
PROGRAM 2 - Radiation All Around Us

Subject Area: 9th Grade Physical Science & 11th 12th Grade Physics

Lesson Objective: Radiation All Around Us explores forms of radiation, natural and manmade, and how this invisible energy can be understood as both hazardous and helpful. Learn how nuclear workers at Savannah River Site protect themselves and the public from dangerous radiation.

Grouping: Whole group

Duration: 60 minutes

Class Size: Max 30

Location: Ruth Patrick Science Center

Materials: PowerPoint (Provided), Rubber Gloves, Nitrile Gloves (Small, Medium, Large), Geiger Counter (RADEX RD1503+ Outdoor Edition dosimeter), Household Radioactive Sources (Smoke Detector, Lantern Mantle, Uranium Glass, Fiestaaware. Banana), Lego Set, Nuts and Bolts Set, Glovebox Simulations (x2), Hand Sanitizer.

Program Details: Radiation All Around Us is a lesson plan provided by the Education Program at Savannah River Site in collaboration with The Ruth Patrick Science Education Center's Student Programs. Learn more about Ruth Patrick Science Education Center's Student Programs: <https://www.usca.edu/rpsec/departments/student-programs>

This Program meets:

South Carolina Academic Standards and Performance Indicators for Science, 2014

Chemistry Standard H.C.2B.1: (Atomic Structure and Nuclear Processes): Obtain and communicate information to compare alpha, beta, and gamma radiation in terms of mass, charge, penetrating power, and their practical applications (including medical benefits and associated risks).

Chemistry Standard H.C.2B.2: Develop models to exemplify radioactive decay and use the models to explain the concept of half-life and its use in determining the age of materials (such as radiocarbon dating or the use of radioisotopes to date rocks).

Chemistry Standard H.C.2B.3: Obtain and communicate information to compare and contrast nuclear fission and nuclear fusion and to explain why the ability to produce low energy nuclear reactions would be a scientific breakthrough.

South Carolina College- and Career- Ready Science Standards 2021

Physics Standard P-PS-4: Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.

Physics Standard P-PS-4-5: Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

Science Georgia Standards of Excellence

Physical Science Standard SP6: Obtain, evaluate, and communicate information about nuclear changes of matter and related technological applications.

Standard SPS7: Obtain, evaluate, and communicate information to explain transformations and flow of energy within a system.