

**INSTRUCTIONS FOR PREPARING OCCUPATIONAL  
EXPOSURE DATA FOR SUBMITTAL TO THE  
RADIATION EXPOSURE MONITORING SYSTEM (REMS) REPOSITORY**

1. TRANSMITTAL LETTER.

A transmittal letter containing the following information at a minimum will accompany each submittal to the REMS repository.

- Data filename.
- Operating system used to create the data file.
- Contact name and phone number of individual knowledgeable about the submittal.
- The number of records included in the submittal.
- The collective total effective dose (TED) for individuals included in the submittal.
- Other instructions that may be useful in processing the submittal.
- Signature and date of the organization's authorized representative.
- Description of the activities conducted at the facility during the monitoring year as it relates to the collective radiation exposure received. The text should include, at a minimum, a general explanation of increases or decreases in the annual collective TED, ED, and CED, a description of events concerning any TED in excess of 2 rems (20 mSv) or a dose in excess of any of the limits in 10 CFR 835 Subpart C including references to any Occurrence Reports related to the exposure, and any other unusual events or operational changes related to occupational radiation exposure at the facilities included in the submittal.

The exposure data file is to be error checked using the latest version of the REMSView program provided by the REMS repository and all reported errors resolved prior to transmitting the file to REMS. REMSView may be obtained from the DOE REMS Program Manager, or online at:

<https://www.energy.gov/ehss/downloads/remsview-validation-application-version-31>.

Please contact REMS Support by phone: 865.576.5092, or e-mail: [REMS\\_support@orau.org](mailto:REMS_support@orau.org) to request a copy of the software.

2. MEDIA REQUIREMENTS.

Data will be submitted to REMS via electronic media. Since the REMS data submittal contains Personally Identifiable Information (PII), the information requires protection against unauthorized access under the Privacy Act of 1974 (as amended) and DOE CIO Guidance CS-38A. Specific instructions for submitting the data file to REMS is provided on the REMS web site.

Other methods of electronic submittal may be acceptable, but must be approved by the DOE REMS Program Manager prior to submission. The data file may be compressed on the electronic media as long as instructions and required software needed to extract the data file are provided. Alternative methods of electronic submission may be accommodated if approved in advance by the DOE REMS Program Manager.

a. File Structure.

Each data record is to be of a fixed length. Extra spaces in the field should be padded with blanks. Do not use nulls (ASCII character 0), or tabs, or any other non-printable characters in any record. Terminate each record with a carriage return and line feed. Responses are required to all fields unless otherwise noted.

3. INSTRUCTIONS FOR PREPARING ELECTRONIC OCCUPATIONAL EXPOSURE DATA SUBMITTALS. Individual exposure data records required to be reported to the Radiation Records Repository will be formatted as shown in Table G-1.

**Table G-1. Electronic Data Submittals.**

#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
1	Monitoring Year	2011	4	1–4	Enter the year for which the monitoring results are being submitted. The monitoring year, as defined in 10 CFR 835.2 may differ slightly from the calendar year due to dosimetry processing schedules.
2	Organization Code	1234567	7	5–11	7-digit organization code, available from the repository. Whenever possible, the appropriate CAIRS organization code should be used.
3	Facility Code	LAB #12	15	12–26	The code representing the facility where the dose was received for the personnel exposure records. Organizations may determine the Facility Code using printable ASCII characters of 15 characters or less. The Facility Code assigned should remain consistent from year to year.
4	Facility Type Code	61	2	27–28	See Facility Type codes, Table G-4
5	Phase of Operation	C	1	29	See Phase of Operation codes, Table G-5
6	ID Number	123456789	15	30–44	The identification number for this individual.
7	ID Type	SSN	3	45–47	The type of identification number used to identify the individual. See ID Type codes Table G-6.
8	First Name	Mary	30	48–77	Legal first name or initial
9	Middle Name	Q	20	78–97	Middle name or initial
10	Last Name	Public	30	98–127	Last name including title

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#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
11	Birth Date	19760101	8	128–135	Date of birth of individual (YYYYMMDD)
12	Sex	F	1	136	Sex of the monitored individuals
13	Occupation Code	184	3	137–139	See Occupation Codes, Table G-7
14	Monitoring Status	E	1	140	<p>E General Employee, employee of the reporting organization, visiting researcher, or student</p> <p>P Member of the Public, including visiting dignitaries</p> <p>G Special Individuals as defined in Chapter III, paragraph 1b(1)</p>
15	Exposure Type	R	1	141	<p>R Routine</p> <p>P PSE, Planned Special Exposure</p> <p>E Emergency, exposure that occurred during an emergency when emergency dose limits and procedures were in effect</p>
16	Monitoring Start Date	20110101	8	142–149	Date monitoring began for the reporting year (YYYYMMDD)
17	Monitoring End Date	20111231	8	150–157	Date monitoring ended for the reporting year (YYYYMMDD)
18	Effective Dose (ED)	120	7	158–164	The effective dose at 1.0 cm depth from external radiation sources, including neutron radiation in millirem. Monitoring should be conducted in accordance with the guidance provided in the external dosimetry chapter of DOE G 441.1-1C <i>Implementation Guide for Use with Title 10, CFR, Part 835, Occupational Radiation Protection</i> , dated 2008. If monitoring is not provided, the field should be blank (padded with spaces). Enter NM as the associated measurement code.
19	Effective Dose Measurement Code	MV	2	165–166	Measurement code for the dose value. See Measurement Codes, Table G-8.
20	Effective Dose from Neutron (ED - neutron)	20	7	167–173	The effective dose at 1.0 cm depth from neutron radiation in millirem. Monitoring should be conducted in accordance with the guidance provided in the external dosimetry chapter of DOE G 441.1-1C <i>Implementation Guide for Use with Title 10, CFR, Part 835, Occupational Radiation Protection</i> , dated 2008. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code.
21	Neutron Dose Measurement Code	MV	2	174–175	Measurement code for the neutron dose value. See Measurement Codes, Table G-8.

#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
22	Equivalent Dose to the Lens of the Eye (EqD – Eye)	(blank, padded with spaces)	7	176–182	Equivalent Dose to the lens of the eye at a tissue depth of 0.3 cm in millirem, including the whole body dose from neutron radiation in millirem. Monitoring should be conducted in accordance with the guidance provided in DOE G 441.1-1C. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code.
23	Lens of the eye Dose Measurement Code	NM	2	183–184	Measurement code for the eye dose value. See Measurement Codes, Table G-8.
24	External Equivalent Dose to the skin of the Whole Body (EqD - SkWB) <sup>1</sup>	120	7	185–191	Equivalent Dose from external radiation at a depth of 0.007 cm to the skin of the whole body, including the neutron dose in millirem. Monitoring should be conducted in accordance with the guidance provided in DOE G 441.1-1C. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code. This includes assessment of skin dose from non-uniform exposure of the skin required by 10 CFR 835.205(b). Per 10 CFR 835.702(b), recording of non-uniform equivalent dose is not required if the dose is less than 1 rem.
25	Skin Dose (WB) Measurement Code	MV	2	192–193	Measurement code for the skin dose (WB) value. See Measurement Codes, Table G-8.
26	External Equivalent Dose to the Skin, Upper Right Extremity (EqD - UR) <sup>1</sup>	120	7	194–200	Equivalent Dose from external radiation at a depth of 0.007 cm to the upper right extremity (e.g., right hand), including the neutron dose in millirem. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code. This includes assessment of skin dose from non-uniform exposure of the skin required by 10 CFR 835.205(b). Per 10 CFR 835.702(b), recording of non-uniform equivalent dose is not required if the dose is less than 1 rem.
27	Skin - UR Measurement Code	MV	2	201–202	Measurement code for the Skin - UR value. See Measurement Codes, Table G-8.

<sup>1</sup> Although not reported to REMS, compliance with the occupational dose limits specified in 10 CFR 835.202(a)(4) requires summation of the equivalent dose to the skin or to any extremity (i.e. data elements 24, 26, 28, 30 and 32) with the committed equivalent dose to the skin or to any extremity (i.e. data element 53). REMS will sum these data elements.

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#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
28	External Equivalent Dose to the Skin, Upper Left Extremity (EqD - UL) <sup>1</sup>	150	7	203–209	Equivalent Dose from external radiation at a depth of 0.007 cm to the upper left extremity (e.g., left hand), including the neutron dose in millirem. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code. This includes assessment of skin dose from non-uniform exposure of the skin required by 10 CFR 835.205(b). Per 10 CFR 835.702(b), recording of non-uniform equivalent dose is not required if the dose is less than 1 rem.
29	Skin - UL Measurement Code	MV	2	210–211	Measurement code for the skin - UL value. See Measurement Codes, Table G-8.
30	External Equivalent Dose to the Skin, Lower Right Extremity (EqD - LR) <sup>1</sup>	(blank, padded with spaces)	7	212–218	Equivalent Dose from external radiation at a depth of 0.007 cm to the lower right extremity (i.e., right foot, ankle, or lower leg), including the neutron dose in millirem. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code. This includes assessment of skin dose from non-uniform exposure of the skin required by 10 CFR 835.205(b). Per 10 CFR 835.702(b), recording of non-uniform equivalent dose is not required if the dose is less than 1 rem.
31	Skin - LR Measurement Code	NM	2	219–220	Measurement code for the skin - LR value. See Measurement Codes, Table G-8.
32	External Equivalent Dose to the Skin, Lower Left Extremity (EqD - LL) <sup>1</sup>	(blank, padded with spaces)	7	221–227	Equivalent Dose from external radiation at a depth of 0.007 cm to the lower left extremity (i.e., left foot, ankle, or lower leg), including the neutron dose in millirem. If monitoring is not provided, the field should be blank (padded with spaces) and 'NM' should be entered as the associated measurement code. This includes assessment of skin dose from non-uniform exposure of the skin required by 10 CFR 835.205(b). Per 10 CFR 835.702(b), recording of non-uniform equivalent dose is not required if the dose is less than 1 rem.
33	Skin - LL Measurement Code	NM	2	228–229	Measurement code for the skin - LL value. See Measurement Codes, Table G-8.

<sup>1</sup> Although not reported to REMS, compliance with the occupational dose limits specified in 10 CFR 835.202(a)(4) requires summation of the equivalent dose to the skin or to any extremity (i.e. data elements 24, 26, 28, 30 and 32) with the committed equivalent dose to the skin or to any extremity (i.e. data element 53). REMS will sum these data elements.

#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
34	Committed Effective Dose (CED)	241	7	230–236	The 50-year CED from intakes during the monitoring period in millirem.
35	CED Measurement Code	MV	2	237–238	Measurement code for the CED value. See Measurement Codes, Table G-8
36	Radionuclide 1	PU238	7	239–245	The scientific abbreviation of the radionuclide taken into the body that contributed to the internal dose. Use the standard scientific format of “Xx999x”, where “X” represents an alphanumeric and “9” represents a numeric character. List only the six highest contributors among the following fields. Enter only one radionuclide per field. Do not include daughter products. When possible, list the radionuclides in descending order of their contribution to the internal dose.
37	Radionuclide 2	(blank padded with spaces)	7	246–252	The scientific abbreviation of the second radionuclide taken into the body.
38	Radionuclide 3	(blank padded with spaces)	7	253–259	The scientific abbreviation of the third radionuclide taken into the body.
39	Radionuclide 4	(blank padded with spaces)	7	260–266	The scientific abbreviation of the fourth radionuclide taken into the body.
40	Radionuclide 5	(blank padded with spaces)	7	267–273	The scientific abbreviation of the fifth radionuclide taken into the body.
41	Radionuclide 6	(blank padded with spaces)	7	274–280	The scientific abbreviation of the sixth radionuclide taken into the body.
42	Committed Equivalent Dose to the gonads (CEqD - GO)	97	7	281–287	The 50-year Committed Equivalent Dose to the gonads from the intake of the radionuclides for this monitoring period, in millirem.
43	Committed Equivalent Dose to the breasts (CEqD - BR)	13	7	288–294	The 50-year Committed Equivalent Dose to the breasts from the intake of the radionuclides for this monitoring period, in millirem.
44	Committed Equivalent Dose to the red bone marrow (CEqD - BM)	359	7	295–301	The 50-year Committed Equivalent Dose to the red bone marrow from the intake of the radionuclides for this monitoring period, in millirem.
45	Committed Equivalent Dose to the lungs (CEqD - LU)	189	7	302–308	The 50-year Committed Equivalent Dose to the lungs from the intake of the radionuclides for this monitoring period, in millirem.
46	Committed Equivalent Dose to the thyroid (CEqD - TH)	13	7	309–315	The 50-year Committed Equivalent Dose to the thyroid from the intake of the radionuclides for this monitoring period, in millirem.

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#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
47	Committed Equivalent Dose to the bone surface (CEqD - BS)	7260	7	316-322	The 50-year Committed Equivalent Dose to the bone surface from the intake of the radionuclides for this monitoring period, in millirem.
48	Committed Equivalent Dose to the colon (CEqD - CO)	13	7	323-329	The 50-year Committed Equivalent Dose to the colon from the intake of the radionuclides for this monitoring period, in millirem.
49	Committed Equivalent Dose to the stomach (CEqD - ST)	13	7	330-336	The 50-year Committed Equivalent Dose to the stomach from the intake of the radionuclides for this monitoring period, in millirem.
50	Committed Equivalent Dose to the bladder (CEqD - BL)	13	7	337-343	The 50-year Committed Equivalent Dose to the bladder from the intake of the radionuclides for this monitoring period, in millirem.
51	Committed Equivalent Dose to the liver (CEqD - LV)	1530	7	344-350	The 50-year Committed Equivalent Dose to the liver from the intake of the radionuclides for this monitoring period, in millirem.
52	Committed Equivalent Dose to the esophagus (CEqD - ES)	13	7	351-357	The 50-year Committed Equivalent Dose to the esophagus from the intake of the radionuclides for this monitoring period, in millirem.
53	Committed Equivalent Dose to the skin (CEqD - SK)	13	7	358-364	The 50-year Committed Equivalent Dose to the skin from the intake of the radionuclides for this monitoring period, in millirem.
54	Committed Equivalent Dose to the remainder (CEqD - RE)	1608	7	365-371	The 50-year Committed Equivalent Dose to the remainder from the intake of the radionuclides for this monitoring period, in millirem.
55	Total Effective Dose (TED)	361	7	372-378	The sum of the Effective Dose and the Committed Effective Dose in millirem.
56	Total Organ Dose (TOD)	7380	7	379-385	The sum of the Effective Dose from external radiation and the Committed Equivalent Dose to the maximally exposed organ or tissue other than the skin or the lens of the eye, in millirem. The TOD value should be reported as the numeric summation of ED (item #18) and the maximum CEqD to an organ.
57	Equivalent Dose to the Embryo/Fetus (EqD – Fetus)	(blank padded with spaces)	7	386-392	Equivalent Dose to the embryo/ fetus during the pregnancy from conception to the end of the pregnancy, in millirem. Dose determination should be made in accordance with DOE G 441.1-1C.

#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
58	Comment Text	Further information for this dose record is contained in the Occurrence Report #	140	393-532	Text of the comment applicable to the dose record in the data file. Comments should be limited to information needed to assess the record, such as references to additional documentation concerning the record. If no comments are necessary, the record may be terminated with a carriage return and line feed at column 394 with one space entered for the comment.

#### 4. OCCUPATIONAL EXPOSURE DATA SUMMARY EXPLANATION.

Policies and procedures should be in place to ensure that duplicate monitoring results for an individual are not reported to the repository by more than one organization.

All equivalent doses will be in units of millirem, rounded to the nearest whole number and right justified within the appropriate field. If monitoring was not provided for a specific dose value, do not enter a value. Leave the field blank, padded with spaces, and enter NM in the corresponding measurement code field.

Occupational exposure monitoring should be provided in accordance with the guidance provided in the following DOE documents: DOE G 441.1-C.

Dose records for more than one facility are required only where radiation monitoring is performed and recorded for specific facilities. If only site-wide monitoring is provided, only one facility record code should be included in the submittal to represent the entire site. For individuals receiving dose at multiple facilities where the fraction of dose received at each facility code cannot be determined, the entire dose should be attributed to the facility where the majority of dose was received. If the facility where the majority of dose was received cannot be determined, the facility code where the individual spent the majority of the monitoring period should be used.

Comment records are required only if additional information is needed to assess the record.

Reporting of fetal exposure data is required for a declared pregnant worker. Fetal exposure data should be included in the submittal for the monitoring year that encompasses the pregnancy end date.

#### 5. BIOASSAY AND INTAKE SUMMARY FILE EXPLANATION.

The following files must be submitted as separate ASCII files containing annual summary records for bioassay and intake information. These files should be submitted on the same media as the annual submittal as shown in Tables G-2 and G-3 respectively. The Bioassay Summary file should contain one record for each facility. The Intake Summary file should contain one record for each facility, radionuclide, and intake mode.



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Bioassay Summary records are required to be reported when any individual participates in a bioassay program or in vivo monitoring during the monitoring year.

Intake Summary records are required to be reported when any individual has received a dose from intakes during the monitoring year. Monitoring results corresponding to doses not exceeding the thresholds listed in 10 CFR 835.702(b) need not be reported.

**Table G-2. Bioassay Summary File.**

#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
1	Facility Code	LAB #12	15	1–15	The code representing the facility where the dose was received for the personnel exposure records. Organizations may determine the Facility Code using printable ASCII characters of 15 characters or less. The Facility Code assigned should remain consistent from year to year.
2	Monitoring Year	2011	4	16–19	Enter the year for which the monitoring records are being submitted. The monitoring year, as defined in 10 CFR 835.2 may differ slightly from the calendar year due to dosimetry processing schedules.
3	Total	237	5	20–24	Total number of individuals monitored in the bioassay program or in vivo monitoring during the year.
4	Routine	233	5	25–29	Number of routine bioassay performed during the year.
5	Special	4	5	30–34	Number of special bioassay or in vivo measurements performed during the year.
6	Urinalysis	212	5	35–39	Number of urine samples analyzed during the year.
7	Fecal	32	5	40–44	Number of fecal samples analyzed during the year.
8	In Vivo	120	5	45–49	Number of in vivo measurements performed excluding wound counts during the year.
9	Wound	3	5	50–54	Number of in vivo measurements performed on wounds during the year.
10	Other	1	5	55–59	Number of other measurements performed in order to determine internal dose for an individual during the year (e.g., air sampling or other method).

**Table G-3. Intake Summary File.**

#	Data Element	Example Code or Data	Field Size	Column Range	Instructions
1	Facility Code	LAB# 12	15	1–15	The code representing the facility where the dose was received for the personnel exposure records. Organizations may determine the Facility Code using printable ASCII characters of 15 characters or less. The Facility Code assigned should remain consistent from year to year.
2	Monitoring Year	2011	4	16–19	Enter the year for which the monitoring results are being submitted. The Monitoring Year as defined in 10 CFR 835.2 may differ slightly from the calendar year due to dosimetry processing schedules.
3	Radionuclide	Pu238	7	20–26	The scientific abbreviation of the radionuclide taken into the body. Use the standard scientific format of "Xx999x", where "X" represents an alphanumeric and "9" represents a numeric character. Enter only one radionuclide per record. Do not include daughter products or radionuclides that did not result in internal doses during the monitoring year.
4	Mode	W	1	27	Mode of the intake. H = Inhalation (record tritiated water intakes as inhalations.) G = Ingestion A = Absorption W = Wound, cut, puncture, injection or any other intake through broken skin. A separate record for each mode and radionuclide should be reported.
5	Collective CED	3489	7	28–34	The collective 50-years CED from intakes of this radionuclide and intake mode during the monitoring year, in millirem.

6. FACILITY TYPE CODES.

The facility record should identify the facility type where the worker's doses were received. The facility type should reflect the original function of the facility even if

activities in support of that function are no longer being conducted at the facility. Facility type codes are listed in Table G-4.

Tables G-4 through G-8 list codes used in filling out occupational exposure records.

**Table G-4. Facility Type Codes.**

<b>Facility Type Code</b>	<b>Facility Type Description</b>
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/Management
80	Weapons Fabrication and Testing
99	Other

## 7. FACILITY PHASE OF OPERATION CODES.

The phase of operation will be recorded for the calendar year for which the phase of operation is most appropriate. For facilities that transition between phases during a year, the phase that is appropriate for the majority of the calendar year should be recorded. Each DOE facility falls into one of the Phase of Operations shown in Table G-5. In general, each phase follows in sequential order, although a facility may forgo one or more phases or may not follow the order listed here.

**Table G-5. Facility Phase of Operation Codes.**

Code	Phase of Operation	Definition
A	Construction (includes Major Renovation)	New facilities that are brought on line to replace or augment existing facilities. This phase includes major renovations for existing facilities but does not include environmental restoration construction.
B	Operations / Maintenance	Includes the normal, mission-related operations and maintenance of the reported Facility Type.
C	Stabilization	Facilities that have been declared to be surplus (assigned to the environmental restoration program). This includes facilities where all operations have been suspended but environmental restoration activities have not begun. This may include periods of surveillance and maintenance prior to environmental restoration activities.
D	Remediation	Period during which corrective actions that are necessary to bring the facility into regulatory compliance are being performed.
E	Decontamination and Decommissioning	Decontamination is the act of removing a chemical, biological, or radiological contaminant from, or neutralizing its potential effect on, a person, object, or environment by washing, chemical action, mechanical cleaning, or other techniques. Decommissioning is the process of closing and securing a facility.
F	Waste Management	This phase includes the management of wastes generated during the environmental restoration process.
G	Surveillance and Maintenance	This phase includes those activities that provide for the safety and protection of a facility after the environmental restoration phase.
Z	Other	All DOE facilities should fit into one of the above categories. "Other" should be used only in highly unusual circumstance.

**Table G-6. Identification Codes.**

ID Type Code	Identification Type Description
SSN	U.S. Social Security Number
PPN	Passport Number
CSI	Canadian Social Insurance Number
WPN	Work Permit Number
OTH	Other <sup>1</sup>

<sup>1</sup> Other identification numbers are unique identifiers assigned by the reporting organization when all other identification types are unavailable. The individual's SSN should be used whenever possible. The first 7 digits of an "other" identification number must be the organization code for the reporting organization. The remaining 8 digits of the ID number should be unique for each individual being submitted by the reporting organization.

**Table G-7. Occupational Codes.**

<b>DOE Code</b>	<b>DOE Occupational Categories</b>	<b>Cross-Reference SOC Code (ranges)<sup>1</sup></b>
001	<b>UNKNOWN</b>	
110	<b>MANAGERS AND ADMINISTRATORS</b>	11–14
	<b>PROFESSIONAL</b>	15–39
160	Engineers	16
170	Scientists	17–19
184	Health Physicists	1843
200	Miscellaneous Professionals	20-25, 32–34
260	Doctors and Nurses	26–30
350	Technicians	35–39
360	Health Technicians	36
370	Engineering Technicians	37
380	Science Technicians	38
383	Radiation Monitors/Technicians	383
390	Miscellaneous Technicians	39
400	<b>SALES</b>	40–44
450	<b>ADMINISTRATIVE SUPPORT AND CLERICAL</b>	45–47
	<b>SERVICE WORKERS</b>	50–52
512	Firefighters	512
513	Protective Force	513/4
521	Food Service Employees	521
524	Janitors	524
525	Miscellaneous Service Employees	523, 525/6
	<b>AGRICULTURAL WORKERS</b>	55–58
562	Grounds keeper	562
570	Forest Workers	57
580	Miscellaneous Agricultural Workers	55, 561, 58
	<b>REPAIR/CONSTRUCTION WORKERS</b>	60–65
610	Mechanics/Repairers	60–61
641	Masons	641
642	Carpenters	642
643	Electricians	643
644	Painters	644
645	Pipe Fitters	645
650	Miners/Drillers	65

<sup>1</sup> Refers to the Department of Commerce's Standard Occupational Classification (SOC) Manual (1980).

DOE Code	DOE Occupational Categories	Cross-Reference SOC Code (ranges) <sup>1</sup>
660	Miscellaneous Repairers/Construction Workers	63, 646
	<b>PRECISION/PRODUCTION WORKERS</b>	67–78
681	Machinists	681
682	Sheet Metal Workers	682
690	Operators, Plant/System/Utility	69
710	Machine Setup/Operators	71–76
771	Welders and Solderers	771
780	Miscellaneous Precision/Production Workers	67, 683–688, 722–78
	<b>TRANSPORT WORKERS</b>	81–83
820	Truck Drivers	8212–8214
821	Bus Drivers	8215
825	Pilots	825
830	Equipment Operators	83
840	Miscellaneous Transporters	81, 821–824, 828
850	<b>HANDLERS/LABORERS/HELPERS</b>	85–87
910	<b>MILITARY PERSONNEL</b>	91
990	<b>MISCELLANEOUS WORKERS</b>	99

Table G-8. Dose Measurement Codes.

Code	Meaning	Definition
MV	Measured Value	Indicates that measurements were performed for the specific individual to determine the dose for that individual. This measurement code would apply in all cases where individual external dosimetry was used or where the individual participated in a bioassay program (including whole body or lung count) that was used to determine the individual's internal dose.
PV	Preliminary Value	Indicates that this measurement is an interim estimation and expects to be updated in a subsequent revision and submittal of this dose record. This measurement code should be used when the final dosimetry or bioassay results are not yet available but the submittal is due.
CV	Calculated Value	Indicates the value given was calculated from indirect measurements such as monitoring performed on other workers or determined from a time-motion study or other analysis such as air sample for internal exposures. The value given represents the final results of the calculation, but the value was not measured directly for the monitored individual. A comment record may be provided to explain the reason and method of calculation.
NM	Not Monitored	Dosimetry was not provided and was not required to be provided.
ND	Not Detectable	Monitoring was performed but the results were below the detection limit of the measurement instrumentation.