



Lesson Title: Firefighter Chemistry

Grade Level: 2nd-5th

Purpose: Teach age appropriate skills for fire and life safety while teaching to statewide learning standards.

Materials Needed (Optional):

For Demonstration:

- pH Scale pictures
- Containment Zone Pictures

For Experiment

- pH experiment supplies
- Water Changing supplies

Standards:

Next Generation Science Standards:

Science:

PS1.A: Structure and Properties of Matter

Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)

PS1.B: Chemical Reactions

When two or more different substances are mixed, a new substance with different properties may be formed.

Washington State Health and PE Standards

Health:

HI.Sa1.Ka Identify safety hazards in the home.

Objectives: The students will demonstrate understanding of:

- Hazardous Materials
- Detection
- Containment
- Neutralization
- Prevention/Protection

Safety:

- Hazards in the Home
- Poison and Burn Prevention

Vocabulary:

- **Hazardous Materials-** dangerous materials or poisons
- **Neutralization-** making something neither negative or positive
- **Acid-** a sour liquid that can burn
- **Base-** a slippery, bitter liquid that can burn
- **pH-** a way to measure if a liquid is safe by seeing how much hydrogen is in it.



Time: 35-45 minutes for presentation and demonstration.

Instructional Content:

Use this bulleted list to guide you and keep you on track and meeting all objectives for lesson. Everyone has their own style for teaching, the most important thing is the make it fun and engaging for the kids.

• Warm up Activities: (5-7 Minutes)

- **Bell Ringer:**
 - Chemistry Bell Ringer
 - Have students complete the top portion of the Chemistry Bell Ringer.
- **Entrance Ticket:**
 - Ask students to try to define:
 - Hazardous Materials, Acid, and Base
- **Mini KWL:**
 - Ask students to individually make a mini KWL chart about Acids and Bases.
 - K-What do you already know about Acids and Bases?
 - W-What do I want to know about Acids and Bases?

• Video:

- Follow the link:
 - http://www.snofire7.org/preparedness_education/home_education_lessons/index.cfm?video_id=8&omo=1_1
 - Watch Video:
 - Run time: 25:27
- Have students fill out the worksheet as they watch.

• Closure Activities: (5-7 Minutes)

- **Chemistry Bell Ringer:**
 - Have students complete the exit ticket activity on the Chemistry Bell Ringer Worksheet.
 - **Exit Ticket:** On the bell ringer activity at the top of the first page, see if you connected the terms with the correct picture. If not, draw a line in a different color to the correct picture.
- **Mini KWL:**
 - Ask students to finish the last column for the KWL chart about Acids and Bases.
 - L-What did you learn?
- **Exit Ticket:**
 - Ask students to use what they learned to add more detail to the definitions they wrote at the beginning of class for the following words:
 - Hazardous Materials, Acid, and Base

Homework and Enrichment Activities:

- Acids and Bases Homework
- Mr. Yuk Home Checklist Homework
- Mr. Yuk Word Search Homework
- Volcano Experiment

Handouts:

- Firefighter Chemistry Bell Ringer
- KWL Chart



NAME: _____

DATE: _____



FIREFIGHTER CHEMISTRY

BELL RINGER

Directions: Answer the following questions before watching the video. If you don't know the answer, use your best guess:

Draw a red line from the the vocabulary word to the picture that best matches with the word.

*Hint: some words match with two pictures.

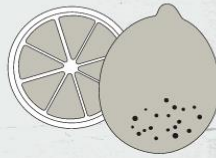
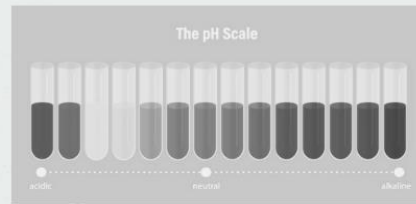
HAZMAT

BASES

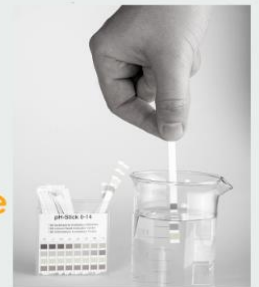
DETECTION

PH

ACIDS



Vinegar



Directions: While watching the video, fill in the blanks and answer the questions:

Vocabulary:

_____ refers to hazardous materials, or materials that are really dangerous.

List two types of hazardous materials:

- 1.
- 2.



Vocabulary:

The process of making something neither positive nor negative is _____.

Some examples of _____ are vinegar and lemons. These are generally sour.

Some examples of _____ are cleaning products like soap, drain cleaner and bleach. These are generally slippery.

The _____ scale shows how acidic or how basic a liquid is.

Hypothesis for pH Experiment: I think...

Hypothesis for the Magic Trick: I think

Describe three ways the Hazmat team stays safe when dealing with hazardous materials:

1. _____
2. _____
3. _____

How can you stay safe from Hazardous Materials?

Exit Ticket: On the bell ringer activity at the top of the first page, see if you connected the terms with the correct picture. If not, draw a line in a different color to the correct picture.



MINI KWL CHART



NAME OF STUDENT:

SUBJECT:

LESSON:

**WHAT I
KNOW:**

**WHAT I
WANT TO
KNOW:**

**WHAT I
LEARNED:**

