C-9. Chemical Exposure Hazard Assessment and Control

I. Scope

This program applies to all NCI-Frederick employees in all NCI-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 chapter outlines the process of collecting and analyzing data through the workplace monitoring process. Collected data is 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 which may be necessary. The Federal regulations applicable to this program are largely found in 29 CFR 1910, Occupational Safety and Health Standards.

III. Definitions

Occupational Exposure Limit - The time-weighted average concentration (TWA) for a normal 8-hour workday and a 40-hour workweek, or Short Term Exposure Limit (STEL)(usually over a 15 minute period), to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

IV. Responsibilities

A. Supervisors are responsible for:

1. Notifying the Environment, Health and Safety Program (EHS) of employee concerns regarding chemical exposure.

2. Implementing EHS recommendations for exposure reduction.

3. Keeping employees informed of potential chemical hazards in the work area.

4. Signing and ensuring employees submit the annual medical surveillance enrollment form.

B. Employees are responsible for:

1. Informing their supervisor of concerns regarding chemical exposures.

2. Cooperating with EHS during an exposure evaluation by wearing monitoring devices.

3. Complying with EHS recommendations to reduce exposure potential such as altered work practices, use of engineering controls, use of personal protective equipment (PPE), etc.

4. Completing and submitting the annual medical surveillance enrollment form.

C. EHS is responsible for:

1. Responding 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 Limits (PEL), American Conference of Governmental Industrial Hygienists (ACGIH)-Threshold Limit Values (TLV), National Institute of Occupational Safety & Health (NIOSH)-Recommended Exposure Limit (REL), or others as applicable).

2. Performing exposure monitoring necessary to characterize employee exposure during the performance of tasks identified as having the potential for exceeding the occupational exposure limit.

3. Notifying the employee and supervisor of exposure sampling results and providing for safekeeping of these exposure records.

4. Evaluating, performing risk assessment, and signing 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 is accomplished through:

1. Surveys and inspections of the processes to be evaluated.

2. Review of employee complaint records.

3. Review of accident reports, illnesses, and training records.

4. Review of 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 comprises a major element of this program. 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 for the purpose of implementing controls 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. Special control methods for specific hazards, such as shielding, monitoring devices with preset alarms, etc.

5. Local exhaust ventilation at the point of generation.

6. General or dilution ventilation to provide circulation of fresh air or to control temperature, humidity, or heat load.

7. Wet methods to reduce generation of dust.

8. Administrative exposure controls, including adjusting work schedules or rotating job assignments.

9. Good housekeeping and maintenance, including cleanliness of the workplace, and waste disposal.

10. Personal protective devices, such as special clothing or eye and respiratory protection (PPE will only be relied upon until a suitable engineering control is established / feasible).

11. Training and education to supplement engineering controls.

VI. Recordkeeping

Chemical exposure records are kept in accordance with 29 CFR 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 duration of employment plus 30 years. Records of equipment used, equipment calibration, and sample results are maintained by EHS and maintained 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.