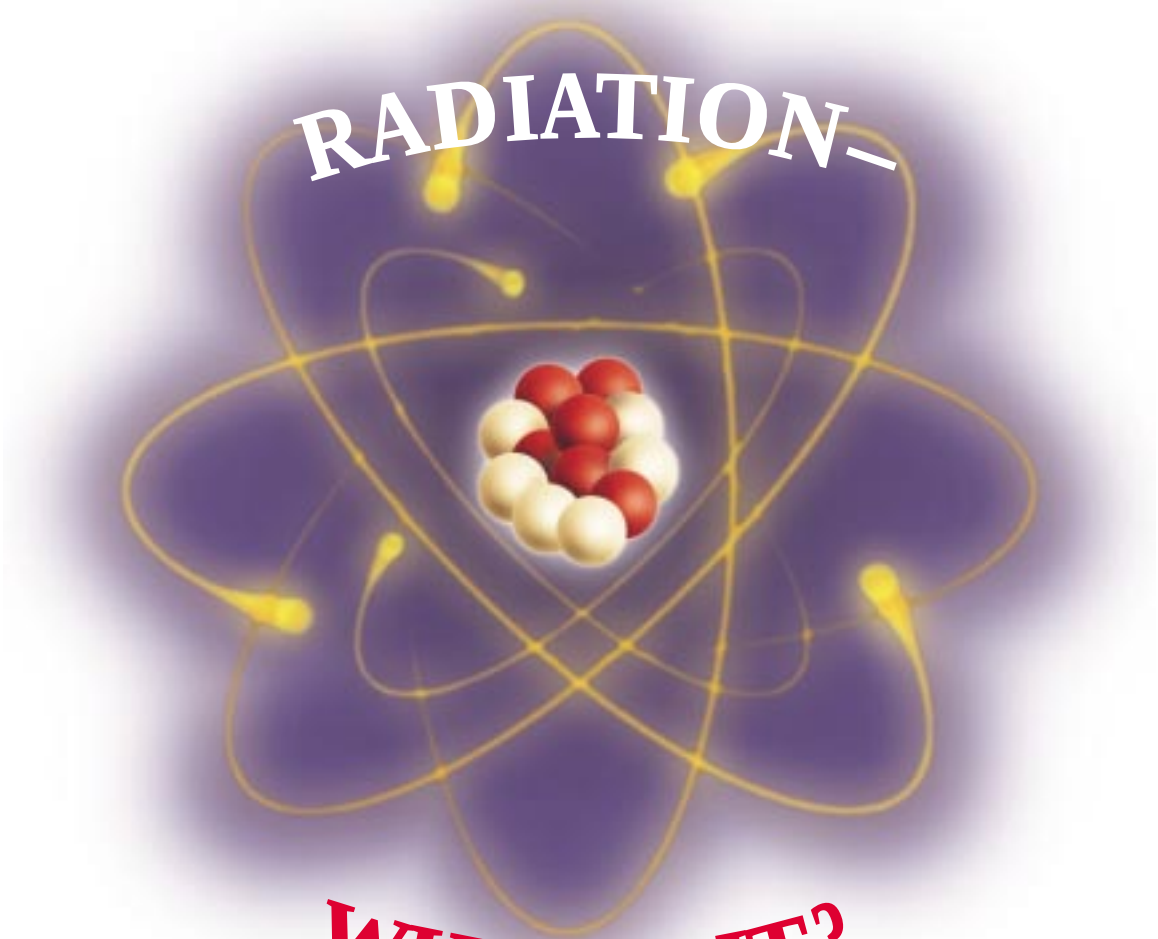
RADIATION–



WHAT IS IT?

GRADES 9- 12

SOUTHERN COMPANY

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RADIATION–
SNC - Plant Farley
LESSON PLAN
WHAT IS IT?

Lesson Title: Radiation – What Is It?

Lesson Description: This is a MS PowerPoint Presentation

Grade Level: 9-12

Subject Area(s): Physical Science

Objectives: Students will:
- gain an understanding of the concept of radiation
- learn basic terms relating to radiation
- be able to list and describe basic types of radiation
- become familiar with some properties of basic forms of radioactive decay
- make inferences between atomic nuclear structure and radioactive decay
- answer elementary questions regarding radiation

Materials:
- PPT presentation
- Windows platform computer with MS PPT 2000
- Large monitor for class to view
- Printed handouts for students to follow

Correlations (NSES):
- Content Standard B - Physical Science
  - develop an understanding of the structure and properties of matter
  - develop an understanding of motions and forces
- Content Standard E – Science and Technology
  - develop understandings about science and technology

Curriculum Integration:
- Mathematics

Background Information:
- Main ideas
  - nuclear structure of the atom is determinant of stability and radioactive decay
  - the term radiation properly refers to all forms of EM energy but is largely used today to refer to particulate radiant energy due to radioactive decay processes
  - there are many kinds of radioactive decay; the three basic types are alpha, beta and gamma
  - principles related to type of decay and ionization/penetrating abilities
  - principles relating to shielding
- Secondary ideas
  - principles related to other areas of nuclear science such as uses of radiation (power, medicine, industrial applications, etc.)
  - historical perspectives: Curie, Roentgen, Becquerel and others
  - measurement of radioactive decay

Teacher Activities:

- Organize all materials needed for activity.
- Present background materials to students.
- Distribute PPT Lecture Handout Sheets to students.
- Conduct PPT Lecture on Radiation.
- Complete lesson by stressing main points.

Student Activities:

- Listen carefully to background information issued by teacher.
- Obtain handouts.
- Pay close attention to PPT presentation.
- Take notes during lecture.
- Participate in post-activity discussion.

Evaluation:

- Direct observation
- Quiz embedded in PPT presentation

Extension/Enrichment:

- Have students use a Geiger counter to measure decay.
- Take your class on a field trip to tour a nuclear power plant.
- Complete a lab using an isogenerator/scaler to measure half-life.
- Have students research various areas of nuclear science.
- Research/discuss topics such as:
  - Transmutation
  - Chart of the Nuclides
  - Use of radiation to preserve food
  - Describe differences between Fission and Fusion
  - Life forms that are Resistant to Radiation
  - Nuclear structure