

Hazard Communication

Short description

This section outlines the requirements to communicate the hazards of chemicals and other materials to Centennial employees, subcontractors and other affected personnel.

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1 Objective and area of application

The purpose of this section is to clearly communicate the hazards associated with hazardous chemicals and materials to which Centennial employees and subcontractors may be exposed during the course of their work. The Hazard Communication Standard (HCS) is now aligned with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). This update to the HCS provides a common and coherent approach to classifying chemicals and communicating hazard information on labels and safety data sheets.

All Centennial employees and subcontractors are entitled by law to pertinent information about the identities and hazards of the chemicals to which they are potentially exposed when working. Having readily available access to such information will allow them take steps to protect themselves, and to implement the controls to prevent potentially hazardous exposure.

This procedure provides the framework for the following elements concerning hazardous chemicals and materials:

- Identifying hazards before starting a job
- Reading container labels and SDSs
- Understanding potential hazards associated with use or exposure to chemicals and other materials
- Using hazard controls and/or personal protective equipment to minimize exposure to hazardous chemicals or materials
- Understanding instructions and warnings pertaining to chemical/material handling and usage
- Knowing and understanding the consequences associated with failing to follow SDS instruction concerning the safe handling and use of chemicals

2 Superior and additional applicable documents

1000_GP_11_01_en_5.0 Global Policy on Health, Safety, Environment/Sustainability and Quality (HSEQ)

1000_GS_11_25_en_1.0 Global HSEQ Standard on Hazardous Materials

This section of the HSEQ Manual applies to all Centennial employees and subcontractors who are performing work in Centennial facilities and project sites. There may be more stringent requirements than this section as defined by specific State, local or contract specific requirements. If there is a conflict between this section and other applicable regulations, the more stringent will apply.

3 Definitions

The following definitions of terms are important for an understanding of this section.

Term	Definition
Centennial	All Centennial employees, joint venture employees, subcontractors and business partners
HSEQ	Health, Safety, Environment and Quality
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
HCS	Hazard Communication Standard
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
ACGIH	American Conference of Governmental Industrial Hygienists
PPE	Personal Protective Equipment
SDS	Safety Data Sheet (formerly MSDS or Material Safety Data Sheet)
Carcinogen	A substance capable of causing cancer in living tissue
PSO	Project Safety Officer
PSM	Project Safety Manager
Mutagenicity	Materials that may cause mutation
Aspiration	Materials that may enter the body with breathing
Pyrophorics	Materials which spontaneously ignite in air
HSEQ Director	Leads the HSEQ Team

4 General requirements on project sites

- All subcontractors shall provide a copy of their written hazard communication program for PSO and HSEQ staff review prior to conducting any work on a Centennial project site
- All subcontractors shall provide a SDS for every chemical or material that will be used or stored on a Centennial project site
- The Centennial project superintendent shall compile a list of all hazardous chemicals or materials on his or her project site using the Hazardous Chemical/Material Inventory (Appendix 1)
- All Centennial project sites shall have a copy of the SDS for each product which will be available for immediate review by all Centennial employees, subcontractors or other affected personnel. The SDS shall be stored and tabbed in the Centennial jobsite binder
- The SDS shall be scanned and stored in the electronic project file in accordance with OSHA's SDS exposure retention requirements
- All containers will be appropriately labeled according to paragraph 6 of this section

- The Centennial project superintendent will verify that all exposed subcontractors and affected personnel are provided with information and training on hazardous chemicals in their work areas including non-routine work practices
- All site personnel will be informed by the Centennial project superintendent of precautionary measures that may need to be taken to protect themselves during the workplace's normal operating conditions and in foreseeable emergencies

5 Hazard classification of chemicals and materials

5.1 Health hazards

For the purpose of this section, health hazards include all of the following:

- Acute toxicity
- Skin corrosion/irritation
- Serious eye damage/irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogens
- Reproductive toxicity
- Specific target organ toxicity
 - Single exposure
 - Repeated exposure
- Aspiration hazards
- Simple asphyxiants

5.2 Physical hazards

For the purpose of this section, physical hazards include all of the following:

- Explosives
- Flammable gases
- Oxidizing gases
- Flammable aerosols
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-reactive chemicals
- Pyrophoric liquids, solids or gases
- Self-heating chemicals
- Oxidizing liquids, solids or peroxides
- Corrosive to metals
- Combustible dust
- Chemicals which become noxious or hazardous in combination or mixture

6 Container labels and pictograms



6.1 Container labels

Containers must be appropriately labeled on all Centennial project sites. Chemicals or materials may only be placed in secondary containers which bear the proper label conveying the same information as found on the primary container label. In no case, may a chemical or material be placed in a common container such as a soda bottle or can. Each container must have the following information included on the container label:

- Product identifier
 - Name, address, and phone number of the responsible party
 - The product identifier is any chemical, common, trade name or designation that the chemical manufacturer or importer chooses to use on the label. The term must also appear on the SDS. The signal word, hazard statement(s), pictogram(s), and precautionary statement(s) are the label elements that comprise the primary information about hazards and protective measures on the label.
- Signal word
 - A signal word is used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. Signal words that may be used are “danger” and “warning.”
 - “Danger” is used for the more severe hazards
 - “Warning” is used for the less severe hazards.
- Hazard statement(s)
 - A hazard statement is assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including the degree of hazard.
 - Example: Fatal if swallowed
- Pictogram(s)
 - A pictogram is 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 the revised HCS standard for application to a hazard category. Pictograms are black symbols, on a white background, with a red diamond border
- Precautionary statement(s)
 - Precautionary Statements describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or material from improper storage or handling. There are four types of precautionary statements:
 - Prevention (to minimize exposure)
 - Response (in case of accidental spillage or exposure emergency response, and first-aid)
 - Storage
 - Disposal

6.2 Pictograms

The chart below identifies each pictogram with corresponding hazards:

Designation	Pictogram	Hazard(s)
Health Hazard		<ul style="list-style-type: none"> ▪ Carcinogen ▪ Mutagenicity ▪ Reproductive Toxicity ▪ Respiratory Sensitizer ▪ Target Organ Toxicity ▪ Aspiration Toxicity
Flame		<ul style="list-style-type: none"> ▪ Flammables ▪ Pyrophoric and Self-Heating ▪ Emits Flammable Gas ▪ Self-Reactives ▪ Organic Peroxides
Exclamation Mark		<ul style="list-style-type: none"> ▪ Irritant (skin and eye) ▪ Skin Sensitizer ▪ Narcotic Effects ▪ Respiratory Tract Irritant ▪ Hazardous to Ozone Layer
Gas Cylinder		<ul style="list-style-type: none"> ▪ Gases under pressure
Corrosion		<ul style="list-style-type: none"> ▪ Skin Corrosion/Burns ▪ Eye Damage ▪ Corrosive to Metals
Exploding Bomb		<ul style="list-style-type: none"> ▪ Explosives ▪ Self-Reactives ▪ Organic Peroxides
Flame Over Circle		<ul style="list-style-type: none"> ▪ Oxidizers
Environment		<ul style="list-style-type: none"> ▪ Aquatic toxicity
Skull and Crossbones		<ul style="list-style-type: none"> ▪ Acute toxicity (fatal or toxic)

7 Safety Data Sheet (SDS) elements

7.1 Section 1: Identification

Section 1 identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier.

The required information consists of the:

- Product identifier used on the label and any other common names or synonyms by which the substance is known
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier)

7.2 Section 2: Hazard identification

Section 2 identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards.

The required information consists of:

- The hazard classification of the chemical
- A signal word
- A hazard statement(s)
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (see section 6.2 of this section for examples of pictograms))
- A precautionary statement(s)
- A description of any hazards not otherwise classified

For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s)

7.3 Section 3: Chemical/material composition

Section 3 identifies the ingredient(s) contained in the chemical or material indicated on the SDS, including impurities and stabilizing additives. Section 3 includes information on substances, mixtures, and all chemicals where a trade secret is claimed.

The required information consists of:

- Substances
 - Chemical name
 - Common name and synonyms
 - Chemical Abstracts Service (CAS) number and other unique identifiers

- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical
- Mixtures
 - Same information required for substances
 - The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
 - Present above their cut-off/concentration limits
 - Present a health risk below the cut-off/concentration limits
 - The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
 - A trade secret claim is made
 - There is batch-to-batch variation
 - The SDS is used for a group of substantially similar mixtures
- Chemicals where a trade secret is claimed
 - A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required

7.4 Section 4: First aid measures

Section 4 describes the initial care that should be given by untrained first responders to an individual who has been exposed to the chemical or material.

The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure:
 - Inhalation
 - Absorption
 - Ingestion
 - Injection
- A description of the most important symptoms or effects, and any symptoms that are acute or delayed
- Recommendations for immediate medical care and special treatment needed

7.5 Section 5: Fire fighting measures

Section 5 provides recommendations for fighting a fire caused by the chemical or material.

The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns
- Recommendations on special protective equipment or precautions for firefighters

7.6 Section 6: Accidental release measures

Section 6 provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between

responses for large and small spills where the spill volume has a significant impact on the hazard.

The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment
- Cleanup procedures

7.7 Section 7: Handling and storage

Section 7 provides guidance on the safe handling practices and conditions for safe storage of chemicals.

The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices
- Recommendations on the conditions for safe storage, including any incompatibilities

7.8 Section 8: Exposure controls and PPE

Section 8 indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize Centennial employee, subcontractor or other potentially affected personnel's exposure.

The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or organization who prepares the SDS
- Appropriate engineering controls
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE)
- Any special requirements for PPE

7.9 Section 9: Physical and chemical properties

This section identifies physical and chemical properties associated with the substance or mixture.

The minimum required information consists of:

- Appearance
- Upper/lower flammability or explosive limits

- Odor threshold
- Vapor density
- pH
- Relative density
- Melting point/freezing point
- Initial boiling point and boiling range
- Flash point
- Evaporation rate
- Flammability
- Upper/lower flammability or explosive limits
- Vapor pressure
- Vapor density
- Relative density
- Solubility
- Partition coefficient
- Auto-ignition temperature
- Decomposition temperature
- Viscosity

7.10 Section 10: Stability and reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other.

The required information consists of:

- **Reactivity**
 - Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available
- **Chemical stability**
 - Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled
 - Description of any stabilizers that may be needed to maintain chemical stability
 - Indication of any safety issues that may arise should the product change in physical appearance
- **Other**
 - Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur
 - List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions)
 - List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation
 - List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS)

7.11 Section 11: Toxicological information

Section 11 identifies toxicological and health effects information or indicates that such data is not available.

The required information consists of:

- Information on the likely routes of exposure
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure
- The numerical measures of toxicity
- A description of the symptoms. The description shall include the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure
- An indication of whether the chemical is or may potentially be a carcinogen

7.12 Section 12-15 (non-mandatory)

Section 12-15 of the SDS is non-mandatory and may contain information that is not applicable to Centennial employees, subcontractors or other personnel. Sections 12-15 of all SDS's shall be reviewed by the Centennial project superintendent and subcontractors prior to the products arrival on the site to determine if these sections are applicable.

Sections 12-15 of the SDS include:

- Section 12: Ecological information
- Section 13: Disposal considerations
- Section 14: Transport considerations
- Section 15: Regulatory information

7.13 Section 16: Other information

Section 16 indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. Other useful information also may be included here and should be reviewed prior to material use on a Centennial project site.

8 Training

All Centennial employees and subcontractors shall be trained on the specific hazards associated with the chemicals and materials to which they will be exposed. The Centennial project superintendent, PSO or HSEQ staff will ensure that all training requirements are met for his or her project. All new and existing Centennial employees shall be trained at the time of initial assignment and whenever new chemicals or materials are introduced.

Training will include the following elements:

- The specific hazards of chemicals and materials in the work area including:
 - Health hazards
 - Physical hazards

- Location and availability of the hazard communication program, chemical inventory list and SDS
- Methods and observations used to detect the presence or release of a hazardous chemical in the work area, such as monitoring devices, visual appearance or odor of hazardous chemicals when being released
- Physical, health, simple asphyxiation, combustible dust and pyrophoric gas hazards, as well as hazards not otherwise classified of the chemicals in the work area
- Container labeling
- Sections of the SDS
- Notification process for spills and/or hazardous exposure
- Measures employees can take to protect themselves from hazards, such as appropriate controls, work practices, emergency and spill cleanup procedures, and personal protective equipment to be used
- Explanation of the SDS, including order of information and how personnel can obtain and use the appropriate hazard information
- Whenever possible, partially filled material containers shall not be stored. At the last application, all material in the container should be used even when additional application is required to exhaust the supply in the container. Unopened containers should be returned to the supplier

9 Recordkeeping

Records pertaining to hazardous chemicals/materials used or stored on Centennial project sites will be maintained in the project files and/or electronically by the PSO or PSM.

The following records will be maintained:

- Chemical inventory lists
- Hazardous material surveys and monitoring data
- SDS
- Training records

10 Amendment history

Date	Version	Revised content
03.04.2014	1.0	Initial Preparation
01.01.2018	2.0	Updates to Paragraph 2 Superior Documents to add the Group Policy and Global Standards, Paragraph 3 Definitions (Centennial and HSEQ Director), Paragraph 4 General requirements on project sites (review), Paragraph 8 Training (oversight) and Appendix 1 (logo)

11 Appendix

Appendix 1: Hazardous Chemical/Material Inventory Log (0206500_CP_11_17_en_A1.1)

