

Scientific English for chemistry

Lesson 1: Laboratory Equipment and Safety Instructions

1. Laboratory Equipment Vocabulary

Chemists use different tools in the laboratory. Here are some common pieces of lab equipment and their uses:

Beaker – A wide cylindrical glass container used to mix, heat, or measure liquids.

Test Tube – A small glass tube used to hold and heat small amounts of liquid.

Bunsen Burner – A small adjustable gas burner used to heat substances.

Graduated Cylinder – A tall, narrow container used to measure liquid volume accurately.

Pipette – A thin tube used to transfer small amounts of liquid.

Erlenmeyer Flask – A conical flask used for mixing and heating liquids.

Goggles – Protective eyewear used to prevent chemical splashes.

Lab Coat – A protective coat worn to avoid chemical spills on clothing.

Tongs – A tool used to hold or pick up hot objects.

Fume Hood – A ventilation device used to remove hazardous fumes.

2.1 Laboratory Safety Rules

Working in a lab requires following safety rules. Below are some important lab safety instructions:

Always wear safety goggles and a lab coat.

Do not eat or drink in the laboratory.

Handle chemicals carefully and read labels before use.

Dispose of chemicals in designated waste containers.

Report spills and accidents immediately to the instructor.

Do not mix chemicals unless instructed.

Wash hands after working with chemicals.

2.2 Grammar Focus: Modal Verbs for Giving Instructions

In safety instructions, we often use modal verbs to express rules, recommendations, or prohibitions.

Must – Used for strong necessity. Example: "You must wear a lab coat."

Should – Used for strong advice. Example: "You should handle acids carefully."

Can – Used for permission. Example: "You can use the Bunsen burner for heating."

Cannot – Used for prohibition. Example: "You cannot drink water in the lab."

3. Common Lab Phrases & Instructions

Below are some common lab instructions:

Measure 10 mL of water using a graduated cylinder.

Pour the solution slowly to avoid splashing.

Use a Bunsen burner to heat the sample.

Wear goggles when handling acids.

If a spill occurs, report it immediately.

End of Lesson 1

Activity 1: Match the Equipment with Its Use

Match each piece of lab equipment with its correct function.

1. ___ Beaker

2. ___ Pipette

3. ___ Erlenmeyer Flask

4. ___ Goggles

5. ___ Tongs

A. Used to transfer small amounts of liquid.

B. A protective item for the eyes.

C. A conical flask for heating liquids.

D. A wide glass container for mixing chemicals.

E. A tool for holding hot objects.

Activity 2: Fill in the Blanks (Modal Verbs)

Complete the sentences using must, should, can, cannot.

1. You _____ wear a lab coat to protect your clothes.

2. You _____ mix chemicals unless given instructions.

3. After the experiment, you _____ wash your hands.

4. You _____ dispose of waste in the correct container.

5. Students _____ enter the lab without super objects

Activity 3: Speaking Practice

1. Work with a partner. One student is the lab assistant, and the other is the student.

2. The lab assistant gives safety instructions, and the student follows them.

Example Dialogue:

Lab Assistant: "You must wear gloves before handling the chemicals."

Student: "Okay, I will wear gloves now."

4. Writing Practice: Giving Safety Instructions

Activity 4: Writing Safety Rules

Write five lab safety rules using must, should, or cannot.

Example:

1. You must wear goggles at all times in the lab.
2. You should always check the chemical label before using it.
3. You cannot eat or drink inside the laboratory.

5. Correcting Safety Mistakes

Each sentence below has one mistake. Rewrite them correctly.

Activity 5: Correct the Mistakes

1. You must wear goggles if handling water.
→ _____
2. You should drink water in the laboratory.
→ _____
3. Chemicals must store in sealed containers.
→ _____
4. Students cannot to mix random chemicals.
→ _____
5. The Bunsen burner should use carefully.
→ _____

6. Writing Task: Why Lab Safety is Important

Activity 6: Writing a Paragraph

Write a short paragraph (5-6 sentences) explaining why lab safety is important. Use at least three modal verbs (must, should, cannot).

Example Paragraph:

"In a chemistry lab, safety is very important. Students must wear protective equipment like gloves and goggles. They should follow the teacher's instructions carefully. They cannot eat or drink in the lab because chemicals may be dangerous. If an accident happens, they must report it immediately. Following these rules helps prevent injuries and keep everyone safe."