FRCM CHAPTER 7
RADIOLOGICAL RECORDS

Revision History

Author	Description of Change	Revision Date
J. D. Cossairt	1. Reformulated in light of Fermilab-wide ESH&Q consolidation and reorganization 2. Removed technologically obsolete information and material duplicative of or in potential conflict with FESHM Chapter 2070. 3. Editorial corrections as needed.	June 2017
J. D Cossairt	1. Reformulated in light of Fermilab-wide ESH&Q reorganization. 2. Editorial corrections as needed,	July 2015
J. D. Cossairt	1. Add Article 782 to include specific reporting requirements required by DOE Order 231.1B	December 2011
J. D. Cossairt	Most recent Version prior to institution of revision history tracking	February 2010

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PART 1 REQUIREMENTS

711 Purpose

This chapter contains the prescribed practices for preparing and retaining radiologically related records. Radiological control records are needed to demonstrate the effectiveness of the overall program. The work force and management are required to use records to document radiological safety afforded to personnel on site. Records of radiological programs may be required to support worker health studies and future disputes or claims. Therefore, these records should be high quality, readily retrievable and managed for the prescribed retention period. Consideration should be given to cross-referencing related records to aid the ability to retrieve them. Records should be handled such that personal privacy is protected in accordance with the requirements of Fermilab's formal program for protection of Protected Personally Indentifiable Information (PII). This applies to both records on both paper and electronic media.

712 Records Management Program

1. A radiological records management program has been established at Fermilab. This program ensures that auditable records and reports are controlled through the stages of creation, distribution, use, arrangement, storage, retrieval, media conversion (if applicable) and disposition. The records management program includes the following:

    a. Radiological Policy Statements

    b. Radiological Control Procedures

    c. Individual Radiological Doses

    d. Internal and External Dosimetry Policies and Procedures

    e. Personnel Training (course records and individual records)

    f. ALARA Records

    g. Radiological Instrumentation Test, Repair and Calibration Records

    h. Radiological Surveys

    i. Area Monitoring Dosimetry Results

    j. Radiological Work Permits

k. Radiological Performance Indicators and Assessments

l. Radiological Safety Analysis and Evaluation Reports

m. Quality Assurance Records

n. Radiological Incident and Critique Reports

o. Accountability records for sealed radioactive sources

p. Reports of loss of radioactive material

q. Radiation safety interlocks test records.

r. Shielding assessments (see FRCM Chapter 8) and Safety Assessment Documents (see FESHM Chapter 2010.)

2. Where radiological services (for example, dosimetry and laboratory analyses) are subcontracted services, there should be a clear agreement regarding records responsibility during performance of the service. Records of results should reside in the custody of the originating contract organization.

3. DOE Orders on records retention provide implementing instructions, records inventory requirements, disposition schedules and provisions for the transfer of records.

4. The Privacy Act of 1974 contains requirements to protect the privacy of individual records.

713 Recordkeeping Standards

1. Radiological control records shall be accurate, legible, and written in a professional manner. The records should include the following:

a. Identification of the facility, specific location, function and process

b. Signature or initials or other identifying code of the preparer and date

c. Legible entries in readable ink, black is preferred

d. Corrections identified by a single line-out, initialed and dated

e. Supervisory signature to ensure review and proper completion of forms.

2. Radiological control records maintained in paper form should not include:

   a. Opaque substances for corrections (corrections should be made by "crossout" with initials)

   b. Shorthand or other nonstandardized terms.

3. Unless otherwise specified, the quantities used in the radiological records required by this Manual shall be clearly indicated in special units of curie, rad, roentgen, or rem, including multiples and subdivisions of these units, or other conventional units, such as dpm, dpm/100 cm^2, or mass units. The SI units, becquerel (Bq), gray (Gy), and sievert (Sv), may be provided parenthetically for reference with scientific standards or for communication with international collaborations

PART 2 RADIOLOGICAL RECORDS FOR INDIVIDUALS

721 Personnel Radiological Records

1. Radiation dose records shall be maintained for all individuals for whom monitoring was required by 10 CFR 835.402 and doses received during planned special exposures, accidents, and emergency conditions. These records, including zero doses, shall be readily accessible to monitored individuals. In addition, the results of individual external and internal dose measurements that are performed, but are not required by 10 CFR 835.402, shall be recorded. The dosimetry system used in these radiological records shall be consistent with that used in Fermilab's Department of Energy Laboratory Accreditation Program (DOELAP) accreditation at the time dosimetry results are issued.

2. Radiation dose records shall contain information sufficient to uniquely identify each individual, accomplished preferably by the use of social security number or employee number.

3. Procedures, data and supporting information needed to reconfirm an individual's dose at a later date shall be maintained.

4. External dose records shall include the following:

    a. Applicable extremity, skin, eye and whole body dose results measured with personnel dosimeters, including all multiple dosimeter badging results

    b. Evaluations resulting from anomalous dose results such as unexpected high or low doses

    c. Dose reconstructions from lost or damaged dosimeters

    d. Evaluations of non-uniform radiation doses.

    e. Exposure investigations, reports, and supplemental documents generated for individuals who may have received exposures which were unmonitored or measured with inappropriate dosimetry.

5. Internal dose records shall include the following:

    a. Committed effective dose

    b. Committed equivalent dose to any organ or tissue of concern; and

c. Estimated intake and identity of radionuclides as determined by

- whole body and/or lung counting results (including chest wall thickness measurements where applicable)
- urine, fecal, and specimen analyses
- air monitoring records

6. Records of summation of external effective dose and committed equivalent dose to any organ receiving a reportable equivalent dose shall be maintained for the individual receiving such dose.

7. The total effective dose received by each monitored individual shall be maintained for each year the individual is monitored.

8. The equivalent dose to the embryo/fetus of a declared pregnant worker shall be maintained with the occupational dosimetry records for the worker. In the absence of specific embryo/fetal monitoring, the equivalent dose to the embryo/fetus will be assumed to be the effective dose received by the declared pregnant worker during the reporting quarters overlapping the gestation period.

9. Records of prior year's occupational dose shall be maintained with the individual's occupational dosimetry records.

10. Efforts shall be made to obtain records of prior occupational internal and external dose received at other facilities. U.S. Nuclear Regulatory Commission Form 4 or equivalent that document previous occupational radiation doses shall be retained. In the absence of formal records of previous occupational history for the current calendar year, a written estimate signed by the individual may be accepted. (See R. P. Form No 1)

11. Records of authorizations to exceed Administrative Goals shall be retained.

12. Emergency doses and planned special exposures shall be accounted for separately, but maintained with the individual's occupational dosimetry records.

13. Records of non-uniform dose to the skin caused by contamination on the skin need not be retained in the personnel dose records if the dose is less than 2 percent of the limit for the skin in Table 2-1.

14. Recording of internal dose is not required for any monitoring result estimated to correspond to an individual receiving less than 0.01 rem. The bioassay or air

monitoring results used to make the estimate shall be maintained in the records and the unrecorded internal dose estimated for any individual in a year shall not exceed the applicable monitoring threshold in FRCM Article 521.

15. Historical doses, recorded to individuals using dosimetry methodology predating the full implementation of the requirements of 10 CFR 835 promulgated in the Federal Register, Vol. 72, No. 119, Docket No. EH-RM-02-835, pp. 31904-31941, June 8, 2007 or received as prior-year's doses from non-Fermilab entities shall be regarded as the official doses of record.

16. The complete records of radiological incidents and occurrences involving personnel dose shall be retained.

17. These records shall be maintained by the ESH&Q Section.

722 Medical Records

1. All medical records at Fermilab are maintained by the Fermilab Occupational Medicine Office

2. Medical evaluations and treatment performed in support of the radiological program are documented. Such evaluations and treatments are extremely improbable for conditions at Fermilab.

3. Records of formal written declarations of pregnancy for workers employed by Fermilab, records of revocations of such declarations, as well as records indicating that the pregnancy has concluded shall also be maintained by the Fermilab Occupational Medicine Office.

723 Radiological Training and Qualification Records

1. Records of training and qualification in radiological control shall be maintained to demonstrate that an individual received appropriate information to perform the work assignment in a safe manner. Qualification standard records shall be retained for applied training as well as for formal classroom training.

2. These records shall be maintained electronically by the ESH&Q Section in accord with general ES&H training policies specified in the Fermilab ES&H Manual-Chapter 2070.

PART 3 VISITORS

731 Record Requirements

For visitors entering an area where radiation monitoring is required, the following records shall be maintained:

1. Documentation of completion of Radiological Orientation including a synopsis of the topics covered shall be maintained for visitors entering an area where radiation monitoring is required. RP Form No. 31 is normally used for this purpose.

2. Records of doses, including zero dose, received by all visitors for whom monitoring was performed shall be maintained. These records shall be sufficient to evaluate compliance with all applicable dose limits and monitoring and reporting requirements.

732 Reports

Upon written request from an individual, a summary of effective dose received during the visit shall be provided to that individual as soon as the data are available, but no later than 90 days after termination of the visit. Requests received after the individual has left the site will be honored within 90 days from the date the request is received by the Dosimetry Program Manager.

PART 4 RADIOLOGICAL CONTROL PROCEDURES

741 Policies, Procedures and Radiological Work Permits

Records of the Radiological Control Program should consist of policy statements, procedures, Radiological Work Permits and supporting data as well as this Manual and its past editions. Procedures for performing radiation surveys should be identifiable with the survey results. Completed Radiological Work Permits should be maintained. The Radiological Control Organization shall maintain those pertinent to its operations and, where appropriate, the Laboratory as a whole.

742 ALARA Records

Records of formal As-Low-As-Reasonably-Achievable (ALARA) reviews shall be maintained to demonstrate the adequacy of the ALARA Program. ALARA topics are documented in the minutes of Radiation Safety Subcommittee and other committees where radiological safety issues are formally discussed. ALARA records shall be maintained by the line organizations for their activities and copies forwarded to the ES&H central file.

743 Quality Assurance Records

The Fermilab Quality Assurance Manual contains Laboratory policies concerning quality assurance. Records of quality assurance reviews and audits developed for Radiological Control functions shall be retained to ensure that sufficient records are specified, prepared, reviewed, approved and maintained to accurately reflect completed work.

PART 5 RADIOLOGICAL SURVEYS

751 Requirements

1. Radiological Control Programs require the performance of appropriate radiological surveys to determine existing conditions in a given location. Maps with sufficient detail to permit identification of original survey and sampling locations should be maintained. Records shall contain sufficient detail to be meaningful even after the originator is no longer available. Radiological surveys should be recorded on appropriate standard forms and include the following common elements:

    a. Date, time, and purpose of the survey

    b. General and specific location of the survey

    c. Type of survey instrument, calibration due date, and Fermi instrument identification number, as appropriate

    d. Name or initial of the surveyor

    e. Pertinent special information needed to interpret survey results (e.g., unusual background levels, special survey distances, etc.)

    f. Reference to a specific Radiological Work Permit if the survey is performed to support the permit (unless an alternate method of tracking survey maps with RWPs is employed).

2. Refer to Chapter 5-Part 5 for specific requirements regarding area radiological surveys.

PART 6 INSTRUMENTATION AND CALIBRATION RECORDS

761 Calibration and Operational Checks

1. Calibration records for fixed, portable, and laboratory radiation measuring equipment and individual monitoring devices shall be maintained and include frequencies, method, dates, personnel, training, and traceability of calibration sources to National Institute of Science and Technology or other acceptable standards. These records are maintained by the ESH&Q Section.

2. Refer to Chapter 5-Part 6 for calibration requirements.

PART 7 RECORDS MANAGEMENT

771 Media

A combination of media may be used for a comprehensive records system. Most records are retained electronically. All records are maintained in accordance with Fermilab standard records retention practices that comply with applicable DOE Orders and Standards.

772 Retention

1. 10 CFR 835 and DOE Orders pertaining to records retention practices describe procedures for retaining records. The generic records retention policies are embodied in the Fermilab Records Management Policies and Procedures.

2. Once a record has been created, reviewed and signed by appropriate supervision, the record is considered complete and shall not be modified. Subsequent errors identified in a completed record may be corrected by creating a supplemental record that includes traceability for the correction.

3. Upon permanent cessation of activities at Fermilab that could result in occupational exposure to individuals, all individual monitoring records shall be transferred to DOE.

PART 8 RADIOLOGICAL REPORTING

781 Reports to Individuals

1. Each individual who is monitored is provided a written radiation dosimetry report at least annually. Electronic distribution is the preferred method. This report shall include:

   - the name of the individual;
   - the individuals Social Security Number, when available, or equivalent identifying number
   - the monitoring period; and
   - the total dose equivalent or effective dose for the monitoring period.

2. Consistent with the provisions of the Privacy Act, upon written request to the Dosimetry Program Manager, an individual will be provided detailed information concerning his/her dosimetry history.

3. When an exposure of an individual to radiation and/or radioactive material is above the established administrative goals and/or dose limits or is a planned special exposure and Fermilab is required to report to DOE, Fermilab shall also provide the affected individual with the dosimetry data included in the report.

4. Upon written request from an individual terminating employment, a summary of dose received during the period of employment shall be provided to that individual as soon as the data are available, but no later than 90 days after termination. Requests received after the individual has left the site will be honored within 90 days from date the request is received by the Dosimetry Program Manager. A written estimate of the radiation dose received by that employee based on available information shall be provided at the time of termination, if requested.

782 Reports Required by the U. S. Department of Energy

1. Reporting of Ionizing Radiation Exposure Information shall be reported in accordance with the requirements of DOE Order 231.1B, *Environment, Safety, and Health Reporting* as specified in its companion Contractor Requirements Document and Attachments.

2. Reporting of Radioactive Sealed Sources Information shall be reported to the DOE Radiological Source Registry and Tracking (RSRT) database in accordance with the requirements of DOE Order 231.1B, *Environment, Safety, and Health Reporting* as specified in its companion Contractor Requirements Document and Attachments.