

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

OCCUPATIONAL HEALTH STANDARDS

**Filed with the Secretary of State on November 12, 2014**

These rules become effective immediately upon filing with the Secretary of State unless adopted under sections 33, 44, 45a(6), or 48 of 1969 PA 306.

Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 14 and 24 of 1974 PA 154, MCL 408.1014 and MCL 408.1024 and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 325.62102, R 325.62104, R 325.62105, R 325.62106, R 325.62107, R 325.62108, R 325.62109, R 325.62110, R 325.62115, R 325.62116, R 325.62117, R 325.62118, R 325.62119, R 325.62120, R 325.62125, R 325.62126, are added to the Michigan Administrative code and Occupational Health Standard Rule 6310 and 6402 are rescinded, as follows:

**PART 621. HEALTH HAZARD CONTROL FOR SPECIFIC EQUIPMENT  
AND OPERATIONS FOR CONSTRUCTION**

**R 325.62102. Adopted and referenced standards.**

**Rule 62102. (1) The following standard is adopted by reference in these rules, American Welding Society Standard AWS Z49.1 'Safety in Welding and Cutting, and Allied Processes,' 1967 edition, and is available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: <http://global.ihs.com>; at a cost as of the time of adoption of these rules of \$106.00.**

**(2) The standard adopted in subrule (1) of this rule is also available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143.**

**(3) Copies of the standard adopted in subrule (1) of this rule may be obtained from the publisher or may also be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in subrule (1) of this rule, plus \$20.00 for shipping and handling.**

**(4) The following Michigan occupational safety and health standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at web-site: [www.michigan.gov/mioshastandards](http://www.michigan.gov/mioshastandards). For quantities greater than 5, the cost, as of the time of adoption of these rules, is 4 cents per page.**

**(a) Construction Safety (CS) Standard Part 1 'General Rules,' R 408.40101 to R 408.40134.**

**(b) CS Part 6 'Personal Protective Equipment,' R 408.40601 to R 408.40641.**

**(c) CS Part 42 'Hazard Communication,' R 408.44201 to R 408.44203.**

**(d) General Industry Safety Standard Part 76 'Spray Finishing Using Flammable and Combustible Materials,' R 408.17601 to R 408.17602.**

**(e) Occupational Health (OH) Standard Part 303 'Methylenedianiline,' R 325.50051 to R 325.50076.**

**(f) OH Part 305 'Asbestos in General Industry,' R 325.51311 to R 325.51312.**

**(g) OH Part 430 'Hazard Communication,' R 325.77001 to R 325.77003.**

**(h) OH Part 432 'Hazardous Waste Operations and Emergency Response,' R 325.52101 to R 325.52137.**

**(i) OH Part 451 'Respiratory Protection,' R 325.60051 to R 325.60052.**

**(j) OH Part 591 'Process Safety Management of Highly Hazardous Chemicals,' R 325.18301 to R 325.18302.**

**(k) OH Part 601 'Air Contaminants for Construction,' R 325.60151 to R 325.60161.**

**(l) OH Part 603 'Lead Exposure in Construction,' R 325.51991 to R 325.51992.**

**(m) OH Part 620 'Ventilation Control for Construction,' R 325.62001 to R 325.62006.**

**(n) OH Part 680 'Noise Exposure for Construction,' R 325.60131.**

**(o) OH Part 681 'Radiation of Construction: Ionizing and Nonionizing,' R 325.68101 to R 325.68102.**

**R 325.62104. Temporary heating devices; ventilation.**

**Rule 62104. (1) An employer shall supply fresh air in sufficient quantities to maintain the health and safety of employees. Where natural means of fresh air supply is inadequate, the employer shall provide mechanical ventilation.**

**(2) When heaters are used in confined spaces, the employer shall ensure sufficient ventilation for proper combustion, maintaining the health and safety of employees, and limiting temperature rise in the area.**

**R 325.62105. Use of hand and power tools.**

**Rule 62105. (1) All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.**

**(2) Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazard.**

**All personal protective equipment shall meet the requirements and be maintained according to the MIOSHA standards listed in Table 1 'Construction Occupational Health and Environmental Controls' and Table 2 'Personal Protective and Life Saving Equipment,' as shown below.**

**(3) When fuel-powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment apply, as outlined in the MIOSHA standards listed in Table 1 'Construction Occupational Health and Environmental Controls' and Table 2 'Personal Protective and Life Saving Equipment,' as shown below.**

**(4) All Personal protective equipment provided for use shall be in accordance with Table 2 'Personal Protective and Life Saving Equipment,' as shown below.**

**Table 1  
Construction Occupational Health and Environmental Controls Standards**

<b>CS Part 1 General Rules</b>
<b>CS Part 42 Hazard Communication*</b>
<b>GI Part 76 Spray Finishing Using Flammable and Combustible Materials*</b>
<b>OH Part 303 Methylenedianiline*</b>
<b>OH Part 430 Hazard Communication</b>
<b>OH Part 432 Hazardous Waste Operations and Emergency Response</b>
<b>OH Part 591 Process Safety Management of Highly Hazardous Chemicals</b>
<b>OH Part 601 Air Contaminants for Construction</b>
<b>OH Part 603 Lead Exposure in Construction</b>
<b>OH Part 620 Ventilation Control for Construction</b>
<b>OH Part 680 Noise Exposure for Construction</b>
<b>OH Part 681 Radiation of Construction: Ionizing and Nonionizing</b>

**Note: the above listed MIOSHA Standards are referenced in R 325.62102**

**\*CS – Construction Safety Standard**

**\*GI – General Industry Standard**

**\*OH – Occupational Health Standard**

**Table 2  
Personal Protective and Life Saving Equipment**

<b>CS Part 6 Personal Protective Equipment*</b>
<b>OH Part 451 Respiratory Protection*</b>
<b>OH Part 680 Noise Exposure for Construction</b>

**Note: the above listed MIOSHA Standards are referenced in R 325.62102**

**\*CS – Construction Safety Standard**

**\*OH – Occupational Health Standard**

**R 325.62106. Ventilation and protection in welding, cutting, and heating.**

**Rule 62106. (1) Gas welding and cutting in general.** The applicable technical portions of American National Standards Institute standard ANSI Z49.1 'Safety in Welding and Cutting,' 1967 edition, apply, as referenced in R 325.62102.

**(2) For purposes of this standard, mechanical ventilation shall meet the following requirements:**

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

**(b) General mechanical ventilation shall 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 the MIOSHA standards listed in Table 1 'Construction Occupational Health and Environmental Controls.'**

**(3) Local exhaust ventilation shall consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system shall 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 the MIOSHA standards listed in Table 1 'Construction Occupational Health and Environmental Controls.'**

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

**(5) All air replacing withdrawn air shall be clean and respirable.**

**(6) Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area.**

**R 325.62107. Welding, cutting, and heating in confined spaces.**

**Rule 62107. (1) Except as provided in subrule (2) of this rule and R 325.62109, either general mechanical or local exhaust ventilation meeting the requirements of R 325.62106 shall be provided whenever welding, cutting, or heating is performed in a confined space.**

**(2) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air-line respirators in accordance with the requirements of Occupational Health Standard Part 451 'Respiratory Protection,' as referenced in R 325.62102, and an employee on the outside of a confined space shall be assigned to maintain communication with those working within it and to aid them in an emergency.**

**R 325.62108. Welding, cutting, or heating of metals of toxic significance.**

**Rule 62108. (1) Welding, cutting, or heating in any enclosed spaces involving the following metals shall be performed with either general mechanical or local exhaust ventilation meeting the requirements of R 325.62106:**

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

**(b) Lead base metals.**

**(c) Cadmium-bearing filler materials.**

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

**(2) Welding, cutting, or heating in any enclosed spaces involving the following metals shall be performed with local exhaust ventilation in accordance with the requirements of R 325.62106, or employees shall be protected by air-line respirators in accordance with the requirements of Occupational Health Standard Part 451 'Respiratory Protection,' as referenced in R 325.62102:**

**(a) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials.**

**(b) Cadmium-bearing or cadmium-coated base metals.**

**(c) Metals coated with mercury-bearing metals.**

**(d) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air-line respirators.**

**(3) Employees performing operations in the open air shall be protected by filter-type respirators in accordance with the requirements of Occupational Health Standard Part 451 'Respiratory Protection,' except that employees performing operations on beryllium-containing base or filler metals shall be protected by air-line respirators in accordance with the requirements of Occupational Health Standard Part 451 'Respiratory Protection,' as referenced in R 325.62102.**

**(4) Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner.**

**R 325.62109. Inert-gas metal-arc welding.**

Rule 62109. (1) Since the inert-gas metal-arc welding process involves the production of ultra-violet radiation of intensities of 5 to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultra-violet rays, and the liberation of toxic fumes and gases, employees shall not be permitted to engage in, or be exposed to, the process until the following special precautions have been taken:

(a) The use of chlorinated solvents shall be kept at least 200 feet, unless shielded, from the exposed arc, and surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.

(b) Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultra-violet rays. Welding helmets and hand shields shall be free of leaks and openings, and free of highly reflective surfaces.

(c) When inert-gas metal-arc welding is being performed on stainless steel, the requirements of R 325.62108(2) shall be met to protect against dangerous concentrations of nitrogen dioxide.

(2) Employees in the area not protected from the arc by screening shall be protected by filter lenses meeting the requirements of Construction Safety Standard Part 6 'Personal Protective Equipment' as referenced in R 325.62102.

(3) When 2 or more welders are exposed to each other's arc, filter lens goggles of a suitable type, meeting the requirements of Construction Safety Standard Part 6 'Personal Protective Equipment' as referenced in R 325.62102, shall be worn under welding helmets.

(4) The welder shall use hand shields to protect against flashes and radiant energy when either the helmet is lifted or the shield is removed.

**R 325.62110. General welding, cutting, and heating.**

Rule 62110. Welding, cutting, and heating, not involving conditions or materials described in R 325.62107, R 325.62108, or R 325.62109, may be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, an employer shall provide suitable mechanical ventilation or respiratory protective equipment.

**R 325.62115. Protection against toxic preservative coatings.**

Rule 62115. (1) In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees shall be protected by air-line respirators, meeting the requirements in Occupational Health Standard Part 451 'Respiratory Protection,' as referenced in R 325.62102.

(2) In the open air, employees shall be protected by a respirator, in accordance with requirements in Occupational Health Standard Part 451 'Respiratory Protection,' as referenced in R 325.62102.

(3) The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned.

**R 325.62116. Lockout and tagging of circuits.**

Rule 62116. Safety-related work practices are contained in Construction Safety Standards Part 1 'General Rules' and Part 17 'Electrical Installations,' as referenced in R 325.62102. In addition to covering the hazards arising from the use of electricity at jobsites, these regulations also cover the hazards arising from the accidental contact, direct or indirect, by employees with all energized lines, above or below ground, passing through or near the jobsite.

**R 325.62117. Electrical Equipment.**

Rule 62117. (1) All electrical conductors and equipment shall be approved.

(2) The employer shall ensure that electrical equipment is free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined on the basis of all of the following considerations:

(a) Suitability for installation and use in conformity with the provisions of Construction Safety Standards Part 1 'General Rules' and Part 17 'Electrical Installations,' as referenced in R 325.62102. Suitability of equipment for an identified purpose may be evidenced by listing, labeling, or certification for that identified purpose.

(b) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection provided.

(c) Electrical insulation.

(d) Heating effects under conditions of use.

(e) Arcing effects.

(f) Classification by type, size, voltage, current capacity, and specific use.

(g) Other factors that contribute to the practical safeguarding of employees using, or likely to come in contact, with the equipment.

(3) Listed, labeled, or certified equipment shall be installed and used in accordance with instructions included in the listing, labeling, or certification.

**R 325.62118. Cranes and derricks.**

Rule 62118. Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to ensure that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.

**R 325.62119. Motor vehicles, mechanized equipment, and marine operations.**

Rule 62119. (1) The use, care, and charging of all batteries shall conform to the requirements of R 325.62117.

(2) For marine operations and equipment the first aid and lifesaving equipment provisions for rendering first aid and medical assistance shall be in accordance with Construction Safety Standards Part 1 'General Rules,' and Part 6 'Personal Protective Equipment' as referenced in R 325.62102.

**R 325.62120. Demolition; preparatory operations.**

Rule 62120. An employer shall determine if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any of these substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started.

**R 325.62125. Power transmission and distribution.**

Rule 62125. (1) The occupational health standards contained in these rules apply to the construction of electric transmission and distribution lines and equipment.

(2) As used in this rule, the term "construction" includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of existing electric transmission and distribution lines and equipment.

(3) Existing electric transmission and distribution lines and electrical equipment shall be modified to conform to the requirements of applicable standards, if work as described in R 325.62125(2) is to be performed on such lines or equipment.

(4) The standards in Construction Safety Standard Part 16 'Power Transmission and Distribution,' provide minimum requirements for safety and health. Employers may require compliance with additional standards that are not in conflict with Construction Safety Standard Part 16 'Power Transmission and Distribution,' as referenced in R 325.62102.

(5) The employer shall provide emergency procedures and first aid training or require that the employees are knowledgeable and proficient in both of the following:

(a) Procedures involving emergency situations.

(b) First aid fundamentals including resuscitation.

(6) In lieu of R 325.62125(5) regarding first aid requirements, the employer may comply with the provisions of Construction Safety Standard Part 1 'General Rules,' as referenced in R 325.62102.

(7) Sanitation facilities shall comply with the requirements of Construction Safety Standard Part 1 'General Rules,' as referenced in R 325.62102.

**R 325.62126. Blasting and use of explosives.**

Rule 62126. (1) Explosives are any of the following:

(a) Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is, with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the United States department of transportation.

(b) All material that is classified as Class A, Class B, and Class C explosives by the United States Department of Transportation.

(c) Classification of explosives by the United States department of transportation is as follows:

(i) Class A explosives: Possessing detonating hazards, such as any of the following:

(A) Dynamite.

(B) Nitroglycerin.

(C) Picric acid.

(D) Lead azide.

(E) Fulminate of mercury.

(F) Black powder.

(G) Blasting caps.

(H) Detonating primers.

(ii) Class B explosives: Possessing flammable hazard, such as propellant explosives, including some smokeless propellants.

**(iii) Class C explosives:** Including certain types of manufactured articles that contain Class A or Class B explosives, or both, as components, but in restricted quantities.

**(2) Sufficient time shall be allowed, but not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. The blaster shall inspect the area and the surrounding rubble to determine if all charges have been exploded before employees are allowed to return to the operation and in tunnels, after the muck pile has been wetted down.**

Rule 6310 **Rescinded.** Health Hazard Control for Specific Equipment and Operations.

~~(1) Temporary heating devices.~~

~~(a) Fresh air shall be supplied in sufficient quantities to maintain the health and safety of workmen. Where natural means of fresh air supply is inadequate, mechanical ventilation shall be provided. [1926.154 (a)(1)]~~

~~(b) When heaters are used in confined spaces, special care shall be taken to provide sufficient ventilation in order to ensure proper combustion, maintain the health and safety of workmen, and limit temperature rise in the area. [1926.154(a)(2)]~~

~~(2) Use of hand and power tools.~~

~~(a) General requirements.~~

~~(i) Condition of tools. All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition. [1926.300(a)]~~

~~(ii) Personal protective equipment. Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazard. All personal protective equipment shall meet the requirements and be maintained according to Rule 6501. [1926.300(c)]~~

~~(b) Fuel-powered tools.~~

~~When fuel-powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment, as outlined in Rules 6201 and 6501, shall apply. [1926.302(c)(2)]~~

~~(c) Powder-actuated tools.~~

~~When using powder-actuated tools, personal protective equipment shall be in accordance with Rule 6501. [1926.302(e)(4)]~~

~~(d) Use of woodworking tools.~~

~~When woodworking tools are used, all personal protective equipment provided for use shall conform to Rule 6501. [1926.304(e)]~~

~~(3) Ventilation and protection in welding, cutting, and heating.~~

~~(a) Gas welding and cutting—general. The applicable technical portions of American National Standards Institute, Z49.1-1967, Safety in Welding and Cutting, shall apply. [1926.350(j)]~~

~~(b) Mechanical ventilation. For purposes of this subsection, mechanical ventilation shall meet the following requirements: [1926.353(a)]~~

~~(i) Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems. [1926.353(a)(1)]~~

~~(ii) General mechanical ventilation shall 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 II of this chapter. [1926.353(a)(2)]~~

~~(iii) Local exhaust ventilation shall consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system shall 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 II of this chapter. [1926.353(a)(3)]~~

~~(iv) Contaminated air exhausted from a working space shall be discharged into the open air or otherwise clear of the source of intake air. [1926.353(a)(4)]~~

~~(v) All air replacing that withdrawn shall be clean and respirable. [1926.353(a)(5)]~~

~~(vi) Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing, or for cleaning the work area. [1926.353(a)(6)]~~

~~(c) Welding, cutting, and heating in confined spaces.~~

~~(i) Except as provided in subparagraph (c)(ii) of this subsection and subparagraph (d)(ii) of this subsection, either general mechanical or local exhaust ventilation meeting the requirements of paragraph (b) of this subsection shall be provided whenever welding, cutting, or heating is performed in a confined space. [1926.353(b)(1)]~~

~~(ii) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air-line respirators in accordance with the requirements of Rule 6501, and an employee on the outside of such a confined space shall be assigned to maintain communication with those working within it and to aid them in an emergency. [1926.353(b)(2)]~~

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

(i) Welding, cutting, or heating in any enclosed spaces involving the metals specified in this subparagraph shall be performed with either general mechanical or local exhaust ventilation meeting the requirements of paragraph (b) of this subsection. [1926.353(c)(1)]

(A) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials. [1926.353(c)(1)(i)]

(B) Lead base metals. [1926.353(c)(1)(ii)]

(C) Cadmium-bearing filler materials. [1926.353(c)(1)(iii)]

(D) Chromium-bearing metals or metals coated with chromium-bearing materials. [1926.353(c)(1)(iv)]

(ii) Welding, cutting, or heating in any enclosed spaces involving the metals specified in this subparagraph shall be performed with local exhaust ventilation in accordance with the requirements of paragraph (b) of this subsection, or employees shall be protected by air-line respirators in accordance with the requirements of Rule 6501. [1926.353(c)(2)]

(A) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials. [1926.353(c)(2)(i)]

(B) Cadmium-bearing or cadmium-coated base metals. [1926.353(c)(2)(ii)];

(C) Metals coated with mercury-bearing metals. [1926.353(c)(2)(iii)]

(D) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air-line respirators. [1926.353(c)(2)(iv)]

(iii) Employees performing such operations in the open air shall be protected by filter-type respirators in accordance with the requirements of Rule 6501, except that employees performing such operations on beryllium-containing base or filler metals shall be protected by air-line respirators in accordance with the requirements of Rule 6501. [1926.353(c)(3)]

(iv) Other employees exposed to the same atmosphere as the welders or burners shall be protected in the same manner as the welder or burner. [1926.353(c)(4)]

(e) Inert-gas metal arc welding.

(i) 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, employees shall not be permitted to engage in, or be exposed to, the process until the following special precautions have been taken: [1926.353(d)(1)]

(A) The use of chlorinated solvents shall be kept at least 200 feet, unless shielded, from the exposed arc, and surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces. [1926.353(d)(1)(i)]

(B) Welders and other employees who are exposed to radiation shall be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields shall be free of leaks and openings, and free of highly reflective surfaces. [1926.353(d)(1)(iii)]

(C) When inert-gas metal arc welding is being performed on stainless steel, the requirements of paragraph (d)(ii) of this subsection shall be met to protect against dangerous concentrations of nitrogen dioxide. [1926.353(d)(1)(iv)]

(ii) Reserved.

(f) General welding, cutting, and heating.

Welding, cutting, and heating, not involving conditions or materials described in paragraph (c), (d), or (e) of this subsection, 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, suitable mechanical ventilation or respiratory protective equipment shall be provided. [1926.353(e)(1)]

(4) Welding, cutting, and heating in way of preservative coatings.

(a) Protection against toxic preservative coatings:

(i) In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees shall be protected by air-line respirators, meeting the requirements of Rule 6501. [1926.354(c)(1)]

(ii) In the open air, employees shall be protected by a respirator, in accordance with requirements of Rule 6501. [1926.354(c)(2)]

(b) The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned. [1926.354(d)]

(5) Electrical equipment installation and maintenance.

(a) Applicability.

This subsection applies only to electrical installations used on the jobsite, both temporary and permanent. For power distribution and transmission lines, see the MIOSHA Construction Safety Standards. [1926.400(b)]

(b) Welding and cutting equipment.

Welding and cutting equipment shall meet the requirements specified in the MIOSHA Construction Safety Standards and subsections (1), (3) and (4) of this rule. [1926.402(e)]

~~(6) Battery rooms and battery charging.~~~~(a) Batteries of the nonseal type shall be located in enclosures with outside vents or in well-ventilated rooms, so arranged as to prevent the escape of fumes, gases, or electrolyte spray into other areas. [1926.403(a)(1)]~~~~(b) Ventilation shall be provided to ensure diffusion of the gases from the battery to prevent the accumulation of an explosive mixture. [1926.403(a)(2)]~~~~(c) Racks and trays shall be substantial and treated to be resistant to the electrolyte. [1926.403(a)(3)]~~~~(d) Floors shall be of acid resistant construction or be protected from acid accumulations. [1926.403(a)(4)]~~~~(e) Face shields, aprons, and rubber gloves shall be provided for workmen handling acids or batteries. [1926.403(a)(5)]~~~~(f) Facilities for quick drenching of the eyes and body shall be provided within 25 feet of the work area for emergency use. [1926.403(a)(6)]~~~~(g) Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries. [1926.403(a)(7)]~~~~(h) Charging.~~~~(i) Battery charging installations shall be located in areas designated for that purpose. [1926.403(b)(1)]~~~~(ii) When charging batteries, the vent caps shall be kept in place to avoid electrolyte spray. Care shall be taken to assure that vent caps are functioning. [1926.403(b)(2)]~~~~(7) Cranes and derricks.~~~~Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres. [1926.550(a)(11)]~~~~(8) Motor vehicles, mechanized equipment, and marine operations.~~~~(a) Equipment. The use, care and charging of all batteries shall conform to the requirements of subsection (6) of this rule. [1926.600(a)(4)]~~~~(b) Marine operations and equipment. First aid and lifesaving equipment. Provisions for rendering first aid and medical assistance shall be in accordance with Rule 6610. [1926.605(d)(1)]~~~~(9) Excavations, trenching, and shoring.~~~~(a) Definition applicable to this subsection.~~~~"Excavation" means any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation. If installed forms or similar structures reduce the depth-to-width relationship, an excavation may become a trench. [1926.653(f)]~~~~(b) General protection requirements. All employees shall be protected with personal protective equipment for the protection of the head, eyes, respiratory organs, hands, feet, and other parts of the body as set forth in Rule 6501. [1926.650(e)]~~~~(c) Employees subjected to hazardous dusts, gases, fumes, mists, or atmospheres deficient in oxygen, shall be protected with approved respiratory protection as set forth in Rules 6402 and 6501. [1926.650(g)]~~~~(d) Specific excavation requirements.~~~~(i) Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., shall be backfilled. Abandon wells shall be sealed in accordance with R 325.1666 of the General Water Quality Control Rules.~~~~(ii) If possible, dust conditions shall be kept to a minimum by the use of water, salt, calcium chloride, oil, or other means. [1926.651(u)]~~~~(iii) Hazardous atmospheres. See Rule 6402(2).~~~~(10) Demolition.~~~~(a) Preparatory operations.~~~~It shall be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started. [1926.850(e)]~~~~(b) Selective demolition by explosives.~~~~Selective demolition by explosives shall be conducted in accordance with the applicable sections of the MIOSHA Construction Safety Standards.~~~~(11) Power transmission and distribution.~~~~(a) General.~~~~(i) Application. The occupational health standards contained in this subsection shall apply to the construction of electric transmission and distribution lines and equipment. [1926.950(a)]~~

~~(A) As used in this subsection the term "construction" includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of existing electric transmission and distribution lines and equipment. [1926.950(a)(1)]~~

~~(B) Existing electric transmission and distribution lines and electrical equipment need not be modified to conform to the requirements of applicable standards in this subsection, until such work as described in subdivision (A) of this subparagraph is to be performed on such lines or equipment. [1926.950(a)(2)]~~

~~(C) The standards set forth in this subsection provide minimum requirements for health. Employers may require adherence to additional standards which are not in conflict with the standards contained in this subsection. [1926.950(a)(3)]~~

~~(ii) Emergency procedures and first aid. The employer shall provide training or require that his employees are knowledgeable and proficient in: [1926.950(e)(1)]~~

~~(A) Procedures involving emergency situations, and [1926.950(e)(1)(i)]~~

~~(B) First aid fundamentals including resuscitation. [1926.950(e)(1)(ii)]~~

~~(C) In lieu of subdivision (ii) of this paragraph, the employer may comply with the provisions of Rule 6610(3) regarding first aid requirements. [1926.950(e)(2)]~~

~~(b) Sanitation facilities. The requirements of Rule 6615 of this part shall be complied with for sanitation facilities. [1926.950(h)]~~

~~(12) Blasting and use of explosives.~~

~~(a) Explosives.~~

~~(i) Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is, with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the United States Department of Transportation. [1926.914(n)(1)]~~

~~(ii) All material which is classified as Class A, Class B, and Class C explosives by the United States Department of Transportation. [1926.914(n)(2)]~~

~~(iii) Classification of explosives by the United States Department of, Transportation is as follows:~~

~~-Class A explosives: Possessing detonating hazards, such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers.~~

~~-Class B explosives: Possessing flammable hazard, such as propellant explosives, including some smokeless propellants.~~

~~-Class C explosives: Including certain types of manufactured articles which contain Class A or Class B explosives, or both, as components, but in restricted quantities. [1926.914(n)(3)]~~

~~(b) The employer shall permit only authorized and qualified persons to use explosives. [1926.900(a)]~~

~~(c) Sufficient time shall be allowed, not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. An inspection of the area and the surrounding rubble shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation and in tunnels, after the muck pile has been wetted down. [1926.910(b)]~~

**Rule 6402 Rescinded. Control Measures for Hazardous Atmospheres in Confined Spaces.**

~~(1) Confined spaces -- General requirements.~~

~~(a) Confined space -- For purposes of this rule, "confined or enclosed space" means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels. [1926.21(b)(6)(ii)]~~

~~(b) All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas. [1926.21(b)(6)(i)]~~

~~(2) Atmosphere testing in confined spaces. In locations where oxygen deficiency or gaseous conditions are possible, air in the excavation, as defined in Rule 6310(9)(a), shall be tested. Controls, as set forth in Parts II, III, V, and VI of this chapter, shall be established to assure acceptable atmospheric conditions. When flammable gases are present, adequate ventilation shall be provided or sources of ignition shall be eliminated. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, basket stretcher, etc., shall be readily available where adverse atmospheric conditions may exist or develop in an excavation. [1926.651(v)]~~

~~(3) Underground lines.~~

~~(a) Definitions applicable to this subsection.~~

~~(i) "Alive or live (energized)" means electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in place of the term "current carrying", where the intent is clear, to avoid repetition of the longer term. [1926.960(a)]~~

- (ii) "Barrier" means a physical obstruction which is intended to prevent contact with energized lines or equipment. [1926.960(c)]
- (iii) "Barricade" means a physical obstruction such as tapes, screens, or cones intended to warn and limit access to a hazardous area. [1926.960(d)]
- (iv) "Cable" means a conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable). [1926.960(g)]
- (v) "Designated employee" means a qualified person delegated to perform specific duties under the conditions existing. [1926.960(e)]
- (vi) "Equipment" is a general term which includes fittings, devices, appliances, fixtures, apparatus, and the like, used as part of, or in connection with, an electrical power transmission and distribution system, or communication systems. [1926.960(s)]
- (vii) "Guarded" means protected by personnel, covered, fenced, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects. Note: Wires, which are insulated but not otherwise protected, are not considered as guarded. [1926.960(v)]
- (viii) "Manhole" means a subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating and maintaining equipment and/or cable. [1926.960(j)]
- (ix) "Qualified person" means a person who by reason of experience or training is familiar with the operation to be performed and the hazards involved. [1926.960(l)]
- (x) "Vault" means an enclosure above or below ground which personnel may enter and is used for the purpose of installing, operating, and/or maintaining equipment and/or cable. [1926.960(pp)]
- (b) Guarding and ventilating street opening used for access to underground lines or equipment.
- (i) Appropriate warning signs shall be promptly placed when covers of manholes, handholes, or vaults are removed. What is an appropriate warning sign is dependent upon the nature and location of the hazards involved. [1926.956(a)(1)]
- (ii) Before an employee enters a street opening, such as a manhole or an unvented vault, it shall be promptly protected with a barrier, temporary cover, or other suitable guard. [1926.956(a)(2)]
- (iii) When work is to be performed in a manhole or unvented vault: [1926.956(a)(3)]
- (A) No entry shall be permitted unless forced ventilation is provided or the atmosphere is found to be safe by testing for oxygen deficiency and the presence of explosive gases or fumes. [1926.956(a)(3)(i)]
- (B) Where unsafe conditions are detected, by testing or other means, the work area shall be ventilated and otherwise made safe before entry. [1926.956(a)(3)(ii)]
- (C) Provisions shall be made for an adequate continuous supply of air. [1926.956(a)(3)(iii)]
- (c) Work in manholes.
- (i) While work is being performed in manholes, an employee shall be available in the immediate vicinity to render emergency assistance as may be required. This shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance, other than emergency. This requirement does not preclude a qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely. [1926.956(b)(1)]
- (ii) When open flames must be used or smoking is permitted in manholes, extra precautions shall be taken to provide adequate ventilation. [1926.956(b)(2)]
- (iii) Before using open flames in a manhole or excavation in an area where combustible gases or liquids may be present, such as near a gasoline service station, the atmosphere of the manhole or excavation shall be tested and found safe or cleared of the combustible gases or liquids. [1926.956(b)(3)]
- (d) Trenching and excavating. Trenching and excavation operations shall comply with Rule 6310(9). [1926.956(c)(2)]
- (e) Welding, cutting, and heating in confined spaces. See Rule 6310(3)(c)