Lesson Title	Safety First!
Length of Lesson	50 min class period
Created By	Kendra Wright
Subject	Science
Grade Level	7th grade
State Standards	Inquiry: 1b, 1c, 2b Life Science: 3b
DOK Level	DOK 1, DOK 2
DOK Application	Recall, Skill/Concept
National Standards	5-8th grade: A (Inquiry), B (Physical Science)
Graduate Research Element	In the lab, I often work with dangerous chemicals and microorganisms. Laboratory safety is essential for my livelihood and research.

Student Learning Goal

MS 7th grade

1b. Discriminate among observations, inferences, and predictions. (DOK 1)
1c. Collect and display data using simple tools and resources to compare information (using standard, metric, and non-standard measurement). (DOK 2)
2b. Categorize types of chemical changes, including synthesis and decomposition reactions, and classify acids and bases using the pH scale and indicators. (DOK 2)

National Science Education Standards 5-8th grade

Content Standard A: Use appropriate tools and techniques
Content Standard B: Properties and changes in matter

Materials Needed (supplies, hand-outs, resources):

Beakers, basic and acidic solutions, phenolphthalein, cow eye, money, alcohol, water, broken glass, tasting powders such as sugar

Lesson Performance Task/Assessment:

Students will work through several lab safety stations, each of which pose a lab safety problem. Students will discuss what is wrong with each situation and provide solutions for mitigation of the hazards associated with each one. After working through the stations as a class, the students will be divided into groups of 4 and given the task of creating a rap, song, or poem about lab safety. The goal of the rap, song, or poem is to get the students to consider lab safety and lab safety situations. The students should have fun in the creation process and performance should help in retention.

Lesson Relevance to Performance Task and Students:

Lab safety is critical to the well-being of students, teachers, and classroom. Students will be presented with lab safety scenarios for which they have to make assessments and

corrections. These activities will prepare students for working in a lab setting and teach them to avoid dangerous lab practices. After working through the stations, students will write and perform raps, songs, and/or poems to demonstrate what they have learned about lab safety.

Anticipatory Set/Capture Interest:
Three demonstrations will be used to capture the students' interest in lab safety.

1) **Phenolphthalein acid/base indicator** (Turning water into grape juice). This sort of chemistry "magic" demonstrates how something might look like water but actually be dangerous acid, base, or other chemical.

Instructions:

a. Fill one flask with water and a few drops of phenolphthalein (5-10 drops). Make sure solution remains clear.
b. Sprinkle a coat of sodium carbonate in a second flask. Make the coating as invisible to the class as possible.
c. Pour the water/phenolphthalein solution into the sodium carbonate flask. The new solution should turn bright pink because it is now basic.
d. Have a third glass with vinegar. Pour the vinegar into the pink solution. When the solution turns acidic, the pink will vanish and return to clear liquid.
e. This provides a good introduction into never trusting that clear liquids are just water. Therefore, never drink or touch chemicals without asking permission and knowing what they are.

2) **Burning money demonstration**

Instructions:

a. Soak money in a half alcohol, half water solution.
b. Light the money on fire. Alcohol will burn, but water will keep the money from burning up.)
c. This provides a good introduction into fire safety.

3) **Cow eye acid demonstration**

Instructions:

a. Place a cow eye in a glass petri dish.
b. Add a few drops of concentrated sulfuric acid to the surface of the eye and watch it dissolve.
c. Eye will have white "blind" patches in a few seconds. Later, eye will be very dissolved. This is a good explanation as to why we wear goggles.

Guided Practice:
For certain lab practices such as wafting, the practice will be demonstrated and then repeated by the student. Teacher will give instructions and explain expectations of what students are to do at each lab station.

Independent Practice:
Students will be getting an overview of lab safety practices, which will be independently practiced in every lab activity. Students are expected to listen to teacher's overview of lab safety at each station, identify problems at station, and answer lab safety questions posed by teacher.

Stations:

1) Dirty lab station and the importance of keeping a work station clean
2) Chemical spills
    a. Don't touch!
    b. Ask how to clean up
    c. If on skin, cloths, eyes, etc., immediately wash off. (Demonstrate eye wash and shower)
3) Fire
    a. Blanket
    b. Extinguisher
4) Wafting and mixing chemicals

Remediation and/or Enrichment:
Remediation will follow student IEP. For enrichment, students will be given the assignment to write a rap, song, or poem about lab safety.

Check(s) for Understanding:
At the lab safety stations, students will be asked:
1) What is wrong in the situations?
2) How could the situation be prevented?
3) What should you do in the hazardous situation?

Closure:
Students will perform their lab safety raps, songs, or poems. Teacher will explain how lab safety relates to her individual research.

Possible Alternate Subject Integrations:
Phenolphthalein indicator demonstration can also be used to explain acid and bases.

Teacher Notes: Lesson is to be fun and interactive.