

NIH Policy Manual

3034 - Working with Hazardous Chemicals

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Approving Official(s): DDM

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Transmittal Notice

1. **Explanation of Material Transmitted:** This release reformats the policy to meet Manual Chapter format requirements. It clarifies responsibilities and the applicability of the [NIH Hazard Communication Program](#) and the [NIH Chemical Hygiene Plan](#) and U.S. Department of Labor, Occupational Safety and Health Administration regulations that require such programs, (29 CFR 1910.1200, 29 CFR 1910.1450).
2. **Filing Instructions:**

Remove: Manual Chapter 3034, dated 12/16/2013

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PLEASE NOTE: For information on:

- Content of this chapter, contact the issuing office listed above.
- NIH Policy Manual, contact the Division of Compliance Management, OMA on 301-496- 4606, policymanual@nih.gov, or:
<https://oma.od.nih.gov/DMS/Pages/Manual-Chapters.aspx>.

A. Purpose

This chapter establishes processes and requirements for identifying and working with hazardous chemicals at the NIH. Hazardous chemicals can have one or more of these properties: injurious corrosiveness, flammability, instability, or toxicity. Additional information on the hazardous chemical properties is described in the NIH Hazard Communication Program (HCP) and the NIH Chemical Hygiene Plan (CHP) available at <https://ors.od.nih.gov/sr/dohs/Documents/chemical-hygiene-plan.pdf>.

B. Scope

This Manual Chapter applies to all NIH personnel working with hazardous chemicals including federal employees, trainees, and contractors whose daily activities are directed by a federal supervisor working in any NIH owned or leased facility. The policy also applies to NIH personnel performing work with hazardous materials at remote locations (e.g., field

work, mobile field medical support, emergency response services, etc.).

Waste minimization and disposal is covered in [NIH Manual Chapter 3032, Waste Minimization and Management at the NIH](#).

C. Background

In 1983, the U.S. Occupational Safety and Health Administration (OSHA) published the Hazard Communication Standard to ensure that employees are aware of the risks and precautions they must take to safely handle chemicals. To address the unique setting of a research or diagnostic laboratory where a myriad of chemicals may be used in small quantities, (i.e., a non-production basis), U.S. OSHA published the final rule for Occupational Exposures to Hazardous Chemicals in Laboratories in 1990.

To meet these regulations and promote worker safety, the NIH establishes programs to ensure risks associated with hazardous chemicals are communicated proactively to personnel in a systematic manner.

D. Policy

All personnel who handle hazardous chemicals at NIH will be informed of and will acknowledge the risks and measures freely available to reduce the risk of adverse exposure or harm. Based on their job function, personnel must comply with either the NIH Hazard Communication Program or the NIH Chemical Hygiene Plan. The programs apply as follows:

The NIH Hazard Communication Program applies to non-laboratory workspaces. It consists of three major components:

1. Identification and accurate inventory of hazardous chemicals,
2. Maintenance of current hazard information at the worksite, including warning labels, signs, safety data sheets (SDS), and
3. Personnel information and training.

The NIH Hazard Communication Program does not apply to the following:

Consumer products, e.g., toners, premoistened household wipes, window cleaner, etc. that employees use as intended by the manufacturer, and when the duration and frequency of exposure is comparable to typical consumer use, e.g., a home or office, the product is exempt from provisions in the OSHA Hazard Communication Act. Prescribed medications, food additives, color additives, cosmetics, are also exempt. For questions regarding other consumer products used in the workplace that may be exempt contact your [safety specialist](#).

The NIH Chemical Hygiene Plan applies to personnel working in all NIH laboratory environments. The Chemical Hygiene Plan contains the regulatory components outlined in the NIH Hazard Communication Program as well as worker safety topics applicable to the laboratory environment, such as:

1. Standard operating procedures (SOP)
2. Criteria for exposure control measures
3. Personnel information and training
4. Circumstances under which a laboratory operation requires prior approval, e.g., working with particularly hazardous substances
5. Medical consultation and assessments for underlying health risks and in response to occupational exposures, injuries, or illnesses

Note: The Chemical Hygiene Plan and Hazard Communication Program documents are reviewed annually and updated as necessary to reflect changes in regulations, industry best practices, and NIH-specific challenges.

E. Responsibilities

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1. **Personnel:** All personnel at the NIH are responsible for strict adherence to prudent and safe practices and procedures. Personnel will review and familiarize themselves with the NIH Hazard Communication Program and NIH Chemical Hygiene Plan. Personnel will adhere to operating procedures for their worksite, and precautions outlined on manufacturers' labels, SOPs and SDSs. Personnel must request safety training from their supervisor when preparing to work with unfamiliar hazardous chemicals. Personal Protective Equipment (PPE) must be used in accordance with NIH policies, laboratory, or facility operating procedures, and SDSs.
2. **Scientific Directors:** NIH Institute, Center and Office (ICO) Scientific Directors are responsible for ensuring that ICO supervisors have the required resources to effectively implement the NIH Chemical Hygiene Plan and NIH Hazard Communication Program.
3. **Supervisors:** Supervisors of personnel who use hazardous chemicals must provide the necessary direction and oversight to ensure the effective implementation of the NIH Hazard Communication Program for their work locations. They must ensure all workers are trained on the applicable requirements of the NIH Chemical Hygiene Plan and NIH Hazard Communication Program. Training requirements for personnel working with hazardous chemicals in a laboratory setting are outlined in *Section 4. Training* in the Chemical Hygiene Plan. General information on working with hazardous chemicals is included in the *Introduction to Laboratory Safety* training that all laboratory staff are required to take. However, specific training on chemical hazards specific to each laboratory is the responsibility of the supervisor. Training requirements for other personnel can be found in *Section III E. Informing and Training Employees* in the Hazard Communications Program. Supervisors are also responsible for ensuring that all identified chemical hazards are properly remediated and that proper PPE is available at no cost to the worker. Supervisors are encouraged to consult with their safety specialist for assistance meeting these requirements.
4. **Division of Occupational Health and Safety/Technical Assistance Branch (DOHS/TAB):** The DOHS is responsible for maintaining and updating the NIH

Chemical Hygiene Plan and the NIH Hazard Communication Program. DOHS provides technical support for conducting risk assessments and guidance for complying with the requirements of the NIH Chemical Hygiene Plan and NIH Hazard Communication Program. Safety offices at the National Institute for Environmental Health Sciences (NIEHS), Research Triangle Park, NC, and National Cancer Institute (NCI), Frederick, MD maintain programs which are consistent with the NIH Chemical Hygiene Plan and the NIH Hazard Communication Program are responsible for providing safety services at their respective locations.

5. **NIH Chemical Hygiene Officer (CHO):** The NIH CHO is part of the DOHS/TAB and is the technical point of contact for the DOHS/TAB responsibilities listed above.
6. **The NIH Occupational Safety and Health Committee (OSHC):** The OSHC is responsible for reviewing the updated NIH Chemical Hygiene Plan and NIH Hazard Communication Program. The committee must provide feedback on the programs to ensure they are effectively implemented. The committee accepts or rejects program changes proposed by the DOHS.

F. Procedures

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1. Reporting hazardous conditions: Personnel may report chemical hazards at the NIH in writing or orally. Reports can be made through the [IC Safety and Health Committees](#); by calling DOHS personnel at 301-496-2960; emailing the Institute's assigned [safety and health specialist](#); or online through [Reporting of Unsafe or Unhealthful Workplace Conditions or Hazards](#). Hazards may be reported anonymously through any of these resources.
2. Conducting a risk assessment: Qualified personnel conducting a proactive risk assessment should identify the frequency of potential exposure and the consequence of exposure to the chemical agent. Based on the occupational exposure risk, supervisors determine what controls must be implemented to effectively reduce the risk to personnel. [DOHS personnel](#) are available to provide technical assistance in performing a risk assessment.
3. Conducting a hazard analysis: Personnel performing a hazard analysis of a procedure where potentially hazardous materials are used, should identify the steps of the procedure, the specific hazards associated with each procedure step, and the control strategies that should be used to reduce or eliminate the potential exposure to those hazards. [DOHS personnel](#) are available to provide technical support in performing a hazard analysis.
4. Training: All laboratory personnel are required to take the Introduction to Laboratory Safety (or an equivalent based on the location specific requirements) prior to working in a laboratory and annual refreshers thereafter. Links for safety training are listed [here](#). These training cover compliance with elements of the Chemical Hygiene Plan and only provide generic information on working with hazardous chemicals in a laboratory. They do not provide comprehensive training on working with specific hazardous chemicals or procedures that laboratory personnel may work with. Training on specific laboratory hazards should be developed and delivered by the supervisor. Supervisors should

consult DOHS for assistance on meeting the training requirements of the NIH Hazard Communication Program.

G. References

1. [29 CFR 1910.1200-"Hazard Communication"](#)
2. [29 CFR 1910.1450-"Occupational Exposure to Hazardous Chemicals in Laboratories"](#)
3. [NIH Policy Manual Chapter 1743 - Managing Federal Records](#)

Appendix 1: Definitions

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1. Select definitions from 29 CFR 1910.1200:

- a. **Exempt personnel:** Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances.
- b. **Hazardous chemical:** [Per the National Institute for Occupational Safety and Health (NIOSH)] Chemical substances that can create a physical or health hazard. Due to their properties, chemical hazardous substances may be, but not limited to, toxic, explosive, flammable, self-reactive, oxidizing, or corrosive. Exposure to these substances by different routes such as inhalation, dermal absorption, or ingestion can lead to adverse health effects, thereby stressing the need to know about the hazards associated with these substances before contact.
- c. **Health hazard:** A chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in [Appendix A to §1910.1200 -- Health Hazard Criteria](#).
- d. **Personnel:** A worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. It includes federal employees, trainees, and contractors whose daily activities are directed by a federal employee.
- e. **Physical hazard:** A chemical that is classified as posing one of the following hazardous effects: explosive, flammable (gases, aerosols, liquids, or solids), oxidizer (liquid, solid or gas), self-reactive, pyrophoric (liquid or solid), self-heating, organic peroxide, corrosive to metal, gas under pressure, or in contact with water emits flammable gas. See [Appendix B to §1910.1200 -- Physical Hazard Criteria](#).
- f. **Pyrophoric gas:** A chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.
- g. **Safety data sheet (SDS):** Written or printed material concerning a hazardous chemical that is prepared in accordance with [paragraph \(g\) of §1910.1200](#).
- h. **Simple asphyxiant:** A substance or mixture that displaces oxygen in the ambient atmosphere and can thus cause oxygen deprivation in those who are exposed,

leading to unconsciousness and death.

2. Select definitions from 29 CFR 1910.1450:

- a. **Chemical Hygiene Plan:** A written program developed and implemented by the employer setting forth procedures, equipment, personal protective equipment, and work practices that (i) are capable of protecting workers from the health hazards presented by hazardous chemicals used in that particular workplace and (ii) meets the requirements of paragraph (e) of §1910.1450.
- b. **Employee:** An individual employed in an NIH workplace who may be exposed to hazardous chemicals in the course of their assignments.
- c. **Hazardous chemical:** Any chemical which is classified as a health hazard or simple asphyxiant in accordance with the [Hazard Communication Standard \(§1910.1200\)](#).
- d. **Health hazard:** A chemical that is classified as posing one of the following hazardous effects: Acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard is detailed in [appendix A of the Hazard Communication Standard \(§1910.1200\)](#) and [§1910.1200\(c\) \(definition of "simple asphyxiant"\)](#).
- e. **Laboratory:** A 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.
- f. **Laboratory scale:** Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. "Laboratory scale" excludes those workplaces whose function is to produce commercial quantities of materials.
- g. **Laboratory use of hazardous chemicals:** The handling or use of such chemicals in which all 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 personnel exposure to hazardous chemicals.