

# Hazardous Chemicals in Labs



# OSHA FACT Sheet

## What types of hazardous chemicals are present in laboratories?

Hazardous chemicals present physical or health threats to workers in clinical, industrial, and academic laboratories. They include carcinogens, toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins as well as agents that act on the hematopoietic systems or damage the lungs, skin, eyes, or mucous membranes. OSHA currently has rules that limit exposures to approximately 400 substances.

## Are there OSHA standards that cover workers exposed to hazardous chemicals in laboratories?

Yes. *Title 29 of the Code of Federal Regulations (CFR) 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories*, covers all workers using hazardous chemicals in laboratories. “Laboratory use” means performing chemical procedures using small quantities of hazardous chemicals on a laboratory scale and not as part of a production process in an environment where protective laboratory practices and equipment are in common use. This standard requires employers to keep employee exposures at or below the permissible exposure limits (PELS) specified in the standard on air contaminants (see *CFR 1910.1000, Table Z*) and in other substance-specific health standards.

## How must employers monitor employee exposures?

You must periodically measure employee exposures to harmful substances if you suspect that these exposures are routinely above the action level (i.e., the threshold for increased compliance activities such as air monitoring and medical examinations). If the exposures are routinely above the action level, you must conduct periodic monitoring of employees for that substance. Monitoring may be terminated when employee exposures are below the action level.

## Are employers required to have a chemical hygiene plan?

Yes. If your laboratory employees use hazardous chemicals, you must develop and implement a written chemical hygiene plan to protect them. In addition to appropriate safety and health procedures and hygiene practices for hazardous chemicals in laboratories, the plan must include the following:

- Criteria for reducing employee exposure to hazardous chemicals;

- Use of personal protective equipment;
- Requirements that ensure fume hoods and other protective equipment are functioning properly;
- Provisions for employee training;
- Circumstances requiring employer approval of certain laboratory operations, procedures, or activities before implementation;
- Provisions for medical consultation;
- Measures to protect employees from particularly hazardous substances; and
- Assignment of a Chemical Hygiene Officer—a qualified employee who by training or experience can provide technical guidance in developing and implementing the chemical hygiene plan.

## What information and training must employers provide to workers?

You must provide workers with information and training that ensures their awareness of the chemical hazards used in their work area. You also must provide this information when an employee is initially assigned to a work area where hazardous chemicals are present and before assignments involving new exposure situations.

In addition, you must inform your employees of the following:

- Contents of the occupational exposure standard and its appendices;
- Location and availability of the employer’s chemical hygiene plan;
- PELs for the hazardous substances to which employees are exposed;
- Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory; and
- Location and availability of known reference material on the chemical hazards, and their safe handling, storage, and disposal including, but not limited to, Material Safety Data Sheets (MSDSs) received from chemical suppliers.

You must also train your employees concerning the following:

- Methods of detecting the presence or release of a hazardous chemical;
- Hazards (both physical and health) of chemicals in the work area;
- Measures that workers and their employers can take to protect employees from hazards, including specific procedures the employer has implemented

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- to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment; and
- Details of the employer's written chemical hygiene plan.

## When must employers provide medical consultation and examinations for employees?

Employers must give all employees who work with hazardous chemicals the opportunity to receive medical attention, including any follow-up examinations that the examining licensed physician decides are necessary. Employees must receive any medical examinations and consultations without cost or loss of pay and at a reasonable time and place.

The employer must provide certain information to the physician, including the identity of the hazardous chemicals, a description of the conditions under which the exposure occurred, and a description of the signs and symptoms of exposure that the employee is experiencing.

## What means of hazard identification must the employer use?

You must ensure that labels on incoming containers of hazardous chemicals are not removed or defaced. You must also retain MSDSs on incoming hazardous chemicals and make them available to laboratory employees. An MSDS contains precautions for handling and using harmful substances and includes information such as health hazards, fire and explosion hazards, physical characteristics, hazardous ingredients, personal protective equipment, and spill procedures. (See 29 CFR 1910.1450.)

## What are the requirements for respirator use?

If engineering, administrative, and work practice controls fail to maintain exposures below PELs, workers must use respirators to achieve that end. Employers must provide appropriate respiratory protection at no cost to workers, provide appropriate training and education regarding its use, and ensure that workers use it properly. (See 29 CFR 1910.134.)

This is one in a series of informational fact sheets highlighting OSHA programs, policies, or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to *Title 29 of the Code of Federal Regulations*. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999. See also OSHA's website at [www.osha.gov](http://www.osha.gov).

## What records must the employer keep?

You must establish and maintain for each employee an accurate record of any measurements taken to monitor employee exposure and any medical consultation and examination including tests or written opinions.

## How can you get more information on safety and health?

OSHA has various publications, standards, technical assistance, and compliance tools to help you, and offers extensive assistance through workplace consultation, voluntary protection programs, grants, strategic partnerships, state plans, training, and education. OSHA's *Safety and Health Program Management Guidelines* (Federal Register 54:3904-3916, January 26, 1989) detail elements critical to the development of a successful safety and health management system. In addition, *Exposure to Hazardous Chemicals in Laboratories* (OSHA 3119) explains this subject in greater detail. You can order this publication online from OSHA at <http://scripts.osha-slc.gov/PHP/pubrequest/pubrequest.php> or by contacting the OSHA publications office at the address below. This and other information are available on OSHA's website.

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