NATIONAL ACCELERATOR LABORATORY

ENVIRONMENT, SAFETY & HEALTH DIVISION

Chapter 53: Chemical Safety

Accidental Exposure Requirements

Product ID: 639 | Revision ID: 2013 | Date published: 1 June 2021 | Date effective: 1 June 2021
URL: https://www-group.slac.stanford.edu/esh/eshmanual/references/chemsafetyReqExposure.pdf

1 Purpose

The purpose of these requirements is to minimize harm to workers from accidental exposures to *chemicals* and other *hazardous materials* and to ensure such exposures are properly reported. They cover signs of exposure, general response, and reporting for accidental chemical exposures. (For chemical-specific information, see safety data sheets.) They apply to workers (as *chemical workers*), supervisors, area and building managers, and ESH.

1.1 Exposure Assessments

An exposure assessment is strongly recommended when there is potential for exposure exceeding 10 percent of either an *action level* or, if no action level exists, an *occupational exposure limit (OEL)*.

Requests for assessments may be made by the supervisor, area manager, and/or ESH coordinator. An ESH industrial hygienist will conduct a risk-based exposure assessment and recommend controls to prevent or mitigate exposures.

Exposure assessment may also be performed after an exposure event to determine if proper safety controls were in place that could have prevented the exposure, and to recommend any new controls that may be necessary to prevent or mitigate future exposures.

1.1.1 Monitoring

If there is reason to believe that either an *action level* or, if no action level exists, an *OEL* may be exceeded, monitoring is required. ESH will provide monitoring that meets the following conditions:

1. Initial monitoring. ESH will provide an industrial hygienist to monitor worker exposure.
2. Periodic monitoring. If exposure is observed that exceeds either the action level or the exposure limit, the frequency of exposure monitoring provisions will comply with the relevant regulation.
3. Termination of monitoring. Monitoring may be terminated in accordance with the relevant regulation.
4. Employee notification. Monitoring results will be provide to workers within 15 working days after the receipt of any results. Monitoring records are maintained by ESH.

1.2 Signs of Exposure

Potential overexposure to hazardous chemicals or substances may be indicated when one or more of the following occurs:

- A chemical or laboratory worker manifests certain physical symptoms (such as headache, rash, nausea, coughing, tearing, irritation or redness of the eyes, irritation of the nose or throat, dizziness, loss of motor dexterity or judgment), and one of the following also occurs:
  - Some or all of the symptoms disappear when the worker is removed from the exposed area.
  - The symptoms reappear soon after the worker returns to work with the same hazardous chemicals.
- Two or more persons in the same work area have similar physical symptoms as described above.
- A hazardous chemical is leaked, spilled or otherwise rapidly released in an uncontrolled manner.
- A chemical or laboratory worker has direct skin or eye contact with a hazardous chemical.

Warning Odor is not a reliable indicator in determining exposure; if there is any reason to believe a chemical exposure has occurred, notify the area or lab manager, even if a suspicious odor is not detected. Follow the emergency notification and medical examination protocols below.

2 Requirements

2.1 Inhalation

Many chemicals can become airborne as gases, mists, vapors, or dusts. Exposure through the respiratory system can be very dangerous because absorption into the blood stream through the lungs occurs quickly. In addition, many materials can damage the nose, throat, and lungs directly.

Persons over-exposed to chemicals must be relocated immediately to fresh air and provided with medical attention. This may include the administration of oxygen as well as other medical treatment. Notify medical personnel or responders if the chemical is toxic or corrosive. Follow the Emergency Notification and Medical Examination and Treatment protocols below.

2.2 Eye Contact

If a chemical contacts the eyes:

1. Shout for help to allow co-workers to assist and call for medical assistance.
2. Immediately flush the eyes with copious amounts of water, preferably at the nearest eyewash station (see Chemical Safety: Emergency Eyewash/Shower Use Procedure).
3. If possible, move both eyes back-and-forth during washing, to flush the maximum of eye surface.
4. Do not stop flushing the eyes until emergency personnel inform you to stop, or for a minimum of 15 minutes.
5. Seek medical attention immediately. Notify medical personnel or responders if the chemical is toxic or corrosive or could have been absorbed through the eyes. Follow emergency notification and medical examination and treatment protocols below.

2.3 Skin Contact

If a chemical comes into contact with the skin:

1. Shout for help to allow co-workers to assist and call for medical assistance.
2. Immediately rinse the affected area with large amounts of running water. This may be done in a sink if the hands are the only portion of the body contacted or under a safety shower if the exposure area is more extensive (See Chemical Safety: Emergency Eyewash/Shower Use Procedure).
3. Remove contaminated clothing while under the shower.
4. Remain under the shower until emergency personnel inform you to stop, or for a minimum of 15 minutes.
5. Seek medical attention immediately. Notify medical personnel or responders if the chemical is toxic or corrosive or could have been absorbed through the skin. Follow the emergency notification and medical examination and treatment protocols below.

2.4 Emergency Notification

In the event of an accidental chemical exposure, emergency response must be notified as soon as possible:

- If life-threatening, call 911, then SLAC Site Security (ext. 5555 or 650-926-5555 from a cell phone), then supervisor. If evacuation is necessary:
  - Follow evacuation path as demonstrated during evacuation drills and/or as illustrated on a posted building evacuation map. These are located near exits, fire extinguishers, or stairwells.
  - Go directly to the assigned emergency assembly point (EAP).
  - Notify the person in charge of taking roll. (Generally, the building manager is the designated roll taker.)
  - Report any additional information with regard to the safety of co-workers and condition of the area evacuated.
- If non-life-threatening, notify supervisor, then SLAC Site Security (ext. 5555 or 650-926-5555 from a cell phone)

Be prepared to provide information on the location, number of people affected, injury types, if any, and incident description. Also describe the chemicals and quantities involved, and have the safety data sheet (SDS) available. (See Emergency Management: Emergency Notification, Response, and Reporting Procedures and Spills: Response, Cleanup, and Reporting Procedure for details).

2.5 Medical Examination and Treatment

Medical attention must be sought, even if no injury is apparent. Arrange to be examined and treated by a doctor or other trained medical specialist as soon as possible. If you are not transported directly to an emergency room from the scene of the exposure, report immediately to the Occupational Health Center.

3 Forms

The following forms and systems are required by these requirements:

- Chemical Management System. System used for ordering and tracking chemicals and storing safety data sheets

4 Recordkeeping

The following recordkeeping requirements apply for these requirements:

- None

5 References

SLAC Environment, Safety, and Health Manual (SLAC-I-720-0A29Z-001)

- Chapter 53, "Chemical Safety"
  - Chemical Safety: Emergency Eyewash/Shower Use Procedure (SLAC-I-730-0A09C-008)
  - Chemical Safety: Safe Handling Guidelines
  - Chemical Safety Program Site (SharePoint)
- Chapter 16, "Spills"
  - Spills: Response, Cleanup, and Reporting Procedure (SLAC-I-750-0A16C-006)
- Chapter 37, "Emergency Management"
  - Emergency Management: Emergency Notification, Response, and Reporting Procedures (SLAC-I-730-0A14C-002)

Other SLAC Documents

- SLAC Occupational Health Center
- Chemical Management Services (CMS)