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# **Ninth Annual Report of Radiation Exposures for DOE & DOE Contractor Employees**

**1976**

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**U.S. Department of Energy**  
Assistant Secretary for Environment  
Division of Operational and  
Environmental Safety

April 1978

**Available from:**

National Technical Information Service (NTIS)  
U.S. Department of Commerce  
5285 Port Royal Road  
Springfield, Virginia 22161

**Price:** Printed Copy: \$ 5.25  
Microfiche: \$ 3.00



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## PREFACE

In 1968, the U.S. Atomic Energy Commission (AEC) established a program for reporting certain occupational radiation exposure information to a central radiation records repository maintained at the Union Carbide Computing Technology Center, Oak Ridge, Tennessee. Annual summaries (WASH-1350-R1 through WASH-1350-R6) were reported for the years 1968–1973 and included data on AEC contractor employees as well as employees of companies in the private sector licensed by the AEC.

In January 1975, the operational functions of the AEC, including the maintenance of records on the occupational radiation exposure of contractor employees were transferred to the Energy Research and Development Administration (ERDA) and the AEC's regulatory functions, including the reporting of information on the occupational radiation exposure of licensees were transferred to the Nuclear Regulatory Commission (NRC). Previous AEC licensees now report to NRC while the contractors reported to ERDA. Radiation exposure data for AEC/ERDA and AEC/ERDA contractor employees for 1974 and 1975 were reported in ERDA 76/119 and ERDA 77-29. This report contains the 1976 data for ERDA and ERDA contractor employees.

On October 1, 1977, the Department of Energy (DOE) was formed and assumed the responsibilities of ERDA. Previous reports for AEC/ERDA and AEC/ERDA contractor employees may be seen at the DOE Public Documents Room, 20 Massachusetts Avenue, NW., Washington, D.C. 20545.





## STANDARDS FOR RADIATION PROTECTION

ERDA Manual Chapter 0524, Standards for Radiation Protection, was applicable to ERDA and ERDA contractor operations not subject to Nuclear Regulatory Commission licensing.

Two basic requirements existed for all ERDA operations. The first requirement was that all operations shall be conducted in a manner to assure that radiation exposure to individuals and

population groups was limited to the lowest levels technically and economically practicable. The second requirement was that radiation exposure to individuals or population groups be maintained below prescribed limits. The ERDA prescribed limits for occupationally exposed individuals are given in the table below as excerpted from ERDA Manual Chapter 0524.

### INDIVIDUALS IN CONTROLLED AREAS

#### A. RADIATION PROTECTION STANDARDS FOR EXTERNAL AND INTERNAL EXPOSURES

Type of Exposure	Exposure Period	Dose Equivalent (Dose or Dose Commitment* (rem))
Whole body, head and trunk, gonads, lens of the eye†, red bone marrow, active blood forming organs.	Year	5‡
	Calendar Quarter	3
Unlimited areas of the skin (except hands and forearms). Other organs, tissues, and organ systems (except bone).	Year	15
	Calendar Quarter	5
Bone.	Year	30
	Calendar Quarter	10
Forearms.§	Year	30
	Calendar Quarter	10
Hands§ and feet.	Year	75
	Calendar Quarter	25

\*To meet the above dose commitment standards, operations must be conducted in such a manner that it would be unlikely that an individual would assimilate in a critical organ, by inhalation, ingestion, or absorption, a quantity of a radionuclide(s) that would commit the individual to an organ dose which exceeds the limits specified in the above table.

†A beta exposure below a maximum energy of 700 Kev will not penetrate the lens of the eye; therefore, the applicable limit for these energies would be that for the skin (15 rem/year).

‡In special cases with the approval of the Director, Division of Safety, Standards, and Compliance, a worker may exceed 5 rem/year provided his/her average exposure per year since age 18 will not exceed 5 rem per year.

§All reasonable effort shall be made to keep exposures of forearms and hands to the general limit for the skin.



## WHOLE-BODY RADIATION EXPOSURES

### General Trends

Data for AEC/ERDA and AEC/ERDA contractor employees for the past 13 years are presented in Table 1 and 2. Table 1 shows that the number of individuals receiving large exposures has declined significantly in the past 13 years. Of particular interest is the large reduction in the number of individuals who received a dose-equivalent greater than 2 rem during 1976. The trends in higher exposures are best observed in the data in Table 2.

In order to provide a better understanding of the dose equivalent profile, the reporting requirements were changed in 1974 whereby the 0-1 rem range was subdivided into 5 groups. The midpoints of

these ranges are then used to calculate the collective dose equivalent for Table 3 which should be a good estimate of the actual collective dose equivalent. As seen in this table, the collective dose decreased by 16 percent in 1976 compared to 1975 and 4 percent compared to 1974. The 1975 annual report showed that exposures increased significantly due to some very unusual program requirements. Therefore, it might be more reasonable to compare 1976 with 1974.

TABLE 1  
 WHOLE-BODY RADIATION EXPOSURE HISTORY FOR AEC/ERDA AND AEC/ERDA CONTRACTOR EMPLOYEES  
 NUMBER OF ESTIMATED DOSE EQUIVALENTS IN EACH OF FOLLOWING RANGES (rem)\*

YEAR	0-1*	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	>12	TOTAL MONITORED
1964	122711	3583	1823	575	176	43	20	10	7	6	10	1		128965
1965	128360	4158	1704	515	294	70	32	26	25	22	6	2		135214
1966	131522	3706	1630	593	313	88	47	24	6	2			1	137932
1967	102510	3472	1572	555	168	35	29	23	17	4	1			108386
1968	103206	2799	1408	425	144	3	1							107986
1969	98625	2554	1313	335	86	4					1			102918
1970	92185	2698	1329	279	158	5	4	2		1				96661
1971	90640	2380	888	275	118	8	3				1		2	94315
1972	86077	2130	929	219	95	8	2							89460
1973	89071	1944	727	172	60	2	1							91977
1974	75684	1667	688	149	40	4								78232
1975	85451	1846	753	232	142				1					88425
1976	87969	1679	475	70	6	1								90200

\*In 1975, approximately 65 percent of these employees received a dose equivalent which was less than measurable. These data differ slightly from that in earlier reports because of errors in reporting.

TABLE 2

## WHOLE-BODY EXPOSURE HISTORY OF AEC/ERDA AND AEC/ERDA CONTRACTOR EMPLOYEES

(Percent of employees with dose  
equivalent greater than)

Year	1 rem (Number)	2 rem (Number)	Total Man rem*	Total Monitored
1964	4.85 (6254)	2.07 (2671)	13411	128965
1965	5.07 (6854)	1.99 (2696)	14818	135214
1966	4.65 (6410)	1.96 (2704)	14173	137932
1967	6.11 (6622)	2.23 (2415)	13715	108386
1968	4.43 (4780)	1.83 (1981)	9877	107986
1969	4.17 (4293)	1.69 (1739)	8707	102918
1970	4.63 (4476)	1.84 (1778)	9137	96661
1971	3.90 (3675)	1.37 (1295)	5395	94315
1972	3.78 (3383)	1.40 (1253)	6170	89460
1973	3.16 (2906)	1.05 ( 962)	5623	91977
1974	3.26 (2548)	1.13 ( 881)	4935	78232
1975	3.36 (2974)	1.28 (1128)	5813	88425
1976	2.47 (2231)	0.60 ( 552)	3984	90200

\*This table reflects the trend in high exposures since individuals with dose equivalents of less than 1 rem have been excluded. The total cumulative dose equivalent has been estimated by using the midpoint of each dose equivalent range shown in Table 1.

Table 3  
 OCCUPATIONAL DOSE EQUIVALENT FOR 1974-1976  
 BY FIELD OFFICE

<u>Field Office</u>	<u>1974</u>	<u>Man-Rem 1975</u>	<u>1976</u>	<u>1976 Increase (Percent)</u>
Albuquerque	2405	2324	1437	-38
Chicago	1943	1638	1354	-17
Grand Junction	--	5	0	-100
Idaho	686	611	790	+29
Nevada	58	55	25	-55
Oak Ridge	1178	1284	1351	+5
Pittsburgh Naval Reactors	587	1876	1609	-14
Richland	2079	2257	2265	0
San Francisco	320	283	285	+1
Schenectady Naval Reactors	261	1022	203	-80
Savannah River	<u>1484</u>	<u>1268</u>	<u>1278</u>	<u>+1</u>
TOTAL	11001	12622	10597	-16

## **DISTRIBUTION OF ANNUAL WHOLE-BODY EXPOSURES BY FACILITY TYPE—1976**

Table 4 provides a breakdown of the 1976 whole-body dose equivalents according to facility type. Table 5 shows that employees working in reactor, fuel processing, and accelerator facilities continue to receive the highest average exposures. However, the general research and other facilities accounted for approximately 43 percent of the total dose equivalent. It is known that many employees reported under the "general research" and "other" facility types more appropriately belonged to another facility type. The accuracy of future reports will therefore increase as more of the contractors correct these reporting deficiencies.

Appendix A contains whole-body dose equivalent distributions by facility type as reported to each of the 11 operations offices or Naval Reactors offices.

Appendix B contains whole-body dose equivalent distributions for each contractor. These are placed alphabetically under their respective field office or Naval Reactors office. Exposure distributions for each ERDA field office or area office are also presented.

TABLE 4

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
FOR ALL EMPLOYEES  
1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	EXPOSURE RANGES (REMS)																TOTAL MAN-REM	
			<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12		>12
REACTOR	8885	3024	2708	962	791	410	259	489	228	14										2436
FUEL FAB	1015	67	498	197	156	46	25	22	4											212
FUEL PROC	2251	405	646	296	296	179	113	211	98	7										952
URAN ENRCH	5572	2059	6763	559	121	42	20	8												537
WEAPON F&T	15823	8430	6021	768	351	111	63	75	4											814
IRRAD FACL																				
GEN RESRCH	34258	20072	9675	2150	1104	474	270	420	70	18	4	1								2698
ACCELERATR	2766	1382	542	309	175	100	46	142	40	28	2									670
OTHER	13909	3461	7633	1064	774	409	224	311	30	3										1862
VISITORS	66543	62806	3252	317	96	30	14	21	6	1										335
ERDA OFFCS	1721	1183	468	47	14	5	2	1	1											46
TOTAL	156743	102889	38206	6669	3878	1806	1036	1700	481	71	6	1								10602



TABLE 5

MAN-REMS PER FACILITY TYPE  
1976

FACILITY TYPE	TOTAL NO. INDIVIDUALS MONITORED	NO. INDIVIDUALS WITH MEASURABLE EXPOSURE	TOTAL NO. MAN-REMS	AVERAGE EXPOSURE (REM) PER INDIVIDUAL (BASED ON ALL EXPOSURES)	AVERAGE EXPOSURE (REM) PER INDIVIDUAL (BASED ON MEASURABLE EXPOSURES)
REACTOR	8885	5861	2436	.27	.42
FUEL FAB	1015	948	212	.21	.22
FUEL PROC	2251	1846	992	.44	.54
URAN ENRCH	9572	7513	537	.06	.07
WEAPON F&T	15823	7393	814	.05	.11
IRRAD FACL	0				
GEN RESRCH	34258	14186	2698	.08	.19
ACCELERATR	2766	1384	670	.24	.48
OTHER	13909	10448	1862	.13	.18
VISITORS	66543	3737	335	.01	.09
ERDA OFFCS	1721	538	46	.03	.09

## RATIOS OF AVERAGE EXPOSURES

It is known that exposure data are inadequate in assessing whether radiation exposures are reduced to as low as practicable. Variables such as facility age and design, along with all the other factors which enter into accomplishing the program objectives may by far outweigh the efforts of management, radiation workers, and safety personnel in reducing personnel exposures to the levels that exist at similar facilities elsewhere.

In some instances, it might be desirable to compare average radiation exposures associated with the same facility type but at different locations. Average exposure ratios have been calculated for each facility type under the operations offices and presented in Table 6. The average exposure ratio is defined as the ratio of the average personnel exposure of the subgroup and the average personnel exposure of the group. The numbers in Table 6 are derived by discarding all exposures less than 0.5 rem. By discarding numbers of less than 0.5 rem, it is intended to include only the people working in the radiation areas. No interpretation of these numbers is possible other than that those numbers less than 1 indicate low average exposures relative to the average for that facility type while those ratios larger than 1 indicate a higher average exposure relative to the average for that facility type.

TABLE 6

AVERAGE EXPOSURE RATIO  
1976

FIELD OFFICE -----	REACTOR -----	FUEL FABRIC -----	FUEL PROCESS -----	URAN ENRICH -----	WEAPONS FAB&TEST -----	IRRAD FACIL -----	GENERAL RESEARCH -----	ACCELER -----	OTHER -----	VISITR -----	ERDA OFFICES -----
ALBUQUERQUE OPERATNS					1.01		1.08		1.20	.56	2.03
CHICAGO OPERATIONS	.89						1.00	1.00	.81	1.11	
GRAND JUNCTION OPERATN											
IDAHO OPERATIONS	.78		1.18								.74
NEVADA OPERATIONS					.64					.78	
OAK RIDGE OPERATIONS		.82		1.00	.84		1.07				
PITTSBURG NAVL REACTRS	.98						.94			.87	
RICHLAND OPERATIONS	1.31	1.12					1.04		1.02	.67	.63
SAN FRANCISCO OPERATN					.90		.73	1.17	1.03	3.11	
SCHENCTDY NAVL REACTR	.66										
SAVANNAH RIVR OPERATN	.55	1.10	.86		1.16		.91		.86		

## INTERNAL EXPOSURES

ERDA Manual Chapter 0525 required ERDA contractors to submit a report on personnel with radioactive material deposited in their bodies. A report was required when:

- a. any uptake of radioactive material occurring during the reporting year that, either independently, or when added to a current burden, was estimated to result in dose commitment to the critical organ in excess of 50 percent of the pertinent annual dose equivalent standards set forth in Appendix 0524.
- b. any previously unreported uptake of radioactive material that was determined to have been reportable according to the above criteria by reason of more recent dose estimates.

In 1976, 25 workers were determined to have radioactive material deposited in their bodies which produced 50 percent of the annual dose equivalent standard for a critical organ. Many of these had had a previous organ burden but were not reportable according to the Manual Chapter criteria. Additional exposure in 1976 added to their previous organ burden and, thus, they were reported in 1976. Twelve of the uranium workers were reported in one or both of the two preceding years but determined to have received an additional uptake during 1976 and were included in the 1976 report.

Table 7 gives a breakdown of these 25 cases where the annual dose commitment exceeded 50 percent of an organ dose standard. The radionuclides are specified as well as the critical organ. The maximum annual dose equivalent limit for the lungs was 15 rem and that for bone is 30 rem as prescribed in ERDA Manual Chapter 0524.

Fifty-six and 48 workers were reported in 1974 and 1975, respectively, to have exceeded 50 percent of an organ burden.

TABLE 7

SUMMARY OF EXPOSURES RESULTING IN INTERNAL BODY  
DEPOSITIONS OF RADIOACTIVE MATERIALS FOR CY 1976\*

<u>Nuclide</u>	<u>Organ</u>	<u>Dose (rem)</u>							
		5-10	10-15	15-20	20-25	25-30	30-50	50-100	100-200
239-240 Plutonium	Bone								
238-239-240 Plutonium	Bone				1				
241 239-40 Am Plutonium	Bone								1
239-240-241 Plutonium	Lung								
239-240 241 Plutonium Am	Lung	1							
235 Uranium	Lung	8							
234-235 Uranium	Lung	2	1						
234-235-238 Uranium	Lung	7	3						
234-238 Uranium	Lung								

\*There exists one case in which an individual received a large uptake which is not included in this table. The individual has invoked the provision of the Privacy Act which prohibits the publication of medical or radiation data.

## WORKER TERMINATIONS

There were 6900 monitored workers in 1976 who terminated their employment with ERDA or ERDA contractors. Table 8 gives the length of employment time distribution as well as the average cumulative dose equivalent for the workers in each time interval. These data indicate that the average annual dose equivalent for the workers terminating in 1976 was a small fraction of the 5 rem per year limit.

TABLE 8  
 LENGTH OF EMPLOYMENT FOR  
 INDIVIDUALS TERMINATING EACH YEAR

	<u>Calendar Year</u>	<u>1-89 Days</u>	<u>90-180 Days</u>	<u>180-365 Days</u>	<u>1-2 Years</u>	<u>2-4 Years</u>	<u>4-6 Years</u>	<u>&gt; 6 Years</u>
Total Number	1976	1669	699	682	1015	970	358	1507
Total Cum. Dose Equivalent (Rem)		253.25	57.77	113.60	597.02	761.94	372.09	3972.86
Avg. Cum. Dose Equivalent (Rem)		.15	.08	.17	.59	.79	1.04	2.64

### **WHOLE-BODY EXPOSURES GREATER THAN 5 REM**

Only one person received a whole-body exposure greater than the limit of 5 rem. This dose equivalent of 5.67 rem occurred because of an oversight in monitoring the accumulated exposure of this individual as reported by the dosimetry service. An investigation was conducted and procedures instituted to avoid a similar occurrence.



**APPENDIX A**

**OPERATIONS OFFICE REPORT  
DISTRIBUTION OF ANNUAL WHOLE-BODY EXPOSURES  
BY FACILITY TYPE**

**1976**

TABLE 1

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
ALBUQUERQUE OPERATIONS OFFICE  
1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	<0.10	EXPOSURE RANGES (REMS)														TOTAL MAN-REM				
				0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11		11-12	>12		
REACTOR																						
FUEL FAB																						
FUEL PROC																						
URAN ENRCH																						
WEAPON F&T	5180	944	3223	543	248	96	54	69	3												567	
IRRAD FACL																						
GEN RESRCH	7259	3961	2428	459	168	83	53	76	24	6	1										562	
ACCELERATR																						
OTHER	3205	838	2141	119	56	18	11	13	9												212	
VISITORS	6642	5268	1336	27	7	4															77	
ERDA OFFCS	800	552	227	15	4			1	1												19	
TOTAL	23086	11563	9355	1163	483	201	118	159	37	6	1										1437	

TABLE 2

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
CHICAGO OPERATIONS OFFICE  
1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	EXPOSURE RANGES (REMS)															TOTAL MAN-REM			
			<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11		11-12	>12	
REACTOR	394	112	131	55	32	27	7	23	7											103	
FUEL FAB																					
FUEL PROC																					
URAN ENRCH																					
WEAPON F&T																					
IRRAD FAC																					
GEN RESRCH	3942	1986	1269	384	135	78	31	45	7	3	3	1								372	
ACCELERATR	2560	1284	461	293	171	96	46	142	39	26	2									649	
OTHER	921	531	214	108	41	15	8	4												67	
VISITORS	10794	9546	927	210	67	14	8	16	6											163	
ERDA OFFCS	3		2	1																	
TOTAL	18614	13459	3004	1051	446	230	100	230	59	29	5	1								1354	

TABLE 3

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
 GRAND JUNCTION OPERATIONS OFFICE  
 1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	EXPOSURE RANGES (REMS)																TOTAL MAN-REM		
			<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12		>12	
REACTOR																					
FUEL FAB																					
FUEL PROC																					
JRAN ENRCH																					
WEAPJN F&T																					
IRRAD FACL																					
GEN RESRCH																					
ACCELERATR																					
OTHER	35	35																			
VISITORS																					
ERDA OFFCS																					
TOTAL	35	35																			

TABLE 4  
 DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
 IDAHO OPERATIONS OFFICE  
 1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	EXPOSURE RANGES (REMS)																TOTAL MAN-REM		
			<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12		>12	
REACTOR	3448	2174	685	258	168	71	41	42	9											308	
FUEL FAB																					
FUEL PROC	830	248	133	86	94	51	39	106	66	7										471	
URAN ENRCH																					
WEAPON F&T																					
IRRAD FACL																					
GEN RESRCH																					
ACCE_ERATR																					
OTHER																					
VISITORS	19775	19758	10	7																	2
ERDA OFFCS	241	163	63	10		3	2														9
TOTAL	24294	22343	891	361	262	125	82	148	75	7											790

TABLE 5  
 DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
 NEVADA OPERATIONS OFFICE  
 1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	<0.10	EXPOSURE RANGES (REMS)																TOTAL MAN-REM			
				0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	>12				
REACTOR																							
FUEL FAB																							
FUEL PROC																							
URAN ENRCH																							
WEAPON F&T	7542	7383	107	32	17	3																19	
IRRAD FACL																							
GEN RESRCH																							
ACCELERATR																							
OTHER																							
VISITORS	9088	9032	42	11	1		2																6
ERDA OFFCS	197	193	4																				
TOTAL	16827	16608	153	43	18	3	2																25

TABLE 6  
 DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
 OAK RIDGE OPERATIONS OFFICE  
 1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	EXPOSURE RANGES (REMS)														TOTAL MAN-REM	
			<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10		10-11
REACTOR																		
FUEL FAB	587	26	317	131	79	23	8	2	1									95
FUEL PROC																		
URAN ENRCH	9572	2059	6763	559	121	42	20	8										537
WEAPON F&T	2859		2611	166	68	8	4	2										197
IRRAD FACL																		
GEN RESRCH	7112	5363	1248	224	131	49	22	63	9	3								328
ACCELERATR																		
OTHER	3614	72	3486	47	9													186
VISITORS	2092	1959	124	9														8
ERDA OFFCS	24	18	6															
TOTAL	25860	9497	14555	1136	408	122	54	75	10	3								1351

TABLE 7  
 DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
 PITTSBURGH NAVAL REACTORS OFFICE  
 1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	EXPOSURE RANGES (REMS)																TOTAL MAN-REM			
			<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12		>12		
REACTOR	2255	223	869	320	267	145	115	242	74											939		
FUEL FAB																						
FUEL PROC																						
URAN ENRCH																						
WEAPON F&T																						
IRRAD FACL																						
GEN RESRCH	2628	333	1273	359	304	137	81	127	14												622	
ACCELERATR																						
OTHER																						
VISITORS	991	457	485	31	6	5	3	4														44
ERDA OFFCS	54	4	39	8	3																	4
TOTAL	5928	1017	2666	718	580	287	199	373	88													1609



TABLE 8

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
RICHLAND OPERATIONS OFFICE  
1976

FACILITY TYPE	TOTAL MONITR	EXPOSURE RANGES (REMS)																TOTAL MAN-REM		
		< MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11		11-12	>12
REACTOR	542	1	12	47	59	56	44	171	138	14										755
FJEL FAB	54		4	13	31	4		1	1											21
FUEL PROC																				
URAN ENRCH																				
WEAPON F&T																				
IRRAD FACL																				
GEN RESRCH	1350	33	477	399	225	77	47	71	15	6										432
ACCELERATR																				
OTHER	2089	35	382	465	491	276	165	255	17	3										1037
VISITORS	49	3	13	16	8	7	1	1												13
ERDA OFFCS	39		20	10	7	2														7
TOTAL	4123	72	908	950	821	422	257	499	171	23										2265

TABLE 9  
 DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
 SAN FRANCISCO OPERATIONS OFFICE  
 1976

FACILITY TYPE	TOTAL MONITR	< MEAS.	<0.10	EXPOSURE RANGES (REMS)														TOTAL >12 MAN-REM				
				0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11		11-12			
REACTOR	4	2	2																			
FJEL FAB																						
FUEL PROC																						
URAN ENRCH																						
WEAPON F&T	102	87	8	4	1		2														3	
IRRAD FAC																						
GEN RESRCH	9810	7749	1709	229	82	22	10	9														192
ACCELERATR	206	98	81	16	4	4			1	2												20
OTHER	490	253	157	34	16	14	5	9	2													51
VISITORS	16922	16698	210	6	7					1												18
ERDA OFFCS	72	54	18																			1
TOTAL	27606	24941	2185	289	110	40	17	18	3	3												285

TABLE 10

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
SCHEENECTADY NAVAL REACTORS OFFICE  
1976

FACILITY TYPE	TOTAL MONITR	EXPOSURE RANGES (REMS)																TOTAL MAN-REM			
		< MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11		11-12	>12	
REACTOR	1339	280	755	177	82	26	9	10												139	
FUEL FAB																					
FUEL PROC																					
URAN ENRCH																					
WEAPON F&T																					
IRRAD FACL																					
GEN RESRCH	1234	290	890	35	19																58
ACCELERATR																					
OTHER																					
VISITORS	190	85	105																		5
ERDA OFFCS	20	3	16	1																	1
TOTAL	2783	658	1766	213	101	26	9	10													203

TABLE 11

DISTRIBUTION OF ANNUAL WHOLE BODY EXPOSURES  
SAVANNAH RIVER OPERATIONS OFFICE  
1976

FACILITY TYPE	TOTAL MONITR	EXPOSURE RANGES (REMS)																	TOTAL MAN-REM	
		< MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12		>12
REACTOR	903	232	254	105	183	85	43	1												192
FUEL FAB	374	41	177	53	46	19	17	19	2											96
FUEL PROC	1421	157	513	210	202	128	74	105	32											520
URAN ENRCH																				
WEAPON F&T	140	16	72	23	17	4	3	4	1											28
IRRAD FAC.																				
GEN RESRCH	923	357	381	61	40	28	26	29	1											131
ACCELERATR																				
OTHER	3555	1697	1253	291	161	86	35	30	2											308
VISITORS																				
ERDA OFFCS	220	161	57	2																3
TOTAL	7536	2661	2707	745	649	350	198	188	38											1278

**APPENDIX B**

**OPERATIONS OFFICE REPORT  
DISTRIBUTION OF ANNUAL WHOLE-BODY EXPOSURES  
BY ERDA OFFICE OR CONTRACTOR**

**1976**

TABLE 1  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

ALBUQUERQUE OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
ALBUQUERQUE MISCELLA																	
C01-00-0209-00																	
EMPLOYEES		1865	12	2													96
VISITORS																	
TOTAL		1865	12	2													96
DOW CHEMICAL, USA																	
C01-07-0007-01																	
EMPLOYEES		2262	285	168	71	42	59	1									398
VISITORS		444	2														23
TOTAL		2706	287	168	71	42	59	1									421
GENERAL ELECTRIC COM																	
C01-06-0006-01																	
EMPLOYEES		181	126	4													7
VISITORS		1															
TOTAL		182	126	4													7
GENERAL ELECTRIC COM																	
C01-08-0006-02																	
EMPLOYEES		3	23	63	33	7	4	8	9								67
VISITORS		36	38	14	3	1											6
TOTAL		39	61	77	36	8	4	8	9								73
INHALATION TOXICOLOG																	
C01-08-0009-01																	
EMPLOYEES		519	78	8	1	2											7
VISITORS		1685	2														
TOTAL		2204	80	8	1	2											7
MASON & HANGER-SILAS																	
C01-01-0001-01																	
EMPLOYEES		31	272	96	25	10	3	1									50
VISITORS		799	43														2
TOTAL		830	315	96	25	10	3	1									52
MONSANTO RESEARCH CO																	
C01-03-0002-01																	
EMPLOYEES		681	502	158	53	15	9	9	2								108
VISITORS		282	56			1											3
TOTAL		963	558	158	53	16	9	9	2								112
ROSS AVIATION, INC.																	
C01-00-0212-01																	
EMPLOYEES		38	2														
VISITORS																	
TOTAL		38	2														

TABLE 1

ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

PAGE 2

## ALBUQUERQUE OPERATIONS OFFICE

OFFICE -----	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM -----
SANDIA LABORATORIES																	
C01-08-0008-01																	
EMPLOYEES	840	1200	195	30	20	10	6	4	4	1							164
VISITORS	1392	648															32
TOTAL	2232	1848	195	30	20	10	6	4	4	1							197
SANDIA LABORATORIES																	
C01-08-0008-02																	
EMPLOYEES	695	147	10	3	1												11
VISITORS	104	16															1
TOTAL	799	163	10	3	1												12
TELEDYNE ISOTOPES																	
C01-00-0211-01																	
EMPLOYEES	10	6	12														2
VISITORS	4	4	1														3
TOTAL	14	10	13														
THE BENDIX CORPORATION																	
C01-04-0003-01																	
EMPLOYEES	51	61		2													4
VISITORS																	4
TOTAL	51	61		2													
THE ZIA COMPANY																	
C01-05-0005-01																	
EMPLOYEES	787	245	32	21	11	7	5										46
VISITORS																	46
TOTAL	787	245	32	21	11	7	5										
UNIVERSITY OF CALIFORNIA																	
C01-05-0004-01																	
EMPLOYEES	1907	1003	246	134	60	43	70	20	2								381
VISITORS	964	85	10	4	2												9
TOTAL	2871	1088	256	138	62	43	70	20	2								389
SUBTOTAL	11010	9128	1148	479	201	118	158	36	6	1							1418

TABLE 2  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

CHICAGO OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM	
AMES LABORATORY																		
C03-00-0011-01																		
EMPLOYEES	103	33	20	19	8	1											18	
VISITORS	771																	18
TOTAL	874	33	20	19	8	1												
ARGONNE NATIONAL LAB																		
C03-00-0012-02																		
EMPLOYEES	2226	588	277	134	75	31	55	11	2	1								324
VISITORS	6991	271	32	24	7	6	11	2										59
TOTAL	9217	859	309	158	82	37	66	13	2	1								383
BROOKHAVEN NATIONAL																		
C03-02-0010-01																		
EMPLOYEES	134	945	325	130	80	39	125	37	23	4	1							621
VISITORS	87	185	141	41	4	2	5	4										71
TOTAL	221	1130	466	171	84	41	130	41	23	4	1							692
CHICAGO MISCELLANEOU																		
C03-00-0013-00																		
EMPLOYEES	266	170	29	15	5	3	3											29
VISITORS		331	1		1													17
TOTAL	266	501	30	15	6	3	3											47
FERMI NATIONAL ACCEL																		
C03-01-0135-01																		
EMPLOYEES	1025	291	154	76	46	18	31	5	4									188
VISITORS	737	140	36	2	2													15
TOTAL	1762	431	190	78	48	18	31	5	4									203
MASSACHUSETTS INSTIT																		
C03-00-0035-01																		
EMPLOYEES	77	33	29	3	1													8
VISITORS	960																	8
TOTAL	1037	33	29	3	1													8
SUBTOTAL	13377	2987	1044	444	229	100	230	59	29	5	1							1351



TABLE 3  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

GRAND JUNCTION OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
-----	-----	-----	-----	-----	-----	-----	---	---	---	---	---	---	---	---	---	---	-----
BENDIX FIELD ENGINEE																	
C04-00-0001-00																	
EMPLOYEES	33																
VISITORS																	
TOTAL	33																
SUBTOTAL	33																

TABLE 4

PAGE 1

ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

## IDAHO OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
C05-00-0182-01																	
EMPLOYEES	1144	198	72	34	3	5	1										43
VISITORS	3880																
TOTAL	5024	198	72	34	3	5	1										43
C05-00-0183-01																	
EMPLOYEES	4	3															
VISITORS																	
TOTAL	4	3															
AEROJET NUCLEAR COMP																	
C05-00-0163-01																	
EMPLOYEES	813	322	153	112	53	27	31	4									198
VISITORS	11147	4	3														1
TOTAL	11960	326	156	112	53	27	31	4									199
ALLIED CHEMICAL CORP																	
C05-00-0169-01																	
EMPLOYEES	241	67	68	76	45	29	84	58	6								389
VISITORS	4731	6	4														1
TOTAL	4972	73	72	76	45	29	84	58	6								390
ARRINGTON CONSTRUCTI																	
C05-00-0070-01																	
EMPLOYEES	9	23	6	3	1	1		1									7
VISITORS																	
TOTAL	9	23	6	3	1	1		1									7
BIGGERS CONSTRUCTION																	
C05-00-0074-01																	
EMPLOYEES	1	7															
VISITORS																	
TOTAL	1	7															
BINGHAM MECHANICAL &																	
C05-00-0082-01																	
EMPLOYEES	2	13	11	5	2	3											8
VISITORS																	
TOTAL	2	13	11	5	2	3											8
C-L ELECTRIC COMPANY																	
C05-00-0075-01																	
EMPLOYEES	2	1				1											1
VISITORS																	
TOTAL	2	1				1											1

TABLE 4

PAGE 2

ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

## IDAHO OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
<b>CONSULTANTS &amp; DESIGN</b>																	
C05-00-0181-01																	
EMPLOYEES	8	2															
VISITORS																	
TOTAL	8	2															
<b>IDAHO MISCELLANEOUS</b>																	
C05-00-0078-00																	
EMPLOYEES	129	120	19	11	8	7	13	5									57
VISITORS																	
TOTAL	129	120	19	11	8	7	13	5									57
<b>LEHIGH DESIGN CO., I</b>																	
C05-00-0071-01																	
EMPLOYEES	23	12															1
VISITORS																	
TOTAL	23	12															1
<b>MORRISON-KNUDSEN</b>																	
C05-00-0134-01																	
EMPLOYEES	40	37	12	20	10	7	19	7	1								73
VISITORS																	
TOTAL	40	37	12	20	10	7	19	7	1								73
<b>ORMOND CONSTRUCTION</b>																	
C05-00-0069-01																	
EMPLOYEES	6	10	2	1													1
VISITORS																	
TOTAL	6	10	2	1													1
<b>WATERS ASBESTOS &amp; SU</b>																	
C05-00-0156-01																	
EMPLOYEES		3	1														
VISITORS																	
TOTAL		3	1														
SUBTOTAL	22180	828	351	262	122	80	148	75	7								781

TABLE 5  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

PAGE 1

NEVADA OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
<b>AIR RESOURCES LABORA</b>																	
C06-00-0159-01																	
EMPLOYEES	1																
VISITORS																	
TOTAL	1																
<b>BIRDWELL DIVISION OF</b>																	
C06-00-0214-01																	
EMPLOYEES	43	8	4														1
VISITORS	69	1															1
TOTAL	112	9	4														
<b>EG&amp;G, INC.</b>																	
C06-00-0028-01																	
EMPLOYEES	786	15	3														1
VISITORS	294																1
TOTAL	1080	15	3														
<b>ENVIRONMENTAL PROTEC</b>																	
C06-00-0116-01																	
EMPLOYEES	245	7	4														1
VISITORS	79																1
TOTAL	324	7	4														
<b>FENIX &amp; SCISSON, INC</b>																	
C06-00-0113-01																	
EMPLOYEES	134		1														
VISITORS	263																
TOTAL	397		1														
<b>HALLIBURTON SERVICES</b>																	
C06-00-0131-01																	
EMPLOYEES	45	1															
VISITORS	254																
TOTAL	299	1															
<b>HOLMES &amp; NARVER, INC</b>																	
C06-00-0029-01																	
EMPLOYEES	275	3															
VISITORS	135																
TOTAL	410	3															
<b>NEVADA MISCELLANEOUS</b>																	
C06-00-0157-00																	
EMPLOYEES	378	1															
VISITORS	202																
TOTAL	580	1															

TABLE 5

ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

PAGE 2

## NEVADA OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-RE
-----	-----	-----	-----	-----	-----	-----	---	---	---	---	---	---	---	---	---	---	-----
REECO																	
G06-00-0027-01																	
EMPLOYEES	1105	15															
VISITORS	1284																
TOTAL	2389	15															
REYNOLDS ELECTRICAL																	
C06-00-0093-01																	
EMPLOYEES	4052	53	16	13	3												
VISITORS	2963																
TOTAL	7015	53	16	13	3												
SPERRY-SUN WELL SURV																	
C06-00-0150-01																	
EMPLOYEES	6																
VISITORS	2																
TOTAL	8																
U. S. DEPARTMENT OF																	
C06-00-0216-01																	
EMPLOYEES	68	2	1														
VISITORS	16																
TOTAL	84	2	1														
WACKENHUT SERVICES.																	
C06-00-0118-01																	
EMPLOYEES	230																
VISITORS	29																
TOTAL	259																
WESTINGHOUSE ELECTRI																	
C06-00-0217-01																	
EMPLOYEES	15	2	4	3													
VISITORS	14																
TOTAL	29	2	4	3													
SUBTOTAL	12987	108	32	17	3												

TABLE 6  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

PAGE 1

OAK RIDGE OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
COMPARATIVE ANIMAL R																	
C08-00-0044-01																	
EMPLOYEES	102	17															1
VISITORS	16																
TOTAL	118	17															1
GOODYEAR ATOMIC CORP																	
C08-04-0049-01																	
EMPLOYEES	136	311	282	51	16	10	5										110
VISITORS																	
TOTAL	136	311	282	51	16	10	5										110
NATIONAL LEAD COMPAN																	
C08-01-0047-01																	
EMPLOYEES	26	317	131	79	23	8	2	1									95
VISITORS																	
TOTAL	26	317	131	79	23	8	2	1									95
OAK RIDGE ASSOCIATED																	
C08-00-0128-01																	
EMPLOYEES	450	126	14	2													10
VISITORS																	
TOTAL	450	126	14	2													10
PUERTO RICO NUCLEAR																	
C08-05-0046-02																	
EMPLOYEES	139	34	10	2	1		2										8
VISITORS	1916	50															3
TOTAL	2055	84	10	2	1		2										10
RMI COMPANY																	
C08-00-0043-01																	
EMPLOYEES	30	20	8														2
VISITORS																	
TOTAL	30	20	8														2
RUST ENGINEERING COM																	
C08-00-0045-01																	
EMPLOYEES		1120	4	2													57
VISITORS																	
TOTAL		1120	4	2													57
UNION CARBIDE CORPOR																	
C08-00-0042-01																	
EMPLOYEES		6134	171	33	5												352
VISITORS																	
TOTAL		6134	171	33	5												352

TABLE 6  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

OAK RIDGE OPERATIONS OFFICE

OFFICE -----	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM -----
UNION CARBIDE CORPOR																	
C08-00-0042-02																	
EMPLOYEES		5405	216	75	8	5	2										349
VISITORS																	
TOTAL		5405	216	75	8	5	2										349
UNION CARBIDE CORPOR																	
C08-00-0042-03																	
EMPLOYEES	4714	623	185	127	48	21	61	9	3								284
VISITORS	27	74	9														5
TOTAL	4741	697	194	127	48	21	61	9	3								289
UNION CARBIDE CORPOR																	
C08-00-0042-04																	
EMPLOYEES	1923	318	106	37	21	10	3										75
VISITORS																	
TOTAL	1923	318	106	37	21	10	3										75
SUBTOTAL	9479	14549	1136	408	122	54	75	10	3								1351

TABLE 7  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

PITTSBURGH NAVAL REACTORS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
DUQUESNE LIGHT COMPA																	
C09-02-0051-01																	
EMPLOYEES	10	173	94	57	24	19	84	63									362
VISITORS	58	286	25	6	5	3	4										33
TOTAL	68	459	119	63	29	22	88	63									394
WESTINGHOUSE ELECTRI																	
C09-00-0050-02																	
EMPLOYEES	435	1575	483	445	239	175	283	25									1120
VISITORS	262	70	5														4
TOTAL	697	1645	488	445	239	175	283	25									1124
WESTINGHOUSE ELECTRI																	
C09-01-0050-01																	
EMPLOYEES	111	394	102	69	19	2	2										80
VISITORS	137	129	1														7
TOTAL	248	523	103	69	19	2	2										87
SUBTOTAL	1013	2627	710	577	287	199	373	88									1605



TABLE 8  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

RICHLAND OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
ATLANTIC RICHFIELD H																	
C10-00-0052-01																	
EMPLOYEES	3	114	333	384	226	130	134	11	3								702
VISITORS		2	8	3	3	1	1										7
TOTAL	3	116	341	387	229	131	135	11	3								709
AUTOMATION INDUSTRIE																	
C10-00-0205-01																	
EMPLOYEES	1	9	17	5	1												6
VISITORS																	
TOTAL	1	9	17	5	1												6
BATTELLE MEMORIAL IN																	
C10-00-0013-02																	
EMPLOYEES	5	353	245	119	26	20	21	12	5								218
VISITORS	3	6	7	1	1												3
TOTAL	8	359	252	120	27	20	21	12	5								220
HANFORD ENGINEERING																	
C10-00-0142-01																	
EMPLOYEES	28	124	154	106	51	27	50	3	1								214
VISITORS		4		1													1
TOTAL	28	128	154	107	51	27	50	3	1								215
HANFORD ENVIRONMENTA																	
C10-00-0057-01																	
EMPLOYEES			1	1													1
VISITORS																	
TOTAL			1	1													1
J. A. JONES CONSTRUC																	
C10-00-0058-01																	
EMPLOYEES	31	259	114	101	49	35	121	6									329
VISITORS		1	1	3	3												3
TOTAL	31	260	115	104	52	35	121	6									332
UNITED NUCLEAR INDUS																	
C10-00-0055-01																	
EMPLOYEES	1	16	60	90	60	44	172	139	14								776
VISITORS																	
TOTAL	1	16	60	90	60	44	172	139	14								776
SUBTOTAL	72	888	940	814	420	257	499	171	23								2258

TABLE 9  
ERDA CONTRACTORS  
ANNUAL WHOLE BCDY EXPOSURES  
1976

SAN FRANCISCO OPERATIONS OFFICE

OFFICE -----	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM -----
<b>ATOMICS INTERNATIONAL</b>																	
C11-00-0060-01																	
EMPLOYEES	253	157	34	16	14	5	9	2									51
VISITORS	683	138	4	1													8
TOTAL	936	295	38	17	14	5	9	2									59
<b>STANFORD LINEAR ACCE</b>																	
C11-00-0062-01																	
EMPLOYEES	98	80	16	4	3												10
VISITORS																	
TOTAL	98	80	16	4	3												10
<b>UNIVERSITY OF CALIFO</b>																	
C11-00-0004-02																	
EMPLOYEES	2172	998	120	44	4	3	1										94
VISITORS																	
TOTAL	2172	998	120	44	4	3	1										94
<b>UNIVERSITY OF CALIFO</b>																	
C11-00-0004-03																	
EMPLOYEES	5341	692	102	33	17	6	8										93
VISITORS	15958	64	2	2													4
TOTAL	21299	756	104	35	17	6	8										97
<b>UNIVERSITY OF CALIFO</b>																	
C11-00-0004-04																	
EMPLOYEES	129	12	3		1												2
VISITORS																	
TOTAL	129	12	3		1												2
<b>UNIVERSITY OF CALIFO</b>																	
C11-00-0004-05																	
EMPLOYEES	98	8	4	5	1	1		1	2								14
VISITORS	57	8		4					1								5
TOTAL	155	16	4	9	1	1		1	3								19
<b>UNIVERSITY OF CALIFO</b>																	
C11-00-0004-06																	
EMPLOYEES	9																
VISITORS																	
TOTAL	9																
<b>UNIVERSITY OF CALIFO</b>																	
C11-00-0004-07																	
EMPLOYEES	89	10	4	1		2											3
VISITORS																	
TOTAL	89	10	4	1		2											3

TABLE 9

ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

SAN FRANCISCO OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
-----	-----	-----	-----	-----	-----	-----	---	---	---	---	---	---	---	---	---	---	-----
SUBTOTAL	24887	2167	289	110	40	17	18	3	3								285

TABLE 10  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

SCHENECTADY NAVAL REACTORS OFFICE

OFFICE -----	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM -----
GENERAL ELECTRIC COM																	
C13-00-0006-06																	
EMPLOYEES	570	1645	212	101	26	9	10										196
VISITORS	78	92															5
TOTAL	648	1737	212	101	26	9	10										201
SUBTOTAL	648	1737	212	101	26	9	10										201

TABLE 11  
ERDA CONTRACTORS  
ANNUAL WHOLE BODY EXPOSURES  
1976

SAVANNAH RIVER OPERATIONS OFFICE

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
-----	-----	-----	-----	-----	-----	-----	---	---	---	---	---	---	---	---	---	---	-----
E. I. DU PONT DE NEM																	
C14-00-0063-01																	
EMPLOYEES	1854	2157	544	519	284	175	162	37									1064
VISITORS																	
TOTAL	1854	2157	544	519	284	175	162	37									1064
E. I. DU PONT DE NEM																	
C14-00-0063-02																	
EMPLOYEES	593	455	199	130	66	23	26	1									209
VISITORS																	
TOTAL	593	455	199	130	66	23	26	1									209
SAVANNAH RIVER ECOLO																	
C14-00-0064-01																	
EMPLOYEES	53	38															2
VISITORS																	
TOTAL	53	38															2
SUBTOTAL	2500	2650	743	649	350	198	188	38									1275

TABLE 12  
 ERDA FIELD OFFICE/AREA OFFICE EMPLOYEE  
 ANNUAL WHOLE BODY EXPOSURES  
 1976

OFFICE -----	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM -----
ADMINISTRATION G00-00-0000-00	35	16															1
SUBTOTAL	35	16															1
ALBUQUERQUE OPERATIO G01-00-0000-00	215	83	7	1													6
AMARILLO AREA OFFICE G01-01-0000-00	1	22	3														2
DAYTON AREA OFFICE G01-03-0000-00	9	8	3														1
KANSAS CITY AREA OFF G01-04-0000-00	6																
LDS ALAMOS AREA OFFI G01-05-0000-00	317	37	2	2			1	1									7
PINELLAS AREA OFFICE G01-06-0000-00	2	4															
ROCKY FLATS AREA OFF G01-07-0000-00		73		1													4
SANDIA AREA OFFICE G01-08-0000-00	3																
SUBTOTAL	553	227	15	4			1	1									19
HEALTH AND SAFETY LA G03-04-0000-00	30	2	2	1	1												1
NEW BRUNSWICK LAB G03-03-0000-00	52	15	5	1													2
SUBTOTAL	82	17	7	2	1												3
GRAND JUNCTION OFFIC G04-00-0000-00	2																
SUBTOTAL	2																
IDAHO OPERATIONS OFF G05-00-0000-00	163	63	10		3	2											9

TABLE 12

 ERDA FIELD OFFICE/AREA OFFICE EMPLOYEE  
 ANNUAL WHOLE BODY EXPOSURES  
 1976

PAGE 2

OFFICE	<MEAS.	<0.10	0.10 0.25	0.25 0.50	0.50 0.75	0.75 1.00	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	>10	TOTAL MAN-REM
SUBTOTAL	163	63	10		3	2											9
NEVADA OPERATIONS OF G06-00-0000-00	3621	45	11	1		2											6
SUBTOTAL	3621	45	11	1		2											6
OAK RIDGE OPERATIONS G08-00-0000-00	17	6															
PADUCAH AREA OFFICE G08-02-0000-00	1																
SUBTOTAL	18	6															
PITTSBURGH NAVAL REA G09-00-0000-00	1	34	7	2													4
PITTSBURGH NAVAL REA G09-01-0000-00	3	5															
SHIPPINGPORT BRANCH G09-02-0000-00			1	1													1
SUBTOTAL	4	39	8	3													4
RICHLAND OPERATIONS G10-00-0000-00		20	10	7	2												7
SUBTOTAL		20	10	7	2												7
SAN FRANCISCO OPERAT G11-00-0000-00	54	18															1
SUBTOTAL	54	18															1
SCHENECTADY NAVAL RE G13-00-0000-00	10	28															1
SCHENECTADY NAVAL RE G13-01-0000-00		1	1														
SUBTOTAL	10	29	1														2
SAVANNAH RIVER OPERA G14-00-0000-00	161	57	2														3







