Glenn Research Center, Environmental Programs Manual

Chapter 24 - CHEMICAL HYGIENE POLICY

NOTE: The current version of this Chapter is maintained and approved by the Environmental Management Office (EMO). The last revision date for this chapter is June 2004. If you are referencing paper copies, please verify that it is the most current version before use. The current version is maintained on the Glenn Research Center intranet at http://osat-ext.grc.nasa.gov/emo/pub/epm/epmcontents.pdf. Approved by: EMO Chief, Michael Blotzer {mailto:Michael.J.Blotzer@nasa.gov}.

GENERAL

This chapter establishes Glenn Research Center (GRC) policy and assigns responsibilities for the laboratory scale use and handling of hazardous chemicals. All employees of the NASA GRC at Lewis Field and Plum Brook Station (PBS), tenant employees and resident support services contractor employees involved in the laboratory scale use of hazardous chemicals are to be informed that their lives or health may depend on their knowledge of the chemicals they use or work with, on their following proper handling procedures, use of engineering controls, and on wearing appropriate protective apparel and equipment.

AUTHORITIES

Occupational Safety and Health Administration, 29 Code of Federal Regulations (CFR) 1910.1450, Occupational Exposures to Hazardous Chemicals in Laboratories, as revised

Executive Order 12196, Occupational Safety and Health Provisions for Federal Employees

BACKGROUND

On January 31, 1990, the Occupational Safety and Health Administration (OSHA) issued the final rule 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories. This chapter prescribes the Center's policy with regard to that directive.

SCOPE

This chapter applies to all NASA GRC civil servant, tenant and resident support services contractor personnel engaged in the laboratory use of hazardous chemicals. A Chemical Hygiene Plan has been established as part of this policy to assure Center compliance with the OSHA Regulation 29 CFR 1910.1450, Occupational Exposure to Chemicals in Laboratories. The Environmental Management Office (EMO) administers the Chemical Hygiene Plan. Implementation of the plan is the responsibility of each laboratory line manager/supervisor.

POLICY

It is the policy of the NASA Glenn Research Center to protect the lives and health of employees who work with hazardous chemicals in laboratories by providing adequate laboratory facilities, equipment, training, personal protection, and environmental surveillance of their workplace.

DEFINITIONS

For the purpose of the Chemical Hygiene policy, the following significant terms are defined:

Chemical Hygiene Plan

> A written program developed and implemented by the Chemical Management Team of the GRC EMO which sets forth procedures, equipment, personal protective equipment and work practices that (i) are capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular workplace and (ii) meets the requirements of paragraph (e) of this section. This written program applies to employees of all organizations at GRC involved in the laboratory use of hazardous chemicals.

Employee

Any GRC civil servant, tenant, or resident support services contractor employee who may be exposed to hazardous chemicals in his or her assigned laboratory work area under normal operating conditions or in foreseeable emergencies.

GRC civil servant employee - a federal employee directly employed by NASA.
Tenant employee - an employee of a co-located organization not directly involved in NASA activities. Examples are employees of the United States Army at Lewis Field and employees of the Department of Agriculture and Department of the Interior at PBS.
Resident support services contractor employee - an employee of any organization contracted by NASA to provide service in support of NASA operations. A listing of support service contractors can be located at http://www.grc.nasa.gov/Doc/contract.htm.

Hazardous chemical

A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees.

Health hazard

Includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

Laboratory scale

Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safety manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.

Laboratory-type hood

A device located in a laboratory, enclosed on five sides with a movable sash or fixed partial enclosure on the remaining side; constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory; and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms.

Walk-in hoods with adjustable sashes meet the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants are not compromised and employees do not work inside the enclosure during the release of airborne hazardous chemicals.

Laboratory use of hazardous chemicals

The handling or use of such chemicals in which all of the following conditions are met:

(i) Chemical manipulations are carried out on a "laboratory scale;"
(ii) Multiple chemical procedures or chemicals are used;
(iii) The procedures involved are not part of a production process, nor in any way simulate a production process; and
(iv) "Protective laboratory practices and equipment" are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

Material Safety Data Sheet (MSDS)

A document, provided by the manufacturer or importer of a hazardous chemical or prepared by Glenn researchers, that identifies a hazardous material and provides information about the physical and health hazards associated with it. Although MSDSs vary in both format and content, all must contain the following information: product identification; manufacturer's name and address; hazardous ingredients information; physical and chemical characteristics; fire and explosion hazard data; reactivity data; health hazard data; precautions for safe handling and use; and control measures.

Occupational Safety and Health Administration (OSHA)

A federal agency responsible for establishing and enforcing standards for exposure of workers to harmful materials in workplace atmospheres, and other matters affecting the health and well-being of industrial and laboratory personnel.

Physical hazard

A chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or is water reactive.

Protective laboratory practices and equipment

Those laboratory procedures, practices and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for employee exposure to hazardous chemicals.

Work Area

For the purposes of Chemical Hygiene, this is a laboratory within the Lewis Field Center, the Plum Brook Station, or an associated off-site facility where the "laboratory use of hazardous chemicals" occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis. It is identified on a Standard Operating Procedure by specific Building Number and Room Number. Other locations where hazardous chemicals are used but are outside the scope of "laboratory use of hazardous chemicals" fall under the requirements of the Hazard Communication Policy and Program (Chapter 23 of the Environmental Programs Manual and the HAZCOM Program).

RESPONSIBILITIES

Center Director

Has ultimate responsibility for chemical hygiene within GRC and must, with other administrators, provide continuing support for institutional chemical hygiene.

Chief, Environmental Management Office

- Appoints a technically qualified individual as the Chemical Hygiene Officer to carry out the responsibilities set forth in the Chemical Hygiene Plan.
- Assures the availability of resources and technical support necessary for establishing, executing, reviewing and maintaining the Chemical Hygiene Plan in compliance with OSHA 29 CFR 1910.1450.

Chemical Hygiene Officer

Establishes, administers, and maintains the Chemical Hygiene Plan in coordination with all appropriate GRC personnel (such as Facilities Division, the Glenn Safety Office and the Organization Development and Training Office).

NASA Program Manager

- Responsible for the overall safe operation of chemical laboratories connected with assigned program.
- Determines the types and levels of training requirements for GRC, tenant, and resident support services contractor employees involved in the laboratory use of hazardous chemical as part of the assigned program.
- Responsible for ensuring that all who need to enter chemical laboratories (employees, contractors, visitors, maintenance, janitorial, etc.) have been properly trained prior to being allowed actual entry into those laboratories.
- Coordinates with the Industrial Hygiene Team (IHT) for training in the proper use of Personal Protective Equipment (PPE).
- Responsible for ensuring that Facilities Division be involved in the Risk Assessment process, before any equipment is purchased.

Laboratory Line Managers/Supervisors of Employees Who Work with Laboratory Scale Amounts of Hazardous Chemicals

- In conjunction with the NASA Program Manager, determines the types and levels of training requirements for the GRC, tenant, or resident support services contractor employees involved in the laboratory use of hazardous chemical within the assigned laboratory work area.

- Responsible for ensuring that the chemical hygiene plan is implemented.
- Responsible for developing any standard operating procedure (SOP), under the technical guidance of the Chemical Management Team, for laboratory processes.
- Ensures that workers know and follow the chemical hygiene rules, that protective equipment is available and in working order, and that appropriate training has been provided.
- Provides regular, formal chemical hygiene and housekeeping inspections, including routine inspections of protective and emergency equipment.
- Knows the current legal requirements concerning regulated substances.
- Determines the required protective laboratory practices and equipment.
- Ensures that facilities and training for use of any material being ordered are adequate.

Laboratory Workers (may be civil servant, support service contractor or tenant employees)

- Responsible for following the requirements in the chemical hygiene plan, SOPs and Safety Permit.
- Responsible for identification of chemical hazards, use of engineering controls and personal protective equipment when required, and ensuring proper disposal of chemicals when no longer needed.

Chemical Management Team

- Responsible for providing technical guidance on implementation of the chemical hygiene plan.
- Provides for chemical specific training to laboratory workers, when requested by the line supervisor.
- Provides technical guidance to laboratory line managers/supervisors on developing SOPs and on proper storage and handling of hazardous chemicals.

Glenn Safety Office, in Conjunction with the Chemical Hygiene Officer

Ensures that appropriate warning placards and signs are provided or arranged for and in place at designated laboratory areas as necessary.

Organization Development and Training Office

- Establishes and maintains the official training records for GRC civil servants.

Occupational Medicine Services, in conjunction with the Industrial Hygiene Team

- Provides information on medical testing available to the laboratory worker.
- Performs selected employee testing and monitoring as required.
- Maintains records as required.

Plum Brook Management Office, in conjunction with the Chemical Hygiene Officer

Ensures compliance with the OSHA Laboratory Standard in the laboratories located at Plum Brook Station.

REQUIREMENTS

All aspects of the GRC Chemical Hygiene Plan assure compliance with OSHA 29 CFR 1910.1450. Its scope, as it applies to laboratory use, includes but is not limited to:

- Basic rules and procedures;
- Chemical procurement, distribution and storage;
- Environmental monitoring;
- Housekeeping, maintenance, and inspections;
- Medical programs;
- Personal protective apparel and equipment;
- Records;
- Signs and labels;
- Spills and accidents;
- Information and training;
- Waste disposal;
- Laboratory design; and
- Standard laboratory operating procedures.

RELATED CHAPTERS

Chapter 3, Water Pollution Control
Chapter 4, Air Pollution Control
Chapter 5, Management of Excess Materials and Waste for Potential Reuse, Recycling or Disposal
Chapter 11, Hearing Conservation Program
Chapter 12, Respiratory Protection Program
Chapter 16, Local Exhaust Ventilation
Chapter 35, Occupational Safety and Health Administration Regulated Materials Program
Chapter 37, Indoor Air Quality

RECORDS

Maintained by the Chemical Management Team

- NASA GRC Chemical Hygiene Plan

Maintained by each Chemical Laboratory Line Manager/Supervisor

- Copies of SOPs

Maintained by the Organization Development and Training Office

- Training records for civil servants

Maintained by Support Service Contractors

- Training Records for affected employees

Maintained by Tenant Organizations

- Training Records for affected employees

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