TEXAS A&M UNIVERSITY
SAN ANTONIO

Hazard Communication Program

August 2021

Environmental Health & Safety

Texas A&M University-San Antonio

Hazard Communication Program

Approval Document

On File in EHS Office	_____
Assistant Manager-EHS (Research and Academic Compliance)	Date
On File in EHS Office	_____
Risk & Compliance Coordinator (University Compliance)	Date
On File in EHS Office	_____
Vice Provost for Research and Graduate Studies	Date

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Annual Review

Annual review of the A&M-SA Hazard Communication Program document is the responsibility of the Assistant Manager-EHS.

Record of Changes

Date of Change	Sections or Pages	Description of Change	Change Made by:
4/15/2021	Complete Plan	Reformatted Plan, added information about MSDS Online	V. Pantusa R. Arredondo

Texas A&M University-San Antonio

Hazard Communication Program

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Texas A&M University-San Antonio

Hazard Communication Program

I. Introduction (Texas HSC §502.002)

The Texas Hazard Communication Act (THCA), Revised 1993, Chapter 502 of the Health and Safety Code (HSC), requires public employers to provide information to employees regarding hazardous chemicals they may be exposed to in the workplace. The Public Employer Community Right-to-Know Act, Chapter 506 of the Health and Safety Code, and Texas Administrative Code (TAC), Title 25, Chapter 295, requires public employers to make information regarding hazardous chemicals accessible to local fire departments, local emergency planning committees, and, through the Texas Department of State Health Services (DSHS), the general public. This requirement is accomplished by submitting A&M-SA chemical inventory to the Tier II Chemical Reporting Program (DSHS).

The Texas A&M University-San Antonio (A&M-SA) Hazard Communication Program is administered through the Environmental, Health, & Safety (EHS) Department with responsibility for compliance delegated throughout administrative channels to every supervisor.

A&M-SA through the A&M-SA Hazard Communication (HazCom) Program, will comply with the THCA by providing training, appropriate personal

II. Purpose

The purpose of this document is to communicate responsibilities and activities required for compliance with the Texas Hazard Communication Act (hereafter referred to as the "Act").

III. Scope

The A&M-SA Hazard Communication Program applies to all A&M-SA employees including student workers that have occupational exposure to hazardous chemicals. Graduate / undergraduate students are covered in that they must be provided access to Safety Data Sheets (SDSs).

Neither the benefits nor the requirements of the Act can be waived.

IV. Duties and Responsibilities

A. Environmental, Health and Safety (EHS)

1. Monitor and coordinate program compliance for A&M-SA.
2. Assist departments in their EHS training programs, as appropriate.
3. Assist departments in obtaining SDSs as appropriate.
4. Maintain liaison with the Texas A&M University System EHS Office.

5. Maintain liaison with the Texas Department of State Health Services (512)834-6787.
    a) *Report orally or in writing, within 48 hours, the occurrence of a chemical accident that results in one or more fatalities or the hospitalization of five or more employees (this is to include circumstances of the accident, the number of fatalities, and the extent of injuries).*
6. Submit required annual Texas Tier Two report to Texas Commission on Environmental Quality by March 1 of the following year.

B. Environmental, Health and Safety (EHS)

1. Monitor and coordinate program compliance for A&M-SA.
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6. Submit required annual Texas Tier Two report to Texas Commission on Environmental Quality by March 1 of the following year.
7. Provide a copy of the annual Texas Tier Two report to the Local Emergency Planning Committee and to the local Fire Department. The Tier Two report includes the emergency contact list for the University to include names and telephone numbers.
8. Compile, maintain and provide designated Workplace Chemical Inventory (WCI) lists; maintain WCI lists for 30 years.
9. Provide access to WCI lists and SDSs upon request.
10. Support inspections on campus by the local Fire Department upon request.
11. Provide local support for chemical management to the online database used to store the WCI.

C. Administrators, Deans, Department Heads, Directors

Will ensure implementation and compliance with the Hazard Communication Program within their departments as follows:

1. Maintain records of each training session given to employees, including the date, the roster of attendees, the subject covered and the names of instructors. These records must be maintained for five years by the employer.
2. Ensure that employees and students are properly trained and advised of their rights under the Act using the Worksite Specific Safety Training Checklist.
3. Allow local Fire Department to conduct on-site chemical inspections upon request.
4. Communicate to affected employees when hazardous or nuisance materials will be used in their areas.

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D. Supervisors, Principal Investigators, Laboratory Managers

Their duties include:

1. Ensure that the work areas chemical inventory is maintained and determine which employees need access to the work area chemical inventory,
2. Ensure that all employees have received appropriate training before working with or in an area containing hazardous chemicals,
3. Providing additional training when the potential for exposure to hazardous chemicals in the employees work area increases significantly or when the employer receives new or significant information concerning the hazards of a chemical in the employee's work area,
4. Provide information to employees and students on the location and availability of WCI and SDSs,
5. Ensure proper labeling of chemical containers including secondary containers,
6. Provide employees with appropriate personal protective equipment (PPE) and ensure the equipment fits the individual and the individuals are trained in the proper use of PPE,
7. Inform employees of non-routine chemical use, and
8. Ensure to update WCI when chemicals are purchased initially, storage locations changes and/or quantities change.

E. Employees

Employees are responsible for:

1. Complete appropriate Hazard Communication Training,
2. Use prudent practices and good judgement when using chemicals,
3. Request additional training when needed for a specific chemical or chemical procedure, and
4. Wear appropriate PPE when using chemicals.

NOTE: Personnel who work with hazardous materials are expected to assume reasonable responsibility for the safety and health of themselves, others around them, and the environment.

F. Contractors (Repair, Maintenance and Construction)
Contractors will:

1. Comply with the Federal Hazard Communication Act and the A&M-SA Hazard Communication Program regarding hazardous or nuisance materials used during projects within A&M-SA facilities and property, and

2. Comply with the Federal Hazard Communication Act and the A&M-SA Hazard Communication Program regarding hazardous or nuisance materials used during projects within A&M-SA facilities and property, and
3. Provide the following to the A&M-SA Facilities Director, prior to use in University occupied buildings:
    a) A list of chemicals (hazardous or nuisance materials) used,
    b) Use description,
    c) Location of use, and
    d) SDSs
4. Have SDSs readily available upon request during the project.

NOTE: The Department Head will ensure that individuals in the affected workplace be provided information on the hazards of the chemicals, measures that they can take to protect themselves from those hazards and access to SDSs.

G. Facilities Director

Facilities Director will:

1. Provide Contractor chemical use information to EHS for consultation prior to Contractor use on campus, and
2. Provide impacted campus Department Head pertinent information when hazardous or nuisance materials will be used in their areas.

V. Exemptions and Exceptions (Texas HSC § 502.004)

A. General Exemptions and Exceptions

Notwithstanding any language to the contrary, the provisions of this Act do not apply to chemicals in the following categories:

1. Any article that is formed to a specific shaper or design during manufacture, that has end-use functions dependent in whole or in part on its shape or design during end use, and that does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use (e.g., tire, PVC piping).
2. Products intended for personal consumption by employees in the workplace (e.g., aspirin, hairspray).
3. Retail food sale establishment and all other retail trade establishments, exclusive of processing and repair areas.
4. Any food, food additive, color additive, drug, or cosmetic as those terms are defined in the Federal Alcohol Administration Act.
5. Hazardous waste regulated pursuant to the Federal Resource Conservation and Recovery Act.
6. Radioactive waste.
7. Tobacco or tobacco products.

8. Wood or wood products.
9. Food, drugs, cosmetics, or alcoholic beverages in a retail food sale establishment that are packaged for sale to consumers.
10. Food, drugs, or cosmetics intended for personal consumption by an employee while in the workplace.
11. A hazardous chemical in a sealed and labeled package that is received and subsequently sold or transferred in that package if:
    a) The seal and label remain intact in the workplace
    b) The chemical does not remain in the workplace more than five working days
    c) Personnel training requirements are met
    d) The chemical is not an extremely hazardous substance at or above the threshold planning quantity or 500 pounds, whichever is less.

B. Research Laboratory Exemptions

Chemicals in a research laboratory are exempt from secondary labeling requirements and inventory requirements if:

1. The laboratory is under the direct supervision or guidance of a technically qualified individual,
2. Labels on primary containers of chemicals are not removed or defaced,
3. Personal training requirements are fulfilled,
4. SDS access requirements are satisfied, and
5. The laboratory is not used primarily to produce hazardous chemicals in bulk for commercial purposes.

NOTE: Labels for small containers, such as test tubes or vials, may be attached to the rack or the container in which they are held.

VI. Chemical Inventory Requirements – Workplace Chemical List (Texas HSC § 502.005)

A&M-SA uses the online chemical management system, MSDSonline® https://www.msdsonline.com/ to maintain its Workplace Chemical List (WCL) inventory. Each work area will identify an individual (identified by area supervisor) who will be responsible for maintaining a current chemical inventory using MSDSonline. See Appendix E for example screen shots of MSDSonline.

Each work area (e.g., research and teaching laboratories, lab prep rooms, paint shop, art room, or print center) will maintain an inventory list of all hazardous chemicals or chemical products present in the work area, regardless of quantity using MSDSonline. The list will include the following information, as appropriate:

A. Chemical Inventory Information
    1. Identity (name) of the chemical as it appears on the SDS and container labels
    2. Location of the hazardous chemicals (building and room);
    3. CAS number;
    4. Hazard associated with the chemical;
    5. Quantity of product

A WCL will be updated when a new chemical or additional quantity above normal restocking amounts of chemical is purchased. EHS will use the WCL available through MSDSonline to compile a WCL. The WCL includes only those hazardous chemicals in a designated workplace that are equal to or greater than the "workplace reporting threshold." If a designated WCL – workplace is occupied by more than one Unit, a single WCI will be compiled by combining WCL's for all Units within the workplace. EHS will print, sign and date the WCL and maintain the record for 30 years. A new WCL for each designated workplace will be compiled by December 31 of each year, or as needed. A&M-SA employees may obtain a copy of the WCL from EHS upon request.

VII Tier Two Report – (HSC 295.182(d); 506.006)

EHS will compile a Tier Two Report for A&M-SA. The Texas Tier Two Report includes all hazardous chemicals and chemical products exceeding 10,000 pounds and all extremely hazardous substances exceeding 500 pounds or the Threshold Planning Quantity, whichever is less. (A list of extremely hazardous substances and the Threshold Planning Quantities are available through the EHS homepage). The Report will be submitted by March 1 of each year, for the preceding calendar year, to the Texas Commission on Environmental Quality (TCEQ) with the appropriate filing fees. A copy of the Tier Two Report will remain on file with EHS per State of Texas Record Retention Schedule. A copy of each Tier Two Report is sent to the Local Emergency Planning Committee and the San Antonio Fire Department.

VIII Employee Notice and Rights of Employees (Texas HSC §502.017)

An official Texas Department of State Health Services Notice to Employees (Appendix B) will be posted at the location(s) within each workplace where notices are normally posted.

An employee shall not be disciplined, harassed, or discriminated against by an employer for filing complaints, assisting inspectors of the TDH, participating in proceedings related to THCA, or exercising any rights under THCA. Employees cannot waive their rights provided by the THCA.

IX Chemical Information and Training (Texas HSC § 502.009)

Employee education and training are essential components of the A&M-SA Hazard Communication Program. Appropriate training will be provided to employees who use or handle hazardous chemicals as part of their normal work assignments. Training of a new or newly assigned employee will be given before the employee works with or handles hazardous chemicals. Employees will receive additional training when the potential for exposure to hazardous chemicals in the employee's work area increases significantly or when the employer receives new and significant information concerning the hazards of a chemical in the employee's work area.

The Act requires employers to provide a training program that is designed to ensure an appropriate level of understanding by employees of the dangers of hazardous chemicals used and what employees can do to minimize risks. The level of training required will depend upon the employee's work assignment and potential exposure to hazardous chemicals.

Chemicals for which education and training shall be provided include those which are a health hazard or physical hazard (see definitions). Each department and ultimately each supervisor shall determine training needs.

B. Training for Laboratory Personnel

   All personnel who work in laboratories (Teaching and Research) and laboratory support facilities will receive the appropriate training.

C. Training for Students

   Students enrolled in laboratory courses will receive appropriate safety information and instruction if class work involves hazardous chemicals; the class instructor will provide this training.

D. Initial Hazard Communication Training

   Initial Hazard Communication Training can be accomplished by completing the online training module in TrainTraq (course code: 11020, course name: Hazard Communication). Records of online training will be maintained in TrainTraq and will be provided to EHS on a monthly basis. Specific hazardous substance and worksite specific safety training is completed by the supervisor and recorded on the Work Site Safety Orientation Checklist form (see Appendix F). Once completed, a copy is sent to EHS.

E. Training Records

   Training sessions shall be documented and training records shall be maintained for a minimum of five (5) years per the Texas Record Retention Schedule. Records shall include the dates of training sessions, the training subjects covered including the types of chemicals reviewed, attendance rosters and the names of instructors.

F. Training Topics

   Training topics will include:

   1. Interpreting SDSs and labels and the relationship between the two methods of hazard communication;
   2. Locations of SDSs and methods for obtaining SDSs;
   3. Hazards associated with applicable categories of hazardous chemicals (e.g., flammable, corrosive, toxic and reactive) including acute and chronic effects;
   4. Methods for identifying specific chemicals within each chemical hazard group (e.g., DOT labels, NFPA 704 system, chemical container labels);
   5. Identity and location of hazardous chemicals the employee will handle;
   6. Safe handling procedures, including proper storage and separation of incompatibles;
   7. Location, selection, use and care of appropriate protective clothing and equipment to minimize exposure to hazardous chemicals;

8. First aid treatment to be used with respect to the hazardous chemicals the employee will handle;
9. Instructions on spill cleanup procedures and proper disposal of chemical waste.

X Safety Data Sheets (SDSs) Requirements (Texas HSC § 502.006)

SDSs are legal documents that provide hazard information on chemicals or chemical products produced or distributed in the United States. Federal and State laws require employers to provide employee's access to SDSs on hazardous chemicals or chemical products in the work environment.

A&M-SA uses MSDSonline to maintain SDS files for chemicals on campus. Access to the SDS files can be obtained at https://www.msdsonline.com/ or by scanning the QR Code posted in Work Areas (Refer for Appendix C for the MSDSonline poster).

A. Globally Harmonized System (GHS) Format

As of June 2015, all SDSs must be GHS compliant. SDSs will have a consistent 16-section format with the following sections (Refer to Appendix C for details):

Section 1: Identification	Section 9: Physical and Chemical Properties
Section 2: Hazard(s) Identification	Section 10: Stability and Reactivity
Section 3: Composition/Information on Ingredients	Section 11: Toxicological Information
Section 4: First Aid Measures	Section 12: Ecological Information (non-mandatory)
Section 5: Fire-Fighting Measures	Section 13: Disposal Considerations (non-mandatory)
Section 6: Accidental Release Measures	Section 14: Transportation Information (non-mandatory)
Section 7: Handling and Storage	Section 15: Regulatory Information (non-mandatory)
Section 8: Exposure Control/Personal Protection	Section 16: Other Information

B. Trade Secrets

Manufacturers and importers may withhold the specific chemical identity of a hazardous chemical with certain "*trade secret*" provisions. Contact EHS for assistance with addressing trade secret information.

C. Obtaining SDSs

SDSs can be obtained by:

- Requesting copies from your supervisor,
- Contacting the vendor directly,
- Performing an internet search by entering the product name followed by SDS, or
- Contact EHS for assistance.

XI Container Labeling Requirements (Texas HSC § 502.007)

Containers of hazardous chemicals will be properly labeled. The Act states that all containers must be labeled except for portable container(s) intended for the immediate use by the employee who performs the transfer. It is recommended that in order to minimize risks no container be excluded from labeling. Labeling requirements are as follows:

A. Primary Container Labels

Primary container labels must:

1. Not be removed or defaced.
2. Identify the material as it is on the SDS.
3. Include appropriate hazard warnings (An appropriate hazard warning includes the key word(s) of the chemical hazard such as, poison, flammable, corrosive, carcinogen, etc.).
4. Include the manufacturer's name and address.

NOTE: *Labels on an existing container of a hazardous chemical may not be removed or defaced unless they are illegible, inaccurate or do not conform to the OSHA Hazard Communication Standard or other labeling requirement. If a primary labeling container is removed or missing, the container must be relabeled with at least the information section A above.*

B. Secondary Container Labels

Secondary container labels shall include:

1. The chemical identity.
2. Appropriate hazard warning, the appropriate hazard warning shall include as a minimum the key word(s) of the chemical hazard (e.g., flammable, corrosive, poison, etc., and if the chemical is a carcinogen or radioactive).
3. Creator initials and date of transfer.

See Appendix D for further information on how to read a container label as well as examples of the NFPA and GHS labeling systems.

C. SDS' and other primary container labels shall be available for chemical specific information when chemical transfer to secondary containers is performed.

D. Use of precautionary labels and pictograms are allowed for showing hazard warnings, but employees shall be trained on the system used and shall have access to chemical specific information.

E. Complete labels are not required on portable container(s) intended for the immediate use by the employee who performs the transfer. However, the contents should be readily identifiable.

XII Non-routine exposure (Texas HSC § 502.017(b))

A. Planned release

Parties that are responsible for the planned release of hazardous or noxious chemical, such as paint vapors produced during renovations in the work place will:

1. Notify all individuals in the affected area(s) as well as EHS.
2. Provide EHS the appropriate precautionary information, including SDSs for the chemical(s) involved.
3. Ensure, with the input and/or assistance of EHS, that individuals in the affected area are provided information on the hazards of the chemicals, measures that they can take to protect themselves from those hazards, and access to appropriate SDSs.

B. Accidental Release

1. Parties that are responsible for the accidental release of hazardous or noxious chemicals will:
   a) Notify all individuals in the affected area(s) and evacuate as necessary using the preplanned evacuation route.
   b) From a safe location notify A&M-SA Police Department by calling the emergency number at (210)784-1911 or by using the SafeZone App, or by calling 911 to report there is a chemical release.
   c) Provide to EHS and to any Emergency Responders the appropriate hazard information, including SDSs for the chemical(s) involved.
   d) Do not touch, taste or smell the material.
   e) Isolate the area.
   f) Notify people in the neighboring offices and classrooms.
2. Emergency Management Coordinator will:
   a) Implement emergency management procedures for a chemical release.
   b) Provide hazard information to emergency responders and to the employees in the affected area(s) as appropriate.
3. EHS will:
   a) Facilitate any external regulatory reporting as required.

XIII Personal Protective Equipment (PPE)

All A&M-SA Departments will be responsible for ensuring that appropriate PPE is provided to their respective employees who use or handle hazardous chemicals. The employee's supervisor in consultation with EHS will assume overall responsibility for ensuring that appropriate equipment and training are provided to his/her employees, including the following:

A. Proper selection of PPE based on:
   1. Routes of entry.
   2. Permeability of PPE.
   3. Duties being performed by the employee.
   4. Hazardous chemicals in use or present in the work area.

B. Proper fit and functionality of PPE as described by the manufacturer's specifications.

C. Appropriate maintenance and storage of PPE.

XIV Commissioner of Health Reporting Requirements (Texas HSC § 502.014)

In the event of a related death(s) or the hospitalization of five or more employees the Texas Department of Health shall be notified. Within 48 hours after the occurrence of an employee accident that directly or indirectly involves chemical exposure or that involves asphyxiation, and that is fatal to one or more employees or results in the hospitalization of five or more employees, the employer of any of the employees so injured or killed shall report the accident either orally or in writing to the Texas Department of State Health Services (DSHS).

DSHS
Main: (512)776-7111

DSHS Hazard Communication Program
Phone: (512)834-6787
Fax: (512)834-6726
Email: TXHazCoHelp@dshs.texas.gov

XV References

Most recent version of the Texas Administrative Code, "Hazard Communication," 25 TAC 295.1-295.13

Most recent version of the Texas Administrative Code, "Hazardous Chemical Right-To-Know," 25 TAC 295.181- 295.183

Most recent version of the Texas Health and Safety Code, Chapter 502, Hazard Communication Act

APPENDIX A: Definitions (Texas HSC § 502.003)

Chemical Name: The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) of the Chemical Abstracts Service (CAS) rules of nomenclature or a name that clearly identifies the chemical for the purpose of conducting a hazard classification.

Common Name: A designation of identification, such as a code name, code number, trade name, or generic name, used to identify a chemical other than by its chemical name.

Employee: A person who is on the payroll of Texas A&M-San Antonio and who may be or may have been exposed to hazardous chemicals in the person's workplace under normal operating conditions or foreseeable emergencies.

Expose or Exposure: An employee is subjected to a hazardous chemical in the course of employment through any route of entry, including inhalation, ingestion, skin contact, or absorption. The term includes potential, possible, or accidental exposure under normal conditions of use or in a reasonably foreseeable emergency.

Extremely Hazardous Substance: Any substance as defined in EPCRA, Section 302, or listed by the United States Environmental Protection Agency in 40 CFR Part 355.

Hazardous Chemical: Any element, compound, or mixture of elements or compounds that is a physical or health hazard. Relatively innocuous materials such as NaCl, sugars, enzymes, etc. are exempt. A hazard determination may be made by employers who choose not to rely on the evaluations made by their suppliers if there are relevant qualitative or quantitative differences. A hazard determination shall involve best professional judgement: factors such as quantity, concentration, physical properties (i.e., volatility) and use may be considered.

Hazardous Chemical – A hazardous chemical is defined as any element, chemical compound or mixture of elements or compounds that is a physical hazard or a health hazard.

Health Hazard: A 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 hemopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes.

Nuisance Material: A nuisance material is any material that leads to temporary irritation or discomfort, but does not produce any long term ill effects.

Physical Hazard: A physical hazard includes chemicals which are a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water reactive.

Primary Container: The container in which the chemical arrives from the manufacturer.

Readily Available: Accessible during an individual's work shift.

Research Laboratory: Facility equipped for scientific investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of new or revised theories or laws. NOTE: For the purpose of the Texas Hazard Communication, this DOES NOT includes teaching labs or chemical stock rooms.

Safety Data Sheet: A document designed to communicate chemical hazard and safe handling information that is prepared in accordance with the requirements of the Globally Harmonized System (GHS) as adopted by

the Occupational Safety & Health Administration's (OSHA) Hazard Communication Standard. A current SDS is one which contains the most recent significant hazard information for the hazardous chemical as determined by the chemical's manufacturer. An appropriate SDS is one which conforms to the most current requirements by OSHA standards. The term "Safety Data Sheet" replaces the term "Material Safety Data Sheet".

Secondary Container: A container which the hazardous chemical is transferred to after receipt from the supplier or prepared in.

Shift: The work shift of the individual who makes the transfer and during which the container is always in their presence. For example, the worker doesn't leave the work area or move the container to an area where they're no longer in possession of it.

Work Area – A work area is a room or defined space within a workplace where hazardous chemicals are produced, used, or stored and employees are present.

Appendix B: Notice to Employees (Texas HSC § 502.017)

NOTICE TO EMPLOYEES

The Texas Hazard Communication Act, codified as Chapter 502 of the Texas Health and Safety Code, requires public employers to provide employees with specific information on the hazards of chemicals to which employees may be exposed in the workplace. As required by law, your employer must provide you with certain information and training. A brief summary of the law follows.

HAZARDOUS CHEMICALS

Hazardous chemicals are any products or materials that present any physical or health hazards when used, unless they are exempted under the law. Some examples of more commonly used hazardous chemicals are fuels, cleaning products, solvents, many types of oils, compressed gases, many types of paints, pesticides, herbicides, refrigerants, laboratory chemicals, cement, welding rods, etc.

WORKPLACE CHEMICAL LIST

Employers must develop a list of hazardous chemicals used or stored in the workplace in excess of 55 gallons or 500 pounds. This list shall be updated by the employer as necessary, but at least annually, and be made readily available for employees and their representatives on request.

EMPLOYEE EDUCATION PROGRAM

Employers shall provide training to newly assigned employees before the employees work in a work area containing a hazardous chemical. Covered employees shall receive training from the employer on the hazards of the chemicals and on the measures they can take to protect themselves from those hazards. This training shall be repeated as needed, but at least whenever new hazards are introduced into the workplace or new information is received on the chemicals which are already present.

SAFETY DATA SHEETS

Employees who may be exposed to hazardous chemicals shall be informed of the exposure by the employer and shall have ready access to the most current Safety Data Sheets (SDSs) or Material Safety Data Sheets (MSDSs) if an SDS is not available yet, which detail physical and health hazards and other pertinent information on those chemicals.

LABELS

Employees shall not be required to work with hazardous chemicals from unlabeled containers except portable containers for immediate use, the contents of which are known to the user.

EMPLOYEE RIGHTS

Employees have rights to:

- access copies of SDSs (or an MSDS if an SDS is not available yet)
- information on their chemical exposures
- receive training on chemical hazards
- receive appropriate protective equipment
- file complaints, assist inspectors, or testify against their employer

Employees may not be discharged or discriminated against in any manner for the exercise of any rights provided by this Act. A waiver of employee rights is void; an employer's request for such a waiver is a violation of the Act. Employees may file complaints with the Texas Department of State Health Services at the telephone numbers provided below.

EMPLOYERS MAY BE SUBJECT TO ADMINISTRATIVE PENALTIES AND CIVIL OR CRIMINAL FINES RANGING FROM $50 TO $100,000 FOR EACH VIOLATION OF THIS ACT

Further information may be obtained from:

Texas Department of State Health Services
Consumer Protection Division
Policy, Standards, & Quality Assurance Section
Environmental Hazards Unit
PO Box 149347, MC 1987
Austin, TX 78714-9347

(512) 834-6787
(800) 293-0753 (toll-free)
Fax: (512) 834-6726
E-mail: TXHazComHelp@dshs.texas.gov
Website: www.dshs.texas.gov/hazcom

TEXAS Health and Human Services | Texas Department of State Health Services

Worker Right-To-Know Program
Publication # 23-14173
Revised 05/2018

AVISO AL EMPLEADO

La Ley de Comunicación sobre Peligros de Texas, codificada como el capítulo 502 del Código de Salud y Seguridad de Texas, exige que los empleadores públicos le provean a los empleados información específica sobre los peligros de los químicos a los que los empleados podrían estar expuestos en el centro de trabajo. Según exige la ley, su empleador debe proveerle cierta información y capacitación. A continuación presentamos un breve resumen de la ley.

QUÍMICOS PELIGROSOS

Los químicos peligrosos son cualquier producto o material que represente algún peligro físico o de salud al ser usado, a menos que este quede exento bajo la ley. Como ejemplos de químicos peligrosos más comúnmente usados están los combustibles, los productos de limpieza, los solventes, muchos tipos de aceite, los gases comprimidos, muchos tipos de pintura, los pesticidas, los herbicidas, los refrigerantes, los químicos de laboratorio, el cemento, las varillas de soldadura, etc.

LISTA DE QUÍMICOS EN EL CENTRO DE TRABAJO

Los empleadores deben desarrollar una lista de los químicos peligrosos usados o almacenados en el centro de trabajo que sobrepasen los 55 galones o las 500 libras. El empleador debe renovar la lista de ser necesario, y al menos anualmente, y debe ponerla a fácil disposición de los empleados y de sus representantes al esta ser solicitada.

PROGRAMA DE INSTRUCCIÓN DEL EMPLEADO

Los empleadores deben proveerle capacitación a los empleados recién asignados antes de que los empleados trabajen en un área de trabajo que contenga químicos peligrosos. Los empleados contemplados en la ley deben recibir capacitación del empleador sobre los peligros de los químicos y sobre las medidas que ellos mismos pueden tomar para protegerse de dichos peligros. La capacitación debe repetirse de ser necesario, y al menos cuando se introduzcan nuevos peligros en el centro de trabajo o se reciba nueva información sobre los químicos que ya están presentes.

HOJAS DE DATOS DE SEGURIDAD

El empleador debe informar de la exposición a los empleados que pudieran estar expuestos a químicos peligrosos y ellos deben tener acceso fácil a las hojas de datos de seguridad (SDS) o las hojas de datos de seguridad del material (MSDS) más recientes si es que todavía no hay una SDS disponible, las cuales detallen los peligros físicos y de salud y cualquier otra información pertinente sobre dichos químicos.

ETIQUETAS

No se requerirá que los empleados trabajen con químicos peligrosos provenientes de contenedores que no están etiquetados con excepción de los contenedores portátiles de uso inmediato, el contenido de los cuales el usuario conoce.

DERECHOS DEL EMPLEADO

Los empleados tienen derecho a:

- acceder a copias de las SDS (o una MSDS si es que todavía no hay una SDS disponible)
- la información sobre sus exposiciones químicas
- recibir capacitación sobre los peligros químicos
- recibir el equipo protector apropiado
- presentar quejas, asistir a los inspectores y testificar en contra de su empleador

No se despedirá a los empleados ni se les discriminará de ninguna manera por ellos ejercer cualquiera de los derechos que esta ley estipula. Las renuncias de derechos del empleado no tienen ninguna validez; el que el empleador solicite ese tipo de renuncia infringe esta ley. Los empleados pueden presentar sus quejas ante el Departamento Estatal de Servicios de Salud de Texas llamando al teléfono sin costo provisto abajo.

LOS EMPLEADORES PODRÍAN ESTAR SUJETOS A SANCIONES ADMINISTRATIVAS Y A MULTAS CIVILES O PENALES QUE VAN DESDE LOS $50 HASTA LOS $100,000 DÓLARES POR CADA INFRACCIÓN DE ESTA LEY

Puede obtener mayor información en:

Texas Department of State Health Services
Consumer Protection Division
Policy, Standards, & Quality Assurance Section
Environmental Hazards Unit
PO Box 149347, MC 1987
Austin, TX 78714-9347

(512) 834-6787
(800) 293-0753 (llamada gratuita)
Fax: (512) 834-6726
E-mail: TXHazComHelp@dshs.texas.gov
Website: www.dshs.texas.gov/hazcom

TEXAS Health and Human Services | Texas Department of State Health Services

Worker Right-To-Know Program
Publication # 23-14173A
Revised 05/2018

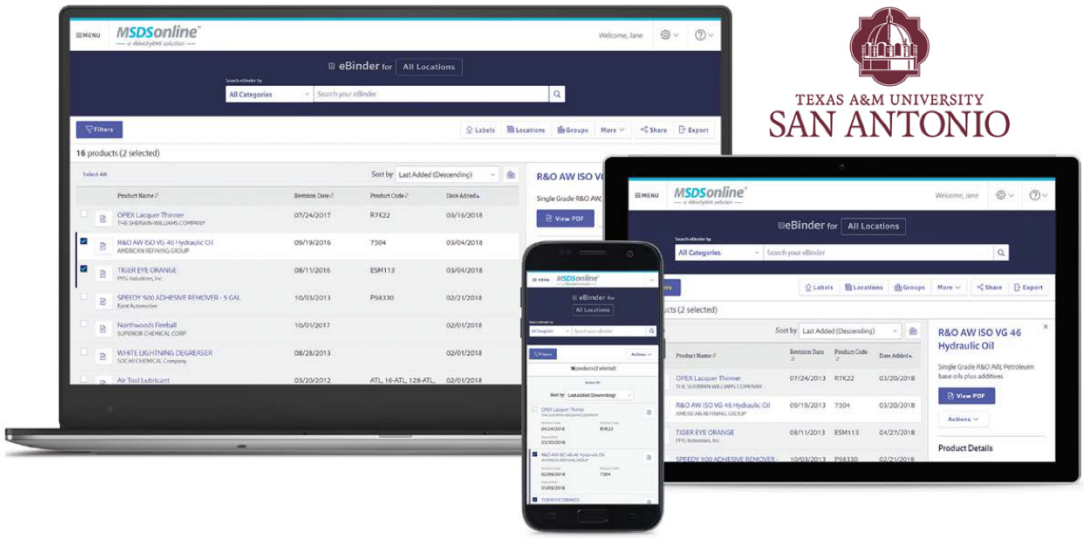
Appendix C Safety Data Sheets

The Hazard Communication Standard requires manufacturers to provide GHS-compliant SDSs (formerly known as MSDSs) by June 2015. The SDS must be in a uniform 16-section format which includes the sections described below.	
Section 1—Identification: Product identifier, manufacturer or distributor name, address, phone number, emergency phone number, recommended use, and restrictions on use.	**Section 9 – Physical and chemical properties** identifies physical and chemical properties associated with the substance or mixture.
Section 2—Hazard(s) identification: All hazards regarding the chemical and required label elements.	**Section 10 – Stability and reactivity** describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into 3 parts: reactivity, chemical stability, and other.
Section 3 – Composition/information on ingredients identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed.	**Section 11 – Toxicological information** identifies toxicological and health effects information or indicates that such data are not available. This includes routes of exposure, related symptoms, acute and chronic effects, and numerical measures of toxicity.
Section 4—First-aid measures: Required first aid treatment for exposure to a chemical and the symptoms (immediate or delayed) of exposure.	**Section 12 – Ecological information** provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment.
Section 5—Fire-fighting measures: The techniques and equipment recommended for extinguishing a fire involving the chemical and hazards that may be created during combustion.	**Section 13 – Disposal considerations** provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS.
Section 6—Accidental release measures: Steps to take in the event of a spill or release involving the chemical. Includes: emergency procedures, protective equipment and proper methods of containment and cleanup.	**Section 14 – Transport information** includes guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea.
Section 7—Handling and storage: Precautions for safe handling and storage, including incompatibilities.	**Section 15 – Regulatory information** identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS.
Section 8—Exposure controls/Personal protection: OSHA's permissible exposure limits (PELs), threshold limit values (TLVs), appropriate engineering controls, and personal protective equipment (PPE).	**Section 16 – Other information** indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

MSDSonline General User Poster

SAFETY DATA SHEETS

Our Electronic SDS Provider Is MSDSonline®



TEXAS A&M UNIVERSITY SAN ANTONIO

For online access to a **Safety Data Sheet, scan this QR code with your phone or tablet**

New to MSDSonline? After scanning the QR code to access the General User Site, visit the MSDSonline Help Center by clicking the ? or ⌄ at the top right of the eBinder.

For local support, call: A&M-San Antonio Safety Office • (210) 784-2822

Example of SDS from MSDSonline

Safety Data Sheet

According to Hazardous Products Regulation (SOR/2015-17)

Revision date: 18.02.2020 *Version: 6.1* *Print date: 18.02.2020*

SECTION 1: Identification

Product identifier

Trade name/designation:	Sulfuric acid 95-98%
Product No.:	BDH3068
Synonymes:	none/none
CAS No.:	7664-93-9
Other means of identification:	

Relevant identified uses of the substance or mixture and uses advised against

Recommended Use:	For Further Manufacturing Use Only
Uses advised against:	Not for Human or Animal Drug Use

Details of the supplier of the safety data sheet

Supplier

VWR International

Street	2360 Argentia Road
Postal code/City	Mississauga, Ontario Canada L5N 5Z7
Telephone	+1-800-932-5000 toll-free within US/Canada
Telefax:	+1-610-728-2103

Emergency phone number

Telephone	+1-613-996-6666 (Canutec, 24 hrs/day, 7 days/week, Canada)

Preparation Information

VWR International - Product Information Compliance

E-mail	sds@vwr.com

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Classification according to Hazardous Products Regulation (SOR/2015-17)

Hazard classes and hazard categories	Hazard statements
Skin corrosion, category 1A	H314
Hazardous to the aquatic environment, acute, category 3	H402

2.2 Label elements

Labelling in accordance with (SOR/2015-17)

Hazard pictograms

Signal word: Danger

Hazard statements	
H314	Causes severe skin burns and eye damage.
H402	Harmful to aquatic life.

Precautionary Statements	
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash ... thoroughly after handling.
P273	Avoid release to the environment.
P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363	Wash contaminated clothing before reuse.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/...
P405	Store locked up.
P501	Dispose of contents/container to ...

Hazards not otherwise classified (HNOC)
none/none

SECTION 3: Composition / information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

Hazardous ingredients GHS Classification in accordance with (SOR/2015-17)

Substance name	Concentration	Identifier	Hazard classes and hazard categories
Sulfuric acid	93 - 98%	CAS No.: 7664-93-9	Skin Corr. 1A - H314

SECTION 4: First aid measures

4.1 General information

IF exposed: Immediately call a POISON CENTER/doctor. If unconscious place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person or a person with cramps. Change contaminated, saturated clothing. Do not leave affected person unattended.

In case of inhalation

Immediately call a POISON CENTER/doctor. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact

After contact with skin, wash immediately with plenty of water and soap. Remove contaminated, saturated clothing immediately. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.

After eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing.

In case of ingestion

Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. Rinse mouth thoroughly with water. Give nothing to eat or drink.

4.2 Most important symptoms/effects, acute and delayed

no data available

4.3 Indication of any immediate medical attention and special treatment needed

no data available

4.4 Self-protection of the first aider

First aider: Pay attention to self-protection!

4.5 Information to physician

no data available

SECTION 5: Fire fighting measures

5.1 Extinguishing media

Suitable extinguishing media
The product itself does not burn.
Co-ordinate fire-fighting measures to the fire surroundings.

Extinguishing media which must not be used for safety reasons
no restriction

5.2 Specific hazards arising from the chemical

In case of fire may be liberated:
Sulphur oxides

5.3 Advice for firefighters

DO NOT fight fire when fire reaches explosives.
Protective equipment and precautions for firefighters
Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information

Do not allow run-off from fire-fighting to enter drains or water courses.
Do not inhale explosion and combustion gases.
Use water spray/stream to protect personnel and to cool endangered containers.
In case of fire: Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

In case of major fire and large quantities: Remove persons to safety. Wear a self-contained breathing apparatus and chemical protective clothing.

6.2 Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

6.3 Methods and material for containment and cleaning up

Spilled product must never be returned to the original container for recycling. Clean contaminated articles and floor according to the environmental legislation. Soak up inert absorbent and dispose as waste requiring special attention.

6.4 Additional information

Clear spills immediately.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid:
Inhalation
Avoid contact with eyes and skin.
Use extractor hood (laboratory).
If handled uncovered, arrangements with local exhaust ventilation have to be used.
If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.
Protect from moisture.

7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: 15-25 °C
Keep container tightly closed and in a well-ventilated place.

7.3 Specific end use(s)

no data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredient (Designation)	Regulatory information	Country	Limit value type (country of origin)	Limit value
Sulfuric acid	CNESST	CA	VECD	3 mg/m³
Sulfuric acid	CNESST	CA	VEMP	1 mg/m³

8.2 Engineering controls

Appropriate engineering controls
Technical measures and the application of suitable work processes have priority over personal protection equipment. If handled uncovered, arrangements with local exhaust ventilation have to be used.

Personal protection equipment (PPE)
Wear suitable protective clothing. When handling with chemical substances, protective clothing must be worn.

Eye/face protection
Eye glasses with side protection

Skin protection
Wear suitable gloves. When handling with chemical substances, protective gloves must be worn. In the case of wanting to use the gloves again, clean them before taking off and air them well. Check leak tightness/impermeability prior to use.

By short-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,12 mm
Breakthrough time (maximum wearing time):	480 min

By long-term hand contact

Suitable material:	NBR (Nitrile rubber)
Thickness of the glove material:	0,38 mm
Breakthrough time (maximum wearing time):	480 min

Respiratory protection
Respiratory protection necessary at: aerosol or mist formation If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

Additional information
Wash hands before breaks and after work. Avoid contact with eyes and skin. When using do not eat, drink or smoke. Provide eye shower and label its location conspicuously.

Environmental exposure controls
no data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

(a) Appearance	
Physical state:	liquid
Color:	colorless
(b) Odour:	no data available
(c) Odour threshold:	no data available

Safety relevant basic data

(d) pH:	no data available
(e) Melting point/freezing point:	-32 °C
(f) Initial boiling point and boiling range:	279 °C (1013 hPa)
(g) Flash point:	no data available
(h) Evaporation rate:	no data available
(i) Flammability (solid, gas):	not applicable
(j) Flammability or explosive limits	
Lower explosion limit:	no data available
Upper explosion limit:	no data available
(k) Vapour pressure:	no data available
(l) Vapour density:	no data available
(m) Relative density:	1.835 g/cm³ (20 °C)
(n) Solubility(ies)	
Water solubility (g/L):	soluble (20°C)
Soluble (g/L) in Ethanol:	no data available
(o) Partition coefficient: n-octanol/water:	no data available
(p) Auto-ignition temperature:	no data available
(q) Decomposition temperature:	340 °C (1013 hPa)
(r) Viscosity	
Kinematic viscosity:	no data available
Dynamic viscosity:	11.0 mPa*s (25 °C)
(s) Explosive properties:	not applicable
(t) Oxidising properties:	not applicable

9.2 Other information

Bulk density:	no data available
Refraction index:	no data available
Dissociation constant:	no data available
Surface tension:	no data available
Henry's Law Constant:	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Corrosive to metals

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Explosive reaction with:
Alkali metals
Alkaline earth metal
Alkali (lye)
Violent reaction with:
light metals
Powdered metals
Exothermic reaction with:
Water
Substance, organic

10.4 Conditions to avoid

Humidity

10.5 Incompatible materials

Metal

10.6 Hazardous decomposition products

no data available

10.7 Additional information

no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute effects

Acute oral toxicity:
Sulfuric acid - LD50: > 2140 mg/kg - Rat - (Merck KGaA)

Acute dermal toxicity:
no data available

Acute inhalation toxicity:
Sulfuric acid - LC50: > 0.51 mg/l - Rat - (CHP)

Irritant and corrosive effects
Primary irritation to the skin:
Causes severe skin burns and eye damage.

Irritation to eyes:
Causes serious eye damage.

Irritation to respiratory tract:
not applicable

Respiratory or skin sensitization
In case of skin contact: not sensitising
In case of inhalation: not sensitising

STOT-single exposure
not applicable

STOT-repeated exposure
not applicable

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

no data available	ACGIH	IARC	NTP	OSHA

Germ cell mutagenicity
No indications of human germ cell mutagenicity exist.

Reproductive toxicity
No indications of human reproductive toxicity exist.

Aspiration hazard
not applicable

Other adverse effects
no data available

Additional information
no data available

SECTION 12: Ecological information

12.1 Ecotoxicity

Fish toxicity:
no data available

Daphnia toxicity:
Sulfuric acid - LC50: 42.5 mg/l (48 h) - Portmann, J.E., and K.W. Wilson 1971. The Toxicity of 140 Substances to the Brown Shrimp and Other Marine Animals. Shellfish Information Leaflet No.22 (2nd Ed.), Ministry of Agric.Fish.Food, Fish.Lab.Burnham-on-Crouch: 12p.

Algae toxicity:
no data available

Bacteria toxicity:
no data available

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
Partition coefficient: n-octanol/water: no data available

12.4 Mobility in soil:
no data available

12.5 Results of PBT/vPvB assessment
no data available

12.6 Other adverse effects
no data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Appropriate disposal / Product
Dispose according to legislation. Consult the appropriate local waste disposal expert about waste disposal.

Waste code product: no data available

Appropriate disposal / Package
Dispose according to legislation. Handle contaminated packages in the same way as the substance itself.

Additional information
no data available

SECTION 14: Transport information

Land transport (TDG)

UN-No.:	1830
Proper Shipping Name:	SULPHURIC ACID
Class(es):	8
Packing group:	II
Environmental hazards:	No
Marine pollutant:	No
Special precautions for user:	

Sea transport (IMDG)

UN-No.:	1830
Proper Shipping Name:	SULPHURIC ACID
Class(es):	8
Classification code:	
Hazard label(s):	8
Packing group:	II
Environmental hazards:	No
Marine pollutant:	No
Special precautions for user:	
Segregation group:	1
EmS-No.	F-A S-B

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not relevant

Air transport (ICAO-TI / IATA-DGR)

UN-No.:	1830
Proper Shipping Name:	SULPHURIC ACID
Class(es):	8
Classification code:	
Hazard label(s):	8
Packing group:	II
Special precautions for user:	

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Domestic Substance List:

SECTION 16: Other information

Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygiensts
DOT - Department of Transportation
IARC - International Agency for Research on Cancer
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PEL - Permissible Exposure Limit
STV - Short Term Value
SVHC - Substances of Very High Concern
TDG - Transport of Dangerous Goods
TLV - Threshold Limit Value
vPvB - very Persistent, very Bioaccumulative

Additional information

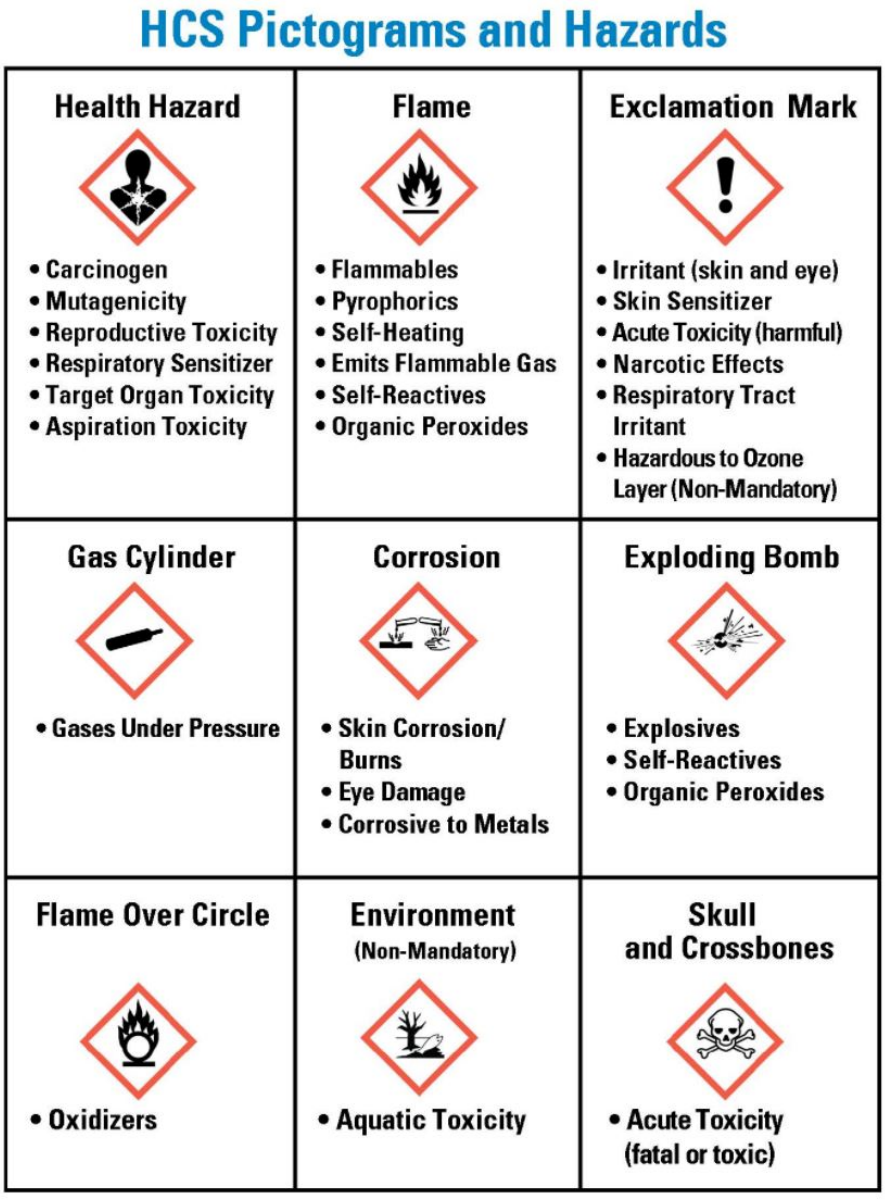
Indication of changes: Section 2

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guidance. The information in this document is based on the present state knowledge and is applicable to the product with regard to appropriate safty precautions. It does not represent any guarantee of the properties of the product. VWR International and his Affiliates shall not be held liable for any damage resulting from handling.

Appendix D: Chemical Labeling Systems

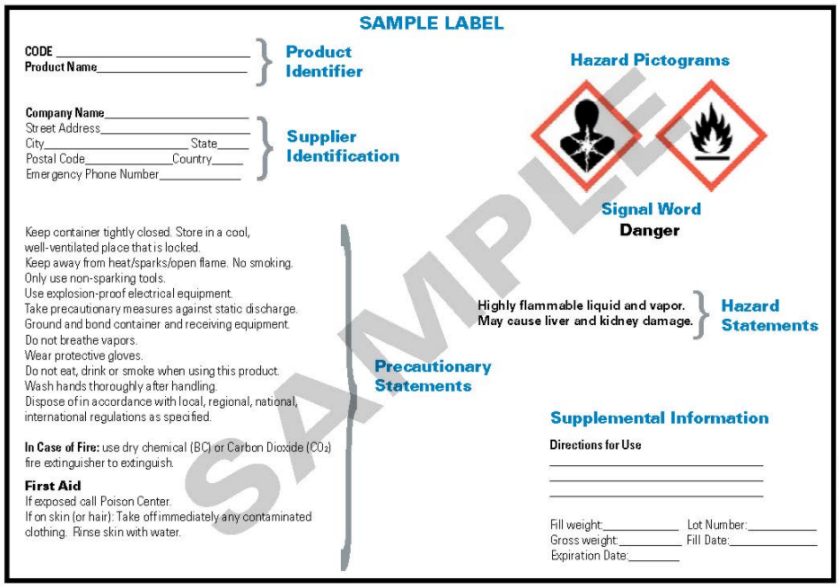
1. **Globally Harmonized System (GHS)**

   The *Globally Harmonized System of Classification and Labeling of Chemicals*, or GHS, was developed to provide a common way to classify chemical hazards and communicate chemical hazard information worldwide. The goal of GHS is to improve safety through "consistent and simplified communications on chemical hazards and practices to follow for safe handling and use." Pictograms are used to identify distinct hazards. Below are the GHS pictograms along with the hazard(s) each represent. The pictograms should be used in conjunction with the SDS to determine the particular hazard associated with the chemical.



From OSHA Pictogram QuickCard™
https://www.osha.gov/Publications/OSHA3491QuickCardPictogram.pdf

Anatomy of a GHS Chemical Label



From OSHA Label QuickCard™
https://www.osha.gov/Publications/OSHA3492QuickCardLabel.pdf

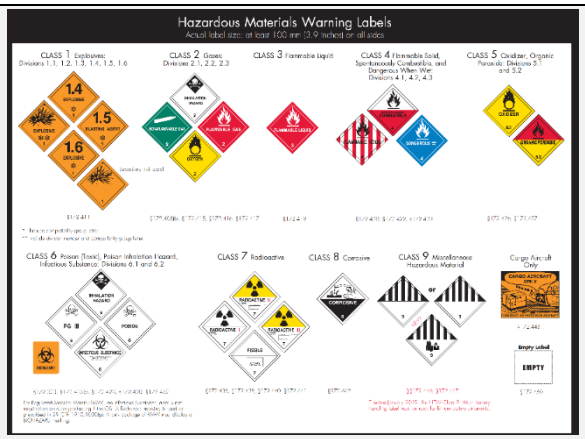
There are 7 distinct components of a chemical label. The label must show:

1. The **chemical name**
2. The **name of the supplier**
3. **Precautionary statements** - This section will instruct workers how to handle and use the chemical safely. This section will explain what types of gloves, masks, or other protective gear must be used when handling the chemical, as well as any other crucial precautionary measures.
4. **Hazard pictograms**
5. **Signal words**: **warning or danger** - There are two types of signal words in HazCom labels: WARNING and DANGER. Danger indicates a more severe hazard.
6. **Hazard Statements** - This indicates precisely the type of hazard posed by a given chemical. You can think of this section as a written analogue to the pictograms. Hazards can be divided into 3 major groups: Health hazards, physical hazards, and environmental hazards. Each hazard has a code and a brief written explanation of the danger. The code consists of the letter H followed by three digits. For example, H221 refers to the hazard “Flammable gas.”
7. **Supplemental Information** - This section often contains the weight, expiration date, and directions for use. Any other hazards not elsewhere listed on the label must be included in this section.

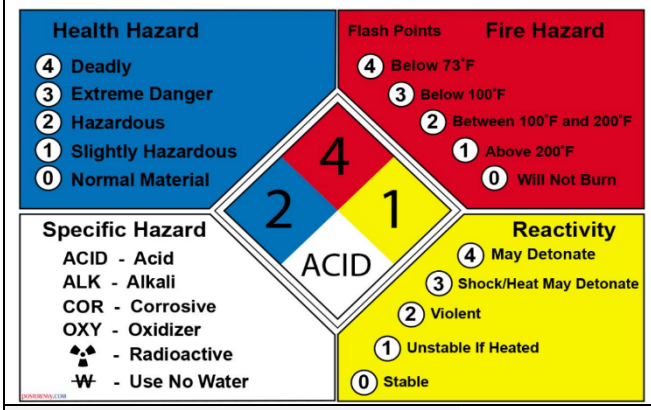
2. Common Labeling Systems: DOT, NFPA, HMIS

There are many labeling systems commonly used to communicate the potential hazards of chemicals. The more commonly used systems are from the U.S. Department of Transportation (DOT), National Fire Protection Association (NFPA) and the Hazardous Materials Identification System (HMIS).

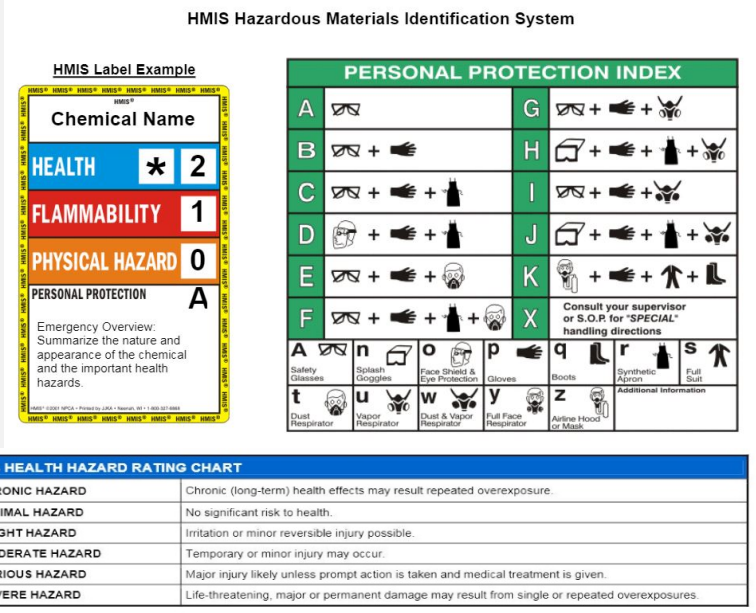
U.S. Department of Transportation (DOT) system categorizes hazardous materials into nine classes:
Class 1: Explosives
Class 2: Gases
Class 3: Flammable Liquids
Class 4: Flammable Solids
Class 5: Oxidizers, Organic Peroxides
Class 6: Toxic (Poison)
Class 7: Radioactive
Class 8: Corrosive
Class 9: Miscellaneous
See *U.S. DOT Chart 16* for details.



The **National Fire Protection Association** (NFPA) system consist of a diamond-shaped label with four sections that are color coded:
Blue: Health Hazard
Red: Fire hazard
White: Specific Hazards
Yellow: Reactivity
The numbering system ranges from zero (0) to four (4). The larger the number, the greater the hazard. Zero (0) is least hazardous and four (4) is the most hazardous. The NFPA codes describe how a material might behave in a fire situation.
See the *NFPA OSHA Quick Card* for details.



The **Hazardous Materials Identification System (HMIS)** uses a similar numbering system as NFPA. The current version of the HMIS manual (HMIS III) updated the formerly yellow coded "Reactivity" section to an orange "Physical Hazard" section to align with OSHA HazCom standard. The white colored "Personal Protection" section uses the HMIS personal protection index to describe the required personal protective equipment.

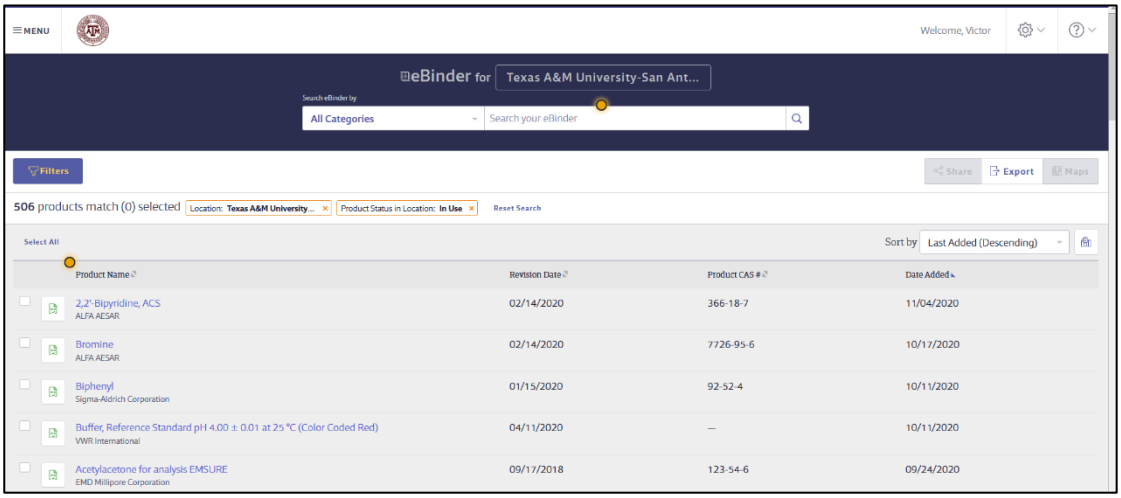


HMIS HEALTH HAZARD RATING CHART	
* CHRONIC HAZARD	Chronic (long-term) health effects may result repeated overexposure.
0=MINIMAL HAZARD	No significant risk to health.
1=SLIGHT HAZARD	Irritation or minor reversible injury possible.
2=MODERATE HAZARD	Temporary or minor injury may occur.
3=SERIOUS HAZARD	Major injury likely unless prompt action is taken and medical treatment is given.
4=SEVERE HAZARD	Life-threatening, major or permanent damage may result from single or repeated overexposures.

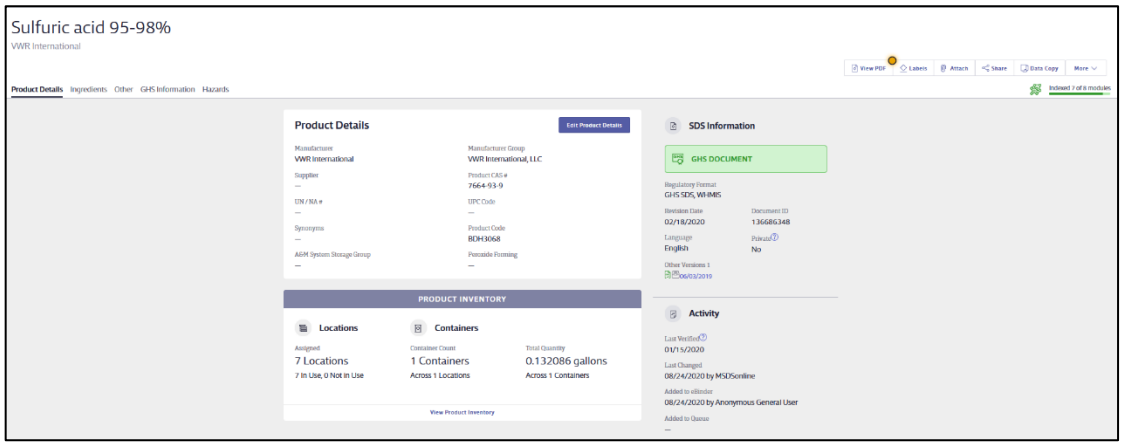
https://www.scribd.com/document/62355538/HMIS-Hazardous-Materials-Identification-System

Appendix E Examples of "Screen Shots" from MSDSonline.

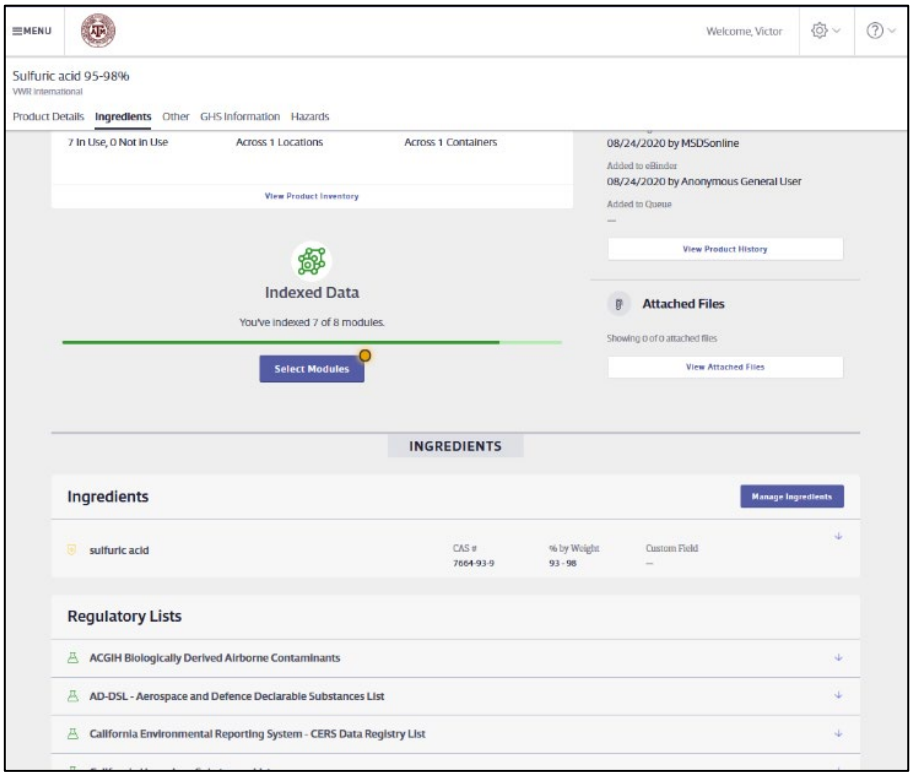
1. Main Inventory Page



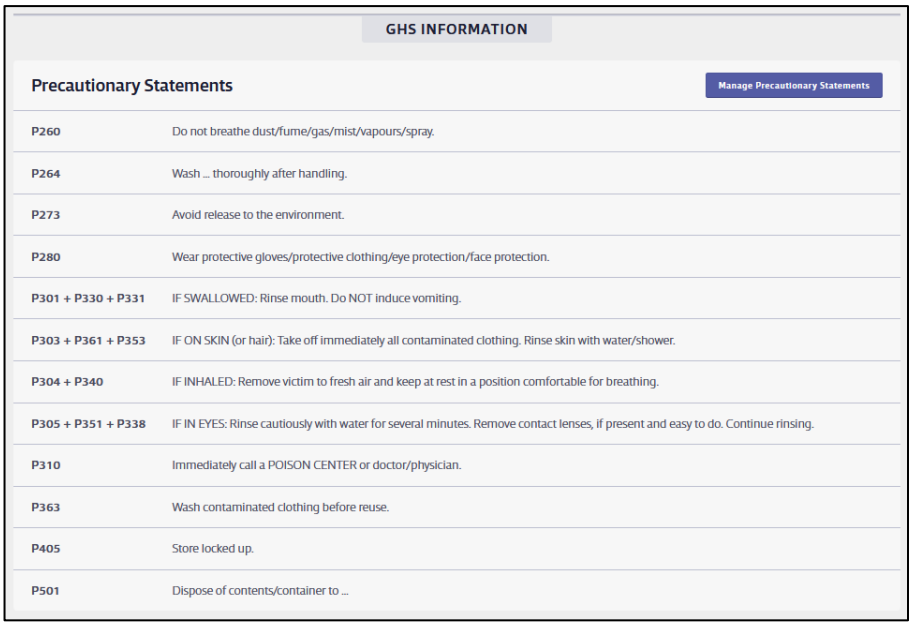
2. Product Details



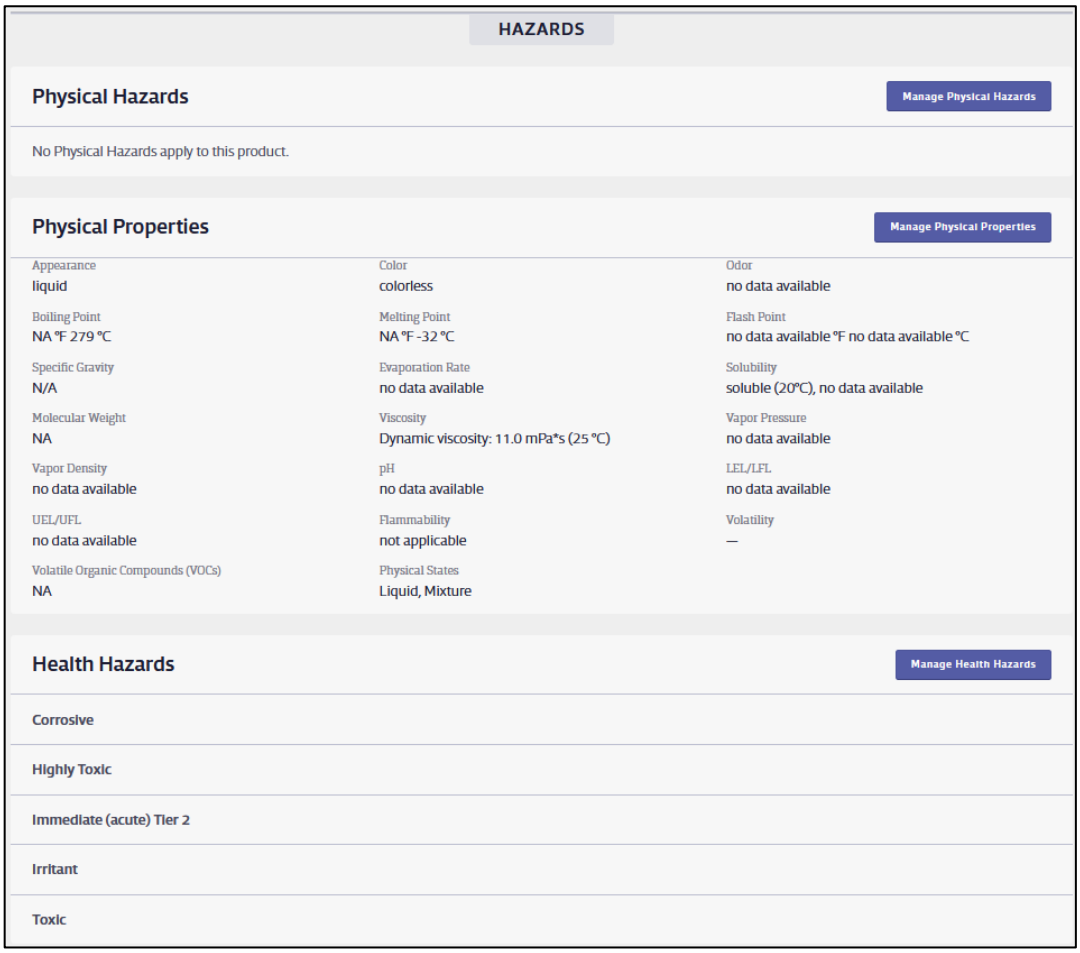
3. Ingredients and Regulatory Lists



4. GHS Information



5. Hazards



HAZARDS

Physical Hazards

Manage Physical Hazards

No Physical Hazards apply to this product.

Physical Properties

Manage Physical Properties

Appearance liquid	Color colorless	Odor no data available
Boiling Point NA °F 279 °C	Melting Point NA °F -32 °C	Flash Point no data available °F no data available °C
Specific Gravity N/A	Evaporation Rate no data available	Solubility soluble (20°C), no data available
Molecular Weight NA	Viscosity Dynamic viscosity: 11.0 mPa*s (25 °C)	Vapor Pressure no data available
Vapor Density no data available	pH no data available	LEL/LFL no data available
UEL/UFL no data available	Flammability not applicable	Volatility —
Volatile Organic Compounds (VOCs) NA	Physical States Liquid, Mixture	

Health Hazards

Manage Health Hazards

Corrosive

Highly Toxic

Immediate (acute) Tier 2

Irritant

Toxic

Appendix F. Work Site Safety Orientation Checklist

TEXAS A&M UNIVERSITY SAN ANTONIO
Research & Academic Environmental Health & Safety

Worksite Specific Safety Training Checklist
For Laboratories

Research and Academic Environmental Health & Safety | (210)784-2822 | safety@tamusa.edu

Trainee Information

Trainee Personnel Name (print) | A&M-SA ID # (UIN, K# or J#) | A&M-SA or Jaguar.edu Email

The Trainee has completed all applicable initial in-person and/or online safety training programs (checked below):

✓	Class	Date Completed
	General Lab Safety Training	
	CITI – Basic Introduction Biosafety	
	CITI – Initial Biosafety Training	
	Biosafety Level 2 Training – Initial	

✓	Class	Date Completed
	Bloodborne Pathogens Training (2114036*)	
	General Shop Safety	
	Other:	
	Other:	

*TrainTraq Catalog number

This Checklist is to be completed prior to the worker working in the laboratory. Please check all items on which training, information or safe work procedures have been read, discussed and/or demonstrated and understood.

	✓	Item
Emergency Response		Aware of all applicable safety signs and labels (e.g., biohazard, fire, and chemical labels), their meaning, and any requirements for entry. Contact information for PI and RA-EHS especially during after-hours emergencies.
		Location of the first aid kit and the chemical and biological spill kits and is knowledgeable in how to clean up spills.
		Location of the eyewash and safety shower and nearest fire alarm pull station. How to use the equipment.
		Basic building alarms, worker response to alarms, and evacuation procedures (primary and secondary routes) and outside assembly area.
		Reporting procedures for medical, fire or safety emergencies
Personal Protective Equipment (PPE)		Know the appropriate personal protective equipment to wear to ensure adequate protection from the hazards in the laboratory and their limitations of the personal protective equipment.
		Where personal protective equipment (PPE: gloves, glasses, lab coat) is stored in the lab
		PPE work practices (i.e. closed toed shoes, lab coats buttoned, disposable gloves, wash hands after removal of gloves, removal of lab coats before leaving the lab, etc.)
General Lab Safety		The proper procedures for all equipment in the laboratory, including chemical fume hoods, biological safety cabinets, centrifuges and other engineering controls.
		Food and beverages are not to be consumed in laboratories. Locations to store food and drink, and the appropriate designated areas to eat
		Understands safety procedures for specific operations (e.g., UV light, safe use of specialized equipment, high voltage equipment, etc.).
		Facility requirements (i.e. door to laboratory closed, no gloved hands in hallways, use of secondary transport containers)
		The Trainee is aware of all biological, chemical, radiological, and other hazards in laboratory.
		Operations requiring prior P.I. approval
		Hazards and proper use of compressed gases and cryogenic material
		Non-chemical physical and health hazards specific for lab
		Proper handling of broken glass, razor blades, needles, syringes or other sharps

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	✓	Item
Chemical Safety		Location and access instructions for a copy of the laboratory chemical inventory, Chemical Safety Guidelines and other safety information
		Highly hazardous chemicals used and their corresponding Standard Operating Procedures (SOP's) or Protocols and Methods to control exposure to highly hazardous chemicals
		Detection methods and observations that may be used to detect the presence or release of a hazardous chemical in the lab (e.g. odor, monitoring equipment, or visual appearance) and what action to take if detected
		Location and access instructions for a copy of the laboratory chemical inventory, Chemical Safety Guidelines and other safety information
		Location of chemical waste containers, use, labeling and compatibility (Hazardous waste management and disposal procedures)
		Correct labeling and storage of hazardous chemical waste and their containers
		Hazardous chemical labeling system used in the lab
		Instructed on how to access Safety Data Sheets (SDS) via *MSDSonline*
		Chemical spill procedures, including cleanup and reporting
Personnel Health and Hygiene		Requirements of the Occupational Health Program for working in BSL2 labs and/or with research animals.
		Knows and understands the signs and symptoms associated with exposure to the hazards in the laboratory, including any infectious agents, recombinant/synthetic nucleic acid molecules, and how exposure can occur (e.g., skin contact, respiratory, eyes).
		Information regarding immune competence and conditions that may predispose them to infection (e.g., indicate any conditions that would make them more susceptible to infection or impact their ability to receive immunizations or prophylactic treatment).
		Laboratory coats worn in the laboratory or any area where they may have become contaminated with hazardous chemicals, biohazardous materials, and/or animal dander, are not to be worn in common areas such as break rooms or cafeterias.
Biological Safety		Identification of all biological hazards in laboratory
		Security requirements for biohazardous materials present in the laboratory.
		Location and review of Laboratory-Specific Safety Plan and bloodborne pathogen exposure control plan
		Laboratory Biosafety Level and standard microbiological procedures and guidelines in CDC/NIH Biosafety in Microbiological and Biomedical Laboratories
		The signs and symptoms associated with exposure to infectious agents or recombinant DNA, routes of exposure and procedures for reporting suspected laboratory acquired infections
		Location and proper use and preparation of laboratory disinfectants
		Regulated Medical Waste disposal procedures and equipment
		Autoclave procedures, particularly pertaining to decontamination of regulated medical waste
		Trained in the standard microbiological practices and procedures for the laboratory.
		Biological material spill procedures, including cleanup and reporting

Acknowledgement: I acknowledge that I have been provided training in, and understand the content of, the above checked items. I understand that additional risk assessment and training may be required when there is a change in the hazards associated with my work. Further, I agree to follow the safety information provided in the trainings.

Trainee Name (print)	Trainee Signature	Date

Certification: I certify that the above named individual has been provided training on the topics listed and has demonstrated an understanding of the information.

PI/Supervisor or Designee Name (print)	PI/Supervisor or Designee Signature	Date