

Understanding Your Annual Radiation Exposure Report

The Radiological Protection Services Department of the Washington Savannah River Company has provided this information to help you understand your 2007 radiation exposure report. If you have questions concerning your 2007 Radiation Exposure Report, contact your Radiological Protection manager:

Washington Savannah River Company provides radiological protection services and oversight at the Savannah River Site (SRS). These services include radiation dose measurements for persons who enter areas where they may be exposed to radiation or radioactive material. The results are periodically reported to monitored individuals.

The results listed are based on a radiation dose system developed by the International Commission on Radiation Protection. The system uses the quantity "effective dose equivalent" and the units of rem. You may be more familiar with the term "millirem" (mrem) which is 1/1000 of a rem.

Every attempt has been made to make this summary complete and accurate. In the report, a zero means you were monitored and no dose was measured. If "NM" appears, it means "not monitored" for that type of exposure.

If you have concerns or questions about the information provided, you are encouraged to talk to your Radiological Protection manager, who can answer many of your questions and obtain any additional information that you might need.

Occupational Exposure

You may receive radiation exposure as a result of your occupation. The source of the radiation can be from outside of your body (external exposure) and from radioactive materials taken into your body (internal exposure).

At SRS, radiation dose from external sources is measured by thermoluminescent dosimeters (TLDS). Bioassay samples, personal air samples (PAS), whole body counts and chest counts are used to determine the dose from radioactive materials inside your body. Radioactive materials may remain inside the body for an extended period after an intake occurs. The length of time depends on the particular type of radioactive material. In your report, doses are listed by type (external, internal from tritium and internal from other radionuclides) to give you additional insight and assist you in limiting your dose in the coming year.

If you have worked at other sites, you may have received additional occupational radiation exposure. Any offsite occupational exposures that have been identified are also included in your report.

The total effective dose equivalent is the best number to use to evaluate your radiation dose for the year. Federal limits for occupational radiation exposure have been established for your protection. SRS limits and goals have been adopted to provide additional levels of protection. You may want to compare your exposure to these limits.

Other Exposures

In addition to the occupational exposures identified in your report, the National Council on Radiation Protection and Measurements estimates that the average effective dose equivalent from non-occupational sources is about 0.360 rem per year. The chart at right breaks down by source this average background exposure.

2007 Annual Dose Guidelines

measurement in rem/year

Total Effective Dose Equivalent

SRS Administrative Control Level	0.500*
DOE Administrative Control Level	2.0
Federal Limit	5.0

Annual Dose Equivalent for Skin and Extremities

SRS Level	50.0
Federal Limit	50.0

Annual Dose Equivalent for Lens of the Eye

SRS Level	15.0
Federal Limit	15.0

* Certain individuals had different administrative control levels based on organizational goals.

Sources Of Non-occupational Radiation Exposure

Radon	55%	0.200 rem
From inside human body	11%	0.040 rem
Medical x-rays	11%	0.039 rem
Rocks and soils	8%	0.028 rem
Cosmic	8%	0.027 rem
Nuclear medicine	4%	0.014 rem
Consumer products	3%	0.010 rem
Others	<1%	

Definitions of Terms

Some of the terms used in your annual radiation exposure report may be unfamiliar to you. Definitions of some of these terms are provided here for your information. If you have questions about these or other terms in your report, you are encouraged to talk to your Radiological Protection manager.

Radiation

Energy released from an atom. The most significant types of radiation encountered at SRS are alpha particles, beta particles, gamma rays, x-rays, and neutrons.

Dose

The amount of radiation a person has received.

Dose Equivalent

The dose modified to account for the type of radiation and its potential effect on the body. Neutrons and alpha particles cause more damage in tissue than gamma rays or beta particles and are weighted more heavily. The dose equivalent is reported in units of rem.

Effective Dose Equivalent

The weighted dose equivalent for the whole body. It takes into account variations in dose and sensitivity to radiation for the different parts (or organs) of the body. It gives the best single measure of a person's radiation exposure. It is reported in units of rem.

Total Effective Dose Equivalent

The effective dose equivalent from all occupational sources for the year.

Lifetime Occupational Dose

The total effective dose equivalent you have received while at work. This includes current exposures at SRS, plus exposures from all previous employment.

Internal Dose

The committed effective dose equivalent (CEDE) due to radioactive materials deposited in your body during the year. The CEDE includes all the dose you will receive from an intake over the next 50 years.

Annual Dose Equivalent to Lens of Eye

The dose that your eye received during the year. People with radionuclides in their body may receive an effective dose equivalent but little eye dose.

Annual Dose Equivalent to Skin

The dose that your skin received during the year. People with radionuclides in their body may receive an effective dose equivalent but little skin dose.

Annual Dose Equivalent to Extremities

The maximum dose received by any one of your extremities during the year. An extremity is a hand or arm below the elbow or a foot or leg below the knee.