

§ 197.550 Respiratory protection.

(a) *General.* When the use of respirators in compliance with this section and the personal protective clothing and equipment in compliance with §197.555 is chosen as the method or one of the methods in compliance with §197.545 to be used in meeting the performance standard, the respirators used must be selected and fitted according to this section.

(b) *Respirator selection.* (1) The respirator must be approved by the Mine Safety and Health Administration (MSHA) in compliance with 30 CFR part 11. When filter elements are used, they must include MSHA approval for organic vapors or benzene.

(2) The employer shall provide affected employees with the appropriate respirators without charge and ensure that the respirators are used properly. Any employee determined by the testing physician as being unable to wear negative pressure respirators, who continues to be subject to exposure over the PEL, must be given the option of wearing a respirator with less breathing resistance, such as a powered air-purifying respirator or a supplied air respirator.

(3) Electrically powered respiratory protective equipment must meet the electrical engineering requirements in subchapter J of this chapter and the electrical equipment requirements in part 151, table 151.05, and part 153, table 1, of this chapter.

(4) The type of respirator provided must be a type specified in table 197.550(b) of this section that is appropriate for the exposure.

TABLE 197.550(b)—RESPIRATORY PROTECTION FOR BENZENE

| Airborne concentration of benzene or condition of use | Respirator type |
|---|--|
| Up to 10 times the TWA | (1) Half-mask air-purifying respirator with organic vapor cartridges. |
| Up to 50 times the TWA | (1) Full facepiece respirator with organic vapor cartridges. (2) Full facepiece gas mask with chin style canister. ¹ |
| Up to 100 times the TWA | (1) Full facepiece powered air purifying respirator with organic vapor canister. ¹ |
| Up to 1,000 times the TWA ... | (1) Supplied air respirator with full facepiece in positive-pressure mode. |

TABLE 197.550(b)—RESPIRATORY PROTECTION FOR BENZENE—Continued

| Airborne concentration of benzene or condition of use | Respirator type |
|---|---|
| More than 1,000 times the TWA or unknown concentration. | (1) Self-contained breathing apparatus with full facepiece in positive pressure mode. (2) Full facepiece positive-pressure supplied-air respirator with auxiliary self-contained air supply. |
| Escape | (1) Any organic vapor gas mask. (2) Any self-contained breathing apparatus with full facepiece |
| Fire fighting | (1) Full facepiece self-contained breathing apparatus in positive pressure mode. |

¹ Canisters for non-powered air purifying respirators must have a minimum service life of four hours when tested at 150 ppm benzene, at a flow rate of 64 liters/minute at 25°C and 85% relative humidity. Canisters for powered air-purifying respirators must have a flow rate of 115 liters/minute (for tight fitting respirators) or 170 liters/minute (for loose fitting respirators).

(c) *Respirator fit testing.* (1) Before the person is permitted to use a respirator selected and fitted in compliance with this section, the person must undergo an Initial Fit Test (IFT) and either a Qualitative Fit Test (QLFT) or a Quantitative Fit Test (QNFT), in compliance with Appendix E of this subpart, using the respirator fitted. If a negative pressure respirator is used, the QLFT or QNFT must be repeated at least once a year thereafter.

(2) The objective of the tests is to identify for the person a respirator which minimizes the chance of leakage.

(3) The person conducting the tests required by paragraph (c)(1) of this section must understand the purpose of these tests and how to perform them.

(4) The person conducting the tests required by paragraph (c)(1) of this section must certify the results by signing the test report.

(d) *Respirator fitting.* (1) Employees who are being fitted for respirators must be trained in the methods for properly fitting a respirator and informed of the factors which may affect a proper fit, such as beards, sideburns, dentures, eyeglasses, and goggles, and that an unobstructed sealing surface is critical in fitting a respirator. (See appendix E of this subpart).

(2) For employees requiring eye glasses, corrective lenses should be

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fitted to the respirator faceplate. As a temporary measure, glasses with short temple bars may be taped to the wearer's head. Contact lenses other than soft lenses or gas permeable lenses must not be worn with respirators.

(e) *Respirator use.* Persons wearing a respirator in a regulated area must be permitted to leave the regulated area to wash their face and respirator facepiece, as necessary, in order to prevent skin irritation associated with respirator use or, if an air-purifying respirator is used, to change the filter elements whenever the person wearing the respirator detects a change in breathing resistance or a chemical vapor breakthrough.

(f) *Respirator inspection.* Respirators must be inspected in accordance with ANSI Z88.2—1980, section 8.

(g) *Respirator maintenance.* (1) Respirators must be maintained in accordance with ANSI Z88.2—1980, section 8.

(2) During respirator cleaning, the rubber or elastomer parts of the respirator must be stretched and manipulated with a massaging action to keep the parts pliable and flexible and to keep the parts from taking a set during storage.

(3) The air purifying element of air-purifying respirators must be replaced when the employee detects breakthrough or after a period not to exceed eight hours, whichever ever comes first. The element must also be replaced at the start of each shift. An air purifying element with an end of useful life indicator approved by MSHA or NIOSH for benzene may be used until the indicator indicates end of useful life even if this exceeds eight hours.

(h) *Respirator storage.* Respirators must be stored in accordance with ANSI Z88.2—1980, section 8.

§ 197.555 Personal protective clothing and equipment.

(a) When the use of respirators in compliance with § 197.550 and the personal protective clothing and equipment in compliance with this section is chosen as the method or one of the methods required by § 197.545 to be used in meeting the performance standard, the clothing and equipment must meet the requirements of this section.

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(b) The employer shall provide employees with the necessary personal protective clothing and equipment without charge and shall ensure that the clothing and equipment are worn or used properly.

(c) Employees must be provided with coveralls or a large apron, boots, gloves, and, if necessary, tight-fitting eye goggles to limit dermal exposure to, and prevent eye contact with, liquid benzene.

§ 197.560 Medical surveillance.

(a) *General.* (1) The employer must provide, and the employees must submit to, the medical surveillance examinations for employees, as required by this section.

(2) All medical surveillance procedures in compliance with this section, other than the pulmonary function test of paragraph (b)(5)(v) of this section and all laboratory tests, must be performed by, or under the supervision of, a licensed physician.

(3) The pulmonary function test of paragraph (b)(5)(v) of this section must be administered by a licensed physician or by a person who has completed a training course in spirometry sponsored by a governmental, academic, or professional institution.

(4) All laboratory tests must be conducted by a laboratory accredited by an accrediting organization acceptable to the Commandant.

(b) *Initial medical examination.* (1) Within March 14, 1992 the employer shall make available to the employees listed in paragraph (b)(2)(i) of this section an initial medical examination. Within six months all initial medical examinations must be completed, including those for the employees listed in paragraph (b)(2)(ii), and each employee notified of the results of that employee's examination.

(2) The initial medical examination must be made available to the following employees before they are permitted to enter or continue working in a workplace in which they will be or may be exposed to benzene:

(i) Employees who were exposed to more than 10 ppm of benzene as an eight-hour TWA on at least 30 calendar days during the year before January 15, 1992 and who were employed by their