WAC 246-225A-090 X-ray image processing requirements. Standards in this section are designed to assure that optimal X-ray image quality and diagnostic information are produced so that fewer retakes are needed, and associated patient and operator exposure is minimized.

(1) When performing manual film processing (also known as hand tank processing) registrants or an operator working under the registrant's direction shall:

(a) Use appropriate chemicals for manual film processing as indicated in chemical and film manufacturer's labels and recommendations.

(b) Mix chemicals in accordance with the chemical manufacturer's recommendations.

(c) Periodically add film developer/fixer replenisher based on the recommendations of the chemical or film manufacturer. Solution may be removed from the tank to permit the addition of an adequate volume of replenisher.

(d) Completely replace all manual processing chemicals at least every two months, or follow the manufacturer's recommendations for periodic chemistry replenishment and maintenance, whichever is shorter.

(e) Except when quick developer chemistry is used, post and keep for department inspection, the most recent twelve months of a log that shows when each chemistry change was done and by whom.

(f) Process film to achieve the best image quality by either:

(i) Following the film manufacturer's published temperature and time recommendations for X-ray film development; or

(ii) Developing film according to the temperature-time chart in (g) of this subsection.

(g) For standard developer solution, follow the X-ray film developing time specified for the appropriate developer solution temperature in Table 1 of this section:

Table 1

THERMOMETER READINGS (DEGREES)		MINIMUM DEVELOPING TIMES (MINUTES)
C	F	
27	80	2
	79	2
	78	2 1/2
	77	2 1/2
24	76	3
	75	3
	74	3 1/2
	73	3 1/2
22	72	4
	71	4
	70	4 1/2
	69	4 1/2
20	68	5
	67	5 1/2
	66	5 1/2
	65	6
18	64	6 1/2
	63	7
	62	8

THERMOMETER READINGS (DEGREES)		MINIMUM DEVELOPING TIMES (MINUTES)
	61	8 1/2
16	60	9 1/2

(h) Use X-ray film developing devices that give:

(i) The actual temperature of the developer solution;

(ii) The developing time in minutes and seconds; and

(iii) An audible or visible signal when developing is complete.

(2) When performing automatic film processing, registrants or an operator working under the registrant's direction shall:

(a) Set up and maintain automatic film processors so that X-ray image density and contrast are optimal;

(b) Follow the film manufacturer's published specifications for time and temperature, and the processor manufacturer's recommendations for type of developer chemistry used. If manufacturer's specifications are not available, the film must be developed using the developer temperatures and immersion times specified in Table 2 of this section:

Table 2

DEVELOPER TEMPERATURE		PROCESSOR DEVELOPER IMMERSION TIME*
°C	°F	Seconds
35	95	20
34.5	94	21
34	93	22
33.5	92	23
33	91	24
32	90	25
31.5	89	26
31	88	27
30.5	87	28
30	86	29
29.5	85	30

*Immersion time only, no cross-over time included.

(c) Replenish the developer chemistry to create optimal X-ray images by:

(i) Replacing all automatic processor chemicals at least every month, or follow the manufacturer's recommendations for periodic chemistry replenishment and maintenance, whichever is shorter.

(ii) Posting and maintaining a log that shows when each chemistry change was performed and by whom. The most recent twelve months of the log must be kept for department inspection.

(iii) Verifying that the processor delivers an adequate rate of developer replenishment; and

(iv) Verifying that standby replenishment, flood replenishment, or prefixed film processing are done as necessary for facilities with a low X-ray workload.

(3) When developing film, registrants or an operator working under the registrant's direction shall:

(a) Set up darkrooms and daylight film loaders so that film being processed, handled, or stored will be exposed only to light passed through a safelight filter. The filter must be of the type specified by the film manufacturer and must not cause excess fog on X-ray-ex-

posed film. Fog greater than 0.1 optical density is considered unacceptable.

(b) Use daylight loaders in darkened areas or where light is dimmed so that the fog standard in (a) of this subsection is met.

(4) When processing digital images, registrants or an operator working under the registrant's direction shall:

(a) Follow the CR and DR sensor or detector manufacturer's recommendations to achieve adequate diagnostic image quality for the least possible patient exposure.

(b) Process CR phosphor plates using the longest processing time recommended by the manufacturer of the plate processor.

(5) The department may make X-ray film development and darkroom tests as necessary to determine compliance with this section.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 11-19-013, § 246-225A-090, filed 9/7/11, effective 10/8/11; WSR 08-14-074, § 246-225A-090, filed 6/26/08, effective 7/27/08.]