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FLINN SCIENTIFIC, INC
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Safety Guidelines for Chemical Demonstrations

Guidelines from the American Chemical Society — Division of Chemical Education

Chemical demonstrators must:

1. Know the properties of the chemicals and chemical reactions involved in all demonstrations presented.
2. Comply with all local rules and regulations.
3. Wear appropriate eye protection for all chemical demonstrations.
4. Warn the members of the audience to cover their ears whenever a loud noise is anticipated.
5. Plan the demonstration so that harmful quantities of noxious gases (e.g., NO_2, SO_2, H_2S) do not enter the local air supply.
6. Provide safety shield protection whenever there is the slightest possibility that a container, its fragments, or its contents could be propelled with sufficient force to cause personal injury.
7. Arrange to have a fire extinguisher at hand whenever the slightest possibility of fire exists.
8. Not taste or encourage spectators to taste any nonfood substances.
9. Not use demonstrations in which parts of the human body are placed in danger (such as placing dry ice in the mouth or dipping hands into liquid nitrogen).
10. Not use "open" containers of volatile, toxic substances (e.g., benzene, CCl_4, CS_2, formaldehyde) without adequate ventilation as provided by fume hoods.
11. Provide written procedure, hazard, and disposal information for each demonstration whenever the audience is encouraged to repeat the demonstration.
12. Arrange for appropriate waste containers for and subsequent disposal of materials harmful to the environment.

Additional safety guidelines from Flinn Scientific Inc.

1. Always practice all demonstrations before performing them in front of students. A demonstration should only be attempted after all the potential pitfalls and hazards have been identified.
2. Never attempt a demonstration that will place you or your students at risk.
3. Have students wear safety goggles or use a safety shield if there is the slightest possibility that a container, its fragments or its contents could be propelled with sufficient force to cause personal injury. A good rule of thumb is if heat or pressure are involved, audience protection is required.
4. If heat is involved in the demonstration, make sure all glassware is borosilicate (e.g., Pyrex®) glass and check for chips and cracks before using.
5. If a flammable liquid is used in a demonstration, make sure to cap all reagent bottles after dispensing the appropriate quantities and be aware of heat sources and flammable vapors. Never repeat a demonstration using flammable liquids until all containers and surfaces are cool to the touch.
6. Use fresh chemicals and clean glassware to prevent possible contamination.
7. All demonstrations should have an educational objective. If the demonstration uses toxic chemicals or a potentially hazardous procedure, review the demonstration again and be sure it has eductional benefits.

8. Always ensure that electrical devices are properly grounded and inspect every electrical circuit before turning the current on.

Flinn Demonstrations Have Been Tested for Increased Safety

Be assured of performing safe and educational chemical demonstrations by using Flinn Scientific Chemical Demonstration kits. Flinn Scientific has over 100 demonstration kits that are guaranteed to excite and energize your students and bring the magic of chemistry into your classroom. Each Flinn Chemical Demonstration kit is convenient, easy-to-use, and will save you valuable time with these features:

- **Safe —** Flinn chemical demonstrations have been designed for safety. All safety precautions are clearly explained. In addition, there is no concern with old chemicals, chemical storage problems, or future chemical disposal problems with a Flinn demonstration kit. The correct amount of chemicals needed to conduct each demonstration seven times is provided.
- **Tested —** Each demonstration kit includes "Teacher Demonstration Notes," written by the Flinn technical staff. The demonstration notes explain what the demonstration does, the procedure to be followed, what reactions will occur, tips on how to "pull off" a demonstration your students will never forget, along with complete safety and disposal information.
- **Guaranteed to Work —** Many times demonstration failures are the result of old, poor quality chemicals. Flinn guarantees your success because fresh, new chemicals will always be used.
- **Fast and Easy —** Chemicals and chemical solutions are already prepared. All you need to do is open the box, dispense and measure the quantity of chemicals required, and conduct the demonstration. All the equipment that is needed (beakers, graduated cylinders, pipets, etc.) should be found in a typical high school chemistry laboratory. Any "specialized" equipment is included.
- **Affordable —** No longer will large quantities of chemicals need to be purchased only to have them on your shelves for decades. Flinn demonstration kits provide just the right amount of chemicals needed to conduct the demonstration seven times.
- **Seven Times per Kit —** Flinn has designed their exciting demonstrations specifically for your chemistry students, with enough materials provided in the kit to perform the demonstration seven times. Once to practice, five times to perform with your students, and once to cover "Murphy's Law."

Look in the chemistry section of a current *Flinn Scientific Catalog/Reference Manual* for the current selection of exciting Flinn Chemical Demonstration Kits.

