

Science and Technology Activities Resource

Safety Rules for Grade 8

Students are expected to have:

- the knowledge to use the materials, tools, and procedures involved in science and technology safely;
- the knowledge concerning the care of living things that are brought into the classroom; and
- the skills needed to perform tasks efficiently and safely.

The Ontario Curriculum Grades 1-8: Science and Technology, 2007 (Revised)

The *Science and Technology Activities Resource* calls for an active, experimental approach to learning, with all students participating regularly in hands-on activities. These hands-on activities can reinforce the learning of science concepts and promote the development of the skills of scientific investigation and technological problem solving.

Teachers, students and parents all share in the goal to **ensure safe hands-on activities** and an outcome of **students becoming self-directed learners responsible for their own and others' safety**. The following guideline highlights a listing of do's and don'ts for all elementary science and technology students.

Planning



Students should:

- consider safety when planning and designing an activity.
- be familiar with materials used and their possible hazards before carrying out an activity or experiment.
- keep the floor and aisles clean at all times.
- in general, have a teacher or an adult supervise the activity.
- be careful not to spill water on the floor and mop up any spills immediately.

Teachers/Adults should:

- consider safety when planning and designing an activity.
- use plastic instead of glassware whenever possible.
- use alcohol-filled thermometers, not mercury.
- in general, be present to supervise the activity.
- wear protective gloves and carefully dispose of broken glassware in clearly marked containers.

Safety Gear



When working in the science and technology classroom/lab, students should:

- wear safety goggles.
- use protective gloves.
- wear footwear at all times.
- tie back long hair.

When working in the science and technology classroom/lab, teachers/adults should:

- sanitize shared equipment, such as goggles, after use.

Testing



Students should:

- keep a safe distance away from stretched materials that might snap and cause injury.
- ensure structures, especially when required to support heavy loads, are designed and built to support the weight. In drop tests, soft materials should be used under the testing load.

Teachers/Adults should:

- review the testing procedures and ensure the tests do not put students at risk.
- limit the size and weight of testing objects.
- not taste anything in the lab, unless instructed by the teacher.

Tools



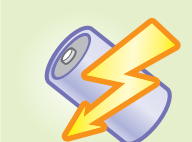
Students should:

- use tools only for the purpose for which they were designed and use them safely and correctly as instructed by the teacher.
- use utility knives and cutting boards or mats when cutting.
- use a hole punch or paper drill when making holes in paper.
- keep tools below waist level.

Teachers/Adults should:

- sharpen cutting tools to reduce the need for excessive force when cutting, which may be dangerous.
- ensure that students use a hand drill under supervision when making holes in wood and plastic.
- ensure that the students avoid using wood chisels.

Electrical Devices



Students should:

- be aware of power overload when electrical appliances such as hot plates and hair dryers are used.
- unplug devices when setting up an activity.
- not insert any object into electrical outlets.
- never run a piece of electrical equipment near water.

Teachers/Adults should:

- show students how to use electrical devices such as hot plates safely.

Heating



Students should:

- ensure all heating activities and use of chemicals are conducted in well-ventilated areas.

Teachers/Adults should:

- ensure that the students use hot plates and/or hot water baths in all heating activities. These heat sources will be appropriate as water does not have to be boiling hot in the activities.

Chemicals



Students should:

- use the correct pouring technique: when pouring a liquid into a test tube, the test tube should be held at a slight angle to allow the liquid to trickle down the inside to avoid splashes.
- use proper technique when shaking test tubes: a rubber stopper should be placed firmly in the mouth of the test tube. The test tube should be held with the fist and the thumb placed firmly over the rubber stopper. Shaking should be done gently but firmly.
- always wash their hands thoroughly with soap after the classroom/lab cleanup.

Teachers/Adults should:

- store chemicals classified as poisonous, flammable, corrosive or irritant securely to prevent unauthorized access.
- always be present to supervise the use of these chemicals.
- report any breakage or spills to the teacher.
- immediately wipe up any spills, using appropriate caution, procedures, and materials. The teacher should be informed of the spill.

Plants and Animals



Students should:

- avoid touching the eyes when handling soils, plants and animals.
- always wash their hands after handling soils, plants and animals.

Teachers/Adults should:

- be mindful of students with allergies to certain plants and animals.
- return animals taken from their natural habitat after the activity as soon as possible.

Science and Technology Activities Resource — Safety Considerations for Grade 8

At the beginning of each Investigation

- Ensure that the students:
- read the *Safety Rules* on this card.

Body Structures and Functions

INVESTIGATIONS Many investigations require the use of microscopes and glass slides. Students should use glass slides and cover slips safely. Protective gloves should be worn and broken glassware should be carefully disposed of in clearly marked containers.

INVESTIGATIONS Ensure that the students:

- 5 • use sharp knives safely.
- 7 • use sharp tweezers safely.
- 10 • use tools safely and correctly as instructed by the teacher.

Systems in Action

INVESTIGATIONS Ensure that the students:

- 2 • are aware of their surroundings when moving large or heavy objects.
- 3 • use tools safely and correctly as instructed by the teacher.
- limit the size and weight of testing objects.

INVESTIGATIONS

- 4 • limit the size and weight of testing objects.
- 5 • limit the size and weight of testing objects.
- 9 • cut and remove the cord and plugs from the electrical product selected to explore in the activity. Electrical devices should never be connected with their casings removed.

Fluids

INVESTIGATIONS Denatured ethanol is used in many investigations. It is poisonous and drinking it may cause blindness or death. Students should not taste any liquids used in the activities unless instructed by the teacher. Many investigations require the use of beakers, test tubes, and graduated cylinders. Check the glass items for chips and

INVESTIGATIONS cracks before use. Protective gloves should be worn and broken glassware should be carefully disposed of in clearly marked containers. Ensure that the students:

- 4 • are careful when handling hot liquids.
- 8-10 • use tools safely and correctly as instructed by the teacher.

Water Systems

INVESTIGATIONS Ensure that the students:

- 1 • check the glass items for chips and cracks before use. Protective gloves should be worn and broken glassware should be carefully disposed of in clearly marked containers.
- 3 • carry hot water in a closed container such as a kettle or thermos flask and exercise care when transferring the hot water into the dishpan to avoid spills.

INVESTIGATIONS

- 6 • use silicone caulking only under the supervision of a teacher or an adult. Silicone caulking should be kept out of the reach of children.
- use hot plates safely. The hot plate takes a long time to cool down after the activity is finished.
- 9 • limit the size and weight of testing objects.