Safety Data Sheets – The Do's and Don'ts.

In this article, Peter Vitali (Principal Consultant & Director at ChemVit Consulting) provides an overview on how to review the quality of Safety Data Sheets (SDSs), and how to prepare new SDSs without the common problems found in many of today's industry available SDSs.

Introduction

It is very common to read SDSs that either due to lack of company resources or lack of staff training, SDSs are issued that may be lacking in key information or may even be technically incorrect.

Users of SDSs must assess the quality of the information contained in the SDS, to ensure that such SDSs are properly assessed, and those writing SDSs have a peer review process to allow simple checking.

On my review of numerous client SDSs, the most common errors found are due to a high focus and reliance on computer software systems. Such systems are good to have as time and high level of resources can be greatly reduced. Reliance purely on such systems can produce SDSs that can provide information that lacks clarity or makes no sense.

SDSs have been produced by people that may not have any formal qualifications to enable them to understand fully the physical and chemical nature of the substance to adequately prepare a proper and legally correct and accurate SDS.

Summary

In Australia, Work Health Act and Work Health and Safety Regulations provide requirements for preparation of SDSs. Safe Work Australia has produced a "Code of Practice for the Preparation of safety data sheets for hazardous chemicals".

Some of the most common issues in with SDSs being:

- Prepared 100% reliance on proprietary SDS software packages.
- Lack of input from suitably competent individual/s.
- Lack of knowledge and experience leading to under or over classification of substances.
- Lack of systems for checking and writing.
- No formal system in place for maintaining SDSs.

Regulatory assessment

The need to conduct a regulatory assessment to ensure all relevant compliance requirements have been achieved is critical in any SDS development.

Key review findings of poorly produced SDSs:

- Lack of product identity
- No revision dates
- Incorrect administrative details
- Product description on SDS different to the product label on package
- Active ingredients not provided with percentage range
- Details of Australian supplier importer not provided
- Product sold in Australia but has only contact details in overseas supplier or manufacturer

Formal system for maintaining of SDSs

In many large organisations, several departments across the organisation may store SDSs. Many organisations still maintain hard copy folder/s of SDSs (including updates). Such systems over time become difficult to

manage and become informal in their workings. One central system should be used to manage and maintain SDSs, either printed or electronic format.

Technical review - Understanding the Chemical and physical science

This may need to be done by people with proper knowledge of the product and its chemistry. It is critical that any newly produced SDS must be subjected to full "technical review".

Some key findings:

- Substances that are solids or powders are provided with descriptive physical features of liquids, such as viscosity and vapour details being provided.
- A liquid substance is provided with physical details to that of a solid with statements such as "if spilt, swept up powder and placed in sealed bag.
- The substance is not miscible in water, but details are provided that the substance is miscible.
- The substance is non-hazardous but the risk and hazard statements being provided as for a hazardous substance.
- The substance is non-hazardous, however the SDS provides requirements for expensive ventilations systems and other engineering controls including strict disposal recommendations.

These assessments do not require the need for highly specialised people. SafeWork Australia provides guidance information which offers authors of SDSs help to prevent such errors being made. Some of these simple checks are provided below.

Peer-review of outgoing SDS

Humans are not perfect and both technical and grammar mistakes can easily be made when any new SDS is to be developed. The only well proven method to try and minimise such errors is to have a formal system in place where any development of SDSs is such that several levels of review process occurs via a spectrum of people being of a technical and administrative background.

This internal system of dissemination of SDSs is one of the most proven methods used to ensure that some degree of rigor has been provided to ensure the SDS passes the regulatory and technical quality checks.

Formatting to Australian regulatory requirements

Reference document: SafeWork Australia "Code of Practice - Preparation of safety data sheets for hazardous chemicals".

The checklist below provides a summary of the information contained in Chapter 3 of this Code (Content of the safety data sheet) by listing its headers of the parameters to be considered. It is not a comprehensive list of information required on the SDS. Refer to the relevant section of the Code of Practice, for detailed instructions.

You can use this this checklist to make an initial determination as to what level of compliance your SDS is at.

Authors Summary

As the author of this article and based on many years of SDSs case reviews, is clear to me that many providers of SDSs are either not following or aware of the available guidelines provided by the Australian Government and or do not have the correct composition of people and systems to ensure proper and legally correct SDSs are being provided.

See link to find out more about Peter Vitali.

Table check list of Headers summary

Section of the SDS	Headers
Section 1—Identification	☐ Product Identifier ☐ Other means of identification ☐ Recommended use of the chemical and restrictions on use ☐ Details of manufacturer or importer ☐ Emergency phone number
Section 2—Hazard(s) identification	☐ Classification of the hazardous chemical ☐ Label elements, including precautionary statements
Section 3—Composition and information on ingredients	☐ Disclosure of ingredient names ☐ Use of generic names ☐ Disclosure of proportions of ingredients
Section 4—First aid measures	☐ Description of necessary first aid measures ☐ Symptoms caused by exposure ☐ Medical attention and special treatment
Section 5—Firefighting measures	☐ Suitable extinguishing equipment ☐ Specific hazards arising from the chemical ☐ Special protective equipment and precautions for firefighters
Section 6—Accidental release measures	☐ Personal precautions, protective equipment and emergency procedures ☐ Environmental precautions ☐ Methods and materials for containment and cleaning up
Section 7—Handling and storage	☐ Precautions for safe handling ☐ Conditions for safe storage, including any incompatibilities
Section 8—Exposure controls and personal protection	☐ Exposure control measures ☐ Biological monitoring ☐ Control Banding ☐ Engineering controls ☐ Individual protection measures, for example personal protective equipment (PPE)

Section of the SDS	Headers
Section 9—Physical and chemical properties	☐ Appearance ☐ Odour ☐ Odour threshold ☐ pH ☐ Melting point/freezing point ☐ Boiling point and boiling range ☐ Flash point ☐ Evaporation rate ☐ Flammability (solid, gas) ☐ Upper/lower flammability or explosive limits ☐ Vapour pressure ☐ Vapour density ☐ Relative density ☐ Solubility ☐ Partition coefficient: n-octanol/water ☐ Auto-ignition temperature ☐ Decomposition temperature ☐ Viscosity ☐ Specific heat value ☐ Saturated vapour concentration ☐ Release of invisible flammable vapours and gases ☐ Particle size ☐ Size distribution
Section 9—Physical and chemical properties	☐ Shape and aspect ratio ☐ Crystallinity ☐ Dustiness ☐ Surface area ☐ Degree of aggregation or agglomeration, and dispersibility ☐ Redox potential ☐ Biodurability or biopersistence ☐ Surface coating or chemistry
Section 10—Stability and reactivity	☐ Reactivity ☐ Chemical stability ☐ Possibility of hazardous reactions ☐ Conditions to avoid ☐ Incompatible materials ☐ Hazardous decomposition products

Section of the SDS	Headers
Section 11—Toxicological information	☐ Information on possible routes of exposure ☐ Early onset symptoms related to exposure ☐ Delayed health effects from exposure ☐ Exposure levels and health effects ☐ Interactive effects ☐ When specific chemical data is not available ☐ Mixtures of chemicals ☐ Other information
Section 12—Ecological information	☐ Ecotoxicity ☐ Persistence and degradability ☐ Bioaccumulative potential ☐ Mobility in soil ☐ Other adverse effects
Section 13—Disposal considerations	☐ Disposal methods
Section 14—Transport information	☐ UN number ☐ Proper Shipping Name or Technical Name ☐ Transport hazard class ☐ Packing Group ☐ Environmental hazards for transport purposes ☐ Special precautions for user ☐ Additional information ☐ Hazchem or Emergency Action Code
Section 15—Regulatory information	☐ Safety, health and environmental regulations
Section 16—Other information	☐ Date of preparation or review ☐ Key abbreviations or acronyms used