

The MSDS: A Basic Guide for Users – Canadian WHMIS Version –



CCOHS Canadian Centre for Occupational Health and Safety

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– Canadian WHMIS Version –



Canadian Centre for Occupational Health and Safety

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A Material Safety Data Sheet (MSDS) provides basic information on a material or chemical product. It contains information on the properties and potential hazards of the material, how to use it safely, and what to do if there is an emergency.

This document is intended primarily as a guide for non-technical people who use MSDSs. It explains the information needed to understand the hazards and precautions necessary for the safe use of chemical products.

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Introduction

A Material Safety Data Sheet (MSDS) provides basic information on a material or chemical product. It contains information on the properties and potential hazards of the material, how to use it safely, and what to do if there is an emergency.

This document is intended primarily as a guide for non-technical people who use MSDSs. It explains the information needed to understand the hazards and precautions necessary for the safe use of chemical products.

MSDSs from different companies may not look the same but they should contain the same basic information. This guide is organized using the nine (9) sections required under Canadian WHMIS (as described in the Controlled Products Regulations), with the suggested headings for each. (See sample MSDS on page 2).

NOTE: The regulation also permits the use of headings which are similar, but not identical, to the suggested headings.

MSDSs are written for several audiences other than supervisors and workers using the material - firefighters, physicians, occupational hygienists, safety supervisors, engineers and environmental specialists, among others. The information used by one group may not be needed by another. Thus, there may be information on a MSDS that you do not need.

The MSDS is an essential starting point for the development of a complete health and safety program for the material. MSDSs are not complete sources of information on their own. Most MSDSs are prepared by the manufacturer or supplier of the material. Therefore, they tend to be general in nature, since they provide summarized information which tries to address all reasonably anticipated uses of the material. As well, there are local laws which must be followed. These laws are not generally described on the MSDS.

When you read an MSDS, you should keep in mind that there are three types of hazards which can be related to the use of a chemical product:

- Health Hazards.
For example, skin contact with strong acids will cause burns.
- Fire Hazards.
For example, propane burns very easily and may explode.
- Reactivity Hazards.
For example, mixing ammonia and household bleach will result in the release of a harmful gas.

You should make certain that the MSDS describes the preventive and emergency-response measures for all of the potential hazards of the material. A good quality MSDS will provide information that is specific and practical (easy to apply). A review of the most important questions to answer when reading a MSDS is found at the end of this document.

Additional information and advice about the material is available from a number of sources, including your supervisor, your health and safety committee, your company or union health and safety specialists, the manufacturer, the supplier, occupational health and safety consultants, the government body responsible for occupational health and safety in your jurisdiction, and the Canadian Centre for Occupational Health and Safety (CCOHS).

Some specialized or technical terms are frequently used on MSDSs. The meaning of these terms can be found in the CCOHS publication "[The Material Safety Data Sheet - An Explanation of Common Terms](#)".

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT INFORMATION

Product Identifier:

Product Code:

Manufacturer's Name and Address:

Business No.:

Emergency No.:

Supplier's Name and Address:

Business No.:

Emergency No.:

Product Use:

SECTION 2: HAZARDOUS INGREDIENTS

Ingredients:

CAS #:

LC50 (species and route):

LD50 (species and route):

SECTION 3: PHYSICAL DATA

Physical State (gas, liquid or solid):

Odour and Appearance:

Odour Threshold:

Specific Gravity:

Vapour Pressure:

Vapour Density:

Evaporation Rate:

Boiling Point:

Freezing/Melting Point:

pH:

Coefficient of Oil/Water Distribution:

May also include other properties, e.g. Solubility in water:

SECTION 4: FIRE AND EXPLOSION HAZARD

Conditions of Flammability:

Flash Point and Method of Determination:

Lower Flammable (Explosive) Limit (LFL/LEL):

Upper Flammable (Explosive) Limit (UFL/UEL):

Auto-ignition Temperature:

Means of Extinction:

Hazardous Combustion Products:

Explosion Data - Sensitivity to Mechanical Impact:

Explosion Data - Sensitivity to Static Discharge:

SECTION 5: REACTIVITY DATA

Unstable: [] yes [] no

If unstable, under which conditions?

Incompatible Materials:

Conditions of Reactivity:

Hazardous Decomposition Products:

SECTION 6: TOXICOLOGICAL PROPERTIES/ HEALTH HAZARD DATA

Route of Entry/Exposure:

- Skin Contact
- Skin Absorption
- Eye Contact
- Inhalation
- Ingestion

LD50:

LC50:

Effects of Acute Exposure to Product:

Effects of Chronic Exposure to Product:

Exposure Limits:

Irritancy of Product:

Sensitization to Product:

Carcinogenicity:

Reproductive Toxicity:

Teratogenicity:

Mutagenicity:

Names of Toxicologically Synergistic Materials:

SECTION 7: FIRST AID MEASURES

Inhalation:

Skin:

Eyes:

Ingestion:

SECTION 8: PREVENTATIVE MEASURES

Engineering Controls:

Personal Protective Equipment:

 Protective Clothing:

 Eye Protection:

 Respiratory Protection:

Storage Requirements:

Handling Procedures and Equipment:

Leak/Spill Clean-up:

Waste Disposal:

Special Shipping Information:

SECTION 9: PREPARATION INFORMATION

Prepared by (Person, Group, Department, etc.):

Phone #:

Preparation Date:

1. Product Information

Product Identifier:

Product Code:

Manufacturer's Name and Address:

Business No.:

Emergency No.:

Supplier's Name and Address:

Business No.:

Emergency No.:

Product Use:

The first thing you should do when you receive a MSDS is make sure you have the right MSDS for the material with which you are working. The Product Information section gives you the information you need to ensure that the MSDS is the right one.

The product identifier on the MSDS, which is usually the product name, should be exactly the same as the identifier on the WHMIS label.

Along with the product name, the name of the manufacturer and/or supplier can help you confirm that you have the correct MSDS. It should match the name on the WHMIS supplier label.

The MSDS and the label may also display other identification, such as a product code or catalog number, which you could use to confirm that you have the correct MSDS.

Information on how the product is used (product use) is sometimes provided.

Some manufacturers write their MSDS with the anticipation that the product will be used in certain specific applications. This can be valuable information, because it can indicate whether your particular way of using the material was anticipated. If it wasn't, you may have to get additional safe handling information from the manufacturer.

Materials may come into the workplace in containers from the original manufacturer, or they may be packaged by a supplier or distributor. The supplier or distributor is the company which provides the material directly to your company. In some cases, both the supplier's name and address and the manufacturer's name and address will be included on the MSDS.

You can use the manufacturer and/or distributor telephone number provided to obtain more information if you need it. Refer also to the Preparation Information section, which gives the name and phone number of the group, department or person responsible for the preparation of the MSDS.

2. Hazardous Ingredients

Ingredients:

CAS #:

LC50 (species and route):

LD50 (species and route):

All of the potentially hazardous ingredients of the material must be listed on the MSDS. The approximate amount (percentage) of each ingredient of the material must also be given.

In some cases, the identity of one or more ingredients is considered by the manufacturer to be confidential business information. In this case the manufacturer may apply for an exemption under the Hazardous Materials Information Review Act. If this has been done, the MSDS will indicate the date the claim for exemption was filed and the registry number assigned to the claim. If the ingredient meets the legal criteria for confidential business information, the claim will be accepted and there will be a statement on the MSDS indicating that an exemption has been granted, along with the date of the legal decision. It is important to note, however, that regardless of whether or not an ingredient is considered "confidential business information", the potential hazards associated with that ingredient must be stated on the MSDS. In other words, if a claim for exemption has been filed for an ingredient that has certain known toxic effects, the supplier must include those specific toxic effects in the appropriate section of the MSDS.

Depending on the MSDS, you may find occupational exposure limits for ingredients included in the Hazardous Ingredients section. MSDSs usually give common occupational exposure limits such as TLVs

(Threshold Limit Values) which are published by the American Conference of Governmental Industrial Hygienists (ACGIH). Canadian legal exposure limits can be different depending on your jurisdiction (provincial, territorial or federal). Legally, your company must comply with the applicable regulated limits, which are not necessarily those listed on the MSDS.

Health and safety professionals use exposure limits as standards when air sampling is conducted. The airborne concentrations measured in the workplace are compared with the exposure limits, and, depending on the results, additional measures may be recommended to reduce employee exposures.

Other information about the ingredients of the material, for example the Chemical Abstracts Service (CAS) registry number, the LD50 and/or the LC50, may be included in this section. Refer to the CCOHS publication "[The Material Safety Data Sheet - An Explanation of Common Terms](#)" for definitions of these terms. The LD50 and LC50 provide some indication of the short-term poisoning potential of the material. The CAS registry number can be used to confirm the identity of an ingredient or to obtain additional information.

3. Physical Data

Physical State (gas, liquid or solid):

Odour and Appearance:

Odour Threshold:

Specific Gravity:

Vapour Pressure:

Vapour Density:

Evaporation Rate:

Boiling Point:

Freezing/Melting Point:

pH:

Coefficient of Oil/Water Distribution:

May also include other properties, e.g.

Solubility in water:

The Physical Data section describes the material and gives technical information on its properties.

You should check that the description of the material (the physical state and appearance) is the same as the material you have. If it is not, you may not have the correct MSDS. Alternatively, the material may be old or may have decomposed during shipping or storage. In either case, the information on the MSDS may not apply and you should obtain additional advice.

The rest of the information in this section is used to help determine the conditions under which the material may be hazardous. Technical specialists use this information to develop specific work site procedures for exposure control, storage, handling, spill clean-up and so on.

The different physical properties commonly given on a MSDS (odour threshold, specific gravity, vapour pressure, vapour density, evaporation rate, boiling point, freezing point, pH and coefficient of water/oil distribution) are explained in the CCOHS publication "[The Material Safety Data Sheet - An Explanation of Common Terms](#)".

4. Fire and Explosion Hazard Data

Conditions of Flammability:

Flash Point and Method of Determination:

Lower Flammable (Explosive) Limit (LFL / LEL):

Upper Flammable (Explosive) Limit (UFL / UEL):

Auto-ignition Temperature:

Means of Extinction:

Hazardous Combustion Products:

Explosion Data - Sensitivity to Mechanical Impact:

Explosion Data - Sensitivity to Static Discharge:

The purpose of the Fire and Explosion Hazard Data section is to describe any fire hazards associated with the material. This information, combined with information from the Reactivity Data section, can be used in determining where a certain material should be stored (e.g. flammable liquids should be stored in specially designed facilities away from incompatible chemicals).

Information in this section can also be used to plan the appropriate type and placement of fire extinguishers as well as to plan the best response to a fire for a particular work site. Much of the information is intended for firefighters and emergency response personnel.

If the material is a potential fire hazard, you should know the special handling precautions or other control measures required to prevent a fire. You should also know the emergency procedures to follow in case of a fire at your work site.

5. Reactivity Data

Unstable: [] yes [] no

If unstable, under which conditions?

Incompatible Materials:

Conditions of Reactivity:

Hazardous Decomposition Products:

The Reactivity Data section describes any conditions under which the material is unstable or can react dangerously. Unstable materials may break down (decompose) and cause fires, explosions or the formation of new chemicals which have different hazards. For example, these new chemicals (decomposition products) may be more toxic or flammable than the original material. Conditions such as heat, sunlight, and age of the chemical can cause unstable chemicals to break down. Therefore, these materials require special storage and handling precautions.

Incompatible materials are materials which may react violently or explosively if they are mixed or brought together. These materials should be stored separately and should not be mixed unless special procedures are followed.

You need to be aware of the information in this section so you can store and handle the material safely and avoid mixing incompatible materials.

6. Toxicological Properties/Health Hazard Data

Route of Entry/Exposure:

- Skin Contact
- Skin Absorption
- Eye Contact
- Inhalation
- Ingestion

LD50:

LC50:

Effects of Acute Exposure to Product:

Effects of Chronic Exposure to Product:

Exposure Limits:

Irritancy of Product:

Sensitization to Product:

Carcinogenicity:

Reproductive Toxicity:

Teratogenicity:

Mutagenicity:

Names of Toxicologically Synergistic Materials:

The Toxicological Properties section describes the ways you may be exposed to the material and the harmful effects it can have.

The health effects information should be considered general since a particular material will not affect everyone the same way. In addition, the way in which a material is used in a particular workplace will influence the degree of the health hazard.

Some MSDSs provide "worst case" toxicity information, describing any known health effect which may possibly occur at any dose, by any route of exposure. Other MSDSs provide information on

health effects which would reasonably be anticipated under conditions of normal use, spills or emergencies. This latter information is usually more useful to the user of the product. Because of these differences of approach, one must be cautious in assuming that a product is or is not a health hazard on the basis of information given in this section.

Sometimes, the MSDS will describe effects of the material on animals. This information is usually included when there is a lack of information about the effects of the material on people. When reading about the effects of the material on animals, it is important to remember that the effects are not necessarily the same for people. With careful interpretation, animal data can add to our understanding of how the material can affect people.

Many of the terms that are used in this section of the MSDS are defined in the CCOHS publication "[The Material Safety Data Sheet - An Explanation of Common Terms](#)". Sometimes medical terms are used to describe the possible health effects. If there are words you don't understand, ask for assistance from someone familiar with the use of medical terms to find out what they mean; for example, a nurse or a doctor. Even a medical dictionary will not always provide a complete or understandable definition.

You need to understand the potential health effects of the material because they underline the importance of following safe work practices and wearing appropriate protective equipment.

You also should give the health effects information to your family doctor. This will help your doctor follow your work history and to monitor your health and relate any symptoms you have to a possible workplace exposure.

Route of Entry/Exposure

The information under the Route of Entry heading describes how you can be exposed to the material. In designing ways to reduce exposure, each route of entry needs to be considered. Chemicals can cause harm either at the point of contact, by absorption into the body, or both. Chemicals absorbed into the body can affect body systems and organs far away from the point of entry. For example, phenol absorbed through the skin can cause kidney failure.

The possible routes of entry are the skin, the eyes, the respiratory system (through inhalation), and the digestive (gastrointestinal) system (through swallowing). How important each route of entry is for a particular material depends on many factors, such as the physical properties of the material and how it is used.

More information on routes of exposure is available in the CCOHS OSH Answers document "[How Workplace Chemicals Enter the Body](http://www.ccohs.ca/oshanswers/chemicals/how_chem.html)" located at www.ccohs.ca/oshanswers/chemicals/how_chem.html

Effects of Acute Exposure to Product

An acute exposure or short-term exposure is one that takes place over a short period of time (minutes, hours or days).

The health effects caused by an acute exposure are usually seen at the time of exposure. Sometimes, they may not appear for several hours or even days after an exposure.

You need information on the typical effects of a short-term exposure because symptoms can alert you that you are being accidentally exposed. For example, workplace control measures may have failed. Any symptoms you experience which may be associated with use of a material should be reported so that your workplace can be investigated to find out the cause. Possible reasons for the symptoms can vary widely. For example, perhaps the material has passed through your gloves, or the ventilation system is not working effectively. Sometimes the symptoms may not be related to an exposure at work - they may be caused by a cold, for example.

Usually, the effects of exposure to a low concentration of the material are described first. The MSDS may then go on to tell you the possible effects of a moderate or severe exposure. You need to know the nature of these symptoms so that you can recognize the potential seriousness of an exposure.

Effects of Chronic Exposure to Product

A chronic exposure is a long-term exposure. Long-term means over months or years. This type of exposure may also be described as prolonged, meaning very long, or repeated, meaning many exposures.

Any illness related to a chronic exposure may develop very slowly or may not appear until many years after the exposure has stopped. You should be aware that at the time of the exposure you may experience no warning symptoms but an illness possibly related to the exposure may appear months or years later. For example, if you are exposed to asbestos you may not experience any respiratory symptoms at the time but may develop lung cancer many years later. Therefore, it is important that you follow all safe handling procedures established for your job.

Exposure Limits

MSDSs usually give common occupational exposure limits such as TLVs (Threshold Limit Values) which are published by the American Conference of Governmental Industrial Hygienists (ACGIH). Canadian legal exposure limits can be different depending on your jurisdiction (provincial, territorial or federal). Some manufacturers provide their own recommended exposure limits for their products. Exposure limits are typically used by health and safety professionals if air sampling needs to be conducted. The airborne concentrations measured in the workplace are compared with the exposure limits as part of a health hazard assessment. Legally, your company must comply with the applicable regulated limits, which are not necessarily those listed on the MSDS.

Irritancy of Product

Some products can cause irritation if they come into direct contact with the skin, eyes or respiratory tract (nose, breathing airways and lungs). If there is information available about irritancy of the product, it will be indicated in this section.

Sensitization to Product

Sensitization is the development, over time, of an allergic reaction to a chemical. The chemical may cause a mild response on the first few exposures but, as the allergy develops, the response becomes worse with subsequent exposures. Eventually, even short exposures to low concentrations can cause a very severe reaction.

There are two different types of occupational sensitization: skin and respiratory. Typical symptoms of skin sensitivity are swelling, redness, itching, pain, and blistering. Sensitization of the respiratory system may result in symptoms similar to a severe asthmatic attack. These symptoms include wheezing, difficulty in breathing, chest tightness, coughing and shortness of breath.

It is very important that you reduce your exposure to sensitizing materials as much as possible by following safe handling procedures.

Carcinogenicity

A carcinogen is a substance that can cause cancer. Carcinogenic means able to cause cancer. Carcinogenicity is the ability of a substance to cause cancer.

Under Canadian WHMIS, materials are identified as carcinogens if they are recognized as carcinogens by the American Conference of Governmental Industrial Hygienists (ACGIH), or the International Agency for Research on Cancer (IARC). The lists of carcinogens published by these organizations include known human carcinogens and some materials which cause cancer in animal experiments. Certain chemicals may be listed as suspect or possible carcinogens if the evidence is limited or so variable that a definite conclusion cannot be made.

If the product you are using contains materials that are identified as known carcinogens, probable carcinogens, suspected carcinogens, or possible carcinogens, you should be particularly careful that you follow safe handling procedures and reduce your exposure to the product as much as possible.

Reproductive Toxicity

Reproductive toxicity is defined under WHMIS as effects on the reproductive process in adult males and/or females, which may be caused by a substance. Possible reproductive effects include reduced fertility in the male or female, menstrual changes, or effects on gonadal function, mating behaviour or conception.

If you are working with a chemical that is identified as having the potential to cause reproductive effects, you should be careful to reduce your exposure as much as possible by following safe handling procedures.

Teratogenicity

A teratogen is a substance that can cause birth defects. An embryotoxin is a substance that can cause toxic effects on the developing embryo. Teratogenic means able to cause birth defects. Embryotoxic means able to cause toxic effects on the developing embryo. Both teratogenicity and embryotoxicity result from a harmful effect by the substance on the embryo or the fetus during pregnancy.

Most chemicals can cause teratogenic effects if there is an extremely high exposure. In these cases, the exposed person will experience other noticeable signs and symptoms caused by the exposure. On the other hand, chemicals which cause reproductive effects in the absence of other significant harmful effects are regarded as true reproductive hazards. Very few workplace chemicals are known to be in this category.

Pregnant women need to be particularly careful to reduce their exposure to these types of materials as much as possible.

Mutagenicity

A mutagen is a substance that can cause changes in the DNA of cells (mutations). Mutagenic means able to cause mutations. Mutagenicity is the ability of a substance to cause mutations.

DNA determines the characteristics that children inherit from their parents. DNA also determines how cells in the body divide or reproduce.

A number of laboratory tests are used to screen chemicals for possible mutagenic effects. Also, there is some evidence that mutations may increase the risk of cancer and reproductive problems such as infertility or birth defects. However, mutagenicity test results are not very reliable predictors of these effects. One reason for this is that the human body can repair mutations while the bacteria used for many of the mutagenicity tests cannot.

Mutagenicity is included on the MSDS because it is an early indicator of potential hazard and often there is very little other evidence available on possible genetic, carcinogenic or reproductive effects.

Names of Toxicologically Synergistic Products

Synergism means that exposure to more than one chemical over the same period of time can result in health effects greater than expected when the effects of exposure to each chemical are added together. Very simply, it is like saying $1 + 1 = 3$. When chemicals are synergistic, the potential hazards of the chemicals should be re-evaluated, taking their synergistic properties into consideration.

It is important to know whether you are using chemicals that are synergistic, since they may cause health effects which are more severe than might be anticipated by considering the effects of each chemical separately.

7. First Aid Measures

Inhalation:

Skin:

Eyes:

Ingestion:

The First Aid Measures section describes actions to be taken immediately in case you are exposed to the material. The purpose of first aid is to minimize injury and future disability. In serious cases, first aid may be necessary to keep the victim alive.

You need to know first aid information before you start working with the material. There is no time to find and read the MSDS during an emergency. First aid procedures should be periodically reviewed by everyone working in areas where the material is handled. Everyone should know the location of the facilities and equipment for providing first aid; for example, the eyewash fountains, safety showers and first aid kits.

Knowing the first aid procedures for materials used in a work area is also necessary so that people will have the appropriate first aid skills. In most cases, only basic first aid training is needed. Sometimes, you may need advanced training; for example, for the administration of cardiopulmonary resuscitation (CPR) or oxygen.

Often, the first aid procedures on a MSDS are for a "worst case" exposure.

The first-aider should evaluate how severe the exposure is before using the full first aid procedure. Formal first aid training will help you make this decision. If you are not sure, follow the instructions given on the MSDS.

When medical treatment is necessary, send the MSDS, if it is readily available, to the emergency facility with the victim. If the MSDS is not available, you should send the material's label or a labelled container of the material, if it is small enough. The medical personnel need to know what the material is and what first aid measures have been recommended and used. Occasionally, the MSDS has additional instructions which may be useful to the emergency doctor; for example, it may say, "Monitor kidney function for 24 hours."

8. Preventive Measures

Engineering Controls:

Personal Protective Equipment:

Protective Clothing:

Eye Protection:

Respiratory Protection:

Storage Requirements:

Handling Procedures and Equipment:

Leak/Spill Clean-up:

Waste Disposal:

Special Shipping Information:

The section on Preventive Measures provides information which is used to develop procedures and practices for working safely with the material. It should be noted that most Material Safety Data Sheets are written to address all reasonably anticipated uses of the material. Because they must address such a wide range of usage situations, the information is not always as specific to your particular situation as it could be. The services of a health and safety professional may be valuable when you are trying to interpret the information and assess its relevance to your particular situation. You may also be able to get more specific information by contacting the manufacturer using the phone numbers given either in the Preparation Information section or in the Product Information section.

All of the possible hazards (fire, reactivity and health) need to be considered when developing safe handling procedures. The Preventive Measures section of the MSDS usually provides information on personal protective equipment, engineering controls, leak/spill procedures, waste disposal, general handling procedures/equipment and storage requirements.

Engineering Controls

Engineering control systems reduce potential hazards either by isolating the person from the hazard or by removing the hazard from the work environment. They include mechanical ventilation and process enclosure. Engineering control systems are important because they are built into the work process to reduce the hazards.

Substitution of a less hazardous material or industrial process is the best way to reduce a hazard, but engineering control systems are the next best option. Engineering controls are preferred to other control measures such as the use of personal protective equipment. This is because engineering controls either control the potential hazard at its source, or put up a permanent barrier between the worker and the potential hazard.

The MSDS does not usually provide the specific details of the engineering controls (for example, ventilation rates, fan size and so on). This is because the controls must be designed to suit the individual work site.

You need to make sure that engineering control systems recommended for your job are properly maintained and are operating when you are working with the material. If there are changes in the process or materials, the controls may have to be changed as well.

Personal Protective Equipment

General guidance on the need for and selection of personal protective equipment such as protective clothing, eye protection and respiratory protection is provided under this heading.

Protective Clothing

Protective clothing includes items such as gloves, aprons, full body suits, and boots. The MSDS should

tell you the types of material(s) that provide the best protection against the chemicals you are using. No one material acts as a barrier to all chemicals. Sometimes, the MSDS may only say to use impervious (resistant) materials. In this case, you have to get information about the exact material of which the clothing should be made. You may be able to obtain this information from the product supplier or manufacturer or from a protective clothing supplier or manufacturer.

Whenever possible, you should wear protective clothing which is resistant to all the potentially hazardous chemicals to which you may be exposed while performing a particular task. Also, it is important to maintain your protective equipment properly (for example, protective gloves may need to be rinsed or washed between uses, or disposed of after one use).

Eye Protection

Under this heading, the MSDS describes the type of eye protection you may need when handling the material. The most common types of eye protection recommended are safety glasses, chemical safety goggles and face shields.

Respiratory Protection

There are many different types of respirators. The correct type of respiratory protection can change as the amount of the material in the air changes. Also, one type of respirator may be effective against some kinds of chemicals but may provide little or no protection against others.

Complete respiratory protection guidelines usually cannot be given on the MSDS because there is not enough room or because of the lack of specific information about the job. The selection of the best respirator for you can be quite complicated and usually requires a work site assessment. This assessment should be done by someone who knows your operations and who knows how to evaluate potentially hazardous conditions.

If respirators are required at your work site, a complete respiratory protection program including respirator selection, fit testing, training and maintenance is necessary. The relevant CSA standard "*Selection, Use and Care of Respirators*" should be followed.

Depending on the job, you may have to use personal protective equipment all the time, part of the time, or only in an emergency. You should know which protective equipment is necessary for your work. You also need to know where, when and how to use and maintain your protective equipment and how to recognize problems with it.

Sometimes, there may be no information about personal protective equipment on the MSDS. If a potentially hazardous exposure is possible in your job, you should check the routes of entry in the Toxicological Properties section. If a certain type of exposure is possible and the route of entry is indicated, you should get advice about the need for you to wear protective equipment. For example, if you have hand contact with a material which can damage or be absorbed through the skin, you may need to wear protective gloves.

Storage Requirements

Information provided under this heading gives advice about the conditions necessary to store the material safely. For example, "store in a cool, dry, well-ventilated area away from heat and ignition sources" is commonly used to describe storage conditions for materials which can burn. The MSDS may also give information about the types of chemicals which should NOT be stored with the material.

The storage recommendations are a good starting point for deciding where and how materials should be stored. Refer also to the Fire/Explosion and Reactivity sections of the MSDS. In order to design safe storage areas for chemicals, the applicable fire codes, building codes and industry standards also need to be consulted.

Handling Procedures and Equipment

You will usually find general precautions necessary for the safe use of the material under this heading. For example, the MSDS may suggest electrical grounding and bonding of containers for dispensing a flammable liquid. These instructions may or may not apply to your work, depending on how the material is used and the hazard control measures already in place. An assessment of your work will determine the best handling precautions for your particular case. You need to know the specific handling procedures for your job.

Leak/Spill Clean-up

General instructions for cleaning up a spill are provided in this section. More specific information, such as recommended sorbent materials for spill clean-up, may be included. The information is used by the people who are responsible for planning emergency response procedures for a spill. Usually, special training is required to clean up a spill or leak safely. You should know your own work site emergency response plan.

Waste Disposal

The waste disposal information is used by people who are responsible for developing waste disposal procedures. The MSDS does not usually contain all the steps and precautions necessary for hazardous waste disposal. As well, the MSDS often does not give the federal, provincial, or local regulations which must be followed. The appropriate authorities for your area should be contacted for this information.

Special Shipping Information

If there are special precautions necessary during shipment of the material, they will be provided in this section. For example, some products may be sensitive to shock or sensitive to high temperatures. The supplier may also include the Transportation of Dangerous Goods (TDG) classification in this section.

9. Preparation Information

Prepared by (Person, Group, Department, etc.):

Phone #:

Preparation Date:

The MSDS preparer's phone number given in this section is a good starting point for obtaining more health and safety information than is provided on the MSDS.

It is very important that you have an up-to-date MSDS. The date the MSDS was prepared is usually found at the end of the MSDS. If you are not sure that the MSDS is current, contact the manufacturer or supplier. Canadian WHMIS requires that no MSDS be more than three years old.

10. Conclusion

It is important to remember that an MSDS is not a complete source of health and safety information on its own. This is because MSDSs are usually written for many different work sites and, therefore, cannot be specific in the advice they offer. They are an essential starting point for developing a complete health and safety program for a material. The questions on the next page will help you identify the specific information you need to work safely with a material.

Important Questions to Answer When Reading A MSDS

Identification

- Do you have the right MSDS for the material with which you are working or will be working?
- Do you have an up-to-date MSDS?
- Does the MSDS description of the material match the material you have?

Potential Hazards

- Can this material burn or explode?
- Is this material unstable? If so, under what conditions?
- Can this material react with other chemicals? If so, which ones?
- Can this material harm your health?
- Do you know the symptoms which may warn you of exposure?
- Have you discussed the health effects information with your doctor?

Preventive Measures

- Does your work site need engineering controls?
- Does this material require special handling precautions?
- Do you need protective equipment?
- Do you need to be careful when mixing this material with any other chemicals?
- Does this material require special storage conditions?

Emergency Measures

- Do you know what to do in case of a fire or explosion?
- Do you know the first aid measures needed in case of an exposure?
- Do you know what to do in case of a spill or leak?
- Do you know where the emergency response equipment is and how to use it?