IT CORPORATION

STANDARD OPERATING PROCEDURE

NUMBER: RPP-010

TITLE: Radiation Protection Records

APPROVED: _____ DATE: 9-27-96
Corporate Director of
Health and Safety

APPROVED: _____ DATE: 9/23/96
Health Physics Professional

APPROVED: _____ DATE: 26Sep96
Corporate Director of
Quality Assurance

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1 PURPOSE AND OBJECTIVES

This procedure provides guidance for the systematic generation and retention of records relating to radiation safety. This procedure is pertinent to those records that are necessary to describe the occupational radiation exposure of IT personnel, and the conditions under which the exposure(s) occurred.

2 RESPONSIBILITIES

2.1 Radiation Safety Officer (RSO)

2.1.1 Ensures pertinent record requirements are met.

2.1.2 Generates and maintains personnel exposure records.

2.1.3 Other responsibilities as described below.

3 REFERENCES

3.1 Requirements and Specifications

3.1.1 IT Corporation Policy No. HS-700, "Radiation Protection Program Plan"

3.1.2 Title 10, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers: Inspections"

3.1.3 Title 10, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation"

3.1.4 Title 29, Code of Federal Regulations, Part 1910.

3.2 Related Procedures

3.2.1 IT Corporation Procedure No. RPP-001, "Internal Exposure Control"

3.2.2 IT Corporation Procedure No. RPP-002, "External Exposure Control"

3.2.3 IT Corporation Procedure No. RPP-003, "Contamination Control"

3.2.4 IT Corporation Procedure No. RPP-004, "Instrumentation and Surveillance"

3.2.5 IT Corporation Procedure No. RPP-005, "Radiological Areas and Posting"

3.2.6 IT Corporation Procedure No. RPP-007, "Receipt, Handling and Identification of Radioactive Materials"

3.2.7 IT Corporation Procedure No. RPP-008, "Engineered Controls and Respiratory Protection"

3.2.8 IT Corporation Procedure No. RPP-009, "Packaging and Transportation of Radioactive Materials"

3.2.9 IT Corporation Procedure No. RPP-012, "Emergency Response and Notifications"

3.2.10 IT Corporation Procedure No. RPP-013, "Handling Sealed Radiation Sources"

3.2.11 IT Corporation Procedure No. RPP-014, "Quality Assurance in Radiological Protection"

3.2.12 IT Corporation Procedure No. RPP-015, "Control of Radiological Work"

3.3 Others

3.3.1 American National Standards Institute, "Standard Practice for Occupational Radiation Exposure Records Systems", ANSI N13.6-1966, 1972.

3.3.2 USNRC Regulatory Guide 8.7, "Occupational Radiation Exposure Records Systems"

4 DEFINITIONS

4.1 Approval - An act of endorsing or adding positive authorization or both.

4.2 Bioassay: Analysis of excreta to determine the absence or degree of presence of radioactive materials.

4.3 Dose Equivalent: The product of absorbed dose, quality dose, quality factor, dose distribution factor, and other necessary modifying factors to express on a common scale, for all ionizing radiations, the irradiation incurred by exposed persons. The unit of dose equivalent is the rem or the sievert.

4.4 Dosimeter: An instrument used for measuring or evaluating the absorbed dose, exposure, or similar radiation quantity.

4.5 Exposure Limits: The maximum radiation dose equivalent permitted under specified circumstances.

4.6 Health Physics Professionals (HPP) - Individuals who, by virtue of their education, and experience, to approve and provide oversight for work involving or pertaining to radioactivity. The HPP shall be Certified by the American Board of Health Physics (Comprehensive).

4.7 May - The word **may** is used to denote permission.

4.8 Occupational Radiation Exposure: Radiation exposure resulting from, and received in, the course of an individual's employment.

4.9 Radiation: In the context of this procedure, radiation refers to ionizing radiation. Ionizing radiation is any electromagnetic or particulate radiation capable of producing ions, directly or indirectly, by interaction with matter.

4.10 Radiation Exposure: In the context of this procedure, "exposure" refers very broadly to the act or state of being irradiated by ionizing radiation.

4.11 Radiation Safety Officers (RSO) - Individuals who, by virtue of training and/or experience, have been authorized to develop, administer and implement a radiation protection program. Fixed facility RSOs are specified by federal or state license requirements, and are authorized to use or directly supervise the use of radioactive materials under the specifications of a specific radioactive materials license. Project RSOs shall be selected by the HPP.

4.12 Shall - The word **shall** is to be understood as a requirement.

4.13 Should - The word **should** is to be understood as a recommendation.

4.14 Survey (Radiation or Contamination) Evaluation of the radiation conditions incident to the production, use, release, disposal, or presence of sources of ionizing radiation. When appropriate, such evaluation shall include a physical survey of materials and equipment and levels of radiation or concentrations of radioactive material present.

5 EQUIPMENT/MATERIALS REQUIRED

None

6 METHODOLOGY

6.1 Records from Purchased Services

6.1.1 If IT personnel or the RSO purchases radiation protection services[1] from another firm, responsibilities for records both during and subsequent to the performance of the services, shall be clearly specified on the IT Request for Purchase Order.

6.1.2 The RSO should be assured that pertinent records requirements are met.

[1] Common examples of purchased services are: TLD personnel dosimetry services; bioassay analyses, and calibration of radiation instrumentation.

6.1.3 Records requirements should include:

6.1.3.1 Retention of written information of sufficient scope to define the procedure and method of evaluation; and

6.1.3.2 Data and computed dose results.

6.2 Records Related to an Individual

6.2.1 The purpose of individual records is to enable the RSO to provide an accurate, quantitative description of the occupational radiation exposure received by the **IT** employee, visitor or contractor, as applicable.

6.2.2 Examples of individual records are:

6.2.2.1 External radiation monitoring results;

6.2.2.2 Internal radiation monitoring results;

6.2.2.3 Supplementary information on individual exposures (e.g., radiation incident investigation reports); and

6.2.2.4 Documentation of proficiency in radiological training and qualification requirements.

6.2.3 Identification of the individual:

6.2.3.1 Positive identification of the individual associate, visitor, or contractor is required.

6.2.3.2 Due to such factors as multiple employment, duplication of common names, and legal changes of names, the Social Security number shall be used for individual identification.

6.2.3.3 For those cases where Social Security numbers are not available (e.g., foreign nationals), the birth date and sex of the individual shall accompany the individual's Employee number on all records.

6.2.4 Radiation exposure received during prior employment:

6.2.4.1 A summary of the occupational radiation exposure received by a monitored worker during previous employment shall be obtained.

6.2.4.2 The RSO shall secure and record the following information when radiation exposure is indicated for previous employment:

- Period(s) of employment and identification of employer.

- The nature and magnitude of prior occupational exposure, both internal and external, for the periods in question.

6.2.5 Exposure Received by Individuals at Other Installations or Facilities During Employment by IT:

6.2.5.1 The RSO shall record the radiation exposure received by the individual at facilities other than IT.

6.2.5.2 When necessary in order to maintain continuity in exposure data, it may be necessary for the RSO to provide dosimetry devices to employees during official visits to other facilities.

6.2.5.3 The RSO shall encourage employees to report when radiation exposure is being incurred at other facilities.

6.2.6 Records of External Exposure

6.2.6.1 The following information shall be available directly or indirectly from the TLD records:

- Identification of the wearer of the dosimeter;

- Period of exposure or deployment;

- Type(s) of phosphor, lot number, or processing batch identifiers;

- Control dosimeter readings and confidence limits;

- Personnel dosimeter readings and confidence limits;

- Notation of abnormalities.

6.2.6.2 From processing of personnel dosimeters, the radiation dose for each individual shall be computed and recorded, and the following data should be included in the record:

- Identification of the individual;

- Period of exposure or deployment of the dosimeter;

- Cross reference to control and calibration data;

- Computed dose for each type of radiation for the specified period;

- Appropriate summation to facilitate comparison with permissible limits.

6.2.6.3 When the dosimeter is the primary means of dose measurement, the records should be continuous for the period in question.

6.2.6.4 If no valid measurement result can be obtained from the personnel dosimeter, an estimate of the radiation exposure shall be recorded after performance of an investigation. The record of investigation should include:

- Identification of the individual;
- Dates involved;
- Nature of the abnormality (e.g., contaminated dosimeter, lost dosimeter);
- Location and tasks to which the individual was assigned;
- Readings from other dosimeters worn by the individual;
- Dose received by others working under similar conditions;
- Results of time-and-motion studies;
- Conclusions as to magnitude and type of occupational exposure actually incurred;
- Signature of the individual; and
- Signature of the RSO.

6.2.7 Records of Internal Exposure

6.2.7.1 When bioassay analyses are performed the record should include:

- Identification of the individual;
- Purpose of the sample and, if applicable, date of suspected intake;
- Collection period for the sample and the date submitted for analysis;
- Type of sample and size of aliquot;
- Type of radioactivity (e.g., alpha, beta);
- Gross and net activity observed, and the counting time;

- Identity of all radionuclides detected;
- Cross reference to calibration and control data and confidence limits; and
- Identification of the laboratory technicians performing the analysis.

6.2.7.2 Records of bioassay interpretation shall include the following:

- A listing of the bioassay data used in the interpretation and the identity of the radionuclide;
- Reference to the method of interpretation;
- Assumptions used in arriving at the conclusion including the known or assumed date of intake;
- Conclusion as to the magnitude and location of the body burden, expressed in units of activity (i.e., curies or becquerels); and
- Identification of the individual making the conclusion.

6.2.7.3 When whole body counting is performed, the record should include:

- Identification of the individual
- Date, time, and purpose of the examination and, if applicable, date and time of suspected intake.
- Quantitative output counting data (e.g., length and type of count, counts per channel, keV per channel, energy range over which counts are made)
- Cross reference to procedure, calibration factors, periodic background and resolution checks, and confidence levels
- Description of calculation procedure or reference to calculation procedure
- Qualitative and quantitative calculations
- Identity and location of all radionuclides detected and the magnitude of the body (organ) burden.
- Identification of the individual making the conclusion.

6.3 Other Individual Exposure Records

6.3.1 Completed Form NRC-5

6.3.2 Completed Form NRC-4

6.3.3 Accident Reports

6.3.4 Personnel Decontamination Records

6.3.5 Radiation Work Permits

6.3.6 Dose estimates and justifications for those estimates

6.4 Radiation Safety Training Records

6.4.1 The IT training department should maintain the date, number, and subject matter of general employee training in radiation protection, radiation worker training, authorized user training, and special briefings.

6.4.2 The occupational radiation exposure record file for the individual should include reference to their participation in these activities.

6.4.3 Specific training records should include:

6.4.3.1 Outline or course lesson plan indicating the name of the instructor, the company that provided the training, the date and time the training was conducted, the name or number of the test used for the class, and employee test results.

6.4.3.2 Training Attendance Records

6.5 Medical Services Provided to the Individual

6.5.1 In certain cases, medical services (i.e., periodic chest x-rays, examinations following occupational injuries, medical qualification for respiratory usage, etc) may be provided to IT associates.

6.5.2 These records shall be forwarded to the Human Resources Department.

6.6 Records to be Maintained by the RSO

6.6.1 Program Administration

6.6.1.1 Records Index

6.6.1.2 Minutes of the Radiation Protection Committee Meetings

6.6.1.3 Statement of RSO Qualifications

6.6.2 Radioactive Material License

6.6.2.1 Application

6.6.2.2 License and Amendments

6.6.2.3 Inspections by the USNRC

6.6.2.4 Correspondence with the USNRC

6.6.3 Nuclear Regulatory Commission

6.6.3.1 Title 10, Code of Federal Regulations

6.6.3.2 Referenced USNRC Regulatory Guides

6.6.3.3 Information Notices from the USNRC

6.6.4 Standard Operating Procedures for Radiation Safety and Document Control Records

6.7 Contamination Control Records

6.7.1 Radiation Work Permits

6.7.2 Contamination Survey Records

6.7.3 Blank Floor Plans

6.7.4 Equipment/Area Decontamination Records

6.8 Source Material Inventory Records

6.8.1 Inventory records for sealed sources

6.8.2 Inventory records for unsealed sources of licensable radioactive materials.

6.9 Site Monitoring Records

6.9.1 Radiological survey results including ambient surveys, contamination surveys, airborne radioactivity surveys, environmental monitoring surveys, etc.

6.9.2 Inventory list of radiological instruments used to perform surveys

6.9.3 Calibration and maintenance records for radiological survey equipment

6.9.4 Radiological survey instrument user manuals

6.10 Waste Disposal Records

6.10.1 Names, quantity, and release survey results of the radioactive material deemed waste

6.10.2 Location, method and date of disposal

6.10.3 Shipping records

6.10.4 Manifests

6.11 Retention and Storage of Records

6.11.1 Occupational radiation exposure records shall be kept confidential, and the following controls shall be in place:

6.11.2 Records shall be kept in a locked cabinet (or equivalent) except when in use.

6.11.3 The IT Health and Safety department shall be the primary and backup custodian for the records.

6.11.4 Employee exposure records shall be preserved and maintained for at least 30 years.

6.11.5 Each analysis using employee exposure records shall be preserved and maintained for at least 30 years.

6.11.6 The contents of occupational radiation exposure records shall be maintained intact.

6.11.7 At the termination of employment, occupational radiation exposure records may be microfilmed and retained pursuant to 29 CFR 1910.

6.11.8 Records relating to the radiation protection program shall be maintained for 30 years.

6.11.9 When the USNRC license is no longer in force, the RSO shall contact the USNRC for permission to dispose of radiation protection records other than personnel exposure records.

7 DOCUMENTATION

None

8 ATTACHMENTS

None