IT CORPORATION

STANDARD OPERATING PROCEDURE

NUMBER: RPP-007

TITLE: Purchase, Receipt, Handling, and Identification of Radioactive Material

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

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

APPROVED: _____ DATE: 26 Sep 96
Corporate Director of
Quality Assurance

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TABLE OF CONTENTS

1 PURPOSE AND OBJECTIVES

This procedure contains the administrative controls for acquisition, receipt, and collection of radioactive materials. This procedure applies to all functions pertaining to receipt and handling of sources, samples or other items known or suspected to be radioactive.

2 RESPONSIBILITIES

2.1 **The Radiation Safety Officer shall**

2.1.1 Approve all requests for acquisition of radioactive standards and sources.

2.1.2 Provide training for performance of radiation surveys, evaluate survey results, provide guidance and direct any/all remediation of incidents involving radioactive materials and/or radiation.

2.1.3 Approve PPE and methods for the collection of known or suspect radioactively contaminated samples or materials.

2.2 **The Project Manager or Fixed Facility Director shall** verify that a radiation survey is completed on all materials known or suspected to be radioactive before they are released for further use.

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 20, "Standards for Protection Against Radiation".

3.1.3 Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material".

3.2 Related Procedures

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

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

3.2.3 IT Corporation Procedure No. RPP-006, "Sample Screening and Classification"

3.2.4 IT Corporation Procedure No. RPP-009, "Packaging and Transportation of Radioactive Material"

3.2.5 IT Corporation Procedure No. RPP-010, "Radiation Protection Records"

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

4 DEFINITIONS

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

4.2 Counts Per Minute (CPM) - A relative unit used to measure the rate of radiation events detected by a sensitive radiation detector and survey rate meter.

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

4.4 Limited Quantity - A maximum quantity of a hazardous material listed by the DOT, for which there are specific exceptions from marking, labeling and packaging. The quantity of radioactive material that is excepted from these requirements is listed in 49 CFR 173.421.

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

4.6 MicroRoentgen per hour (μR/hr) - A unit of gamma exposure rate measured by a survey meter equivalent to the Ludlum Model 19. 1000 μR/hr is equivalent to 1 millirad per hour (mR/hr) for gamma radiation.

4.7 Normal Background - The ambient radiation field to which we are exposed daily, originating from cosmic rays, naturally occurring radionuclides (^{40}K, etc.) and human endeavors (fallout, fuel cycle, etc.). This radiation field is variable, and causes a survey meter to respond in the absence of radioactive materials.

4.8 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.

4.9 Radiation Survey Instrument - A hand held radiation survey instrument capable of detecting ionizing radiation.

4.10 Radioactive Shipping Labels - A label bearing the radiation symbol and the isotope and quantity contained in the package which is applied to two sides of a shipping package. The label selected shall be indicative of the external radiation levels measured on the surface of the package. Specifically:

4.10.1 White I - gamma radiation levels on the surface of the package are less than 0.5 mR/hr.

4.10.2 Yellow II - gamma radiation levels on the surface of the package are less than 50 mR/hr.

4.10.3 Yellow III - gamma radiation levels on the surface of the package are less than 200 mR/hr.

4.11 Type A Quantity (A_1 and A_2 Quantities) - The maximum quantity of radioactive material permitted in a Type A package. The A_2 quantity shall be used when the physical form has NOT been certified as a special form by the DOT. These quantities are listed by individual isotopes in the DOT regulations, 49 CFR 173.435.

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.

5 EQUIPMENT/MATERIALS REQUIRED

5.1 A radiation survey instrument.

5.2 Pre-numbered smears

5.3 Disposable bench-liner

5.4 Protective clothing

6 METHODOLOGY

6.1 Purchase of Radioactive Materials

6.1.1 The individual requesting acquisition of radioactive material shall inform the RSO of the quantity and form needed, and the intended use for the material.

6.1.2 The RSO shall review and approve the planned acquisition based upon safety considerations, existing inventory, and license conditions.

6.1.3 Upon approval by the RSO, the requisition shall be submitted to the purchasing agent to complete the purchase order.

6.1.4 The RSO shall maintain a file of approved acquisitions pending their addition to the inventory.

6.1.5 When the inventory is updated following receipt of the materials, the approved forms shall be transferred to the inventory file.

6.1.6 When the materials are received, the materials are added to the inventory as required by standard operating procedures and/or license requirements.

6.2 Receipt of Radioactive Materials

6.2.1 All papers, forms, manifests, etc., accompanying the shipment shall be inspected.

> These contain information which shall help determine the level of protection and instrumentation required.

6.2.2 If the information on these forms is unclear or incomplete:

A. Work shall be stopped..

B. Clarification shall be obtained from a supervisor.

C. The Project Manager and the RSO shall be consulted before proceeding.

6.2.3 Visually inspect the outer container checking for breaks or stains that may indicate damage to the contents.

CAUTION: If damage or stains are noted evaluate your protective clothing. You should be prepared for a worst-case scenario before proceeding if stains are noted (double gloves, spill tray and absorbent material at hand, etc.).

6.2.4 Perform a smear survey of the outer shipping container.

NOTE: When low energy beta (e.g., tritium) contamination is suspected, use Poly-Foam smears or equivalent type that dissolve in scintillation cocktail.

6.2.5 If smear results are within the allowed limits proceed with unpackaging the shipment using the fixed facility specific procedure for receipt of samples.

CAUTION: If smear results are **NOT** within allowed limits isolate the package, perform a direct frisk of your hands, and notify the RSO.

6.3 Collection of Samples

6.3.1 Workers collecting samples at a job site covered by a job specific health and safety plan (HASP) will be required to adhere to the requirements of the plan.

6.3.2 If the sample collection work is not covered by a HASP these steps will be followed.

A. Sampling personnel will contact the job site RSO or the HPP for task specific directions and proper PPE.

B. Sampling personnel will obtain all PPE and additional site control equipment required (e.g. postings, boundary tape/rope, radiation monitoring equipment, etc.).

C. At the site, postings and warnings for site identification, decontamination/monitoring areas, and support function areas will be set up as required.

D. Samples will be collected as required by a work plan or contract.

E. All personnel, samples, and equipment will be radiologically monitored prior to entering the support zone area to ensure that no detectable contamination is present (see RPP-003 "Contamination Control").

F. Any contamination found will be reported to the job site RSO and removed using the techniques described in RPP-003 "Contamination Control."

G. All skin contamination events that occur at sites where a job site RSO is not present will be decontaminated as described in RPP-003 and then reported to a RSO or Regional HPP as soon as possible following the incident. Items that need to be reported are:

- Person affected and SS number,
- Location and size of the affected area,
- Activity level of contaminant (net dpm per detector area above background),
- Estimated duration of exposure (how long was the contaminant possibly present),
- Potential radionuclide(s) involved,
- Methods used to decontaminate the individual, and
- Specific events leading up to the contamination, paying particular attention to those behaviors, outside influences, or PPE failure that may have lead up to the event.

6.4 Identification of Radioactive Materials

6.4.1 All samples containing known or suspect radioactive materials will be identified with a radioactive sticker.

6.4.2 When samples are not environmental samples as defined in RPP-006 "Sample Screening and Classification," the sample container will be clearly marked with the contact dose rate or contact count rate (for the case of low level activity samples).

7 RECORDS

7.1 All Records pertinent to this procedure shall be maintained pursuant to RPP-010.

7.2 The RSO shall maintain the records pertaining to the inventory of licensable radioactive material.

7.3 The RSO shall submit a copy of the current NRC license as requested by the vendor supplying the radioactive material.

7.4 All personnel opening packages containing certified solutions or sources shall forward all pertinent sample information to administrative personnel, and all certificates to the RSO.

8 ATTACHMENTS

8.1 None