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TONY CALLAWAY
Travis County Fire Marshal

TO: Travis County Fire Marshal Customers

SUBJECT: **INFORMATION BULLETIN 002B**
Frequently **A**sked **Q**uestions and Definitions related to Occupancy Classification Letters (aka Commodities Letters) for Storage, Retail, Warehouse, Manufacturing, and/or Hazardous Materials

DATE: December 28, 2022

CREATED BY: Travis County Fire Marshal's Office

Purpose:

As a customer service initiative, the Travis County Fire Marshal's Office (**TCFMO**) has developed this Information Bulletin (IB) to address the Frequently Asked Questions (FAQs) and listed the following definitions in order to assist you in preparing an Occupancy Classification Letter (aka Commodities Letter) for your project when required by the TCFMO. Please refer to Information Bulletin 002A for instructions and required format for your OCL. If you still have questions on whether or not your facility requires an OCL, please contact the TCFMO at Fire.Marshal@traviscountytx.gov

I. OCCUPANCY CLASSIFICATION LETTER FAQS

Q1. How do I know if I must complete an Occupancy Classification Letter (OCL)?

A1. You may have to complete an OCL if:

1. You have a storage area or retail display area greater than 500 square feet and intend on storing Class I-IV commodities higher than 12 feet, or High Hazard commodities higher than 6 feet (See IB 192a); and/or
2. You store, use, handle or manufacture any hazardous materials (as defined by the currently adopted version of the International Fire Code)

Q2. What is a commodity?

A2. A commodity is a combination of products, packing materials and containers.

Q3. How are commodities classified?

A3. Commodities are classified as Class I, Class II, Class III, Class IV or High Hazard Commodities. See the High-Piled Combustible Storage Definitions in Section II below for a detailed description of each commodity classification.

Q4. What is considered a hazardous material?

A4. Hazardous materials are those chemicals or substances which are *physical hazards* or *health hazards* as defined and classified in by the currently adopted version of the IFC, whether the materials are in usable or waste condition. See the Hazardous Materials Definitions in Section III below for further information on hazardous materials.

Q5. What items are considered hazardous materials?

A5. The following provides examples of chemicals considered hazardous that require disclosure. Note: this is not intended to be a complete list of all hazardous materials:

- **Flammable**: acetone, alcohol, ethylene oxide, gasoline, ether, acetylene, carbon monoxide, ethane, hydrogen.
- **Combustible**: motor oils, diesel, hydraulic fluids (other than elevators), kerosene.
- **Oxidizers**: oxygen, nitrous oxide, chlorine, hydrogen peroxide (>10%), nitric acid, bromine, sulfuric acid, nitrates, nitrites, ozone, peroxides, percloric acid.
- **Pyrophorics**: phosphine, silane, lithium, phosphorus, potassium.
- **Unstable materials**: picric acid, peroxyacetic acid, sodium perchlorate, acetic acid, ethyl nitrate.
- **Water reactive**: calcium carbide, sodium hydroxide, sodium metal, bromine pentafluoride.
- **Corrosive**: nitric acid, sulfuric acid, calcium, potassium, ammonia, florine, iodine.
- **Toxic**: chlorine, nitric oxide, nicotine, mercury, allyl alcohol, barium chloride, oxalic acid,

Q6. Are cleaning supplies in my office considered hazardous materials?

A6. Hazardous materials contained solely in a consumer product for direct distribution to and used by the general public are exempt, and do not need to be reported. For example, typical "user" quantities of window cleaner, furniture polish, sanitizing cleansers and the like do not require an HMIS report. However, warehouse and/or large retail "display for sale" quantities of the same materials are not exempt and must be listed and reported.

Q7. I operate a small veterinary practice and keep two small oxygen bottles on hand for emergencies. Do I have to complete an OCL?

A7. No. If you only store and use medical gases, you'll only need to submit a Medical Gas Form. Please see **Information Bulletin 003** for more information regarding medical gas storage and use in these types of facilities.

Q8. What types of retail stores require an OCL and which do not?

A8. Large "supercenter" stores that sell everything from car tires to soup need to complete an OCL. Large home supply stores, paint stores, electronics, and all warehouse style stores require and OCL. In general, any retail store that includes a back of house storage area greater than 500 sq. ft. will require an OCL to be completed.

Q9. Do I have to report commodities that are stored outside of my building?

A9. Yes. The International Fire Code and the TCFMO amendments have specific requirements for outdoor storage of a variety of materials.

II. HIGH-PILED COMBUSTIBLE STORAGE DEFINITIONS

The following definitions provide fundamental information that can assist in completing a basic Occupancy Classification Letter Part 2, "High-Piled Combustible Storage Statement". Note that this is not intended to be an all-inclusive list and the customer should refer to the currently adopted version of the IFC and applicable references for further needed information. Also note that due to the complex design requirements and importance of the proper classification of commodities and hazardous materials, it is often necessary to obtain the service of a fire protection design professional (e.g., TX Registered Fire Protection Engineer) to assist with the proper classification of commodities and/or hazardous materials as well as the development of a protection scheme that meets the requirements of both the business and the County's fire and building codes.

The definitions coincide with the most common terms used relating to High-Piled Combustible Storage. All definitions are from the currently adopted version of the edition of the IFC.

HIGH-PILED COMBUSTIBLE STORGE: The storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of the storage is greater than 12 feet in height, and also includes for certain high-hazard commodities (e.g., rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities) where the top of the storage is greater than 6 feet in height.

HIGH-PILED STORAGE AREA: An area within a building which is designated, intended, proposed or actually used for *high-piled combustible storage.*

SHELF STORAGE: Storage on shelves less than 30 inches (762 mm) deep with the distance between shelves not exceeding 3 feet (914 mm) vertically. For other shelving arrangements, see the requirements for rack storage.

SOLID SHELVING: Shelving that is solid, slatted or of other construction located in racks and which obstructs sprinkler discharge down into the racks.

TRANSVERSE FLUE SPACE: The space between rows of storage parallel to the direction of loading.

CLASS I COMMODITIES: Essentially noncombustible products on wooden or nonexpanded polyethylene solid deck pallets, in ordinary corrugated cartons with or without single-thickness dividers, or in ordinary paper wrappings with or without pallets. Class I commodities are allowed to contain a limited amount of Group A plastics in accordance with Section 3203.7.4. Examples of Class I commodities include, but are not limited to, the following:

Alcoholic beverages not exceeding 20-percent alcohol, Appliances noncombustible, electrical, Cement in bags, Ceramics, Dairy products in nonwax-coated containers (excluding, bottles), Dry insecticides, Foods in noncombustible containers, Fresh fruits and vegetables in nonplastic trays or containers, Frozen foods, Glass, Glycol in metal cans, Gypsum board, Inert materials, bagged, Insulation, noncombustible, Noncombustible liquids in plastic containers having less than a 5-gallon (19 L) capacity, Noncombustible metal products.

CLASS II COMMODITIES: Class I products in slatted wooden crates, solid wooden boxes, multiple-thickness paperboard cartons or equivalent combustible packaging material with or without pallets. Class II commodities are allowed to contain a limited amount of Group A plastics in accordance with Section 3203.7.4. Examples of Class II commodities include, but are not limited to, the following:

Alcoholic beverages not exceeding 20-percent alcohol, in combustible containers, Foods in combustible containers, Incandescent or fluorescent light bulbs in cartons, Thinly coated fine wire on reels or in cartons,

CLASS III COMMODITIES: Commodities of wood, paper, natural fiber cloth, or Group C plastics or products thereof, with or without pallets. Products are allowed to contain limited amounts of Group A or B plastics, such as metal bicycles with plastic handles, pedals, seats and tires. Group A plastics shall be limited in accordance with Section 3203.7.4. Examples of Class III commodities include, but are not limited to, the following:

Aerosol, Level 1 (see IFC Chapter 51),Combustible fiberboard, Cork, baled, Feed, bagged, Fertilizers, bagged, Food in plastic containers, Furniture: wood, natural fiber, upholstered, nonplastic, wood or metal with plastic-padded and covered armrests, Glycol in combustible containers not exceeding 25 percent, Lubricating or hydraulic fluid in metal cans, Lumber, Mattresses, excluding foam rubber and foam plastics, Noncombustible liquids in plastic containers having a capacity of more than 5 gallons (19 L), Paints, oil base, in metal cans, Paper, waste, baled, Paper and pulp, horizontal storage, or vertical storage that is banded or protected with *approved* wrap, Paper in cardboard boxes, Pillows, excluding foam rubber and foam plastics, Plastic-coated paper food containers, Plywood, Rags, baled, Rugs, without foam backing, Sugar, bagged, Wood, baled,Wood doors, frames and cabinets, Yarns of natural fiber and viscose.

CLASS IV COMMODITIES: Class I, II or III products containing Group A plastics in ordinary corrugated cartons and Class I, II and III products with Group A plastic packaging, with or without pallets. Group B plastics and free-flowing Group A plastics are also included in this class. The total amount of nonfree-flowing Group A plastics shall be in accordance with Section 3203.7.4. Examples of Class IV commodities include, but are not limited to, the following:

Aerosol, Level 2 (see IFC Chapter 51), Alcoholic beverages, exceeding 20-percent but less than 80-percent alcohol, in cans or bottles in cartons, Clothing, synthetic or nonviscose, Combustible metal products (solid), Furniture, plastic upholstered, Furniture, wood or metal with plastic covering and padding, Glycol in combustible containers (greater than 25 percent and less than 50 percent), Linoleum products, Paints, oil base in combustible containers, Pharmaceutical, alcoholic elixirs, tonics, etc., Rugs, foam back, Shingles, asphalt, Thread or yarn, synthetic or nonviscose.

HIGH-HAZARD COMMODITIES: High-hazard products presenting special fire hazards beyond those of Class I, II, III or IV. Group A plastics not otherwise classified are included in this class. Examples of high-hazard commodities include, but are not limited to, the following:

Aerosol, Level 3 (see IFC Chapter 51), Alcoholic beverages, exceeding 80-percent alcohol, in bottles or cartons, Commodities of any class in plastic containers in carousel storage, Flammable solids (except solid combustible metals), Glycol in combustible containers (50 percent or greater), Lacquers, which dry by solvent evaporation, in metal cans or cartons, Lubricating or hydraulic fluid in plastic containers, Mattresses, foam rubber or foam plastics, Pallets and flats which are idle combustible, Paper and pulp, rolled, in vertical storage which is unbanded or not protected with an *approved* wrap Paper, asphalt, rolled, horizontal storage, Paper, asphalt, rolled, vertical storage, Pillows, foam rubber and foam plastics, Pyroxylin, Rubber tires, Vegetable oil and butter in plastic containers.

GROUP A PLASTICS: Plastic materials having a heat of combustion that is much higher than that of ordinary combustibles, and a burning rate higher than that of Group B plastics. Examples of Group A plastics include, but are not limited to, the following:

ABS (acrylonitrile-butadiene-styrene copolymer), Acetal (polyformaldehyde), Acrylic (polymethyl methacrylate), Butyl rubber, EPDM (ethylene propylene rubber), FRP (fiberglass-reinforced polyester), Natural rubber (expanded), Nitrile rubber (acrylonitrile butadiene rubber), PET or PETE (polyethylene terephthalate), Polybutadiene, Polycarbonate, Polyester elastomer,v Polyethylene, Polypropylene, Polystyrene (expanded and unexpanded), Polyurethane (expanded and unexpanded), PVC (polyvinyl chloride greater than 15 percent plasticized, e.g., coated fabric unsupported film), SAN (styrene acrylonitrile), SBR (styrene butadiene rubber).

GROUP B PLASTICS: Plastic materials having a heat of combustion and a burning rate higher than that of ordinary combustibles, but not as high as those of Group A plastics. Examples of Group B plastics include, but are not limited to, the following:

Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose), Chloroprene rubber, Fluoroplastics (ECTFE, ethylene-chlorotrifluoroethylene copolymer; ETFE, ethylene-tetrafluoroethylene copolymer; FEP, fluorinated ethylene-propylene copolymer), Natural rubber (nonexpanded), Nylon (Nylon 6, Nylon 6/6), PVC (polyvinyl chloride greater than 5-percent, but not exceeding 15-percent plasticized), Silicone rubber.

GROUP C PLASTICS: Plastic materials having a heat of combustion and a burning rate similar to those of ordinary combustibles. Examples of Group C plastics include, but are not limited to, the following:

Fluoroplastics (PCTFE, polychlorotrifluoroethylene; PTFE, polytetrafluoroethylene), Melamine (melamine formaldehyde), Phenol, PVC (polyvinyl chloride, rigid or plasticized less than 5 percent, e.g., pipe, pipe fittings), PVDC (polyvinylidene chloride), PVDF (polyvinylidene fluoride), PVF (polyvinyl fluoride), Urea (urea formaldehyde)

III. HAZARDOUS MATERIALS INVENTORY DEFINITIONS

The following definitions should provide customers some fundamental information to assist completing a basic Occupancy Classification Letter Part 3, "Hazardous Materials Inventory Statement (HMIS)". Note that this is not intended to be an all-inclusive list and the customer should refer to the currently adopted version of the IFC and applicable references for further needed information. Also note that due to the complex design requirements and importance of the proper classification of commodities and hazardous materials, it is often necessary to obtain the service of a fire protection design professional (e.g., TX Registered Fire Protection Engineer) to assist with the proper classification of commodities and/or hazardous materials as well as the development of a protection scheme that meets the requirements of both the business and the County's fire and building codes.

The definitions coincide with the most common hazardous materials encountered. All definitions are from the currently adopted version of the Edition of the IFC.

A HAZARDOUS MATERIALS INVENTORY STATEMENT lists those items which are classified as *physical hazards* and *health hazards*.

PHYSICAL HAZARD: A chemical for which there is evidence that it is a combustible liquid, compressed gas, cryogenic, explosive, flammable gas, flammable liquid, flammable solid, organic peroxide, oxidizer, pyrophoric or unstable (reactive) or water-reactive material.

PHYSICAL HAZARDS. The material categories listed below are classified as physical hazards. A material with a primary classification as a physical hazard can also pose a health hazard.

1. Explosives and blasting agents.
2. Flammable and combustible liquids.
3. Flammable solids and gases.
4. Organic peroxide materials.
5. Oxidizer materials.
6. Pyrophoric materials.
7. Unstable (reactive) materials.
8. Water-reactive solids and liquids.
9. Cryogenic fluids.

HEALTH HAZARD: A chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic, highly toxic and corrosive.

HEALTH HAZARDS: The material categories listed in this section are classified as health hazards. A material with a primary classification as a health hazard can also pose a physical hazard.

1. Highly toxic and toxic materials.
2. Corrosive materials.

Examples of most common materials considered physical and health hazards

Hazardous Material	Example of Product
Flammable liquid Class IA	Naptha, ethyl ether
Flammable liquid Class IB	Gasoline, acetone, ethanol
Flammable liquid Class IC	Turpentine
Combustible liquid Class II	Kerosene, diesel
Combustible liquid Class IIIA	Antifreeze,
Combustible liquid Class IIIB	Motor oil, linseed oil
Flammable gas	Acetylene
Oxidizing gas	Oxygen, Nitrous Oxide
Corrosive	Muriatic acid, sulfuric acid, bleach

MATERIAL SAFETY DATA SHEET (MSDS): Information concerning a hazardous material which is prepared in accordance with the provisions of DOL29 CFR Part 1910.1200 or in accordance with the provisions of a federally approved state OSHA plan.

FLASH POINT: The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified inASTMD56, ASTMD93 or ASTMD 3278.

BOILING POINT: The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mmof mercury. Where an accurate boiling point is unavailable for the material in question or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the liquid.

The flash point and boiling point of a material are two of the many required pieces of information on a Material Safety Data Sheet. That information will help determined the classification of flammable and combustible liquids.

FLAMMABLE LIQUID: A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

CLASS IA. Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).

CLASS IB. Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

CLASS IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

***The category of flammable liquids does not include compressed gases or cryogenic fluids.

COMBUSTIBLE LIQUID: A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

CLASS II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

CLASS IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

CLASS IIIB. Liquids having closed cup flash points at or above 200°F (93°C).

***The category of combustible liquids does not include compressed gases or cryogenic fluids.

FLAMMABLE GAS: A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] which:

1. It is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; *or*
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E 681.

FLAMMABLE SOLID: A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR; Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis.

ORGANIC PEROXIDE: An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

CLASS I. Describes those formulations that are capable of deflagration but not detonation.

CLASS II. Describes those formulations that burn very rapidly and that pose a moderate reactivity hazard.

CLASS III. Describes those formulations that burn rapidly and that pose a moderate reactivity hazard.

CLASS IV. Describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

CLASS V. Describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

UNCLASSIFIED DETONABLE. Organic peroxides that are capable of detonation. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.

OXIDIZING GAS: Gas that can support and accelerate combustion of other materials.

CORROSIVE: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact.

OXIDIZER: A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials. Examples of other oxidizing gases include bromine, chlorine and fluorine.

CLASS 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock. In addition, the oxidizer will enhance the burning rate and can cause spontaneous ignition of combustibles.

CLASS 3. An oxidizer that will cause a severe increase in the burning rate of combustible materials with which it comes in contact or that will undergo vigorous self-sustained decomposition caused by contamination or exposure to heat.

CLASS 2. An oxidizer that will cause a moderate increase in the burning rate or that causes spontaneous ignition of combustible materials with which it comes in contact.

CLASS 1. An oxidizer whose primary hazard is that it slightly increases the burning rate but which does not cause spontaneous ignition when it comes in contact with combustible materials.

OXIDIZING GAS: A gas that can support and accelerate combustion of other materials.

AEROSOL: A product that is dispensed from an aerosol container by a propellant. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.

LEVEL 1 AEROSOL PRODUCTS are hose with a total chemical heat of combustion that is less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

LEVEL 2 AEROSOL PRODUCTS are those hose with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

LEVEL 3 AEROSOL PRODUCTS. Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30 kJ/g).

PYROPHORIC: A chemical with an auto-ignition temperature in air, at or below a temperature of 130°F (54°C).

UNSTABLE (REACTIVE) MATERIAL: A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:

CLASS 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

CLASS 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

CLASS 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

CLASS 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

WATER-REACTIVE MATERIAL: A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause auto-ignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

CLASS 3. Materials that react explosively with water without requiring heat or confinement.

CLASS 2. Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause auto-ignition or ignition of combustibles upon exposure to water or moisture.

CLASS 1. Materials that react with water with some release of energy, but not violently.

TOXIC: A chemical falling within any of the following categories:

1. A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

HIGHLY TOXIC: A material which produces a lethal dose or lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less) if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

CLOSED SYSTEM: The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of *compressed gases*. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

OPEN SYSTEM: The use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.