 41.06.340, 41.56.090, 41.58.050, 41.59.110, 41.76.060, 41.80.080, section 7, chapter 6, Laws of 2010; for WAC 391-45-002 and 391-45-310 is RCW 28B.52.080, 41.56.090, 41.58.050, 41.59.110, 41.76.060, 41.80.120, section 7, chapter 6, Laws of 2010; for WAC 391-55-002 and 391-55-110 is RCW 28B.52.080, 41.56.090, 41.58.050, 41.59.110, 41.76.060, 41.80.090, section 7, chapter 6, Laws of 2010; for WAC 391-55-0715, 391-55-072, 391-55-201, 391-55-202, and 391-55-302 is RCW 41.56.090, 41.58.050, 41.59.110, section 105, chapter 235, Laws of 2010; for WAC 391-55-200 is RCW 41.56.090, 41.58.050, 74.39A.270; and for WAC 391-65-002 is RCW 28B.52.080, 41.56.090, 41.58.050, 41.59.110, 41.76.060, 41.80.130, section 7, chapter 6, Laws of 2010.

Statute Being Implemented: Chapter 6, Laws of 2010; chapter 296, Laws of 2010; chapter 235, Laws of 2010.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fiscal Matters: Agency staff is proposing that these rules be adopted.

Name of Agency Personnel Responsible for Drafting and Implementation: Dario de la Rosa, 112 Henry Street, Suite 300, Olympia, WA 98504-0919, (360) 570-7328; and Enforcement: Cathy Callahan, 112 Henry Street, Suite 300, Olympia, WA 98504-0919, (360) 570-7312.

No small business economic impact statement has been prepared under chapter 19.85 RCW. Agency rules obligate public employers, public employees, and unions representing public employees, and do not impose costs on profit-making businesses.

A cost-benefit analysis is not required under RCW 34.05.328. Agency rules are excepted by RCW 34.05.328 (5)(a)(i).

July 7, 2010

Dario de la Rosa

Appeals Administrator

AMENDATORY SECTION (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-08-001 Application and scope of chapter 391-08 WAC.** Chapter 391-08 WAC has been added to the Washington Administrative Code by the public employment relations commission pursuant to the authority of section 12, chapter 288, Laws of 1975 1st ex. sess. (RCW 41.59.110); sections 7, 14 and 20, chapter 296, Laws of 1975 1st ex. sess. (RCW 41.58.050, 28B.52.080 and 41.56.090, respectively); and section 232, chapter 354, Laws of 2002 (RCW 41.06.340); ~~((and))~~ section 15, chapter 356, Laws of 2002 (RCW 41.76.060); and section 7, chapter 6, Laws of 2010, to promulgate comprehensive and uniform rules for practice and procedure before the agency. This chapter sets forth general rules applicable to all types of proceedings before the agency, and should be read in conjunction with the provisions of:

(1) Chapter 10-08 WAC, which contains the model rules of procedure promulgated by the chief administrative law

judge to regulate adjudicative proceedings under chapters 391-25, 391-35, 391-45 and 391-95 WAC, except:

(a) WAC 10-08-035, which is replaced by detailed requirements in WAC 391-25-070, 391-25-090, 391-35-050, 391-45-050, and 391-95-110;

(b) WAC 10-08-050, which relates to office of administrative hearings procedures inapplicable to proceedings before the public employment relations commission;

(c) WAC 10-08-083, which is replaced by detailed requirements in WAC 391-08-010;

(d) WAC 10-08-110, which is replaced by detailed requirements in WAC 391-08-120;

(e) WAC 10-08-120, which is replaced by detailed requirements in WAC 391-08-040, 391-08-300 and 391-08-310;

(f) WAC 10-08-140, which is limited by WAC 391-08-040, 391-08-300 and 391-08-310;

(g) WAC 10-08-150, which is limited by WAC 391-08-315;

(h) WAC 10-08-211, which is replaced by WAC 391-08-640 and detailed requirements in WAC 391-25-390, 391-25-391, 391-25-590, 391-25-630, 391-25-650, 391-25-660, 391-25-670, 391-35-210, 391-35-250, 391-45-350, 391-45-390, 391-95-270, and 391-95-290;

(i) WAC 10-08-230, which is replaced by detailed requirements in WAC 391-25-150, 391-25-220, 391-25-230, 391-25-250, 391-25-270, 391-35-070, 391-35-080, 391-45-070, 391-45-090, 391-45-260, and 391-95-170; and

(j) WAC 10-08-250, 10-08-251, and 10-08-252 which are replaced by detailed requirements in WAC 391-08-520.

(2) Chapter 391-25 WAC, which regulates representation proceedings.

(3) Chapter 391-35 WAC, which regulates unit clarification proceedings and contains some well-established unit determination standards in a subchapter of rules beginning at WAC 391-35-300.

(4) Chapter 391-45 WAC, which regulates unfair labor practice proceedings.

(5) Chapter 391-55 WAC, which regulates the resolution of impasses in collective bargaining.

(6) Chapter 391-65 WAC, which regulates grievance arbitration and grievance mediation proceedings.

(7) Chapter 391-95 WAC, which regulates union security nonassociation proceedings.

In the event of a conflict between a general rule in this chapter and a special rule in another chapter applicable to a particular proceeding, the special rule shall govern.

AMENDATORY SECTION (Amending WSR 98-14-112, filed 7/1/98, effective 8/1/98)

**WAC 391-08-800 Agency records—Public ((access)) records officer—Contact information.** ((The agency shall maintain for public inspection:))

(1) ((An index to all proceedings processed by the agency;)) Any person wishing to request access to public records of the agency, or seeking assistance in making such a request should contact the public records officer of the agency:

David I. Gedrose

Public Records Officer, Public Employment Relations

Commission

P.O. Box 40919

360-570-7322

David.Gedrose@perc.wa.gov

Information is also available at the agency's web site at [www.perc.wa.gov](http://www.perc.wa.gov).

~~(2) ((A docket for each proceeding processed by the agency, showing the actions taken and the final resolution of each such proceeding;~~

~~(3) A schedule of hearing dates assigned in particular cases; and~~

~~(4) The files for all proceedings, including all documents filed with the agency in the particular case, except materials held in confidence as provided in WAC 391-08-810.))~~ The public records officer will oversee compliance with the act but another staff member may process the request. Therefore, these rules refer to the public records officer "or designee." The public records officer or designee will provide the "fullest assistance" to requestors, ensure that public records are protected from damage or disorganization, and prevent fulfilling public records requests from causing excessive interference with essential functions of the agency.

#### NEW SECTION

**WAC 391-08-830 Agency records—Availability—Organization—Requests.** (1) Hours for inspection of records. Public records are available for inspection and copying during normal business hours, Monday through Friday, 8:00 a.m. to 5:00 p.m., excluding legal holidays. Records must be inspected at the Olympia office of the agency.

(2) Organization of records. The agency will maintain its records in a reasonably organized manner. The agency will take reasonable actions to protect records from damage and disorganization. A requestor shall not take agency records from its offices without the permission of the public records officer or his or her designee. A variety of records is available on the agency web site at [www.perc.wa.gov](http://www.perc.wa.gov). Requestors are encouraged to view the documents available on the web site prior to submitting a records request.

(3) Making a request for public records:

(a) Any person wishing to inspect or copy public records of the agency should make the request by letter, fax, or e-mail addressed to the public records officer and including the following information:

(i) Name of requestor;

(ii) Address of requestor;

(iii) Other contact information, including telephone number and any e-mail address;

(iv) Identification of the public records adequate for the public records officer or designee to locate the records; and

(v) The date and time of day of the request.

(b) If the requestor wishes to have copies of the records made instead of simply inspecting them, he or she should so indicate and make arrangements to pay for copies of the records or make a deposit. Pursuant to WAC 391-08-860 standard photocopies will be provided at fifteen cents per page.

(c) The public records officer or designee may accept requests for public records that contain the above information by telephone or in person. If the public records officer or designee accepts such a request, he or she will confirm receipt of the information and the substance of the request in writing.

#### NEW SECTION

**WAC 391-08-840 Processing of public records requests.** (1) Within five business days of receipt of the request, the public records officer will do one or more of the following:

- (a) Make the records available for inspection or copying;
- (b) If copies are requested and payment of a deposit for the copies, if any, is made or terms of payment are agreed upon, send the copies to the requestor;
- (c) Provide a reasonable estimate of when records will be available;
- (d) If the request is unclear or does not sufficiently identify the requested records, request clarification from the requestor. Such clarification may be requested and provided by telephone. The public records officer or designee may revise the estimate of when records will be available; or
- (e) Deny the request.

(2) Protecting rights of others. In the event that the requested records contain information that may affect rights of others and may be exempt from disclosure, the public records officer may, prior to providing the records, give notice to such others whose rights may be affected by the disclosure. Such notice should be given so as to make it possible for those other persons to contact the requestor and ask him or her to revise the request, or, if necessary, seek an order from a court to prevent or limit the disclosure. The notice to the affected persons will include a copy of the request.

(3) Records exempt from disclosure. Some records are exempt from disclosure, in whole or in part. If the agency believes that a record is exempt from disclosure and should be withheld, the public records officer will state the specific exemption and provide a brief explanation of why the record or a portion of the record is being withheld. If only a portion of a record is exempt from disclosure, but the remainder is not exempt, the public records officer will redact the exempt portions, provide the nonexempt portions, and indicate to the requestor why portions of the record are being redacted.

(4) Inspection of records.

(a) Consistent with other demands, the agency shall promptly provide space to inspect public records. No member of the public may remove a document from the viewing area or disassemble or alter any document. The requestor shall indicate which documents he or she wishes the agency to copy.

(b) The requestor must claim or review the assembled records within thirty days of the agency's notification to him or her that the records are available for inspection or copying. The agency will notify the requestor in writing of this requirement and inform the requestor that he or she should contact the agency to make arrangements to claim or review the records. If the requestor or a representative of the requestor fails to claim or review the records within the thirty-day period or make other arrangements, the agency

may close the request and refile the assembled records. Other public records requests can be processed ahead of a subsequent request by the same person for the same or almost identical records, which can be processed as a new request.

(5) Providing copies of records. After inspection is complete, the public records officer or designee shall make the requested copies or arrange for copying.

(6) Providing records in installments. When the request is for a large number of records, the public records officer or designee will provide access for inspection and copying in installments, if he or she reasonably determines that it would be practical to provide the records in that manner. If, within thirty days, the requestor fails to inspect the entire set of records or one or more of the installments, the public records officer or designee may stop searching for the remaining records and close the request.

(7) Completion of inspection. When the inspection of the requested records is complete and all requested copies are provided, the public records officer or designee will indicate that the agency has completed a diligent search for the requested records and made any located nonexempt records available for inspection.

(8) Closing withdrawn or abandoned request. When the requestor either withdraws the request or fails to fulfill his or her obligations to inspect the records or pay the deposit or final payment for the requested copies, the public records officer will close the request and indicate to the requestor that the agency has closed the request.

(9) Later discovered documents. If, after the agency has informed the requestor that it has provided all available records, the agency becomes aware of additional responsive documents existing at the time of the request, it will promptly inform the requestor of the additional documents and provide them on an expedited basis.

#### NEW SECTION

**WAC 391-08-850 Processing of public records—Electronic records.** (1) The process for requesting electronic public records is the same as for requesting paper public records.

(2) When a requestor requests electronic records in an electronic format, the public records officer will provide the nonexempt records or portions of such records that are reasonably locatable in an electronic format that is used by the agency and is generally commercially available, or in a format that is reasonably translatable from the format in which the agency keeps the record.

(3) Customized access to data bases. With the consent of the requestor, the agency may provide customized access under RCW 43.105.280 if the record is not reasonably locatable or not reasonably translatable into the format requested. The agency may charge a fee consistent with RCW 43.105.280 for such customized access.

#### NEW SECTION

**WAC 391-08-860 Exemptions to public records.**

NEW SECTION**WAC 391-08-870 Costs for providing public records.**

(1) There is no fee for inspecting public records. A requestor may obtain standard black and white photocopies for fifteen cents per page and color copies for twenty-five cents per page.

(2) Before beginning to make the copies, the public records officer or designee may require a deposit of up to ten percent of the estimated costs of copying all the records selected by the requestor. The public records officer or designee may also require the payment of the remainder of the copying costs before providing all the records, or the payment of the costs of copying an installment before providing that installment. The agency will not charge sales tax when it makes copies of public records.

(3) The cost of electronic copies of records shall be one dollar for information on a CD-ROM. There will be no charge for e-mailing electronic records to a requestor, unless another cost applies.

(4) The agency may also charge actual costs of mailing, including the cost of the shipping container.

(5) Payment may be made by cash, check, or money order to the "Public Employment Relations Commission."

NEW SECTION**WAC 391-08-880 Review of denial of public records.**

(1) Any person who objects to the initial denial or partial denial of a records request may petition in writing to the public records officer for a review of that decision. The petition shall include a copy of or reasonably identify the written statement by the public records officer or designee denying the request.

(2) The public records officer shall promptly provide the petition and any other relevant information to the executive director who will immediately consider the petition and either affirm or reverse the denial within two business days following the agency's receipt of the petition, or within such other time as agency and the requestor mutually agree to.

(3) If the agency denies a requestor access to public records because it claims the record is exempt in whole or in part from disclosure, the requestor may request the attorney general's office to review the matter under the procedure set forth under WAC 44-06-160.

(4) Judicial review. Any person may obtain court review of denials of public records requests at the conclusion of two business days after the initial denial of such request regardless of any internal administrative appeal.

AMENDATORY SECTION (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-25-002 Sequence and numbering of rules—Special provisions.** This chapter of the Washington Administrative Code is designed to regulate proceedings under a number of different chapters of the Revised Code of Washington. General rules are set forth in sections with numbers divisible by ten. Where a deviation from the general rule is required for conformity with a particular statute, that spe-

cial provision is set forth in a separate rule numbered as follows:

(1) Special provisions relating to chapter 41.56 RCW (Public Employees' Collective Bargaining Act) and to chapter 53.18 RCW (port employees) are set forth in WAC sections numbered one digit greater than the general rule on that subject matter.

(2) Special provisions relating to chapter 41.59 RCW (Educational Employment Relations Act) are set forth in WAC sections numbered two digits greater than the general rule on that subject matter.

(3) Special provisions relating to chapter 28B.52 RCW (Collective Bargaining—Academic Personnel in Community Colleges) are set forth in WAC sections numbered three digits greater than the general rule on that subject matter.

(4) Special provisions relating to RCW 41.06.340 and/or chapter 41.80 RCW (Personnel System Reform Act) are set forth in WAC sections numbered six digits greater than the general rule on that subject matter.

(5) Special provisions relating to chapter 41.76 RCW (faculty at public four-year institutions of higher education) are set forth in WAC sections numbered seven digits greater than the general rule on that subject matter.

(6) Special provisions relating to chapter 6, Laws of 2010 (symphony orchestra employees) and chapter 49.08 RCW (private sector and other employees) are set forth in WAC sections numbered nine digits greater than the general rule on that subject matter.

AMENDATORY SECTION (Amending WSR 01-14-009, filed 6/22/01, effective 8/1/01)

**WAC 391-25-030 Petition—Time for filing.** (1) A "contract bar" exists while a valid collective bargaining agreement is in effect, so that a petition involving any or all of the employees covered by the agreement will be timely only if it is filed during the "window" period not more than ninety nor less than sixty days prior to the stated expiration date of the collective bargaining agreement.

(a) To constitute a valid collective bargaining agreement for purposes of this subsection:

(i) The agreement must cover a bargaining unit that is appropriate under the terms of the applicable statute;

(ii) The agreement must be in writing, and signed by the parties' representatives;

(iii) The agreement must contain a fixed expiration date not less than ninety days after it was signed; and

(iv) The agreement will only operate as a bar for the first three years after its effective date.

(b) An agreement to extend or replace a collective bargaining agreement shall not bar a petition filed in the "window" period of the previous agreement.

(c) A "protected" period is in effect during the sixty days following a "window" period in which no petition is filed, and a successor agreement negotiated by the employer and incumbent exclusive bargaining representative during that period will bar a petition under this chapter. If the filing and withdrawal or dismissal of a petition under this chapter intrudes upon the protected period, the employer and incumbent exclusive bargaining representative shall be given a

sixty-day protected period commencing on the date the withdrawal or dismissal is final.

(d) A certification of issues for interest arbitration issued under WAC 391-55-200 serves as a valid agreement under subsection (1)(a) of this rule.

(2) A "certification bar" exists where a certification has been issued by the agency, so that a petition involving the same bargaining unit or any subdivision of that bargaining unit will only be timely if it is filed:

(a) More than twelve months following the date of the certification of an exclusive bargaining representative; or

(b) More than twelve months following the date of the latest election or cross-check in which the employees failed to select an exclusive bargaining representative.

(3) Where neither a "contract bar" nor a "certification bar" is in effect under this section, a petition may be filed at any time.

(4) Neither a certification bar nor a contract bar in an underlying existing bargaining unit will preclude petitions filed under WAC 391-25-440 from being processed at any time subject to the limitations stated in that rule.

AMENDATORY SECTION (Amending WSR 08-04-058, filed 1/31/08, effective 4/1/08)

**WAC 391-25-051 Special provision—Individual providers of home care under RCW 74.39A.270 and 74.39A.300—Family child care providers under RCW 41.56.208—Adult family home providers under RCW 41.56.029—Language access providers under chapter 296, Laws of 2010.** (1) This rule consolidates special rules applicable to:

(a) Individual providers under RCW 74.39A.270 and 74.39A.300, which extend the coverage of chapter 41.56 RCW to "individual providers" defined as a person, including a personal aide, who has contracted with the department of social and health services to provide personal care or respite care services to functionally disabled persons under the medicaid personal care, community options program entry system, chore services program, or respite care program, or to provide respite care or residential services and support to persons with developmental disabilities under chapter 71A.12 RCW, or to provide respite care as defined in RCW 74.13.-270.

(b) Family child care providers under RCW 41.56.028, which extends coverage of chapter 41.56 RCW to "child care providers" defined as persons who:

(i) Provide regularly scheduled care for a child or children in the home of the provider or in the home of the child or children for periods of less than twenty-four hours or, if necessary due to the nature of the parent's work, for periods equal to or greater than twenty-four hours;

(ii) Receive child care subsidies; and

(iii) Are either licensed by the state under RCW 74.15.-030 or are exempt from licensing under chapter 74.15 RCW.

(c) Adult family home providers under RCW 41.56.029, which extends coverage of chapter 41.56 RCW to "adult family home providers" who are persons defined as a provider as defined in RCW 70.128.010 who receives payments from the medicaid and state-funded long-term care programs.

(d) Language access providers under section 2, chapter 296, Laws of 2010, which extends coverage of chapter 41.56 RCW to "language access providers" who are persons defined as any independent contractor who provides spoken language interpreter services for department of social and health services appointments or medicaid enrollee appointments, or provided these services on or after January 1, 2009, and before June 10, 2010, whether paid by a broker, language access agency, or the department of social and health services.

(2) The showing of interest requirement in WAC 391-25-110 is modified for the bargaining unit affected by RCW 74.39A.270 and 74.39A.300, to require a ten percent showing of interest for either a petitioner or an intervenor.

(3) The posting of notice requirement in WAC 391-25-140 is inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, ~~((and))~~ 41.56.029, and section 2, chapter 296, Laws of 2010.

(4) A party wishing to participate as an intervenor in representation proceedings governed by this rule must file a motion to intervene no later than ten days following receipt of the petition for investigation of a question concerning representation.

(5) The description of bargaining unit requirement of WAC 391-25-190 is limited to a single, statewide unit of:

(a) Individual providers under RCW 74.39A.270 and 74.39A.300; or

(b) Family child care providers under RCW 41.56.028; or

(c) Adult family home providers under RCW 41.56.029; or

(d) Language access providers under section 2, chapter 296, Laws of 2010.

(6) The description of bargaining unit requirement of WAC 391-25-210(2) is limited to a single, statewide unit of:

(a) Individual providers under RCW 74.39A.270 and 74.39A.300; or

(b) Family child care providers under RCW 41.56.028; or

(c) Adult family home providers under RCW 41.56.029; or

(d) Language access providers under section 2, chapter 296, Laws of 2010.

(7) The provisions of WAC 391-25-210(3) relating to alternative units or mergers of units are inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, ~~((and))~~ 41.56.029, and section 2, chapter 296, Laws of 2010.

(8) The posting requirement in WAC 391-25-220(2), relating to investigation statements, is inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, ~~((and))~~ 41.56.029, and section 2, chapter 296, Laws of 2010.

(9) The posting requirement in WAC 391-25-230(2), relating to election agreements, is inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, ~~((and))~~ 41.56.029, and section 2, chapter 296, Laws of 2010.

(10) The cross-check procedures in WAC 391-25-250, 391-25-391, and 391-25-410 are inapplicable to the bargain-

ing unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, (~~and~~) 41.56.029, and section 2, chapter 296, Laws of 2010.

(11) The unit determination election procedures in WAC 391-25-420 are inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, (~~and~~) 41.56.029, and section 2, chapter 296, Laws of 2010.

(12) The requirements of WAC 391-25-430, relating to posting of election notices on the employer's premises, is inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, (~~and~~) 41.56.029, and section 2, chapter 296, Laws of 2010.

(13) Any representation election for the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, (~~and~~) 41.56.029, and section 2, chapter 296, Laws of 2010 shall be conducted by mail ballot under WAC 391-25-470, with the following modifications:

(a) Together with the procedures for casting ballots, the notice supplied to providers may describe the collective bargaining rights established by RCW 74.39A.270, 74.39A.300, 41.56.028, (~~and~~) 41.56.029, and section 2, chapter 296, Laws of 2010 and agreements reached by a petitioning union and the employer concerning the election process;

(b) The notice and ballot materials supplied to providers shall be set forth in English and any other language the agency deems reasonably necessary to conduct a fair election;

(c) The ballot materials supplied to providers shall include a card return-addressed to the commission, by which providers eligible voters can individually request notice and ballot materials in languages other than those received. Upon receipt of such a request card, the agency shall promptly supply notice and ballot materials to the eligible voter in the requested language.

(d) At least twenty-one days shall be provided between the date on which ballot materials are mailed to providers and the deadline for return of cast ballots to the commission.

(e) The executive director shall have discretion to vary tally arrangements and procedures from those customarily used, because of the large size of the bargaining unit involved.

(f) The reference in WAC 391-25-140 through 391-25-470 shall be interpreted in light of subsection (3) of this section.

(14) The procedure for on-site elections in WAC 391-25-490 is inapplicable to the bargaining unit affected by RCW 74.39A.270, 74.39A.300, 41.56.028, (~~and~~) 41.56.029, and section 2, chapter 296, Laws of 2010.

**AMENDATORY SECTION** (Amending WSR 90-06-072, filed 3/7/90, effective 4/7/90)

**WAC 391-25-150 Amendment and withdrawal.** (~~Any~~) A petition may be amended or withdrawn by the petitioner at any time prior to the issuance of a notice of election, or under such conditions as the executive director or the commission may impose.

**NEW SECTION**

**WAC 391-25-229 Special provision—Symphony orchestra employees.** In addition to the information required by WAC 391-25-220, an employer of symphony orchestra employees who are seeking to be represented for the purposes of collective bargaining must, upon request, provide the executive director with financial information that establishes the agency's jurisdiction over the employer.

**AMENDATORY SECTION** (Amending WSR 01-14-009, filed 6/22/01, effective 8/1/01)

**WAC 391-25-299 Special provision—Private sector and other employees.** Except for symphony orchestra employees as defined in section 1, chapter 6, Laws of 2010, the commission lacks authority to proceed in representation disputes under chapter 49.08 RCW absent the agreement of all parties. WAC 391-25-290 through 391-25-390 shall not be applicable to proceedings under chapter 49.08 RCW, except for hearings and issues submitted by stipulation of all parties to the proceeding.

**NEW SECTION**

**WAC 391-25-399 Special provision—Symphony orchestra employees.** WAC 391-25-391 and the practices and precedents applicable under chapter 41.56 RCW shall also be applicable to symphony orchestra employees as defined in section 1, chapter 6, Laws of 2010.

**AMENDATORY SECTION** (Amending WSR 08-17-119, filed 8/20/08, effective 9/20/08)

**WAC 391-25-440 Election for inclusion of unrepresented employees.** (1) Where only one employee organization seeks to add an employee or group of previously unrepresented employees to an appropriate bargaining unit, which it already represents, under this chapter and the relevant statute, the organization may petition for a self-determination election to ascertain the employees' desire to be included in its existing bargaining unit.

(2) In order to invoke the self-determination election procedures under this section, the petitioning organization shall:

(a) Demonstrate that it has the support of at least thirty percent or more of the unrepresented employees to be included in the appropriate existing unit;

(b) Affirmatively state on the petition filed under WAC 391-25-070 that it requests a self-determination election to add the petitioned-for employees into an existing appropriate bargaining unit;

(c) Provide an accurate description of the existing bargaining unit that the petitioning organization seeks to merge the unrepresented employees into; and

(d) Demonstrate that the resulting bargaining unit is appropriate under the appropriate statute.

(i) If the propriety of the proposed resulting unit is disputed, the executive director or his or her designee shall make a determination following a hearing.



(ii) If the propriety of the proposed resulting unit is stipulated, the executive director or his or her designee shall determine whether the proposed unit is, on its face, an appropriate unit under the applicable statute.

(3) Any notice to employees required to be posted under WAC 391-25-140 shall affirmatively indicate that the petitioning organization seeks to merge the petitioned-for employees into an existing bargaining unit of employees represented by that organization through a self-determination election.

(4) If the resulting bargaining unit is determined to be appropriate, the agency shall conduct a self-determination election under this chapter for the petitioned-for employees to ascertain whether they desire to become part of the existing unit.

(a) Only the petitioned-for employees are eligible to vote in a self-determination election.

(b) Cross-check procedures under WAC 391-25-391 and 391-25-396 are applicable to this section.

(c) In such an election, if a majority of the eligible employees voting in the election vote for inclusion, they are deemed to have indicated their desire both to become part of the existing unit and to be represented by the petitioner. If a majority of voters vote against inclusion in the existing unit, they are considered as indicating a desire to remain unrepresented.

(5)(a) Should another organization seek to intervene in a proceeding filed under this section, it must demonstrate both:

(i) That it has support from at least thirty percent of the employees subject to the original petition; and

(ii) That if the same group of employees were added to an appropriate unit that it already represents under this chapter and the appropriate statute, the resulting unit would be an appropriate unit.

(b) If either (a)(i) or (ii) of this subsection are not established, the request for intervention will be denied, and the petition processed in accordance with this section.

(c) In the event the requirement of both (a)(i) and (ii) of this subsection are met, the election shall be for representation by the petitioner as part of the larger unit proposed by the petitioner, or representation by the intervener as part of the larger unit proposed by the intervener, or no representation.

(6) In the event a petition for representation of the same employees sought to be added to a larger unit by the petitioner under this section is filed pursuant to WAC 391-25-010 or 391-25-012, along with the requisite thirty percent showing of interest, and the petitioned-for unit is appropriate under the applicable statute, then the self-determination election petition filed under this section shall be dismissed. If either of those requirements is not met, the petition filed pursuant to WAC 391-25-010 or 391-25-012 will be dismissed and the original self-determination election petition processed in accordance with this section.

(7) The existence of a valid collective bargaining agreement does not preclude the processing of a petition filed under this rule.

(8) Petitions filed under this rule do not raise a question concerning representation for the existing appropriate bargaining unit.

(a) The issuance of a certification for the existing appropriate bargaining within the previous twelve months will not bar the filing and processing of a petition under this rule.

(b) The alteration of the composition of the existing appropriate bargaining unit as a result of an amended certification issued under this rule does not affect the certification bar of the existing unit; nor does it create a new certification bar as described in WAC 391-25-030(2).

AMENDATORY SECTION (Amending WSR 01-14-009, filed 6/22/01, effective 8/1/01)

**WAC 391-25-450 Disclaimers.** Prior to the issuance of the notice of a notice of election, an organization may disclaim a bargaining unit and have its name removed from the ballot by written notice filed and served as required by WAC 391-08-120. ((If a disclaimer is filed after the issuance of a notice of election,)) The organization filing ((the)) a disclaimer shall not seek to be certified in the bargaining unit, or subdivision thereof, for a period of at least one year.

AMENDATORY SECTION (Amending WSR 90-06-072, filed 3/7/90, effective 4/7/90)

**WAC 391-25-531 Special provision—Public employees.** Where there are three or more choices on the ballot, representation elections for employees covered by chapter 41.56 RCW shall be decided by a majority of those eligible to vote in the election.

AMENDATORY SECTION (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-35-002 Sequence and numbering of rules—Special provisions.** This chapter of the Washington Administrative Code is designed to regulate proceedings under a number of different chapters of the Revised Code of Washington. General rules are set forth in sections with numbers divisible by ten. Where a deviation from the general rule is required for conformity with a particular statute, that special provision is set forth in a separate rule, numbered as follows:

(1) Special provisions relating to chapter 41.56 RCW (Public Employees' Collective Bargaining Act) and to chapter 53.18 RCW (port employees) are set forth in WAC sections numbered one digit greater than the general rule on that subject matter.

(2) Special provisions relating to chapter 41.59 RCW (Educational Employment Relations Act) are set forth in WAC sections numbered two digits greater than the general rule on that subject matter.

(3) Special provisions relating to chapter 28B.52 RCW (Collective Bargaining—Academic Personnel in Community Colleges) are set forth in WAC sections numbered three digits greater than the general rule on that subject matter.

(4) Special provisions relating to RCW 41.06.340 and/or chapter 41.80 RCW (Personnel System Reform Act) are set forth in WAC sections numbered six digits greater than the general rule on that subject matter.

(5) Special provisions relating to chapter 41.76 RCW (faculty at public four-year institutions of higher education)

are set forth in WAC sections numbered seven digits greater than the general rule on that subject matter.

(6) Special provisions relating to chapter 6, Laws of 2010 (symphony orchestra employees) and chapter 49.08 RCW (private sector and other employees) are set forth in WAC sections numbered nine digits greater than the general rule on that subject matter.

**AMENDATORY SECTION** (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-45-002 Sequence and numbering of rules—Special provisions.** This chapter of the Washington Administrative Code is designed to regulate proceedings under a number of different chapters of the Revised Code of Washington. General rules are set forth in sections with numbers divisible by ten. Where a deviation from the general rule is required for conformity with a particular statute, that special provision is set forth in a separate rule numbered as follows:

(1) Special provisions relating to chapter 41.56 RCW (Public Employees' Collective Bargaining Act) and to chapter 53.18 RCW (port employees) are set forth in WAC sections numbered one digit greater than the general rule on that subject.

(2) Special provisions relating to chapter 41.59 RCW (Educational Employment Relations Act) are set forth in WAC sections numbered two digits greater than the general rule on that subject matter.

(3) Special provisions relating to chapter 28B.52 RCW (Collective Bargaining—Academic Personnel in Community Colleges) are set forth in WAC sections numbered three digits greater than the general rule on that subject matter.

(4) Special provisions relating to RCW 41.06.340 and/or chapter 41.80 RCW (Personnel System Reform Act) are set forth in WAC sections numbered six digits greater than the general rule on that subject matter.

(5) Special provisions relating to chapter 41.76 RCW (faculty at public four-year institutions of higher education) are set forth in WAC sections numbered seven digits greater than the general rule on that subject matter.

(6) Special provisions relating to chapter 6, Laws of 2010 (symphony orchestra employees) and chapter 49.08 RCW (Private sector and other employees) are set forth in WAC sections numbered nine digits greater than the general rule on that subject matter.

**AMENDATORY SECTION** (Amending WSR 08-04-058, filed 1/31/08, effective 4/1/08)

**WAC 391-45-310 Examiner decisions.** (1)(a) A party seeking review by the commission of an interlocutory decision of the executive director, his or her designee, or a hearing examiner must file a motion for discretionary review with the commission and a copy with the executive director, his or her designee, or a hearing examiner, within seven days after the decision is issued.

(b) Discretionary review of an interlocutory decision issued by the executive director, his or her designee, or a hearing examiner will be accepted by the commission only:

(i) If the executive director, his or her designee, or a hearing examiner has committed an obvious error which would render further proceedings useless; or

(ii) If the executive director, his or her designee, or a hearing examiner has committed probable error and the decision of the interlocutory decision of the hearing examiner substantially alters the status quo or substantially limits the freedom of a party to act; or

(iii) If the executive director, his or her designee, or a hearing examiner has so far departed from the accepted and usual course of administrative proceedings as to call for the exercise of ~~((registry))~~ revisory jurisdiction by the commission.

(c) The commission will not accept motions for discretionary review of:

(i) The scope of proceedings issued in a preliminary ruling by the executive director or his or her designee or a hearing examiner under WAC 391-45-110; or

(ii) Application of the six-month statute of limitations;

(ii) Any evidentiary ruling by a hearing examiner during the course of an administrative hearing.

(d) A motion for discretionary review under this rule, and any response, should not exceed fifteen pages double-spaced, excluding appendices.

(e) Denial of discretionary review of a decision does not affect the right of a party to obtain later review of the executive director's, his or her designee's, or hearing examiner's decision or the issues pertaining to that decision.

(2) After the close of the hearing and the filing of all briefs, the examiner shall issue a decision containing findings of fact, conclusions of law, and an order. Unless appealed to the commission under WAC 391-45-350, a decision issued under this section shall be the final order of the agency, with the same force and effect as if issued by the commission.

**AMENDATORY SECTION** (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-55-002 Sequence and numbering of rules—Special provisions.** This chapter of the Washington Administrative Code is designed to regulate proceedings under a number of different chapters of the Revised Code of Washington. General rules are set forth in sections with numbers divisible by ten. Where a deviation from the general rule is required for conformity with a particular statute, that special provision is set forth in a separate rule numbered as follows:

(1) Special provisions relating to chapter 41.56 RCW (Public Employees' Collective Bargaining Act) and to chapter 53.18 RCW (port employees) are set forth in WAC sections numbered one digit greater than the general rule on that subject matter.

Special provisions relating to bargaining units eligible for interest arbitration are set forth beginning with WAC 391-55-200.

(2) Special provisions relating to chapter 41.59 RCW (Educational Employment Relations Act) are set forth in WAC sections numbered two digits greater than the general rule on that subject matter. Special provisions relating to fact finding are set forth beginning with WAC 391-55-300.

(3) Special provisions relating to chapter 28B.52 RCW (Collective Bargaining—Academic Personnel in Community Colleges) are set forth in WAC sections numbered three digits greater than the general rule on that subject matter.

(4) Special provisions relating to chapter 41.80 RCW (Personnel System Reform Act) are set forth in WAC sections numbered six digits greater than the general rule on that subject matter.

(5) Special provisions relating to chapter 41.76 RCW (faculty at public four-year institutions of higher education) are set forth in WAC sections numbered seven digits greater than the general rule on that subject matter.

(6) Special provisions relating to chapter 6, Laws of 2010 (symphony orchestra employees) and chapter 49.08 RCW (private sector and other employees) are set forth in WAC sections numbered nine digits greater than the general rule on that subject matter.

#### NEW SECTION

**WAC 391-55-0715 Special provision—Public employees.** In cases involving mediation conducted under section 105, chapter 235, Laws of 2010, the mediator shall ensure that:

(1) Representatives from all bargaining units affected by the state board of education required action plan are provided an opportunity to participate in a single mediation with the employer; and

(2) The scope of the mediation is limited to those terms and conditions of employment that are impacted by the state board of education required action plan.

#### NEW SECTION

**WAC 391-55-072 Special provision—Educational employees.** In cases involving mediation conducted under section 105, chapter 235, Laws of 2010, the mediator shall ensure that:

(1) Representatives from all bargaining units affected by the action plan are provided an opportunity to participate in a single mediation with the employer; and

(2) The scope of the mediation is limited to those terms and conditions of employment that are impacted by the state board of education required action plan.

AMENDATORY SECTION (Amending WSR 99-14-060, filed 7/1/99, effective 8/1/99)

**WAC 391-55-110 Dispute resolution panel—Membership.** The commission shall establish and maintain a panel of individuals qualified to serve in an impartial capacity in the resolution of labor disputes.

(1) Applicants for membership on the dispute resolution panel shall demonstrate minimum background and experience equal to the minimum qualifications for the working level positions on the professional staff of the commission:

(a) A master's degree in labor relations, personnel management or industrial relations or closely allied field, or a law degree; and

(b) At least three years of experience in collective bargaining with major work assignments in negotiations, con-

tract administration or related work as a union or management representative, mediator, arbitrator or educator in the above areas; and

(c) Additional qualifying experience shall substitute, year for year, for education.

(2) Applicants for membership on the dispute resolution panel shall furnish letters of recommendation supporting their acceptability as an impartial from:

(a) At least one management representative; and

(b) At least one union representative; and

(c) At least one impartial arbitrator, mediator or labor relations administrative agency official.

(d) All letters of recommendation submitted under subsections (a) through (c) of this section shall be signed and dated within two years of the date of the application for membership. Additionally, any letter of recommendation submitted in support of an applicant should be on official letterhead or contain recent contact information for the author of the letter of recommendation.

(3) Applicants who desire to be referred for interest arbitration proceedings shall demonstrate their experience as an impartial in at least five grievance arbitration, fact finding or interest arbitration cases, by submitting copies of arbitration awards which can be provided, upon request, to parties selecting an interest arbitrator.

(4) Applicants for membership on the dispute resolution panel shall submit, in the form specified by the executive director, information on their background, qualifications, professional certifications and affiliations. All information submitted shall be subject to administrative verification.

(5) Applications of persons appearing to be qualified for membership on the panel shall be forwarded to the commission for consideration and action. The commission shall review each application submitted to it, together with the supporting letters of recommendation, and shall notify the applicant of the determination made.

(6) Whenever it appears to the commission that an applicant or member of the dispute resolution panel has failed or refused to comply with applicable statutes, rules and ethical standards, the application shall be rejected or the member shall be removed from the dispute resolution panel. A member shall also be removed from the panel if he or she has:

(a) Ceased accepting appointments as an impartial in the resolution of labor disputes; or

(b) Failed to keep the agency informed of their current address and telephone number.

(7) Persons referred from the dispute resolution panel shall be impartial. No active member of the dispute resolution panel may serve in any capacity as an advocate or representative for either labor or management in labor relations matters. Any member of the panel who intends to engage in advocacy work shall notify the executive director and shall be placed on inactive status while their advocacy work continues.

(8) Upon appointment to the dispute resolution panel by the commission, the panel member may be placed under contract pursuant to chapter 39.29 RCW. Only persons listed on the panel shall be compensated by the agency under a personal service contract.

AMENDATORY SECTION (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-55-200 Interest arbitration—Certification of issues.** (1) If a dispute involving a bargaining unit eligible for interest arbitration under RCW 41.56.028, 41.56.029, section 2, chapter 296, Laws of 2010, 41.56.030(7), 41.56.475, 41.56.492, 41.56.496 or 74.39A.270 (2)(c) has not been settled after a reasonable period of mediation, and the mediator is of the opinion that his or her further efforts will not result in an agreement, the following procedure shall be implemented:

(a) The mediator shall notify the parties of his or her intention to recommend that the remaining issues in dispute be submitted to interest arbitration.

(b) Within seven days after being notified by the mediator, each party shall submit to the mediator and serve on the other party a written list (including article and section references to parties' latest collective bargaining agreement, if any) of the issues that the party believes should be advanced to interest arbitration.

(2) The mediator shall review the lists of issues submitted by the parties.

(a) The mediator shall exclude from certification any issues that have not been mediated.

(b) The mediator shall exclude from certification any issues resolved by the parties in bilateral negotiations or mediation, and the parties may present those agreements as "stipulations" in interest arbitration under RCW 41.56.465 (1)(b), 41.56.475 (2)(b), or 41.56.492 (2)(b).

(c) The mediator may convene further mediation sessions and take other steps to resolve the dispute.

(3) If the dispute remains unresolved after the completion of the procedures in subsections (1) and (2) of this section, interest arbitration shall be initiated, as follows:

(a) Except as provided in (b) of this subsection, the mediator shall forward his or her recommendation and a list of unresolved issues to the executive director, who shall consider the recommendation of the mediator. The executive director may remand the matter for further mediation. If the executive director finds that the parties remain at impasse, the executive director shall certify the unresolved issues for interest arbitration.

(b) For a bargaining unit covered by RCW 41.56.492, the mediator shall certify the unresolved issues for interest arbitration.

NEW SECTION

**WAC 391-55-201 Special provision—Certification of issues—Public employees.** (1) If a dispute involving negotiations conducted under section 105, chapter 235, Laws of 2010 and WAC 391-55-0715 have not been settled by May 15th of the year in which mediation occurred, the executive director shall certify any disputed issues for a decision by the superior court in the county where the school district is located.

(2) The executive director shall review the lists of issues submitted by the parties, including any list of issues submitted under WAC 391-55-072.

(a) The executive director shall exclude from certification any issues that have not been mediated.

(b) The executive director shall exclude from certification any issues resolved by the parties in bilateral negotiations or mediation, and the parties may present those agreements as "stipulations" to the superior court.

NEW SECTION

**WAC 391-55-202 Special provision—Certification of issues—Educational employees.** (1) If a dispute involving negotiations conducted under section 105, chapter 235, Laws of 2010 and WAC 391-55-072 have not been settled by May 15th of the year in which mediation occurred, the executive director shall certify any disputed issues for a decision by the superior court in the county where the school district is located.

(2) The executive director shall review the lists of issues submitted by the parties, including any list of issues submitted under WAC 391-55-0715.

(a) The executive director shall exclude from certification any issues that have not been mediated.

(b) The executive director shall exclude from certification any issues resolved by the parties in bilateral negotiations or mediation, and the parties may present those agreements as "stipulations" to the superior court.

NEW SECTION

**WAC 391-55-302 Special provision—Educational employees.** WAC 391-55-310 through 391-55-355 are not applicable to negotiations between educational employees and employers conducted under section 105, chapter 235, Laws 2010.

AMENDATORY SECTION (Amending WSR 03-03-064, filed 1/14/03, effective 2/14/03)

**WAC 391-65-002 Sequence and numbering of rules—Special provisions.** This chapter of the Washington Administrative Code is designed to regulate proceedings under a number of different chapters of the Revised Code of Washington. General rules are set forth in sections with numbers divisible by ten. Where a deviation from the general rule is required for conformity with a particular statute, that special provision is set forth in a separate rule numbered as follows:

(1) Special provisions relating to chapter 41.56 RCW (Public Employees' Collective Bargaining Act) and to chapter 53.18 RCW (port employees) are set forth in WAC sections numbered one digit greater than the general rule on that subject matter.

(2) Special provisions relating to chapter 41.59 RCW (Educational Employment Relations Act) are set forth in WAC sections numbered two digits greater than the general rule on that subject matter.

(3) Special provisions relating to chapter 28B.52 RCW (Collective Bargaining—Academic Personnel in Community Colleges) are set forth in WAC sections numbered three digits greater than the general rule on that subject matter.

(4) Special provisions relating to chapter 41.80 RCW (Personnel System Reform Act) are set forth in WAC sections numbered six digits greater than the general rule on that subject matter.

(5) Special provisions relating to chapter 41.76 RCW (faculty at public four-year institutions of higher education) are set forth in WAC sections numbered seven digits greater than the general rule on that subject matter.

(6) Special provisions relating to chapter 6, Laws of 2010 (symphony orchestra employees) and chapter 49.08 RCW (private sector and other employees) are set forth in WAC sections numbered nine digits greater than the general rule on that subject matter.

**WSR 10-14-118**  
**PROPOSED RULES**  
**DEPARTMENT OF**  
**EARLY LEARNING**  
[Filed July 7, 2010, 9:32 a.m.]

Original Notice.

Preproposal statement of inquiry was filed as WSR 10-11-064.

Title of Rule and Other Identifying Information: Revising WAC 170-100-080 Eligibility for services, early childhood education and assistance program.

Hearing Location(s): Department of Early Learning (DEL) State Office, 649 Woodland Square Loop S.E., Lacey, WA 98503, on August 10, 2010, at 2:00 p.m. If you would like to phone in, call (866) 441-7284 and enter PIN# 162705.

Date of Intended Adoption: After September 1, 2010.

Submit Written Comments to: Heike Syben, P.O. Box 40970, Olympia, WA 98504-0970, e-mail heike.syben@del.wa.gov, fax (360) 413-3482, by 5:00 p.m. on August 10, 2010.

Assistance for Persons with Disabilities: Contact Heike Syben, ECEAP coordinator by August 3, 2010, (360) 725-2839.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department is revising WAC 170-100-080 to implement 2SHB 2731 (section 7(3), chapter 231, Laws of 2010, regular session). Section 7 amends DEL's RCW 43.215.405 to include children who are eligible for special education due to disability under RCW 28A.155.020 in the definition of "eligible child" for ECEAP.

Reasons Supporting Proposal: Revising WAC 170-100-080 is necessary to implement section 7(3) of 2SHB 2731. Eligibility for ECEAP services are set by rule, and statutory changes in eligibility criteria must also be included in the ECEAP rules.

Statutory Authority for Adoption: RCW 43.215.020.

Statute Being Implemented: 2SHB 2731 (chapter 231, Laws of 2010, regular session); RCW 43.215.405.

Rule is not necessitated by federal law, federal or state court decision.

Agency Comments or Recommendations, if any, as to Statutory Language, Implementation, Enforcement, and Fis-

cal Matters: DEL adopts the rules and other policy for ECEAP and develops client service contracts with ECEAP contractors statewide. Contractor staff implement rules by determining child eligibility and then prioritizing eligible children for enrollment based on local community needs and trends.

Name of Proponent: DEL, governmental.

Name of Agency Personnel Responsible for Drafting: Heike Syben, DEL State Office, Lacey, Washington, (360) 725-2839; Implementation: Joyce Kilmer, DEL State Office, Lacey, Washington, (360) 725-2843; and Enforcement: ECEAP contractors, statewide.

No small business economic impact statement has been prepared under chapter 19.85 RCW. The proposed rule is not expected to create new costs for small businesses, or if costs are created they are expected to be minor. Preparation of a small business economic impact statement is not required.

A cost-benefit analysis is not required under RCW 34.05.328. DEL is not listed among the state agencies required to comply with RCW 34.05.328.

July 7, 2010

Elizabeth M. Hyde

Director

AMENDATORY SECTION (Amending WSR 06-18-085, filed 9/5/06, effective 9/5/06)

**WAC 170-100-080 Eligibility for services.** ~~((1) Contractors must recruit, document eligibility, and enroll children based on available funds. Enrolled children must not be participants in the federally funded head start program. Contractors must give priority for enrollment to children from families with the lowest incomes or to children from families with multiple needs.~~

~~(2) To be enrolled, children must meet the following age criteria:~~

~~(a) First priority for enrollment must be given to children who are four years old, but not yet five years old, by August 31 of the program year.~~

~~(b) Second priority may be given to children who are three years old by August 31 of the program year and meet other eligibility criteria.~~

~~(c) Contractors may not enroll children who are younger than three years old or older than five years old on August 31 of the program year.~~

~~(3) To be enrolled, children must meet either the following income or risk factor criteria:~~

~~(a) Family income. Children are eligible if their family income is at or below one hundred ten percent of the Federal Poverty Guidelines established by the United States Department of Health and Human Services. Contractors may choose which time period below best reflects the family's current financial circumstances:~~

~~(i) Previous calendar year before enrollment;~~

~~(ii) Twelve months before enrollment; or~~

~~(iii) Previous or current month, when annual family income has been documented and shows a significant recent decrease due to death, divorce, unexpected job loss, or similar circumstance.~~

~~(b) Risk factors. Up to ten percent of funded slots may be used for children from families who are not income eligible and are impacted by:~~

~~(i) Developmental factors, such as developmental delay or disability; or~~

~~(ii) Environmental factors, such as domestic violence, chemical dependency, child protective services involvement, or other factors affecting school success.) (1) Contractors must write and follow a recruitment procedure, including active recruitment of age-eligible homeless children, children in the foster care system, and children with disabilities.~~

~~(2) Children are eligible for ECEAP if they are at least three years old, but not yet five years old, by August 31st of the school year and one of the following:~~

~~(a) Returning to the same ECEAP contractor from the previous school year.~~

~~(b) Qualified by their school district for special education services under RCW 28A.155.020. All children on a school district individualized education program (IEP) meet this requirement.~~

~~(c) From a family with income at or below one hundred ten percent of the federal poverty guidelines established by the U.S. Department of Health and Human Services.~~

~~(d) From a family that is not income-eligible but is impacted by either:~~

~~(i) Developmental risk factors, such as developmental delay or disability, but not on an IEP.~~

~~(ii) Environmental risk factors that could affect school success such as domestic violence, chemical dependency, homelessness, parental incarceration, or child protective services involvement.~~

~~Each contractor's maximum percentage of over-income children is in their ECEAP client services contract.~~

~~(3) Children cannot be simultaneously enrolled in Head Start and ECEAP. Children served by school district special education may be simultaneously enrolled in ECEAP.~~

~~(4) Contractors must write and follow a procedure for prioritizing enrollment of the eligible children who are most in need of ECEAP services. From the pool of eligible children, contractors must prioritize children who are:~~

~~(a) Four years old by August 31st of the school year.~~

~~(b) From families with the lowest incomes.~~

~~(c) Homeless, as defined by the federal McKinney-Vento Homeless Assistance Act.~~

~~(d) In the foster care system.~~

~~(e) From families with multiple needs.~~

~~(5) Contractors may determine additional prioritization categories to best meet the needs of their community, such as:~~

~~(a) English language learners.~~

~~(b) Refugee status.~~

~~(c) Transferring from other ECEAP or Head Start sites.~~

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Title of Rule and Other Identifying Information: WAC 357-01-228 Parent-in-law.

Hearing Location(s): Department of Personnel, 521 Capitol Way South, Olympia, WA, on August 12, 2010, at 8:30 a.m.

Date of Intended Adoption: August 12, 2010.

Submit Written Comments to: Connie Goff, Department of Personnel, P.O. Box 47500, e-mail [connieg@dop.wa.gov](mailto:connieg@dop.wa.gov), fax (360) 586-4694, by August 5, 2010. FOR DOP TRACKING PURPOSES PLEASE NOTE ON SUBMITTED COMMENTS "FORMAL COMMENT."

Assistance for Persons with Disabilities: Contact department of personnel by August 5, 2010, TTY (360) 753-4107 or (360) 586-8260.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: We are proposing to add "adoptive parent" to the definition of parent-in-law to coincide with the definition of "parent" found in WAC 357-01-227 which includes adoptive parent.

Statutory Authority for Adoption: Chapter 41.06 RCW.

Statute Being Implemented: RCW 41.06.150.

Rule is not necessitated by federal law, federal or state court decision.

Name of Agency Personnel Responsible for Drafting: Kristie Wilson, 521 Capitol Way South, (360) 664-6408; Implementation and Enforcement: Department of personnel.

No small business economic impact statement has been prepared under chapter 19.85 RCW.

A cost-benefit analysis is not required under RCW 34.05.328.

July 7, 2010

Eva N. Santos

Director

AMENDATORY SECTION (Amending WSR 09-17-057 and 09-18-112, filed 8/13/09 and 9/2/09, effective 12/3/09)

**WAC 357-01-228 Parent-in-law.** A biological or adop-tive parent of an employee's spouse or an employee's registered domestic partner or an individual who stood *in loco parentis* to an employee's spouse or to an employee's registered domestic partner when the employee's spouse or the employee's registered domestic partner was a child. A person who had day-to-day responsibilities to care for and financially support the employee's spouse or the employee's registered domestic partner when he or she was a child is considered to have stood *in loco parentis* to the employee's spouse or to the employee's registered domestic partner.

**WSR 10-14-122**

**PROPOSED RULES**

**DEPARTMENT OF PERSONNEL**

[Filed July 7, 2010, 10:27 a.m.]

Original Notice.

**WSR 10-14-123**

**PROPOSED RULES**

**DEPARTMENT OF PERSONNEL**

[Filed July 7, 2010, 10:29 a.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Title of Rule and Other Identifying Information: WAC 357-31-600 Is there a limit to the amount of sick leave a participating employee may withdraw from a sick leave pool?

Hearing Location(s): Department of Personnel, 521 Capitol Way South, Olympia, WA, on August 12, 2010, at 8:30 a.m.

Date of Intended Adoption: August 12, 2010.

Submit Written Comments to: Connie Goff, Department of Personnel, P.O. Box 47500, e-mail [connieg@dop.wa.gov](mailto:connieg@dop.wa.gov), fax (360) 586-4694, by August 5, 2010. FOR DOP TRACKING PURPOSES PLEASE NOTE ON SUBMITTED COMMENTS "FORMAL COMMENT."

Assistance for Persons with Disabilities: Contact department of personnel by August 5, 2010, TTY (360) 753-4107 or (360) 586-8260.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: This is a house-keeping change due to the passage of ESSB 6724 which addresses the shared leave program.

Statutory Authority for Adoption: Chapter 41.06 RCW.

Statute Being Implemented: RCW 41.06.150.

Rule is not necessitated by federal law, federal or state court decision.

Name of Agency Personnel Responsible for Drafting: Kristie Wilson, 521 Capitol Way South, (360) 664-6408; Implementation and Enforcement: Department of personnel.

No small business economic impact statement has been prepared under chapter 19.85 RCW.

A cost-benefit analysis is not required under RCW 34.05.328.

July 7, 2010  
Eva N. Santos  
Director

AMENDATORY SECTION (Amending WSR 07-11-095, filed 5/16/07, effective 7/1/07)

**WAC 357-31-600 Is there a limit to the amount of sick leave a participating employee may withdraw from a sick leave pool?** A participating employee may not withdraw more than (~~two hundred sixty-one~~) five hundred twenty-two days from a sick leave pool for the entire duration of state employment. The (~~two hundred sixty-one~~) five hundred twenty-two days includes any days an employee has received under the Washington shared leave program. One day equals eight hours of leave.

**WSR 10-14-126**  
**PROPOSED RULES**  
**DEPARTMENT OF PERSONNEL**

[Filed July 7, 2010, 11:10 a.m.]

Original Notice.

Exempt from preproposal statement of inquiry under RCW 34.05.310(4).

Title of Rule and Other Identifying Information: WAC 357-28-055 How is the periodic increment date determined for a general government employee?

Hearing Location(s): Department of Personnel, 521 Capitol Way South, Olympia, WA, on August 12, 2010, at 8:30 a.m.

Date of Intended Adoption: August 12, 2010.

Submit Written Comments to: Connie Goff, Department of Personnel, P.O. Box 47500, e-mail [connieg@dop.wa.gov](mailto:connieg@dop.wa.gov), fax (360) 586-4694, by August 5, 2010. FOR DOP TRACKING PURPOSES PLEASE NOTE ON SUBMITTED COMMENTS "FORMAL COMMENT."

Assistance for Persons with Disabilities: Contact department of personnel by August 5, 2010, TTY (360) 753-4107 or (360) 586-8260.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: To clarify that if an employee is hired at the maximum step of a pay range the periodic increment date (PID) will not be set. If the employee later receives a new appointment the PID will be set at that time based on the new appointment (either six or twelve months out depending on where the employee is placed in the new pay range).

Statutory Authority for Adoption: Chapter 41.06 RCW.

Statute Being Implemented: RCW 41.06.150.

Rule is not necessitated by federal law, federal or state court decision.

Name of Agency Personnel Responsible for Drafting: Kristie Wilson, 521 Capitol Way South, (360) 664-6408; Implementation and Enforcement: Department of personnel.

No small business economic impact statement has been prepared under chapter 19.85 RCW.

A cost-benefit analysis is not required under RCW 34.05.328.

July 7, 2010  
Eva N. Santos  
Director

AMENDATORY SECTION (Amending WSR 06-11-048, filed 5/11/06, effective 6/12/06)

**WAC 357-28-055 How is the periodic increment date determined for a general government employee?** (1) For a general government employee appointed to a position before July 1, 2005, the employee's periodic increment date as of June 30, 2005 is retained.

(2) For a general government employee appointed to a position on or after July 1, 2005 whose base salary is set at the minimum of the salary range, the periodic increment date is six months from the date of appointment.

(3) For a general government employee appointed to a position on or after July 1, 2005 whose base salary is set above the minimum but below the maximum of the salary range, the periodic increment date is twelve months from date of appointment.

(4) A general government employee appointed to a position on or after July 1, 2005, whose base salary is set at the maximum of the range will not have a periodic increment date set. If the employee later receives a new appointment,

the periodic increment date will be set at that time, as described in this section.

(5) Once a general government employee's periodic increment date is set, it remains the same unless:

(a) The periodic increment date is advanced or postponed in accordance with WAC 357-28-070 and 357-28-075; or

(b) The periodic increment date is adjusted for leave without pay in accordance with WAC 357-31-345.