Lesson Title	Intro into Chemical and Physical Properties
Length of Lesson	One (50 minute) class period
Created By	Bo Cherry
Subject	General Science
Grade Level	7th grade
State Standards	7th: 1 d (Inquiry); 2 a (Physical Science)
DOK Level	DOK 3
DOK Application	Prove, Compare, Classify
National Standards	5-8: A (Inquiry); B (Physical Science)
Graduate Research Element	Chemical and physical properties are key in understanding geologic features and processes. Also, a basic knowledge of chemistry is crucial to understanding water quality.

Student Learning Goal:
MS 7th Grade:
(Inquiry) 1 (d) Organize data in tables and graphs and analyze data to construct explanations and draw conclusions.; (Physical Science) 2 (a) Identify patterns (e.g., atomic mass, increasing atomic numbers) and common characteristics (metals, nonmetals, gasses) of elements found in the periodic table of elements.

National Science Education Standards of Content 5-8:
(Inquiry - A) Abilities necessary to do scientific inquiry; Think critically and logically to make the relationships between evidence and explanations; (Physical Science - B) Properties and changes of properties in matter.

Materials Needed (supplies, hand-outs, resources)
Computer, Projecter, Powerpoint (INSPIRE_PP_Cherry_08.31.11), play-doh, rubber band, paper, foil, matches, baking soda, vinegar, beaker, hard-boiled egg, rusty pipe or metal object, candle, ice cube

Lesson Performance Task/Assessment:
This lesson focuses on chemical and physical changes of matter. Students will be reviewed on the various types of matter before discussing the differences in a chemical or physical change. Students will be expected to take detailed notes which follow the powerpoint (INSPIRE_PP_Cherry_08.31.11). Demonstrations will supplement the lecture and during these demonstrations, students will be asked to make a table to record their data. The instructor will then show various ways in which chemical and/or physical

changes occur. The table format should have at least three headings: Demonstration, Physical/Chemical Change, and Comments. The demonstration section should be a short description of what the instructor is showing the class. Then, the students choose whether the demonstration is showing a physical or chemical change. Lastly, the comments section is used for the students to describe why the demonstration is either a chemical or physical change (i.e. cooking a marshmallow/chemical change/because new substances are created). A list of the demonstrations and how to perform each one can be found in the file INSPIRE_Cherry_INFO_08.31.11. After the demonstrations, students will be handed cards with various chemical or physical changes written on each. The class will go around the classroom discussing each card to decide whether they are physical or chemical changes. As they go around the room, students will record their predictions on their paper. After all students have discussed their cards, the instructor will go around the room again and discuss the correct answers and leading discussion about each example. A list of these cards is also found in the file INSPIRE_Cherry_INFO_08.31.11.

Lesson Relevance to Performance Task and Students:
This lesson is a great introduction to chemistry because it gets students thinking about matter in a different way. Students will see things happening around them and be able to characterize them as chemical of physical changes.

Anticipatory Set/Capture Interest:
The demonstrations at the beginning of the class will serve as the anticipatory set. Students will be interested in the subject because many of the demonstrations will be exciting.

Guided Practice:
The first half of this lesson will be guided because the instructor will lead the students through each example during the demonstration time. Also, after the students have gone through all of their cards the first time, the instructor will lead the class through all the cards with explanations.

Independent Practice:
Students will have an opportunity to practice on their own by writing what they think each card is representing (i.e. physical or chemical change).

Remediation and/or Enrichment:
Remediation- Individual IEP; work in groups rather than individually
Enrichment - Have students find more examples of physical and chemical changes that they see at home.

Check(s) for Understanding:
Throughout the class, students will have the opportunity to give their answers as the class goes over each card. This will allow the instructor to check for understanding in each student by asking them to give their answers.

Closure:
Question 1: Why is freezing liquid water to create ice NOT a chemical change?

Question 2: List three different types of chemical properties. Physical properties?

Possible Alternate Subject Integrations:
Chemistry, Physical Science

Teacher Notes:
None