

Radiation

OVERVIEW:

In this activity, students will visit a medical facility and observe the developed technology used to treat cancer. In addition, students will interview a radiologist to discover the risk factors, side effects, benefits, and other concerns of radiation.

CONCEPTS:

National Science Foundation Standards:

Standard C: Life Science

(Structure and Function in Living Systems)

- Diseases and their causes.

Benchmark 8: The Designed World

F: Health Technology

- The ability to measure the level of substances in body fluids has made it possible for physicians to make comparisons with normal levels, make very sophisticated diagnoses, and monitor the effects of the treatments they prescribe.

OBJECTIVES:

Students will:

- Identify the different types of radiation
- Recognize its use in medicine
- Identify possible risk factors and possible side effects associated with radiation therapy.
- Visit a medical facility and interview a radiologist about the procedures used for the treatment of cancer.

PROCEDURES:

- Allow 1 hour and half to present the background information and complete the activity.
- Present the background information.
- Complete the activity (Part A.) “Visit a Medical Facility”
- Follow up activity with discussion questions (see Part B.) These questions may be used for assessment purposes

MATERIALS:

- Background information
- Prearranged trip to a hospital or radiation treatment facility

BACKGROUND:

Radiation therapy is the careful use of high energy radiation to treat cancer. Radiation is high energy particles that move at a very fast speed. There are many people who are involved in radiation therapy:

- Radiation Oncologists
- Radiation Therapists
- Dosimetrists

About 50%-60% of cancer patients receive radiation therapy at some point during the treatment of their disease. There are two common types of radiation:

- **External Radiation** – This is done by use of a machine outside a patient’s body that emits rays of radiation aimed at the particular spot where the tumor is.
- **Internal Radiation** – In this type of radiation, radioactive sources are put either inside or around the tumor, by use of a tube.

Radiation therapy works because the radiation destroys the cancer cell’s ability to reproduce and the body naturally gets rid of these cells. Unfortunately at time when the beams are aimed at the tumor, they may also destroy healthy cells that are around the tumor. Radiation can also be used with other types of cancer treatment such as chemotherapy. The benefit of radiation highly outweighs the side effects, because radiation kills the cancer cell at the source.

The side effects of radiation include:

- Redness and irritation
- Dry mouth
- Difficulty swallowing
- Nausea
- Digestive problems
- Hair loss
- Shortness of Breath

Although the side effects are unpleasant, most are not serious and can be controlled with medication or diet.

ACTIVITY:

Part A:

Arrange for a field trip to a hospital or a radiation treatment facility to see the equipment used and to have a radiologist speak about the procedures used during the treatment of various diseases.

Part B:

Ask the following questions and allow time for discussion.

Share

What was some of the equipment used during a radiation treatment? How was the equipment used?

Process

Why do you think radiation is an effective form of treatment for cancer?

Generalize

Why is it important to have an understanding of the side effects of radiation treatment?

Apply

How can you use your knowledge of radiation treatment and its side effects to help someone who is undergoing treatment for cancer?