How to Read a Safety Data Sheet

Auto-Chlor System employees work with chemicals daily and **it is important that you understand the safest way to handle these chemicals**. All employees are covered by ***Right-to-Know* laws**, which require employers to supply workers with information on the identity of the chemicals to which they are exposed, their health effects, and training on how to handle them safely.

Safety Data Sheets (SDS) **contain information on health hazards, chemical ingredients, physical characteristics, control measures, and special handling procedures** for all hazardous substances in the work area. The laws say that SDSs **must be readily accessible** to all employees. At the typical Auto Chlor facility, SDSs are available in the office, the warehouse, the driver's book, and also on-line at: www.autochlor.com.

Safety Data Sheet Breakdown

Section 1 – Product and Company Information

The name of the product and the **name, address, and emergency telephone number of the manufacturer** must be provided. This section will also include a product code as well as a recommended use for the product.

Section 2 – Hazards Identification

The Hazards Identification section describes the **ways you may be exposed** to the material and the harmful health effects it can have. The possible routes of exposure are **skin contact, eye contact, inhalation, and ingestion** (swallowing). Chemicals can cause harm either at the point of contact, by absorption into the body, or both. The OSHA Hazard Category scale is used in this section, with **Category 1 being most harmful** and **Category 4 being the least**. This section also consists of the signal word, pictogram, hazard statement(s) and precautionary statement(s).

Section 3 - Composition/Information on Ingredients

Potentially hazardous chemical components, by-products and impurities of the product are listed in this section along with the concentration range (percentage) of each. There are many details to consider in this section:

- The chemical or specific name is the one that **describes the specific chemical**. An example is sodium hydroxide.
- A **unique number is assigned** by the **C**hemical **A**bstract **S**ervice to each chemical. This is **known as the CAS Number**. While different **chemicals may have the same name, they will all have their own CAS number** that can be

used to look up information. The CAS publishes a book that contains a list of all CAS Numbers and the chemicals they represent.

Section 4* – *First Aid Measures

The First Aid Measures section describes **actions to be taken immediately** in case you are accidentally exposed to the material. The main routes of exposure listed would be **eye and skin contact, inhalation, or ingestion** (swallowing). 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. ***First aid information needs to be known before you start working with the material.*** A copy of the SDS **should be sent with a victim needing medical treatment** in order to assist the medical facility.

Section 5* - *Fire Fighting Measures

This section provides information on the **fire hazards of a product** and **special precautions necessary to extinguish** a fire. A few notes on this section are:

- **Extinguishing media:** Specifies what kind of fire extinguisher to use. There are four classifications of fires: **Class A** (paper and wood), **Class B** (flammable materials such as liquids or greases), **Class C** (electrical fires), and **Class D** (metals or metal alloys). **All branches should have Class ABC** fire extinguishers.
- **Special firefighting procedures** and unusual fire and explosion hazards: For example, some chemicals (i.e. corrosives) must not be extinguished with water.

Section 6* – *Accidental Release Measures

General instructions for **responding to an accidental release or cleaning up a spill** are provided in this section. Specific information, such as recommended absorbent materials for spill cleanup, may be included. The information is intended to be **used mainly by emergency responders and environmental professionals**.

Section 7* – *Handling and Storage

In this section, you will find **general precautions necessary for the safe handling** of the material, including any equipment that may be required. **All possible hazards** (fire, reactivity, health and environmental) **need to be considered** when developing safe handling procedures. The **storage recommendations** provided in this section provide a good starting point for deciding where and how materials should be stored (e.g. at what temperature).

Section 8* – *Exposure Controls/Personal Protection

This section provides information which is used to develop **procedures and practices** for working safely with the material. **Engineering controls are the preferred method of reducing risk**. If the SDS gives the choice between an engineering control and PPE, the **engineering control should be used** if practical. For example given the choice

between local exhaust (shop fan) and a respirator to reduce inhalation hazard, the shop fan should be used. The local exhaust has less chance of failure and does not require special training for its use.

It will **also contain a product's TLV** (Threshold Limit Value) **or PEL** (Permissible Exposure Limit) which gives the **highest amount of exposure to a chemical that is safely allowed** over 15-minute and 8-hour periods. Pay close attention to the personnel protective equipment requirements. For example, all gloves do not protect against all chemicals. The correct type of glove should be specified on the SDS.

Section 9 – Physical and Chemical Properties

Physical and chemical characteristics include the chemical's **appearance and odor,** along with physical properties like **density, pH, and solubility**. A few notes on this section are:

- **Boiling point:** The boiling point of a substance is the **temperature at which the liquid boils or becomes a gas**. The lower the boiling point, the quicker it evaporates and the **easier it is to inhale.** Chemicals with boiling points below 100°C (or 212°F) require special caution.
- **Appearance and odor:** This information **may help identify a substance that spills or leaks** in your work area. However, many chemicals are hazardous at levels lower than they can be smelled. Also, many chemicals, such as ammonia, cause **"olfactory fatigue",** which means that workers rapidly lose their ability to smell the substance.
- **Specific gravity:** If the specific gravity is **greater than one**, the substance **will sink** in water; if **less than one**, it **will float** on top of water.
- **Flash point:** This is the **lowest temperature at which a liquid** gives off enough vapor to form a mixture with air that **can be ignited by a spark**. Liquids with flash points **below 100°F are considered flammable**, and liquids with flash points **between 100° and 200°F are considered to be combustible**.

Section 10 – Stability and Reactivity

This section of the SDS describes any **conditions under which the material is unstable or can react dangerously** and **conditions that should be avoided**. When stored improperly, some chemicals can react with other chemicals and release dangerous materials. Contact with air, heat, water or another specific chemical could cause fire, explosion or toxic gases when stored or handled improperly. This information **should be reviewed to ensure that incompatible chemicals are stored correctly** in vehicles and in the warehouse.

Section 11 – Toxicological Information

This section of the SDS contains **toxicity information**, either for the ingredients of the product or the product as a whole. There are **two measurements** for the toxicity levels:

LD50 and **LC50**. These values are obtained from toxicity testing using experimental animals and are used to indicate the short-term poisoning potential of a material: **the lower the value, the more toxic the material**. This information can be quite technical and difficult to interpret. 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.

Section 12 –Ecological Information

Ecological Information is **not specifically required**. If included, this section contains information that is useful in **evaluating the environmental impact of the material** if it is released (e.g. toxicity to fish, birds, plants and microorganisms). This information is intended **mainly for environmental professionals** and other company staff evaluating use, disposal or spill control.

Section 13 –Disposal Considerations

General **waste disposal information** will normally be included in this section. The SDS does not usually contain all the steps and precautions necessary for adequate hazardous waste disposal. As well, the SDS 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.

Section 14 –Transort Information

This section of the SDS is **intended for those responsible for shipping the material**. Basic classification information and special **precautionary information to help a knowledgeable user prepare a material for shipment** is given here. This section is **not intended to contain every regulatory detail** involving the transportation of a material.

Section 15 –Regulatory Information

Useful references to applicable health, safety and environmental laws and regulations may be provided here, along with information on the regulatory status of the product. It is not intended to be a comprehensive list of all of the regulations that may apply.

Section 16 –Other Information

This section is used to provide **supplemental information** which the author of the data sheet considers important for the safe use of the material. It may include label text, hazard ratings, preparation and revision information or key/legend that explains the abbreviations used in the SDS.

Remember…

- SDSs must be reviewed **prior to any contact** with a new chemical.

EXERCISE
As a group, **review the SDS for Machine Detergent No. 3X**. Read sections of the SDS and ask participants what the hazards are and what precautions should be taken.

QUIZ
Each participant should **complete the Safety Data Sheet quiz**. Review the answers as a group.

SAFETY DATA SHEETS (SDS)

1. Every hazardous substance in the workplace must have a Safety Data Sheet.
   a. True
   b. False

2. The highest safe amount of the chemical you can be exposed to may be shown as:
   a. ASL (Absolute Safest Level)
   b. PEL (Permissible Exposure Limit)
   c. LEL (Lower Exposure Limit)

3. Boiling point is important because it's the temperature at which chemical:
   a. Won't change form
   b. Changes from a liquid to a gas
   c. Changes from gas to solid

4. A chemical flash point is:
   a. The lowest temperature at which an ignition source could make its vapors catch fire.
   b. The temperature at which it changes from a solid to a liquid.
   c. The temperature it dissolves in water.

5. Fire suppression and explosion information can be found in which section:
   a. Section 3
   b. Section 5
   c. Section 8

6. If the SDS indicates a chemical is incompatible with another chemical, air or water, you:
   a. Avoid exposing the chemical to high heat.
   b. Avoid exposing your skin to the substance with which it's incompatible.
   c. Avoid exposing the chemical to the substance with which it's incompatible

7. A chemical may cause health problems if you're exposed by:
   a. Inhaling or swallowing
   b. Skin or eye contact
   c. Both a and b

8. It's safe to expose reactive chemicals to air, but not water.
   a. True
   b. False

9. An SDS lists personal protective equipment (PPE), so you know what to use to:
   a. Prevent chemical contact with incompatible substances
   b. Avoid inhaling or making skin or eye contact with chemical
   c. Keep the chemical from catching fire or exploding.

10. Only managers have access to an SDS.
   a. True
   b. False

By signing, I acknowledge that I understand and will abide by any directives or policies contained within this document.

Signature:_____

Name:_____ Date:_____