

DOW CHEMICAL LAD
SOLVENTS / EDC 1

OSHA HAZARD COMMUNICATION MANUAL
CFR29 1910.1200
INTERPRETING MATERIAL SAFETY DATA SHEETS

The Material Safety Data Sheet (MSDS) is essentially a technical bulletin which contains information about a chemical. The MSDS is prepared by the manufacturer of the chemical and provided to the downstream purchasers and/or users of the chemical. The information in the MSDS is normally divided into sections, such as follows;

SECTION I INGREDIENTS

Lists the percent of the chemicals that are contained in the product, any trade name, and the Chemical Abstract Service number.

SECTION II PHYSICAL DATA

Describes the chemical's appearance, odor, and other characteristics. Boiling point, for example, is the temperature at which the chemical begins to boil and turn into a vapor.

SECTION III FIRE AND EXPLOSION DATA

Describes at what temperature the chemical ignites, called the flash point. Flammable chemicals ignite below 100°F while combustible chemicals ignite at 100°F or above. This section also lists extinguishing media - what will put the fire out safely - such as water spray, foam, etc..

SECTION IV REACTIVITY DATA

Describes whether the chemical reacts with other materials or under specific conditions. Incompatibility lists the materials, such as water or other chemicals, that cause the chemical to burn, explode, or release dangerous gases. Instability lists the environmental conditions, such as heat or direct sunlight, that cause a dangerous reaction. Hazardous decomposition products that evolve when the material is involved in fire are listed, as well as whether or not hazardous polymerization will or will not occur.

SECTION V ENVIRONMENTAL, SPILL, LEAK, DISPOSAL
PROCEDURES

Describes the materials and practices that are to be used to control or clean up accidental spills and releases. This

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section also includes information on proper disposal procedures.

SECTION VI HEALTH HAZARD DATA

Describes symptoms of overexposure, such as skin rash, burn, headache, or dizziness. Also, describes the hazards associated with eye contact, skin contact, ingestion, and inhalation.

SECTION VII FIRST AID

Describes actions to be taken when harmful contact with the chemical has occurred such as flushing skin that has been exposed with water for 15 minutes. It also may list any medical conditions that can be aggravated or accelerated by exposure to the chemical. Additionally, there may be special directions for doctors or emergency medical technicians involved in treatment of overexposure victims.

SECTION VIII HANDLING PRECAUTIONS

Describes protective equipment for the eyes, skin, and respiratory tract needed to work safely with the chemical. Also list agency exposure limits such as the OSHA Permissible Exposure Limit.

SECTION IX ADDITIONAL INFORMATION

Describes regulatory information, such as the SARA Hazard Category, whether it is an immediate or delayed health hazard (or both), and special precautions to be taken for handling or storage.

In addition to the above information, there are other resources available to aid in the understanding of the valuable information presented in the MSDS. The Plant Environmental Coordinator, Supervisors, and the Technical Staff may also be contacted in an effort to interpret data pertaining to the chemicals you work with.

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The following is a glossary of terms which may be found in a MSDS.

Acute -

Having the character of being single, of short duration, or of high intensity. As -- a single oral dose; a short single vapor exposure probably lasting no more than 8 hours; a sudden effect.

ACGIH -

American Conference of Governmental Industrial Hygienist, Executive Secretary, P.O. Box 1937, Cincinnati, Ohio, 45201

Adverse Effect -

Any harmful change from the normal response to a stimulus.

Aerosol -

A suspension of extremely fine solid particles or liquid droplets in gas, usually air.

Allergy -

The acquired state of being sensitized to a specific material. Involves an immunological response to a sensitizing material where reexposure reveals an altered capacity to react.

Ames Test -

A mutagenicity test using bacteria. If a mutation is caused by the test substance, many bacterial will be able to grow in a nutrient deficient media.

Antibodies -

Any of the body globulins that combine specifically with antigens and neutralize toxins.

Asphyxiant -

A substance, usually a gas, that can cause the loss of consciousness or even death as a result of too little oxygen or too much carbon dioxide in the blood.

Benign -

Of a mild character; not malignant; non-cancerous.

Bronchial tubes -

The tubes of the respiratory tract branching from the trachea to the lungs.

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Bronchitis -

An inflammation of the mucous lining of the bronchial tubes.

Carcinogenic -

A substance capable of producing carcinoma (cancer).

Carcinogenesis -

The initiation of uncontrolled tissue growth.

Cardiac -

Pertaining to the heart.

Ceiling -

The maximum amount of a material to which any employee can be exposed, even instantaneously, without proper protective equipment.

Chloracne -

A skin disorder that can be induced by chlorinated chemicals, characterized by blackheads.

Cholinesterase -

An enzyme that stops nerves from "firing".

Cholinesterase Inhibitor -

A substance that keeps cholinesterase from working.

Chronic -

Usually comprising the majority of lifetime test animals - over 1 to 2 years in rodents. Constant, lasting for a long time; recurring.

Cornea -

The transparent part of the covering of the eyeball.

CNS -

Central Nervous System

Dermal -

The name given to a study in which a substance is repeatedly applied to the skin of an animal for weeks to months to determine whether absorption takes place to a great degree enough to cause toxicity.

Dermatitis -

Inflammation of the skin.

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Dominant Lethal -

Male rodent exposed to test chemical for 3 months then mated with 2 untreated females. number of live eggs vs. eggs released give indication of mutation causing mortality to fertilized eggs.

Dyspnea -

Difficult or labored respiration.

Edema -

Swelling.

Effect -

Any change from a normal response to some stimulus; it may be desirable or undesirable.

Emphysema -

A pathological accumulation of air in the lungs; the inability to completely exhale.

Epidemiology -

The study of disease as it spreads and involves large groups of people.

Epithelium -

Cellular tissue that covers surfaces, forms glands, and lines most cavities of the body.

Erythema -

Redness.

Evaporation Rate -

The ratio of the time required to evaporate a measured volume of liquid to the time required to evaporate the same volume of a reference liquid (ethyl ether) under ideal test conditions. The higher the ratio, the slower the evaporation rate.

Exfoliation -

Peeling or flaking of the skin.

Flash point -

The minimum temperature at which a liquid will generate sufficient flammable vapors to ignite.

Gastrointestinal -

Stomach plus intestines.

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Genetic -
Related to DNA - chromosomes, genes.

Half-life -
The time required to get rid of half of a given dose of a substance.

Hazard -
The potential for causing harm. For chemicals, hazard equals toxicity times exposure.

Hematologic -
Referring to the blood.

Hepatic -
Referring to the liver.

Hyper- -
Increased over normal.

Hyperemia -
Redness.

Hypo- -
Decreased below normal.

i.m. -
Intramuscular - into the muscle.

Inhibition -
A reduction in the rate of reaction; rate may be reduced to zero.

Innocuous -
Cannot injure or harm; harmless.

i.p. -
Intraperitoneal - within the abdominal cavity but outside the organs.

In vitro -
"In glass" - in a test tube; outside the animal.

In vivo -
Inside the animal.

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Irreversible Effect -

One which can be characterized and measured and which persists indefinitely after the stress has been removed.

Iris -

The opaque contractile diaphragm perforated by the pupil and forming the colored portion of the eye.

Irritant -

Any substance, not corrosive, that on immediate, prolonged, or repeated contact with normal living tissue will induce a local inflammatory reaction.

i.v. -

Intravenous - into the veins.

Lachrymator -

A substance that irritates the eyes and produces tears.

LC₅₀ -

Usually used for inhalation tests - that concentration of a vapor in air which causes the death of 50 % of a given population of animals - a statistically derived number stated with a fixed number (i.e. LC₅₀ 4 hours).

LD₅₀ -

Lethal dose for 50 % of a given population of animals - a statistically derived number with any route of exposure.

Lesion -

Any change in the cellular structure of a tissue.

Long Term Exposure -

Term usually connoting exposures measured in months / years.

Malignant -

Designating an abnormal growth that tends to metastasize.

mg -

Milligrams; one thousandth of a gram; 0.000035 ounces.

mg/m³ -

Milligrams per cubic meter - Airborne concentrations of particulate materials or mists expressed as milligrams of particulate per cubic meter of air.

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Mutagen -

A substance which causes a sudden variation of the offspring differing from its parents in some well-marked characteristic, due to changes within the chromosomes or genes.

Mutation -

A relatively permanent change in hereditary material.

Narcosis -

A reversible condition characterized by stupor or insensibility; unconsciousness.

Necrosis -

Tissue death or a burn.

NEL -

No-effect-level. That dose causing no adverse effects in chronic or sub-chronic tests.

Neuro- -

Related to the nervous system.

NOEL -

No-observed-effect-level.

OSHA -

U. S. Department of Labor, Occupational Safety and Health Administration, 3rd Street and Constitution Ave., N. W., Washington, D.C. 20210

Parenteral -

Not intestinal. A route of dosing other than oral.

Particulate -

Composed of fine droplets or particles.

Parts per million -

The concentrations of gases and vapors usually expressed as parts per million parts of air (ppm) on a volumetric basis.

Percent Volatile by Volume -

Refers to the percentage of liquid or solid that evaporates at room temperature. The higher the percentage, the faster the evaporation rate.

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Percutaneous -
Through the skin.

PEL -
OSHA's Permissible Exposure Limit - that concentration of a substance in the working environment which may be inhaled (encountered) by the majority of individuals, 8 hours/day, 5 days/week, for a working lifetime (35 years) with no adverse effects (same as the ACGIH TLV).

Pharmacokinetics -
Study of the speed of metabolism - helps determine threshold dose (if any).

p.o. -
"Per Oral" - by mouth.

Potentiation -
Greater than the additive toxicity of 2 substances.

Pulmonary Edema -
Edema of the lungs wherein fluid accumulates in the aveoli (air sacs).

Renal -
Referring to the kidney.

Reproduction Test -
Males and females are dosed. effects on any reproductive parameters or any health effect on parents or young are determined. May take 1 to 3 generations to study.

Respirable -
Capable of being taken in by breathing.

Reversible Effects -
One which can be characterized and measured, but which does not persist after the stress has been removed.

S.C. -
Subcutaneous - under the skin.

Sensitivity -
The magnitude of a normal reaction to a substance - not an allergic response.

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Solubility -

Refers to the percentage by weight which can be dissolved in a media (usually water).

Specific Gravity -

The ratio of the weight of a volume of liquid to the weight of an equal volume of water (water = 1).

STEL -

Short Term Exposure Levels, in relation to Threshold Limit Values. The short term limit of exposure without the aid of respiratory protection.

Subacute -

Intermediate between acute and chronic; a repeated dosing over a period of days or weeks.

Sub-chronic -

Repeated dosing, more than 1 dose to tests lasting up to 1 year.

Susceptibility -

The state of being subjected to the influence of some stimulus or stress.

Symptom -

Any Evidence of a change from the normal which is manifest subjectively.

Synergism -

A more than additive effect of 2 substances which have the same type of effect (i.e. - asbestos and cigarettes).

Systemic Effect -

Remote as opposed to local effect at the site of contact.

Target Organ -

The primary organ affected by dosing with a test substance .

Teratogen -

A substance, form of energy, or disease, imposed at a level which produces a permanent functional or anatomic abnormality in the developing organism "in utero"; causes birth defects.

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Threshold dose -

The amount of a substance which uses up 100 % of the body's primary defense system. Not possible to determine exactly.

TLV -

Threshold Limit Value - that concentration of a substance in the working environment which may be inhaled (encountered) by the majority of individuals, 8 hours/day, 5 days/week, for a working lifetime (35 years) with no adverse effects.

Toxic Hazard -

The probability of toxicity occurring under stated circumstances.

Toxicity -

A property of a substance to produce injury by other than physical means.

Tumor -

An abnormal mass of tissue. May or may not be cancerous.

TWA -

Time Weighted Average - exposure for a normal work day in relation to TLV.

Vapor Pressure -

Pressure exerted by a vapor. The higher the vapor pressure the, the easier a material will evaporate.

Vascular -

Pertaining to the vessels in the body which convey blood or lymph.

MB:1291