

Guidelines for Material Safety Data Sheets

1. Introduction

Material safety data sheets (MSDS) are required for hazardous substances (Part 13 of the Workplace Health and Safety Regulations 1997) and dangerous goods (Part 3 of the Dangerous Goods Safety Management Regulations 2001). The manufacturer or importer of a substance must prepare the MSDS and provide it to the user (employer) on the occasion of the first supply of goods to the user. In addition, a manufacturer must prepare a new MSDS when significant new information becomes available on the substance.

2. Access to a Material Safety Data Sheet

Access to an MSDS can be provided in several ways including:

- paper and microfiche copy collections of the MSDS with microfiche readers open to use by all workers
- computerised and internet MSDS databases;
- copy provided by the supplier of the chemical.

Within the University of Queensland MSDS information on most chemicals can be obtained through access to *Chemwatch* on the University network. Chemwatch can be accessed at the following website <http://hazsafety.pf.uq.edu.au/chemwatch>

Where an MSDS is not available through Chemwatch, chemical purchasers should include with their order a specific request for an MSDS when they do not already have an MSDS for the material. Material safety data sheets should be available to all workers. In many cases a summary form of the MSDS is found preferable for general use, rather than the multiple paged and often complex full details.

The register of MSDS should be used as an information tool to make sure everyone is involved in managing hazardous substances exposure at the workplace.

3. Role of an MSDS

The material safety data sheet has a number of roles for managing the safe use of chemicals.

- It should first be used to ensure that the product is being *used as intended* by the manufacturer or importer. Other use may be possible, but particular care should be taken when the product is being put to a 'new' use - it may give rise to unforeseen hazards.
- It is the key tool for *risk assessment* as it includes detailed hazard information.

- The options for appropriate controls included in the MSDS may be utilised for the design and improvement of *control measures* and procedures.
- Workplace *monitoring* and *health surveillance* strategies may often be based on advice contained in the MSDS.
- Sufficient information should be provided to select the necessary safety equipment and to develop necessary *emergency procedures*.
- The MSDS may be used as the basis of a *training program* for workers as it covers hazards, precautions and emergency procedures.

3.1 Information provided by an MSDS

A wide range of information is provided in an MSDS. It is the most comprehensive source of information available to a chemical user.

Identification information

The **name** of the product is clearly specified together with **classifications** appropriate to the product - United Nations substance number, dangerous goods class and subsidiary risk, hazardous substance status, poisons schedule etc.

The manufacturer's or importer's **name, address and telephone number** is provided, often with a 24 hour-a-day telephone contact for emergencies.

The name (and CAS number) of **hazardous ingredients** is given together with their approximate proportion in the product composition.

Specific chemical properties

A wide range of specific chemical and physical properties are listed:

- **Boiling point** and **vapour pressure**, which give an indication of the potential to generate significant vapour concentrations. Low boiling point and high vapour pressure materials will generate higher vapour concentrations at ambient conditions.
- **Vapour density (VD)** - the ratio of the density of the vapour to that of air. This determines the behaviour of the gas or vapour in air. Substances with a $VD < 1$ will rise in air. Substances with $VD > 1$ will tend to sink in air and flow along horizontal surfaces and down stairs drains etc.
- **Solubility** of the substance in water and other solvents expressed in a variety of units (eg g/L) or descriptive terms (insoluble, dispersible, slight, partial, soluble, miscible).
- **Specific gravity** of a liquid - the ratio of the density of the substance compared to that of water. This enables a determination of whether the substance will float on or sink in water.
- The **pH** of the product gives an indication of acidity (if $pH < 7$) or alkalinity (if $pH > 7$).
- Fire safety data such as:
 - *flammability range*, the range of concentrations of fuel in air between the lower flammability limit (LFL) and the upper flammability limit (UFL), over which a mixture of a material

- *flash point* (fp), the lowest temperature of a liquid at which the vapour above it can be ignited
 - *auto-ignition temperature* (AIT), the lowest temperature (of a potential ignition source) at which a flammable mixture in air can be ignited
- **Other hazardous chemical reactivity** - corrosivity, oxidising properties, reactivity with common substances (e.g. air and water) tendency to spontaneous combustion or self accelerating polymerisation, shock or light sensitivity.

Health hazard information

Information is included on the **acute** and **chronic health effects** of substances, the major **routes of exposure** (inhalation, ingestion, skin absorption, eye contact). The result of any animal toxicity testing is provided with particular emphasis on the potential for carcinogenicity or reproductive hazards. **First aid** instructions and **advice for the medical practitioner** are given.

Precautions for use

The relevant **workplace exposure standards** (TWA, STEL and ceiling if applicable) are supplied for use in the planning or workplace controls. Specific **engineering controls** such as ventilation, are set out. **Personal protective equipment** recommendations are given. In higher standard MSDS the face protection, respirator and glove recommendations are specific to the product. Specific recommendations are provided for the prevention of **fire** and **explosion**.

Safe handling information

Information is provided in MSDS on procedures for the safe **storage** and **transport** of the substance including any special requirements, codes or restrictions which apply. Recommendations are outlined for clean-up of **spillage** and **disposal** of waste. **Fire fighting** methods and associated protective equipment are specified.

Other information

A range of other information is included in the MSDS on **environmental data**, **references** and **emergency contact** points.