



Ames Procedural Requirements

APR 8715.1

Effective Date: December 14, 2018

Expiration Date: December 14, 2023

COMPLIANCE IS MANDATORY

Subject: Chapter 24 – Chemical Hazard Communication Program

Responsible Office: Code QH/Occupational Safety, Health, and Medical Service Division

DOCUMENT CHANGE LOG

Status [Baseline /Revision /Cancelled]	Document Revision	Date of Change	Description
Revision	2	12/14/2018	In the Information Management section, deleted the following statement: “the Building Emergency Action Plan which contains chemical inventories for each building and is compiled and updated annually.” The BEAP is not being updated annually. In section 24.2.2, added the following responsibilities to supervisors: a) Ensure a hazardous chemical list is present in the work area and made available to workers, b) update hazardous chemical lists and inventories at least annually or when there is significant quantity change, c) Ensure job hazard analyses are developed to address hazards associated with non-routine tasks, i) Ensure renovation or removal work associated with pipes/utilities go through a permit review board; so that, hazards associates with pipes/utilities are addressed prior to start of the work., m) appoint a SEMA agreement holder for the work center and n) assign a competent person to assist the SEMA agreement holder in assessing and controlling the hazards of the chemical being ordered.

			<p>In section 24.2, added responsibility of a SEMA agreement holder as 24.2.7.</p> <p>In section 24.2, added responsibility of a Competent Person as 24.2.8.</p> <p>In section 24.3. clarified how hazards are communicated to workers and prevented.</p> <p>In section 24.2.4. Replaced Contract Officer with Contract Officer Representative, as the paragraph heading.</p> <p>In section 25.5, added clarification, consistent with OSHA regulation, that portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer, need not be labeled.</p> <p>Revised the example of SEMA agreement in Appendix E</p> <p>Added an example of an Ames Product Review for Hazardous Chemical Purchase Form</p>

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PREFACE

PURPOSE

This chapter of APR 8715.1 establishes minimum requirements to communicate chemical hazards to workers. This chapter together with the list of hazardous chemicals in each work area comprise the Center's written Hazardous Communication Program.

APPLICABILITY

This directive applies to all Ames workers, and to Ames contractors and grantees as specified in their contracts or grants.

In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms: "may" or "can" denote discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are/is" denotes descriptive material.

In this directive, all document citations are assumed to be the latest version unless otherwise noted.

AUTHORITY

Chapter 4.7 of NPR 1800.1D and 29 CFR 1910.1200, Hazard Communication

APPLICABLE DOCUMENTS AND FORMS

None

MEASUREMENT/VERIFICATION

Verification of compliance is measured through the internal audit process and management review and those results. Measuring effectiveness will at a minimum use customer satisfaction data.

Verification and measurement for compliance to this directive will be tracked through Agency triennial audit and Ames Safety Accountability Program (formerly Ames Annual Voluntary Protection Program (VPP) self-inspections).

CANCELLATION

APR8715.1 Chapter 24 – Chemical Hazard Communication with the expiration date of 4/30/18

Eugene Tu
Director

Distribution Statement:

APR 8715.1 Ames Health and Safety Manual Chapters shall be made available via procurement website to anyone bidding a job here at Ames. The exceptions are Chapter 7 – Ames Radiation Safety Guide, Chapter 10 – Pressure Systems Safety, Chapter 12 – Explosives Safety and Chapter 23 – Control of

Narcotics and Other Controlled Drugs including Alcohol, which shall not to be made public but can be viewed onsite.

CHAPTER 24. CHEMICAL HAZARD COMMUNICATION PROGRAM

24.1 Overview

This chapter of APR 8715.1 establishes minimum requirements to communicate chemical hazards to workers. This chapter together with the list of hazardous chemicals in each work center comprise the Center's written Hazardous Communication Program.

24.2 Responsibilities

24.2.1 Occupational Safety, Health, and Medical Service Division shall:

- a. Provide Hazard Communication training to civil service employees.
- b. Manage Safety, Environmental and Mission Assurance (SEMA) Agreements are valid for a 3-year period.
- c. Provide oversight of chemical purchases.
- d. Verify that contractors whose employees may be exposed to chemicals under normal condition of use or in a foreseeable emergency have a written hazard communication program as required by 29 CFR 1910.1200, Hazard Communication Program.

24.2.2 Supervisors (all levels) shall:

- a. Ensure a list of hazardous chemicals present in the work area is maintained and made available to workers.
- b. Ensure job hazard analyses are developed to address chemical hazards associated with non-routine tasks.
- c. Ensure that employees complete required training (the HAZCOM 2012 course and task-specific on-the-job training) before working on hazardous chemical assignments.
- d. Ensure that Safety Data Sheets (SDSs) (as hard copies or electronic files) are readily accessible and available for all hazardous chemicals in the work area, stored or in use, during all shifts.
- e. Ensure that hazardous chemical containers are properly labeled.
- f. Ensure that training is provided when a new chemical is introduced into the workplace or when there is a substantial change in chemical usage or work practices.
- g. Ensure that any hazardous chemicals/materials shipped from an ARC facility are packaged and documented by an authorized Transportation Officer.
- h. Ensure that all applicable requirements of this chapter, including SEMA Agreements and training, are met before hazardous chemicals/materials are acquired.
- i. Ensure that hazard determinations are completed and Safety Data Sheets (SDSs) are prepared for any new chemical that is developed at Ames. A new Safety Data Sheet (SDS) must be written in accordance with the criteria contained in 29 CFR 1910.1200 Hazard Communication Standard.

- j. Ensure renovation or removal work associated with pipes/utilities go through permit review board; so that, hazards associated with pipes/utilities are addressed prior to start of the work.
- k. Appoint a government purchase card holder (for civil service personnel) or a company credit card holder (for contractors) as a SEMA agreement holder who will order hazardous chemicals for the organization.
- l. Assign a competent person (OSHA defines competent person as someone who is "capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them") to assist the SEMA agreement holder in assessing and controlling the hazards of the chemicals being ordered.

24.2.3 Employees shall:

- a. Attend Hazard Communication training (SATERN class: HAZCOM 2012 for Chemical Users ARC-003-03, or HAZCOM 2012 for Office Workers ARC-001-03), before working with hazardous material.
- b. Read and understand the Safety Data Sheets (SDSs) for each hazardous material that they will handle or may be exposed to at work.
- c. Go through SEMA Agreement holder for procurement of chemicals/materials.
- d. Use the least hazardous material appropriate for the job.
- e. Use the Central Chemical Storage Facility. Purge unwanted chemicals by using the Ames Chemical Exchange (ACE) program.
- f. Use Personal Protective Equipment when required.
- g. Follow all site procedures for acquisition, labeling, storage, and handling of hazardous chemicals/materials.
- h. In the event of personnel exposure to a hazardous material, provide applicable Safety Data Sheets (SDSs) along with other relevant information to emergency personnel and medical care providers.

24.2.4 Contracting Officer Representative (COR) shall:

- a. Ensure that contractor employees know ARC Hazard Communication policies and comply with this program while working on site.
- b. Ensure that contractor purchases of hazardous chemicals/materials are reviewed for compliance with applicable regulations and ARC policy and requirements as specified in this chapter and that purchasers of chemicals that will be used at ARC have a valid SEMA Agreement on file with the Safety, Health and Medical Services Division.
- c. Review and evaluate contractor Hazard Communication policies, written hazard communication program, and performance.

24.2.5 Acquisition Division shall:

- a. Shall include appropriate clauses in contracts where the NF 1707 submitted with the purchase request identifies the purchase as falling under this APR.

24.2.6 Shipping and Receiving Personnel shall:

- a. Ensure that received containers of hazardous chemicals/materials are properly labeled.
- b. Ensure that Safety Data Sheets (SDSs) accompany all incoming hazardous chemicals/materials as required on the purchase request.
- c. Ensure that the lab-generated chemicals/materials shipped from ARC are accompanied by appropriate Safety Data Sheets (SDSs).

24.2.7 SEMA Agreement Holder (Representative from Ames Organization to Ensure Chemical Hazards are Controlled or Minimized) shall:

- a. Request help from a competent person for duties stated in paragraph 4.7.2.4 of NPR 1800.1. (See 24.2.8 for details).
- b. Maintain familiarity with applicable regulations and ARC policies for acquisition of hazardous chemicals/materials.
- c. Ensure adequate controls for the hazardous chemicals/materials being procured are in place prior to bringing into Ames as required by 4.7.1.3 of NPR 1800.1D.
- d. Request Code QH industrial hygiene review prior to acquisition of hazardous chemicals/materials as needed.
- e. Utilize Ames Chemical Exchange (ACE) and Central Chemical Storage Facility (CCSF) chemicals and facilities to the maximum extent possible. Please contact Code JQ for assistance.
- f. Make arrangements and post instructions for delivery of chemicals.
- g. Request Code JQ environmental compliance review prior to acquisition of a new hazardous material, especially toxic gases and volatile solvents.
- h. Order the smallest reasonable amount, size, activity, and/or hazard potential.
- i. Fill out Ames Product Review for Hazardous Chemical Purchase Form send it to the Safety Office if
 - 1) chemicals ordering contain OSHA regulated chemicals listed in Appendix G, or
 - 2) anyone in the work center believes that additional chemical review by the Safety Office is warranted

24.2.8 Competent Person shall:

- a. Identify hazards associated with the chemicals/materials and/or articles being obtained;
- b. Identify alternatives, where available, to reduce risk;
- c. Determine safety and health requirements for the safe use of hazardous chemicals/materials and/or articles;

- d. Ensure there are adequate controls for the hazardous chemicals being procured prior to purchase;
- e. Verify that all employees (civil servants and contractors) complete required training identified by supervisor or Safety Division prior to working with chemicals;
- f. Disapprove acquisitions of hazardous chemicals/materials and/or articles that cannot be safely used.

24.3 Written Hazard Communication Program

24.3.1 Sections below describe the methods ARC uses to address 29 CFR 1910.1200 (e), Written Hazard Communication Program requirements:

- a. Supervisors maintain a current list of hazardous chemicals for their own work area
- b. Supervisors ensure job hazard analyses are developed to address hazards associated with non-routine tasks
- c. Employees receive on-the-job training before working on any hazard chemical assignment.
- d. Supervisors shall ensure renovation or removal work associated with pipes/utilities go through the permit review board so that hazards associated with pipes/utilities are addressed prior to start of the work.

24.3.2 Methods Used to Communicate in Multi-employer work sites

- a. All employees in a multi-employer work site at ARC shall have access to safety data sheets for each hazardous chemical they may be exposed to. SDSs shall be available in laboratories and shops or electronically using a Chemwatch subscription.
- b. Contractors must prepare a safety plan that explains how they will comply with ARC requirements. The plan must include an explanation of any labeling system that differs from Appendix D.
- c. Storage and use areas must be labeled to identify the hazard, with standard NFPA labels. Sample NFPA labels can be found in Appendix D.
- d. When necessary in order to prevent exposure to others, operations with hazardous chemicals shall be performed in a designated, labeled controlled access area. Precautionary measures to be taken during the workplace's normal operating conditions and in foreseeable emergencies shall be posted at the entrances to restricted access areas or sent to building occupants by email. These precautionary may be derived from:
 - Recommendation and requirements from the permit review board
 - Risk assessment in the laboratory safety plans
 - Hazards and controls identified in job hazard analysis
 - Recommendation and requirement generated during system safety/project reviews
 - Product labels.

24.4 Safety Data Sheets (SDS)

The manufacturer's current SDS shall be obtained by the user before acquisition of any hazardous material and shall be maintained in a location accessible within 10 minutes to worksites where the material is stored or used. Safety data sheets (SDSs) may be obtained by contacting the vendor directly or through the code Q website (click the CHEMWatch icon) using the electronic safety data sheet (sds) database. If an online service is used, the safety data sheet (SDS) obtained must exactly match the product name and manufacturer of the item to be purchased.

- a. Users should always verify that they have the current safety data sheet (SDS) for the product or chemical in question.
- b. Safety data sheets (SDSs) are available via web-links (Chemwatch) from the Code Q website.

24.5 Chemical Labelling System

The following rules and guidelines apply to all chemical containers.

- a. Each workplace container of hazardous material is labeled, tagged, and marked to identify the material and to provide appropriate warnings.
- b. At a minimum, the label should identify the chemical(s), and the hazard warning(s).
- c. The chemical identity provided on the label must be the same as or cross-referenced to the same identifier on the Safety Data Sheet (SDS) and inventory.
- d. The user shall label all containers to which chemicals may be transferred from the primary container, prior to transfer.
- e. Incoming containers received with defaced or missing labels should be rejected unless the contents are definitely known and the container is immediately labeled with the appropriate information.
- f. Labels shall not be removed or defaced, and must remain intact.
- g. Labels must be legible, in English (another language may be used in addition to English when appropriate), and prominently displayed on the exterior of the container.
- h. Preprinted and manufacturers' labels must be revised within three months of receipt of significant new information and before the material is reintroduced into the worksite.
- i. Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer need not be labeled.
- j. Labels for many pure chemicals can be printed from the Code Q website using the electronic database system. Biohazard and Target Organ labels are also available. A current list and set of instructions are available from the Safety, Health and Medical Services Division.
- k. Owners and users of chemicals will verify that all original containers of classified hazardous chemicals in the workplace are clearly and prominently labeled, in English, with the following information:

- 1) Product Identifier or name:
- 2) Signal Word to indicate the level of severity of hazard and alert the reader to a potential hazard;
- 3) Hazard Statement which describes the nature of the hazard(s) of the chemical;
- 4) A Pictogram, conveying in a graphic element, specific information about the hazards of the chemical;
- 5) Precautionary Statement(s) which describe recommended measures to take to prevent adverse effects resulting from exposure or improper storage or handling;
- 6) The name, address and telephone number of the chemical manufacturer, importer or other responsible party.

24.6 Training

24.6.1 Everyone at NASA AMES who works with or is potentially exposed to hazardous chemicals must receive initial training on the hazard communication standard and this plan before working with hazardous chemicals/materials.

24.6.2 Training courses required for chemical users include:

- a. Hazard Communication 2012 for Chemical Users (ARC-003-03)
- b. Hazardous Waste/Environmental & Spill Response Essentials (Annual) (ARC-002-03)
- c. Personal Protective Equipment (ARC-009-01)
- d. Chemical Hygiene for Laboratories (for those who work in laboratories) (ARC-008-05)

24.6.3 Job-specific training shall include:

- a. The hazardous chemicals present at the work area;
- b. The physical and health risks of the hazardous chemicals;
- c. Signs and symptoms of overexposure;
- d. How to determine the presence or release of hazardous chemicals in the work area;
- e. How to reduce or prevent exposure to hazardous chemicals through use of control procedures, work practices and personal protective equipment;
- f. Procedures to follow if employees are overexposed to hazardous chemicals;
- g. Procedures to follow in the event of a spill of hazardous chemicals;
- h. Location of the SDS file and written Hazard Communication program.

24.6.4 Prior to introducing a new chemical, each employee who will handle the chemical shall be given information and training as outlined above for the new chemical hazard.

24.6.5 Office workers shall complete the course HAZCOM 2012 for Office Workers

24.6.6 The Occupational Safety, Health and Medical Services Division maintains records of training provided by the Division. Supervisors may obtain attendance rosters and verifications from the

Occupational Safety, Health and Medical Services Division. Managers maintain records of supervisor-provided task specific training. Records of site and task-specific training shall include the date and time (duration), name of trainer, and outline or summary of topics presented.

24.7 Agreements to Ensure Effective Control of Hazardous Chemicals/Materials

The Safety, Environmental and Mission Assurance (SEMA) agreement is used at Ames to establish a team to assist the center in controlling and minimizing workers exposure to hazardous chemicals/materials. Each SEMA agreement spells out the responsibilities of the SEMA agreement holder and a competent person advising the purchaser and workers using the hazardous chemical. A sample SEMA agreement can be found in Appendix E. Contractors ordering chemicals to be used at ARC are also required to register a SEMA agreement with the Safety, Health and Medical Services Division. Blank copies of these agreements can be printed from the Occupational Safety, Health and Medical Services Division website.

Material code 68 “chemical and chemical products” should be used when creating the order log. Use chemical descriptors in the text fields so your approving official will know you have purchased a chemical. If you are purchasing for someone else, you are still the responsible party.

APPENDIX A: DEFINITIONS

"Chemical" means any substance, or mixture of substances.

"Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means 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 that will clearly identify the chemical for the purpose of conducting a hazard classification.

"Classification" means to identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical; and decide whether the chemical will be classified as hazardous according to the definition of hazardous chemical in this section. In addition,

classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for health and physical hazards.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

Competent Person. OSHA defines competent person as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them".

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers. "Employee" means 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.

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

"Exposure or exposed" means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure.

"Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazard category" means the division of criteria within each hazard class, e.g., oral acute toxicity and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

"Hazard class" means the nature of the physical or health hazards, e.g., flammable solid, carcinogen, oral acute toxicity. "Hazard not otherwise classified (HNOC)" means an adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria for the physical and health hazard classes addressed in this section. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in this

section, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA (e.g., acute toxicity Category 5).

"Hazard statement" means a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard.

"Hazardous chemical" means any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

"Hazardous Material" means chemicals which in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke which may have any of the characteristics in the hazardous chemical definition. Examples include aluminum bar stock, welding rods, and smoke candles.

"Health hazard" means a chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 29 CFR §1910.1200 -- Health Hazard Criteria.

"Immediate use" means that 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.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

"Label" means an appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

"Label elements" means the specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category. "Mixture" means a combination or a solution composed of two or more substances in which they do not react.

"Physical hazard" means a chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to 29 CFR §1910.1200 -- Physical Hazard Criteria.

"Pictogram" means a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical. Eight pictograms are designated under this standard for application to a hazard category.

"Precautionary statement" means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.

"Product identifier" means the name or number used for a hazardous chemical on a label or in the SDS. It provides a unique means by which the user can identify the chemical. The product identifier used shall permit cross-references to be made among the list of hazardous chemicals required in the written hazard communication program, the label and the SDS.

"Produce" means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

"Pyrophoric gas" means a chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Safety data sheet (SDS)" means written or printed material concerning a hazardous chemical that is prepared in accordance with paragraph (g) of this section.

"Signal word" means a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in this section are "danger" and "warning." "Danger" is used for the more severe hazards, while "warning" is used for the less severe.

"Simple asphyxiant" means a substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

"Substance" means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

"Use" means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

APPENDIX B: ACRONYMS

AIB--Ames Stores Stock

ACE--Ames Chemical Exchange

BEAP--Building Emergency Action Plan

CAS--Chemical Abstracts Service

CFR—Code of Federal Regulation

COR--Contracting Officer Representative

HAZCOM--Hazard Communication

JQ—Environmental Management

NFPA—National Fire Protection Agency

OSHA—Occupational Safety and Health Administration

QH—Occupational Safety, Health and Medical Services Division

SDS--Safety Data Sheets

SEMA Agreement-- Safety, Environmental and Mission Assurance Agreement

APPENDIX C: REFERENCES

1. Hazard Communication, 29 Code of Federal Regulations (CFR) 1910.1200
2. NPR 1800.1D, NASA Occupational Health Program Procedures

APPENDIX D: CHEMICAL LABELING REQUIREMENTS

Area, Door, and Building Labeling: National Fire Protection Association (NFPA) Diamond Label

How to Read an NFPA Label

The NFPA diamond label is used to warn firefighters and other emergency responders of the hazards they would be exposed to in a fire or chemical spill situation.

Flammability Hazard

0 = Will not burn.
 1 = Must be considerably pre-heated to ignite.
 2 = Must be moderately heated or exposed to high ambient temperatures to ignite.
 3 = Capable of igniting under most ambient conditions.
 4 = Easily ignites, or ignites spontaneously in air.

Colors indicate the type of hazard
 Numbers indicate the degree of hazard

Instability Hazard

0 = Normally stable even under fire conditions.
 1 = Normally stable materials that can become unstable at elevated temperatures and pressures.
 2 = Materials that readily undergo violent chemical change at elevated temperatures and pressures.
 3 = Materials capable of detonation, or explosive decomposition, or explosive reaction, but that require a strong initiating source, or that must be heated under confinement before initiation.
 4 = Materials readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures.

Health Hazard

0 = Materials that offer no hazard beyond that of ordinary combustible materials.
 1 = Materials that can cause significant irritation.
 2 = Materials that can cause temporary incapacitation or residual injury.
 3 = Materials that can cause serious or permanent injury.
 4 = Materials that can be lethal.

Other Hazards

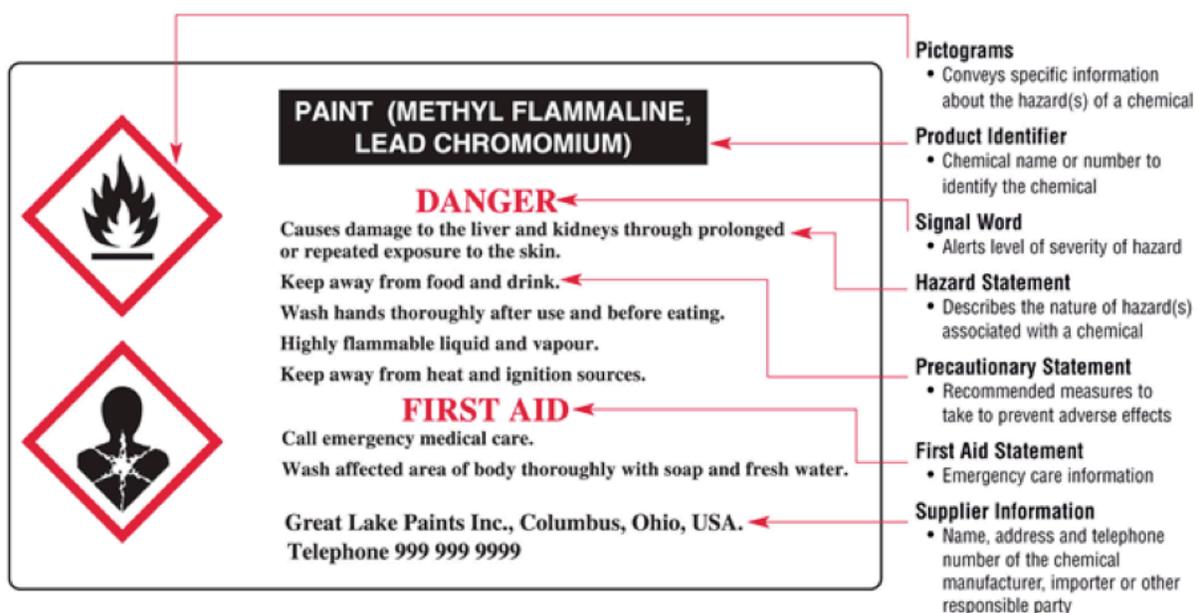
W = water reactive
OX = oxidizer
COR = corrosive
ACID = acidic
ALK = alkaline or caustic
 = radioactive

These are examples; other symbols may be present.

If you need assistance in understanding the meaning of these labels, contact your supervisor or Code QH.

<u>SAMPLE LABEL</u>	
<p style="text-align: center;"><u>PRODUCT IDENTIFIER</u></p> CODE _____ Product Name _____	<p style="text-align: center;"><u>HAZARD PICTOGRAMS</u></p>  <p style="text-align: center;"><u>SIGNAL WORD</u></p> <p style="text-align: center;">Danger</p> <p style="text-align: center;"><u>HAZARD STATEMENT</u></p> Highly flammable liquid and vapor. May cause liver and kidney damage.
<p style="text-align: center;"><u>SUPPLIER IDENTIFICATION</u></p> Company Name _____ Street Address _____ City, State _____ Postal Code, Country _____ Emergency Phone Number _____	<p style="text-align: center;"><u>SUPPLEMENTAL INFORMATION</u></p> Directions for use _____ _____ _____ Fill weight: _____ Lot number: _____ Gross weight: _____ Fill Date: _____ Expiration Date: _____
<p style="text-align: center;"><u>PRECAUTIONARY STATEMENTS</u></p> Keep container tightly closed. Store in cool, well ventilated place that is locked. Keep away from heat/sparks/open flame. No smoking. Only use non-sparking tools. Use explosion-proof electrical equipment. Take precautionary measure against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear Protective gloves. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of in accordance with local, regional, nation, international regulations as specified. In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO2) fire extinguisher to extinguish. First Aid If exposed call Poison Center. If on skin (on hair): Take off immediately and contaminated clothing. Rinse skin with water.	

HCS/GHS Labeling Components



Minimum Requirements for a Chemical Label

Product Identifier -- This is the unique name or number used to identify a hazardous chemical. The same Product Identifier must be used for the label, SDS and required company chemical list for each chemical.

Signal Word -- A word used to alert employees of a potential hazard and its relative level of severity. The two signal words used are:

- **Danger** -- Used for more severe hazards
- **Warning** -- Used for less severe hazards

Only one word will be present on a label. If "Danger" is included then "Warning" should not appear.

Hazard Statement -- A statement describing the nature of the chemical hazard, including, where appropriate, the degree of hazard. Statements such as "Fatal if swallowed", "Toxic if swallowed" and "Causes severe skin burns and eye damage" are examples of Hazard Statements.

Pictogram --

HCS PICTOGRAMS & HAZARDS

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases under pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull & Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

Precautionary Statement -- A phrase describing recommended measures to be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling.

- There are four types of Precautionary Statements used on labels.
 - Prevention -- Statements meant to keep you from harm, such as “Do not eat, drink or smoke when using this product” or “Wear protective gloves.”
 - Response -- Statements providing steps to take if you have been exposed to a chemical hazard. “If on skin: Gently wash with plenty of soap and water” or “Immediately call a poison center or doctor/physician” are examples of response statements.
 - Storage -- Explains the safe way to store the chemical. “Store locked up” and “Store in a well-ventilated place. Keep container tightly closed” are statements you might see in this section of the label.

- Disposal -- The last statement explains to the employer/employee how to dispose of the chemical safely. "Dispose of contents in accordance with local, regional, national, international regulations." is an example of a disposal statement you might see on a label.

Supplier Information -- Name, address, and telephone number of the supplier.

APPENDIX E: SEMA AGREEMENT

ARC Safety, Environmental and Mission Assurance (SEMA) Agreement for Hazardous Chemicals/Materials

This agreement is effective for three years from this date _____.

I, (state your name) _____, am appointed as a SEMA agreement holder for (organization code or contractor name _____). I agree to perform the following:

- a. **Work with a Competent Person** to review procurements and other acquisitions of hazardous materials and/or articles. The competent must do the following:
 1. Identify hazards associated with the materials being obtained;
 2. Identify alternatives, where available, to reduce risk;
 3. Determine safety and health requirements for the safe use of hazardous materials;

*Please attach corresponding Safety Data Sheet and Documents describing chemical hazards and personal protective equipment to be worn (i.e. as Job Hazard Analyses and chemical SOPs) with this request. See <http://q.arc.nasa.gov/content/job-hazard-analysis> for examples.

Potential User: Please Answer Questions	
Does the purchaser have a current SEMA Agreement filed with the Safety Office? Name:	
Please list name of workers who will be using the chemical:	
<p>Personnel working with chemicals need to complete the following trainings. See training needs survey at the back of the Training Catalog: http://q.arc.nasa.gov/content/training:</p> <ul style="list-style-type: none"> • Building Emergency Action Plan (BEAP) • HAZCOM 2012 for Chemical Users • Chemical Hygiene Program • Personal Protective Equipment • Hazardous Waste, Environmental & Spill Response and • Other relevant trainings. <p>Have personnel listed above completed all the required trainings?</p>	
<p>Is there written documentation describing the hazards and required PPE (JHA, PPE Hazard Assessment, SOPs or Lab Safety Plan) signed by the Supervisor? See http://q.arc.nasa.gov/content/job-hazard-analysis</p>	
Shop name, description of primary work operations:	
<p>Brief Description how the chemical is used or applied (if the chemical will be heated, sprayed, sanded, machined or by-products will be generated, please mention them here).</p> <p>Will there be mixing or pouring into secondary containers? Quantities?</p> <p>Quantity of material used per each use? Where?</p> <p>Give dimensions of work space? Length= Width= Height=</p>	
<p>Time spent during use of this material per day? (Minutes or hours/day) How many days per week, month or year?</p>	
<p>Will work be done in a chemical fume hood, paint booth, or with extra ventilation (specify)? Are there oxygen sensors? Toxic gas alarms? See https://cdms.nasa.gov/assets/docs/centers/ARC/Dirs/APR/APR8715.1C58.pdf</p>	

If the chemical has an adverse health effect on the body when exposed to it, such as corrosives that can damage the tissues, there needs to be an eyewash and/or emergency shower within 10 seconds or 50 feet from where the chemical is used. If this applies to the chemical you are purchasing, is there an eyewash and/or shower available?

See <https://cdms.nasa.gov/assets/docs/centers/ARC/Dir/APR/APR8715.1C18.html>

List Personal Protective Equipment that personnel will be wearing while using the chemical:

If respirator is worn specify type & cartridges:

Who will wear a respirator?

Personnel who wear respirator need to be current in the respiratory protection program (RPP).

Training currency can be verified at https://safetytraining.arc.nasa.gov/training/currently_trained

See <http://q.arc.nasa.gov/content/respiratory-protection> for RPP enrollment information.

Hazard Association with the chemical (circle all that apply).

Physical Hazards (delete the ones that don't apply): explosive, flammable gas, flammable liquid, flammable solid, oxidizing substances, organic peroxides, toxic and infectious substances, corrosive

Health Hazards (delete the ones that don't apply): Acute toxicity, Skin corrosion, skin irritation, eye irritation, respiratory sensitizer, mutagenicity, carcinogenicity, Reproductive Toxicity, Specific Target Organ Toxicity, Aspiration Hazard

Code QH Evaluation

The Code QH Industrial Hygienist reviewed SDS(s), JHAs, SOPs, and other relevant documentation. Below is a summary of the hazards and requirements for safe use of this product. This information must be shared with the employees who will use this material. A Chemical Exposure Assessment Form is attached.

Yes/No Recommend user wear respirator when using this chemical

Yes/No PPE required include the following:

Yes/No Special ventilation required (e.g., hood, paint booth, extra local ventilation)

Yes/No This material contains a carcinogen

Yes/No This material contains a reproductive toxin

Yes/No This material contains a sensitizer

Yes/No Based on training record review, all personnel listed in this request has completed all trainings.

Yes/No Personal Air Sample will be collected. Contact Code QH, 4-5172, at least 2 weeks prior to using this chemical task.

Comments:

Code QH Industrial Hygienist: _____ Extension: _____ Date: _____

APPENDIX G: OSHA REGULATED CHEMICALS

Chemical Name	CAS Number	OSHA Regulation (29 CFR)	
2-Aceylaminoflourene	53-96-3	1910.1003 1910.1014	13 Carcinogens; 2-Acetylaminoflourene;
Acrylonitrile	107-13-1	1910.1045	Acrylonitrile
4-Aminodiphenyl	92-67-1	1910.1003 1910.1011	13 Carcinogens; 4-Aminodiphenyl
Inorganic Arsenic	7440-38-2	1910.1018	Inorganic Arsenic
Asbestos	1332-21-4	1910.1001	Asbestos
Benzene	71-43-2	1910.1028	Benzene
Benzidine	92-87-5	1910.1003 1910.1010	13 Carcinogens; Benzidine
Beryllium	10210-64-7	1910.1024	Beryllium
1,3-Butadiene	106-99-0	1910.1051	1,3-Butadiene
Cadmium and compounds	7440-43-9	1910.1027	Cadmium
Bis-Chloromethyl ether	542-88-1	1910.1003 1910.1008	13 Carcinogens bis-Chloromethyl ether
Methyl Chloromethyl ether	107-30-2	1910.1003 1910.1006	13 Carcinogens; Bis-Chloromethyl ether
Chromium V(l)	18540-29-9	1910.1026	Chromium (VI)
1,2-Dibromo-3-chloropropane	96-12-8	1910.1044	1,2-Dibromo-3-chloropropane
3,3'-Dichlorobenzidine	91-94-1	1910.1003 1910.1007	13 Carcinogens 3,3'-Dichlorobenzidine
4-Dimethylaminoazobenzene	60-11-7	1910.1015	4-Dimethylaminoazobenzene
Ethyleneimine	151-56-4	1910.1003 1910.1012	13 Carcinogens Ethyleneimine
Ethylene oxide	75-21-8	1910.1047	Ethylene oxide

Formaldehyde (and formalin)	50-00-0	1910.1048 Formaldehyde
Lead	7439-92-1	1910.1025 Lead
Methylene chloride	75-09-2	1910.1052 - Methylene chloride
4,4'-Methylenedianiline	101-77-9	1910.1050 - Methylenedianiline
alpha-Naphthylamine	134-32-7	1910.1003 - 13 Carcinogens 1910.1004 - alpha-Naphthylamine
beta-Naphthylamine	91-59-8	1910.1003 - 13 Carcinogens 1910.1009 - beta-Naphthylamine
4-Nitrobiphenyl	92-93-3	1910.1003 - 13 Carcinogens
N-Nitrosodimethylamine	65-75-9	1910.1003 - 13 Carcinogens 1910.1016 - N-Nitrosodimethylamine
beta-Propiolactone	57-57-8	1910.1003 - 13 Carcinogens 1910.1013 - beta-Propiolactone
Vinyl chloride	75-01-4	1910.1017 - Vinyl chloride