

Chemicals and Our Environment

There are more than a half million different chemicals currently used in the U.S. every day. Many more are introduced each year. They enhance our lives and have become an integral part of our lifestyles. Chemicals are found in nearly every work environment. Some are as commonplace as printer toner, but at VCU and VCUHS, many complex and highly toxic chemicals are used as well. It is necessary to become familiar with all of the chemical substances in your work environment, the appropriate precautions required to handle them safely, and the first aid/emergency procedures unique to those substances should an accident occur.

Routes of Entry into the Body

The basic ways chemicals enter the body are:

1. **Inhalation.** The most common way for a chemical substance to enter the body is by breathing a chemical that is mixed in the surrounding air. The lungs readily absorb particles and gases. Hazardous chemicals that can become airborne should only be used in well-ventilated areas or while using proper respiratory protection.
2. **Ingestion.** The second way chemicals enter the body is through the mouth. Chemical ingestion usually occurs unknowingly and unintentionally. Occasionally, a person ingests a chemical they mistake for a food or beverage. More likely, however, chemical ingestion occurs when one eats, drinks, or smokes contaminated food, beverages, or cigarettes. To prevent ingestion, wash your hands thoroughly before breaks.
3. **Absorption.** The third way chemicals enter the body is through the skin. Chemicals such as organic solvents can be absorbed directly through the skin barrier. Other chemicals cause damage to the protective skin layers and can then be readily absorbed. To protect yourself from accidental absorption, wear appropriate protective clothing such as gloves, impervious apron, face shield, etc.

The Hazard Communication Standard

The Hazard Communication Standard (HCS) is not only a federal law, but is also incorporated into the compliance criteria for nearly every accrediting agency; e.g., TJC, CAP, AAALAC and others. The following outlines the various steps required to comply with the HCS.

- Develop and maintain an accurate inventory of hazardous materials present in the work environment.
- Provide a source or maintain Safety Data Sheets for each item on the inventory.
- Assure hazardous chemicals are properly labeled. Under the law, the manufacturer has the responsibility to properly label their products.
- Train employees to safely handle hazardous materials. This includes, selection, use, and maintenance of appropriate personal protective equipment.
- Develop written standard operating procedures for safely managing chemical spills and non-routine tasks.
- Inform employees about the availability of the chemical inventory, SDSs, and standard operating procedures for safely managing hazardous chemicals.

Chemical Inventory

Units/departments at VCU and VCUHS must compile a list of hazardous chemical substances. The list must be maintained in an area which is readily available to all unit/department employees. As new substances are purchased or old ones are discontinued, the inventory must to updated to reflect these changes.

Safety Data Sheets

The HCS requires chemical manufacturers to provide consumers with Safety Data Sheets (SDSs). Every SDS contains these sections.

Product Identification	Hazard (s) Identification
Composition/information on ingredients	First-aid measures
Fire-fighting measures	Accidental release measures
Handling and storage	Exposure controls/ personal protection
Physical and chemical properties	Stability and reactivity
Toxicological information	Ecological information
Disposal considerations	Transport information
Regulatory information	Other information (date of preparation or last revision)

University. Units/departments must maintain an accurate collection of SDSs or provide a SDS source for each substance listed on the unit/department chemical inventory. SDSs are resources which help one better understand how to safely handle a chemical substance. SDSs must be reviewed by all employees so they can fully understand associate health hazards. SDSs are not a tool to be used to manage an emergency. Emergency procedures must be anticipated, planned for, and reviewed before an incident occurs.

Health System. SDSs for products used in any VCUHS facility may be obtained by:

Primary Source. Use the searchable electronic index icon on either the VCUHS intranet homepage or Environment of Care page.



CAUTION: Make sure your product search is for the exact product you use. Be sure to type in the correct name brand of the product and/or the chemical concentration as applicable.