

Hazard Communication Program

The Scripps Research Institute

July 2009 Revision

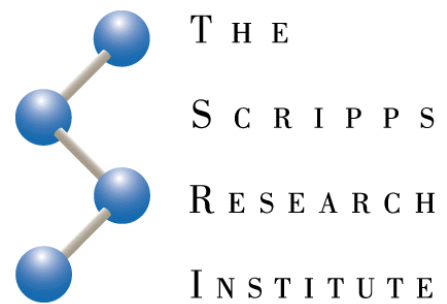


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1.0 INTRODUCTION

To enhance our employees' health and safety, The Scripps Research Institute (TSRI) has developed, implemented, and maintained a Hazard Communication Program (HazComm Program) as required by Title 8, California Code of Regulations, §5194, the Hazard Communication Standard. According to the provisions of this section all employees at TSRI have the right to personally receive information regarding hazardous substances to which TSRI employees may be exposed. In addition, employees have the right against discharge or other discrimination due to the employee's exercise of the afforded rights pursuant to the provisions of the Hazardous Substances Information and Training Act.

The TSRI chemical hygiene officer is the designated HazComm Program manager and has full authority and responsibility for developing and maintaining the program. TSRI provides information about the hazardous substances in the workplace, the associated hazards, and the control of these hazards through a comprehensive HazComm Program that includes the elements listed below.

2.0 EXEMPTIONS AND ECLUSIONS

The following circumstances and/or materials are exempted from the HazComm Program:

- 1. Chemicals in closed containers:** Although operations in which employees handle hazardous substances only in sealed containers (e.g., warehouse, transportation, or retail sales) are exempt from the full standard, employers are still required to
 - Ensure that labels on incoming containers are not removed or defaced.
 - Obtain and maintain material safety data sheets (MSDSs) and make them readily accessible to employees in their work area(s) during each work shift.
 - Train employees so they know how to handle and protect themselves in the event of a chemical spill or a leak from a sealed container.

- 2. Laboratories:** Employees who engage in the laboratory use of hazardous chemicals are exempt from the hazard communication regulation if they meet all of the following conditions:
 - Chemical manipulations are carried out on a "laboratory scale" — a single person using small quantities of hazardous chemicals in procedures that are not part of a production process, nor in any way simulate a production process; and
 - Multiple chemicals or chemical procedures are used; and
 - Protective laboratory practices and equipment are available and in common use industry-wide to minimize the potential for employee exposure to hazardous chemicals.These employees are, however, subject to Title 8 CCR, Section 5191, "Occupational Exposure to Hazardous Chemicals in Laboratories."

- 3. Excluded chemicals:** The following types of chemicals are excluded from the hazard communication regulation:
 - Hazardous wastes regulated by the EPA
 - Tobacco products
 - Natural wood or chemically untreated wood products for retail sale
 - Manufactured items—articles that are handled/processed in a way that does not result in employee exposure via inhalation, ingestion, or skin absorption, such as items for immediate use or retail sale
 - Food, drugs, and cosmetics consumed or used by the employees on the job site
 - Retail trade establishments, except for processing and repair work areas
 - Pesticide use regulated by the California Department of Food and Agriculture
 - Consumer products, unless quantities used or exposures are greater than ordinary home consumer quantities or exposures

3.0 ROLES AND RESPONSIBILITIES

3.1 Principal Investigators, Directors, Managers, and Supervisors

Principal investigators, department heads, managers, and supervisors shall have the authority and responsibility to assure that employees in their respective areas are aware of the hazardous substances that are in the work area and may be used routinely or infrequently. Additional responsibilities include

- updating the inventory list provided annually by Environmental Health & Safety (EH&S) and informing EH&S if new hazardous substances are added to the chemical list during the year;
- ensuring that employees know the location of and/or how to access material safety data sheets (MSDSs);
- ensuring that hazardous substances are labeled in accordance with Section 7; and
- ensuring that employees are trained regarding the HazComm Program as outlined in Section 8, including specific chemical hazards or processes.

3.2 Safety Officers

The management of each laboratory, department, or unit chooses an existing employee to serve as safety officer. He or she is responsible for the general safety of the group. The safety officer works with EH&S, but reports to his or her PI, manager, or supervisor. Some of the responsibilities include

- orienting new employees, visitors, and volunteers to EH&S policies and lab procedures;
- issuing personal protective equipment (PPE) or informing employees about how engineering controls protect them from exposure;
- receiving and maintaining the list of hazardous substances from EH&S;
- showing employees how to properly label hazardous materials and where the labeling materials are located;
- showing employees where MSDSs are located or how to access MSDSs through electronic sources TSRI offers; and
- assisting with arrangements for the annual lab/department EH&S training.

3.3 Employees

Employees are responsible for following the requirements of the HazComm Program. This involves

- keeping themselves informed regarding the hazards of the chemicals and products that they work with;
- reviewing labels and MSDSs for hazard information;
- requesting instruction, as needed, from their supervisor when undertaking use of a new chemical or process;
- utilizing control measures (e.g., ventilation and personal protective equipment) to reduce or eliminate exposure to hazardous substances; and
- participating in training programs, as required.

3.4 Volunteers and Visitors

Volunteers and visitors are expected to be hosted by a TSRI employee during their stay at TSRI. If the visitor or volunteer enters areas where there are known hazards, the host shall identify the hazards and arrange for or provide personal protective equipment (PPE) which shall be worn.

3.5 Environmental Health and Safety

EH&S is responsible for the development and administration of the HazComm Program. This involves

- providing or assisting with guidance to aid in implementation of the program;
- providing training and technical assistance to managers and supervisors on implementation;
- reviewing, updating, and evaluating the overall effectiveness of the program;
- developing and providing training on the content of the program; and
- maintaining documentation of HazComm Program training.

3.6 Industrial Hygiene Manager/Chemical Hygiene Officer

The EH&S industrial hygiene manager is responsible for maintenance of the HazComm Program and documentation. This consists of

- writing the HazComm Program and reviewing the content periodically for applicability and accuracy;
- supervising the maintenance and updating of the list of hazardous substances for each laboratory, department, or unit;
- ensuring that hazardous substance audits are performed annually for each laboratory, department, or unit;
- ensuring the operation of TSRI's electronic chemical inventory system;
- supervising the maintenance of MSDSs in hardcopy and/or electronic form;
- developing or approving HazComm training materials; and
- ensuring control measures are available and utilized to minimize exposure to hazardous substances.

3.7 Safety Coordinators

The safety coordinators are responsible for

- providing PIs, directors/managers, and supervisors with assistance with the HazComm Program;
- assisting safety officers and department or lab personnel with proper labeling requirements of hazardous substances;
- providing New Hire Orientation training and annual safety training for each department or laboratory which addresses applicable aspects of the Hazard Communication Standard; and
- serving as a source of information regarding workplace hazards and means to eliminate, control, or reduce the hazards.

3.8 Chemical Inventory Safety Technicians

The chemical inventory safety technicians are responsible for

- performing annual chemical audits in each department and laboratory to develop the list of hazardous substances;
- producing and sending the list of hazardous substances to the safety officer; and
- maintaining the hardcopy versions of all the MSDSs received in EH&S.

3.9 Procurement, Planning & Construction, and Facilities Engineering

Procurement ensures that MSDSs are requested with all orders for hazardous substances. Those MSDSs are directed to EH&S and/or the order originator.

Planning & Construction, Facilities Engineering, and Procurement arrange for contractors to perform various construction or maintenance tasks that may involve the use of hazardous substances. If the contractor intends to use hazardous substances on-site, then TSRI must be informed. If TSRI is asking a contractor to work in an area where exposure to a hazardous substance is likely, then TSRI must provide MSDSs or a safety orientation for the contractors.

3.10 Contractors

TSRI provides a safety orientation to contractors either one-on-one or in a group/classroom session. The orientation includes hazard communication, hazard recognition, material safety data sheets (MSDSs), site safety rules, and emergency reporting. See Section 11 for additional responsibilities.

4.0 LIST OF HAZARDOUS SUBSTANCES

The TSRI industrial hygiene manager in the Environmental Health and Safety Department (EH&S) supervises the chemical inventory safety technicians who prepare and maintain current inventory lists of all known hazardous substances present on campus. The list is based upon a physical audit or list verification of the hazardous substances in departments and laboratories. A current annual list is available for each department and laboratory and is sent to the safety officer or department supervisor or management. Contact EH&S at 858.784.8240 to obtain a current copy if one is not available in your work area.

TSRI is currently shifting inventory to a web-based system known as the ChemTracker Consortium, a higher education collaborative for chemical inventory management hosted by Stanford University. Each lab shall be able to access their inventory in real time. Access to ChemTracker is granted by EH&S through the issuance of a user name and password for each user or a generic department or lab account. The ChemTracker log-in site is: <https://chemtracker.stanford.edu/members/>

A detailed explanation of health hazard definitions and assessment can be found in Appendix A.

5.0 PROPOSITION 65 CHEMICALS

An updated list of chemicals known to the state of California to cause cancer or reproductive toxicity is available on the web at: http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html.

6.0 MATERIAL SAFETY DATA SHEET (MSDS)

An MSDS is a written or printed data sheet concerning a chemical which is prepared and distributed by chemical manufacturers and/or distributors.

MSDSs are received from chemical manufacturers and/or distributors by the department or lab ordering the hazardous substance. EH&S also receives MSDSs electronically or via mail as hardcopies from the major chemical manufacturers and distributors. Hardcopies of MSDSs for hazardous substances to which employees at TSRI may be exposed are kept in the EH&S office. The chemical inventory safety technicians open, verify, and file the hardcopy MSDSs. If an employee encounters difficulties locating or obtaining an MSDS, he or she shall call EH&S at 858.784.8240 for assistance.

TSRI also provides electronic access to MSDSs through three sources:

1. **Chemwatch:** Chemwatch is a web-based subscription MSDS service that maintains a library of thousands of consistently and independently prepared MSDSs. Access to ChemWatch is available to all TSRI employees at <http://scripps.chemwatchna.com/>. The user ID and password are available through EH&S. MSDSs can be searched for by chemical name and Chemical Abstract Service (CAS) number.
2. **ChemTracker:** There is an internal connection between ChemTracker and Chemwatch. When a chemical is located in the ChemTracker database, the Chemwatch MSDS for that hazardous substance can be accessed by clicking on the MSDS button.
3. **Chemical Manufacturers' Websites:** A majority of TSRI laboratory chemicals are purchased through several of the large chemical suppliers. Below are some of the manufacturer websites where MSDSs can be obtained

Sigma Aldrich: www.sigmaaldrich.com

VWR: www.vwrsp.com

Acros Organics: www.acros.com

Fisher Scientific or ThermoFisher: www.fishersci.com

Alfa Aesar: www.alfa.com

If an employee is potentially exposed to a chemical whose identity is a trade secret AND a medical professional (nurse or doctor) determines there is a medical emergency, then a manufacturer's representative must provide that information to the medical professional for treatment purposes.

7.0 LABELS AND OTHER FORMS OF WARNING

TSRI policy prohibits the defacing or removal of labels on materials obtained from manufacturers. TSRI policy is that **all** containers of hazard materials are labeled with the identity of the hazardous substance(s).

Labels must be legible, in English, and prominently displayed on the container. If applicable, the department or laboratory supervisor shall arrange for labels, signs, and other warnings to be printed in

other languages as needed. EH&S also provides labels for the use of the laboratories or departments and for hazard signage for all areas on campus where hazardous materials are used. If EH&S does not provide specific labels, then laboratory personnel shall be referred to procurement resources.

In addition, all containers of hazardous substances which leave the workplace must be labeled with the name and address of the responsible party. In the case of laboratories at TSRI, the required information includes the name of the principal investigator, campus location, building and room number. Prior to shipment of hazardous materials, EH&S and Shipping/Receiving must be contacted regarding safe shipping requirements.

8.0 EMPLOYEE INFORMATION AND TRAINING

Prior to beginning work in a department or laboratory, TSRI employees, volunteers, students, or visitors who work in laboratories are required to complete a health and safety training orientation. Depending upon the individual's job description one or more of the following training courses shall be required

- New Hire Orientation
- Annual Safety Training
- Hazardous Waste Management
- Right to Know- Hazard Communication

These training modules shall provide information on the following:

- The requirements of the hazard communication regulation, including the employees' rights under the regulation
- The location and availability of the written HazComm Program
- Methods and observation techniques used to determine the presence or release of hazardous substances in the work area
- Protective practices to minimize or prevent exposure to these substances
- How to read labels and review MSDSs to obtain hazard information
- Physical and health effects of hazardous substances
- Symptoms of overexposure
- Measures employees need to put into practice to reduce or prevent exposure to these hazardous substances by engineering controls, work practices, and use of personal protective equipment
- Emergency and first-aid procedures to follow if employees are exposed to hazardous substances
- The location and interpretation, if needed, of warning signs or placards to communicate that a chemical known to cause cancer or reproductive toxicity is used in the workplace
- Where applicable, training is conducted in languages other than English

Supervisors are required to provide additional training on specific hazards which their employees may encounter in the workplace. In addition, supervisors are required to provide employees with additional training when a new hazard is introduced into the workplace or whenever employees might be exposed to hazards at another employer's work site.

9.0 HAZARDOUS NON-ROUTINE TASKS

Periodically, TSRI employees are required to perform hazardous non-routine tasks. Prior to beginning work on a project, the employee shall be given information by his or her supervisor regarding hazards to which they may be exposed. EH&S professionals are available to assist supervisors to provide the appropriate training to their employees.

This information shall cover

- specific hazards

- measures TSRI and the supervisor have taken to reduce the risk of these hazards, such as providing ventilation, ensuring the presence of another employee, providing a respiratory protection program, and establishing emergency procedures
- required protective/safety measures

10.0 LABELED/UNLABELED PIPES

Aboveground pipes transporting hazardous substances (e.g., gases, vapors, liquids, semi-liquids, or plastics) shall be identified in accordance with Title 8 CCR, Section 3321, "Identification of Piping." Other aboveground pipes that do not contain hazardous substances but may have associated hazards if disturbed or cut (e.g., steam lines, oxygen lines) shall be addressed as follows:

Before employees enter the area and initiate work, EH&S or Facilities Engineering shall inform them of the following:

- Location of the pipe or piping system or other known safety hazard
- Substance in the pipe
- Potential hazards
- Safety precautions

11.0 INFORMING CONTRACTORS

To ensure that outside contractors work safely at TSRI and to protect members of the TSRI community from chemicals used by outside contractors, the Facilities Engineering Department managers are responsible for giving and receiving the following information to and from contractors:

- Hazardous substances to which contractors may be exposed while on the job site
- Precautions and protective measures the contractors may take to minimize the possibility of exposure
- This information is provided verbally and/or through a written handout

Contractors who come on to TSRI property to perform work are required to provide Facilities Engineering with MSDSs for the hazardous materials they shall be using and measures they shall employ to minimize exposure of TSRI employees to those materials. Facilities Engineering is responsible for communicating this information to affected TSRI employees with assistance of the chemical hygiene officer when needed.

APPENDIX A
Health Hazard Definitions and Assessment

Appendix A: Health Hazard Definitions and Assessment

Although safety hazards related to the physical characteristics of a substance can be objectively defined in terms of testing requirements (e.g., flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body--such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees--such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in populations; the effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most substances have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects. There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1988)--irritation, corrosivity, sensitization, and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the workplace; but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis, and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of substance exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them.

For purposes of this program, any substances which meet any of the following definitions, as determined by the criteria set forth here are health hazards. However, this is not intended to be an exclusive categorization scheme. If there are available scientific data that involve other animal species or test methods, they must also be evaluated to determine the applicability of the HCS (Hazard Communications Standard, section 5194).

1. **Carcinogen:**

A substance is considered to be a carcinogen if

- a. It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or
- b. It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or
- c. It is regulated by OSHA as a carcinogen.

2. **Corrosive:**

A substance that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a substance is considered to be corrosive if, when tested

on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

3. **Highly Toxic:**

A substance falling within any of the following categories:

- a. A substance that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- b. A substance that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
- c. A substance that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. **Irritant:**

A substance, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A substance is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for 24 hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A substance is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

5. **Sensitizer:**

A substance that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the substance.

6. **Toxic:**

A substance falling within any of the following categories:

- a. A substance that has a median lethal dose (LD50) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- b. A substance that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
- c. A substance that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. **Target Organ Effects:**

The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and substances which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

- a. *Hepatotoxins*: Substances which produce liver damage. Signs and Symptoms: Jaundice; liver enlargement. Example substances: Carbon tetrachloride; nitrosamines.
- b. *Nephrotoxins*: Substances which produce kidney damage. Signs and Symptoms: Edema; proteinuria. Example substances: Halogenated hydrocarbons; uranium.
- c. *Neurotoxins*: Substances which produce their primary toxic effects on the nervous system. Signs and Symptoms: Narcosis; behavioral changes; decrease in motor functions. Example substances: Mercury; carbon disulfide.

- d. *Agents which act on the blood or hematopoietic system:* Decrease hemoglobin function; deprive the body tissues of oxygen. Signs and Symptoms: Cyanosis; loss of consciousness. Example substances: Carbon monoxide; cyanides.
- e. *Agents which damage the lung:* Substances which irritate or damage the pulmonary tissue. Signs and Symptoms: Cough; tightness in chest; shortness of breath. Example substances: Silica; asbestos.
- f. *Reproductive toxins:* Substances which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). Signs and Symptoms: Birth defects; sterility. Example substances: Lead; DBCP.
- g. *Cutaneous hazards:* Substances which affect the dermal layer of the body. Signs and Symptoms: Defatting of the skin; rashes; irritation. Example substances: Ketones; chlorinated compounds.
- h. *Eye hazards:* Substances which affect the eye or visual capacity. Signs and Symptoms: Conjunctivitis; corneal damage. Example substances: Organic solvents; acids.