HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS)
GUIDE

O'FALLON FIRE PROTECTION DISTRICT

January 2, 2012

The Hazardous Materials Inventory Statement (HMIS) will communicate all types and quantities of materials that are stored, used and/or manufactured on a property. Evaluation of hazardous materials is necessary for the control and mitigation of dangerous conditions created by hazardous materials.

This guide has been prepared to assist you in making a complete and accurate Hazardous Materials Inventory Statement to the O'Fallon Fire Protection District Fire Prevention Bureau. Frequently asked questions ask about reporting hazardous materials have been included for you benefit.

Q. WHY MUST I SUBMIT A HMIS?

A. *The O'Fallon Fire Protection District's interest is to have the best understanding of potential hazards and how to address them with knowledge and accuracy should an incident occur involving your company, or a surrounding area.*

Q. WHO SHOULD I HAVE COMPLETE THIS FORM?

A. *A representative of your company with knowledge of materials that are stored,, shipped or manufactured on your site.*

Q. WHAT SHOULD I HAVE LISTED ON THE HMIS FORM?

A. *A thorough inventory of materials on site which should include types of storage, amounts, and materials such as flammable liquids or solids, compressed gas, oxidizers and explosives (see page 3 for more types of materials.) Look for information on these types of materials in your company's Material Safety Data Sheets (MSDS) and, if available, your company's Hazardous Materials Management Plan. Information should be transferred to the Hazardous Materials Inventory Statement (HMIS).*

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SECTION 1 **Facility Name or Company Name:** Name of business that will be storing or handling hazardous materials.

Date: Date the form is filled out.

Address: Complete address of business storing and handling hazardous materials.

Plan Reviewer: Do not fill this out.

SECTION 2 **Hazardous Materials Class**: Hazardous materials are divided into categories; *health hazards* or *physical hazards (see page 3 for descriptions)*. A product may be considered a hazardous material in one or more categories. Each product must be identified under each applicable category. Therefore, a material that has a primary classification as a physical hazard may also present a health hazard.

Definitions (that will assist in proper classification) for some materials are found on pages (3) through (7) of this information guide.

SECTION 3 **Chemical Name:** (Common or Trade Name): The chemical name (International Union of Pure and Applied Chemistry-IUPAC) should be used. Common or trade name is acceptable with the appropriate health and physical data

SECTION 4 **The Physical state** of the product should be identified as a solid, liquid, or gas. Each product should be quantified according to physical state, i.e. pounds (lbs), cubic feet (cu ft) and U.S. gallons (gal). Consider maximum amounts that may be stored or handled at one time.

SECTION 5 **Sub Class**: Refer to the Descriptions and Definitions section for specific sub-classifications of each hazard category.

SECTION 6 **Storage:** Each method of storage should be indicated and quantified. Storage methods include: box, container, bag, bulk, tank, and pressure container of greater than 15 psi.

SECTION 7 **Standard system for the Identification of the Hazards of Materials for Emergency Response, NFPA 704:** This system is intended to provide basic information to emergency responders, enabling them to make decisions regarding evacuation, approach, control, and mitigation.

This system identifies the hazards of a material in terms of three parameters: Health, Flammability, and Reactivity. Within each parameter the degree of severity is indicated by a numerical value, ranging from 0 (no hazard) to 4 (severe hazard). The fourth space is reserved for special hazard information, i.e., water reactive, oxidizer, radiation hazard, etc.

Material Safety Data Sheets (MSDS) very often have these classifications listed on the product and can be easily transferred to the HMIS form.

SECTION 8 **Total:** Add up the total amount and fill in at the bottom of each column.

Please return the *Hazardous Materials Inventory Statement (HMIS),* and *Material Safety Data Sheets (MSDS)* to O'Fallon Fire Protection District – Fire Prevention Bureau.

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DESCRIPTIONS

Health Hazard A health hazard is a classification of a chemical for which there is statistically significant evidence that acute or chronic health effects may occur in exposed persons, based on at least one study conducted in accordance with established scientific principals.

Physical Hazard A physical hazard is a classification of a chemical which there is scientifically valid evidence that it is a combustible liquid, compressed gas, cryogenic, explosive, flammable gas, flammable liquid, flammable solid, organic peroxide, pyrophoric, unstable (reactive) or water-reactive material.

DEFINITIONS

Blasting Agent Any material or mixture consisting of a fuel and oxidizer, intended for blasting and not otherwise classified as an explosive, provided that the finished product, as mixed and packaged for use or shipment, cannot be detonated by means of a No. 8 test-blasting cap when unconfined. Materials or mixtures classified as nitrocarbonitrates by DOT regulations shall be included in this definition.

Carcinogens Any substance that causes the development of cancerous growths in living tissue. A chemical is considered to be a carcinogen if:

1. It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen.
2. It is listed as a carcinogen or potential carcinogen in the latest Edition of the Annual Report on Carcinogen published by the National Toxicology Program (NTP).
3. It is regulated by OSHA as a carcinogen, 29 CFR 1910.1200

Examples: asbestos, benzene, beryllium, carbon tetrachloride, chloroform, diazomethane, P-dioxane, ethylene dichloride, Polychlorinated buphenyls (PCB's) vinyl chloride

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 III B	Liquids having a closed cup flash point at or above 200 F (93 C)

Compressed Gas Any material or mixture having in the container either an absolute pressure exceeding 40 psi at 70 F, or an absolute pressure exceeding 104 psi at 103 F, or both; or any liquid having a vapor pressure exceeding 40 psi at 100 F as determined by ASTM D323-82

Corrosives A chemical that causes visible destruction of, or irreversible alterations in living tissue by a chemical action at the site of contact. A chemical is considered to be a carcinogen if, when tested on the intact, skin of albino rabbits by the methods described in 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.
Examples: Acids-formic hydrochloric (muriatic) greater than 15%, hydrofluoric, nitric greater than 6% perchloric, sulfuric 4% or more. Bases-(alkalis) hydroxides-ammonium greater than 10%, certain carbonates-potassium. Other Corrosives- bromine, chorine, fluorine, iodine, ammonia.

Cryogenic Material Materials that may exist as compressed gases when they are stored at ambient temperatures. Refrigerated liquefied gases having normal boiling points below – 130 F.

Explosive Any chemical compound or mechanical mixture that is commonly used or intended for the purpose of producing an explosion, that contains any oxidizing and combustible units or other ingredients in such proportions, quantities, or packing, that an ignition by fire, friction, concussion, percussion or detonation of any part of the compound or mixture may cause a sudden generation of highly heated gases that the resultant gaseous pressure is capable of producing destructive effects on contiguous objects or of destroying life or limb.

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

Flammable Solid A solid substance other than one which is defined as a blasting agent or explosive, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or as a result of retained heat from manufacture, or which has an ignition temperature below 212 F, or which burns so vigorously or persistently when ignited so as to create a serious hazard.
Example: Organic solids, camphor, cellulose nitrate, naphthalene, inorganic solids, decaborane, lithium amide, phosphorus heptasulfide, phosphorous sesquisulfide, potassium sulfide, anhydrous sodiumsulfide. Combustible metals (except dust powders) cesium, magnesium, and zirconium. Combustible dusts and powders (including medals) finely divided flammable solids, which may be dispersed in air as a dust cloud. Wood, plastics, coal, flour, powdered metals, combustible fibers.

Highly Toxic Materials A material which produces a lethal dose or a lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose of 50 mg or less per kg of body weight when administered orally to albino rats weighing between 200 and 300 g each.
2. A chemical that has a median lethal dose of 200 mg or less per kg 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 rats weighing between 2 and 3 kg each.
3. A chemical that has a median lethal concentration in air of 200 parts per million by volume or less of gas or vapor, or 2 mg per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 g each.

Mixtures of these materials with ordinary materials, such as water, may not warrant a classification of highly toxic. Example: Gases-arsine, chlorine trifluoride, cyanogens, diborane, fluorine, germane, hydrogen cyanide, nitric oxide, nitrogen dioxide, ozone phosphine, hydrogen selenide, stbine. Liquids-acrolein, acrylic acid, 2-chloroethanol, 2-methyllactonitrile, methyl ester tetraethylstannane. Solids – phenylmercury, 4-aminopyridine, arsenic pentoxide.

Irritants: A chemical which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of 5 or more. A chemical is an eye irritant if so determined under the procedures listed in 16 CFR 1500.42 or other appropriate techniques.

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 may present an explosion hazard (detonation of deflagration) or they may be shock sensitive. They may also decompose into various unstable compounds over an extended period of time.

CLASS I.	Those formulations that are capable of deflagration but not detonation. Example: acetyl cyclohexane 60-65%, sulfonyl peroxide, benzoyl peroxide of 98% concentration, t-butyl hydro-peroxide 90%, t-butyl peroxydicabonate 75%, t-butyl peroxyisopropylcarbonate 92%, di-n-propyl peroxydicarbonate 98%, di-n-propyl peroxydicarbonate 85%.
CLASS II.	Those formulation that burn very rapidly and that pose a moderate reactivity hazard.
CLASS III.	Those formulations that burn rapidly and that pose a moderate reactivity hazard.
CLASS IV.	Those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.
CLASS V.	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 peroxide pose an extremely high explosion hazard through rapid explosive decomposion.

Oxidizers A chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

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 due to contamination of 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.

Pyrophoric Materials A chemical with an auto ignition temperature in air, at or below 13 F (-11 C). Examples: Gases: diorama, prospering, and silage. Liquids: diethylaluminum chloride, diethylberyllim, diethylphoshine, diethyzinc, dimethylarsine, triethylaluminum, triathylgallium. Solids: cesium, hafrium, lithium, white or yellow phosphorus, plunium, potassium, rubidium, sodium, thorium.

Radioactive Materials Any material or combination of materials that spontaneously emits ionizing radiation.

Toxic Materials A material which produces a lethal dose or a concentration within any of the following:

1. A chemical or substance that has a median lethal dose of more than 50mg per kg but not more than 500 mg per kg of body weight when administered orally to albino rats weighing between 200 and 300g each.
2. A chemical or substance that has a median lethal dose of more than 200mg per kg but not more then 1,000m per kg 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 rats weighing between 2 and 3 kg each.
3. A chemical or substance that has a median lethal concentration in air of 200 parts per million but not more that 2,000 parts per million by volume of gas or vapor, or more than two mg per liter but not more than 20mg per liter of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300g each.

Mixtures of these materials with ordinary materials, such as water, may not warrant a classification of toxic.
Examples: Gases: boron trichloride, chlorine, hydrogen fluoride, hydrogen sulfide, phosgene, silicon. Liquids: acrylonitrile, allyl alchol, alpha-chorotoluenen, aniline, o-cresol. Solids: acrylamide, barium chloride, benzidne, beryllium chloride, cadmium chloride, cadmium oxide, chloroacetic acid, chlorophenylmercury, chromium (IV) oxide, sodium floride

Unstable (reactive) Materials

Those materials, other than explosives, 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 explosions, when exposed to heat, friction or shock, or in contact with incompatible materials.

CLASS 1. Materials, which are normally stable, but can become unstable at elevated temperatures and pressures. Examples: acetic acid, hydrogen peroxide 35-52%, paraldehyde, tetrahydrofuran.

CLASS 2. Materials, which in themselves, that are normally unstable and readily undergo violent chemical change but do not detonate. This degree should include material which undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. Examples: acroein, acrylic acid, hydrazine, methacrylic acid, sodium perchlorate, styrene, vinyl acetate.

Unstable (reactive) Materials (cont.)

CLASS 3. Materials, which in themselves, that 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 degree should include materials, which are sensitive to thermal or mechanical shock at elevated temperatures or pressures. Examples: Hydrogen peroxide, (greater then 52%), hydroxylamine, nitromethane, paranitroaniline, perchloric acid, tetrafloroethylene minomer.

CLASS 4. Materials, which in themselves, that are capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This degree should include materials, which are sensitive to mechanical shock or localized thermal shock at normal temperatures and pressures. Examples: acetyl peroxide, dibutyl peroxide, peroxyacetin acid, picric acid (dry)

Water-reactive Materials

Materials, which explode, violently react, produce flammable, toxic or other hazardous gases, or evolve enough heat to cause self-ignition of nearby combustibles upon exposure to water or moisture.

CLASS 3. Materials, which react explosively with water without requiring heat or confinement. Example: aluminum alkyls such as triethylalumunum, isobutyaluminun, diethylzinc.

CLASS 2. Materials, which may form potentially explosive mixtures with water. Example: calcium carbide, calcium metal, lithium hydride, potassium metal, cyanogens bromide, sulfuric acid.

CLASS 1. Materials, which may react with water with some release of energy but not violently. Example: acetic anhydride, sodium hydroxide, sulfur monochloride, titanium tetrachloride.

Other Health Hazards

Other health hazards are those listed below:
Target Organ Toxins: Substances, which cause damage to particular organs and systems. *Examples: Hepatoxins-Chemical, which causes liver damage: carbon tetrachloride, nitro-Samines. Nephrotoxins-chemicals, which cause kidney damage: halogenated hydrocarbon, uranium. Neurotoxins-chemicals, which cause their primary toxic effect on the nervous system: mercury, carbon disulfide. Blood or Hematopoietic System Toxins – chemicals, which irritate or damage the lungs: silica, asbestos. Reproductive toxins – chemicals, which affect the reproductive capabilities including chromosomal damage (mutations) and effect fetuses (tersiogenesis): lead, DBCP.*

Cutaneous Hazards – chemicals, which affect the dermal layer (skin): ketones, chlorinated compounds.
Eye Hazards – chemicals, which affect eye or visual capacity: organic solvents, acids.