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Requirements
for

Hazardous Communication Program

REVISION

Rev No.	DCN No.	Change Summary	Release Date	DCN Initiator	Document Owner
7	DCN0876	Updated Section 4 Clarified requirements for when a Chemical Authorization Request is required.	12-14-12	S. Traudt	R. Segura

Prior revision history, if applicable, is available from the Document Control Office.

1. PURPOSE AND SCOPE

1.1 The purpose of this document is to provide the requirements to be met under the College of Nanoscale Science & Engineering (CNSE) Hazard Communication Program.

1.2 Ensure compliance with the New York Right-To-Know law and OSHA's Hazard Communication Standard (29 CFR 1910.1200).

1.3 Ensure that the hazards of the chemicals used at the CNSE are evaluated and that the information concerning their hazards is clearly identified and conveyed to those who work with or around these chemicals. This shall include CNSE employees, students, tenants, temporary employees, and contractors.

1.4 Ensure that detailed information regarding the hazards of the chemicals we use is readily accessible and understood by those who may access it. The information shall be in the form of Material Safety Data Sheets (MSDS).

1.5 Ensure that all new employees receive training on the CNSE Hazard Communication Program and the Environmental Health and Safety (EHS) policies prior to entering their work area.

2. DEFINITIONS

The regulatory definitions related to HAZCOM as cited by OSHA in 29 CFR 1910.1200 are as follows:

2.1 **Chemical** – any element, chemical compound or mixture of elements and/or compounds.

2.2 **Chemical Manufacturer** – an employer with a workplace where chemical(s) are produced for use or distribution.

2.3 **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) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

2.4 **Container** – any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical.

2.5 **Employee –** a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies.

Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

2.6 **Employer** – a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

2.7 **Exposure or Exposed** – an employee is subjected (e.g., inhalation, ingestion, skin contact or absorption) in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g., accidental or possible) exposure.

2.8 **Fully Disclosed MSDS** – provides information pertaining to proprietary components listed on a supplier MSDS.

2.9 **Hazardous Chemical** – any chemical which is a physical hazard or a health hazard.

2.10 **Hazard Warning** – any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s).

2.11 **Health Hazard** – a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes:

- Chemicals which are carcinogens,
- Toxic or highly toxic agents,
- Reproductive toxins,
- Irritants,
- Corrosives,
- Sensitizers,
- Hepatotoxins,
- Nephrotoxins,
- Neurotoxins,
- Agents which act on the hematopoietic system, and
- Agents which damage the lungs, skin, eyes, or mucous membranes.

2.12 **Identity** – chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used will permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

2.13 **Immediate Use** – the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

2.14 **Label** – a written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals which meets OSHA, EPA, and DOT regulations.

2.15 **Material Safety Data Sheet (MSDS)** – written or printed material containing specific information about a chemical which is prepared in accordance with 29 CFR 1910.1200 (g).

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

2.17 **Use** – to package, handle, react, emit, extract, generate as a byproduct, or transfer.

2.18 **Work Area** – a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

3. RESPONSIBILITIES

The OSHA HAZCOM standard sets forth responsibilities for chemical manufacturers, companies using the hazardous chemicals, and the employees who use chemicals in the workplace.

3.1 The Operations Manager

The Operations Manager shall be responsible to ensure that the requirements of the CNSE Hazard Communication Program are adhered to, and shall act as the owner in all official correspondence with New York Right-To-Know and representatives of the Occupational Safety and Health Administration (OSHA), as necessary.

3.2 Department, Operation Managers, Professors and Supervisors

3.2.1 Department, Operation Managers, Professors and Supervisors shall ensure that their employees are fully aware of, and understand, the requirements of the Hazard Communication Program and the objectives of the Environmental Health & Safety Policy, and that the necessary training is provided to all of the employees within their organization.

3.2.2 Department, Operation Managers, Professors and Supervisors shall provide their employees with all of the safety requirements of their jobs, including but not limited to: the hazards of the chemicals used, personal

protective equipment requirements and availability, the location and use of Material Safety Data Sheets, and all appropriate emergency procedure; and shall effectively implement daily Hazard Communication activities at the line level.

3.3 Employees

Employees shall be alert to the potential hazards of their jobs and shall conduct their jobs in a safe manner, following all safety procedures. Whenever there is a question regarding the handling of or use of a chemical, the container label or MSDS shall be consulted for specific information. If the employee needs assistance, they shall contact their Supervisor or a member of the EHS department.

3.4 Human Resources Manager

The Human Resources Manager shall ensure that all new, re-hired, and temporary employees receive both general and specific Hazard Communication training, as well as, training in the objectives of the EHS Policy before they begin their job assignments.

3.5 EHS Department

The EHS Department shall be responsible for ensuring that the CNSE Hazard Communication Program meets all Federal, State, and local requirements, and make the necessary revisions as required. The EHS Department shall coordinate also Hazard Communication activities and procedures with the various departments and tenants of CNSE, and act as the organizations representative while interfacing with state Right-To-Know and OSHA representatives.

3.6 Contractors

It shall be the responsibility of each employee (host) who contracts the services of outside personnel (contractor) to perform work on CNSE property to ensure that the contractor is aware of the potential hazards associated with the required work. Detailed procedures are included within Section 8.0 of this document and also the CNSE Written Contractor Safety Program.

4. PROCEDURE

4.1 Chemical Authorization Program

4.1.1 Prior to introducing a new chemical into the facility, to a new tool, or making a process chemical change to an existing tool, the requestor must:

- Complete form EHS-00002-F1 (Chemical Authorization Form) identifying all information in Section 1 and
- Acquire a current vendor/supplier MSDS, then
- Send these to CNSEChemicalApprovalRequests@albany.edu

NOTE: A fully disclosed MSDS will be required for proprietary formulations. The requestor should request from the supplier to provide such documentation directly to EHS to protect proprietary formulations.

IMPORTANT: If a tenant chooses to rename a material:

- The tenant must work with the supplier/vendor to ensure an MSDS for the new name is provided to the EHS office.
- All containers provided by the vendor/supplier must also be labeled with the new name.
- All tools and piping must also be labeled with the new name.

4.1.2 The purpose of this review is to ensure that the chemical properties and associated hazards, labeling, exhausts, drains, and disposal requirements are in strict adherence with site and regulatory requirements. It also ensures that all of the necessary safety and health information regarding the use of the chemical is reviewed with the user prior to introduction and use.

- Once received by EHS, there is a 10 working-day turn-around time to review and approve.
- Exceptions to the 10 working-day turn-around would be for those materials which are listed on the RoHS (Restriction of Hazardous Substances) or the REACH (Registration, Evaluation Authorization, Chemical) lists.
- Should changes to the manufacturer's hazard rating be proposed, the EHS team will collectively determine outcome of the proposed change.
- If it is determined the hazard ratings should change;
  - Notification will be made to the requestor.
  - Change will be indicated and highlighted on the Approved Chemical List.

- Change will be indicated on the soft and hard copy MSDS.
- EHS will request update from manufacturer.

4.1.3 Upon completion of a Chemical Authorization form for a new process gas, EHS shall ensure that specification EHS-00011 (Gas Cylinder Handling Procedures) is updated to include the new gas in Table 1: Gas Classification.

4.1.4 Once approved, the requestor will be notified and the chemical will be added to the “Approved Chemical List”. The “Approved Chemical List” is maintained by the EHS department and is uploaded on a periodic basis to the CNSE Intranet. This listing shall include the product name, manufacturer, owner of the chemical, the hazard ratings and the date of the most recent MSDS along with the approval date.

4.1.5 Once a chemical is on the “Approved Chemical List”, the Chemical Authorization Form for that chemical and associated MSDS will be retained by the EHS Department. All Fully Disclosed MSDS will be kept under lock and key by EHS to protect confidentiality.

4.1.6 Prior to delivering to the requestor, the receiving department shall ensure the material has been approved and listed on the appropriate list.

- Receiving department will first contact EHS for verification, then contact the ‘ship to’ person, as appropriate.

4.1.7 The requester shall ensure that all appropriate labeling and listed EHS requirements are met when the chemical is used.

4.1.8 All chemicals must be procured through CNSE Purchasing. Samples received without prior approval shall not be delivered to requestor. Requestor must contact EHS for approval.

4.2 Labeling

4.2.1 All chemical containers, chemical storage cabinets, and production equipment which uses or stores chemicals, shall be clearly labeled as to their contents.

4.2.2 Secondary container chemical labels shall be of the Hazardous Material Information System (HMIS) color bar type (Appendix A) and shall contain the following information: the product name (as identified on the MSDS which may include the term proprietary), hazard information such as in the form of the HMIS ratings for Health, Flammability, and Reactivity, and the labels may also include information regarding the proper PPE to be utilized when working with the specific chemical.

4.2.3 Chemical labels shall be prominently displayed on the container and written in English and in other spoken languages, if necessary.

- *Materials which contain Tetramethylammonium hydroxide (TMAH) will be clearly identified on the label with the words "Contains TMAH" and the percentage (%).*

4.2.4 Chemical containers which have pre-affixed hazard labels from the manufacturer are exempted from the requirements of section 4.2.2 provided that the label contains: the major chemical components, hazard information, and information regarding the proper PPE to be utilized when working with the specific chemical.

4.2.5 In situations where it is impractical, due to space availability, to affix labels on storage cabinets for every chemical/product contained within, a listing of the chemicals/products, their assigned HMIS/NFPA ratings, and their hazardous components may be affixed to the outside of the storage cabinet.

4.2.6 All chemical drains, collection systems, facility and process plumbing shall be labeled as to their contents and direction of flow. Labels shall be placed every 10 feet, at all branches and before and after penetrations.

4.2.7 In addition, all process gas lines within secondary regulator boxes shall be labeled as to their contents and direction of flow. The label shall be affixed to the gas line within the secondary regulator box and shall be visible without having to open the door of the box.

4.3 Material Safety Data Sheets (MSDS)

4.3.1 A Fully Disclosed MSDS is required for each chemical used at CNSE. An MSDS containing the information required by 29 CFR 1910.1200 is kept for each substance listed on the Chemical Inventory. The following list indicates the sections of the MSDS standard format.

- <u>Section 1 – Chemical Product and Company Identification</u>: This section links the chemical name on the label to the MSDS. The MSDS also lists the name, address, and the phone number of the company, manufacturer, or distributor who provides the chemical.

- <u>Section 2 – Composition, Information or Ingredients</u>: This section must identify the hazardous ingredients of the material. This section may also include OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).

- Section 3 – Hazard Identification: This section discusses the health effects one may encounter when exposed to the material. This section will describe the appearance of the material, the potential health effects and symptoms associated with exposure, routes of entry, target organs that could be affected, and so on.

- Section 4 – First Aid Measures: This section will describe possible first aid procedures for each route of entry. The procedures will be written so that untrained individuals can understand the information.

- Section 5 – Fire-fighting Measures: This section will describe information on the fire and explosive properties of the material, extinguishing items, and general fire-fighting instructions.

- Section 6 - Accidental Release Measure: This section gives information on how to respond when a material spills, leaks, or is released into the air. This information may include how to contain a spill or the types of equipment that may be needed for protection.

- Section 7 – Handling and Storage: This section discusses information on handling and storage of the material. Topics that could be described are general warnings to prevent overexposure, handling procedures, and hygiene instructions to prevent continued exposure.

- Section 8 – Exposure Controls and Personal Protection: This section discusses engineering controls and personal protective equipment that would help reduce exposure to the material. The necessary personal protective equipment should be considered for eye/face protection, skin protection, and respiratory protection.

- Section 9 – Physical and Chemical Properties: This section will include information about the physical and chemical properties of the material. The following characteristics should be detailed: appearance, odor, physical state, pH, vapor pressure, vapor density, boiling point, freezing/melting point, solubility in water, and specific gravity or density.

- Section 10 – Stability and Reactivity: This section requires that potentially hazardous chemical reactions are identified. It addresses chemical stability, conditions to avoid, incompatibility with other materials, hazardous decomposition, and hazardous polymerization.

- Section 11 – Toxicological Information: This section discusses data used to determine the hazards that are given in Section 3, “Hazard Identification.” The following information can be addressed: acute and/or chronic data, carcinogenicity, reproductive effects, target organ effects, etc.

- Section 12 – Ecological Information: This section will help determine the environmental impact should the material ever be released into the environment.

- Section 13 – Disposal Consideration: This section gives important information that may be helpful in the proper disposal of the material.

- Section 14 – Transport Information: This section is designed to give basic shipping information. The basic shipping information could include the hazardous materials description, hazard class, and the identification number (UN or NA numbers).

- Section 15 – Regulatory Information: This section discusses information on the regulations under which the material falls. Examples of a few regulations are OSHA, Toxic Substance Control Act (TSCA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Superfund Amendments and Reauthorization Act (SARA) Title III.

- Section 16 – Other Information: This section may include any other important information concerning the material. This information can include hazard ratings, preparation and revisions of the MSDS, and label information.

4.3.2 Purchasing shall require an MSDS from our suppliers whenever changing vendors for an existing approved chemical.

4.3.3 A copy of MSDSs and a current copy of the ACL (Approved Chemical List) is maintained on file in the EHS Department. Employees have immediate 24 hour access to the ACL and MSDS' for the purpose of obtaining information concerning chemicals that they are using. During normal business hours an employee can request a copy of a MSDS by emailing or stopping by the EHS office. MSDS' can be obtained after hours by contacting Security and asking that they contact the ERT leader. The ERT leader shall then meet the requestor at the EHS office, where the requestor shall sign the MSDS Request Form (EHS-00002-F3) and obtain a photocopy of the requested MSDS.

The ACL will be updated continuously as MSDSs are received as the result of the introduction of new chemicals at the facility, or because of revisions to existing MSDSs by the manufacturer.

5. RECORDS

5.1 Employees may receive personal copies of MSDSs for chemicals they work with or around by requesting them from the EHS department as described above in Section 4.3.3.

5.2 Records of MSDSs shall be maintained and retained in the EHS department office for at least thirty years after the product is no longer used at CNSE.

5.3 Information regarding proprietary chemical formulas, ingredients and specific usage will be treated as confidential and only disclosed as required by law.

6. TRAINING

6.1 Prior to beginning work in an area which utilizes chemicals, all new, rehired, temporary, contract and subcontract employees shall receive training on the CNSE Hazard Communication Program.

6.2 It is the responsibility of each Supervisor, Department Manager or Professor to provide safety training specific to the job and the area in which any employee new to the area must work.

6.3 The training shall include, but not be limited to:

- How to detect the presence or release of a hazardous chemical in the work area,
- How to read and understand a MSDS,
- The physical and health hazards of the chemicals used in the work area,
- How to select and properly use PPE specific to the chemicals used in the work area,
- Safe work practices to be used, and
- Emergency procedures.

6.4 Information regarding the use of new chemicals which present new potential hazards shall be communicated to all affected employees by the Supervisor prior to introducing the chemical into the area.

6.5 Contractors will ensure that subcontractors working under their direction understand and comply with the applicable parts of this procedure.

7. ACCESS TO MEDICAL INFORMATION

An employee may request, and receive information relevant to environmental testing in their work area, and personal biological monitoring results through the EHS Department.

8. CONTRACTORS

8.1 It is the responsibility of the CNSE host or tenant to ensure that contractors performing work within our facility are aware of the hazards associated with the required work. If the contractor will be working with or around our chemicals, the properties and hazards of the chemicals shall be reviewed with them. In addition, the host shall make the contractor aware of the location the MSDSs, the HAZCOM labeling system used at the facility, and evacuation procedures.

8.2 Prior to performing work at the site, the contractor must meet the requirements and conditions set forth in the CNSE Written Contractor Safety Program.

8.3 CNSE Employees may not use Contractor Supplied Chemicals unless they are on the Approved Chemical List, and the Employee has received training on the proper usage and safety procedures associated with the chemical.

9. NON-ROUTINE WORK TASKS

9.1 Non-routine work tasks performed by CNSE personnel include, but are not limited to,: open flame work, confined space entry, spark producing work in chemical storage areas or any closed vessel, maintenance operations on any scrubber, and work on chemical waste drain lines.

9.2 Prior to engaging in these activities, or any activities of a hazardous nature not occurring on a routine basis, the Supervisor, Department Manager or Professor of the employee(s) to perform the work must review the operation with the EHS Department.

9.3 It is the responsibility of the Supervisor, Department Manager or Professor for ensuring that all required personal protective equipment and clothing, prescribed work practices, and safety precautions are adhered to.

10. FORMS/APPENDICES

10.1 **EHS-00002-F1** Chemical Authorization Form

10.2 **EHS-00002-F2** MSDS Revision Notification Form

10.3 **EHS-00002-F3** MSDS Request Form

10.4 **Appendix A** – Example Secondary Container HMIS Chemical Labels

APPENDIX A
EXAMPLE OF SECONDARY CONTAINER HMIS CHEMICAL LABEL