

SEE WHAT PHYSICAL SCIENCE IS ALL ABOUT 4-6

MATTER - Section I:

Safety

- Good safety practices: [lesson]
 1. Use a lab coat when necessary. These can be found in thrift stores and really have value in the classroom (role playing, etc.).
 2. Discuss safety. Tasting, touching, smelling unknown chemicals; unauthorized experiments.
 3. Show safety goggles. Discuss their many uses.
- An unauthorized experiment: [demonstration]

clean test tube	propane torch (or bunsen burner)
test tube holder	safety goggles
wood splints (or popsicle stick)	potassium chlorate ($KClO_3$)
¼ teaspoon (aluminum)	(labeled "Mystery Powder")
test tube brush	metal pan

Caution: Before attempting this yourself, check local fire regulations. This demonstration will set off smoke detectors. Elementary teachers may prefer to borrow (from the junior or senior high) only enough chemical to use that day. Store only small quantities (30gms or 1 oz. is sufficient for 20 demonstrations). Store in a locked cabinet. Do not grind this chemical in a mortar and pestle. Potassium Chlorate is stable under ordinary conditions of use and storage. It is not combustible but, when heated it releases oxygen (it is an "oxidizer"). Oxygen, in turn, promotes rapid combustion of flammable materials. Skin contact may cause redness, irritation and pain. If exposed, wash with soap and water.

1.
 - a. Read caution label to class, "... This chemical should not come in contact with anything organic." Discuss "organic" and "inorganic."
 - b. "Is it okay to put some in a glass test tube? Can we use an aluminum spoon? (Have you heard of an aluminum tree? Where does aluminum come from?)"
2. Place ¼ teaspoon or 1 ½ grams of $KClO_3$ in a tube. Move the rest of the $KClO_3$ sufficiently away.
3. Put on safety goggles and gently heat chemical over the burner.
Note: Test tube is always pointed away from people.
4. The powder will quickly melt to a liquid. Do not boil. Once it has melted, remove test tube from flame and drop in two wood splints or popsicle stick (present this as a mischievous student doing an unauthorized experiment).
5. Hold test tube upright over a metal pan for safety. The hot chemical will oxidize the wood. This also dramatically demonstrates a chemical change.
6. Once cooled, the test tube can be cleaned with water and a test tube brush.

The atom

- Structure of the atom: [lesson]
 1. Proton: in nucleus, has a plus electric charge.
Neutron: in nucleus, has no electric charge.
Electron: orbits around the outside, has a negative electric charge.
 2. Each atom has equal numbers of protons (+) and electrons (-) so that the net charge on the atom is zero ("+'s" and "- 's" cancel).