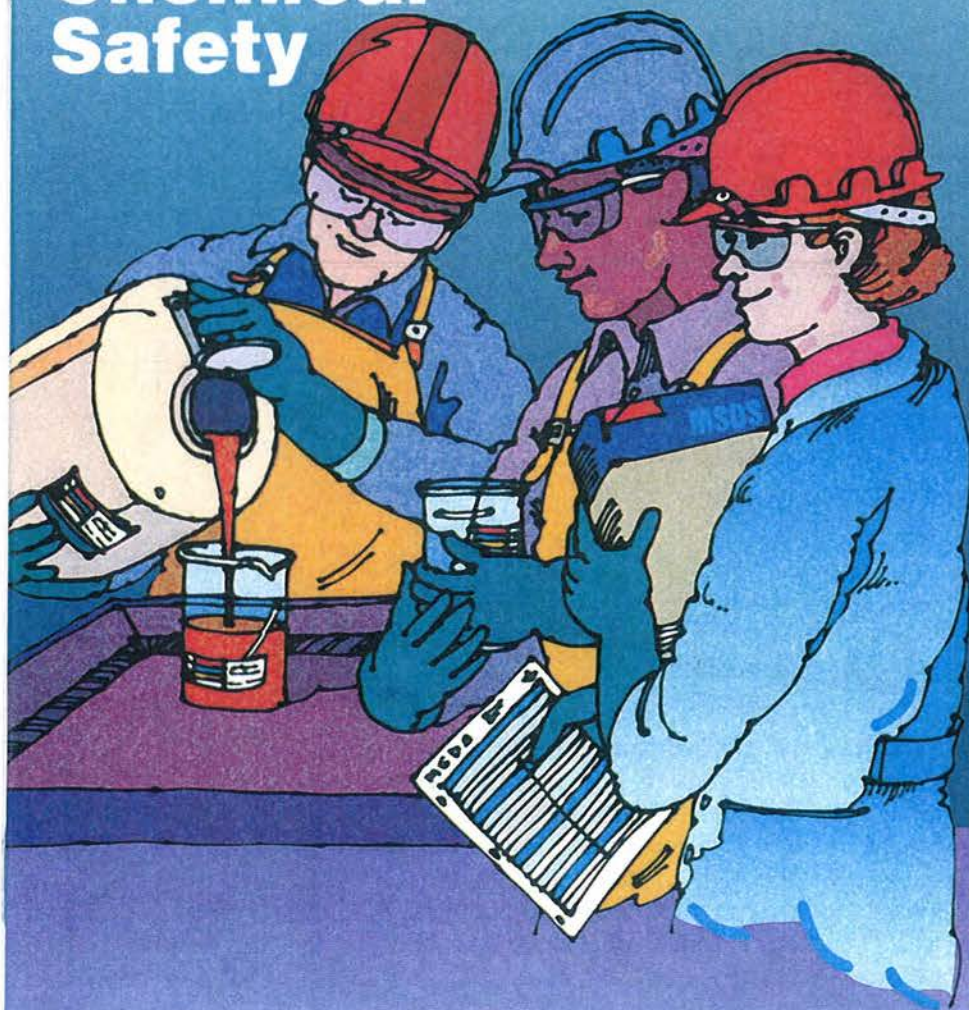
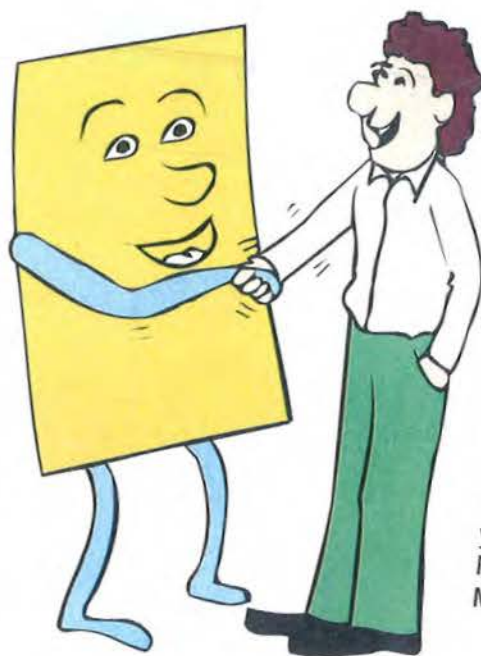




# The MSDS— Your Guide to Chemical Safety





**Get to know  
the MSDS.  
It could  
save  
your life!**

If there are hazardous materials, substances, or wastes in your workplace you should get to know the Material Safety Data Sheet—MSDS for short

### **The MSDS can be the #1 safety tool on the job.**



Companies that make and distribute hazardous substances have to provide companies like yours an MSDS on each substance and mixture of hazardous substances. That's so you have one place to look for everything you need to know about a chemical's hazards—and what you can do to work with it safely.

**There is no single mandatory form** for the MSDS, so you'll probably see many different types on the job. What is consistent, though, is the type of information included on each form. Once you understand what this info is and how it is to be used, you'll be able to use any type of MSDS you run up against to protect yourself.



# You deserve to know all the facts

OSHA requires an MSDS as part of the Hazard Communication Standard, or Right-to-Know regulation. They wanted to make sure you had one easy reference for every sort of information on a hazardous substance:



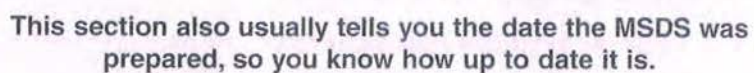
- What it is
- Who makes or sells it
- Where they are located
- Why it's hazardous
- How you can be exposed to the hazard
- What conditions could increase the hazard
- How to handle the substance safely
- What protection to use while working with it
- What to do if you are exposed
- What to do if there's a spill or emergency

**Let's go through  
the information  
on an MSDS.**



[illegible]

**And in case you need even more information** than the MSDS contains, this section gives you the name and address of the company that makes the chemical plus the phone numbers to call for information or in the event of an emergency.

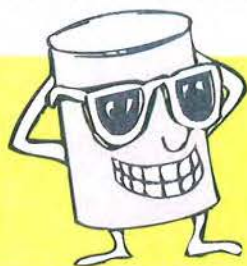


[illegible]

You can  
call me  
Nick



\*\*The TLV® is the Threshold Limit Value® set by the American Conference of Governmental Industrial Hygienists (ACGIH).



The only time you won't find the identity of a chemical is when it's a trade secret. But the MSDS will still tell you about its hazards and required safety measures.

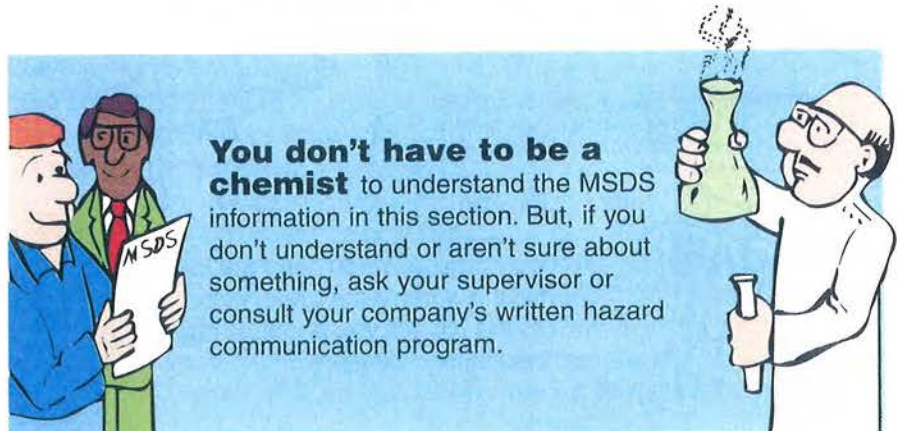
# Know the physical and chemical characteristics

The image shows a yellow MSDS form. A large red checkmark is placed over the 'Physical/Chemical Characteristics' section, which includes fields for Boiling Point, Vapor Pressure, Vapor Density, and Solubility in Water. The form also has sections for 'Hazardous Ingredients/Identify Ingredients' and 'Physical and Chemical Properties'.

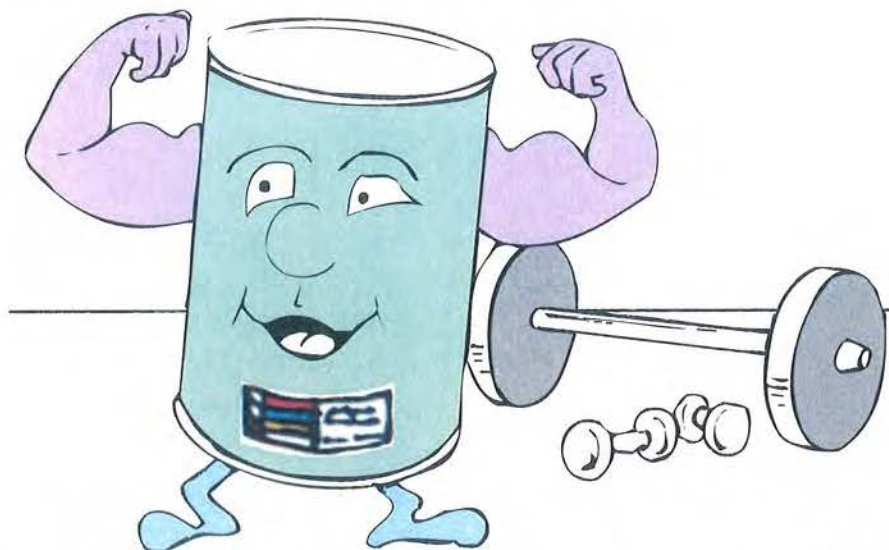
You can control potential hazards by understanding their characteristics.

Next, you'll find out about the chemical's physical and chemical characteristics.

There are things that could affect the degree of hazard you face in different work situations.



**You don't have to be a chemist** to understand the MSDS information in this section. But, if you don't understand or aren't sure about something, ask your supervisor or consult your company's written hazard communication program.



**You'll find applicable information on the hazardous material's**

- **Boiling point and melting point** (to help you prevent a potentially dangerous change in state, as from liquid to a breathable gas)



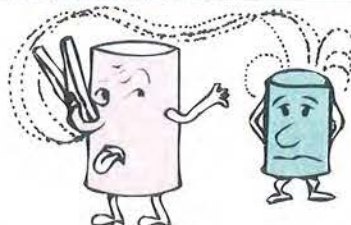
- **Vapor pressure, vapor density, and evaporation rate** (especially important for flammable or toxic gases and vapors you could inhale)



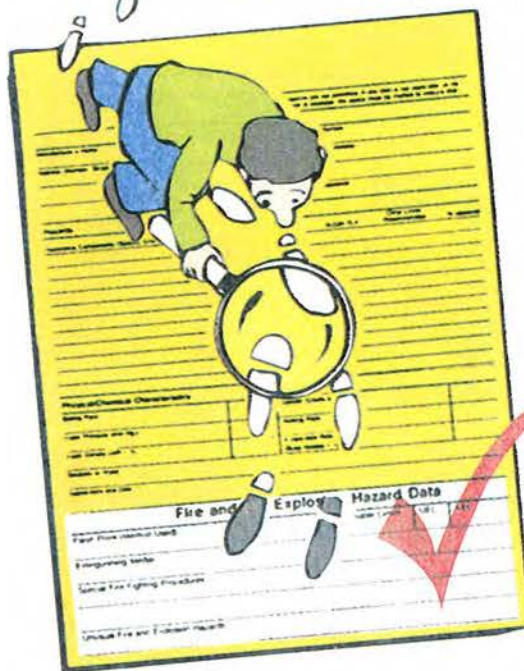
- **Solubility in water and specific gravity** (so you know if a chemical will dissolve in water, sink, or float)



- **Normal appearance and odor** (to help you recognize anything different and possibly dangerous)



# Follow the trail to safety




The Fire and Explosion Hazard Data section helps you judge the risk of these two dangerous hazards.



The **FLASH POINT** tells you the minimum temperature at which the vapors from a liquid may ignite.

**Flammability limits** indicate the concentration of the substance, in the form of a gas or a vapor, that's needed for it to ignite. Ignition is less likely below the lower limit or above the upper limit. Compare it to an engine that won't start if the carburetor is set too lean (below the lower limit) or is flooded (above the upper limit).

| MIN. |  | MAX. |
|------|---|------|
| %    |   | %    |
| SAFE | DANGER  | SAFE |

The MSDS also tells you what to use—ABC, CO<sub>2</sub>, foam, etc.—to put out a fire, and if there are any special hazards or fire-fighting procedures to follow.



This information is especially useful if there's a spill. It can also help you decide where and how to store substances that could have dangerous reactions, such as fire or explosion, if accidentally combined.

[illegible]

**Reactivity Data** also tells you if a substance is stable, exactly what it should be kept away from, and what situations to avoid.

# Bar the door to chemical hazards



A sample Material Safety Data Sheet (MSDS) form. A large red checkmark is placed over the 'Health Hazard Data' section, which includes fields for 'Routes of Entry', 'Hazardous Effects', 'Symptoms', 'First Aid Measures', and 'Precautions for Safe Handling and Use'.

**Health Hazard Data** is one of the most important parts of the MSDS to you.

It tells how a chemical could enter your body:



• inhaling



• swallowing



• through the skin

Then it lists specific *possible* health hazards—things that *could* happen to you if you're exposed to the chemical.

**Some effects, like skin burns, are *acute*:**

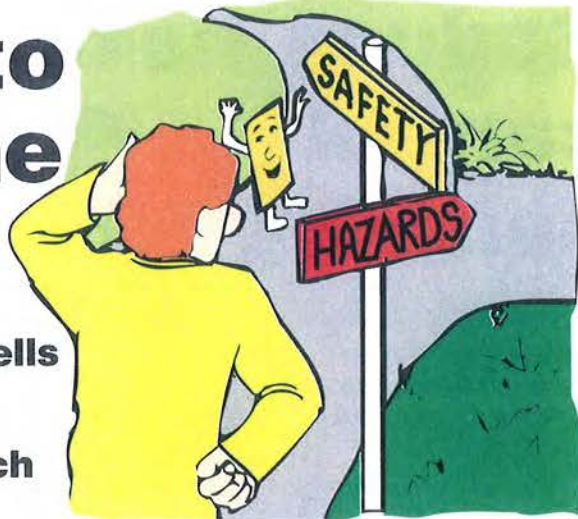
They show up right after exposure.

**Others, like lung cancer, are *chronic*:**

They're the result of exposure long ago or repeated exposure over a long period of time.

# Learn to read the signs

**The MSDS also tells you signs and symptoms of exposure to watch out for.**

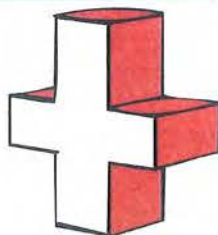


Things like headache, nausea, dizziness, rashes, or dermatitis.



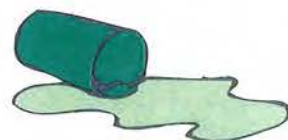
If the chemical could make an existing medical condition like asthma worse, the MSDS will state that, too. If the chemical is believed to be a carcinogen, that will also be listed.

Finally, if you *are* exposed to this substance, the MSDS gives you emergency and first-aid procedures to follow until medical help arrives.



# Reduce risks through careful handling

After the MSDS explains all the reasons *why* you should handle and use a substance carefully, it tells you *how* to do it.



**Precautions for Safe Handling and Use**  
 Supply to the User or Caretaker of the Substance or Mixture

When the Substance is Released

Precautions to be Taken in Handling and Storing

Other Precautions

Control Measures

Personal Protective Equipment

Storage

Disposal

## Precautions for Safe Handling and Use

begins by explaining what to do if there's a spill, leak, or any accidental chemical release.

It also tells you how to handle and store the substance safely, as well as any other precautions you might need to follow to protect yourself and those around you.

Grounding containers during a transfer of flammables, for example, is essential for stopping static electricity as an ignition source.



This section also covers the correct way to dispose of the hazardous substance.

# Protect yourself with the latest fashions

**Read Control Measures very carefully.**

It covers the protective equipment you might need, as well as the work and hygiene practices and the ventilation required to keep your chances of exposure low.

The MSDS will explain what types of equipment to use when you work with this substance, such as:

- Type of respirator
- Gloves
- Eye protection
- Other protective clothes and equipment

Because each workplace has its own procedures, the equipment you use may not be exactly the same as on the MSDS. When in doubt, ask your supervisor, and follow instructions.



**Control Measures**

Administrative, Engineering, and PPE

Administrative: ...

Engineering: ...

PPE: ...

Other: ...



# YOU control the risks

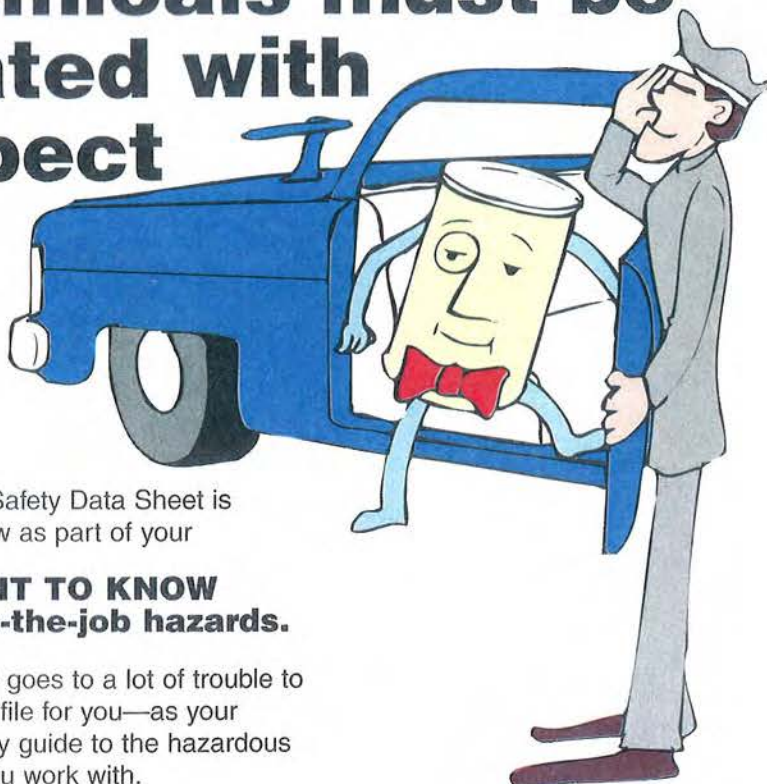


**The MSDS also tells you what work and hygiene practices to follow.** Things like taking a shower after working with the substance or washing work clothes at work may be recommended to keep your risk of exposure low.

Another thing this part of the MSDS explains is what type of ventilation provides the best protection against this particular chemical's hazards. Of course, you're not responsible for installing ventilation systems—but you should check to make sure they're present and working properly in your work area *before* you start the job.



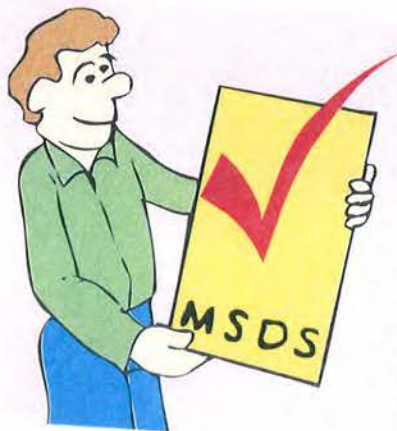
# Your employer wants you to know: **Chemicals must be treated with respect**



The Material Safety Data Sheet is required by law as part of your

## **RIGHT TO KNOW about on-the-job hazards.**

Your employer goes to a lot of trouble to keep them on file for you—as your personal safety guide to the hazardous substances you work with.



## **Check the MSDS**

before you start any job using a hazardous chemical. That way you'll know exactly what the risks are and how to do the job safely. Then follow procedures and use recommended equipment. That's the way hazards won't be so hazardous after all.

# Test Your MSDS Knowledge QUIZ

Directions: Complete each of the following statements.

1. MSDS stands for \_\_\_\_\_.
2. OSHA requires the MSDS as part of the \_\_\_\_\_ or Right-to-Know regulation.
3. The MSDS first tells you the \_\_\_\_\_ of the chemical.
4. In the Hazardous Ingredients/Identity Information section, you'll find the substance's hazardous components, chemical ID, and common names. Worker \_\_\_\_\_ to the chemical are also included.
5. You'll find information about a chemical's boiling point and normal appearance and odor in the section on \_\_\_\_\_ and \_\_\_\_\_ characteristics.
6. The \_\_\_\_\_ tells you the minimum temperature at which vapors from a liquid may be able to ignite.
7. \_\_\_\_\_ tells how a chemical could enter your body and some of the effects it could have, like skin burns or lung cancer.
8. The MSDS tells you signs and symptoms of \_\_\_\_\_, like nausea, dizziness, rashes, or dermatitis.
9. The section on Precautions for Safe Handling and Use explains what to do if there's a \_\_\_\_\_, \_\_\_\_\_, or accidental chemical release.
10. The Control Measures section covers the \_\_\_\_\_ you might need.

**For the correct answers, turn this page upside down.**

1. material safety data sheet 2. Hazard Communication Standard  
3. identity 4. exposure limits 5. physical/chemical 6. flash point 7. Health Hazard  
Data 8. exposure 9. spill/leak 10. protective equipment

## Training Verification

Employee's Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_