SCIENCE SAFETY
Grades K - 5

1.0 PURPOSE

It is the goal of Pitt County Schools to ensure that teachers and students have science instruction free from unnecessary injury or health problems and to meet all pertinent safety and environmental regulations.

This program is intended to establish appropriate procedures and protective measures for Pitt County Schools teachers and students in all science classes.

2.0 SCOPE

Coverage includes all Pitt County Schools K-5 teachers conducting science experiments/labs.

3.0 RESPONSIBILITIES

3.1 Teachers

a) Responsible for recognizing unsafe conditions and eliminating or reporting such conditions to the Principal.

b) Serve as a model for safe classroom procedures.

c) Instruct students about the potential hazard(s) of an activity and the appropriate procedures for safely completing the activity.

d) Ensure that all equipment used by students is functioning properly.

e) Ensure that student activities are appropriate for their background and maturity and that safety equipment is available, if needed.

f) Utilize appropriate classroom management techniques to reduce the risk of student exposure to potential hazards.

g) Ensure that all students follow instructions, utilize appropriate procedures, and practice safe behavior.

h) Ensure that students are not allowed to perform unsupervised demonstrations.

i) Maintain a current inventory of existing chemicals available, including Safety Data Sheets (SDS's) for their respective classrooms.

4.0 TRAINING REQUIRED

4.1 All teachers conducting science experiments/labs and affected staff must read and understand this instruction.

4.2 At the beginning of each year, the Science Curriculum Specialist will provide an orientation about the Science Safety Program to teachers who will be teaching science. The orientation will include the following:

4.2.1 Distribution of the written Science Safety Program.

4.2.2 Locations of the chemical inventory and Safety Data Sheets (SDS's) at the school.

4.2.3 Procedure for reporting accidents.

4.2.4 Procedure for reporting unsafe conditions.

4.2.5 Procedure for acquiring and disposing of chemicals.

4.2.6 Instruction on how to read the Safety Data Sheets (SDS) to obtain appropriate hazard information.

5.0 AVAILABILITY

Pitt County Schools Science Safety Program will be readily available to employees. A copy of the Science Safety Program can be seen on Pitt County Schools' website.

6.0 CHEMICAL HAZARD CONTROL

All chemicals must be used with caution. Some chemicals may be explosive, combustible, poisonous, caustic, or corrosive, and exposure to may cause acute (immediate) or chronic (long term) health problems.

6.1 Chemical Purchasing

6.1.1 Prior to ordering or buying any chemical, the need should be verified, based on the desired use of the chemical. Amounts ordered should not exceed what is expected to be used in one year.

6.1.2 When ordering or buying a chemical be sure to request the latest SDS from the vendor.

6.1.3 Before new chemicals are ordered or used, teachers should anticipate the chemical's hazards, handling, proper storage, and disposal.

6.2 Chemical Labeling

6.2.1 It is the responsibility of the teacher to ensure that all chemicals and any container that contains a chemical are properly labeled. Unknown chemicals are expensive to sample and dispose of.

6.2.2 All labels must indicate the name of the material, contact information for the manufacturer, precautionary statements, and all hazard warnings appropriate for employee safety.

6.2.3 Labels shall not be removed or altered.

6.2.4 Additional labels may be affixed, but they should not obscure the original label.

6.3 Chemical Usage – General Procedures

6.3.1 Chemicals that are caustic or corrosive should be used only if an eyewash fountain is available and functioning properly. Highly caustic or corrosive chemicals are not appropriate for K-5 usage.

6.3.2 Teachers should never work alone when mixing chemicals.

6.3.3 Do not begin a lab if safety equipment is not available or malfunctioning.

6.3.4 Eating and drinking are prohibited when conducting science experiments.

6.3.5 Avoid inhalation of chemicals. Do not sniff to test chemicals.

6.3.6 Do not taste chemicals for any purpose.

6.3.7 Study the chemical's SDS; know the symptoms of exposure for the chemical being used and the precautions necessary to prevent exposure.

6.4 Allergens and Sensitizers

A variety of allergens may be encountered in the science curriculum. Exposure of skin or the respiratory tract to these agents may cause dermatitis, asthma, or other responses. The special problem with allergic responses is one of sensitization, and difficulties arise because the cause of the allergic response may not be readily identifiable. Usually there is no physical reaction at the time of initial exposure, but this is the point where sensitization occurs. The reaction takes place upon a subsequent exposure to the allergen.

6.5 Mercury

6.5.1 Per the School Children's Health Act of 2006, Pitt County Schools does not allow the usage or storage of any mercury or mercury containing devices.

6.5.2 To have mercury-containing devices properly disposed of, contact the Environmental Specialist.

7.0 FIRE PREVENTION AND EMERGENCY RESPONSE

7.1 All aisles and exits must be clear at all times.

7.2 If a fire is not manageable then evacuate and leave the firefighting to the emergency responders. Use the following steps if the fire is not manageable:

- Activate the fire alarm and evacuate the area.
- Notify essential school administration and obtain medical assistance as soon as possible.

8.0 ANIMALS

8.1 Animals must be fed and their facilities cleaned at appropriate intervals. This schedule must be maintained on weekends and school holidays.

8.2 Hands should be washed and sterilized after any contact with an animal or its environment.

8.3 Access to animal care facilities should be limited to those individuals directly responsible for the animals.

8.4 Appropriate protective equipment such as rubber gloves should be worn when handling animals.

8.5 The following animals should not be allowed in schools:

- Wild animals
- Poisonous animals
- Stray animals
- Baby chickens and ducks
- Aggressive animals
- Reptiles and amphibians
- (Not recommended for children under 12)

8.6 Teachers should check with students to ensure that the animals are not an allergen.

8.7 Birds should not be allowed to fly free in a classroom.

9.0 PLANTS

9.1 Hands should be washed after contact with plants.

9.2 Do not use plants that present hazards from oils (ex. poison ivy), hazards if eaten (ex. mushrooms), or hazards from saps.

9.3 Teachers should check with students to ensure that the plants are not an allergen.

10.0 CHEMICAL DISPOSAL

10.1 Chemicals that are no longer used in the instructional program or pose a hazard should be removed from the school.

10.2 Chemicals should not be poured in drains at Falkland Elementary or Northwest Elementary. These schools are connected to septic systems (wastewater field systems) and some chemicals can damage the septic system process or the environment.

11.0 DEFINITIONS

Acute Health Effects – Acute health effects result from a single exposure to a chemical. (Ex. Hydrogen cyanide is a highly toxic substance; acute exposure at relatively low doses can result in death)

Allergen – An agent capable of producing an immunologic reaction.

ANSI – American National Standards Institute. ANSI is an organization that develops national consensus standards for a wide variety of devices and procedures.

Biohazard – Infectious agents that present a risk or potential risk to the health of humans or other animals, either directly through infection or indirectly through damage to the environment.

Carcinogen – A substance that may cause cancer in animals or humans.

Chronic Health Effects – Chronic health effects result from long-term exposure to a substance. (Ex. Liver cancer from inhaling low levels of benzene over several years)

Corrosive – A substance that, according to the DOT, causes visible destruction or permanent changes in human skin tissue at the site of contact or is highly corrosive to steel.

EPA – Environmental Protection Agency. The federal agency responsible for administration of laws to control and/or reduce pollution of air, water, and land systems.

Explosive – A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Flammable Liquid

Class IA – Flash point less than 73° Fahrenheit boiling point less than 100° Fahrenheit. (Ex. Petroleum ether and Pentane)

Class IB – Flash point less than 73° Fahrenheit, boiling point equal to or greater than 100° Fahrenheit. (Ex. Gasoline and Toluene)

Class IC – Flash point equal to or greater than 73° Fahrenheit, but less than 100° Fahrenheit. (Ex. Xylene)

Flammable Solid – A non-explosive material that is capable of producing fire as a result of friction or heat retained from production.

GFCI – Ground Fault Circuit Interrupter. Used to prevent injury from contact with electrical equipment by shutting off power before damage caused by a ground fault can occur. Required in locations where one might be in contact with a grounded surface and an electrical source, particularly adjacent to a water supply.

Hazardous Chemical – Any chemical that presents a physical or health hazard to an employee or student.

HMIS – Hazardous Material Information System

Incompatible – The term applied to two substances to indicate that one material cannot be mixed with the other without the possibility of a dangerous reaction.

NC DPI – North Carolina Department of Public Instruction

NEC – National Electric Code

NFPA – National Fire Protection Association. An organization whose aims are to promote and improve fire protection and prevention.

OSHA – Occupational Safety and Health Administration. A federal agency under the Department of Labor that publishes and enforces safety and health regulations.

Oxidizer – A chemical other than a blasting agent or explosive, that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Reactive – A chemical which as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

Safety Data Sheet (SDS) – A document which describes pertinent information related to the use of a chemical product, including its physical and health hazards, the permissible exposure level, precautions for safe handling, spill cleanup, emergency and first aid procedures, personal protective equipment needs, and the name and telephone number of who can be contacted to obtain emergency procedures or other related information.

Systemic – Spread throughout the body and affecting many or all body systems or organs.

Toxicity – The potential of a substance to exert a harmful effect on humans or animals and a description of the effects and conditions or concentration under which the effect takes place.

Water Reactive – A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

12.0 REFERENCE DOCUMENTS

National Fire Protection Association. **NFPA 10 Standard for Portable Fire Extinguishers**.

National Fire Protection Association. **NFPA 30 Flammable and Combustible Liquids Code**.

North Carolina Occupational Safety and Health Administration. **Occupational Safety and Health Standards for General Industry:** *29 CFR 1910.106, Flammable/Combustible Liquids.* Raleigh, NC: N.C. Department of Labor.

North Carolina Occupational Safety and Health Administration. **Occupational Safety and Health Standards for General Industry:** *29 CFR 1910 Subpart I, PPE Standards.* Raleigh, NC: N.C. Department of Labor.

North Carolina Occupational Safety and Health Administration. **Occupational Safety and Health Standards for General Industry:** *29 CFR 1910.151, Medical and First Aid.* Raleigh, NC: N.C. Department of Labor.

North Carolina Occupational Safety and Health Administration. **Occupational Safety and Health Standards for General Industry:** *29 CFR 1910.157, Portable Fire Extinguishers.* Raleigh, NC: N.C. Department of Labor.

North Carolina Occupational Safety and Health Administration. **Occupational Safety and Health Standards for General Industry:** *29 CFR 1910.1200, Hazard Communication.* Raleigh, NC: N.C. Department of Labor.

North Carolina Occupational Safety and Health Administration. **Occupational Safety and Health Standards for General Industry:** *29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories.* Raleigh, NC: N.C. Department of Labor.