**Instructor:** Susan M. Santoriello
**School District:** East Brunswick
**Lesson Title:** What Do You Know About Radioactivity?
**Grades:** 6,7,8,9,10,11,12
**Subject:** Science
**Overview:** This activity can be used as a way to introduce and/or test student knowledge of radioactivity (what it is, where it comes from and how it affects our lives).
**Objectives:**

1. The students will use the Internet to determine if a given set of statements regarding radioactivity are true or false.
2. The student will create electric circuit cards using the given statements that will respond by lighting a light bulb or setting off a buzzer when another person correctly responds (T or F) to the radioactivity statement.

**Materials and Resources:**

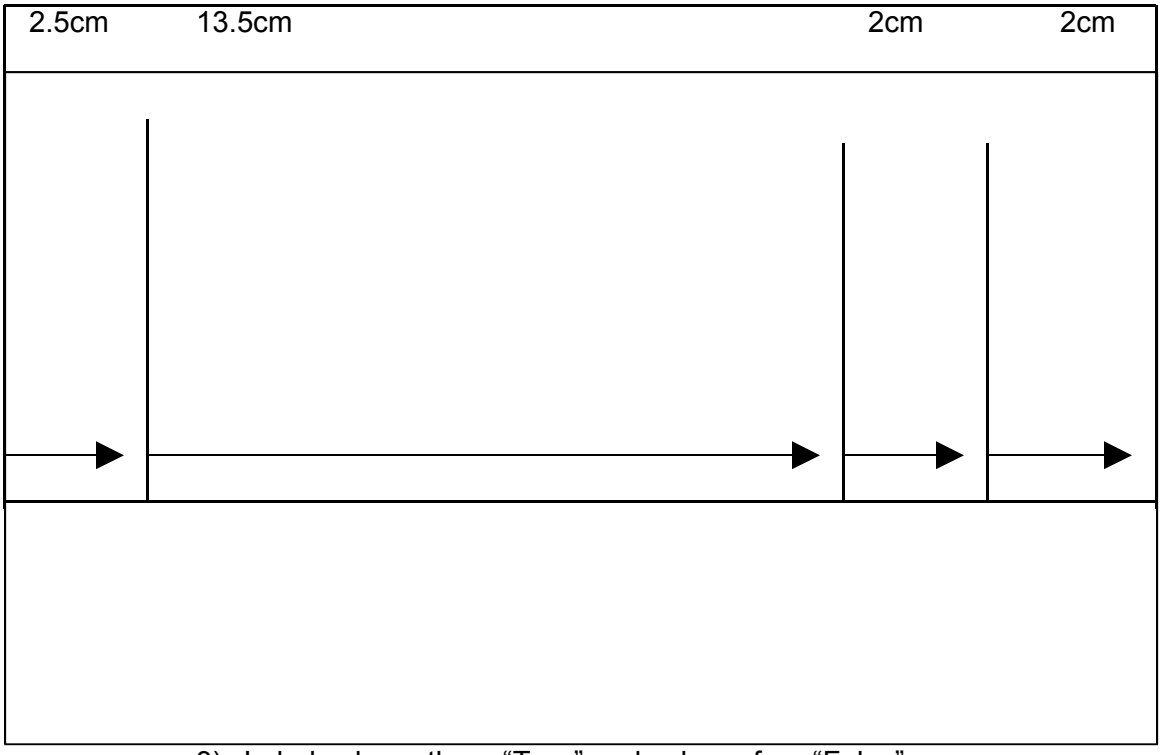
- 20 – 25 statements regarding radioactivity (statements should be both true and false) depending upon the size of your class
- Package of 5 x 8 index cards
- Brass paper fasteners (15 per card)
- Electric hook up wire (5 – 20 cm pieces with the ends stripped of insulation)
- Masking tape
- Clip leads with alligator clips (3 per group)
- "D" cell batteries (2 per group)
- Battery holders (nice but not necessary) (1 per group)
- Miniature lamp holder and flashlight lamp or buzzer (1 per group)
- Wire cutters and/or scissors

**Activity:**
**Day 1**:

1. Divide class into groups of 4 or 5 depending on the size of your class.
2. Assign each group 5 statements regarding radioactivity and provide them with time in the media center or computer lab to determine if each of the statements are True or False.
3. Each group should turn in one sheet paper with their answers. Each statement should be answered as true or false and be accompanied by a brief explanation (1 – 2 sentences). This should be turned in along with the electric circuit card that is to be completed during the next class period.

**Day 2**:

1. Provide each group with a zip-lock baggie containing an index card, 15 brass fasteners, hook up wire, 3 clip leads, 2 batteries and a holder, the lamp holder and lamp or buzzer.
2. Have an ample supply of masking tape and wire cutters or scissors available.
3. Instruct students to do the following:
    1) Title the index card (using the first two rows) “What do you know about Radioactivity?”
    2) Divide the index card into 4 columns below the title according to the following dimensions.




    3) Label column three “True” and column four “False”.
    4) In column two the students should neatly write out each statement - numbering them and skipping lines between each statement.
    5) In the first column, in line with #1, the students should push a brass fastener through the index card.
    6) Using a piece of hook up wire, the students should attach one stripped end of the wire to one side of the brass fastener. When tightly attached so only wire is touching the metal, spread the fastener open so the wire does not move.
    7) Push another brass fastener through the “true” column and the “false” columns next to statement #1.
    8) Attach the opposite end of the wire to the correct answer for the statement – spreading the fasteners open to keep them in place. Be careful not to let any of the brass fasteners touch each other.
    9) Repeat steps 5 – 8 for each of the remaining statements.
    10) Set up a simple series circuit using the batteries, clip leads and lamp or buzzer.

11) Test your circuit card to see if it works by touching one clip lead to the brass fastener next to a statement number (first column) and the other to the correct answer (T or F) for that statement. (The light should light or the buzzer should buzz).
12) If all wires are correctly connected and no brass fasteners are touching, cover all wires and fasteners with masking tape from left to right across the index card.

4. At the end of Day 2, collect each group's cards, circuits and left over materials for grading.

**Day 3**:

1. Put out each group's cards and series circuits in various locations around the room.
2. Allow groups to move around from station to station attempting to correctly answer the statements on each card.
3. Once each group has had a chance to try each card, bring the class back together for discussion. Talk about the % of correct answers each group had, where in general did they gain the information they had about radioactivity (before doing this activity). Generally, discuss the types of information they will learn about in the Nuclear Unit that is to follow.