

ACNWC-0010

PDR 8/11/89

TECHNICAL DIVISION
SAVANNAH RIVER LABORATORY

April 18, 1989

TO: D.W. Moeller

FROM: D.A. Orth *alt*

RADIATION EXPOSURE REPORTING AT SR

The annual report to a worker gives him a comprehensive summary of his current status including:

- a. Individual and total dose equivalents received the past year from external radiation, from ingestions during the year, and from previous ingestions
- b. Dose commitment to age 75 from ingestions during the past year and from previous ingestions
- c. Cumulative dose since the start of employment

The combination covers about all possible combinations of information including his dose commitment to age 75 from an ingestion, but it also carries the ingestion forward for proportional inclusion in future years. It does not just write it all off in the year of the ingestion with nothing assigned the next year. The records attached illustrate the reports for an individual who received an ingestion from a puncture wound in 1965 and later moved into a position with little exposure. If a worker with these kinds of records should change employers, both the employer and employee would know his status and the possible limits on future work.

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Attachment

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DESIGNATED ORIGINAL

Certified By *CMB*

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PERSONAL AND CONFIDENTIAL

February 3, 1988

SAVANNAH RIVER PLANT
HEALTH PROTECTION DEPARTMENT

TO: ██████████
703-A

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ANNUAL RADIATION EXPOSURE REPORT

Occupational radiation exposures can result from external sources of radiation and from intake of radionuclides into the body. At the Savannah River Site, radiation exposure from external sources is measured by TLD badges. Analyses of bioassay samples and whole body counting provide the necessary information for assessment of exposure from the assimilation of radionuclides. Radionuclides in the body may cause exposure for an extended period after an intake occurs. The length of the exposure period depends on the particular radionuclide that is assimilated.

Federal agencies have recently adopted a radiation dose system developed by the International Commission on Radiation Protection (ICRP). This system provides a method for summing exposures from external radiation sources and radionuclides in the body. The ICRP system uses a quantity called "effective dose equivalent" and the unit of effective dose equivalent is the rem (1 rem = 1000 mrems).

- o In 1987, your annual effective dose equivalent was 0.680 rem.

This included:

External (as measured by TLD badge):	0.010 rem
Internal (from tritium in the body):	0 rem
Internal (from other radionuclides in the body)	0.670 rem

- o Your cumulative effective dose equivalent since the start of your employment at this site through 1987 was 46.205 rem.

This included:

External (as measured by TLD badge):	8.040 rem
Internal (from tritium in the body):	0.025 rem
Internal (from other radionuclides in the body)	38.140 rem

- o In 1988, your annual effective dose equivalent from intake of radionuclides in previous years will be 0.630 rem.

- o During the period from 1988 through the year in which your 75th birthday occurs, your cumulative effective dose equivalent from the intake of radionuclides prior to 1988 will be 8.360 rem.

Note: Zero means either no measured dose or no record of you being monitored.

The exposures reported above are related to your work at this site. In addition, you were exposed to non occupational sources of radiation. The average effective dose equivalent in this area from natural radiation, consumer products and medical radiation is about 0.35 rem per year.

Please contact Health Protection if you have any questions about our Annual Radiation Exposure Report.

ANNUAL DOSE EQUIVALENT SUMMARY

Pay Roll No. [REDACTED]

SSN [REDACTED]

YEAR	INTERNAL EFFECTIVE DOSE EQUIVALENT	EXTERNAL WHOLE BODY DOSE EQUIVALENT	TOTAL DOSE EQUIV.
1953		-	0 mre
1954		0 mrem	0 mre
1955		225 mrem	225 mre
1956		70 mrem	70 mre
1957		150 mrem	150 mre
1958		215 mrem	215 mre
1959		75 mrem	75 mre
1960		190 mrem	190 mre
1961		270 mrem	270 mre
1962		270 mrem	270 mre
1963		125 mrem	125 mre
1964		420 mrem	420 mre
1965	5690 mrem	220 mrem	5910 mre
1966	3740 mrem	230 mrem	3970 mre
1967	3050 mrem	90 mrem	3140 mre
1968	2570 mrem	1000 mrem	3570 mre
1969	2240 mrem	1080 mrem	3320 mre
1970	1990 mrem	980 mrem	2970 mre
1971	1810 mrem	1140 mrem	2950 mre
1972	1660 mrem	535 mrem	2195 mre
1973	1530 mrem	375 mrem	1905 mre
1974	1430 mrem	150 mrem	1580 mre
1975	1340 mrem	135 mrem	1475 mre
1976	1250 mrem	75 mrem	1325 mre
1977	1170 mrem	25 mrem	1195 mre
1978	1110 mrem	5 mrem	1115 mre
1979	1050 mrem	0 mrem	1050 mre
1980	980 mrem	5 mrem	985 mre
1981	930 mrem	0 mrem	930 mre
1982	880 mrem	0 mrem	880 mre
1983	830 mrem	0 mrem	830 mre
1984	780 mrem	0 mrem	780 mre
1985	740 mrem	0 mrem	740 mre
1986	700 mrem	0 mrem	700 mre
1987	670 mrem	10 mrem	680 mre
TOTAL	38140 mrem *	8065 mrem **	46205 mre

* Cumulative effective dose equivalent from internal exposures through 1987. He will receive an additional dose equivalent of 8060 mrem from these internal exposures through 2009 (age 75)

** Includes 25 mrem from tritium and 2520 mrem from neutrons.

SAVANNAH RIVER PLANT

October 30, 1987

TO: J. A. PORTER

FROM: W. C. REINIG

Bill Reinig

1988 RADIATION EXPOSURE REPORT

In accord with new Federal guidance, we will use the Annual Radiation Exposure Report to inform employees of their committed effective dose equivalent. This is the projected dose from past transuranic assimilations. In the Report to be issued in early 1988, we will include the projected dose for 1988 and the projected dose through age 75.

As an example, an employee (an actual case) had a plutonium uptake in 1960. Since then, he has received internal exposure from that assimilation. This internal exposure will continue through the remainder of the employee's life. The next Annual Radiation Exposure Report will tell the employee:

- a) The dose received in 1987. This dose includes the contributions from external penetrating radiation (and any tritium uptakes) plus the weighted internal dose (470 mrems) received in 1987 from the 1960 plutonium assimilation. (See note for explanation of weighted internal dose).
- b) The cumulative dose received since the start of his SRP employment. This dose includes the contributions from external penetrating radiation (and any tritium uptakes) plus the weighted internal dose (18,400 mrems) from the 1960 plutonium assimilation.
- c) The projected internal weighted dose in 1988 (460 mrems) from the 1960 plutonium assimilation.
- d) The projected internal weighted dose integrated from 1988 to age 75 (6900 mrems) that will result from the 1960 plutonium assimilation.

A full explanation of these doses will be included in the Report.

Prior to issuing the Annual Radiation Exposure Report, Health Protection will hold discussions with each of the 106 employees at this site whose projected internal weighted dose in 1988 will be greater than 100 mrems.

J. A. PORTER

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NOTE: Internal weighted dose is the dose received by body organs multiplied by the weighting factors recommended by the ICRP (and included in the new Federal guidance). The product, effective dose equivalent, represents a dose that is equivalent in terms of risk to whole body irradiation. This comparability allows the summation of external and internal exposures.

WCR:gt

CC: J. T. Lowe, 773-A
J. T. Granaghan, 703-A
R. Maher, 703-A
A. H. Peters, 703-A
G. Hayes, 735-A
R. M. Hall, 735-A