

LESSON 6: MSDS HEALTH HAZARD INFORMATION

INTRODUCTION

In addition to physical hazard information, Material Safety Data Sheets contain a great deal of information about health hazards. In this lesson, you'll see how you can use the MSDS to identify the following

- Health hazards
- Exposure routes
- Health effects
- First-aid procedures
- Required protective equipment
- Special handling and storage precautions

LEARNING OBJECTIVES

When you have completed this lesson, you should be able to do the following

Describe different types of exposure limits.

Use health hazard data on an MSDS to answer the following questions about a chemical material:

Is it a health hazard?

What is the exposure limit?

How can I be exposed?

What can it do to me?

What first-aid procedures should I use?

What protective equipment is required?

What special precautions should I take?

LEARNING RESOURCES

- Videotape Segment 6: Health Hazard Information
- Workbook Application Exercise 6-1 Understanding MSDS Health Hazard Information
- Workbook Application Exercise 6-2: Using MSDS Health Hazard Information
- Lesson Summary

DIRECTIONS FOR PROCEEDING

Complete the following steps in order. You might want to check off each step as you complete it.

- 1) Read the workbook introduction to Videotape Segment 6.
- 2) Watch Videotape Segment 6.
- 3) Complete Application Exercise 6-1 in this workbook,
- 4) Complete Application Exercise 6-2 in this workbook.
- 5) Read the lesson summary.

**INTRODUCTION TO VIDEOTAPE SEGMENT 6:
MSDS Health Hazard Information**

As you watch this videotape segment, **first** watch for the description of exposure **limits**. Then notice how you can use the MSDS to recognize carcinogens, exposure routes, and medical symptoms. Also **pay** close attention to the importance of knowing and using the correct first-aid procedures in a medical emergency. Finally, learn how the MSDS helps protect you from health hazards by **specifying** particular types of protective equipment required and special handling and storage precautions.

Now, watch Videotape Segment 6.

NOTES



APPLICATION EXERCISE 6-1:
Understanding MSDS Health Hazard Information

Directions: Check or circle your answer(s) to each question, or write your answer in the blank provided. Remember, there may be more than one correct choice for a question. When you complete the exercise, fold over the right side of the page to check your answers. Then turn the page to get more information about each question.

1) Which question(s) can be answered by looking at exposure limits on an MSDS?

- A) Is the material a health hazard?
- B) Is breathing the material hazardous?
- C) Is the material a carcinogen?
- D) How much can be airborne?
- E) Can I see or smell it?

2) Which type of exposure limits are set by OSHA?

- A) TLVs
- B) RELs
- C) PELs
- D) ANSI limits

**APPLICATION EXERCISE 6-1:
Understanding MSDS Health Hazard Information**

Answer	Additional Information
1) A B D	<p>Exposure limits define the amount of chemical allowed in a given volume of air. Limits are set to define airborne levels that produce no ill health effects in most people, even if they are exposed every day for their entire working lives.</p> <p>If an exposure limit has been set, it means that the chemical is a health hazard. It also means that the chemical can become airborne, and that breathing too much of it can injure you or make you sick.</p> <p>Many chemicals — not just carcinogens — have exposure limits. Often, you cannot see or smell an airborne hazard even when it is present above its exposure limit.</p>
2) C	<p><i>OSHA sets Permissible Exposure Limits, or PELs. Compliance with PELs is mandatory,</i></p> <p>Compliance with other exposure limits is voluntary.</p> <ul style="list-style-type: none">• ACGIH (American Conference of Governmental Industrial Hygienists) recommends <i>Threshold Limit Values</i>, or TLVs.• NIOSH (National Institute of Occupational Safety and Health) proposes <i>Recommended Exposure Limits</i>, or RELs.• ANSI (American National Standards Institute) recommends limits set by a consensus of experts.• Chemical manufacturers may recommend their own exposure limits.

- 3) What must the MSDS tell you for EACH exposure route?
- A) Exposure limits
 - B) Immediate health effects
 - C) Delayed health effects
 - D) First-aid procedures
- 4) If required, does the MSDS have to tell you the specific type of protective gloves and eyewear that you need?
- A) Yes
 - B) No

Answer Additional Information

3) A B C D Health effects and first-aid procedures vary with the exposure route. Thus, MSDSs must identify known health effects and recommended first-aid procedures for each exposure route that may be hazardous.

MSDSs must identify both immediate and delayed health effects. Immediate health effects appear right away, whereas delayed effects develop slowly over time. Exposure limits are set for airborne hazards, not for specific exposure routes.

4) A MSDSs must specify the specific type of gloves or protective eyewear required. For example, impervious gloves and full-face protection are required for working safely with strong acids. The MSDS cannot simply say that gloves and eye protection are required.

**APPLICATION EXERCISE 6-2:
Using Health Hazard Data on MSDSs**

Directions: Check or circle your answer(s) to each question, or write your answer in the blank provided. Remember, there may be more than one correct choice for a question. When you complete the exercise, fold over the right side of the page to check your answers. Then turn the page to get more information about each question.

Locate the MSDS for Caustic Soda Beads in Appendix A and use this MSDS to answer the following questions.

1) **What type** of health hazard(s) does this material present?

- A) Irritant
- B) Corrosive
- c) Target organ chemical
- D) Reproductive hazard
- E) Sensitizer
- F) Carcinogen

2) **What should you do** if a co-worker accidentally swallows some of this chemical?

- A) Try to make the person throw up
- B) Get the victim to fresh air
- C) Make the person drink a lot of water
- D) Begin artificial respiration

**APPLICATION EXERCISE 6-2:
Using Health Hazard Data on MSDSs**

Answer Additional Information

The MSDS for Caustic Soda Beads is located on pages A-6 to A-7 of Appendix A.

1) B

The Health Hazard Data Section, Section VI clearly identifies this material as a corrosive. It destroys body tissues upon contact, and it can cause serious burns, permanent blindness, or death upon ingestion. Although the effect of exposure can be only mild irritation, this material is not classified as an irritant. Irritants are capable of causing only minor health effects, not life-threatening or disabling burns.

Section VI also tells you that neither the NTP, IARC, nor OSHA considers this material either a carcinogen or potential carcinogen. The MSDS does not identify any effects associated with entry into the bloodstream. This corrosive is a contact hazard, not a target *organ* chemical, reproductive hazard, or sensitizer.

2) c

The FIRST-AID PROCEDURES given in the Health Hazard Data Section give specific instructions for each exposure route. For ingestion, the MSDS recommends giving large amounts of water — provided that the victim is conscious. This is the correct procedure for ingestion of most corrosives. You should *NOT* try to make the victim throw up because the corrosive would burn as it came back up.

For inhalation, the correct procedure is either to get the victim to fresh air (breathing) or to give artificial respiration (not breathing). Skin or eye contact calls for “flushing” the exposed area with water, which means running water over it for at least 15 minutes.

- 3) What type(s) of special protection might be required to work safely with solutions of this material?
- A) Air-supplied respirator
 - B) Air-purifying respirator
 - c) Chemical splash-proof goggles
 - D) Rubber gloves
 - E) Full-body protective clothing

Now go back to page 6-9, *fold over the right side of the page, and check your answers. Look on the back of the question page for more information on each question. If you are taking this course as a self-study, proceed to the Lesson Summary when you have finished. If you are taking this course in a classroom situation, wait for further instructions from your trainer when finished.*

Answer	Additional Information
3) B C D	Generally required protective equipment is identified in the Control Measures Section. This includes a respirator with a high efficiency filter to remove any corrosive mists or vapors. Rubber gloves, apron and chemical splash-proof goggles are also recommended.

LESSON 6 SUMMARY

Three sections of the MSDS contain specific information about health hazards.

- Hazardous Ingredients Section
- . Health Hazard Data Section
- . Control Measures Section

The following table summarizes the information you will find in the **Hazardous Ingredient Section**.

Data	Question Answered	Explanation
EXPOSURE LIMITS	Is it a health hazard? Is breathing it harmful? How much can be in the air, without causing adverse health effects in exposed individuals?	YES if a limit is given. YES if a limit is given. Limit gives parts of contaminant per million parts of contaminated air (ppm) or milligrams (mg) per cubic meter; PELs (Permissible Exposure Limits) are mandatory.

The following table summarizes the information you will find in the **Health Hazard Data Section**,

Data	Question Answered	Explanation
EXPOSURE HAZARDS	How can I be exposed? What can it do to me?	If any are known, MSDS must give both immediate and delayed health effects for each exposure route.
FIRST-AID PROCEDURES	What first-aid procedure should I use?	Follow the recommended procedure given for the person's exposure route and current condition.

The following table summarizes the information you will find in the **Control Measures Section**.

Data	Question Answered	Explanation
RESPIRATORY PROTECTION	Do I need respiratory PPE? What type do I need?	YES if any type listed. Air-supplied or specific type of air-purifying should be given.
VENTILATION	Is ventilation required? Is local exhaust needed? Is general needed? Is a special type needed?	YES if any identified. YES if section identifies. YES if section identifies. YES if section identifies.
PROTECTIVE GLOVES	Do I need gloves? What type do I need?	YES if any identified. MSDS must state type.
EYE PROTECTION	What type of eye protection do I need?	MSDS must state specific type needed.
OTHER PROTECTIVE EQUIPMENT	What other protective equipment is required?	Any listed.