CHEMICAL HAZARD COMMUNICATION

NIST S 7101.59
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1. PURPOSE

The purpose of the NIST Chemical Hazard Communication Program is to ensure that the hazards of all chemicals resident at or shipped from a NIST workplace (see definition of "NIST Workplace") are classified and communicated to potentially exposed employees, covered associates, and other parties. This suborder also serves as NIST's written hazard communication program, as required by Occupational Safety and Health Administration (OSHA) Hazard Communication Standard 29 CFR 1910.1200 (HCS).

2. BACKGROUND

The HCS was promulgated in 1994 to ensure that the hazards of all chemicals produced or imported are classified and that information concerning the classified hazards is transmitted to employers and employees. The HCS was revised in 2012 to align with the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Revision 3 and provide a common and coherent approach to classifying chemicals and communicating hazard information. The HCS again was revised in 2024 to be consistent with the GHS, primarily Revision 7.

The HCS requires chemical manufacturers and importers to classify the hazards of chemicals that they produce or import and to provide information about the chemical hazards through labels on shipped containers and more detailed information sheets called safety data sheets (SDSs).

The HCS requires employers to develop and implement a written hazard communication program, which describes how the employer will comply with the HCS requirements for preparing and distributing SDSs, labeling containers of chemicals in the workplace and containers being shipped to other workplaces, maintaining a list of the hazardous chemicals known to be present in the workplace, informing employees of the hazards of non-routine tasks, informing employees of the hazards associated with chemicals in unlabeled pipes in the

[1] For revision history, see Appendix A.

workplace, providing employee training regarding chemical hazards and protective measures, and communicating chemical hazard information to other employers.

This suborder supersedes NIST Administrative Manual Subchapter 12.17, *Chemical Hazard Communication*, NIST Health and Safety Instruction # 7, *Hazard Communication*, and NIST Health and Safety Instruction # 15, *Chemical Container Labeling*.

3. APPLICABILITY

a. The provisions of this suborder apply to all NIST workplaces and to all NIST employees and covered associates who may be exposed to hazardous chemicals under normal conditions of use or in a foreseeable emergency (see definition of "Foreseeable Emergency").

b. The provisions of this suborder apply to:

(1) Any chemical known to be present in a NIST workplace in such a manner that NIST employees or covered associates could be exposed under normal conditions of use or in a foreseeable emergency;[2] and

(2) Hazardous chemicals shipped from a NIST workplace.

c. Hazardous chemicals exempt from specific *labeling requirements* of this suborder[3] include:

(1) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(2) Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 2601 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(3) Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (*e.g.*, flavors and fragrances), as such terms are defined in the Federal Food, Drug, and

[2] Chemicals within the scope of other NIST OSH suborders (*e.g.*, Compressed Gas Safety, Cryogen Safety) shall comply with the applicable requirements of this and any other applicable NIST OSH suborder.

[3] Hazardous chemicals exempt from specific labeling requirements of this suborder shall be labeled in accordance with the labeling requirements of the applicable Act and regulations.

Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;

(4) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, Firearms and Explosives;

(5) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission; and,

(6) Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

d. Hazardous chemicals exempt from all requirements of this suborder are detailed in 29 CFR 1910.1200(b)(6). These exemptions include, but are not limited to:

(1) Any hazardous waste[4] as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(2) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. 9601 et seq.) when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA in accordance with Environmental Protection Agency regulations;

(3) Tobacco or tobacco products;

[4] Hazardous wastes at a NIST workplace shall comply with the requirements of the site-specific hazardous waste program (*e.g.*, NIST S 7301.06*, Chemical Waste Accumulation/Disposal at NIST Gaithersburg*, NIST S7301.07, *Chemical Waste Accumulation/Disposal at NIST Boulder*).

(4) Wood or wood products which have not been treated with a hazardous chemical covered by this standard, and wood which will not be subsequently sawed or cut, generating dust;

(5) Articles (see definition of "Article");

(6) Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;

(7) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (*e.g.*, tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail establishment (*e.g.*, over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (*e.g.*, first aid supplies);

(8) Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

(9) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 *et seq*.) and Federal Hazardous Substances Act (15 U.S.C. 1261 *et seq*.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended;

(10) Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical hazard, health hazard, or other hazards covered under the HCS;

(11) Ionizing and non-ionizing radiation[5]; and,

(12) Biological hazards[6].

4. REFERENCES

[5] Chemical hazards associated with sources of ionizing and non-ionizing radiation are not exempted from the requirements of this program.

[6] Chemical hazards associated with biological hazards are not exempted from the requirements of this program.

a. EPA 40 CFR 751, *Regulation of Certain Chemical Substances and Mixtures Under Section 6 of the Toxic Substances Control Act*

b. OSHA 29 CFR 1910.1200: *Hazard Communication*

c. OSHA 29 CFR 1910.1001: *Asbestos*

d. OSHA 29 CFR 1910.1002: *Coal Tar Pitch Volatiles*

e. OSHA 29 CFR 1910.1003: *13 Carcinogens*

f. OSHA 29 CFR 1910.1017: *Vinyl Chloride*

g. OSHA 29 CFR 1910.1018: *Inorganic Arsenic*

h. OSHA 29 CFR 1910.1024: *Beryllium*

i. OSHA 29 CFR 1910.1025: *Lead*

j. OSHA 29 CFR 1910.1026: *Chromium (VI)*

k. OSHA 29 CFR 1910.1027: *Cadmium*

l. OSHA 29 CFR 1910.1028: *Benzene*

m. OSHA 29 CFR 1910.1029: *Coke Oven Emissions*

n. OSHA 29 CFR 1910.1043: *Cotton Dust*

o. OSHA 29 CFR 1910.1044: *1,2-Dibromo-3-Chloropropane*

p. OSHA 29 CFR 1910.1045: *Acrylonitrile*

q. OSHA 29 CFR 1910.1047: *Ethylene Oxide*

r. OSHA 29 CFR 1910.1048: *Formaldehyde*

s. OSHA 29 CFR 1910.1050: *Methylenedianiline*

t. OSHA 29 CFR 1910.1051: *1,3-Butadiene*

u. OSHA 29 CFR 1910.1052: *Methylene Chloride*

v. OSHA 29 CFR 1910.1053: *Respirable Crystalline Silica*

w. OSHA 29 CFR 1910.1201: *Retention of DOT Markings, Placards, and Labels*

x. OSHA 29 CFR 1910.1450: *Occupational Exposure to Hazardous Chemicals in Laboratories*

y. OSHA 29 CFR 1926.59: *Hazard Communication in Construction*

z. OSHA 29 CFR 1926.1101: *Asbestos*

aa. OSHA 29 CFR 1926.1102: *Coal Tar Pitch Volatiles*

bb. OSHA 29 CFR 1926.1103: *13 Carcinogens*

cc. OSHA 29 CFR 1926.1104: *alpha-Napthylamine*

dd. OSHA 29 CFR 1926.1106: *Methyl Chloromethyl Ether*

ee. OSHA 29 CFR 1926.1107: *3,3'-Dichlorobenzidine (and its salts)*

ff. OSHA 29 CFR 1926.1108: *bis-Chloromethyl Ether*

gg. OSHA 29 CFR 1926.1109: *beta-Naphthylamine*

hh. OSHA 29 CFR 1926.1110: *Benzidine*

ii. OSHA 29 CFR 1926.1111: *4-Aminodiphenyl*

jj. OSHA 29 CFR 1926.1112: *Ethyleneimine*

kk. OSHA 29 CFR 1926.1113: *beta-Propiolactone*

ll. OSHA 29 CFR 1926.1114: *2-Acetylaminofluorene*

mm. OSHA 29 CFR 1926.1115: *4-Dimethylaminoazobenzene*

nn. OSHA 29 CFR 1926.1116: *N-Nitrosodimethylamine*

oo. OSHA 29 CFR 1926.1117: *Vinyl Chloride*

pp. OSHA 29 CFR 1926.1118: *Inorganic Arsenic*

qq. OSHA 29 CFR 1926.1124: *Beryllium*

rr. OSHA 29 CFR 1926.62: *Lead*

ss. OSHA 29 CFR 1926.1126: *Chromium (VI)*

tt. OSHA 29 CFR 1926.1127: *Cadmium*

uu. OSHA 29 CFR 1926.1128: *Benzene*

vv. OSHA 29 CFR 1926.1144: *1,2-Dibromo-3-Chloropropane*

ww. OSHA 29 CFR 1926.1145: *Acrylonitrile*

xx. OSHA 29 CFR 1926.1147: *Ethylene Oxide*

yy. OSHA 29 CFR 1926.1148: *Formaldehyde*

zz. OSHA 29 CFR 1926.60: *Methylenedianiline*

aaa. OSHA 29 CFR 1926.1152: *Methylene Chloride*

bbb. OSHA 29 CFR 1926.1153: *Respirable Crystalline Silica*

ccc. OSHA 3371-08 2009: *Hazard Communication Guidance for Combustible Dusts*

5. APPLICABLE NIST DIRECTIVES

a. NIST O 7101.00: *Occupational Safety and Health Management System*

b. NIST S 7101.60: *Chemical Management (Chemical Hygiene Plan)*

c. NIST S 7101.61: *Compressed Gas Safety*

d. NIST S 7101.28: *Non-R&D Contractor* Safety (Under development)

e. NIST S 7101.52: *Cryogen Safety*

f. NIST S 7101.54: *Dispersible Engineered Nanomaterials*

g. NIST S 7101.29: *Medical Surveillance Program*

h. NIST S 7101.21: *Personal Protective Equipment*

i. NIST S 7101.58: *Respiratory Protection Program*

j. NIST S 7101.23: *Safety Education and Training*

k. NIST S 7101.20: *Work and Worker Authorization Based on Hazard Reviews*

l. NIST S 7301.06: *Chemical Waste Accumulation/Disposal at NIST-Gaithersburg Program*

m. NIST S 7301.07: *Chemical Waste Accumulation/Disposal at NIST-Boulder Program*

6. REQUIREMENTS

The requirements in this section address the issue of determining and classifying the potential hazards of chemicals resident at or shipped from a NIST workplace and communicating information concerning their hazards to employees, associates, and other parties. Some of the requirements in this suborder (*e.g.*, chemical hazard classifications, SDSs, and training) may be integral to or result from the conduct of hazard reviews in accordance with NIST S 7101.20: *Work and Worker Authorization Based on Hazard Reviews* when the activity under review involves hazardous chemicals.

a. Chemical Hazard Determinations and Classifications (required for potentially Hazardous Chemicals)

   Chemical Hazard Determination is the process of identifying relevant data regarding the hazards of a chemical; reviewing the data to ascertain the hazards associated with the chemical by comparing the data with the criteria specified in the HCS for health and physical hazards; and deciding whether the chemical will be classified as hazardous (see definition of "Hazardous Chemical").

Chemical Hazard Classification is a Chemical Hazard Determination with an additional determination of the degree of each health and physical hazard, where appropriate, by comparing the data with the criteria specified in the HCS for health and physical hazards.

(1) General Requirements

(a) Chemical hazard determinations and classifications shall be performed as early as possible, preferably prior to the chemical being produced or used.

(b) Chemical hazard determinations and classifications shall follow the procedures described in 29 CFR 1910.1200 - Appendices A and B to determine and classify the hazards of the chemicals, including determinations regarding when chemical mixtures are covered. When determining or classifying chemical mixtures produced or imported by NIST employees or associates, the information provided on the current SDSs of the individual ingredients may be relied upon, except where it is known or in the exercise of reasonable diligence should have been known that the SDS misstates or omits information required by 29 CFR 1910.1200.

(c) Chemical hazard determinations and classifications shall identify and consider the full range of available scientific literature and other evidence concerning the potential hazards and shall consult:

i. 29 CFR 1910.1200-Appendix A regarding health hazards,

ii. 29 CFR 1910.1200-Appendix B regarding physical hazards,

iii. 29 CFR 1910.1200(c) regarding simple asphyxiant, pyrophoric gas, and hazard not otherwise classified (see definition “Hazard Not Otherwise Classified”) hazards, and

iv. 3371-08 2009 - *Hazard Communication Guidance for Combustible Dusts* regarding combustible dust hazards.

(d) Chemical hazard determinations shall determine all hazard classes described in 29 CFR 1910.1200 that apply to the chemical being classified.

(e) Chemical hazard classifications shall determine all hazard classes[7] and, where appropriate, the category of each hazard class described in 29 CFR 1910.1200 that

[7] HCS hazard classes include: acute toxicity, skin corrosion or irritation, serious eye damage or eye irritation, respiratory or skin sensitization, germ cell mutagenicity, carcinogenicity, reproductive toxicity, specific target organ

apply to the chemical being classified. The hazard classification shall include any hazards associated with the chemical's intrinsic properties including:

i. A change in the chemical's physical form; and,

ii. Chemical reaction products associated with known or reasonably anticipated uses or applications.

(f) Chemical hazard classifications and determinations for chemicals regulated by OSHA in the Chemical-Specific Health Standards shall be performed in compliance with the procedures described in the OSHA Chemical-Specific Health Standards, when applicable (see Appendix B of this suborder), and specific hazards shall be addressed with respect to the chemical (see Appendix C of this suborder).

(g) Chemical hazard classifications shall be described in writing and include a description of the classification process, any relevant data regarding the chemical hazards, and a description of the basis of determination for any assigned hazard classes and, where appropriate, the category of each hazard class described in 29 CFR 1910.1200 that apply to the chemical being classified.

(2) Hazardous Chemicals at a NIST Workplace whose Use at that Workplace Meets the Definition of "Laboratory Use"

(a) Chemical hazard classifications shall be conducted for chemicals acquired at a NIST workplace that will be shipped from the NIST workplace, whenever the chemical users decide that the results of the chemical hazard classifications contained in the SDSs obtained from the suppliers shall not be relied upon[8] and when SDSs were not provided by the suppliers.

(b) Chemical hazard determinations shall be conducted for chemicals acquired at a NIST workplace that will not be shipped from the NIST workplace, whenever the chemical users decide that the results of the chemical hazard classifications contained in the SDSs obtained from the suppliers shall not be relied upon and when SDSs were not provided by the suppliers.

toxicity, aspiration hazard, simple asphyxiant, explosive, flammable, oxidizer, self-reactive, pyrophoric, self-heating, organic peroxide, corrosive to metal, gas under pressure, in contact with water emits flammable gas, combustible dust, and hazards not otherwise classified (HNOC); some HCS hazard classes include additional criteria (*e.g.*, route or frequency of exposure, physical state of chemical); see the HCS for complete hazard class information.

[8] Chemical manufacturers should be contacted to communicate any discrepancies in the obtained SDSs and to request revised SDSs.

(c) Chemical hazard classifications shall be conducted for chemicals produced at a NIST workplace that will be shipped from the NIST workplace.

(d) Chemical hazard determinations shall be conducted for chemicals produced at a NIST workplace that will not be shipped from the NIST workplace.

(3) Hazardous Chemicals at a NIST Workplace whose Use at that Workplace Does Not Meet the Definition of "Laboratory Use"

(a) Chemical hazard classifications shall be conducted for chemicals acquired at a NIST workplace, whenever the chemical users decide that the results of the chemical hazard classifications contained in the SDSs obtained from the suppliers shall not be relied upon[9].

(b) Chemical hazard classifications shall be conducted for chemicals produced at a NIST workplace.

b. Safety Data Sheets (required for Hazardous Chemicals)

(1) General Requirements

(a) SDSs shall include the same product identifier, name, address, and telephone number of the chemical manufacturer, importer, or other responsible party used on the container label.

(b) SDSs shall be in English.

(c) SDSs developed by or on behalf of employees or covered associates shall contain the section numbers and section headings in the order specified in 29 CFR Part 1910.1200(g)(2) and include the information specified in 29 CFR Part 1910.1200-Appendix D.

i. If no relevant information is found for any sub-heading within a section on the SDS, the SDS shall be marked to indicate that no applicable information was found.

[9] Chemical manufacturers should be contacted to communicate any discrepancies in the obtained SDSs and to request revised SDSs.

(d) SDSs developed by or on behalf of employees or covered associates shall contain information that accurately reflects the scientific evidence used in the associated Chemical Hazard Classifications.

(e) SDSs developed by or on behalf of employees or covered associates shall be revised within 3 months of employees or covered associates becoming newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards. The revised SDS shall be provided with all future shipped containers of the chemical. If the chemical is not currently being produced or imported at the NIST workplace, the SDS shall be revised before the chemical is introduced into or shipped from the NIST workplace again.

(f) SDSs for each hazardous chemical listed on a Hazardous Chemical Inventory List shall be readily accessible in the work area electronically[10] or in hard copy during each work shift when employees or covered associates are present.

(g) SDSs shall be readily available upon request and in accordance with the requirements of 29 CFR 1910.1020(e).

(2) Hazardous Chemicals at a NIST Workplace whose Use at that Workplace Meets the Definition of "Laboratory Use"

(a) SDSs received with incoming shipments shall be maintained and readily accessible in the work area electronically or in hard copy during each work shift when employees or covered associates are present.

(b) SDSs shall be developed for chemicals acquired at a NIST workplace that will be shipped from the NIST workplace, whenever the chemical users decide that the results of the chemical hazard classifications contained in the SDSs obtained from the suppliers shall not be relied upon[11] and when SDSs were not provided by the suppliers.

(c) SDSs shall be developed for chemicals produced at a NIST workplace that will be *shipped* from the NIST workplace.

[10] "Readily accessible in the work area electronically" means that employees and covered associates can access SDSs on a NIST information-technology system in the work area.

[11] Chemical manufacturers should be contacted to communicate any discrepancies in the obtained SDSs and to request revised SDSs.

(3) Hazardous Chemicals at a NIST Workplace whose Use at that Workplace Does Not Meet the Definition of "Laboratory Use"

(a) SDSs received with incoming shipments shall be maintained and readily accessible in the work area electronically or in hard copy during each work shift when employees or covered associates are present. *If an SDS was not provided with a shipment and not already possessed at the time of delivery, the SDS shall be obtained from the supplier as soon as possible.*

(b) SDSs shall be developed for chemicals acquired at a NIST workplace that will be shipped from the NIST workplace, whenever the chemical users decide that the results of the chemical hazard classifications contained in the SDSs obtained from the suppliers shall not be relied upon[12].

(c) SDSs shall be developed for chemicals produced at a NIST workplace.

(4) Hazardous Chemicals Shipped from a NIST Workplace

(a) SDSs shall be provided with the initial shipment and upon request to each recipient. If the SDS has been revised, the revised SDS shall be provided with the first shipment to each recipient that occurs after the SDS has been revised.

c. Labels and Other Forms of Warning

(1) General Requirements

(a) Labels and other forms of warning shall be prominently displayed.

(b) Labels and other forms of warning shall be in English, legible, and contain information that is current.

(c) Labels and other forms of warning shall be revised within 6 months of employees or covered associates becoming newly aware of significant information regarding the hazards of a chemical. The revised label shall be provided with all future shipped containers of the chemical. If the chemical is not currently present at the NIST workplace, labels and other forms of warning shall be revised before the chemical is introduced into or shipped from the NIST workplace again.

[12] Chemical manufacturers should be contacted to communicate any discrepancies in the provided SDSs and to request revised SDSs.

(2) Hazardous Chemicals at a NIST Workplace

(a) Hazardous chemical containers shall be labeled, tagged, or marked with[13]:

EITHER

i. Shipped Container Label Information

(i) Product identifier;

(ii) Signal word, hazard statement(s), pictogram(s), and precautionary statement(s) in accordance with the requirements of 29 CFR 1910.1200-Appendix C, for each hazard class and associated hazard category for the hazardous chemical;

(iii) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party; and,

(iv) NIST Chemical Owner Name[14].

OR

ii. Workplace Container Label Information

(i) Product identifier;

(ii) Words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available under NIST S 7101.59: *Chemical Hazard Communication*, will provide employees and covered associates with the specific information regarding the physical and health hazards of the hazardous chemical; and

[13] Hazardous chemicals at a NIST workplace exempt from specific labeling requirements of this suborder shall be labeled in accordance with the labeling requirements of the applicable Act and regulations (see Section 3c) and include the NIST Chemical Owner Name.

[14] SRMs stored under the control of the Office of Reference Materials (ORM) are not required to be labeled with the NIST Chemical Owner Name.

(iii) NIST Chemical Owner Name[15].

(b) Existing labels on chemical containers entering a NIST workplace shall not be removed or defaced, unless the containers are immediately marked, labeled, or tagged with the required information[16].

(c) Alternate methods of labeling (*e.g.*, signs, placards, process sheets, batch tickets, operating procedures, or other such written materials) may be used in lieu of affixing labels to individual stationary process containers[17], as long as the alternative method:

i. Identifies the containers to which it is applicable;

ii. Conveys the information required to be on a label in accordance with Section 6c(2)(a) of this suborder; and

iii. Is readily accessible to the employees and covered associates in their work area throughout each work shift.

(d) Labeling for chemicals regulated by OSHA in the Chemical-Specific Health Standards shall be performed in compliance with the procedures described in the OSHA Chemical-Specific Health Standards, when applicable (see Appendix B of this suborder), and additional labeling requirements shall be addressed with respect to the chemical (see Appendix C of this suborder).

(e) Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use (see definition of "Immediate Use") of the employee or covered associate who performs the transfer, may be labeled but are not required to be.

(3) Hazardous Chemicals Shipped from a NIST Workplace

[15] SRMs stored under the control of the ORM are not required to be labeled with the NIST Chemical Owner Name.
[16] If the acquired container no longer contains the originally acquired chemical or the results of a chemical hazard classification identify that the existing label information is not current, the container should be re-marked, re-labeled or re-tagged to indicate the required label information for the current contents of the container. If the container is "Empty", it is recommended that a line be drawn through the original label and the container should be marked with the word "Empty" to indicate that the original chemical is no longer present.
[17] In certain "Laboratory Use" situations (*e.g.*, when the container is too small to provide all required label elements), the Alternate Methods of Labeling may be employed for containers in the NIST workplace that are not stationary process containers; when feasible to do so, such containers shall be labeled with at least the Workplace Container Label Information [see Section 6c(2)(a)(ii)].

(a) Each hazardous chemical container leaving the NIST workplace shall be labeled, tagged, or marked with the following in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation[18]:

i. Product identifier;

ii. Signal word, hazard statement(s), pictogram(s) and precautionary statement(s) in accordance with the requirements of 29 CFR 1910.1200-Appendix C, for each hazard class and associated hazard category for the hazardous chemical; and

iii. Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party. If the hazardous chemical was produced by NIST, the container shall be labeled, tagged, or marked with:

(i) National Institute of Standards and Technology;

(ii) NIST Responsible Party Name (*i.e.*, OU/Division Name);

(iii) NIST Responsible Party Address (*i.e.*, OU/Division Address); and,

(iv) NIST Responsible Party Telephone Number (*i.e.*, OU/Division Telephone Number for the NIST employee or covered associate who has been designated to provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.)[19].

(b) The signal word, hazard statement(s), pictogram(s), and precautionary statement(s) shall be located together on the container label, tag, or mark.

(c) Pictograms

i. Where a pictogram required by the Department of Transportation under title 49 of the Code of Federal Regulations appears on a shipped container, the

[18] Hazardous chemicals exempt from specific labeling requirements of this suborder shall be labeled in accordance with the labeling requirements of the applicable Act and regulations (see Section 3c).

[19] SRMs stored under the control of the ORM may be labeled with "National Institute of Standards and Technology", the NIST Gaithersburg address, and the NIST Responsible Party Telephone Number to meet this requirement.

pictogram specified in Appendix C.4 of the HCS for the same hazard shall not be required on the label.

(d) Bulk Shipments

i. The label for bulk shipments of hazardous chemicals shall be on the immediate container, transmitted with the shipping papers or the bills of lading, or, with the agreement of the receiving entity, transmitted by technological or electronic means so that it is immediately available to workers in printed form on the receiving end of shipment.

(e) Small Container Labelling

i. Where it is not feasible to use pull-out labels, fold-back labels, or tags containing the full label information required [see Section 6c(3)(a)], containers less than or equal to 100 ml capacity shall include, at a minimum, the following information on the label of the container:

(i) Product identifier;

(ii) Signal word and pictogram(s) in accordance with the requirements of 29 CFR 1910.1200-Appendix C, for each hazard class and associated hazard category for the hazardous chemical;

(iii) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party; and,

(iv) A statement that the full label information for the hazardous chemical is provided on the immediate outer package.

ii. Where it is not feasible to use pull-out labels, fold-back labels, or tags containing the full label information required [see Section 6c(3)(a)] or any label interferes with the normal use of the container, containers less than or equal to 3 ml capacity do not require a label but shall bear, at a minimum, the Product Identifier.

iii. The immediate outer package shall include:

(i) The full label information required [see Section 6c(3)(a)]; and,

(ii) A statement that the small container(s) inside must be stored in the immediate outer package bearing the complete label when not in use.

(4) Non-Hazardous Chemicals at a NIST Workplace

(a) Non-Hazardous chemical containers should be labeled, tagged, or marked with:

i. Product identifier; and,

ii. NIST Chemical Owner Name[20].

d. Hazardous Chemical Inventory Lists[21] (required for Hazardous Chemicals)

(1) Hazardous Chemicals at a NIST Workplace whose Use at that Workplace Meets the Definition of "Laboratory Use".

(a) Hazardous Chemical Inventory Lists shall be prepared and list all commercially-acquired hazardous chemicals[22] present in OU-assigned work areas.

(b) Hazardous Chemical Inventory Lists shall include the product identifiers that are referenced on the corresponding container labels and SDSs of the hazardous chemicals present in OU-assigned work areas.

(c) Hazardous Chemical Inventory Lists shall be maintained and made readily available upon request electronically or in hard copy.

(2) Hazardous Chemicals at a NIST Workplace whose Use at that Workplace Does Not Meet the Definition of "Laboratory Use"

[20] SRMs stored under the control of the ORM are not required to be labeled with the NIST Chemical Owner Name.

[21] Hazardous chemicals that are owned by a NIST employee or covered associate shall be inventoried in CIMS. In select situations [*e.g.*, Hollings inventory, SRMs stored under the control of the ORM], hazardous chemicals may be inventoried outside of CIMS; in such situations, OSHE shall be notified of the inventories and the Hazardous Chemical Inventory Lists shall be made readily available upon request electronically or in hard copy. It is recommended that in work areas in which individuals other than NIST employees or covered associates are conducting work ("multi-employer work areas") or in work areas where not all of the hazardous chemicals are inventoried in CIMS, a master Hazardous Chemical Inventory List that represents all hazardous chemicals in the work area be printed and posted. Hazardous chemicals that are Biohazardous Materials or LC-RAM shall satisfy the CHC inventory requirements in accordance with the requirements specified in this program. Hazardous chemicals that are SNM-362 RAM shall satisfy the CHC inventory requirements in accordance with the requirements specified in NIST S 7201.01, Ionizing Radiation Safety – Radioactive Material at NIST Gaithersburg.

[22] Hazardous-chemical SRMs labeled for sale by NIST that are sold or transferred by ORM to employees or covered associates outside of ORM shall be considered commercially-acquired hazardous chemicals.

(a) Hazardous Chemical Inventory Lists shall be prepared and list all hazardous chemicals present in OU-assigned work areas.

(b) Hazardous Chemical Inventory Lists shall include the product identifiers that are referenced on the corresponding container labels and SDSs of the hazardous chemicals present in OU-assigned work areas.

(c) Hazardous Chemical Inventory Lists shall be maintained and made readily available upon request electronically or in hard copy.

e. Hazardous Activities

(1) The chemical hazards of routine and non-routine activities performed by NIST employees and covered associates shall be communicated to all NIST employees and covered associates who may be exposed to the hazardous chemicals in accordance with the training requirements of this suborder and the requirements of NIST S 7101.20: *Work and Worker Authorization Based on Hazard Reviews*.[23]

f. Hazardous Chemicals in Pipes

(1) The identities and hazards of hazardous chemicals located inside of pipes shall be communicated to all NIST employees and covered associates who may be exposed to the hazardous chemicals under normal conditions of use or in a foreseeable emergency (see definition of "Foreseeable Emergency") in accordance with the training requirements of this suborder and the requirements of NIST S 7101.20: *Work and Worker Authorization Based on Hazard Reviews*.

g. Information and Training

(1) Training shall be provided, documented, and recorded in accordance with the requirements of the NIST S 7101.23: *Safety Education and Training*.

(2) All employees and covered associates to whom this suborder applies shall be provided with effective information and training on the hazardous chemicals in their work areas. Information and training may be designed to cover categories of hazards (*e.g.*,

[23] As part of the risk assessment process, staff should consult with OSHE regarding the need for a health hazard evaluation if the work will be performed with a chemical that may have an adverse health effect if exposed to it. OSHE will perform evaluation, monitoring, and/or sampling in accordance with NIST S 7101.29 to determine whether the potential exposure is near or above any regulatory limits and the appropriate medical surveillance program to enroll in, if necessary.

flammability, carcinogenicity) or specific chemicals; however, chemical-specific information must always be available through labels and other forms of warning and SDSs.

(3) All employees and covered associates to whom this suborder applies shall receive the following training at the time of their initial assignment to a NIST workplace:

(a) Training provided by OSHE on the details of this suborder, covering the following topics:

i. The requirements of 29 CFR 1910.1200;

ii. The location, availability, and requirements of this suborder, including the Hazardous Chemical Inventory List, Container Labeling and Other Forms of Warning, and SDSs required by this suborder and 29 CFR 1910.1200;

iii. An explanation of the labels received on containers acquired at a NIST workplace;

iv. An explanation of the labeling system employed at a NIST workplace; and

v. An explanation of the SDSs, including the order of information and how employees and covered associates can obtain and use appropriate hazard information.

(b) Information provided by the OU/division on the hazardous chemicals in the employee's or associate's work area(s), covering the following topics:

i. Any activities in the work area where hazardous chemicals are present;

ii. How to obtain access to the Hazardous Chemical Inventory List and SDSs for the hazardous chemicals in the work area.

(c) Training provided by the OU/division on the hazardous chemicals in the employee's or associate's work area(s), covering the following topics:

i. The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as the hazards not otherwise classified, of the hazardous chemicals in the work area;

ii. Measures employees and covered associates can take to protect themselves from these hazards, including specific procedures implemented to prevent exposure to the hazardous chemicals in the work area, such as appropriate work practices, emergency procedures, and personal protective equipment; and,

iii. Methods and observations that may be used to detect the presence or release of the hazardous chemicals in the work area.

Note: Training for a specific work area shall be provided in accordance with the requirements of the OU/division to which the specific work area is assigned.

(4) All employees and covered associates to whom this suborder applies shall receive the following information whenever a new chemical hazard for which they previously have not been trained is introduced into their work area:

(a) Information provided by the OU/division, covering the following topics:

i. Any operations in the work area where the new chemical hazard is present;

(5) All employees and covered associates to whom this suborder applies shall receive the following training whenever a new chemical hazard for which they previously have not been trained is introduced into their work area:

(a) Training provided by the OU/division, covering the following topics:

i. A description of the new chemical hazard;

ii. Measures employees and covered associates can take to protect themselves from the new chemical hazard in the work area; and

iii. Methods and observations that may be used to detect the presence or release of the new, chemical hazard in the work area.

Note: Training for a specific work area shall be provided in accordance with the requirements of the OU/division to which the specific work area is assigned.

(6) All employees and covered associates to whom this suborder applies shall receive information and training from OSHE as specified in the OSHA Chemical-Specific Health

Standards, when applicable (see Appendix B) and specific information and training shall be addressed with respect to the chemical (see Appendix C of this suborder).

h. Informing Other Employers

(1) The employers of personnel who are not NIST employees or covered associates and may be exposed to hazardous chemicals owned by NIST employees and covered associates under normal conditions of use or in a foreseeable emergency (see definition of "Foreseeable Emergency") shall be provided with the following upon request:

(a) On-site access to SDSs, either electronically or in hard copy, for the hazardous chemicals to which their personnel may be exposed;

(b) Information on the training provided to their personnel on any precautionary measures that their personnel need to take to protect themselves during the workplace's normal operating conditions and in foreseeable emergencies; and

(c) Copies of this program, including a description of the labeling system used at pertinent NIST workplaces.

7. DEFINITIONS

a. Activity – An experiment, operation, process, or job, often comprising subtasks, conducted to achieve a specific outcome.

b. Article – A manufactured item (*e.g.*, a plastic pipe, silicon wafer) other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, *e.g.*, minute or trace amounts of a hazardous chemical (as determined in 29 CFR 1910.1200(d)), and does not pose a physical hazard or health risk to individuals.

c. Biohazard – A biological material or agent that presents potential risk to the health of humans or other organisms either directly through infection or indirectly through damage to the environment. Biohazards include, but are not limited to, bacteria; fungi; viruses; parasites; rickettsia; biological toxins; prions; non-human mammalian cell lines and tissues; human specimens such as human blood, serum, plasma, blood products, primary and continuous human cell lines, unfixed human tissues, fecal materials, semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, tears, sweat, breast milk, and urine; and recombinant DNA materials

such as inserts or vectors that are known to express toxins, oncogenes, and/or virulent factors. Non-toxic proteins and commercially available enzymes, cell culture medium and supplements, reagents such as monoclonal antibodies, and random DNA base pairs are not considered biohazards.

d. Biohazardous Material – See definition of biohazard.

e. Bulk Shipment – Any hazardous chemical transported where the mode of transportation comprises the immediate container (*i.e.*, contained in tanker truck, rail car, or intermodal container).

f. Chemical – Any substance or mixture of substances.

g. Chemical Hazard Classification – 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 (see definition "Hazardous Chemical"). In addition, Chemical Hazard Classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the HCS criteria for health and physical hazards.

h. Chemical Hazard Determination – To identify the relevant data regarding the hazards of a chemical; review those data to ascertain the hazards associated with the chemical by comparing the data with the HCS criteria for health and physical hazards; and deciding whether the chemical will be classified as hazardous (see definition "Hazardous Chemical"). Chemical Hazard Determination does not include determining the degree of each health and physical hazard.

i. Chemical Hazard Warning – Any words, pictures, symbols, or combination thereof that appears on a container label, other form of warning (*e.g.*, placard, sign), or SDS which conveys the hazards of a chemical in a container.

j. Chemical Manufacturer – An employer with a workplace where chemical(s) are produced for use or distribution. Note: Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or distributor.

k. 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 that will clearly identify the chemical for the purpose of conducting a hazard classification.

l. Chemical Owner – A NIST employee or covered associate whose name appears on one or more chemical containers.

m. Chemical Owner Name – The first name or first initial and last name of the NIST Chemical Owner.

n. CIMS (Chemical Inventory Management System) – A relational database system currently used by NIST for tracking chemical inventory, generating labels, and managing SDSs.

o. Combustible Dust – Finely divided solid particulates of a substance or mixture that pose a flash-fire hazard or explosion hazard when dispersed in air or other oxidizing media.

p. Common Name – 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.

q. Consumer Product – Any article, or component part thereof, produced or distributed (i) for sale to a consumer for use in or around a permanent or temporary household or residence, a school, in recreation, or otherwise, or (ii) for the personal use, consumption or enjoyment of a consumer in or around a permanent or temporary household or residence, a school, in recreation, or otherwise.

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

s. Distributor – A business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers. Note: Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or distributor.

t. Document Custodian – An OSHE employee assigned to serve as the point of contact for a specific document and to carry out the responsibilities delineated in the Document and Record Control Program.

u. Exposure or Exposed – An employee is subjected in the course of employment to a hazardous chemical, 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.)

v. Foreseeable Emergency – 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.

w. Gas – a substance which (i) At 122 °F (50 °C) has a vapor pressure greater than 43.51 PSI (300 kPa) (absolute); or (ii) Is completely gaseous at 68 °F (20 °C) at a standard pressure of 14.69 PSI (101.3 kPa).

x. Hazard Category – 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.

y. Hazard Class – The nature of the physical or health hazards (*e.g.*, flammable solid, carcinogen, oral acute toxicity).

z. Hazard Not Otherwise Classified (HNOC) – An adverse physical or health effect identified through evaluation of scientific evidence during the Chemical Hazard Classification or Chemical Hazard Determination process that does not meet the specified criteria for the physical and health hazard classes addressed in 29 CFR 1910.1200. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in 29 CFR 1910.1200, 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).

aa. Hazard Statement – 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.

bb. Hazardous Chemical – Any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, or hazard not otherwise in accordance with 29 CFR 1910.1200.

cc. Health Hazard – 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 29 CFR 1910.1200-Appendix A.

dd. Immediate Outer Package – The first package enclosing the container of hazardous chemical.

ee. 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.

ff. Importer – 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.

gg. Inter-Company Transfer – Transporting hazardous chemicals from one company property to another company property.

hh. Intra-Plant Transfer – Transporting hazardous chemicals from one location to another location within the same building.

ii. Label – 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.

jj. Label Elements – The specified pictogram, hazard statement, signal word and precautionary statement for each hazard class and category, as specified in 29 CFR 1910.1200-Appendix C.

kk. Laboratory – For the purposes of this program, a work area where the "Laboratory Use" (see definition of "Laboratory Use") of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis.

ll. Laboratory Scale – For the purposes of this program, scale of work in which the procedures/containers used for reactions, transfers, and other handling of chemicals are designed to be easily and safely carried out/manipulated by one person. "Laboratory Scale" excludes work whose purpose is to produce commercial quantities of materials.

mm. Laboratory Use – For the purposes of this program, use of hazardous chemicals in which all of the following conditions are met:

(1) Chemical manipulations are carried out on a "Laboratory Scale" (see definition of "Laboratory Scale");

(2) Multiple chemical procedures or chemicals are used[24];

[24] OSHA LOI # 20164 describes that "Multiple chemical procedures or chemicals are used" means "using chemicals in laboratory procedures", which includes scenarios involving a single chemical or single procedure.

(3) The procedures involved are not part of a production process, nor in any way simulate a production process; and

(4) "Protective Laboratory Practices and Equipment" (see definition of "Protective Laboratory Practices and Equipment") are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

nn. LC RAM (Limited Control RAM) – RAM that is:

(1) Byproduct material exempted under 10 CFR 30;

(2) Unimportant quantities of source material as per 10 CFR 40.13;

(3) RAM such as that described in 10 CFR 31.8, 10 CFR 40.22, and 10 CFR 70.19 that is not part of a GL device;

(4) Incidentally-Activated RAM; or

(5) Any other RAM determined by the RSO to warrant some degree of control for RSP purposes.

oo. Liquid – A substance or mixture which at 122 °F (50 °C) has a vapor pressure of not more than 43.51 PSI (300 kPa (3 bar)), which is not completely gaseous at 68 °F (20 °C) and at a standard pressure of 101.3 kPa, and which has a melting point or initial melting point of 68 °F (20 °C) or less at a standard pressure of 14.69 PSI (101.3 kPa). Either ASTM D4359–90 (R2019) (incorporated by reference, see § 1910.6); or the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of ADR 2019 (incorporated by reference, see § 1910.6) can establish whether a viscous substance or mixture is a liquid if a specific melting point cannot be determined.

pp. Mixture – A combination or a solution composed of two or more substances in which they do not react.

qq. NIST Visitor – Any individual at a NIST workplace who is not a NIST employee or associate.

rr. NIST Workplace – An establishment at one geographical location containing one or more "work areas" and at which NIST employees and covered associates conduct work (see

definition of "Work Area"). NIST workplaces include, but are not limited to, NIST Gaithersburg, NIST Boulder, and NIST joint institutes.

ss. Non-Hazardous Chemical – For the purposes of this program, any chemical that does not meet the definition of "Hazardous Chemical" (see definition "Hazardous Chemical").

tt. Non-Laboratory Use – For the purposes of this program, use of hazardous chemicals that does not meet the definition of "Laboratory Use" (see definition of "Laboratory Use").

uu. Organizational Unit (OU)-Assigned Space or Work Area – For the purposes of this program, a space or work area assigned to an OU in the NIST space management system maintained by the Office of Facilities and Property Management or assigned to an OU by another OU on a non-permanent basis (*i.e.*, loaned).

vv. Package – A receptacle and any other components or materials necessary for the receptacle to perform its containment function in conformance with the minimum packing requirements of the U. S. Department of Transportation's Hazardous Materials Regulations (49 CFR Parts 171 through 180).

ww. Physical Hazard – A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, liquids, or solids); aerosols; oxidizer (gases, liquids, or solids); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; in contact with water emits flammable gas; or desensitized explosive. The criteria for determining whether a chemical is classified as a physical hazard are detailed in 29 CFR 1910.1200-Appendix B.

xx. Physician or other licensed health care professional (PLHCP) – an individual whose legally permitted scope of practice (*i.e.*, license, registration, or certification) allows the individual to independently provide or be delegated the responsibility to provide some or all of the health care services referenced in paragraph (i) of 29 CFR 1910.1200.

yy. Pictogram – 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 29 CFR 1910.1200 for application to a hazard category.

zz. Precautionary Statement – 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.

aaa. Produce – To manufacture, process, formulate, blend, extract, generate, emit, package, or repackage.

bbb. Product Identifier – 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.

ccc. Protective Laboratory Practices and Equipment – Laboratory practices and equipment accepted by laboratory health and safety experts as effective, or that the employer can show to be effective, in minimizing the potential for employee exposure to hazardous chemicals.

ddd. RAM (Radioactive Material) – Material permitted at NIST Gaithersburg under SNM-362, a GL, or as LC RAM.

eee. Regulated Area – An area, demarcated by the employer, where:

(1) An employee's exposure to airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limits; or

(2) An employee's airborne exposure exceeds, or can reasonably be expected to exceed, either the time-weighted average (TWA) permissible exposure limit (PEL) or short-term exposure limit (STEL); or

(3) An employee's exposure to airborne concentrations of chromium (VI) exceeds, or can reasonably be expected to exceed, the PEL; or

(4) An employee's exposure to airborne concentrations of cadmium exceeds, or can reasonably be expected to exceed the permissible exposure limit (PEL); or

(5) Airborne concentrations of benzene exceed or can reasonably be expected to exceed, the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes; or

(6) Airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits, or where dermal exposure to MDA can occur; or

(7) Airborne concentrations of BD exceed or can reasonably be expected to exceed the 8-hour time weighted average (8-hr TWA) exposure of 1 ppm or the short-term exposure limit (STEL) of 5 ppm for 15 minutes; or

(8) An employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL; or

(9) An employee's exposure to airborne concentrations of respirable crystalline silica exceeds, or can reasonably be expected to exceed, the PEL.

fff. Released for Shipment – A chemical that has been packaged and labeled in the manner in which it will be distributed or sold.

ggg. Responsible Party – Someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

hhh. Safety Data Sheet (SDS) – Written or printed material concerning a hazardous chemical that is prepared in accordance with paragraph (g) of 29 CFR 1910.1200.

iii. Shipped Container – Any container that leaves the NIST workplace.

jjj. Signal Word – 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 29 CFR 1910.1200 and this program are "DANGER" and "WARNING." "DANGER" is used for the more severe hazards, while "WARNING" is used for the less severe.

kkk. Simple Asphyxiant – 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.

lll. SNM (Special Nuclear Material) –

(1) Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the NRC determines to be SNM, but not including source material; or

(2) Any material artificially enriched by any of the foregoing, but not including source material.

mmm. SNM-362 – A NRC license authorizing acquisition, use, transfer, and disposal of any chemical or physical form of the byproduct material specified in the license, but not exceeding quantities specified in the license, for purposes authorized by the license, at NIST–Gaithersburg.

nnn. SNM-362 RAM – Byproduct material, source material, and SNM that is acquired, possessed, used, transferred, or disposed of under SNM-362.

ooo. Solid – A substance or mixture which does not meet the definitions of liquid or gas.

ppp. Specific Chemical Identity – The chemical name, Chemical Abstracts (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

qqq. Stationary Process Container – A chemical process container that is not capable of being moved.

rrr. Substance – 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.

sss. Use – To package, handle, react, emit, extract, generate as a byproduct, or transfer.

ttt. Work Area – A defined space in a workplace where hazardous chemicals are produced or used to which there is a reasonable likelihood that workers present in the space could be exposed.

uuu. Workplace – See definition "NIST Workplace".

8. ACRONYMS

a. ABS – Acrylonitrile Butadiene Styrene

b. ACM – Asbestos-Containing Material

c. AN – Acrylonitrile

d. BD – 1,3-Butadiene

e. CBD – Chronic Beryllium Disease (Berylliosis)

f. CFR – Code of Federal Regulations

g. CIMS – Chemical Inventory Management System

h. DBCP – 1,2-Cibromo-3-Chloropane

i. EtO – Ethylene Oxide

j. GHS – Globally Harmonized System of Classification and Labelling of Chemicals

k. HCS – Hazard Communication Standard (OSHA 29 CFR 1910.1200: *Hazard Communication in General Industry*)

l. HNOC – Hazard Not Otherwise Classified

m. LC-RAM – Limited Control Radioactive Material

n. MC – Methylene Chloride

o. MDA – Methylenediamine

p. NIST – National Institute of Standards and Technology

q. ORM – Office of Reference Materials

r. OSH – Occupational Safety and Health

s. OSHA – Occupational Safety and Health Administration

t. OSHE – Office of Safety, Health, and Environment

u. OU – Organizational Unit

v. PEL – Permissible Exposure Limit

w. PPM – Parts Per Million

x. PACM – Presumed Asbestos-Containing Material

y. RAM – Radioactive Material

z. RSO – Radiation Safety Officer

aa. RSP – Radiation Safety Program

bb. SAN – Styrene-Acrylonitrile Resin

cc. SDS – Safety Data Sheet

dd. SNM – Special Nuclear Material

ee. SRM – Standard Reference Material

ff. STEL – Short-Term Exposure Limit

gg. TWA – Time-Weighted Average

9. RESPONSIBILITIES

a. OU Directors[25] are responsible for:

(1) Establishing policies and procedures, as needed, for the requirements of this program to be met as it applies to their employees and covered associates and to hazardous chemicals in their OU-assigned space and ensuring that those policies and procedures are implemented; and

(2) Ensuring subordinate managers have the authority, resources, and training needed to implement OU-established policies and procedures.

b. Division Chiefs (or Equivalents)[26] are responsible for:

(1) Implementing this program as it applies to activities involving their personnel and space in accordance with any applicable OU-established policies and procedures.

c. Organizational Unit (OU)/Division Safety Personnel are responsible for:

[25] For each of the laboratory divisions in Boulder, Colorado, the NIST Boulder Labs Director and the Laboratory Director for the division in question each have these responsibilities. They should work together to coordinate their respective policies and procedures to the maximum extent possible to minimize any additional and undue burden on the division, which must otherwise follow two different sets of policies and procedures.

[26] Some NIST OUs do not have Division Chiefs; these OUs shall designate other individuals to carry out these responsibilities.

(1) Participating in the implementation of this program in accordance with any applicable OU/division-established policies and procedures.

d. Chemical Owners[27] are responsible for:

(1) Ensuring that Chemical Hazard Classifications and Chemical Hazard Determinations have been performed in accordance with the requirements of this suborder for the chemicals they own;

(2) Ensuring that labels and other forms of warning have been provided according to the requirements of this suborder for chemicals they own;

(3) Taking appropriate action when notified by a user of a chemical container they own that the label on that container is illegible or contains information that is not current;

(4) Ensuring that SDSs have been obtained, produced, maintained, and provided according to the requirements of this suborder for chemicals they own;

(5) Ensuring that the Hazardous Chemical Inventory List has been maintained according to the requirements of this suborder for the chemicals they own;

(6) Ensuring that other employees and covered associates in the same work area will be informed when a new chemical hazard is to be introduced into the work area[28]; and

(7) Carrying out other duties as assigned for the chemicals they own in accordance with any applicable OU/division-established policies and procedures.

e. Employees and Covered Associates are responsible for:

(1) Completing the training required by this program and their OUs/divisions and working in accordance with that training;

(2) Requesting additional training as needed or as conditions change;

[27] These responsibilities are those pertinent to this suborder only. Chemical Owners have other responsibilities described in other NIST OSH suborders, including NIST S 7101.60: *Chemical Management (Chemical Hygiene Plan)* NIST S 7301.06*, Chemical Waste Accumulation/Disposal at NIST Gaithersburg*, and NIST S7301.07, *Chemical Waste Accumulation/Disposal at NIST Boulder*.

[28] Employees and covered associates who become aware of a new, chemical hazard in their work area shall inform their line management of the new, chemical hazard so that line management can ensure that the training requirements of this suborder are met.

(3) Knowing the requirements of this suborder;

(4) Knowing the chemical hazards in the specific work area;

(5) Ensuring that routine and non-routine activities will be performed according to the requirements of this suborder and any other applicable suborder;

(6) Knowing the method for obtaining access to the Hazardous Chemical Inventory List and SDSs for the hazardous chemicals in the specific work area;

(7) Reading chemical container labels, other forms of warning, and SDSs prior to using hazardous chemicals for the first time and as needed thereafter;

(8) Notifying the Chemical Owner if they identify a label on a chemical container that is illegible or contains information that is not current; and

(9) Contacting line managers, Organizational Unit (OU)/Divisional Safety Personnel, and/or the OSH program manager for this program regarding any questions related to the hazard communication training and information provided on chemical container labels, other forms of warning, and SDSs.

f. OSHE Industrial Hygienists are responsible for:

(1) Performing a health hazard evaluation in accordance with the requirements of NIST S 7101.29, *Medical Surveillance Program* when there is a recognized health hazard in the workplace from an OSHA Chemical-Specific Substance; and

(2) Providing training and information relevant to the OSHA Chemical-Specific Substance for which they may be exposed to.

g. OSH Program Manager for this program is responsible for:

(1) Providing NIST employees and covered associates with straightforward interpretations and explanations of how relevant regulations, codes, and standards in this program area apply in the NIST environment; and

Making this suborder available upon request and in accordance with the requirements of 29 CFR 1910.1020.

10. AUTHORITIES

There are no authorities specific to this suborder alone. For authorities applicable to all NIST OSH suborders, see section 9 of NIST O 7101.00.

11. DIRECTIVE OWNER

Chief Safety Officer

12. APPENDICES

a. Revision History

b. Chemicals Regulated in OSHA Chemical-Specific Health Standards (Scope and Application)

c. Chemicals Regulated in OSHA Chemical-Specific Health Standards (Hazard Communication Requirements)

1331

Appendix A. Revision History

Version	Approval Date	Effective Date	Brief Description of Change; Rationale
1	04/29/14	04/01/15	• None – Initial document
2	02/08/15	10/01/16	• Minor revision to "Hazardous Chemical" definition. Minor revision for formatting. • Addition of footnote and definitions pertaining to inventory requirements for Biohazardous Materials, LC-RAM, and SNM-362 RAM. • Minor revision to Section 6g to differentiate between information requirements and training requirements. • Added text to Section 9d to assign Chemical Owners the responsibility of ensuring that Chemical Hazard Classifications and Chemical Hazard Determinations have been performed in accordance with the requirements of the suborder. • Minor revision to Section 6d to clarify Hazardous Chemical Inventory Lists requirements and to include a footnote pertaining to SRMs. • Revised footnote 2 and changed "associate" to "covered associate" throughout suborder to update text with current NIST definitions of "associate" and "covered".
3	01/07/21	01/07/21	• Updated suborder and CFR links.
4	03/27/23	03/27/23	• Updated Appendix B to include 29 CFR 1910.1002, 29 CFR 1910.1053, and 29 CFR 1926, Subpart Z (OSHA Chemical-Specific Health Standards). Updated CISPro to CIMS. • Updated Version numbers and footer to current style.

Version	Approval Date	Effective Date	Brief Description of Change; Rationale
5	03/03/25	03/03/25	• Updated Sections 6a, 6c, and 6g to include hazard communication requirements of 29 CFR 1910 and 29 CFR 1926, Subpart Z (OSHA Chemical-Specific Health Standards). • Added a definition (regulated area) and acronyms (PEL, TWA). • Updated Version numbers. • Updated title for Appendix B to clarify that it provides scope and application content for OSHA Chemical-Specific Health Standards. • Added Appendix C to describe hazard communication requirements for OSHA Chemical-Specific Health Standards and moved associated content from Section 6 to appendix C. • Updated the entire document to reflect HCS2024, revision to 29 CFR 1910.1200. • Updated Appendix C to include SDS requirements for SDSs specified in 40 CFR 751 (2024).

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Appendix B. Chemicals Regulated in OSHA Chemical-Specific Health Standards (Scope and Application)

This appendix provides basic information regarding whether a chemical is within the scope and application of the OSHA Chemical-Specific Health Standards. The OSHA Chemical-Specific Health Standards (29 CFR 1910.1001 - 29 CFR 1910.1053, 29 CFR 1926.1101 – 29 CFR 1926.1153) provide numerous requirements (*e.g.*, hazard communication, information and training, permissible exposure limits, and exposure monitoring/medical surveillance) for specific chemicals. The application and therefore applicable requirements of the OSHA Chemical-Specific Health Standards are determined by criteria such as chemical concentration, physical form, and use. The OSHA Chemical-Specific Health Standards should be consulted for detailed information regarding applicable requirements. The OSH Safety Program Manager for this program or another OSHE staff member will provide assistance upon request.

When the use of a chemical at a NIST workplace is within the scope and application of an applicable OSHA Chemical-Specific Health Standard, specific hazard communication requirements apply (see Appendix C).

a. When the use of a chemical at a NIST workplace meets the definition of "Laboratory Use" and is within the scope and application of an OSHA Chemical-Specific Health Standard, OSHA 29 CFR 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories* supercedes the requirements of the particular OSHA Chemical-Specific Health Standard, except as follows:

   (1) 1910.1450(a)(2)(i) For any OSHA health standard, only the requirement to limit employee exposure to the specific permissible exposure limit shall apply for laboratories, unless that particular standard states otherwise or unless the conditions of 1910.1450(a)(2)(iii) apply (see below);

   (2) 1910.1450(a)(2)(ii) Prohibition of eye and skin contact where specified by any OSHA health standard shall be observed;

   (3) 1910.1450(a)(2)(iii) Where the action level (or in the absence of an action level, the permissible exposure limit) is routinely exceeded for an OSHA regulated substance with exposure monitoring and medical surveillance requirements of 1910.1450(d) and 1910.1450(g)(1)(ii) shall apply.

   Note: The hazard communication requirements of the OSHA Chemical-Specific Health Standards are not applicable to chemical uses that meet the definition of "Laboratory Use".

b. When the use of a chemical at a NIST workplace does not meet the definition of "Laboratory Use" and is within the scope and application of an OSHA Chemical-Specific Health Standard, all requirements of the specific OSHA Chemical-Specific Health Standard are applicable, including the hazard communications requirements.

(1) Non-laboratory use of a chemical for non-construction activities may be within the scope and application of 29 CFR 1910.1001 - 29 CFR 1910.1053 (see below).

(2) Non-laboratory use of a chemical for construction activities may be within the scope and application of 29 CFR 1926.1101 – 29 CFR 1926.1153 (see below).

c. Scope and Application of OSHA Chemical-Specific Health Standards:

(1) 29 CFR 1910.1001: *Asbestos*

(a) This section applies to all occupational exposures to asbestos in all industries covered by the Occupational Safety and Health Act, except:

i. This section does not apply to construction work as defined in 29 CFR 1910.12(b). (Exposure to asbestos in construction work is covered by 29 CFR 1926.1101.); and

ii. This section does not apply to ship repairing, shipbuilding and shipbreaking employments and related employments as defined in 29 CFR 1915.4. (Exposure to asbestos in these employments is covered by 29 CFR 1915.1001).

(2) 29 CFR 1910.1002: *Coal Tar Pitch Volatiles*

(a) As used in 29 CFR 1910.1000 (Table Z-1), coal tar pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum (excluding asphalt), wood, and other organic matter. Asphalt (CAS 8052-42-4, and CAS 64742-93-4) is not covered under the "coal tar pitch volatiles" standard.

(3) 29 CFR 1910.1003: *13 Carcinogens*

(a) This section applies to any area in which the 13 carcinogens addressed by this section are manufactured, processed, repackaged, released, handled, or stored, but shall not

apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3) and (4) of this section. The 13 carcinogens are the following: 4-Nitrobiphenyl, Chemical Abstracts Service Register Number (CAS No.) 92933; alpha-Naphthylamine, CAS No. 134327; methyl chloromethyl ether, CAS No. 107302; 3,3'-Dichlorobenzidine (and its salts) CAS No. 91941; bis-Chloromethyl ether, CAS No. 542881; beta-Naphthylamine, CAS No. 91598; Benzidine, CAS No. 92875; 4-Aminodiphenyl, CAS No. 92671; Ethyleneimine, CAS No. 151564; beta-Propiolactone, CAS No. 57578; 2-Acetylaminofluorene, CAS No. 53963; 4-Dimethylaminoazo-benzene, CAS No. 60117; and N-Nitrosodimethylamine, CAS No. 62759.

(b) This section shall not apply to the following:

i. Solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl; methyl chloromethyl ether; bis-chloromethyl ether; beta-Naphthylamine; benzidine or 4-Aminodiphenyl; and

ii. Solid or liquid mixtures containing less than 1.0 percent by weight or volume of alpha-Naphthylamine; 3,3'-Dichlorobenzidine (and its salts); Ethyleneimine; beta-Propiolactone; 2-Acetylaminofluorene; 4-Dimethylaminoazobenzene, or N-Nitrosodimethylamine.

(4) 29 CFR 1910.1017: *Vinyl Chloride*

(a) This section applies to the manufacture, reaction, packaging, repackaging, storage, handling or use of vinyl chloride or polyvinyl chloride, but does not apply to the handling or use of fabricated products made of polyvinyl chloride.

(b) This section applies to the transportation of vinyl chloride or polyvinyl chloride except to the extent that the Department of Transportation may regulate the hazards covered by this section.

(5) 29 CFR 1910.1018: *Inorganic Arsenic*

(a) This section applies to all occupational exposures to inorganic arsenic except that this section does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.

(6) 29 CFR 1910.1024: *Beryllium*

(a) This standard applies to occupational exposure to beryllium in all forms, compounds, and mixtures in general industry, except those articles and materials exempted by paragraphs (a)(2) and (a)(3) of this standard.

(b) This standard does not apply to articles, as defined in the Hazard Communication standard (HCS) (§1910.1200(c)), that contain beryllium and that the employer does not process.

(c) This standard does not apply to materials containing less than 0.1% beryllium by weight where the employer has objective data demonstrating that employee exposure to beryllium will remain below the action level as an 8-hour TWA under any foreseeable conditions.

(7) 29 CFR 1910.1025: *Lead*

(a) This section applies to all occupational exposure to lead, except:

i. This section does not apply to the construction industry or to agricultural operations covered by 29 CFR Part 1928.

(8) 29 CFR 1910.1026: *Chromium (VI)*

(a) This standard applies to occupational exposures to chromium (VI) in all forms and compounds in general industry, except:

i. Exposures that occur in the application of pesticides regulated by the Environmental Protection Agency or another Federal government agency (*e.g.*, the treatment of wood with preservatives);

ii. Exposures to portland cement; or

iii. Where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium cannot release dusts, fumes, or mists of chromium (VI) in concentrations at or above 0.5 µg/m3 as an 8-hour time-weighted average (TWA) under any expected conditions of use.

(9) 29 CFR 1910.1027: *Cadmium*

(a) This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Occupational Safety and Health Act, except the construction-related industries, which are covered under 29 CFR 1926.63.

(10) 29 CFR 1910.1028: *Benzene*

(a) This section applies to all occupational exposures to benzene. Chemical Abstracts Service Registry No. 71-43-2, except:

i. The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities, except that operations where gasoline or motor fuels are dispensed for more than 4 hours per day in an indoor location are covered by this section.

ii. Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section.

iii. The storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section.

iv. Containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene.

v. Work operations where the only exposure to benzene is from liquid mixtures containing 0.5 percent or less of benzene by volume, or the vapors released from such liquids until September 12, 1988; work operations where the only exposure to benzene is from liquid mixtures containing 0.3 percent or less of benzene by volume or the vapors released from such liquids from September 12, 1988, to September 12, 1989; and work operations where the only exposure to benzene is from liquid mixtures containing 0.1 percent or less of benzene by volume or the vapors released from such liquids after September

12, 1989; except that tire building machine operators using solvents with more than 0.1 percent benzene are covered by paragraph (i) of this section.

vi. Oil and gas drilling, production and servicing operations.

vii. Coke oven batteries.

viii. The cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) methods of compliance, paragraph (e)(1) exposure monitoring-general, and paragraph (e)(6) accuracy of monitoring. Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible.

(11) 29 CFR 1910.1029: *Coke Oven Emissions*

(a) This section applies to the control of employee exposure to coke oven emissions, except that this section shall not apply to working conditions with regard to which other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.

(12) 29 CFR 1910.1043: *Cotton Dust*

(a) This section, in its entirety, applies to the control of employee exposure to cotton dust in all workplaces where employees engage in yarn manufacturing, engage in slashing and weaving operations, or work in waste houses for textile operations.

(b) This section does not apply to the handling or processing of woven or knitted materials; to maritime operations covered by 29 CFR Parts 1915 and 1918; to harvesting or ginning of cotton; or to the construction industry.

(c) Only paragraphs (h) Medical surveillance, (k)(2) through (4) Recordkeeping - Medical Records, and appendices B, C and D of this section apply in all workplaces where employees exposed to cotton dust engage in cottonseed processing or waste processing operations.

(d) This section applies to yarn manufacturing and slashing and weaving operations exclusively using washed cotton (as defined by paragraph (n) of this section) only to the extent specified by paragraph (n) of this section.

(e) This section, in its entirety, applies to the control of all employees exposure to the cotton dust generated in the preparation of washed cotton from opening until the cotton is thoroughly wetted.

(f) This section does not apply to knitting, classing or warehousing operations except that employers with these operations, if requested by NIOSH, shall grant NIOSH access to their employees and workplaces for exposure monitoring and medical examinations for purposes of a health study to be performed by NIOSH on a sampling basis.

(13) 29 CFR 1910.1044: *1,2-Dibromo-3-Chloropropane*

(a) This section applies to occupational exposure to 1,2-dibromo-3-chloropropane (DBCP), except:

i. Exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or

ii. The storage, transportation, distribution or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquid, except for the requirements of paragraphs (i), (n) and (o) of this section.

(14) 29 CFR 1910.1045: *Acrylonitrile*

(a) This section applies to all occupational exposures to acrylonitrile (AN), Chemical Abstracts Service Registry No. 000107131, except:

i. This section does not apply to exposures which result solely from the processing, use, and handling of the following materials:

(i) ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers;

(ii) Materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable of releasing AN in airborne concentrations in excess of 1 ppm as an eight (8)-hour time-weighted average, under the expected conditions

of processing, use, and handling which will cause the greatest possible release; and

(iii) Solid materials made from and/or containing AN, which will not be heated above 170 deg. F during handling, use, or processing.

(15) 29 CFR 1910.1047: *Ethylene Oxide*

(a) This section applies to all occupational exposures to ethylene oxide (EtO), Chemical Abstracts Service Registry No. 75-21-8, except:

i. This section does not apply to the processing, use, or handling of products containing EtO where objective data are reasonably relied upon that demonstrate that the product is not capable of releasing EtO in airborne concentrations at or above the action level under the expected conditions of processing, use, or handling that will cause the greatest possible release.

(16) 29 CFR 1910.1048: *Formaldehyde*

(a) This standard applies to all occupational exposures to formaldehyde, *i.e.*, from formaldehyde gas, its solutions, and materials that release formaldehyde.

(17) 29 CFR 1910.1050: *Methylenedianiline*

(a) This section applies to all occupational exposures to MDA, Chemical Abstracts Service Registry No. 101-77-9, except:

i. Except as provided in paragraphs (a)(8) and (e)(5) of this section, this section does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

ii. Except as provided in paragraph (a)(8) of this section, this section does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

iii. This section does not apply to the storage, transportation, distribution or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids, except for the provisions of 29 CFR 1910.1200 and paragraph (d) of this section.

iv. This section does not apply to the construction industry as defined in 29 CFR 1910.12(b). (Exposure to MDA in the construction industry is covered by 29 CFR 1926.60).

v. Except as provided in paragraph (a)(8) of this section, this section does not apply to materials in any form which contain less than 0.1 percent MDA by weight or volume.

vi. Except as provided in paragraph (a)(8) of this section, this section does not apply to "finished articles containing MDA."

(18) 29 CFR 1910.1051: *1,3-Butadiene*

(a) This section applies to all occupational exposures to 1,3-Butadiene (BD), Chemical Abstracts Service Registry No. 106-99-0, except as provided in paragraph (a)(2) of this section.

(19) 29 CFR 1910.1052: *Methylene Chloride*

(a) This section applies to all occupational exposures to methylene chloride (MC), Chemical Abstracts Service Registry Number 75-09-2, in general industry, construction and shipyard employment.

(20) 29 CFR 1910.1053: *Respirable Crystalline Silica*

(a) This section applies to all occupational exposures to respirable crystalline silica, except:

i. Construction work as defined in 29 CFR 1910.12(b) (occupational exposures to respirable crystalline silica in construction work are covered under 29 CFR 1926.1153);

ii. Agricultural operations covered under 29 CFR part 1928; and

iii. Exposures that result from the processing of sorptive clays.

(b) This section does not apply where the employer has objective data demonstrating that employee exposure to respirable crystalline silica will remain below 25 micrograms per cubic meter of air (25 µg/m3) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

(c) This section does not apply if the employer complies with 29 CFR 1926.1153 and:

i. The task performed is indistinguishable from a construction task listed on Table 1 in paragraph (c) of 29 CFR 1926.1153; and

ii. The task will not be performed regularly in the same environment and conditions.

(21) 29 CFR 1926.1101: *Asbestos*

(a) This section regulates asbestos exposure in all work as defined in 29 CFR 1910.12(b), including but not limited to the following:

i. Demolition or salvage of structures where asbestos is present;

ii. Removal or encapsulation of materials containing asbestos;

iii. Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos;

iv. Installation of products containing asbestos;

v. Asbestos spill/emergency cleanup; and

vi. Transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed.

vii. Coverage under this standard shall be based on the nature of the work operation involving asbestos exposure.

viii. This section does not apply to asbestos-containing asphalt roof coatings, cements and mastics.

(22) 29 CFR 1926.1102: *Coal Tar Pitch Volatiles*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1002 of this chapter (see above, 29 CFR 1910.1002).

(23) 29 CFR 1926.1103: *13 Carcinogens (4-Nitrobiphenyl, etc.)*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(24) 29 CFR 1926.1104: *alpha-Naphthylamine*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(25) 29 CFR 1926.1106: *Methyl Chloromethyl Ether*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(26) 29 CFR 1926.1107: *3,3'-Dichlorobenzidine (and its salts)*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(27) 29 CFR 1926.1108: *bis-Chloromethyl Ether*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(28) 29 CFR 1926.1109: *beta-Naphthylamine*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(29) 29 CFR 1926.1110: *Benzidine*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(30) 29 CFR 1926.1111: *4-Aminodiphenyl*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(31) 29 CFR 1926.1112: *Ethyleneimine*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(32) 29 CFR 1926.1113: *beta-Propiolactone*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(33) 29 CFR 1926.1114: *2-Acetylaminofluorene*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(34) 29 CFR 1926.1115: *4-Dimethylaminoazobenzene*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(35) 29 CFR 1926.1116: *N-Nitrosodimethylamine*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1003 of this chapter (see above, 29 CFR 1910.1003).

(36) 29 CFR 1926.1117: *Vinyl Chloride*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1017 of this chapter (see above, 29 CFR 1910.1017).

(37) 29 CFR 1926.1118: *Inorganic Arsenic*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1018 of this chapter (see above, 29 CFR 1018).

(38) 29 CFR 1926.1124: *Beryllium*

(a) This standard applies to occupational exposure to beryllium in all forms, compounds, and mixtures in construction, except those articles and materials exempted by paragraphs (a)(2) and (a)(3) of this standard.

(b) This standard does not apply to articles, as defined in the Hazard Communication standard (HCS) (29 CFR 1910.1200(c)), that contain beryllium and that the employer does not process.

(c) This standard does not apply to materials containing less than 0.1% beryllium by weight where the employer has objective data demonstrating that employee exposure to beryllium will remain below the action level as an 8-hour TWA under any foreseeable conditions.

(39) 29 CFR 1926.62: *Lead*

(a) This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by 29 CFR 1910.1025(a)(2) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

i. Demolition or salvage of structures where lead or materials containing lead are present;

ii. Removal or encapsulation of materials containing lead;

iii. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

iv. Installation of products containing lead;

v. Lead contamination/emergency cleanup;

vi. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed, and

vii. Maintenance operations associated with the construction activities described in this paragraph.

(40) 29 CFR 1926.1126: *Chromium (VI)*

(a) This standard applies to occupational exposures to chromium (VI) in all forms and compounds in construction, except:

i. Exposures that occur in the application of pesticides regulated by the Environmental Protection Agency or another Federal government agency (*e.g.*, the treatment of wood with preservatives);

ii. Exposures to portland cement; or

iii. Where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium cannot release dusts, fumes, or mists of chromium (VI) in concentrations at or above 0.5 µg/m3 as an 8-hour time-weighted average (TWA) under any expected conditions of use.

(41) 29 CFR 1926.1127: *Cadmium*

(a) This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, in all construction work where an employee may potentially be exposed to cadmium. Construction work is defined as work involving construction, alteration and/or repair, including but not limited to the following:

i. Wrecking, demolition or salvage of structures where cadmium or materials containing cadmium are present;

ii. Use of cadmium containing-paints and cutting, brazing, burning, grinding or welding on surfaces that were painted with cadmium-containing paints;

iii. Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain cadmium, or materials containing cadmium;

iv. Cadmium welding; cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys;

v. Installation of products containing cadmium;

vi. Electrical grounding with cadmium welding, or electrical work using cadmium-coated conduit;

vii. Maintaining or retrofitting cadmium-coated equipment;

viii. Cadmium contamination/emergency cleanup; and

ix. Transportation, disposal, storage, or containment of cadmium or materials containing cadmium on the site or location at which construction activities are performed.

(42) 29 CFR 1926.1128: *Benzene*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1028 of this chapter (see above, 29 CFR 1910.1028).

(43) 29 CFR 1926.1144: *1,2-Dibromo-3-Chloropropane*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1044 of this chapter (see above, 29 CFR 1910.1044).

(44) 29 CFR 1926.1145: *Acrylonitrile*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1045 of this chapter (see above, 29 CFR 1910.1045).

(45) 29 CFR 1926.1147: *Ethylene Oxide*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1047 of this chapter (see above, 29 CFR 1910.1047).

(46) 29 CFR 1926.1148: *Formaldehyde*

(a) The requirements applicable to construction work under this section are identical to those set forth at 1910.1048 of this chapter (see above, 29 CFR 1910.1048).

(47) 29 CFR 1926.60: *Methylenedianiline*

(a) This section applies to all construction work as defined in 29 CFR 1910.12(b), in which there is exposure to MDA, including but not limited to the following:

i. Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain MDA;

ii. Installation or the finishing of surfaces with products containing MDA;

iii. MDA spill/emergency cleanup at construction sites; and

iv. Transportation, disposal, storage, or containment of MDA or products containing MDA on the site or location at which construction activities are performed.

(b) Except as provided in paragraphs (a)(7) and (f)(5) of this section, this section does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(c) Except as provided in paragraph (a)(7) of this section, this section does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(d) Except as provided in paragraph (a)(7) of this section, this section does not apply to the storage, transportation, distribution or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids, except for the provisions of 29 CFR 1910.1200 and paragraph (e) of this section.

(e) Except as provided in paragraph (a)(7) of this section, this section does not apply to materials in any form which contain less than 0.1% MDA by weight or volume.

(f) Except as provided in paragraph (a)(7) of this section, this section does not apply to "finished articles containing MDA."

(g) Where products containing MDA are exempted under paragraphs (a)(2) through (a)(6) of this section, the employer shall maintain records of the initial monitoring results or objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in the recordkeeping provision of paragraph (o) of this section.

(48) 29 CFR 1926.1152: *Methylene Chloride*

(a) The requirements applicable to construction employment under this section are identical to those set forth at 29 CFR 1910.1052 (see above, 29 CFR 1910.1052).

(49) 29 CFR 1926.1153: *Respirable Crystalline Silica*

(a) This section applies to all occupational exposures to respirable crystalline silica in construction work, except where employee exposure will remain below 25 micrograms per cubic meter of air (25 $\mu g/m^3$) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

Appendix C. Chemicals Regulated in OSHA Chemical-Specific Health Standards (Hazard Communication Requirements)

This appendix provides hazard communication requirements for chemicals regulated in the OSHA Chemical-Specific Health Standards (29 CFR 1910.1001 - 29 CFR 1910.1053, 29 CFR 1926.1101 – 29 CFR 1926.1153). The OSHA Chemical-Specific Health Standards should be consulted for detailed information regarding applicable requirements. The OSH Safety Program Manager for this program or another OSHE staff member will provide assistance upon request.

When the use of a chemical at a NIST workplace is within the scope and application of an applicable OSHA Chemical-Specific Health Standard (see Appendix B), the following specific hazard communication requirements shall be addressed with respect to the chemical being used.

a. 13 Carcinogens

(1) Hazards

(a) 4-Nitrobiphenyl: Cancer.

(b) alpha-Napthylamine: Cancer; skin irritation; and acute toxicity effects.

(c) Methyl Chloromethyl Ether: Cancer; skin, eye and respiratory effects; acute toxicity effects; and flammability.

(d) 3,3'-Dichlorobenzidine (and its salts): Cancer and skin sensitization.

(e) bis-Chloromethyl Ether: Cancer; skin, eye, and respiratory tract effects; acute toxicity effects; and flammability.

(f) beta-Naphthylamine: Cancer and acute toxicity effects.

(g) Benzidine: Cancer and acute toxicity effects.

(h) 4-Aminodiphenyl: Cancer.

(i) Ethyleneimine: Cancer; mutagenicity; skin and eye effects; liver effects; kidney effects; acute toxicity effects; and flammability.

(j) beta-Propiolactone: Cancer; skin irritation; eye effects; and acute toxicity effects.

(k) 2-Acetylaminofluorene: Cancer.

(l) 4-Dimethylaminoazobenzene: Cancer; skin effects; and respiratory tract irritation.

(m) N-Nitrosodimethylamine: Cancer; liver effects; and acute toxicity effects.

(2) Labels and Other Information

(a) Labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing the 13 Carcinogens or to their containers and address the following hazards.

i. 4-Nitrobiphenyl: Cancer.

ii. alpha-Napthylamine: Cancer; skin irritation; and acute toxicity effects.

iii. Methyl Chloromethyl Ether: Cancer; skin, eye and respiratory effects; acute toxicity effects; and flammability.

iv. 3,3'-Dichlorobenzidine (and its salts): Cancer and skin sensitization.

v. bis-Chloromethyl Ether: Cancer; skin, eye, and respiratory tract effects; acute toxicity effects; and flammability.

vi. beta-Naphthylamine: Cancer and acute toxicity effects.

vii. Benzidine: Cancer and acute toxicity effects.

viii. 4-Aminodiphenyl: Cancer.

ix. Ethyleneimine: Cancer; mutagenicity; skin and eye effects; liver effects; kidney effects; acute toxicity effects; and flammability.

x. beta-Propiolactone: Cancer; skin irritation; eye effects; and acute toxicity effects.

xi. 2-Acetylaminofluorene: Cancer.

xii. 4-Dimethylaminoazobenzene: Cancer; skin effects; and respiratory tract irritation.

xiii. N-Nitrosodimethylamine: Cancer; liver effects; and acute toxicity effects.

(3) Information and Training

(a) Employees and covered associates exposed to the 13 Carcinogens shall have access to labels on containers of the 13 Carcinogens and to safety data sheets and be trained in accordance with 29 CFR 1910.1003.

b. 1,2-Dibromo-3-Chloropropane (DBCP)

(1) Hazards

(a) Cancer; reproductive effects; liver effects; kidney effects; central nervous system effects; skin, eye and respiratory tract irritation; and acute toxicity effects.

(2) Labels and Other Information

(a) Containers of DBCP-contaminated protective devices or work clothing which are to be taken out of change rooms or the workplace for cleaning, maintenance or disposal shall be labeled.

(b) Portable vacuum units used to collect DBCP shall be labeled.

(c) Labels shall include the following information: CONTAMINATED WITH 1,2-Dibromo-3-chloropropane (DBCP), MAY CAUSE CANCER.

(d) Signage shall be posted to clearly indicate all regulated areas and include the following information: DANGER; 1,2-Dibromo-3-chloropropane; MAY CAUSE CANCER; WEAR RESPIRATORY PROTECTION IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to DBCP shall have access to labels on containers of DBCP and to safety data sheets and be trained in accordance with 29 CFR 1910.1044.

c. 1,3-Butadiene (BD)

(1) Hazards

(a) Cancer; eye and respiratory tract irritation; central nervous system effects; and flammability.

(2) Information and Training

(a) Employees and covered associates exposed to BD shall have access to labels on containers of BD and to safety data sheets and be trained in accordance with 29 CFR 1910.1051.

d. Acrylonitrile (AN)

(1) Hazards

(a) Cancer; central nervous system effects; liver effects; skin sensitization; skin, respiratory, and eye irritation; acute toxicity effects; and flammability.

(2) Labels and Other Information

(a) Signage shall be posted to clearly indicate all workplaces where AN concentrations exceed the permissible exposure limits and include the following information: DANGER; ACRYLONITRILE (AN); MAY CAUSE CANCER; RESPIRATORY PROTECTION MAY BE REQURED IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to AN above the action level, whose exposures are maintained below the action level by engineering and work practice controls, or who are subject to potential skin or eye contact with liquid AN shall have access to labels on containers of AN and AN-based materials and to safety data sheets and be trained in accordance with 29 CFR 1910.1045.

e. Asbestos

(1) Hazards

(a) Cancer and lung effects.

(2) Labels and Other Information

(a) Labels shall be affixed to containers of contaminated protective devices or work clothing, which are to be taken out of change rooms or the workplace for cleaning, maintenance or disposal.

(b) Labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers.

(c) Labels shall not be required where:

i. Asbestos fibers have been modified by a bonding agent, coating, binder, or other material provided that the manufacturer can demonstrate that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of fibers of asbestos in excess of the TWA permissible exposure level and/or excursion limit will be released; or

ii. Asbestos is present in a product in concentrations less than 1.0%.

iii. Labels shall include the following information: DANGER; CONTAINS ASBESTOS FIBERS; MAY CAUSE CANCER; CAUSES DAMAGE TO LUNGS; DO NOT BREATHE DUST; AVOID CREATING DUST.

(d) Signage may be posted in lieu of labels so long as they contain the information required for labeling.

(e) Labels or signage shall be affixed or posted to previously installed ACM and/or PACM, when identified, so that employees and associates will be notified of what materials contain ACM and/or PACM.

(f) Labels and signage shall be attached in areas where they will clearly be noticed by employees and associates who are likely to be exposed, such as at the entrance to mechanical room/areas.

(3) Information and Training

(a) Employees and covered associates exposed to airborne concentrations of asbestos at or above the PEL (an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8)-hour time-weighted average (TWA) and/or excursion limit (an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes)

shall have access to labels on containers of asbestos and to safety data sheets and be trained in accordance with 29 CFR 1910.1001 or 29 CFR 1926.1101, whichever is applicable.

f. Benzene

(1) Hazards

(a) Cancer; central nervous system effects; blood effects; aspiration; skin, eye, and respiratory tract irritation; and flammability.

(2) Labels and Other Information

(a) Signage shall be posted at entrances to regulated areas and include the following information: DANGER; BENZENE; MAY CAUSE CANCER; HIGHLY FLAMMABLE LIQUID AND VAPOR DO NOT SMOKE; WEAR RESPIRATORY PROTECTION IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to benzene shall have access to labels on containers of benzene and to safety data sheets and be trained in accordance with 29 CFR 1910.1028.

b. Beryllium

(1) Hazards

(a) Cancer; lung effects (CBD and acute beryllium disease); beryllium sensitization; skin sensitization; and skin, eye, and respiratory tract irritation.

(2) Labels and Other Information

(a) Containers of contaminated personal protective clothing or equipment required that will be removed from the workplace for laundering, cleaning, maintenance or disposal shall be labeled.

(b) Containers that contain at least 0.1 percent beryllium by weight or are materials contaminated with beryllium that are transferred for disposal, recycling, or reuse (except for intra-plant transfers) shall be labeled.

(c) Containers of clothing, equipment, and materials contaminated with beryllium, shall be labeled.

(d) Labels shall include the following information: DANGER; CONTAINS BERYLLIUM; MAY CAUSE CANCER; CAUSES DAMAGE TO LUNGS; AVOID CREATING DUST; DO NOT GET ON SKIN.

(e) Signage shall be posted at entrances to regulated areas and include the following information: DANGER; REGULATED AREA; BERYLLIUM; MAY CAUSE CANCER; CAUSES DAMAGE TO LUNGS; AUTHORIZED PERSONNEL ONLY; WEAR RESPIRATORY PROTECTION AND PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT IN THIS AREA.

(3) Information and Training

(a) Beryllium: Employees and covered associates exposed to beryllium shall have access to labels on containers of beryllium and to safety data sheets and be trained in accordance with 29 CFR 1910.1024.

c. Cadmium

(1) Hazards

(a) Cancer; lung effects; kidney effects; and acute toxicity effects.

(2) Labels and Other Information

(a) Bags or containers of contaminated protective clothing and equipment that are to be taken out of the change rooms or the workplace for laundering, cleaning, maintenance or disposal shall be labeled.

(b) Bags or containers of waste, scrap, debris, bags, containers, personal protective equipment, and clothing contaminated with cadmium and consigned for disposal shall be labeled.

(c) Shipping and storage containers containing cadmium or cadmium compounds shall be labeled.

(d) Installed cadmium products, where feasible, shall have a visible label or other indication that cadmium is present.

(e) Labels shall include at least the following information: DANGER; CONTAINS CADMIUM; MAY CAUSE CANCER; CAUSES DAMAGE TO LUNGS AND KIDNEYS; AVOID CREATING DUST.

(3) Information and Training

(a) Employees and covered associates exposed to cadmium shall have access to labels on containers of cadmium and to safety data sheets and be trained in accordance with 29 CFR 1910.1027 or 29 CFR 1926.1127, whichever is applicable.

d. Chromium (IV)

(1) Hazards

(a) Cancer, eye irritation, and skin sensitization.

(2) Labels and Other Information

(a) Bags or containers of contaminated protective clothing or equipment that are removed from change rooms for laundering, cleaning, maintenance, or disposal shall be labeled in accordance with 29 CFR 1910.1200.

(b) Bags or containers of waste, scrap, debris, and any other materials contaminated with chromium (VI) that are consigned for disposal shall be labeled in accordance with 29 CFR 1910.1200.

(3) Information and Training

(a) Employees and covered associates exposed to chromium (IV) shall have access to labels on containers of chromium (IV) and to safety data sheets and be trained in accordance with 29 CFR 1910.1026 or 29 CFR 1926.1126, whichever is applicable.

e. Coke Oven Emissions

(1) Labels and Other Information

(a) Containers of contaminated protective clothing and equipment shall be labeled and include the following information: CONTAMINATED WITH COKE EMISSIONS; MAY CAUSE CANCER; DO NOT REMOVE DUST BY BLOWING OR SHAKING.

(b) Signage shall be posted at entrances to regulated areas and include the following information: DANGER; COKE OVEN EMISSIONS; MAY CAUSE CANCER; DO NOT EAT, DRINK OR SMOKE; WEAR RESPIRATORY PROTECTION IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(c) Signage shall be posted in the areas where the permissible exposure limit is exceeded and include the following information: WEAR RESPIRATORY PROTECTION IN THIS AREA.

(2) Information and Training

(a) Coke Oven Emissions: Employees and covered associates exposed to coke oven emissions shall have access to labels on containers on containers of chemicals and substances associated with coke oven processes and to safety data sheets and be trained in accordance with 29 CFR 1910.1029.

f. Cotton Dust

(1) Labels and Other Information

(a) Signage shall be posted in each work area where the permissible exposure limit for cotton dust is exceeded and include the following information: DANGER; COTTON DUST; CAUSES DAMAGE TO LUNGS (BYSSINOSIS); WEAR RESPIRATORY PROTECTION IN THIS AREA.

g. Ethylene Oxide (EtO)

(1) Hazards

(a) Cancer; reproductive effects; mutagenicity; central nervous system; skin sensitization; skin, eye and respiratory tract irritation; acute toxicity effects; and flammability.

(2) Labels and Other Information

(a) Containers of EtO whose contents are capable of causing employee exposure at or above the action level or whose contents may reasonably be foreseen to cause employee exposure above the excursion limit shall be labeled (reaction vessels, storage tanks, and pipes or piping systems are not considered to be containers).

(b) Signage shall be posted demarcating regulated areas and entrances or access ways to regulated areas and include the following information: DANGER; ETHYLENE OXIDE; MAY CAUSE CANCER; MAY DAMAGE FERTILITY OR THE UNBORN CHILD; RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING MAY BE REQUIRED IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to EtO shall have access to labels on containers of EtO and to safety data sheets and be trained in accordance with 29 CFR 1910.1047.

h. Formaldehyde

(1) Hazards

(a) Cancer; skin and respiratory sensitization; eye, skin and respiratory tract irritation; acute toxicity effects; and flammability.

(2) Labels and Other Information

(a) Containers of contaminated clothing and equipment shall be labeled and include the following information: DANGER; FORMALDEHYDE-CONTAMINATED [CLOTHING] EQUIPMENT; MAY CAUSE CANCER; CAUSES SKIN, EYE, AND RESPIRATORY IRRITATION; DO NOT BREATHE VAPOR; DO NOT GET ON SKIN.

(b) Containers of formaldehyde-contaminated waste and debris resulting from leaks or spills shall be labeled warning of formaldehyde's presence and of the hazards associated with formaldehyde.

(c) Materials capable of releasing formaldehyde at levels above 0.5 ppm shall be labeled to address all health and physical hazards, including cancer and respiratory sensitization, and shall contain the hazard statement "May Cause Cancer.".

(d) Materials capable of releasing formaldehyde at levels of 0.1 ppm to 0.5 ppm, shall be labeled to identify that the product contains formaldehyde, list the name and address of the responsible party, and state that physical and health hazard information is readily available from the employer and from safety data sheets.

(e) Signage shall be posted at storage areas for contaminated clothing and equipment and include the following information: DANGER; FORMALDEHYDE-CONTAMINATED [CLOTHING] EQUIPMENT; MAY CAUSE CANCER; CAUSES SKIN, EYE AND RESPIRATORY IRRITATION; DO NOT BREATHE VAPOR; DO NOT GET ON SKIN.

(3) Information and Training

(a) Employees and covered associates exposed to formaldehyde shall have access to labels on containers of formaldehyde and to safety data sheets and be trained in accordance with 29 CFR 1910.1048.

i. Inorganic Arsenic

(1) Hazards

(a) Cancer; liver effects; skin effects; respiratory irritation; nervous system effects; and acute toxicity effects.

(2) Labels and Other Information

(a) Containers of contaminated protective clothing and equipment in the workplace or which are to be removed from the workplace shall be labeled and include the following information: DANGER: CONTAMINATED WITH INORGANIC ARSENIC. MAY CAUSE CANCER. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF INORGANIC ARSENIC CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS.

(b) Labels shall not be required when the inorganic arsenic in the product is bound in such a manner so as to make unlikely the possibility of airborne exposure to inorganic arsenic (Possible examples of products not requiring labels are semiconductors, light emitting diodes and glass.).

(c) Signage shall be posted at entrances to regulated areas and include the following information: DANGER; INORGANIC ARSENIC; MAY CAUSE CANCER; DO NOT EAT, DRINK OR SMOKE; WEAR RESPIRATORY PROTECTION IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to inorganic arsenic shall have access to labels on containers of inorganic arsenic and to safety data sheets and be trained in accordance with 29 CFR 1910.1018.

j. Lead

(1) Hazards

(a) Reproductive/developmental toxicity; central nervous system effects; kidney effects; blood effects; and acute toxicity effects.

(2) Labels and Other Information

(a) Containers of contaminated protective clothing and equipment shall be labeled with the following information: DANGER: CLOTHING AND EQUIPMENT CONTAMINATED WITH LEAD. MAY DAMAGE FERTILITY OR THE UNBORN CHILD. CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM. DO NOT EAT, DRINK OR SMOKE WHEN HANDLING. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

(b) Signage shall be posted in each work area where the PEL is exceeded and include the following information: DANGER; LEAD; MAY DAMAGE FERTILITY OR THE UNBORN CHILD; CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM; DO NOT EAT, DRINK OR SMOKE IN THIS AREA.

(3) Information and Training

(a) Employees and covered associates exposed to lead shall have access to labels on containers of lead and to safety data sheets and be trained in accordance with 29 CFR 1910.1025 or 29 CFR 1926.62, whichever is applicable.

k. Methylene Chloride (MC)

(1) Hazards

(a) Cancer, cardiac effects (including elevation of carboxyhemoglobin), central nervous system effects, liver effects, and skin and eye irritation.

(2) Safety Data Sheets

(a) The following text shall be provided in SDS Section 1c and 15.

i. After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion-sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

(3) Information and Training

(a) Employees and covered associates exposed to MC shall have access to labels on containers of MC and to safety data sheets and be trained in accordance with 29 CFR 1910.1052.

l. Methylenediamine (MDA)

(1) Hazards

(a) Cancer; liver effects; and skin sensitization.

(2) Labels and Other Information

(a) Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of change rooms or the workplace for cleaning, maintenance, or disposal, shall be labeled to warn of the hazards of MDA.

(b) Containers of MDA-contaminated clothing to be transported shall be labeled to warn of the hazards of MDA.

(c) Signage shall be posted demarcating regulated areas and entrances or access ways to regulated areas and include the following information: DANGER; MDA; MAY CAUSE CANCER; CAUSES DAMAGE TO THE LIVER; RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING MAY BE REQUIRED IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to MDA shall have access to labels on containers of MDA and to safety data sheets and be trained in accordance with 29 CFR 1910.1050 or 29 CFR 1926.60, whichever is applicable.

m. Respirable Crystalline Silica

(1) Hazards

(a) Respirable Crystalline Silica: Cancer, lung effects, immune system effects, and kidney effects.

(2) Labels and Other Information

(a) Signage shall be posted at all entrances to regulated areas and include the following information: DANGER; RESPIRABLE CRYSTALLINE SILICA; MAY CAUSE CANCER; CAUSES DAMAGE TO LUNGS; WEAR RESPIRATORY PROTECTION IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to respirable crystalline silica, except where employee exposure will remain below 25 micrograms per cubic meter of air (25 $\mu g/m^3$) as an 8-hour time-weighted average (TWA) under any foreseeable conditions, shall have access to labels on containers of crystalline silica and safety data sheets and be trained in accordance with 29 CFR 1910.1053 or 29 CFR 1926.1153, whichever is applicable (see NIST PR 7101.29.01: *Respirable Crystalline Silica Safety Procedure*).

n. Vinyl Chloride

(1) Hazards

(a) Cancer; central nervous system effects; liver effects; blood effects; and flammability.

(2) Labels and Other Information

(a) Containers of polyvinyl chloride resin waste from chemical reactors (*e.g.*, process equipment used to perform chemical reactions) or other waste contaminated with vinyl chloride shall be labeled and include the following information: CONTAMINATED WITH VINYL CHLORIDE; MAY CAUSE CANCER.

(b) Signage shall be posted at entrances to regulated areas and include the following information: DANGER; VINYL CHLORIDE; MAY CAUSE CANCER; AUTHORIZED PERSONNEL ONLY.

(c) Signage shall be posted at areas containing hazardous operations or where emergencies currently exist and include the following information: DANGER; VINYL CHLORIDE; MAY CAUSE CANCER; WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA; AUTHORIZED PERSONNEL ONLY.

(3) Information and Training

(a) Employees and covered associates exposed to vinyl chloride shall have access to labels on containers of vinyl chloride and to safety data sheets and be trained in accordance with 29 CFR 1910.1017.