

Chemical Health and Safety – General Program

I. Objective

To establish minimum requirements for storage, handling and use of chemicals.

II. Scope

This process applies to employees and operations involved in the transportation, storage, use and handling of chemicals. This does not apply to off-the-shelf consumer products.

III. Roles & Responsibilities

Management is responsible for implementation of the requirements specified herein including ensuring that employees receive training commensurate with their responsibilities.

Employees are responsible to know their roles and the hazards associated with chemical use, attend and receive appropriate training, and be familiar with emergency procedures including who to contact in the event of an emergency.

Contract employees are responsible to comply with applicable regulatory requirements and the conditions of their contract with Lenovo.

Chemical Management/Environmental Programs is responsible for overall management of chemical purchase, deliveries, chemical labeling, maintaining a location chemical list, maintains a Safety Data Sheets (SDS) database, provide information about the chemical and development/implementation/auditing of requirements within Lenovo OHS and Environmental Practices or other duties assigned through local procedures and agreements.

Occupational Health and Safety (OHS) is responsible for providing assistance with the development of the chemical safety program, chemical safety training and information, assisting management in assessing chemical safety risks and reviewing chemical safety program implementation periodically, or other duties assigned through local procedures and agreements.

IV. Process Elements

A. Chemical Awareness A chemical awareness program must be implemented. Program shall comply with local applicable regulatory requirements.

1. Access of and understanding Safety Data Sheets information for chemicals used at Lenovo.
2. Labeling requirements of chemical containers, including waste containers, pipelines, and points of discharge must be labeled in accordance with applicable regulatory requirements and consistent with Section I of this document.
3. Operating procedures are required for processes and operations using chemicals, including information on use, handling, storing, disposal and action to be taken in the event of a chemical emergency

B. Employee information and training must be provided prior to initial assignment and whenever a new chemical hazard the employees have not previously been trained, is introduced into their work area. Additional training, including refresher training, must be provided as required by applicable regulatory requirements.

C. Safety Data Sheet (SDS): Manufacture/distributors are required to provide SDS for each chemical material. SDS's shall be maintained on file for each Lenovo approved chemical in use. Information on the chemical material may include the following:

1. Identification of the substance or mixture and of the supplier
2. Hazards identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection.
9. Physical and chemical properties
10. Stability and reactivity

11. Toxicological information
12. Ecological information (non-mandatory)
13. Disposal considerations (non-mandatory)
14. Transport information (non-mandatory)
15. Regulatory information (non-mandatory)
16. Other information, including date of preparation or last revision

D. Chemical Storage, Use and Handling. Consider using the least hazardous material required to perform each process or task.

1. Control incompatible chemicals to prevent accidental mixing. Examples of control include distance, secondary containment, or as specified in local building code.
2. Extremely toxic or unstable chemicals secured to prevent unauthorized access.
3. Identify and track chemicals with shelf-life expiration dates based on their stability or ability to polymerize (e.g., ethers, other peroxidizable compounds, some monomers, and some corrosive gases) to ensure proper disposal prior to their expiration date.
4. Chemical piping systems with hazardous chemicals or physical hazards (e.g. high temperature, high pressure) should have capped ends after a dead ended valve to prevent leakage.
5. Storage or consumption of food, beverage or tobacco products and cosmetics application in areas where hazardous chemicals are stored, used, or handled is prohibited.
6. Working alone is prohibited for chemical operations which may be immediately dangerous to life and health. Examples include work with flammables, corrosives, and acutely toxic chemicals where the concentration, quantity, and use of the chemicals could create an extremely hazardous condition.

E. Flammable and Combustible Liquids - Flammable and combustible liquids are classified as shown in the following table:

| Classes of Flammable and Combustible Liquids | | | | |
|---|---|---|--|--|
| Flammable Liquids Flashpoint < 100°F (37.8°C) | | | Combustible Liquids Flashpoint ≥ 100°F (37.8°C) | |
| Class IA | Class IB | Class IC | Class H | Class III |
| Flashpoint < 73°F (22.8°C) and boiling point < 100°F (37.8°C) | Flashpoint < 73°F (22.8°C) and boiling point > 100°F (37.8°C) | Flashpoint > 73°F (22.8°C) and < 100°F (37.8°C) | Flashpoint ≥ 100°F (37.8°C) and < 140°F (93.3°C) | Flashpoint ≥ 140°F (60°C) and < 200°F (93.3°C) |

Flammable and combustible liquid containers are to be limited to the capacities specified in the table below

| Maximum Allowable Size of Containers and Portable Tanks | | | | | |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Container type | Flammable liquids | | | Combustible liquids | |
| | Class IA | Class IB | Class IC | Class II | Class III |
| Glass | 1 pint (0.473 liter) | 1 quart (0.95 liter) | 1 gallon (3.8 liters) | 1 gallon (3.8 liters) | 5 gallons (19 liters) |
| Metal or approved plastic | 1 gallon (3.8 liters) | 5 gallons (19 liters) | 5 gallons (19 liters) | 5 gallons (19 liters) | 5 gallons (19 liters) |
| Safety cans | 2 gallons (7.6 liters) | 5 gallons (19 liters) | 5 gallons (19 liters) | 5 gallons (19 liters) | 5 gallons (19 liters) |
| Metal drum | 60 gallons (228 liters) |
| Portable tanks | 660 gallons (2,508 liters) |

- Containers are limited to the capacities in the table, except glass containers of no more than 1 gallon capacity may be used for a Class IA or IB flammable liquid if:
 - Such liquid would be rendered unfit for its intended use by contact with metal; or
 - The process requires more than one pint of a Class IA liquid or one quart of a Class IB liquid; or the required liquid purity is available only in glass containers greater than 1 pint in capacity.
- Flammable liquids must be stored in accordance with applicable building codes, and regulatory requirements.

5. Refrigerators or freezers used to store flammable liquids must be approved by a Nationally Recognized Testing Laboratory for storage of flammables.
6. When a chemical is heated for use to within 30 degrees F (16.7 degrees C) of its flashpoint, it shall be handled in accordance for the next lower class of liquids. For example if a Class II liquid is heated to within 30 degrees F of its flashpoint, it shall be considered a class 1C flammable.

F. Compressed Gases and Gas Systems (Use) Handling:

1. Use only inspected and approved cylinders, stamped with the applicable approval agency and legibly labeled.
2. Do not place close to heat-producing devices or open flame. Explosion hazards can develop when compressed gases are exposed to temperatures above 125 degrees F (52C).
3. Leak testing of the valve assembly and all fittings of hazardous compressed gasses must be done after connections are completed.
4. Documented procedures must be developed prior to use of highly toxic or pyrophoric gases. Procedures should address:
 - a. Cylinders in storage or use placed in outside open-air installations or in cabinets or rooms with special alarmed exhaust systems which have a source of emergency power to permit continuous operation. Local fire/building codes may have additional requirements or provisions for small quantity exemptions.
 - b. Inspection or handling of highly toxic gas cylinders done by personnel wearing appropriate respiratory protection (for example atmosphere-supplying respirators).
 - c. Use of full face shield and flame-retardant gloves for pyrophoric gas cylinder handling.
5. Cylinders containing non-liquefied gases (except acetylene or refrigerants) must be removed from service when the regulator pressure drops to 25 pounds per square inch.
6. Location emergency response procedures must include criteria for handling malfunctioning hazardous gas cylinders or hazardous gas system leaks.

G. Compressed Gases and Gas Systems Transportation and Storage:

1. Cylinders should be normally transported in a vertical position, secured, with protective valve caps secured in place. **Note:** certain gases such as acetylene must always be kept in a vertical position.

2. Cylinders which contain gases which can form explosive mixtures if released simultaneously (such as hydrogen and oxygen) must be separated by at least 20 feet or by a fire barrier at least 5 feet high while in storage.
3. Flammable, toxic and other highly hazardous gases must be stored under a roof in a secured area, either out-of-doors, or in a properly ventilated room or cabinet.
4. Cylinders must be securely fastened in an upright position to a wall rack, welding gas transporter, or other substantial structure.
5. Securing of multiple compatible cylinders is permitted in a storage system designed for securing multiple cylinders and in accordance with local building codes and regulatory requirements. Cylinders shall be installed in an upright position in a cage or rack constructed to protect the cylinders from falling on three (3) sides by the cage/rack structure. The open side shall have removable restraint(s) that can be adjusted to prevent the remaining cylinders from falling.
6. Inspection or handling of highly toxic gas cylinders done by personnel wearing appropriate respiratory protection. In some instances this may require atmosphere-supplying respirators.
7. Leak test valve assemblies on highly hazardous gas cylinders (including toxic, highly flammable, and other highly hazardous gasses) prior to being placed in storage or distributed.
8. Gasses with shelf-life expiration based upon hazards such as corrosives must be properly identified and tracked to ensure proper disposal prior to expiration date.

H. **Hazard Classification:** Chemical manufacturers and importers should determine the hazards of the chemicals they produce or import. Hazard classification provides specific criteria to address health and physical hazards as well as classification of chemical mixtures.

- I. **Chemical Labeling:** All chemicals at Lenovo shall be labeled. This includes commercial containers, point of use containers, compressed gas cylinders, pipelines, drums, tanks, reservoirs and waste containers.
- Lenovo utilizes manufacturer's hazard warning labeling on original chemical containers. If a chemical is transferred into another point of use container or the manufacturer's label is illegible, the container shall be labeled and consist with label requirements throughout the using area.

- Chemical manufacturers and importers must provide a label that includes a signal word, pictogram, hazard statement, and precautionary statement for each hazard class and category.
- Labeling will consist of readable ink marking or an affixed label with the chemical name, part number, acronyms, chemical structure, or sample identifiers and may include pictograms.

A pictogram includes 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 the contents of a container. Examples of pictograms are on the following **Appendix C**.

Appendix C

HCS Pictograms and Hazards

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

J. Lab Chemical Safety Procedures

1. Managers must ensure processes and precautions to protect employees and Lenovo facilities are in place prior to any high hazard laboratory operation. Laboratory operations are "high hazard" if they contain chemicals or chemical processes which:
 - are pyrophoric, self-reactive, explosive, or have the potential to produce a violent exothermic reaction when combined with other substances.
 - have high acute toxicity or might react to produce substances with high acute toxicity during use.
 - run at elevated pressure (working pressure of greater than two times atmospheric)
 - have unattended operations in which a heating device malfunction or other system failure could result in fire, explosion, or release of toxic materials outside of a locally exhausted enclosure. (An unattended operation is one at which there is no person present who is knowledgeable regarding that operation and its emergency shutdown procedures).

V. Control Points

1. Chemicals are segregated, stored and used as per requirements of chemical safety program
2. Employees at customer locations who do not work with chemicals but work in chemical use areas are provided with information on what to do if exposed to chemicals

VI. Documentation

Medical, Health and Safety records (e.g. training, audit, accident investigation, industrial hygiene survey, self-assessment inspection) must be maintained in accordance with the essential local code requirements.

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