

**WAC 296-155-415 Ventilation and protection in welding, cutting, and heating.** (1) **Mechanical ventilation.** For purposes of this section, mechanical ventilation must meet the following requirements:

(a) Mechanical ventilation must consist of either general mechanical ventilation systems or local exhaust systems.

(b) General mechanical ventilation must be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits, as defined in Part B of this chapter.

(c) Local exhaust ventilation must consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system must be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits as defined in Part B of this chapter.

(d) Contaminated air exhausted from a working space must be discharged into the open air or otherwise clear of the source of intake air.

(e) All air replacing that withdrawn must be clean and respirable.

(f) You must not use oxygen for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area.

(2) **Welding, cutting, and heating in confined spaces.**

(a) Except as provided in subdivision (b) of this subsection and subdivision (b) of subsection (3) of this section, you must provide either general mechanical or local exhaust ventilation meeting the requirements of subsection (1) of this section whenever welding, cutting, or heating is performed in a confined space.

(b) When sufficient ventilation cannot be obtained without blocking the means of access, you must protect employees in the confined space by air line respirators in accordance with the requirements of Part C of this chapter, and you must assign an employee on the outside of such a confined space to maintain communication with those working within it and to aid them in an emergency.

(3) **Welding, cutting, or heating of metals of toxic significance.**

(a) You must perform welding, cutting, or heating in any enclosed spaces involving the metals specified in this subsection with either general mechanical or local exhaust ventilation meeting the requirements of subsection (1) of this section:

(i) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials.

(ii) Lead base metals;

(iii) Cadmium-bearing filler materials;

(iv) Chromium-bearing metals or metals coated with chromium-bearing materials.

(b) You must perform welding, cutting, or heating in any enclosed spaces involving the metals specified in this subdivision with local exhaust ventilation in accordance with the requirements of subsection (1) of this section, or you must protect employees by air line respirators in accordance with the requirements of Part C of this chapter.

(i) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials;

(ii) Cadmium-bearing or cadmium-coated base metals;

(iii) Metals coated with mercury-bearing metals;

(iv) **Beryllium-containing base or filler metals.** Because of its high toxicity, you must perform work involving beryllium with both local exhaust ventilation and air line respirators.

(c) You must protect employees performing such operations in the open air by filter-type respirators in accordance with the requirements of Part C of this chapter, except that you must protect employees performing such operations on beryllium-containing base or filler metals by air line respirators in accordance with the requirements of Part C of this chapter.

(d) You must protect other employees exposed to the same atmosphere as the welders or burners in the same manner as the welder or burner.

**(4) Inert-gas metal-arc welding.**

(a) Since the inert-gas metal-arc welding process involves the production of ultraviolet radiation of intensities of 5 to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, you must not permit employees to engage in, or be exposed to the process until the following special precautions have been taken:

(i) You must keep the use of chlorinated solvents at least 200 feet, unless shielded, from the exposed arc, and surfaces prepared with chlorinated solvents must be thoroughly dry before welding is permitted on such surfaces.

(ii) You must protect employees in the area not protected from the arc by screening by filter lenses meeting the requirements of Part C of this chapter. When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type, meeting the requirements of Part C of this chapter you must wear under welding helmets. You must use hand shields to protect the welder against flashes and radiant energy when either the helmet is lifted or the shield is removed.

(iii) You must suitably protect welders and other employees who are exposed to radiation so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields must be free of leaks and openings, and free of highly reflective surfaces.

(iv) When inert-gas metal-arc welding is being performed on stainless steel, you must meet the requirements of subdivision (b) of subsection (3) of this section to protect against dangerous concentrations of nitrogen dioxide.

**(5) General welding, cutting, and heating.**

(a) Welding, cutting, and heating, not involving conditions or materials described in subsections (2), (3), or (4) of this section, may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, you must provide suitable mechanical ventilation or respiratory protective equipment.

(b) You must protect employees performing any type of welding, cutting, or heating by suitable eye protective equipment in accordance with the requirements of Part C of this chapter.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-415, filed 4/19/16, effective 5/20/16; Order 74-26, § 296-155-415, filed 5/7/74, effective 6/6/74.]