

CWA Occupational Safety and Health Fact Sheet #6

Arsenic and the Workplace

Arsenic compounds have a wide variety of uses. They are used in agriculture in insecticides, herbicides, larvicides, and pesticides; in pigment production; in the manufacture of glass and enamels; textiles; printing; tanning; taxidermy; anti-fouling paints; to control sludge formation in lubricating oils; as an alloying agent to harden lead-base bearing materials; and with copper to improve its toughness and corrosion resistance.

CWA members who work as telecommunications cable splicers and outside plant technicians, as well as within manufacturing and printing operations, may work with and suffer exposure to arsenic.

Health Effects

Health problems from arsenic exposure occur as a result of inhalation (breathing) or ingestion (swallowing) of arsenic dust and fumes.

Inhalation of arsenic compounds is the most common cause of arsenic poisoning in the industrial work environment. This medical condition is divided into three phases:

- The worker complains of weakness, loss of appetite, nausea, occasional vomiting, and some diarrhea.
- The worker complains of an inflammation of the eyelids and mucous membranes of the nose and respiratory passages. Hoarseness and a cough may also occur. In addition, skin lesions are common.
- The worker complains of pains in the hands and feet. In more severe cases, paralysis may occur.

Arsenic compounds are a skin irritant causing skin rashes or dermatitis, burning, itching, and changes in the color of the skin. The moist mucous membranes of the body are most sensitive to the irritant action. In addition, the skin, eyelids, angles of the ears, nose, mouth, and respiratory membranes are susceptible to the irritant effects of exposure.

Of particular concern, science has proven that arsenic exposure can cause lung and skin cancer.

Health symptoms associated with ingestion of arsenic include weight loss, nausea and diarrhea alternating with constipation, eruption of skin, loss of hair, neuritis, and horizontal white lines on the fingernails and toenails. In addition, arsenic poisoning can cause stomach or gastrointestinal damage.

Medical Treatment

As required by the OSHA Arsenic Standard, 29 CFR 1910.1018, employers must provide medical examinations to workers who are exposed to five (5) micrograms of arsenic per cubic meter of air (5 ug/m³) before first exposure and every six to 12 months thereafter. These exams should include a medical and work history; a chest x-ray; examination of the nose, skin, and finger and toe nails; a urinalysis for arsenic contamination; a sputum cytology exam; and a nervous system examination. In addition, attention must be given to allergic and chronic skin lesions, skin rashes, eye diseases, weight, and baseline blood and red blood cell count tests.

If the employer does not provide for periodic physical examinations, these should be negotiated into the collective bargaining agreement. CWA members should make sure to tell the examining physician of their work with or around arsenic and make sure that the above medical procedures/tests are performed.

Controlling the Hazard

Employers should provide affected CWA members with training on the following issues:

- The toxicity of arsenic (including the early recognition of health symptoms and disorders related to inhalation, skin contact and absorption; and ingestion,
- Available engineering controls and administrative controls,
- The use of personal protective equipment including respirator,
- Medical Surveillance, and
- Personal hygiene, sanitation, and lunchroom facilities.

In addition, employers must develop and provide affected workers with a written compliance program regarding arsenic use and the methods by which workers will be protected from arsenic exposure.

Where called for (based on the degree of exposure, the concentration of arsenic, and the OSHA standard), arsenic exposure should be controlled through the implementation of engineering (e.g., enclosure of work operations and local exhaust ventilation) and administrative controls (e.g., reductions in time spent in arsenic-exposed work areas and alternate work). If necessary, but only after arsenic exposure cannot be adequately reduced to safe levels through the use of engineering and administrative controls, employers must provide CWA members who work with or around arsenic with personal protective equipment. Personal protective equipment would include protective clothing, gloves, gauntlets, goggles, safety hoods to protect the head and neck, shoe covers, as well as respirators.

In cases where respiratory equipment must be used, employers must institute the provisions of the OSHA Respirator Standard, CFR 1910.34, that requires physical examinations and fit testing for affected workers. Also, employers should supply clean work clothes daily and workers should

shower prior to changing into street clothes.

The OSHA Standard

OSHA has established a comprehensive Arsenic Standard, CFR 1910.1018. This standard sets a permissible exposure limit (PEL) for arsenic of 10 micrograms per cubic meter of air, (10 ug/m³) averaged over any eight-hour period (time-weighted average or TWA). In addition, the OSHA standard has established an “Action Level” of five (5) micrograms per cubic meter of air (5 ug/m³) averaged over any eight hour period. Only OSHA-approved testing equipment may be used to determine the exposure of workers. Also, as noted, the employer must institute the necessary engineering and administrative controls as well as provide affected workers with the necessary training, personal protective equipment, the appropriate personal hygiene and lunchroom facilities, as well as medical surveillance examinations.

What Can You Do?

The key to making the workplace safe for all CWA members is strong, active, local safety and health committees. The committee can identify dangerous conditions at the workplace and discuss them with management. If the employer refuses to cooperate, the committee can request an OSHA inspection. The committee should always coordinate its activities through the local officers, the CWA Representatives, and negotiated safety and health committees.

In addition, CWA members may obtain information and assistance by contacting the:

CWA Occupational Safety and Health Department

501 Third Street, N.W.

Washington, D.C. 20001-2797

Webpage: www.cwasafetyandhealth.org

Phone: (202) 434-1160.

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