

SAFETY AND ENVIRONMENTAL COMPLIANCE MANUAL C-9

Section C: Environment, Health, and Safety Program
Number/Title: C-9/Chemical Exposure Hazard Assessment and Control
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I. Scope

This program applies to all NCI at Frederick employees in all NCI at Frederick facilities who have potential exposure to chemical hazards.

II. Purpose

The goal of this program is to minimize employee exposures to chemical health hazards in the workplace. Workplace monitoring is a method by which these hazards are evaluated. This section outlines the process of collecting and analyzing data through the workplace monitoring process. Collected data are used to assess personnel exposures, verify and document compliance with applicable statutes, evaluate the condition and effectiveness of engineering controls, and determine appropriate personal protective equipment (PPE) that may be necessary. The federal regulations applicable to this program are largely found in Title 29 *Code of Federal Regulations*, Part 1910 (29 C.F.R. 1910), Occupational Safety and Health Standards.

III. Definitions

Occupational Exposure Limit: The time-weighted average (TWA) concentration for a normal 8-hour work day and 40-hour work week, or the short-term exposure limit (STEL), which is the maximum acceptable exposure to which nearly all workers may be repeatedly subjected, averaged over short (usually 15-minute) periods, without adverse effect.

PPE: Personal protective equipment. Includes devices and clothing designed to be worn or used for the protection or safety of an individual while in potentially hazardous areas or performing potentially hazardous operations.

IV. Responsibilities

A. Supervisors

1. Notify the Environment, Health and Safety Program (EHS) of employee concerns regarding chemical exposure
2. Implement EHS recommendations for exposure reduction
3. Keep employees informed of potential chemical hazards in the work area
4. Ensure employees complete the annual medical surveillance enrollment form; sign each employee's annual medical surveillance enrollment form; and ensure employees submit their annual medical surveillance form

B. Employees

1. Inform their supervisor of concerns regarding chemical exposures
2. Cooperate with EHS during an exposure evaluation by wearing monitoring devices

3. Comply with EHS recommendations to reduce exposure potential, including altering work practices, using engineering controls, using PPE, etc.
4. Complete and submit the annual medical surveillance enrollment form

C. EHS

1. Responds to supervisor/employee notification of chemical exposure concerns. An exposure concern is one where there is the potential for employees to be exposed above the most appropriate occupational exposure limit (Occupational Safety & Health Administration [OSHA] permissible exposure limit [PEL]; American Conference of Governmental Industrial Hygienists [ACGIH] threshold limit value [TLV]; National Institute of Occupational Safety and Health [NIOSH] recommended exposure limit [REL], or others, as applicable).
2. Performs exposure monitoring necessary to characterize employee exposure during the performance of tasks identified as having the potential for exceeding the occupational exposure limit
3. Notifies the employee and supervisor of exposure sampling results and maintains these exposure records
4. Evaluates, performs risk assessment, and signs off on the medical surveillance enrollment form

V. Procedures

A. Recognition

The extent of occupational exposure to chemical substances (i.e., TWA concentration, duration, regularity, etc.) must be recognized and evaluated prior to making recommendations for improvement. This evaluation is accomplished through:

1. Surveying and inspecting the processes to be evaluated
2. Reviewing employee complaint records
3. Reviewing accident reports, illnesses, and training records
4. Reviewing processes and equipment
5. Performing a chemical inventory by examining the presence and use of particularly hazardous materials
6. Observing the use of engineering controls, PPE, and administrative controls
7. Evaluating employee and management awareness of hazards
8. Evaluating the annual medical surveillance enrollment forms

B. Evaluation

Once the potential for exposure to a chemical substance has been recognized, the risk associated with that exposure shall be evaluated. The degree of risk depends on the toxicological nature of the hazard, the magnitude of the exposure, the duration of the exposure, and the susceptibility of the individuals exposed. The evaluation of the degree of risk represents a major element of this process. Employee exposure sampling quantitatively evaluates the risk and consists of the following elements:

1. Monitoring of the work environment over an appropriate period of time using personal or area samplers and approved collection methods to obtain a representative measurement of an employee's exposure
2. Analysis of work environment samples by an accredited laboratory
3. Data evaluation and comparison with current occupational exposure limits so that necessary controls may be implemented to reduce exposures
4. Analysis of previously monitored, similarly exposed groups (SEGs)

C. Control

When feasible, one or more methods of controlling employee exposure to chemical substances will be implemented. Methods of controlling exposures include the following:

1. Substitution of a less hazardous material
2. Change or alteration of a process to minimize worker exposure
3. Isolation or enclosure of a process or work operation to reduce the number of employees exposed, and isolation or enclosure of a worker in a control booth or area
4. Use of special control methods for specific hazards, such as shielding or monitoring devices with preset alarms
5. Use of local exhaust ventilation at the point of generation
6. Use of general or dilution ventilation to provide circulation of fresh air or to control temperature, humidity, or heat load
7. Employment of wet methods to reduce generation of dust
8. Implementation of administrative exposure controls, including adjusting work schedules or rotating job assignments
9. Employment of good housekeeping and maintenance practices, including cleanliness of the workplace and proper waste disposal
10. Use of personal protective devices, such as special clothing or eye and respiratory protection (PPE will be relied upon only until a suitable engineering control is established/feasible)
11. Training and education of workers to supplement engineering controls

VI. Recordkeeping

Chemical exposure records are kept in accordance with Title 29 *Code of Federal Regulations*, part 1910.20 (29 C.F.R. 1910.20). Exposure records shall be maintained in the Occupational Health Management (OHM) database by EHS as a part of an employee's medical record for the duration of employment plus 30 years. Records of equipment used, equipment calibration, and sample results are maintained by EHS for at least one year beyond sample collection date.

Documentation of training is also maintained and includes dates, persons trained, and content of training. Establishing intervals for retraining, identifying untrained employees, and proof of training are some of the benefits of maintaining an accurate training record. Documentation will be maintained by the EHS Records Management Office and/or Occupational Health Services, as appropriate.