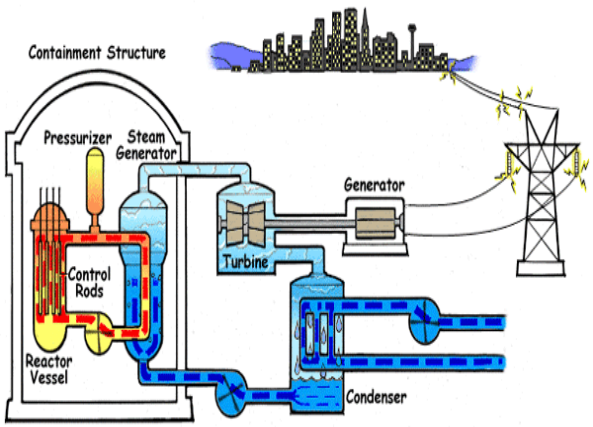
Nuclear Power Plant



FAST FACTS

Nuclear material is used for many things besides nuclear power:

- To detect and treat certain illnesses
- To perform research at universities
- To help in industries for such things as locating cracks in steel, getting rid of dust from film and even measuring the amount of air whipped into ice cream!

Our thanks to the Nuclear Regulatory Commission for providing much of the material in this brochure. If you want to learn more about radiation and radioactivity visit the NRC on-line at:
http://www.nrc.gov/reading-rm/basic-ref/students.html

Mission Statement

The Division of Radiation Safety is a leader in radiation protection, specializing in radiation safety, regulatory compliance, and risk management for biomedical and clinical research efforts that directly support the NIH mission.

We are a diverse collection of professionals who maximize our unique talents and expertise to provide comprehensive services and innovative solutions to protect individuals, populations, and the environment from ionizing radiation.

By conducting a successful radiation safety program, we proudly contribute to the advancement of science and medicine for the benefit of humanity.

Division of Radiation Safety
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Division of Radiation Safety

Earth Day

OUR RADIOACTIVE WORLD

Did you know?

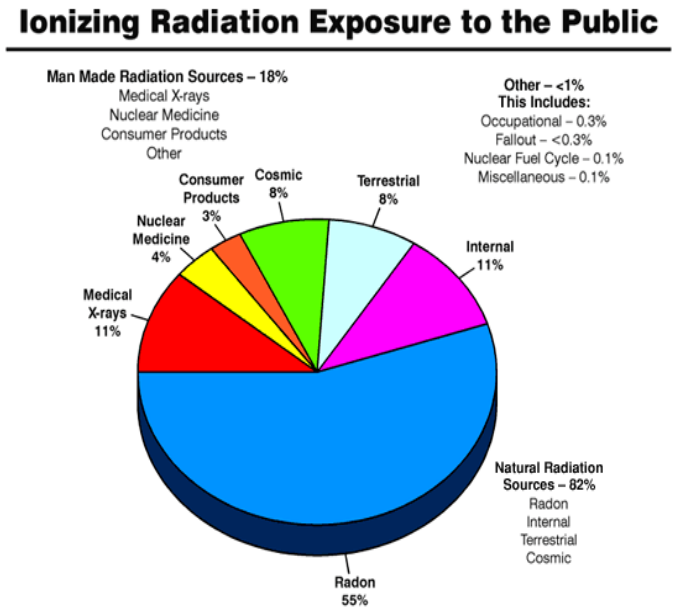
Radiation is all around us. It comes from the earth and from outer space. Many forms of radiation are invisible -- we can't feel it, see it, taste it, or smell it. Yet, it can be detected and measured when present. We measure ionizing radiation in units called millirems. But what is radiation? Radioactive materials are composed of atoms that are unstable. An unstable atom gives off its excess energy until it becomes stable. The energy emitted is radiation. We can classify radiation as being either natural or man-made.

As I mentioned a moment ago, the earth is surrounded by radiation. Every day, for example, we are exposed to radon, a radioactive gas from uranium found in soil dispersed in the air; from radioactive potassium in our food and water; from uranium, radium, and thorium in the earth's crust; and from cosmic rays and the sun.

These types of radiation are called natural or background radiation. In the U.S. we are exposed to an average of 300 millirems of natural radiation each year . This amounts to natural radiation accounting for about 82 percent of our total annual exposure. Where does the remaining 18 percent come from? Man-made sources.

Man-made radiation sources that people can be exposed to include tobacco, dental x-rays, medical x-rays, smoke detectors, lantern mantles, nuclear medicine, and building materials.

Adding it all up, the average American is exposed to a total of about 360 millirems a year from natural and man-made radiation.



The above chart is taken from the National Council on Radiation Protection and Measurements (NCRP) Report No. 93, "Ionizing Radiation Exposure of the Population of the United States," 1987.

This chart shows that natural sources of radiation account for about 82% of all public exposure while man-made sources account for the remaining 18%.

Although scientists have only known about radiation since the 1890s, they have developed a wide variety of uses for this natural force. Today, to benefit mankind, radiation is used in science, medicine, and industry, as well as for generating electricity. Radiation has useful applications in such areas as agriculture, medicine, space exploration, architect/engineering, industry/manufacturing, government, geology (including mining), ecology, and education.

Radiation is used by doctors to diagnose illness and helps archaeologists find the age of ancient artifacts. Electricity produced by nuclear fission -- splitting the atom -- is one of its greatest uses. A reliable source of electricity is needed to give us light, help to groom and feed us, and to keep our homes and businesses running. Let me give you some specific examples of how radiation can be used:

- Diagnose and treat illness
- Kill bacteria and preserve food without chemicals and refrigeration
- Process sludge for fertilizer and soil conditioner
- Locate underground natural resources and tell a dry hole from a gusher
- Make smoke detectors, nonstick frying pans, and ice cream
- Grow stronger crops
- Power satellites and provide future electrical needs for space laboratories with people on board
- Design instruments, techniques, and equipment; measure air pollution
- Prove age of art work and assist in determining authenticity