

OBJECTIVES

- 2.01.01 List the types of records and reports that the Radiological Control Organization is responsible for maintaining.
- 2.01.02 Explain the requirements for radiological records.
- 2.01.03 Describe the types of radiological records and reports used by the Radiological Control groups.

Procedures

ESH-1-01-02 Administration of ESH-1 Controlled Documents

ESH-1-01-03 Radiological Surveillance Authorization Agreements

ESH-1-01-04 Chain of Custody for Radiological Samples

ESH-1-01-12 Management of ESH-1 Radiological Records

References:

1. 10 CFR Part 835 (December 14, 1993) "Occupational Radiation Protection; Final Rule"; Federal Register; Vol. 58, No. 238, Sec. 701-4
2. DOE/EH-0256T Revision 1 (April 1994) "U.S. Department of Energy Radiological Control Manual" (DOE RadCon) chapter 7.
3. LM107-01.1 (December 1994) "Los Alamos National Lab Radiological Control Manual" (LANL RadCon) chapter 7.
4. DOE order 1324.2A.
5. Memo: ESH-1-94-154 (May 3, 1994) "Site specific documentation requirements" (memo to RCTs from Lee McAtee).

INTRODUCTION

10 CFR 835 establishes radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities. These requirements are developed in more detail in the LANL RadCon manual, which is based on the DOE RadCon manual, and in the LANL standards and procedures.

It is important to maintain the proper documentation to ensure that these standards and requirements are being met. An RCT plays a vital role in supporting these requirements through proper documentation.

Before turning the page to objective 2.01.01, try making your own list of the types of documents used by RCTs at LANL; then compare this with the list on page 2.

2.01.01 RADIOLOGICAL RECORDS

Record keeping by the Radiological Control Organization is mandated by 10CFR835.703, RadCon chapter 7, and DOE order 1324.2A. In this section we present an overview of the types of documents used by RCTs.

The following documents and records will be discussed.

- A. Radiation Protection Standards and Procedures
- B. Radiological Surveys
 - external radiation
 - contamination (direct and smear)
 - air
 - stack
- C. Instrument Performance Tests
 - Performance Test
 - Response Check
- D. Appraisals
 - Audits
 - Quality Assurance (QA) self-inspection reports
- E. Radiological Deficiency Reports:
 - Radiological Incident Reports (RIR)
 - Radiological Occurrence Reports
- F. Radiological Work Permits (RWP)
- G. Radioactive Material Survey and Release tags
 - HPR
 - Release Logs
 - HPRMS
- H. RCT orientation checklists
- I. User authorization agreements
- J. Logbooks
- K. Records of other groups
 - Medical (ESH-2)
 - TLDs (ESH-4)
 - HPAL (ESH-4)
 - bioassay (ESH-4)
 - respirators (ESH-5)
 - personnel radiological records (ESH-12)
 - ALARA (ESH-12)
 - Training (ESH-13)

Items A through H should be on file at all ESH-1 facilities. User authorization agreements and RCT logbooks are encouraged at all facilities. The last items (K) are maintained by other groups; RCTs may need access to these records as part of their duties.

Exercise.

Why do these records matter? You may wish to try the following exercise. Choose members of the class to be attorneys on each side of a lawsuit. The plaintiff is a former LANL worker who claims that his health was damaged by radiation at LANL. All that is available to the LANL attorneys are incomplete documents, containing errors, illegible entries, improperly made corrections, etc. Select a jury and let them decide the outcome of this mock trial.

Exercise.

Before continuing with section 2.01.02, list examples of how not to complete these records, and some of the possible consequences.

2.01.02 REQUIREMENTS FOR RADIOLOGICAL RECORDS

The requirements in this section have been established to meet the needs of both scientists and lawyers. Both want clear, unambiguous data. In addition, lawyers want guarantees that the records are intact, and the evidence could not have been altered.

DOCUMENTS and RECORDS

Documents are "living" in the sense that they change and are updated as activities change.

Records are "dead". They record history. Once a record is completed, it must not be altered.

Completed records are records that have all the appropriate signatures.

Supplemental Records are used to correct errors subsequently discovered in completed records.

Exercise: go through the list in section 2.01.01 and mark each "record" with "R" and each "document" with "D"

Radiological control records are needed to demonstrate the effectiveness of the overall Radiation Protection program. The records are used to document radiological safety for personnel onsite. Radiological control records become valuable tools in evaluating past trends and guiding future performance goals. These records may become the basis for public disclosures, legal proceedings, medical assessments and audits to show compliance with company, state, or federal requirements.

REQUIREMENTS

The Department of Energy (RadCon-Sec. 711 - 713) has set record keeping standards. In addition to the requirement of being accurate, legible, and retrievable, all radiological records should include the following:

- identification of the facility, specific location, function, and process
- signature or other identifying code of the preparer and date
- legible entries in black ink
- corrections identified by a single line-out, initialed, and dated
- supervisor's signature (as appropriate) to indicate review and proper completion of the forms.

The DOE and LANL Radiological Control Manuals (section 713.3) state that radiological control records should not include:

- records that are corrected using opaque substances
- records that contain shorthand or other non-standard terms.

NA and NDA

A completed form (e.g. RWP, HPR, HPRMS) should not contain blank sections. A supervisor reviewing a form should assume that a blank section is one that has been overlooked, or has not yet been completed.

Instead of leaving blanks, the RCT should enter "NA" or "NDA", as appropriate.

- **NA**, not applicable, means that this section has been considered, but does not apply.
- **NDA**, no detectable activity, means that a measurement has been made, but no radioactivity above background has been found.
- **<** (e.g. <20 dpm) is similar to "NDA" but is even more specific, implying that the minimum detectable activity (MDA) is 20 dpm, and that the result is less than this value. (MDA is discussed in the appendix to lesson 2.03.)
- **>** (e.g. >20 dpm) is not very helpful, since a scientist could logically conclude that the activity might be a million dpm, or even a million curies since 1MCi > 20 dpm.

RECORDS MANAGEMENT

The LANL Radiological Control Manager or his designee is responsible for maintaining the radiological records management program. Both the federal government and LANL regulate the management and control of these records. The program is operated to ensure that auditable records and reports are controlled through the stages of creation, use, storage, and retrieval.

Records for the current calendar year and for the preceding calendar year are stored at each facility. Older records are archived by CIC-10, as described in the procedure ESH-1-01-12, section 7.5.

Most records generated by RCTs are archived for 75 years, as prescribed by DOE order 1324.2A and ESH-1-01-12. Some exceptions are instrument performance tests (2 years) and RIRs for unplanned spills ("permanent")

Radiological Control records should be protected from physical damage, e.g. temperature extremes, moisture, infestation, electromagnetic fields, excessive light, theft, vandalism, and fire. Protective measures include vaults, rooms with fixed fire suppression (such as sprinklers), fire-rated cabinets, or duplicate storage (see the RadCon manual section 775).

2.01.03 TYPES OF RADIOLOGICAL RECORDS

The following is an overview of the documents and records used by RCTs.

A. Radiation Protection Standards and Procedures Volumes I & II.) LANL maintains many radiological control standards and procedures as part of the LANL radiological control record management program. These procedures are driven by the LANL Radiological Control Manual. Volume I is a compilation of laboratory-wide radiation protection procedures. Volume II is a compilation of relevant facility-specific radiation protection information including appropriate operating group procedures (i.e., SOPs, emergency plans), special instructions, Radiation Monitoring Instructions (RMIs), RCT Site Orientations, and other information that describes or documents the operational radiation protection at the facility. These documents should be available in your section office Controlled Document Station.

B. Radiological Surveys

The LANL Radiological Control Program includes the performance of radiation, contamination, and airborne radioactivity surveys to determine existing conditions in a given location. These are discussed in more detail in later lessons.

External Radiation Survey: The purpose of radiation surveys is to identify and measure external sources of ionizing radiation.

Contamination survey: contamination surveys identify areas and/or materials that have fixed or removable radioactivity. A direct survey measures fixed contamination and smears or swipes measure removable contamination. These are discussed in lesson 2.05.

Airborne radioactivity survey: Air Monitoring is performed when there is the potential for radioactive material to become airborne. This is discussed in lesson 2.06.

Stacks which exhaust the air from hoods, glove boxes, or other areas containing radioactive material, are monitored to ensure the integrity of the HEPA filters, and to minimize release of radioactivity to the environment.

Radiological surveys are used to determine the radiological conditions, indicate trends, and to identify when corrective actions are necessary. These surveys establish the basis for selecting the correct personnel protection (e.g., protective clothing, dosimetry, respiratory equipment, etc.) and area posting requirements.

All surveys are required to contain sufficient detail to be meaningful even after the originator is no longer available. The content of radiological surveys is directed by the LANL Radiological Control Manual (sections 751-4) and 10CFR835.703.

Every survey should record: **when, where, who, how, why, and what.**

- **when:** date and time of the survey
- **where:** maps with sufficient detail to permit identification of original survey and sampling locations, general and specific location of the survey
- **who:** name and signature of the surveyor and RCT supervisor
- **how:** instrument model and serial number
- **why:** purpose of the survey
reference to a specific RWP if applicable
- **what:** results of the measurements of area dose rates, and pertinent information needed to interpret the survey results, e.g.:

air concentrations in general airborne areas and breathing zones (for airborne radioactivity surveys)

supporting information, such as air sample collection efficiency, flow rate, duration of sampling, correction factors and filter medium (for airborne radioactivity surveys)

contamination levels and a reference to counting efficiency, counting time, correction factors, type of radiation and whether the contamination was fixed or removable (for contamination surveys).

C. Instrument Performance Tests and Response Checks - ESH-1 keeps records of instrument performance tests and response checks, see the procedures ESH-1-07-85, -86, -87, -88.

D. Audit and QA self-inspection reports - These should include both external audits and self-evaluation. It is essential to document the corrective actions. Remember, according to auditors, "if it isn't documented, it didn't happen".

E. Radiological Deficiency Reports

a. Radiological Incident Reports - The purpose of the Radiological Incident Report (**RIR**) is to provide a documented record of observed radiological problems and a mechanism for reporting these problems to management for action. The RIR program also provides a capability to track and monitor the progress of planned corrective actions and a database for assessing trends in radiological program performance and needed actions through the use of a tickler checklist.

b. Radiological Occurrence Reports - (Also known as **5000.3B** Reports) When it has been determined by ESH-7 that an "incident" is also a "occurrence", the incident report is used to meet the documentation requirements of the Laboratory's Occurrence Reporting System.

Incidents and Occurrences are discussed in more detail in lesson 2.13 and in the Lab Procedure LP-107-01.0.

F. Radiological Work Permits, RWP

An RWP is an authorization to perform a job in a radiological area, identifying the hazards, and ensuring effective communication between different groups involved. It contains information on the radiological conditions, and specifies the radiation protection requirements.

RWPs are discussed in more detail in lesson 2.10 and in the Lab Procedure LP-107-02.0.

G. Radioactive Material Survey and Release tags, and removal log.

RCT's are required to label radioactive sources, radioactive material, contaminated items, and to document items that have to be released from a radiological area.

- Health Physics Radioactive Materials Survey (**HPRMS**) tags are used to document the survey results, radiological hazards, and appropriate controls for a radioactive source, radioactive material, or contaminated item. The tag is fixed to the item.
- Health Physics Release (**HPR**) tag may be used to document the survey results and controls for items released from radiological areas.
- As an alternative to affixing an HPR tag, the survey results may be recorded on the "equipment and item **removal log**".

These are discussed in more detail in lesson 2.08 and the Lab Procedure LP-107-04.0.

- H. RCT orientation checklists** - Every facility should have a checklist to orient new RCTs, and ensure that RCTs who transfer between LANL facilities are familiar with the facility specific procedures
- I. User authorization agreements** - users are encouraged to perform tasks for which they are properly trained. These agreements are documented and kept on file. Refer to the procedure ESH-1-01-03, "Radiological Surveillance Authorization Agreement".
- J. Logbooks** -

RCTs are encouraged to maintain a logbook in which he/she briefly describes the events that transpire during his/her shift. The entries should include information about jobs worked on and actions taken. Logbooks are not a substitute for other standard documentation. Logbook entries should include factual information only. **Do not** include personal comments or conjectures.

Logbooks should be bound, with numbered pages to ensure that no pages have been removed. Blanks, e.g. at the bottom of a page, should be lined out to clearly indicate the end of the previous entry. Errors should be corrected with a single lineout, with a note (initialed and dated) to refer to the corrected information later in the book. These formalities ensure that in the case of a lawsuit, it can be demonstrated that the original information is intact and nothing has been altered or erased.

K. Records of other groups

The last two items, personnel records, involve other groups (ESH-2, 4, 5, 12, and 13), but are mentioned here because they are an important part of the work of an RCT.

Group ESH-12 maintains occupational radiation dosimetry records for all workers who are part of the personnel dosimeter program at LANL. External dose measurements using TLDs are analyzed by ESH-4. Internal dosimetry records include in-vivo measurements, and in-vitro analysis (such as urine analysis). All of these are combined and maintained by ESH-12.

Records of ALARA plans and goals are maintained by ESH-12. These are discussed in RCT lesson 2.10.

Health Physics Analysis Lab, HPAL analysis reports are provided by ESH-4 containing the results from air filters, smears and swipes, and nasal smears

or nose swipes. These ordinarily become a part of another record, e.g. an RWP, RIR, etc.

Reports of periodic medical examinations and evaluations, respirator fit-testing results and records of medical treatment performed in support of the radiological control program are maintained by the Occupational Medicine group (ESH-2) and/or ESH-5. Employees should report to ESH-2 and ESH-12 non-occupational radiation doses, such as therapeutic or large amounts of diagnostic radiation doses for medical purposes prior to and during LANL employment (see the LANL RadCon manual, sections 724.4 and 216.4).

All personnel that are monitored by the personnel dosimetry program and active LANL workers are given an annual report of their radiation exposure. A person may also receive a current radiation dose record upon special request. Terminating employees will be given an exposure report within 90 days of their last day of employment summarizing their radiation dose for the total period of employment within LANL.

Exposure records that identify an individual are private information and all requirements of the Privacy Act must be met. The records are available only to personnel having need of them in the performance of their duties and to the individual involved. The release of this information to others is permitted only upon specific written approval of the individual or the individual's authorized agent or when required by law or DOE.

Records of training and qualification in radiological control are maintained by ESH-13 to demonstrate that a person received the appropriate information to perform the work safely. Training and qualification records are available to first-line supervisors and managers to aid in making work assignments.

SUMMARY

Documentation must be completed correctly and on time. If records and reports are not consistently complete, accurate, and legible, the integrity of the radiological protection program is jeopardized. Backtracking to complete incomplete documents, to correct inaccurate documents, and to regenerate illegible documents costs time, energy, and personnel. When this kind of backtracking is necessary, even only a few times, the validity of all documents is questioned. In addition, if documentation is not completed within the appropriate time frame, the consequences can be the same as not completing the documentation at all. Don't approach the task of completing documentation lightly. Do it right the first time, and do it on time.