

DOE Occupational Radiation Exposure: 2008 Annual Report

Exhibit A-1. Labor Categories and Occupation Codes.

The following is a list of the Occupation Codes that are reported with each individual's dose record to the DOE Radiation Exposure Monitoring System (REMS) in accordance with DOE M 231.1-1A. Occupation Codes are grouped into Labor Categories for the purposes of analysis and summary in this report. The occupation codes are listed in DOE M 231.1-1A, Appendix G, Table 7, and represent a subset of the occupations listed in the Department of Commerce's Standard Occupational Classification (SOC) Manual (1980).

Labor Category	Occupation Code	Occupation Name
Agriculture	562	Groundskeepers
	570	Forest Workers
	580	Misc. Agriculture
Construction/Repair	610	Mechanics/Repairers
	641	Masons
	642	Carpenters
	643	Electricians
	644	Painters
	645	Pipe Fitter
	650	Miners/Drillers
	660	Misc. Repair/Construction
Laborers	850	Handlers/Laborers/Helpers
Management	110	Manager - Administrator
	400	Sales
	450	Admin. Support and Clerical
Misc.	910	Military
	990	Miscellaneous
Production	681	Machinists
	682	Sheet Metal Workers
	690	Operators, Plant/System/Utility
	710	Machine Setup/Operators
	771	Welders and Solderers
	780	Misc. Precision/Production
Professional	160	Engineer
	170	Scientist
	184	Health Physicist
	200	Misc. Professional
	260	Doctors and Nurses
Service Workers	512	Firefighters
	513	Security Guards
	521	Food Service Employees
	524	Janitors
	525	Misc. Service
Technicians	350	Technicians
	360	Health Technicians
	370	Engineering Technicians
	380	Science Technicians
	383	Radiation Monitors/Techs.
	390	Misc. Technicians
Transport Workers	820	Truck Drivers
	821	Bus Drivers
	825	Pilots
	830	Equipment Operators
	840	Misc. Transport
Unknown	1	Unknown

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A-2. Organizations Reporting to DOE REMS, 2004-2008

Thirty sites reported occupational exposure data in 2008. The following is a list of all organizations reporting to the DOE REMS from 2004-2008. The list provides the Operations Field Office and Site groupings used in this report as well as the organization reporting code and name.

Operations/ Field Office	Site	Organization Code	Organization Name	Year Reported*				
				'04	'05	'06	'07	'08
Albuquerque	Ops. and Other Facilities	530001	NNSA Kansas City Site Office	•	•	•		
		531002	Honeywell FM & T/KC Production	•	•	•	•	•
		590001	Waste Isolation Pilot Project (WIPP)	•	•	•	•	•
		593001	Carlsbad Area Office		•	•	•	
		593004	Carlsbad Area Miscellaneous Contractors	•	•	•	•	•
	Golden Field Office	2806003	National Renewable Energy Lab (NREL) - GO	•	•	•	•	•
	Los Alamos National Lab. (LANL)	540001	NNSA Los Alamos Site Office	•	•	•	•	
		544003	Los Alamos National Laboratory	•	•	•	•	•
		544809	Protection Technologies Los Alamos	•	•	•	•	•
		544904	Johnson Controls, Inc.	•	•	•	•	•
	Pantex Plant (PP)	510001	NNSA Amarillo Site Office	•	•	•		•
		514004	Battelle - Pantex				•	
		515002	BWXT - Amarillo	•	•	•	•	•
		515006	BWXT - Amarillo - Subcontractors	•	•	•	•	•
		515009	BWXT - Amarillo - Security Forces	•	•	•	•	•
	Sandia National Lab. (SNL)	578003	Sandia National Laboratory	•	•	•	•	•
	Chicago	Ops. and Other Facilities	1000503	Ames Laboratory (Iowa State)	•	•	•	•
1001501			Argonne Site Office	•				
1001606			Chicago Office Subs	•				
1002001			Environmental Meas. Lab. - Research	•	•			
1004031			New Brunswick Laboratory - Research	•	•	•	•	•
1005003			Princeton Plasma Physics Laboratory	•	•	•	•	•
Argonne Nat'l Lab. - East (ANL-E)		1000703	Argonne National Laboratory - East	•				
Argonne National Lab (ANL)		1000703	Argonne National Laboratory		•	•	•	•
Argonne Nat'l Lab. - West (ANL-W)		1000713	Argonne National Laboratory - West	•				
Brookhaven Nat'l Lab. (BNL)		1001003	Brookhaven National Laboratory	•	•	•	•	•
Fermi Nat'l Accelerator Lab. (FERMI)	1002503	Fermilab	•	•	•	•	•	
DOE HQ	DOE Headquarters	1504001	DOE Headquarters	•	•	•		•
		1509503	Thomas Jefferson National Accel. Facility	•				
Idaho	Idaho Site	3004001	Idaho Field Office	•	•	•	•	•
		3004402	BBWI - AMWTP	•				
		3005004	INL - BEA, LLC - Services	•	•	•	•	•
		3005016	ICP - BBWI - Construction Subs	•	•	•	•	•
		3006016	ICP - CWI - Construction Subs		•	•	•	•
		3009004	Bechtel BWXT Idaho, LLC - WVDP	•				
		3060634	Stoller Service Subs - Grand Junction		•			
		3260605	SM Stoller - EM		•	•		
		3260616	SM Stoller Subs - LM					
		3260634	SM Stoller Service Subs - Grand Junction	•				
Nevada	Nevada Test Site (NTS)	3500000	Nevada Operations	•	•	•	•	•
		3501204	Bechtel Nevada - Las Vegas	•	•	•	•	•
		3501405	Bechtel Nevada - NTS	•	•	•	•	•
		3501416	Bechtel Nevada - NTS Subcontractors	•	•	•	•	•
		3501503	Bechtel Nevada - Special Tech Laboratory		•	•	•	•
		3501604	Bechtel Nevada - Washington Aerial Measurement		•	•	•	•
		521503	Bechtel Nevada - Special Technologies Labs	•				
		521604	Bechtel Nevada - Washington Aerial Meas.	•				
		3507514	Nevada Miscellaneous Contractors	•	•	•	•	•
		3508004	Nye County Sheriff	•	•	•	•	•
		3509009	Wackenhut Services, Inc. - NV	•	•	•	•	•

Oak Ridge		9700000	Yucca Mountain Project		●	●	●	●	
	Ops. and Other Facilities	4004203	Oak Ridge Inst. for Science & Educ. (ORISE)	●	●	●	●	●	
		4004501	Oak Ridge Office	●	●	●	●	●	
		4009503	Thomas Jefferson National Accel. Facility	●	●	●	●	●	
	Oak Ridge Site	1522005	DeNuke Services: SPRU LA					●	
		4003602	UT-Battelle: Isotek				●	●	
		4004602	UT-Battelle: Foster Wheeler	●	●	●	●	●	
		4005104	USEC: Oak Ridge		●	●	●	●	
		4006002	Bechtel-Jacobs Co., LLC-ETTP	●	●	●	●	●	
		4006012	USEC: Oak Ridge	●	●				
		4006105	UT-Battelle - Materials & Energy Corp.				●	●	
		4006302	British Nuclear Fuels Limited (BNFL) (ETTP)	●	●				
		4006503	UT-Battelle - ORNL	●	●	●	●	●	
		4006510	Bechtel Jacobs - ORNL	●	●	●	●	●	
		4007509	Wackenhut Services - OR Security	●	●	●	●	●	
		4008010	Bechtel-Jacobs, Y-12	●	●	●	●	●	
		4018102	BWXT LLC, Y-12	●	●	●	●	●	
	Paducah Gas. Diff. Plant (PGDP)	4007002	Bechtel-Jacobs Co., LLC - Paducah	●	●	●			
		4007002	Swift & Staley, UDS					●	
		6203004	UT-Battelle - Paducah Remediation Services			●	●	●	
		6203106	Uranium Disposition Services - Paducah Sub		●	●	●		
		6203204	Swift & Staley Mech Contr, Inc. - Paducah		●	●	●		
	Portsmouth Gas. Diff. Plant (PORTS)	4002502	Bechtel-Jacobs - Portsmouth	●	●				
		6202106	Uranium Disposition Services - Portsmouth Sub		●	●	●	●	
		6202204	Theta Pro2Serve Management Co. - Portsmouth		●	●	●	●	
		6202304	LATA/Parralax Portsmouth LLC		●	●	●	●	
	Oakland	Ops. and Other Facilities	8001003	Boeing North America, Inc. - Research		●	●	●	●
			8001023	Rocketdyne - Boeing	●				
			8006103	U. of Cal./Davis, Radiobiology Lab. - LEHR					
			8007001	Oakland Field Office	●	●	●		
		Lawrence Berkeley Nat'l Lab. (LBNL)	8003003	Lawrence Berkeley National Laboratory	●	●	●	●	●
		Lawrence Livermore Nat'l Lab. (LLNL)	580403	Lawrence Livermore National Laboratory	●			●	●
8004003			Lawrence Livermore National Laboratory		●	●	●		
580701			Lawrence Livermore National Laboratory					●	
580404			LLNL Services	●				●	
8004004			LLNL Services		●	●			
580503			LLNL - Nevada	●			●	●	
8005003			LLNL - Nevada		●	●			
Stanford Linear Acc. Center (SLAC)		8008003	Stanford Linear Accelerator Center	●	●	●	●	●	
	8009005	Separation Process Research Unit			●	●			
Ohio	Ops. and Other Facilities	4500001	Ohio Field Office	●					
		4510001	Miamisburg Envir. Mgmt. Project Office	●	●				
		4510006	MEMP Office Subs						
		4517003	Battelle Memorial Institute - Columbus	●					
	Fernald Environmental	4521001	Fernald Closure Project (FCP)	●	●	●			
		4521004	FEMP Office Service Subcontractors	●	●	●			
		4523702	Fluor Fernald - FEMP	●	●	●			
		4523704	Fluor Fernald Service Vendors	●	●				
		4523706	Fluor Fernald Construction Subcontractors	●	●	●			
	Mound Plant	4516002	CH2M Hill-Mound, Inc.	●	●	●			
		4516004	CH2M Hill-Mound, Inc. - Service Subs	●	●	●			
		4516009	CH2M Hill-Mound, Inc. - Security Forces	●					
	West Valley Project	4530001	West Valley Demonstration Project Office		●	●			
4539004		West Valley Nuclear Services, Inc. (WVNS)				●	●		
4542005		RMI Environmental Services	●	●	●				
Rocky Flats	Rocky Flats Env. Tech. Site (RFETS)	7700001	Rocky Flats Office	●	●				
		7707002	Rocky Flats Prime Contractors	●	●				

		7707004	Rocky Flats Subcontractors	●	●			
Richland	Office of River Protection	4700805	Bechtel National, Inc. - WTP	●	●	●	●	●
		4701001	Office of River Protection	●	●	●	●	●
		4702004	Advance Technology Laboratories		●	●	●	●
		4707104	CH2M Hill Hanford Group	●	●	●	●	●
		NA-21	National Nuclear Security Administration					●
	Hanford Site	7500503	Battelle Memorial Institute (PNL)	●	●	●	●	●
		7500605	Washington Closure Hanford, LLC	●	●	●	●	●
		7502504	Advance Med Hanford	●	●	●	●	●
		7505004	Fluor Daniel - Hanford	●	●	●	●	●
		7505005	Fluor Daniel Northwest	●	●	●	●	●
		7505006	Fluor Daniel Northwest Services	●	●	●	●	●
		7505024	Duratek Federal Services, Inc. - Hanford	●	●	●	●	●
		7505025	Duratek Federal Services, Inc.	●	●	●	●	●
		7505034	Duke Engineering Services Hanford	●				
		7505044	NUMATEC Hanford	●	●	●	●	
		7505055	Lockheed Martin Services, Inc.	●	●	●	●	●
		7505075	COGEMA Engineering Corporation	●	●	●	●	●
		7505099	Protection Technology - Hanford Security	●	●			
		7505304	CH2M Hill Plateau Remediation Co.					●
		7506001	DOE - Richland Field Office	●	●	●	●	●
7509104	Verizon/Qwest	●						
Savannah River	Savannah River Site (SRS)	8500505	Bechtel Construction - SR					●
		8500516	Miscellaneous SRS Construction Subs	●	●	●	●	●
		8501002	Westinghouse Savannah River Co.	●	●	●	●	●
		8501014	Westinghouse S.R. Subcontractors	●	●	●	●	●
		8505001	S.R. Forest Station			●	●	
		8505004	SRS - WSRC				●	●
		8505501	Savannah River Field Office	●	●	●	●	●
		8505525	SRS - WSRC - Construction				●	●
		8505526	SRS - WSRC - Construction				●	●
		8507004	Miscellaneous DOE Contractors - SR		●	●	●	●
		8509003	Univ. of Georgia Ecology Laboratories	●	●	●	●	●
		8509504	Wackenhut Services, Inc. - SRS				●	●
		8509509	Wackenhut Services, Inc. - SR	●	●	●	●	●
		Not included in this report (see Appendix D)						
Pittsburg Naval Reactor Office	Pittsburg Naval Reactor Office	6007504	PNR - BAPL & BPMI-P	●	●	●	●	●
		6008003	Pittsburg Naval Reactor	●	●	●	●	●
		6009003	PNR - Bechtel Bettis, Inc.	●	●	●	●	●
Schenectady Naval Reactor Office	Schenectady Naval Reactor Office	9004003	LM-KAPL - Kesselring	●	●	●	●	●
		9005003	LM-KAPL - Knolls	●	●	●	●	●
		9005004	LM-KAPL - Knolls Service Subs	●	●	●	●	●

*Those organizations no longer reporting radiation exposure information have either ceased operations requiring the monitoring and reporting of radiation records, are no longer under contract or subcontract at the DOE facility, or have changed organization codes or the name of the organization.

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Exhibit A-3. Facility Type Codes.

The following is a list of Facility Type Codes reported to REMS in accordance with DOE M 231.1-1A. A facility type code is reported with each individual's dose record and indicates the facility type where the majority of the individual's dose was accrued during the monitoring year.

Facility Type Code	Description
10	Accelerator
21	Fuel/Uranium Enrichment
22	Fuel Fabrication
23	Fuel Processing
40	Maintenance and Support (Site-Wide)
50	Reactor
61	Research, General
62	Research, Fusion
70	Waste Processing/Mgmt.
80	Weapons Fab. and Testing
99	Other

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Exhibit B-1. Site Dose Data - 2006.

2006								
Site	Coll. TEDE (person-rem)	Percent Change from 2005	Number with Meas. Dose	Percent Change from 2005	Avg. Meas. TEDE (rem)	Percent Change from 2005	Percentage of Coll. TEDE above 0.500 rem	Percent Change from 2005
Ames Laboratory	0.2	-46% ▼	8	-43% ▼	0.023	-6% ▼		
Argonne National Laboratory	9.5	-44% ▼	158	-41% ▼	0.060	-5% ▼	8%	-43% ▼
Boeing North America, Inc. - Research	0.0	-97% ▼	5	-83% ▼	0.007	-82% ▼		
Brookhaven National Laboratory	6.1	-40% ▼	147	-32% ▼	0.042	-12% ▼		
Fermi National Accelerator Laboratory	25.7	60% ▲	776	83% ▲	0.033	-13% ▼	2%	
Fernald Environmental Management Project	16.8	-66% ▼	462	-45% ▼	0.036	-37% ▼		
Hanford								
Hanford Site	106.1	-38% ▼	1,451	-21% ▼	0.073	-22% ▼	15%	-38% ▼
Office of River Protection	13.5	2% ▲	278	2% ▲	0.049	0%		
Pacific Northwest National Laboratory	13.3	-34% ▼	182	-6% ▼	0.073	-30% ▼		
Honeywell, FM&T/KC Production	0.2	74% ▲	26	8% ▲	0.006	60% ▲		
Idaho Site Office	161.7	-11% ▼	2,023	-2% ▼	0.080	-10% ▼	17%	30% ▲
Lawrence Berkeley National Laboratory	0.9	-21% ▼	16	-27% ▼	0.059	9% ▲		
Lawrence Livermore National Laboratory	16.4	63% ▲	134	-28% ▼	0.122	125% ▲	41%	77% ▲
Los Alamos National Laboratory	164.0	5% ▲	1,985	-8% ▼	0.083	15% ▲	34%	25% ▲
Mound Plant	0.2	-84% ▼	15	-87% ▼	0.010	24% ▲		
Nevada Test Site	1.8	-50% ▼	39	-45% ▼	0.046	-9% ▼		
New Brunswick Laboratory	0.1	-47% ▼	2	-50% ▼	0.043	6% ▲		
Oak Ridge								
East Tennessee Technology Park	0.5	-90% ▼	22	-86% ▼	0.021	-24% ▼		
Oak Ridge Institute for Science and Education	0.0	-82% ▼	8	-78% ▼	0.006	-20% ▼		
Oak Ridge National Laboratory	25.6	-20% ▼	416	-24% ▼	0.062	5% ▲	9%	31% ▲
Y-12 NSC	53.3	-18% ▼	1,171	-8% ▼	0.045	-10% ▼	13%	
Paducah Gaseous Diffusion Plant	2.2	-21% ▼	25	-44% ▼	0.088	43% ▲		
Pantex Plant	39.7	-10% ▼	327	-2% ▼	0.121	-8% ▼		
Portsmouth Gaseous Diffusion Plant	2.2	-15% ▼	40	-11% ▼	0.056	-4% ▼		
Princeton Plasma Physics Laboratory	1.5	33% ▲	155	14% ▲	0.010	16% ▲		
RMI Environmental Services	1.5		66		0.023	11% ▲		
Sandia National Laboratory	22.0	158% ▲	268	21% ▲	0.082	114% ▲	44%	
Savannah River Site	107.2	-12% ▼	2,387	1% ▲	0.045	-13% ▼	1%	-77% ▼
Stanford Linear Accelerator Center	3.0	-71% ▼	102	-72% ▼	0.030	3% ▲		
Thomas Jefferson National Accelerator Facility	0.5	-65% ▼	29	-60% ▼	0.018	-12% ▼		
West Valley Project	16.1	11% ▲	189	-10% ▼	0.085	23% ▲		
Site Office Personnel*	0.7	-45% ▼	41	-52% ▼	0.018	14% ▲		
Totals	812.6	-18% ▼	12,953	-20% ▼	0.063	2% ▲	16%	8% ▲

Note: Boxed values (gray background) indicate the greatest value in each column.

* Includes site office personnel from Albuquerque, Chicago, Oak Ridge, and Ohio in addition to several smaller facilities not associated with a DOE site.

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Exhibit B-2. Site Dose Data - 2007

Site	Collective TEDE (person-rem)	Percent Change - Coll. TEDE	Number with Meas. Dose	Percent Change - # with Meas. Dose	Avg. Meas. TEDE (rem)	Percent Change - Avg. Meas. TEDE	Percentage of Coll. TEDE above 0.500 rem	Percent Change - Coll. TEDE above 0.500 rem
Ames Laboratory	0.2		6		0.026			
Argonne National Laboratory	9.2	-3% ▼	146	-8% ▼	0.063	5% ▲	12%	53% ▲
Boeing North America, Inc. - Research	0.2		14		0.012			
Brookhaven National Laboratory	6.3	3% ▲	191	30% ▲	0.033	-21% ▼		
Fermi National Accelerator Laboratory	16.6	-36% ▼	213	-73% ▼	0.078	134% ▲	6%	226% ▲
Hanford - Hanford Site	124.2	17% ▲	1,650	14% ▲	0.075	3% ▲	18%	25% ▲
Hanford - Office of River Protection	22.8	69% ▲	397	43% ▲	0.057	18% ▲		
Hanford - Pacific Northwest National Laboratory	11	-17% ▼	181	-1% ▼	0.061	-17% ▼		
Honeywell, FM&T/KC Production	0.1		22		0.004			
Idaho National Laboratory	133.7	-17% ▼	1,871	-8% ▼	0.071	-11% ▼	7%	-59% ▼
Lawrence Berkeley National Laboratory	0.8		17		0.045			
Lawrence Livermore National Laboratory	15.5	-5% ▼	137	2% ▲	0.113	-7% ▼	40%	-3% ▼
Los Alamos National Laboratory	149.6	-9% ▼	1,392	-30% ▼	0.107	30% ▲	46%	34% ▲
Nevada Test Site	5.7	219% ▲	70	79% ▲	0.082	78% ▲		
New Brunswick Laboratory	0		2		0.014			
Oak Ridge - East Tennessee Technology Park	0.2		15		0.014			
Oak Ridge - Oak Ridge Institute for Science and Education	0.1		35		0.004			
Oak Ridge - Oak Ridge National Laboratory	31.8	24% ▲	424	2% ▲	0.075	22% ▲	19%	116% ▲
Oak Ridge - Y-12 National Security Complex	74.3	39% ▲	1,258	7% ▲	0.059	30% ▲	5%	
Paducah Gaseous Diffusion Plant	1.7	-25% ▼	29	16% ▲	0.057	-35% ▼		
Pantex Plant	23.9	-40% ▼	293	-10% ▼	0.082	-33% ▼	25%	40% ▲
Portsmouth Gaseous Diffusion Plant	1.5	-35% ▼	18	-55% ▼	0.081	44% ▲		
Princeton Plasma Physics Laboratory	1.4	-11% ▼	153	-1% ▼	0.009	-9% ▼		
Sandia National Laboratory	7.8	-64% ▼	175	-35% ▼	0.045	-46% ▼		
Savannah River Site	112.4	5% ▲	2,135	-11% ▼	0.053	17% ▲	7%	971% ▲
Stanford Linear Accelerator Laboratory	1.5	-52% ▼	41	-60% ▼	0.035	19% ▲		
Thomas Jefferson National Accelerator Facility	0.8		19		0.041			
West Valley Project	44.5	177% ▲	188	-1% ▼	0.237	179% ▲	42%	
Site Office Personnel*	0.3		10		0.025			
Totals	797.8	-2% ▼	11,102	-14% ▼	0.072	15% ▲	19%	21% ▲

Note: Boxed values (gray background) indicate the greatest value in each column.

* Includes site office personnel from Albuquerque, Chicago, Oak Ridge, and Ohio in addition to several smaller facilities not associated with a DOE site.

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Exhibit B-3. Site Dose Data - 2008

Site	Collective TEDE (person-rem)	Percent Change - Coll. TEDE	Number with Meas. Dose	Percent Change - # with Meas. Dose	Avg. Meas. TEDE (rem)	Percent Change - Avg. Meas. TEDE	Percentage of Coll. TEDE above 0.500 rem	Percent Change - Coll. TEDE above 0.500 rem
Ames Laboratory	0.5		30		0.017			
Argonne National Laboratory	13.2	43% ▲	128	-12% ▼	0.103	63% ▲	33%	65% ▲
Boeing North America, Inc. - Research	0.1		15		0.009			
Brookhaven National Laboratory	5.4	-13% ▼	149	-22% ▼	0.036	11% ▲		
DOE - NNSA	0.1		5		0.016			
Fermi National Accelerator Laboratory	15.4	-7% ▼	166	-22% ▼	0.093	19% ▲	7%	54% ▲
Hanford - Hanford Site	76.5	-38% ▼	1,778	8% ▲	0.043	-43% ▼	1%	-2541% ▼
Hanford - Office of River Protection	18.3	-20% ▼	372	-6% ▼	0.049	-15% ▼		
Hanford - Pacific Northwest National Laboratory	11.1	1% ▲	226	25% ▲	0.049	-19% ▼		
Honeywell, FM&T/KC Production	0.1		39		0.003			
Idaho National Laboratory	120.1	-10% ▼	1,957	5% ▲	0.061	-14% ▼	5%	-55% ▼
Lawrence Berkeley National Laboratory	0.4		8		0.054			
Lawrence Livermore National Laboratory	20.4	31% ▲	129	-6% ▼	0.158	39% ▲	63%	37% ▲
Los Alamos National Laboratory	107.3	-28% ▼	1,219	-12% ▼	0.088	-18% ▼	30%	-51% ▼
Nevada Test Site	5.2	-9% ▼	75	7% ▲	0.070	-15% ▼		
New Brunswick Laboratory	0.1		8		0.017			
Oak Ridge - East Tennessee Technology Park	0.4		23		0.019			
Oak Ridge - Oak Ridge Institute for Science and Education	0.2		53		0.003			
Oak Ridge - Oak Ridge National Laboratory	42.7	34% ▲	492	16% ▲	0.087	16% ▲	12%	-53% ▼
Oak Ridge - Y-12 National Security Complex	72.1	-3% ▼	1,301	3% ▲	0.055	-6% ▼	5%	36% ▲
Paducah Gaseous Diffusion Plant	1.3	-23% ▼	44	52% ▲	0.029	-50% ▼		
Pantex Plant	16.5	-31% ▼	287	-2% ▼	0.057	-30% ▼		
Portsmouth Gaseous Diffusion Plant	1.4	-4% ▼	36	100% ▲	0.039	-52% ▼		
Princeton Plasma Physics Laboratory	1.3	-7% ▼	123	-20% ▼	0.010	16% ▲		
Sandia National Laboratory	7.2	-8% ▼	160	-9% ▼	0.045	1% ▲		
Savannah River Site	127.1	13% ▲	2,151	1% ▲	0.059	12% ▲	4%	-96% ▼
Stanford Linear Accelerator Laboratory	0.6		25		0.022			
Thomas Jefferson National Accelerator Facility	1.5	97% ▲	51	168% ▲	0.030	-27% ▼		
West Valley Project	22.2	-50% ▼	157	-16% ▼	0.141	-40% ▼		
WIPP	1.1		63		0.017			
Site Office Personnel*	0.6		22		0.026			
Totals	690.2	-13% ▼	11,287	2% ▲	0.061	-14% ▼	10%	-84% ▼

Note: Boxed values (gray background) indicate the greatest value in each column.

* Includes site office personnel from Albuquerque, Chicago, Oak Ridge, and Ohio in addition to several smaller facilities not associated with a DOE site.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-4. Internal Dose by Site, 2006-2008.

Site	No. of Individuals with New Intakes*			Collective CEDE Dose from Intake (person-rem)			Average CEDE		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
Argonne National Laboratory	17	20	6	0.466	0.324	0.105	0.027	0.016	0.017
Brookhaven National Laboratory		17	5		0.336	0.012		0.020	0.002
Fernald Environmental Management Project	36			0.199			0.006		
Hanford - Hanford Site	30	14	14	0.284	0.061	0.219	0.009	0.004	0.016
Hanford - Office of River Protection	7	9		0.025	0.014		0.004	0.002	
Hanford - Pacific Northwest National Laboratory	3	9	7	0.090	0.434	0.010	0.030	0.048	0.001
Idaho National Laboratory	30	4	7	1.055	0.086	0.544	0.035	0.022	0.078 ◀
Lawrence Livermore National Laboratory	9	11	10	0.070	0.020	0.023	0.008	0.002	0.002
Los Alamos National Laboratory	36	30	36	1.376	8.003	2.336	0.038	0.267 ◀	0.065
Mound Plant	15			0.156			0.010		
Nevada Test Site		5	9		0.765	0.134		0.153	0.015
New Brunswick Laboratory			1			0.010			0.010
Oak Ridge - East Tennessee Technology Park	1			0.015			0.015		
Oak Ridge - Oak Ridge National Laboratory	5	4	22	0.093	0.024	0.190	0.019	0.006	0.009
Oak Ridge - Y-12 National Security Complex	999 ◀	1,057 ◀	1,054 ◀	41.442 ◀	54.874 ◀	53.955 ◀	0.041	0.052	0.051
Paducah Gaseous Diffusion Plant		1	1		0.013	0.011		0.013	0.011
Pantex Plant	47	19	18	0.841	0.065	0.244	0.018	0.003	0.014
Savannah River Site	25	36	32	1.117	0.399	0.217	0.045 ◀	0.011	0.007
West Valley Project		1	1		0.001	0.004		0.001	0.004
Totals	1,260	1,237	1,223	47.229	65.419	58.014	0.037	0.053	0.047

*Only includes intakes that occurred during the monitoring year. Individuals may be counted more than once.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-5. Neutron Dose Distribution by Site, 2008.

Site	No. Meas. Dose	Meas < 0.1	0.1 - 0.25	0.25 - 0.5	0.5 - 0.75	0.75 - 1.0	1-2	>2	Total Monitored*	No. of Individuals with Meas. Dose	% of Individuals with Meas. Dose	Collective Neutron Dose (person-rem)	Avg. Meas. Neutron Dose (rem)
Ames Laboratory	151								151				
Argonne National Laboratory	2,425	5							2,430	5	0%	0.196	0.039
Boeing North America, Inc. - Research	156								156				
Brookhaven National Laboratory	2,323	9							2,332	9	0%	0.066	0.007
DOE - NNSA	25								25				
Fermi National Accelerator Laboratory	1,388								1,388				
Hanford - Hanford Site	6,239	760	20	4					7,023	784	11% ◀	13.092	0.017
Hanford - Office of River Protection	1,367	32							1,399	32	2%	0.539	0.017
Hanford - Pacific Northwest National Laboratory	1,739	58	1						1,798	59	3%	2.093	0.035
Honeywell, FM&T/KC Production	88								88				
Idaho National Laboratory	6,096	199	21	11	5				6,332	236	4%	16.762	0.071
Lawrence Berkeley National Laboratory	1,110								1,110				
Lawrence Livermore National Laboratory	8,396	23	11	3					8,433	37	0%	3.509	0.095 ▶
Los Alamos National Laboratory	8,100	796	115	23	10	1			9,045 ▶	945 ▶	10%	52.317 ▶	0.055
Nevada Test Site	3,285	25	1						3,311	26	1%	1.082	0.042
New Brunswick Laboratory	26								26				
Oak Ridge - East Tennessee Technology Park	1,812	1							1,813	1	0%	0.010	0.010
Oak Ridge - Oak Ridge Institute for Science and Education	97								97				
Oak Ridge - Oak Ridge National Laboratory	7,553	133	17	9					7,712	159	2%	9.901	0.062
Oak Ridge - Y-12 National Security Complex	5,260	5							5,265	5	0%	0.099	0.020
Paducah Gaseous Diffusion Plant	642	26							668	26	4%	0.440	0.017
Pantex Plant	2,985	67	1						3,053	68	2%	1.839	0.027
Portsmouth Gaseous Diffusion Plant	791	12							803	12	1%	0.446	0.037
Princeton Plasma Physics Laboratory	356								356				
Sandia National Laboratory	2,803	1							2,804	1	0%	0.012	0.012
Savannah River Site	6,789	303	44	7					7,143	354	5%	18.395	0.052
Stanford Linear Accelerator Laboratory	5,045								5,045				
Thomas Jefferson National Accelerator Facility	1,475	1							1,476	1	0%	0.013	0.013
West Valley Project	444								444				
Waste Isolation Pilot Project	956								956				
Site Office Personnel**	525	1							526	1	0%	0.011	0.011
Totals	80,447	2,457	231	57	15	1			83,208	2,761	3%	120.822	0.044

*Represents the total number of monitoring records. The number of individuals specifically monitored for neutron radiation cannot be determined. □

** Includes site office personnel from Albuquerque, Chicago, Oak Ridge, and Ohio in addition to several smaller facilities not associated with a DOE site.

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-6a. Distribution of TEDE by Facility Type - 2006

Total Effective Dose Equivalent (TEDE)

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Facility Type	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Accelerator	10,320	1,105	67	34	8	4	5					11,543	11%	1,223	59.536	0.049
Fuel Fabrication	957	418	38	6								1,419	33%	462	16.774	0.036
Fuel Processing	908	443	36	2								1,389	35%	481	20.989	0.044
Fuel Uran. Enrich.	258	17	5	3								283	9%	25	2.206	0.088
Maint. and Support	10,152	1,632	276	135	25	10	4					12,234	17%	2,082	160.808 ◀	0.077
Other	11,697	1,724	226	76	32	10	8					13,773	15%	2,076	138.849	0.067
Reactor	117	24	8	6	5	5						165	29%	48	11.793	0.246 ◀
Research, Fusion	266	162	1									429	38% ◀	163	1.856	0.011
Research, General	28,720	1,932	280	98	31	5	4					31,070 ◀	8%	2,350	158.48	0.067
Waste Proc./ Mgmt.	5,230	2,032	324	91	9	1						7,687	32%	2,457 ◀	146.973	0.06
Weapons Fab. & Test	9,702	1,326	180	69	10	1						11,288	14%	1,586	94.298	0.059
Totals	78,327	10,815	1,441	520	120	36	21					91,280	14%	12,953	812.562	0.063

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-6b. Distribution of TEDE by Facility Type - 2007

Total Effective Dose Equivalent (TEDE)

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Facility Type	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Accelerator	11,525	473	64	26	8	1						12,097	5%	572	37.084	0.065
Fuel Processing	993	342	33	11	2							1,381	28%	388	19.146	0.049
Maintenance and Support	9,906	1,492	265	135	33	11	2					11,844	16%	1,938	161.100	0.083 ◀
Reactor	150	39	5	1								195	23%	45	1.990	0.044
Research, General	27,131	1,636	238	74	20	17	6				1	29,123 ◀	7%	1,992	148.484	0.075
Research, Fusion	265	157										422	37% ◀	157	1.452	0.009
Waste Processing/Management	5,219	1,914	366	165	51							7,715	32%	2,496 ◀	201.298 ◀	0.081
Weapons Fabrication and Testing	9,166	1,334	255	52	15	1						10,823	15%	1,657	102.152	0.062
Other	11,194	1,564	202	55	18	4	14					13,051	14%	1,857	125.120	0.067
Totals	75,549	8,951	1,428	519	147	34	22				1	86,651	13%	11,102	797.826	0.072

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
 Exhibit B-6c. Distribution of TEDE by Facility Type - 2008

Total Effective Dose Equivalent (TEDE)

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Facility Type	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Accelerator	10,301	324	34	22	3							10,684	4%	383	22.541	0.059
Fuel/Uranium Enrichment	104	15										119	13%	15	0.134	0.009
Fuel Processing	1,007	349	17									1,373	27%	366	11.448	0.031
Maintenance and Support	12,313	2,072	326	104	24	7	3	1				14,850	17%	2,537 ◀	167.019 ◀	0.066
Reactor	226	19	6									251	10%	25	1.417	0.057
Research, General	24,975	1,628	239	83	34	10	3					26,972 ◀	7%	1,997	146.125	0.073 ◀
Research, Fusion	294	125										419	30%	125	1.304	0.010
Waste Processing/Management	5,080	1,868	411	118	4							7,481	32% ◀	2,401	161.422	0.067
Weapons Fabrication and Testing	7,765	1,423	223	45	3	2						9,461	18%	1,696	91.641	0.054
Other	9,856	1,518	169	49	5	1						11,598	15%	1,742	87.132	0.050
Totals	71,921	9,341	1,425	421	73	20	6	1				83,208	14%	11,287	690.183	0.061

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-7a. Collective TEDE by Site and Facility Type - 2006

Site	Accelerator	Fuel/Uranium Enrichment	Fuel Fabrication	Fuel Processing	Maintenance and Support	Reactor	Research, General	Research, Fusion	Waste Processing/Management	Weapons Fabrication and Testing	Other	Totals
Ames Laboratory							0.182					0.182
Argonne National Laboratory	4.146				0.165		3.318		0.923		0.974	9.526
Boeing North America, Inc. - Research							0.035					0.035
Brookhaven National Laboratory	3.055				0.84	0.693	0.988		0.531			6.107
Fermi National Accelerator Laboratory	25.740 ◀											25.74
Fernald Environmental Management Project			16.774 ◀									16.774
Hanford - Hanford Site					92.827 ◀						13.314	106.141
Hanford - Office of River Protection					1.187				11.622		0.691	13.5
Hanford - Pacific Northwest National Laboratory					0.119		8.495				4.658	13.272
Honeywell, FM&T/KC Production										0.151		0.151
Idaho National Laboratory							52.789 ◀		48.966		59.948 ◀	161.703
Lawrence Berkeley National Laboratory							0.937					0.937
Lawrence Livermore National Laboratory							16.370					16.37
Los Alamos National Laboratory	18.319				54.712		34.854	0.221	1.452	0.023	54.382	163.963 ◀
Mound Plant									0.156			0.156
Nevada Test Site					1.786							1.786
New Brunswick Laboratory							0.085					0.085
Oak Ridge - East Tennessee Technology Park							0.456					0.456
Oak Ridge - Oak Ridge Institute for Science and Education							0.045					0.045
Oak Ridge - Oak Ridge National Laboratory							25.62					25.62
Oak Ridge - Y-12 National Security Complex							0.097				53.155 ◀	53.252
Paducah Gaseous Diffusion Plant		2.206 ◀										2.206
Pantex Plant										39.654		39.654
Portsmouth Gaseous Diffusion Plant							2.239					2.239
Princeton Plasma Physics Laboratory								1.544 ◀				1.544
RMI Environmental Services											1.543	1.543
Sandia National Laboratory	4.694				1.710	11.100 ◀	1.949	0.091	0.438	0.957	1.036	21.975
Savannah River Site				20.989 ◀	7.462		9.745		66.386 ◀	0.358	2.291	107.231
Stanford Linear Accelerator Laboratory	3.046											3.046
Thomas Jefferson National Accelerator Facility	0.536											0.536
West Valley Project									16.062			16.062
Site Office Personnel*							0.276		0.437		0.012	0.725
Totals	59.536	2.206	16.774	20.989	160.808	11.793	158.480	1.856	146.973	94.298	138.849	812.562

Note: Arrowed values indicate the greatest value in each column.

* Includes site office personnel from Albuquerque and Oakland.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-7b. Collective TEDE by Site and Facility Type - 2007

Site	Accelerator	Fuel/Uranium Enrichment	Fuel Fabrication	Fuel Processing	Maintenance and Support	Reactor	Research, General	Research, Fusion	Waste Processing/Management	Weapons Fabrication and Testing	Other	Totals
Ames Laboratory							0.158					0.158
Argonne National Laboratory	2.786				0.074		4.912		1.428		0.042	9.242
Boeing North America, Inc. - Research											0.162	0.162
Brookhaven National Laboratory	3.686				1.138	0.227	0.793		0.433			6.277
Fermi National Accelerator Laboratory	16.560 ◀											16.560
Hanford - Hanford Site					108.186 ◀						16.020	124.206
Hanford - Office of River Protection					2.097				19.123		1.600	22.820
Hanford - Pacific Northwest National Laboratory					0.033		7.262				3.696	10.991
Honeywell, FM&T/KC Production										0.098		0.098
Idaho National Laboratory							30.775		55.635		47.261	133.671
Lawrence Berkeley National Laboratory							0.770					0.770
Lawrence Livermore National Laboratory							15.498					15.498
Los Alamos National Laboratory	11.273				35.120	0.006	47.310 ◀	0.018	1.202		54.649 ◀	149.578 ◀
Nevada Test Site					5.706							5.706
New Brunswick Laboratory							0.027					0.027
Oak Ridge - East Tennessee Technology Park							0.208					0.208
Oak Ridge - Oak Ridge Institute for Science and Education							0.136					0.136
Oak Ridge - Oak Ridge National Laboratory							31.849					31.849
Oak Ridge - Y-12 National Security Complex										74.286 ◀		74.286
Paducah Gaseous Diffusion Plant							1.664					1.664
Pantex Plant										23.943		23.943
Portsmouth Gaseous Diffusion Plant							1.453					1.453
Princeton Plasma Physics Laboratory								1.380 ◀				1.380
Sandia National Laboratory	0.553				0.807	1.757 ◀	0.521	0.054	0.282	3.404	0.432	7.810
Savannah River Site				19.146 ◀	7.891		4.945		78.696 ◀	0.421	1.258	112.357
Stanford Linear Accelerator Laboratory	1.453											1.453
Thomas Jefferson National Accelerator Facility	0.773											0.773
West Valley Project									44.499			44.499
Site Office Personnel*					0.048		0.203					0.251
Totals	37.084			19.146	161.100	1.990	148.484	1.452	201.298	102.152	125.120	797.826

Note: Arrowed values indicate the greatest value in each column.

* Includes site office personnel from Albuquerque and Oakland.

**DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-7c. Collective TEDE by Site and Facility Type - 2008**

Site	Accelerator	Fuel/Uranium Enrichment	Fuel Fabrication	Fuel Processing	Maintenance and Support	Reactor	Research, General	Research, Fusion	Waste Processing/Management	Weapons Fabrication and Testing	Other	Totals
Ames Laboratory							0.511					0.511
Argonne National Laboratory	0.479				0.188		9.665		2.810		0.035	13.177
Boeing North America, Inc. - Research											0.141	0.141
Brookhaven National Laboratory	2.986				1.221	0.041	0.743		0.439			5.430
DOE - NNSA							0.033		0.036		0.011	0.080
Fermi National Accelerator Laboratory	15.400 ◀											15.400
Hanford - Hanford Site					60.760						15.773	76.533
Hanford - Office of River Protection					1.860				14.081		2.316	18.257
Hanford - Pacific Northwest National Laboratory					0.200		6.593				4.302	11.095
Honeywell, FM&T/KC Production										0.126		0.126
Idaho National Laboratory							45.996 ◀		32.136		41.932 ◀	120.064
Lawrence Berkeley National Laboratory							0.429					0.429
Lawrence Livermore National Laboratory							20.356					20.356
Los Alamos National Laboratory	1.144				88.937 ◀		7.700		0.110		9.433	107.324
Nevada Test Site					5.219							5.219
New Brunswick Laboratory											0.137	0.137
Oak Ridge - East Tennessee Technology Park							0.438					0.438
Oak Ridge - Oak Ridge Institute for Science and Education							0.172					0.172
Oak Ridge - Oak Ridge National Laboratory							42.726					42.726
Oak Ridge - Y-12 National Security Complex										72.058 ◀		72.058
Paducah Gaseous Diffusion Plant		0.134 ◀					0.027		1.112			1.273
Pantex Plant										16.454		16.454
Portsmouth Gaseous Diffusion Plant							1.397					1.397
Princeton Plasma Physics Laboratory								1.282 ◀				1.282
Sandia National Laboratory	0.451				0.608	1.376 ◀	0.753	0.022	0.882	2.658	0.469	7.219
Savannah River Site				11.448 ◀	8.026		8.118		86.566 ◀	0.345	12.569	127.072 ◀
Stanford Linear Accelerator Laboratory	0.560											0.560
Thomas Jefferson National Accelerator Facility	1.521											1.521
West Valley Project									22.181			22.181
WIPP									1.069			1.069
Site Office Personnel*							0.468				0.014	0.482
Totals	22.541	0.134		11.448	167.019	1.417	146.125	1.304	161.422	91.641	87.132	690.183

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report

Exhibit B-8. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Accelerator Facilities, 2008

ACCELERATORS

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Site/Contractor	Less than Meas.	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Fermi National Accelerator Lab	1,222	122	21	21	2							1,388	12%	166 ◀	15.400 ◀	0.093 ◀
Los Alamos National Laboratory	141	20			1							162	13% ◀	21	1.144	0.054
Brookhaven National Laboratory	1,039	69	10	1								1,119	7%	80	2.986	0.037
Thomas Jefferson Natl. Accel. Facil.	1,425	48	3									1,476	3%	51	1.521	0.030
Argonne National Laboratory	1,151	17										1,168	1%	17	0.479	0.028
Stanford Linear Accelerator Center	5,020	25										5,045 ◀	0%	25	0.560	0.022
Sandia National Laboratory	291	23										314	7%	23	0.451	0.020
BATTELLE - PNNL	1											1	0%	0	0.000	0.000
Johnson Controls Inc.	1											1	0%	0	0.000	0.000
Oak Ridge Office	10											10	0%	0	0.000	0.000
Totals	10,301	324	34	22	3							10,684	4%	383	22.541	0.059

Note: Arrowed values indicate the the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report

Exhibit B-9. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Fuel Facilities, 2008

FUEL FACILITIES																
Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)																
Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
ENRICHMENT																
Bechtel Jacobs - Paducah	104	15										119 ◀	13% ◀	15 ◀	0.134 ◀	0.009 ◀
Totals	104	15										119	13%	15	0.134	0.009
FABRICATION																
PROCESSING																
Westinghouse Savannah River Co.	778	331	17									1,126 ◀	31% ◀	348 ◀	11.093 ◀	0.032 ◀
Westinghouse S.R. Subcontractors	64	8										72	11%	8	0.223	0.028
Wackenhut Services Inc. - SR	94	8										102	8%	8	0.110	0.014
Savannah River Field Office	24	2										26	8%	2	0.022	0.011
DeNuke Services (SPRU-LA)	42											42	0%	0	0.000	0.000
Misc. S.R.S. Const. Subcontractors	1											1	0%	0	0.000	0.000
Miscellaneous DOE Contractors - SR	3											3	0%	0	0.000	0.000
SR construction - Parsons	1											1	0%	0	0.000	0.000
Totals	1,007	349	17									1,373	27%	366	11.448	0.031

Note: Arrowed values indicate the the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report

Exhibit B-10. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Maintenance and Support, 2008.

MAINTENANCE AND SUPPORT

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
FLUOR FEDERAL SERVICES	25		1									26	4%	1	0.168	0.168 ◀
Los Alamos National Laboratory	3,291	597	133	65	23	7	3	1				4,120 ◀	20%	829 ◀	86.489 ◀	0.104
Bechtel Nevada - NTS	1,491	49	12	4								1,556	4%	65	4.778	0.074
CH2M HILL HANFORD GROUP INC.	101	22	4									127	20%	26	1.562	0.060
FLUOR HANFORD INC.	1,536	619	133	30	1							2,319	34%	783	46.901	0.060
FLUOR NORTHWEST SERVICES	12	10	3									25	52% ◀	13	0.764	0.059
Westinghouse Savannah River Co.	164	112	19	3								298	45%	134	7.961	0.059
Sandia National Laboratory	479	11		1								491	2%	12	0.608	0.051
Bechtel Nevada - Las Vegas	700	7										707	1%	7	0.337	0.048
Bechtel Nevada - Washington Aerial Meas.	72	2										74	3%	2	0.088	0.044
Johnson Controls Inc.	709	53	3	1								766	7%	57	2.065	0.036
Advance Technology Laboratories	26	9										35	26%	9	0.298	0.033
Brookhaven National Laboratory	917	40	1									958	4%	41	1.221	0.030
Argonne National Laboratory	184	7										191	4%	7	0.188	0.027
CH2M Hill Plateau Remediation Company (Hanford)	884	488	17									1,389	36%	505	12.927	0.026
BATTELLE - PNNL	34	8										42	19%	8	0.200	0.025
NNSA Los Alamos Site Office	97	8										105	8%	8	0.145	0.018
Nevada Operations	458	1										459	0%	1	0.016	0.016
Westinghouse S.R. Subcontractors	25	4										29	14%	4	0.058	0.015
Protection Technologies Los Alamos	534	24										558	4%	24	0.238	0.010
Savannah River Field Office	2	1										3	33%	1	0.007	0.007
B.N. - NTS Subcontractors	25											25	0%	0	0.000	0.000
BECHTEL HANFORD	10											10	0%	0	0.000	0.000
Bechtel Nevada - Special Tech. Lab.	43											43	0%	0	0.000	0.000
COGEMA ENGINEERING CORPORATION	3											3	0%	0	0.000	0.000
DOE-RICHLAND FIELD OFFICE	9											9	0%	0	0.000	0.000
DURATEK FEDERAL SERVICES INC.	5											5	0%	0	0.000	0.000
DURATEK FEDERAL SERVICES OF HANFORD	22											22	0%	0	0.000	0.000
LOCKHEED MARTIN SERVICES INC.	5											5	0%	0	0.000	0.000
Miscellaneous DOE Contractors - SR	1											1	0%	0	0.000	0.000
Nevada Miscellaneous Contractors	22											22	0%	0	0.000	0.000
Nye County Sheriff	7											7	0%	0	0.000	0.000
UT-BATTELLE: ORNL	1											1	0%	0	0.000	0.000
Wackenhut Services Inc. - NV	411											411	0%	0	0.000	0.000
Wackenhut Services Inc. - SR	1											1	0%	0	0.000	0.000
Yucca Mountain Project	7											7	0%	0	0.000	0.000
Totals	12,313	2,072	326	104	24	7	3	1				14,850	17%	2,537	167.019	0.066

Note: Arrowed values indicate the the greatest value in each column.

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Exhibit B-11. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Reactor Facilities, 2008

REACTOR FACILITIES

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Sandia National Laboratory	81	14	6									101	20% ◀	20 ◀	1.376 ◀	0.069 ◀
Brookhaven National Laboratory	142	5										147 ◀	3%	5	0.041	0.008
BATTELLE - PNNL	1											1	0%	0	0.000	0.000
NNSA - EUROPE, AFRICA AND THE MIDDLE EAST	2											2	0%	0	0.000	0.000
Totals	226	19	6									251	10%	25	1.417	0.057

Note: Arrowed values indicate the the greatest value in each column.

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Exhibit B-12. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Research, General, 2008

RESEARCH, GENERAL																
Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)																
Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Lawrence Livermore National Laboratory	7,278	89	13	8	12	5	1					7,406	2%	128	20.340	0.159
Argonne National Laboratory	602	48	8	8	2	1	2					671	10%	69	9.665	0.140
Los Alamos National Laboratory	454	50	11	2	4	2						523	13%	69	7.700	0.112
UT-BATTELLE: FOSTER WHEELER	108	39	25	6								178	39%	70	7.198	0.103
Bechtel Jacobs - ORNL	257	53	6	10								326	21%	69	6.317	0.092
UT-BATTELLE: ORNL	6,854	282	42	20	8	1						7,207	5%	353	29.211	0.083
Uranium Disposition Services - Portsmouth Sub	18	11	1									30	40%	12	0.809	0.067
INL - BEA LLC - Services	1,647	578	99	24	8	1						2,357	30%	710	45.996	0.065
Wackenhut Services	256	5	1									262	2%	6	0.332	0.055
Lawrence Berkeley Laboratory	1,102	7	1									1,110	1%	8	0.429	0.054
Brookhaven National Laboratory	59	11	3									73	19%	14	0.743	0.053
BATTELLE - PNNL	534	118	15	1								668	20%	134	6.593	0.049
Westinghouse Savannah River Co.	638	156	13	3								810	21%	172	7.862	0.046
Sandia National Laboratory	417	20	1	1								439	5%	22	0.753	0.034
LATA/Parralax Portsmouth LLC	556	22										578	4%	22	0.553	0.025
Bechtel Jacobs - ETPP	1,765	23										1,788	1%	23	0.438	0.019
Theta Pro2Serve Management Co. (Ports)	193	2										195	1%	2	0.035	0.018
USEC - Oak Ridge	122	1										123	1%	1	0.018	0.018
Westinghouse S.R. Subcontractors	123	7										130	5%	7	0.125	0.018
Ames Laboratory (Iowa State)	121	30										151	20%	30	0.511	0.017
Isotek (Bldg 3019)	67	7										74	9%	7	0.118	0.017
NNSA - EUROPE, AFRICA AND THE MIDDLE EAST		2										2	100%	2	0.033	0.017
Lawrence Livermore Nat'l Lab - Services	570	1										571	0%	1	0.016	0.016
Savannah River Field Office	13	2										15	13%	2	0.032	0.016
Paducah Remediation Services (PRS)	511	2										513	0%	2	0.027	0.014
Wackenhut Services Inc. - SR	55	7										62	11%	7	0.086	0.012
Misc. S.R.S. Const. Subcontractors	3	1										4	25%	1	0.007	0.007
SR construction - Parsons		1										1	100%	1	0.006	0.006
Oak Ridge Inst. for Sci. & Educ. (ORISE)	44	53										97	55%	53	0.172	0.003
Advance Technology Laboratories	2											2	0%	0	0.000	0.000
Bechtel Jacobs - Y-12	97											97	0%	0	0.000	0.000
CH2M HILL HANFORD GROUP INC.	5											5	0%	0	0.000	0.000
FLUOR HANFORD INC.	1											1	0%	0	0.000	0.000
Idaho Field Office	2											2	0%	0	0.000	0.000
Johnson Controls Inc.	3											3	0%	0	0.000	0.000
Lawrence Livermore Lab - Government	122											122	0%	0	0.000	0.000

Lawrence Livermore National Laboratory - Nev	334											334	0%	0	0.000	0.000
Materials & Energy Corporation	25											25	0%	0	0.000	0.000
Miscellaneous DOE Contractors - SR	1											1	0%	0	0.000	0.000
SRFS Service Subcontractors	1											1	0%	0	0.000	0.000
Univ. of Georgia Ecology Laboratory	14											14	0%	0	0.000	0.000
Wackenhut Services Subcontractors - SR	1											1	0%	0	0.000	0.000
Totals	24,975	1,628	239	83	34	10	3					26,972	7%	1997	146.125	0.073

Note: Arrowed values indicate the the greatest value in each column.

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Exhibit B-13. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Research, Fusion, 2008

RESEARCH, FUSION

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Sandia National Laboratory	55	2										57	4%	2	0.022	0.011 ◀
Princeton Plasma Physics Laboratory	233	123										356 ◀	35% ◀	123 ◀	1.282 ◀	0.010
Los Alamos National Laboratory	6											6	0%	0	0.000	0.000
Totals	294	125										419	30%	125	1.304	0.010

Note: Arrowed values indicate the the greatest value in each column.

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Exhibit B-14. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Waste Processing, 2008

WASTE PROCESSING

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
West Valley Nuclear Services Inc.	287	66	65	26								444	35%	157	22.181	0.141
Argonne National Laboratory	145	19	11	2								177	18%	32	2.810	0.088
Westinghouse Savannah River Co.	1,589	871	190	63	4							2,717	42%	1,128	79.709	0.071
INL - BEA LLC - Services	900	399	89	19								1,407	36%	507	32.136	0.063
Sandia National Laboratory	79	10	4									93	15%	14	0.882	0.063
SR construction - Parsons		1										1	100%	1	0.058	0.058
Westinghouse S.R. Subcontractors	177	81	8	7								273	35%	96	5.496	0.057
CH2M HILL HANFORD GROUP INC.	541	239	37	1								818	34%	277	13.844	0.050
Brookhaven National Laboratory	26	9										35	26%	9	0.439	0.049
Bechtel Jacobs - Paducah	9	21	6									36	75%	27	1.112	0.041
Misc. S.R.S. Const. Subcontractors	15	5	1									21	29%	6	0.217	0.036
Advance Technology Laboratories	22	8										30	27%	8	0.237	0.030
Los Alamos National Laboratory	17	5										22	23%	5	0.110	0.022
NNSA - NORTH AND SOUTH AMERICA		2										2	100%	2	0.036	0.018
Washington TRU Solutions-WIPP Contractors	893	62										955	6%	62	1.058	0.017
Wackenhut Services Inc. - SR	287	60										347	17%	60	0.984	0.016
Savannah River Field Office	61	8										69	12%	8	0.097	0.012
Washington TRU Solutions LLC-WIPP		1										1	100%	1	0.011	0.011
SR construction - Parsons Subcontractors	9	1										10	10%	1	0.005	0.005
BECHTEL HANFORD	2											2	0%	0	0.000	0.000
BECHTEL NATIONAL CORPORATION	2											2	0%	0	0.000	0.000
DOE-RICHLAND FIELD OFFICE	1											1	0%	0	0.000	0.000
DURATEK FEDERAL SERVICES INC.	1											1	0%	0	0.000	0.000
FLUOR HANFORD INC.	3											3	0%	0	0.000	0.000
Miscellaneous DOE Contractors - SR	11											11	0%	0	0.000	0.000
NNSA - ASIA AND MEMBERS OF THE FORMER SOVIET UNION	1											1	0%	0	0.000	0.000
NNSA Los Alamos Site Office	1											1	0%	0	0.000	0.000
Wackenhut Services Subcontractors - SR	1											1	0%	0	0.000	0.000
Totals	5,080	1,868	411	118	4							7,481	32%	2,401	161.422	0.067

Note: Arrowed values indicate the the greatest value in each column.

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Exhibit B-15. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Weapons Fabrication, 2008

WEAPONS FABRICATION

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Sandia National Laboratory	705	31	11									747	6%	42	2.658	0.063 ◀
B & W Pantex	2,528	237	33	11								2,809	10%	281	16.218	0.058
BWXT Y-12	3,867	1,085	177	34	3	2						5,168 ◀	25%	1,301 ◀	72.058 ◀	0.055
B & W - Security	131	4	1									136	4%	5	0.219	0.044
B & W - Subcontractors	28	1										29	3%	1	0.017	0.017
Westinghouse Savannah River Co.	353	26	1									380	7%	27	0.345	0.013
Honeywell FM&T/KC Production	49	39										88	44% ◀	39	0.126	0.003
Los Alamos National Laboratory	3											3	0%	0	0.000	0.000
PXSO/NNSA and DOE Couriers	79											79	0%	0	0.000	0.000
Savannah River Field Office	13											13	0%	0	0.000	0.000
Wackenhut Services Inc. - SR	2											2	0%	0	0.000	0.000
Westinghouse S.R. Subcontractors	7											7	0%	0	0.000	0.000
Totals	7,765	1,423	223	45	3	2						9,461	18%	1,696	91.641	0.054

Note: Arrowed values indicate the the greatest value in each column.

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Exhibit B-16. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Other , 2008

OTHER																
Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)																
Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Westinghouse Savannah River Co.	324	72	19	12	4							431	25%	107	12.116	0.113
ICP - CWI - Construction Subs	1,801	617	95	26								2,539	29%	738	41.91	0.057
BATTELLE - PNNL	1,002	72	10	2								1,086	8%	84	4.302	0.051
Los Alamos National Laboratory	2,552	180	16	6	1	1						2,756	7%	204	9.415	0.046
OFFICE OF RIVER PROTECTION	106	5	1									112	5%	6	0.275	0.046
CH2M HILL HANFORD GROUP INC.	189	40	6									235	20%	46	2.041	0.044
FLUOR NORTHWEST SERVICES	137	54	4									195	30%	58	2.412	0.042
FLUOR HANFORD INC.	352	22		1								375	6%	23	0.919	0.040
BECHTEL HANFORD	1,054	211	15	1								1,281	18%	227	8.667	0.038
SR construction - Parsons		2										2	100%	2	0.070	0.035
COGEMA ENGINEERING CORPORATION	26	3										29	10%	3	0.092	0.031
DOE-RICHLAND FIELD OFFICE	567	34		1								602	6%	35	0.871	0.025
CH2M Hill Plateau Remediation Company (Hanford)	316	99	2									417	24%	101	2.206	0.022
DURATEK FEDERAL SERVICES INC.	58	4										62	6%	4	0.087	0.022
FLUOR FEDERAL SERVICES	138	24	1									163	15%	25	0.519	0.021
SR construction - Parsons Subcontractors		3										3	100%	3	0.064	0.021
Westinghouse S.R. Subcontractors	88	14										102	14%	14	0.279	0.020
Sandia National Laboratory	537	25										562	4%	25	0.469	0.019
New Brunswick Laboratory - Research	18	8										26	31%	8	0.137	0.017
Misc. S.R.S. Const. Subcontractors	20	3										23	13%	3	0.040	0.013
Argonne National Laboratory	220	3										223	1%	3	0.035	0.012
Idaho Field Office	24	2										26	8%	2	0.022	0.011
NNSA - EUROPE, AFRICA AND THE MIDDLE EAST	2	1										3	33%	1	0.011	0.011
Boeing North America Inc. - Research	141	15										156	10%	15	0.141	0.009
Johnson Controls Inc.	12	2										14	14%	2	0.018	0.009
National Renewable Energy Lab (NREL)- GO	12	3										15	20%	3	0.014	0.005
Advance Technology Laboratories	33											33	0%	0	0.000	0.000
ADVANCEDMED HANFORD	32											32	0%	0	0.000	0.000
Bechtel BWXT Idaho - Construction	1											1	0%	0	0.000	0.000
Bechtel Construction - SR	1											1	0%	0	0.000	0.000
DURATEK FEDERAL SERVICES OF HANFORD	38											38	0%	0	0.000	0.000
LOCKHEED MARTIN SERVICES INC.	8											8	0%	0	0.000	0.000
Miscellaneous DOE Contractors - SR	1											1	0%	0	0.000	0.000
NNSA - ASIA AND MEMBERS OF THE FORMER SOVIET UNION	3											3	0%	0	0.000	0.000

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Exhibit B-16. Distribution of TEDE by Facility Type Listed in Descending Order of Average Measurable TEDE for Other , 2008

OTHER																
Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)																
Site/Contractor	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
NNSA - MANAGEMENT AND SUPPORT PERSONNEL	5											5	0%	0	0.000	0.000
NNSA - NORTH AND SOUTH AMERICA	7											7	0%	0	0.000	0.000
NNSA Los Alamos Site Office	3											3	0%	0	0.000	0.000
Protection Technologies Los Alamos	2											2	0%	0	0.000	0.000
Savannah River Field Office	21											21	0%	0	0.000	0.000
Wackenhut Services Inc. - SR	5											5	0%	0	0.000	0.000
Totals	9,856	1,518	169	49	5	1						11,598	15%	1,742	87.132	0.050

Note: Arrowed values indicate the the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-17. Internal Dose by Facility Type and Nuclide, 2006-2008

Facility Type	Nuclide*	No. of Individuals with New Intakes**			Collective CEDE (person-rem)			Average CEDE (rem)		
		2006	2007	2008	2006	2007	2008	2006	2007	2008
Accelerator	Hydrogen-3	2			0.003			0.002		
	Mixed		1			0.026			0.026	
	Total	2	1		0.003	0.026		0.002	0.026	
Fuel Fabrication	Mixed	5			0.039			0.008		
	Other	4			0.064			0.016		
	Thorium	27			0.096			0.004		
	Total	36			0.199			0.006		
Fuel Processing	Hydrogen-3	1		2	0.003		0.014	0.003		0.007
	Plutonium		3	6		0.247	0.023		0.082	0.004
	Total	1	3	8	0.003	0.247	0.037	0.003	0.082	0.005
Fuel/Uranium Enrichment	Total									
Maintenance and Support	Americium	7	1	1	0.800	0.039	0.150	0.114	0.039	0.150
	Hydrogen-3	1	2	22	0.013	0.008	0.264	0.013	0.004	0.012
	Mixed	4	1	7	0.698	0.002	0.121	0.175	0.002	0.017
	Other		5			0.010			0.002	
	Plutonium	27	13	19	0.164	0.912	2.088	0.006	0.070	0.110
	Total	39	22	49	1.675	0.971	2.623	0.043	0.044	0.054
Other	Americium	3			0.106			0.035		
	Hydrogen-3	9	12	3	0.030	0.050	0.018	0.003	0.004	0.006
	Mixed	3	4	2	0.024	0.064	0.002	0.008	0.016	0.001
	Other		4			0.008			0.002	
	Plutonium	19	15	6	0.464	0.074	0.025	0.024	0.005	0.004
	Radon-222	26			0.834			0.032		
	Total	60	35	12	1.458	0.196	0.056	0.024	0.006	0.005
Reactor	Americium		10			0.176			0.018	
	Uranium			2			0.003			0.002
	Total		10	2		0.176	0.003		0.018	0.002
Research, Fusion	Total									
Research, General	Americium	7	8	7	0.268	0.144	0.108	0.038	0.018	0.015
	Hydrogen-3	19	21	10	0.366	0.066	0.044	0.019	0.003	0.004
	Mixed	3	6	1	0.111	7.734	0.001	0.037	1.289	0.001
	Other	3	5	13	0.009	0.014	0.047	0.003	0.003	0.004
	Plutonium	8	14	2	0.274	0.565	0.014	0.034	0.040	0.007
	Thorium	1			0.010			0.010		
	Uranium	5	2	16	0.140	0.030	0.151	0.028	0.015	0.009
	Total	46	56	49	1.178	8.553	0.365	0.026	0.153	0.007

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-17. Internal Dose by Facility Type and Nuclide, 2006-2008

Facility Type	Nuclide*	No. of Individuals with New Intakes**			Collective CEDE (person-rem)			Average CEDE (rem)		
		2006	2007	2008	2006	2007	2008	2006	2007	2008
Waste Processing/Management	Americium	3	7	1	0.058	0.124	0.004	0.019	0.018	0.004
	Hydrogen-3	1	2	3	0.003	0.007	0.020	0.003	0.004	0.007
	Mixed	14			0.196			0.014		
	Other	1	4		0.033	0.007		0.033	0.002	
	Plutonium	5	14	15	0.111	0.144	0.645	0.022	0.010	0.043
	Uranium	1			0.005			0.005		
	Total	25	27	19	0.406	0.282	0.669	0.016	0.010	0.035
Weapons Fabrication and Testing	Hydrogen-3	6	7	13	0.025	0.029	0.063	0.004	0.004	0.005
	Mixed	46	20	18	0.840	0.243	0.462	0.018	0.012	0.026
	Plutonium		1			0.018			0.018	
	Uranium	999 ◀	1,055 ◀	1,053 ◀	41.442 ◀	54.678 ◀	53.736 ◀	0.041	0.052	0.051
	Total	1,051	1,083	1,084	42.307	54.968	54.261	0.040	0.051	0.050
Totals	1,260	1,237	1,223	47.229	65.419	58.014	0.037	0.053	0.047	

*Intakes grouped by nuclide. Intakes involving multiple nuclides were grouped into "mixed." Nuclides where fewer than 10 individuals had intakes were grouped as "other."

**Individuals may be counted more than once.

Note: Arrowed values indicate the the greatest value in each column.

**DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-18a. Distribution of TEDE by Labor Category - 2006**

Total Effective Dose Equivalent (TEDE)																
Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)																
Labor Category	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Agriculture	138											138				
Construction	3,860	961	111	38	13	1						4,984	23%	1,124	62.399	0.056
Laborers	1,503	333	69	14	5	2						1,926	22%	423	30.644	0.072
Management	6,858	818	62	23	2							7,763	12%	905	36.848	0.041
Miscellaneous	4,994	765	133	41	13	1	2					5,949	16%	955	68.092	0.071
Production	2,678	1,419	339	158	19	6	1					4,620	42% ◀	1,942	176.505 ◀	0.091 ◀
Scientists	21,563	2,232	136	34	6	1						23,972	10%	2,409 ◀	82.876	0.034
Service	4,236	477	20	2								4,735	11%	499	11.785	0.024
Technicians	7,098	1,684	295	105	24	5	4					9,215	23%	2,117	158.722	0.075
Transport	1,773	240	23	3								2,039	13%	266	10.442	0.039
Unknown	23,626	1,886	253	102	38	20	14					25,939 ◀	9%	2,313	174.249	0.075
Totals	78,327	10,815	1,441	520	120	36	21					91,280	14%	12,953	812.562	0.063

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-18b. Distribution of TEDE by Labor Category - 2007

Total Effective Dose Equivalent (TEDE)

Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)

Labor Category	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Agriculture	134	2										136	1%	2	0.037	0.018
Construction	3,254	907	122	29	8	1						4,321	25%	1,067	59.000	0.055
Laborers	1,366	253	86	34	5							1,744	22%	378	36.306	0.096
Management	7,182	748	89	40	11	1						8,071	11%	889	52.939	0.060
Miscellaneous	5,035	708	129	30	4	2	3					5,911	15%	876	61.389	0.070
Production	2,177	1,201	305	151	56	9						3,899	44% ◀	1,722	181.249 ◀	0.105 ◀
Scientists	20,711	1,691	116	33	3							22,554	8%	1,843	66.111	0.036
Service	3,708	422	17	5	1							4,153	11%	445	11.129	0.025
Technicians	7,355	1,455	309	102	20	2	1					9,244	20%	1,889 ◀	145.881	0.077
Transport	1,288	148	45	8	2							1,491	14%	203	15.556	0.077
Unknown	23,339	1,416	210	87	37	19	18				1	25,127 ◀	7%	1,788	168.229	0.094
Totals	75,549	8,951	1,428	519	147	34	22				1	86,651	13%	11,102	797.826	0.072

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-18c. Distribution of TEDE by Labor Category - 2008

Total Effective Dose Equivalent (TEDE)																
Number of Individuals Receiving Radiation Doses in Each Dose Range (rem)																
Labor Category	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Agriculture	128		2									130	2%	2	0.267	0.134 ◀
Construction	3,733	1,032	119	29								4,913	24%	1,180	57.820	0.049
Laborers	1,315	358	80	18	1	1						1,773	26%	458	32.416	0.071
Management	6,709	716	60	33	8							7,526	11%	817	42.862	0.052
Miscellaneous	4,141	826	127	44	3							5,141	19%	1,000	60.552	0.061
Production	2,594	1,303	360	109	4	3						4,373	41% ◀	1,779	140.112 ◀	0.079
Scientists	20,367	1,681	100	31	9	3						22,191	8%	1,824	68.141	0.037
Service	3,360	403	30	3	1							3,797	12%	437	12.477	0.029
Technicians	6,473	1,524	303	68	17	3	3					8,391	23%	1,918 ◀	136.215	0.071
Transport	1,386	156	29	1								1,572	12%	186	9.704	0.052
Unknown	21,715	1,342	215	85	30	10	3	1				23,401 ◀	7%	1,686	129.617	0.077
Totals	71,921	9,341	1,425	421	73	20	6	1				83,208	14%	11,287	690.183	0.061

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-19. Internal Dose by Labor Category, 2006-2008.

Labor Category	No. of Individuals with New Intakes*			Collective CEDE Dose from Intake (person-rem)			Average CEDE		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
Construction	174	162	164	4.336	5.231	5.738	0.025	0.032	0.035
Laborers	56	73	75	2.513	4.903	4.903	0.045	0.067	0.065
Management	125	125	119	4.556	6.022	4.786	0.036	0.048	0.040
Miscellaneous	19	9	7	0.455	0.110	0.285	0.024	0.012	0.041
Production	411 ◀	381 ◀	371 ◀	22.479 ◀	25.430 ◀	25.278 ◀	0.055 ◀	0.067	0.068 ◀
Scientists	144	169	144	3.450	4.763	4.272	0.024	0.028	0.030
Service	14	6	8	0.220	0.150	0.338	0.016	0.025	0.042
Technicians	166	194	178	4.570	7.758	6.506	0.028	0.040	0.037
Transport	7	4	3	0.040	0.046	0.013	0.006	0.012	0.004
Unknown	144	114	154	4.610	11.006	5.895	0.032	0.097 ◀	0.038
Totals	1,260	1,237	1,223	47.229	65.419	58.014	0.037	0.053	0.047

*Only included intakes that occurred during the monitoring year. Individuals may be counted more than once,

Note: Arrowed values indicate the the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-20. Dose Distribution by Labor Category and Occupation, 2008.

Labor Category	Occupation	Less than Meas	Meas 0 - 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	Total Monitored	Percent of Monitored with Meas. TEDE	No. with Meas. TEDE	Collective TEDE (Person-rem)	Avg. Meas. TEDE (rem)
Agriculture	Groundskeepers	97											97				
	Misc. Agriculture	31		2									33	6%	2	0.267	0.134
Construction	Carpenters	270	76	12	9								367	26%	97	7.291	0.075
	Electricians	1,152	281	24									1,457	21%	305	10.913	0.036
	Masons	19	4										23	17%	4	0.031	0.008
	Mechanics/Repairers	517	127	12	3								659	22%	142	6.686	0.047
	Miners/Drillers	157	10										167	6%	10	0.205	0.020
	Misc. Repair/Construction	1,144	367	42	5								1,558	27%	414	19.068	0.046
	Painters	117	30	1	1								149	21%	32	1.155	0.036
	Pipe Fitter	357	137	28	11								533	33%	176	12.471	0.071
Laborers	Handlers/Laborers/Helpers	1,315	358	80	18	1	1						1,773	26%	458	32.416	0.071
Management	Admin. Support & Clerical Sec.	2,384	180	29	30	8							2,631	9%	247	25.711	0.104
	Manager - Administrator	4,322	536	31	3								4,892	12%	570	17.151	0.030
	Sales	3											3				
Miscellaneous	Military	9											9				
	Miscellaneous	4,132	826	127	44	3							5,132	19%	1,000	60.552	0.061
Production	Machine Setup/Operators	138	130	70	15	3	1						357	61%	219	24.272	0.111
	Machinists	197	22	5	2		2						228	14%	31	4.086	0.132
	Misc. Precision/Production	809	347	69	22								1,247	35%	438	27.745	0.063
	Operators, Plant/ System/Util.	1,270	758	205	68	1							2,302	45%	1,032	79.861	0.077
	Sheet Metal Workers	133	33	10	2								178	25%	45	3.704	0.082
	Welders and Solderers	47	13	1									61	23%	14	0.444	0.032
Scientists	Doctors and Nurses	82	2	3									87	6%	5	0.487	0.097
	Engineer	6,995	641	33	8	6	1						7,684	9%	689	25.318	0.037
	Health Physicist	376	92	3	1								472	20%	96	2.932	0.031
	Misc. Professional	5,661	623	42	15	2							6,343	11%	682	24.934	0.037
	Scientist	7,253	323	19	7	1	2						7,605	5%	352	14.470	0.041
Service	Firefighters	508	51	4									563	10%	55	1.127	0.020
	Food Service Employees	21	3	3									27	22%	6	0.427	0.071
	Janitors	487	47	10	1								545	11%	58	3.212	0.055
	Misc. Service	249	14	2									265	6%	16	0.502	0.031
	Security Guards	2,095	288	11	2	1							2,397	13%	302	7.209	0.024
Technicians	Engineering Technicians	1,814	162	21	8	8							2,013	10%	199	15.673	0.079
	Health Technicians	79	26	6									111	29%	32	1.570	0.049
	Misc. Technicians	1,941	201	25	7	5	1	2					2,182	11%	241	17.421	0.072
	Radiation Monitors/Techs.	1,144	808	184	36	2	2						2,176	47%	1,032	71.144	0.069
	Science Technicians	530	151	34	6	2		1					724	27%	194	15.509	0.080
	Technicians	965	176	33	11								1,185	19%	220	14.898	0.068
Transport	Bus Drivers	22	1										23	4%	1	0.021	0.021
	Equipment Operators	317	50	10	1								378	16%	61	3.551	0.058
	Misc. Transport	540	63	18									621	13%	81	5.033	0.062
	Pilots	21											21				

	Truck Drivers	486	42	1								529	8%	43	1.099	0.026
Unknown	Unknown	21,715	1,342	215	85	30	10	3	1			23,401 ◀	7%	1,686 ◀	129.617 ◀	0.077
Totals		71,921	9,341	1,425	421	73	20	6	1			83,208	14%	11,287	690.183	0.061

Note: Arrowed values indicate the the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-21. Internal Dose Distribution by Site and Nuclide, 2008.

Site	Nuclide	Number of Individuals Receiving Doses in Each Dose Range											Total Indiv. with Meas. CEDE	Collective CEDE (person-rem)	Avg. CEDE (rem)	
		Meas. 0-0.02	0.02-0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.00	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	>5.0				
Argonne National Laboratory	Plutonium	2												2	0.021	0.010
	Americium	2	2											4	0.084	0.021
Brookhaven National Laboratory	Plutonium	3												3	0.009	0.003
	Uranium	2												2	0.003	0.002
Hanford - Hanford Site	Americium			1										1	0.150	0.150
	Mixed	2												2	0.002	0.001
	Plutonium	9	1											10	0.056	0.006
	Thorium	1												1	0.011	0.011
Hanford - Pacific Northwest National Laboratory	Hydrogen-3	7												7	0.010	0.001
Idaho National Laboratory	Plutonium	1	4	2										7	0.544	0.078
Lawrence Livermore National Laboratory	Other	10												10	0.023	0.002
Los Alamos National Laboratory	Plutonium	1		1				1						3	1.930	0.643 ◀
	Hydrogen-3	20	7											27	0.314	0.012
	Mixed	4	2											6	0.092	0.015
Nevada Test Site	Plutonium	7												7	0.104	0.015
	Mixed	2												2	0.030	0.015
New Brunswick Laboratory	Plutonium	1												1	0.010	0.010
Oak Ridge - Oak Ridge National Laboratory	Americium	3												3	0.024	0.008
	Hydrogen-3	1												1	0.002	0.002
	Other	3												3	0.024	0.008
	Uranium	14	1											15	0.140	0.009
Oak Ridge - Y-12 National Security Complex	Mixed			1										1	0.219	0.219
	Uranium	463	435	126	25	2	2							1,053 ◀	53.736 ◀	0.051
Paducah Gaseous Diffusion Plant	Uranium	1												1	0.011	0.011
Pantex Plant	Hydrogen-3	1												1	0.001	0.001
	Mixed	10	7											17	0.243	0.014
Savannah River Site	Hydrogen-3	17												17	0.096	0.006
	Plutonium	14	1											15	0.121	0.008
West Valley Project	Americium	1												1	0.004	0.004
Totals		602	460	131	25	2	2	1						1,223	58.014	0.047

Note: Arrowed values indicate the greatest value in each column.

DOE Occupational Radiation Exposure: 2008 Annual Report
Exhibit B-22. Extremity Dose Distribution by Site, 2008.

Site	No. Meas. Dose	Meas. 0-0.1	0.10-1	1-5	5-10	10-20	20-30	>30	Total Monitored*	No. with Meas.	No. Above Monitoring Threshold (5 rem)**	Collective Extremity Dose (person-rem)	Avg. Meas. Extremity Dose (rem)
Ames Laboratory	119	31	1						151	32		1.460	0.046
Argonne National Laboratory	2,356	43	18	12	1				2,430	74	1	45.363	0.613
Boeing North America, Inc. - Research	156								156				
Brookhaven National Laboratory	2,275	22	26	9					2,332	57		31.210	0.548
DOE - NNSA	25								25				
Fermi National Accelerator Laboratory	1,370	4	11	3					1,388	18		8.810	0.489
Hanford - Hanford Site	6,683	120	207	13					7,023	340		91.858	0.270
Hanford - Office of River Protection	1,006	154	232	7					1,399	393		87.026	0.221
Hanford - Pacific Northwest National Laboratory	1,562	108	107	20	1				1,798	236	1	76.502	0.324
Honeywell, FM&T/KC Production	85	3							88	3		0.100	0.033
Idaho National Laboratory	6,034	153	131	14					6,332	298		70.496	0.237
Lawrence Berkeley National Laboratory	1,088	11	5	5	1				1,110	22	1	16.601	0.755
Lawrence Livermore National Laboratory	8,371	12	25	21	2	2			8,433	62	4	99.525	1.605
Los Alamos National Laboratory	7,668	915	346	109	7				9,045	1,377	7	430.863	0.313
Nevada Test Site	3,297	8	5	1					3,311	14		2.575	0.184
New Brunswick Laboratory	23	3							26	3		0.059	0.020
Oak Ridge - East Tennessee Technology Park	1,810		3						1,813	3		0.931	0.310
Oak Ridge - Oak Ridge Institute for Science and Education	97								97				
Oak Ridge - Oak Ridge National Laboratory	7,580	51	69	9	3				7,712	132	3	69.093	0.523
Oak Ridge - Y-12 National Security Complex	5,211	17	22	15					5,265	54		50.595	0.937
Paducah Gaseous Diffusion Plant	668								668				
Pantex Plant	2,777	142	115	19					3,053	276		77.254	0.280
Portsmouth Gaseous Diffusion Plant	803								803				
Princeton Plasma Physics Laboratory	356								356				
Sandia National Laboratory	2,804								2,804				
Savannah River Site	6,036	251	663	176	15	2			7,143	1,107	17	712.183	0.643
Stanford Linear Accelerator Laboratory	5,045								5,045				
Thomas Jefferson National Accelerator Facility	1,476								1,476				
West Valley Project	416	16	12						444	28		3.700	0.132
Site Office Personnel***	1,482								1,482				
Totals	78,679	2,064	1,998	433	30	4			83,208	4,529	34	1,876.204	0.414

* Represents the total number of monitoring records. The number of individuals provided extremity monitoring cannot be determined.

** All extremity doses above 5 rem were for the upper extremities (hands and forearms). DOE annual limit for extremities is 50 rem.

10 CFR 835.402(a)(1)(ii) requires extremity monitoring for a shallow dose equivalent to the skin or extremity of 5 rem or more in a year.

***Includes site office personnel from Albuquerque, Oakland and Oak Ridge.

Note: Arrowed values indicate the greatest value in each column.