



Training Solutions, Delivered!

GHS Safety Data Sheets in the Laboratory

**Leader's Guide, Fact Sheet
& Quiz**

**Item Number: 4250
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This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation.

PREPARING FOR THE MEETING

Here are a few suggestions for using this program:

- a) Review the contents of the Fact Sheet that immediately follows this page to familiarize yourself with the program topic and the training points discussed in the program. The Fact Sheet also includes a list of Program Objectives that details the information that participants should learn from watching the program.
- b) If required by your organization, make an attendance record to be signed by each participant to document the training to be conducted.
- c) Prepare the area and equipment to be used for the training. Make sure the watching environment is comfortable and free from outside distractions. Also, ensure that participants can see and hear the TV screen or computer monitor without obstructions.
- d) Make copies of the Review Quiz included at the end of this Leader's Guide to be completed by participants at the conclusion of the presentation. Be aware that the page containing the answers to the quiz comes before the quiz itself, which is on the final page.

CONDUCTING THE PRESENTATION

- a) Begin the meeting by welcoming the participants. Introduce yourself and give each person an opportunity to become acquainted if there are new people joining the training session.
- b) Introduce the program by its title and explain to participants what they are expected to learn as stated in the Program Objectives of the Fact Sheet.
- c) Play the program without interruption. Upon completion, lead discussions about your organization's specific policies regarding the subject matter. Make sure to note any unique hazards associated with the program's topic that participants may encounter while performing their job duties at your facility.
- d) Hand out copies of the review quiz to all of the participants and make sure each one completes it before concluding the training session.

4250 GHS SAFETY DATA SHEETS IN THE LABORATORY FACT SHEET

LENGTH: 17 MINUTES

PRODUCTION YEAR: 2012

PROGRAM SYNOPSIS:

Most of us encounter chemicals in one form or another every day. They're used in a wide range of products and laboratory processes and are often essential in our jobs. But, if we don't take the proper precautions, many chemicals can be hazardous to our safety and health. GHS Safety Data Sheets are a valuable tool for working with hazardous chemicals and understanding them will help you to do your job safely. This program explains how we can work with hazardous chemicals safely, how to handle and store them, the PPE to use and what to do in an emergency in the laboratory based on the information found in Safety Data Sheets.

PROGRAM OBJECTIVES:

After watching the program, the participant will be able to explain the following:

- The difference between MSDS and SDS;
- Sections 1-3, which discusses materials and their hazards;
- Sections 4-6, which discusses potential emergencies;
- Sections 7-10, which details the precautions to take when handling a material;
- Sections 11-16, which highlights other important information.

INSTRUCTIONAL CONTENT:

INTRODUCTION

- Most of us encounter chemicals in one form or another every day. They're used in a wide range of products and laboratory processes and are often essential in our jobs. But, if we don't take the proper precautions, many chemicals can be hazardous to our safety and health.
- There are many types of potentially hazardous chemicals: flammables, Corrosives, Irritants, Sensitizers, Toxins, even Carcinogens (which can cause cancer). Each of these chemicals has its own set of hazards, required safety precautions, and recommended emergency procedures.
- So how can we work with hazardous chemicals safely? How should we handle and store them? What personal protective equipment should we use? And what should we do in an emergency?

MATERIAL SAFETY DATA SHEETS AND GHS SDS'S

- For years, "Material Safety Data Sheets" (MSDS's) provided us with the answers to these questions.
- MSDS's came about as part of OSHA's Hazard Communication Standard. This "Right-to-Know" regulation required chemical manufacturers and importers to give their customers MSDS's for any potentially hazardous products that they supplied.
- But although certain types of information had to be included, OSHA did not require a standard format for Material Safety Data Sheets. As a result, MSDS's ended up in a variety of forms with data arranged in different ways. This often made it hard to find the information that you needed. And in an emergency situation, this could cost valuable time.
- Another difficulty with many Material Safety Data Sheets was that they were written in technical language, as if they were intended only for Health and Safety Professionals. However, many other types of people, such as firefighters, emergency medical technicians, and laboratory workers like you also need to be able to understand what MSDS's tell them.
- To address these problems OSHA has adopted the "Globally Harmonized System of Classification and Labeling of Chemicals" (GHS for short) into the HAZCOM Standard. The GHS was developed by the United Nations so that workers anywhere in the world would be able to understand the hazards that a chemical presents.
- A major part of the Globally Harmonized System is the use of the GHS "Safety Data Sheet". It gives chemical manufacturers a standard format and specific understandable language to use to describe a chemical's hazards.
- Although compliance with the GHS is voluntary, most industrialized countries are adopting it and will be starting to use GHS Safety Data Sheets soon, if they haven't already, so it also makes it easier for U.S. chemical companies to sell

their products internationally.

- For many workers the GHS Safety Data Sheet will look very familiar. That's because it's formatted almost exactly like one of the versions of the ANSI Material Safety Data Sheet, except for much of the information in sections two and three whose positions are swapped.
- So just like ANSI MSDS's, GHS Safety Data Sheets present information in an "as needed" order.
- The chemical's identity, its hazards and some emergency instructions are provided up front for quick and easy access. Basic safety information is presented next... in "easy-to-understand" language.
- Supporting technical data, as well as information for Health and Safety Professionals, is provided later in the SDS.
- Safety Data Sheets are designed to answer four basic questions that anyone who encounters a chemical might have. "What is the material and what are its hazards?" "What should I do if a problem occurs when I'm working with this material?" "What precautions should I take to prevent problems when I work with this material?" And finally... "Is there anything else I should know about this material?"

MATERIALS AND THEIR HAZARDS

- Each of these questions is answered by one or more sections of the Safety Data Sheet.
- For example, Sections 1, 2, and 3 provide answers to the first question: "What is the material and what are its hazards?"
- Section 1 of the SDS identifies the material using the standard GHS product identifier. You'll find the same product identifier on both the SDS and the chemical's container label. "Section 1" also lists the name, address, and telephone number of the chemical's manufacturer, importer or distributor. This is provided in case you have questions about the SDS or the material itself. An emergency telephone number may also be listed for quick access to additional information.
- Section 2 describes the hazards that are associated with the chemical, including the information that's provided on the chemical's label, such as the signal word, hazard statements and precautionary statements. It may also contain copies of the GHS pictograms that appear on the label.
- Section 3 discusses the ingredients in the chemical and its composition. It also provides additional identifying information such as its chemical identity, common name and CAS and EC numbers.

HAZARDOUS MATERIALS EMERGENCIES

- The next important question that a Safety Data Sheet answers is "What should I do if a problem occurs when I'm working with this material?" Sections 4, 5, and 6 provide this information.
- Section 4 of the SDS outlines the basic First Aid Measures that can be used before professional medical assistance is available. Simple instructions are provided based on the chemical's route of exposure. For example, first aid instructions for skin contact might be "Remove contaminated clothing. Wash skin with soap and water. Get medical attention."
- If the material gets into your eyes, you might be instructed to "Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention."
- This section also provides information on the symptoms and effects the chemical can produce to help you recognize if someone has been exposed.
- You can see why it's important to know the appropriate first aid measures BEFORE you work with a hazardous material, so be sure to read Section 4 of the SDS immediately for any chemical that you are going to use. You should also know the location of first aid kits, safety showers and eye washes in your work area.
- Section 5 of the GHS Safety Data Sheet provides information, precautions and instructions for fighting fires that involve the material. This section includes information on any hazards that the material could present if it burns. For instance, a fire could release poisonous fumes that are more dangerous than the material itself.
- Appropriate "Extinguishing Media" to use when fighting a fire involving the chemical is also identified in this section. These may include water, water fog, foam, carbon dioxide, halon, and other dry chemicals. Using the wrong type could make a bad situation even worse.
- Firefighting instructions describing basic strategies that minimize the hazards the material may present in a fire are also provided here.
- The personal protective equipment necessary for firefighting will be listed in this section as well. This usually includes full fire-fighting gear and an SCBA (Self-Contained Breathing Apparatus). Even more protection may be necessary for some hazardous chemicals.
- Section 6 tells you what to do in case of spills, leaks and other accidental releases of hazardous materials.
- Included in this section are general procedures for containing a spill or other accidental release, cleaning up the

hazardous material and decontaminating clothing and equipment that comes in contact with the material.

- To review, SDS Sections 4, 5, and 6 provide information on what to do if a hazardous situation occurs.

HANDLING HAZARDOUS MATERIALS

- The next question the Safety Data Sheet addresses is "What precautions can I take to prevent problems when I work with this material?" For answers we turn to Sections 7, 8, 9, and 10.
- Section 7 covers Handling and Storage practices that will minimize the physical and health hazards of the material as well as preserve its quality.
- As you would expect, the handling instructions on the SDS are often the same as the ones listed on the chemical's container label. For example, in this section you might see the caution "Avoid contact with eyes, skin, and clothing. Ensure that containers are properly secured before moving."
- This section also provides information on the appropriate storage conditions for the material and its container, including temperature, humidity, atmospheric pressure, ventilation, vibration in the area and exposure to light. Depending on the material, these may all be relevant factors for safe storage and maintaining product quality.
- Engineering Controls, Personal Protective Equipment and Exposure Guidelines are addressed in "Section 8" of the SDS.
- "Engineering Controls" might include things such as the use of local exhaust ventilation systems when working with some materials. Other materials may require fully enclosed systems, where no release of gases or vapors can be permitted.
- This section also lists the Personal Protective Equipment necessary to minimize the risk of exposure.
- For example, to provide respiratory protection the SDS may instruct you to "Wear a NIOSH-approved air-purifying respirator equipped with organic vapor cartridges or canisters."
- For Eye Protection, you may be directed to "Wear safety glasses with side-shields, or safety goggles."
- To defend against skin contact, rubber gloves and other protective clothing might be recommended.
- Section 8 of the SDS will also list any TLVs (Threshold Limit Values), PELs (Permissible Exposure Limits), or other established exposure guidelines for the material or its hazardous ingredients.
- This information is used by your employer to determine the engineering controls and personal protection appropriate for the work you do.
- Section 9 of the SDS describes the Physical and Chemical Properties of the chemical. This information is important for evaluating the use of a material for a specific purpose and can help to determine what precautions should be taken when working with the chemical.
- Your employer will also use the chemical and physical characteristics listed in this section to help determine the safest work practices for your facility.
- The information can be helpful in identifying a chemical when its container label has been damaged or destroyed as well.
- "Stability and Reactivity" is also information that is needed to determine safe handling, storage, transportation and disposal procedures. For this data we turn to Section 10 of the SDS.
- This section will indicate whether the material is chemically stable or dangerously unstable under normal conditions. It will also describe conditions to avoid when working with the material, such as heat, pressure, shock or other physical stresses that might result in a hazardous situation.
- If the material might react with another substance to create a hazardous situation, such as poisonous vapors, a fire, or an explosion, this incompatibility will be listed as well.
- This section of the SDS also addresses any hazards that could be produced as a result of oxidation, heating, decomposition, polymerization or other chemical reactions.
- Remember, Sections 7, 8, 9, and 10 provide the information necessary to prevent hazardous situations from occurring.

OTHER IMPORTANT INFORMATION

- This brings us to the fourth question the GHS Safety Data Sheet is designed to answer: "Is there anything else I should know about this material?" This information can be found in Sections 11 through 16.
- Most workers use this information under the guidance of Health and Safety Professionals such as industrial hygienists, environmental managers and safety directors.
- However, your employer may also use these sections as a reference when setting up your company's Standard

Operating Procedures, so you might want to take a quick look at this information.

- Section 11, "toxicological information" provides background toxicity information on the health hazards of the material. This includes likely routes of exposure, symptoms related to the chemical's toxicological characteristics and immediate and delayed effects of exposure.
- Section 12, "ecological information", addresses the effects that the material may have on plants, wildlife, and other aspects of the environment.
- Section 13, "disposal considerations", provides information on safe and proper waste management options.
- Section 14, "transport information", includes the chemical's UN number, proper shipping name, transport hazard classes, packing group, and any special precautions that should be taken when transporting the chemical.
- Section 15, "regulatory information", addresses any Federal, State and International regulations that may apply to the material.
- Section 16 contains other relevant information that doesn't belong in any of the previous sections as well as information on preparing and revising the SDS.

CONCLUSION

- There's a lot we need to know about the chemicals we work with. And Safety Data Sheets are where to go to find it. Let's review.
- GHS Safety Data Sheets provide information about the chemicals you work with. SDS's are organized much like an ANSI MSDS and contain much of the same type of information. The information in an SDS is presented in an "as needed" order. Some of the information from an SDS also appears on a chemical's container label.
- GHS Safety Data Sheets are a valuable tool for working with hazardous chemicals and understanding them will help you to do your job safely, so make sure you know where the SDS's are in your laboratory. And read them before you use any chemicals that you work with!

GHS SAFETY DATA SHEETS IN THE LABORATORY

ANSWERS TO THE REVIEW QUIZ

1. a

2. a

3. b

4. a

5. a

6. b

GHS SAFETY DATA SHEETS IN THE LABORATORY
REVIEW QUIZ

The following questions are provided to determine how well you understand the information presented in this program.

Name _____ **Date** _____

1. The purpose of a Safety Data Sheet is to provide a guide for the safe use of a hazardous chemical.
 - a. True
 - b. False

2. All SDS's use the same format, with information arranged in the same way.
 - a. True
 - b. False

3. SDS's look nothing like one of the versions of the ANSI Material Safety Data Sheet.
 - a. True
 - b. False

4. You will find the name, address and telephone number of the chemical's manufacturer in the first section of an SDS.
 - a. True
 - b. False

5. The SDS section on "extinguishing media" tells you what type of fire extinguisher to use for fires involving the chemical.
 - a. True
 - b. False

6. Goggles are an example of an "engineering control" that might be described in Section 8 of an SDS.
 - a. True
 - b. False