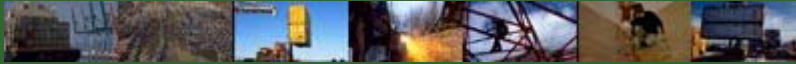




Safety Meeting Outline



SMO 05-0303

PHYSICAL PROPERTIES OF MATERIALS

By SeaBright Insurance Loss Control

Toxic materials can take the form of solids, liquids, gases, vapors, dusts, fumes, fibers and mists. How a substance gets into the body and what damage it causes depends on the form or the physical properties of the substance.

A toxic material may take different forms under varying conditions and each form may present a different type of hazard. For example, lead solder in solid form is not hazardous because it is not likely to enter the body. Soldering, however, turns the lead into liquid, which may spill or come into contact with skin. When the spilled liquid becomes solid again, it may be in the form of small liquid particles (dust) that may be inhaled or ingested and then absorbed. If lead is heated to a very high temperature, like when it is welded, a fume may be created. A fume consists of very small particles, which are extremely hazardous as they are easily inhaled and absorbed. It is thus important to know what form or forms a given substance takes in the workplace. It is good to know each of these properties, here are the descriptions.

Solid A solid is a material that retains its form, like stone. Most solids are generally not hazardous since they are not likely to be absorbed into the body, unless present as small particles such as dust.

Liquid A liquid is a material that flows freely, like water. Many hazardous substances are in liquid form at normal temperatures. Some liquids can damage the skin. Some pass through the skin and enter the body and may or may not cause skin damage. Liquids may also evaporate (give off vapors), forming gases which can then be inhaled.

Gas A gas consists of individual chemical molecules dispersed in air, like oxygen, at normal temperature and pressure. Some gases are flammable, explosive, and/or toxic. The presence of a gas may be difficult to detect if it has no color or odor, and does not cause immediate irritation. Such gases, like carbon monoxide, may still be very hazardous.

Vapor A vapor is the gas form of a substance that is primarily a liquid at normal pressure and temperature. Most organic solvents evaporate and produce vapors. Vapors can be inhaled into the lungs, and in some cases may irritate the eyes, skin or respiratory tract. Some are flammable, explosive and/or toxic. The term vapor pressure or evaporation rate is used to indicate the tendency for different liquids to evaporate.

- Dust** A dust consists of small solid particles in the air. Dusts may be created when solids are pulverized or ground, or when (settled dust) becomes airborne. Dusts may be hazardous because they can be inhaled into the respiratory tract. Larger particles of dust are usually trapped in the nose and windpipe (trachea) where they can be expelled, but smaller particles (respirable dust) can reach and may damage the lungs. Some dust particles, like lead dust, may then enter the bloodstream through the lungs. Some organic dusts, such as grain dust, may explode when they reach high concentrations in the air.
- Fume** A fume consists of very small, fine solid particles in the air, which forms when solid chemicals (often metals) are heated to very high temperatures, evaporate to vapor, and finally become solid again. The welding or brazing of metal, for example, produces metal fumes. Fumes are hazardous because they are easily inhaled. Many metal fumes can cause an illness called metal fume fever, consisting of fever, chills and aches like the "flu." Inhalation of other metal fumes, such as lead, can cause poisoning without causing metal fume fever.
- Fiber** A fiber is a solid particle whose length is at least three times its width. The degree of hazard depends upon the size of the fiber. Smaller fibers such as asbestos, can lodge in the lungs and cause serious harm. Larger fibers are trapped in the respiratory tract; and are expelled without reaching the lungs.
- Mist** A mist consists of liquid particles of various sizes, which are produced by agitation or spraying of liquids. Mists can be hazardous when they are inhaled or sprayed on the skin. The spraying of pesticides and the machining of metals using metal working fluids are two situations where mists are commonly produced.



SAFETY MEETING AGENDA

DEPARTMENT/JOB SITE: _____ MEETING DATE: _____

1. **Open Meeting & Present safety topic:** _____
2. Read minutes from previous meeting.
3. **Persons present:**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4. **Old Business** – Status of previous recommendations. Discuss pending old business if any.

5. **Accidents** – Discuss accidents and near misses that have occurred since the last meeting. Brief summary of accidents to date by number and type. Note any trends. Discuss corrective action taken, or needed. Concentrate on accident causes to make everyone more aware.

6. **Inspection Reports** – Report on findings and recommendations of any inspection reports made since last meeting.

7. **New Business** – Solicit employee suggestions. Discuss new procedures, changes to company safety policy, etc.

TIME MEETING STARTED: _____ TIME FINISHED: _____
MEETING CHAIRED BY: _____ TITLE: _____