

PROGRAM DIRECTIVE

Program Directive A-74
Issued October 1, 1980
Revised March 9, 2001

SUBJECT: Electrical Equipment Used in Wetwells

AFFECTED CODES/

DIRECTIVES: NEC Articles 500 and 501; and OAR 437-02-1910.307 and 1910.307(a),
Electrical Installations and Utilization Equipment

PURPOSE: To provide guidelines for determining the appropriate type of electrical equipment for use in confined spaces containing waste water with organic matter.

BACKGROUND: Hazardous concentrations of flammable gases, such as methane and hydrogen sulfide, may exist continuously or intermittently under normal operating conditions in waste water collection areas. Whether a wetwell is or is not a Class I, Division I location under the National Electric Code (NEC) depends on the conditions in the particular wetwell. While design and construction of electrical systems in wetwells must ensure that employees are not exposed to an explosion hazard, the explosion-proof motor is not the only acceptable type for Class I, Division I locations.

In addition to employees within the confined space, those employees in the vicinity of the confined space may also be exposed to the effects of an explosion.

ACTION: If at least one employee is or may be exposed to the explosion hazard, then the electrical system must be of the type indicated in the National Electric Code, Article 501-8(a) which states:

"501-8. Motors and Generators.

(a) Class I, Division I. In Class I, Division I locations, motors, generators, and other rotating electric machinery shall be:

(1) approved for Class I, Division I, locations; or (2) of the totally enclosed type supplied with positive-pressure ventilation from a source of clean air with discharge to a safe area, so arranged to prevent energizing of the machine until ventilation has been established and the enclosure has been purged with at least 10 volumes of air, and also arranged to automatically de-energize the equipment when the air supply fails; or (3) of the totally enclosed inert gas-filled type supplied with a suitable reliable source of inert gas for pressuring the enclosure, with devices provided to ensure a positive pressure in the enclosure and arranged to automatically de-energize the equipment when the gas supply fails; or (4) of a type designed to be submerged in a liquid which is flammable only when vaporized and mixed with air, or in a gas or vapor at a pressure greater than atmospheric and which is flammable only when mixed with air; and the machine is so arranged to prevent energizing it until it has been purged with the liquid or gas to exclude air, and also arranged to automatically de-energize the equipment when the supply of liquid, or gas or vapor fails or the pressure is reduced to atmospheric.

Totally enclosed motors of Types (2) or (3) shall have no external surface with an operating temperature in degrees Celsius in excess of 80 percent of the ignition temperature of the gas or vapor involved, as determined by ASTM test procedure (Designation: D-2155-66).

Appropriate devices shall be provided to detect and automatically de-energize the motor or provide an adequate alarm if there is any increase in temperature of the motor beyond designed limits. Auxiliary equipment shall be of a type approved for the location in which it is installed."

Compliance officers shall determine if electrical equipment in Class I, Division I, locations conforms to the above or following requirements:

Electrical installations or equipment are acceptable to OR-OSHA:

- A. If accepted, certified, listed, labeled, or otherwise determined to be safe by a nationally recognized testing laboratory, such as, but not limited to, Underwriters' Laboratories, Inc., as approved under ORS 479.760 for the approval of testing laboratories, or
- B. With respect to electrical installations or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or has determined to be safe, if inspected or tested by another federal agency or by a state certified electrical inspector responsible for enforcing the National Electric Code as applied in 1910.307, or
- C. With respect to custom-made equipment or related installations

which are designed and fabricated for, and intended use by, a particular customer, if determined safe for its intended use by the manufacturer on the basis of test data which the employer keeps and makes available for inspection by OR-OSHA.

Employers found to be in violation of these requirements shall be cited under 1910.307 and 1910.307(a).

**EFFECTIVE
DATE:**

This directive is effective immediately and will remain in effect until cancelled or superseded.