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Revision 1

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**TRU Waste Certification Compliance Requirements
for Remote-Handled Wastes
for Shipment to the
Waste Isolation Pilot Plant**

January 1989



WASTE ISOLATION PILOT PLANT

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Revision 1
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TRU WASTE CERTIFICATION COMPLIANCE REQUIREMENTS
FOR REMOTE-HANDLED WASTES
FOR SHIPMENT TO THE
WASTE ISOLATION PILOT PLANT

JANUARY 1989

WESTINGHOUSE ELECTRIC CORPORATION
WASTE ISOLATION PILOT PLANT
MANAGEMENT AND OPERATING CONTRACTOR

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1.0 INTRODUCTION

Compliance requirements are presented for certifying that unclassified, remote-handled (RH) transuranic (TRU) solid wastes meet the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC) (Reference 1). The requirements apply to both newly generated and TRU wastes retrieved from storage. All applicable DOE orders must continue to be met. The compliance requirements for contact-handled (CH) TRU wastes are addressed in other documents (References 2 and 3).

The compliance requirements are divided into four sections: General Requirements, Waste Container Requirements, Waste Form Requirements, and Waste Package Requirements.

2.0 GENERAL REQUIREMENTS

The compliance requirements are presented to assist those generating and/or storing TRU waste to prepare their site-specific certification program to be applied to waste packages for shipment to the WIPP. The certification program includes the shipper's* plans for certification and quality assurance as illustrated in Figure 1.

The certification plan should include a general description of the methods to be applied by the shipper to certify that waste packages meet the certification requirements. These include administrative controls, inspection methods, and, where appropriate, package upgrading methods. The controls and methods should be those most suited to the needs and capabilities of the site and the types of waste.

The shipper's Quality Assurance Plan is guided by the certification quality assurance requirements (Reference 4). Site quality assurance measures will be subject to audit by the cognizant DOE Field/Area Office in addition to DOE overview.

The shipper's certification program includes the operating procedures which control the actual operations for certifying waste packages. The operating procedures, which employ the principles of the certification and quality assurance plans, contain the specific details of the process controls, the inspection techniques, and the remedial actions applied to each waste package. The documented data from the operating procedures form the base of information to verify that waste sent to the WIPP is certified by the shipper as meeting the WIPP requirements.

* The term "shipper" is used in this document to refer to the authority responsible for certification of waste retrieved from storage, recognizing that in some cases the authority resides with the waste generation site or is transferred to the waste storage site.

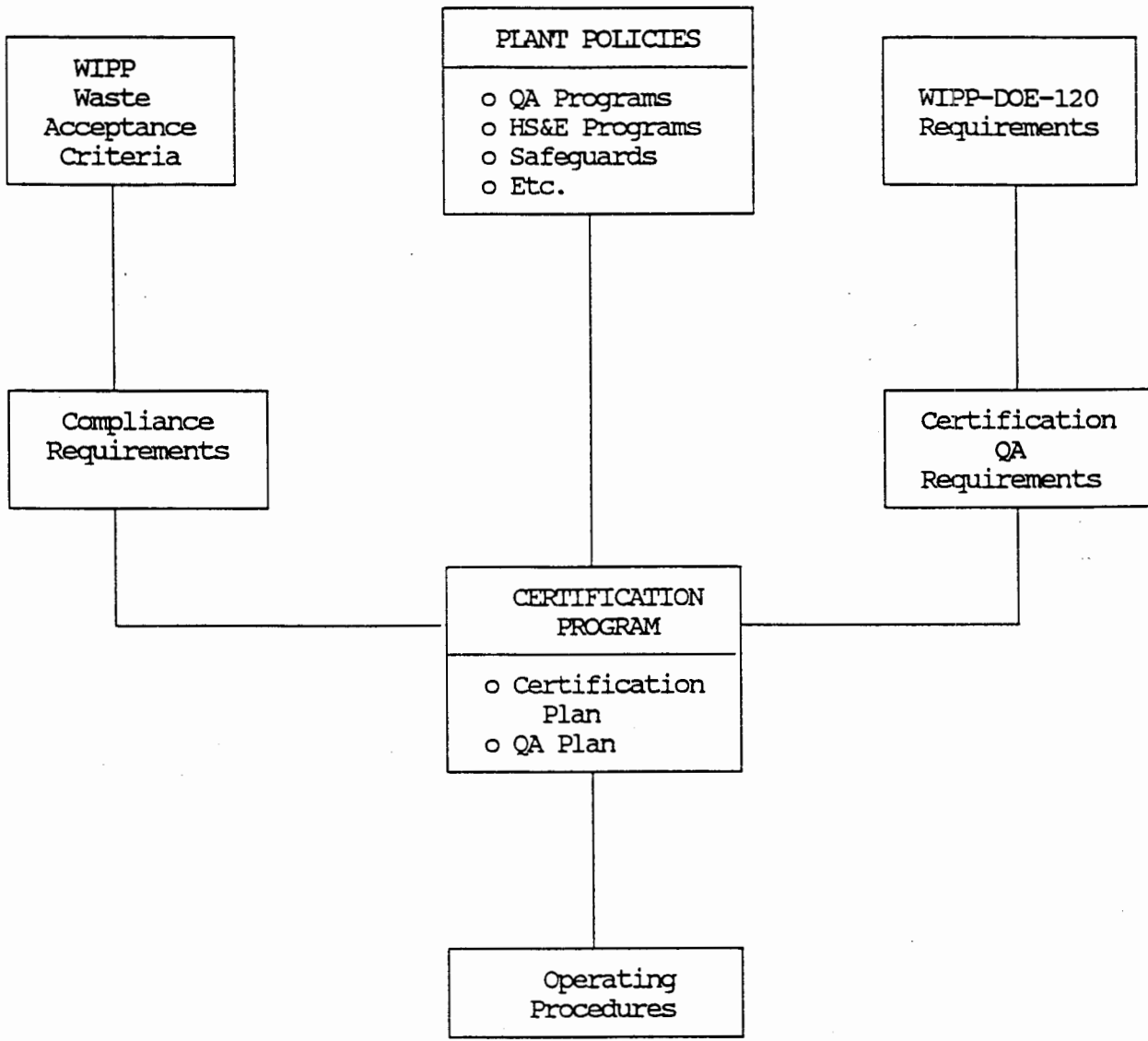


Figure 1 Basis for Certification of TRU Waste for Shipment to WIPP.

Each shipper's Certification and Quality Assurance Plans must be submitted to and be approved by the WIPP Project Office (WPO) prior to certifying waste. Only waste certified to the WIPP-WAC or waste with special WPO approval will be accepted at the WIPP.

Certified RH waste packages retrieved from certified storage for shipment to the WIPP will require selected properties to be verified by the shipper. At a minimum, these properties are surface radiation levels, surface contamination levels, and physical condition of container.

3.0 WASTE CONTAINER REQUIREMENTS

The requirements in this section apply to the RH container for the waste package. The RH container may be the original container, or it may be an overpack added to the waste package.

Generally, common inspection methods can be used to verify that the container meets the requirements. The shipper's operating procedures must describe the methods to be used for each requirement and show that they will result in the necessary data.

3.1 CRITERION: WASTE CONTAINERS

RH TRU waste containers shall be noncombustible and meet, as a minimum, the structural requirements and design conditions for Type A packaging contained in 49 CFR 173.412. Due to the special characteristics and application of the RH canister, the compression test requirement of 49 CFR 173.465 (d) is not applicable. In addition, all RH waste containers shall be certified to a WIPP-approved specification to have a design life of at least 20 years from the date of certification.

INTENT

The purpose for this criterion is to provide protection to personnel from the potential failure of waste containers and the release of contamination during shipping and handling, including retrieval if required.

CONTROLLED PROPERTIES

- o Container design and fabrication
- o Physical condition of container
- o Design life of container

COMPLIANCE REQUIREMENTS

RH TRU waste containers will comply with this criterion if the following conditions are met:

- 3.1.1 Documentation shall exist to show that the container was fabricated to design specifications acceptable to WIPP.
- 3.1.2 Documentation shall exist to show that, as a minimum, the container complies with DOT requirements for Type A packaging, excluding the compression test, and can be reasonably expected to have a lifetime of 20 years following certification. The 20-year design life is for the combination of the waste container and the protective coating (e.g., paint). It should not be interpreted that the paint itself must have a 20-year lifetime without defect.
- 3.1.3 Documented inspection data shall exist to show that the container does not present a handling hazard because of pressurization or other deterioration.

DISCUSSION

Containers fabricated to design criteria acceptable to WIPP for RH containers will, as a minimum, meet the structural requirements and design conditions for Type A packaging contained in 49 CFR 173.412. Due to the special characteristics and application of the RH canister, the compression test requirement of 49 CFR 173.465(d) is not applicable. The container will be designed to have a life of at least 20 years from the date of certification. Containers fabricated to the design specification will meet Criterion 3.1.1.

RH waste packages retrieved from certified storage must be examined and, where deficiencies are found, corrective actions taken to certify the packages as meeting Criterion 3.1.

For Criterion 3.1.2, procurement and fabrication documents showing compliance with DOT requirements cited in 49 CFR 173.412 and 173.415 will verify meeting this requirement. For containers without proper documentation, demonstration and verification that material type, thickness, physical size, and other physical attributes meet applicable Type A requirements is required.

3.2 CRITERION: WASTE PACKAGE SIZE

RH TRU waste packages shall be no larger than a nominal 26 inches (0.66 m) in diameter with an overall length of 10 feet 1 inch (3.1 m) including the pintle.

INTENT

The purpose for this criterion is to assure the package is compatible with the size limitations of handling equipment, facilities, and transportation hardware.

CONTROLLED PROPERTY

- o Waste package size

COMPLIANCE REQUIREMENT

RH TRU waste packages shipped to the WIPP will comply with this criterion if the following condition is met:

- 3.2.1 Documentation shall exist to show that the container is fabricated to the dimensions specified in the RH-waste container design criteria (Reference 5).

DISCUSSION

The size of the transfer cask at the WIPP limits the dimensions of the RH waste package to a nominal 26-inch diameter and 10 ft 1 inch overall length. because of interface requirements, container configurations, such as chamfering

and dimensions of pintles, are to be followed to facilitate handling of waste containers at WIPP.

The throughput of RH waste at the WIPP is planned on the basis of the specified size container. Special approval from the WIPP operator must be obtained before shipping any RH waste package other than that specified above.

3.3 CRITERION: WASTE PACKAGE HANDLING

RH TRU waste packages shall be equipped with an axial lifting pintle of a design acceptable to the WIPP. The packages shall have no other lifting devices.

INTENT

The purpose for this criterion is to permit the use of a standard method for waste package handling.

CONTROLLED PROPERTY

- o Container design features

COMPLIANCE REQUIREMENT

RH TRU waste packages will comply with this criterion if the following condition is met:

- 3.3.1 RH waste containers shall be fabricated to documented design criteria incorporating the approved handling feature.

DISCUSSION

The design of the RH waste handling system is such that all waste packages have a lifting pintle meeting the requirements of the WIPP container design criteria. Waste packages retrieved from storage shall be inspected to verify that lifting capabilities are those specified.

4.0 WASTE FORM REQUIREMENTS

Compliance with certification requirements for newly generated waste and for the waste in waste packages retrieved from interim storage will require characterizing the contents of each waste container. This characterization may be accomplished at the time of waste generation, by subsequent examination, or by analysis of records. Nondestructive examination methods are acceptable for certifying some forms.

A reliable identification and characterization of the waste form by documented results from records evaluation and nondestructive examination is sufficient for meeting some requirements. For example, a waste form identified as large metallic components should contain sufficiently low particulate content to not require immobilization.

Consideration should be given to developing methods or processes (e.g., immobilization of particulates, corrosion inhibitors, and incineration) for upgrading waste forms which do not meet requirements. Each method will require evaluation and verification.

4.1 CRITERION: IMMOBILIZATION

Powders, ashes, and similar particulate waste materials shall be immobilized if more than 1 weight percent of the waste matrix in each package is in the form of particles below 10 microns in diameter, or if more than 15 weight percent is in the form of particles below 200 microns in diameter.

INTENT

The purpose for this criterion is to reduce: (a) the quantity of potentially respirable fines; and (b) the dispersibility of radioactive material in the event of container failure.

CONTROLLED PROPERTY

- o Weight percent and size of particles in waste

COMPLIANCE REQUIREMENT

RH TRU waste will comply with this criterion if the following condition is met:

- 4.1.1 Documented procedures or evidence shall exist to show that the waste package contains no more than 1 weight percent of the waste matrix as radioactive particles less than 10 microns in diameter, or 15 weight percent of less than 200 microns in diameter.

DISCUSSION

A waste form shown by previous representative sampling or waste source examination to contain an acceptable quantity of particulates meets Criterion 4.1.

Particulate desiccants, for example Portland cement, added to some waste forms to immobilize any free water are not considered particulate waste material.

4.2 CRITERION: LIQUID WASTES

TRU waste shall not be in free liquid form. Minor liquid residues remaining in well-drained bottles, cans, and other containers are acceptable.

INTENT

The purpose for this criterion is to reduce the dispersibility of radionuclide materials in the event of waste container failure.

CONTROLLED PROPERTY

- o Quantity of free liquids present in waste

COMPLIANCE REQUIREMENT

RH TRU waste will comply with this criterion if the following condition is met:

- 4.2.1 Documented procedures or evidence shall exist to show that the waste package contains no free liquids other than minor residues.

DISCUSSION

The type and form of the waste in each waste package should be identified by records and verified by examination. The package should not contain encapsulated (bottled) liquids. Waste forms may meet the requirements by documented inspection data showing the absence of free liquid. Waste forms with free liquid must be treated to remove or absorb the excess liquid. Use of absorbents outside a sealed bag which contains trapped liquid does not meet the intent of this criterion.

4.3 CRITERION: PYROPHORIC MATERIALS

Pyrophoric materials, other than radionuclides, shall be rendered safe by mixing with chemically stable materials (e.g., concrete, glass, etc.) or processed to remove their hazardous properties. No more than 1 percent by weight of the waste in each package may be pyrophoric forms of radionuclides, and these shall be generally dispersed in the waste.

INTENT

The purpose for this criterion is to reduce the possibility of fire originating from spontaneous combustion.

CONTROLLED PROPERTIES

- o Quantity of potentially pyrophoric material present in waste

- o Degree of dispersion of potentially pyrophoric material in waste
- o Potentially pyrophoric combination of material and waste matrix

COMPLIANCE REQUIREMENTS

RH TRU waste will comply with this criterion if the following conditions are met:

- 4.3.1 Documented procedures or evidence shall exist to show that the waste package contains no significant quantities of either pyrophorics or nonpyrophoric wastes that could form pyrophoric compounds because of mixing.
- 4.3.2 For newly generated RH TRU waste, documented procedures describing the method(s) of converting pyrophorics into safe forms through dispersion, dilution with a noncombustible material, or oxidation prior to packaging.

DISCUSSION

A significant quantity of pyrophoric material is that quantity, or concentration which would produce fires under normal handling, transportation, interim storage, and WIPP emplacement conditions and, when ignited, burns so vigorously and persistently as to cause breaching of the waste package. This includes water-reactive materials and other materials described in 49 CFR 173, Subpart E. Waste containing elemental alkaline metals that have been subjected to a controlled reaction to convert these metals to oxides or salts is considered nonpyrophoric. During storage of wastes, the absence of combustion can be used to support other information from records and nondestructive testing which are employed in meeting this requirement.

4.4 CRITERION: EXPLOSIVES AND COMPRESSED GASES

TRU waste shall contain no explosives or compressed gases as defined by 49 CFR 173, Subparts C and G.

INTENT

The purpose for this criterion is to reduce personnel risk from possible explosions and the potential release of contamination in the event of waste container failure.

CONTROLLED PROPERTIES

- o Presence of explosive items or materials, including selected chemical compounds, in waste
- o Presence of pressurized vessel(s) in waste

COMPLIANCE REQUIREMENTS

RH TRU waste will comply with this criterion if the following conditions are met:

- 4.4.1 Documented evidence shall exist to show that the waste package contains no explosive quantities of materials.
- 4.4.2 Documented evidence shall exist to show that the waste package contains no pressurized vessels.

DISCUSSION

A vessel or waste container pressurized to greater than 7 psig is considered to be a pressurized vessel for the purposes of this criterion.

Vessels should be permanently vented if repressurization above 7 psig could occur. When permanent venting is not performed, the pressure inside the vessel should be reduced to ambient pressure at room temperature at the time of packaging.

This criterion is not intended to apply to trace amounts of chemical compounds that are used in explosive materials. It is intended to apply to

items or compounds which can actually detonate, including compounds which might form in the waste during storage if they are capable of detonating.

Nondestructive examinations may be used to verify compliance with Criterion 4.4.

4.5 CRITERION: RADIOACTIVE MIXED WASTE

TRU wastes shall contain no hazardous wastes unless they exist as co-contaminants with transuranics. TRU-contaminated corrosive materials shall be neutralized, rendered noncorrosive, or packaged in a manner to ensure container adequacy through the design lifetime. Hazardous materials to be reported are listed in 40 CFR 261, Subparts C and D.

INTENT

The purposes for this criterion are: (a) to ensure that operating personnel are aware of potential hazards in the event of a waste container failure; and (b) to preclude the possibility of container failure through the potential retrieval period because of attack by corrosive materials.

CONTROLLED PROPERTIES

- o Identification of the presence of hazardous material
- o Form and packaging of corrosive materials
- o Waste package design

COMPLIANCE REQUIREMENTS

RH TRU waste will comply with this criterion if the following conditions are met:

- 4.5.1 Documented procedures are utilized to ensure that hazardous materials (a) are not included in waste packages or (b) are chemically identified, quantified, and documented.

- 4.5.2 There exist documented evidence or analyses showing, and documented procedures are utilized to ensure, that all radioactive mixed TRU wastes are neutralized or packaged as follows: (a) the corrosive material is treated to remove its corrosive character, or (b) the corrosive material is packaged to ensure package integrity through the retrieval period, as specified under Criterion 3.1.
- 4.5.3 The types and quantities of hazardous materials are listed in the data package.

DISCUSSION

The WIPP is not planned to be a disposal facility for hazardous materials. The WIPP will not dispose of hazardous materials except when they exist as co-contaminants in TRU waste. If hazardous materials are contaminated with TRU nuclides, it will be necessary to dispose of this material in the WIPP. Where it is known or reasonably suspected that a waste package contains hazardous materials, the information must be documented in the data package.

Corrosive materials "otherwise rendered noncorrosive" must be identified by code, found in 40 CFR 261, Subparts C and D, or otherwise identified, and entered into the data package (see Criterion 5.9). The records should show that the waste is noncorrosive or has been rendered noncorrosive by packaging so the design life of the container will not be jeopardized. For waste retrieved from storage, meeting Criterion 3.1.2 is evidence to support other data that the waste is noncorrosive.

4.6 CRITERION: SPECIFIC ACTIVITY OF WASTE

For purposes of TRU waste certification, the 100 nCi/g TRU waste limit shall be interpreted as 100 nCi per gram of waste matrix. The weight of added external shielding and the containers (including any rigid liners) should be subtracted prior to performing the nCi/g calculation.

INTENT

The purpose for this criterion is to ensure that the waste disposed of in the WIPP meets the TRU waste definition.

CONTROLLED PROPERTIES

- o Radioactivity contained in waste package
- o Mass of waste matrix

COMPLIANCE REQUIREMENTS

RH TRU waste will comply with this criterion if the following condition is met:

- 4.6.1 Documented evidence shall exist to show that the specific activity of any TRU waste package is 100 nCi per gram of waste matrix or greater.

DISCUSSION

DOE Order 5820.2A, Chapter II.3.a.(2) (Reference 6), states:

"The lower concentration limit for transuranic waste (>100 nCi/g of waste) shall apply to the contents of any single waste package at the time of assay. The mass of the waste container including shielding shall not be used in calculating specific activity of the waste."

DOE Order 5820.2A also defines a waste container as:

"A receptacle for waste, including any liner or shielding material that is intended to accompany the waste in disposal."

5.0 WASTE PACKAGE REQUIREMENTS

The criteria in this section apply to the waste package, i.e., the combination of the container and its RH TRU waste contents. Four of these criteria require documented inspection results to show compliance. One criterion involves the presentation of information on the external surface of the waste package, and one criterion defines the data which must be supplied to the WIPP operator.

5.1 CRITERION: WASTE PACKAGE WEIGHT

RH TRU waste packages shall weigh no more than 8,000 pounds (3,630 kg).

INTENT

The purpose for this criterion is to prevent overloading of waste package handling equipment.

CONTROLLED PROPERTY

- o Waste package weight

COMPLIANCE REQUIREMENTS

RH TRU waste packages will comply with this criterion if the following conditions are met:

- 5.1.1 Each waste package shall be weighed to ensure that the weight does not exceed 8,000 pounds (3,630 kg). The actual weight shall be documented.
- 5.1.2 The weight of the package shall not exceed the weight for which the container has been certified in accordance with 49 CFR 173.463, Standards for Type A Packaging.

DISCUSSION

The WIPP-approved RH container design will be qualified as a Type A container for 8,000 pounds. Waste packages which exceed this weight limit must be repackaged. The measured weight of each package must be documented in the data package.

5.2 CRITERION: NUCLEAR CRITICALITY

The fissile or fissionable radionuclide content of RH TRU waste shall not exceed 600 g total (in Pu-239 fissile gram equivalents).

For materials other than Pu-239, U-235, and U-233, which shall be treated as equivalent, fissile equivalents shall be obtained using ANSI/ANS-8.15-1981.

INTENT

The purpose for this criterion is to prevent the occurrence of a criticality incident within a waste package or package array.

CONTROLLED PROPERTY

- o Pu-239 fissile gram equivalent material content of the waste package

COMPLIANCE REQUIREMENTS

RH TRU waste packages will comply with this criterion if one of the following conditions is met:

- 5.2.1 Assay data shall be presented to show the fissile content does not exceed 600 g total (in Pu-239 fissile gram equivalents).
- 5.2.2 For newly generated RH TRU, documented procedures controlling the loading of contents into the waste container may be substituted for assay data.

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DISCUSSION

For Criterion 5.2.1, the shipper's assay data for each package must show that the specific limits for fissile content are not exceeded.

The assay data are to be documented in the data package. The shipper must comply with the DOT regulations.

For materials other than Pu-239, U-235, and U-233 which shall be treated as equivalent, fissile equivalents shall be obtained using ANSI/ANS-8.15-1981.

5.3 CRITERION: PU-239 EQUIVALENT ACTIVITY

Waste packages shall not exceed 1,000 Ci of Pu-239 equivalent activity (PE-Ci).

INTENT

The purpose for this criterion is to limit the impact of any potential release of radioactivity in the WIPP facility should an accident occur which involves breach of containers.

CONTROLLED PROPERTY

- o Pu-239 equivalent activity content in any waste package

COMPLIANCE REQUIREMENT

RH TRU waste packages will comply with this criterion if the following condition is met:

- 5.3.1 There exist documented analyses showing each package meets the above limit.

DISCUSSION

Analyses may be based on the data output from the assay measurements. The Pu-239 equivalent weighting factor is based on the ratio of the 50-year whole body dose commitment due to inhalation of Pu-239, and the 50-year whole body dose commitment due to inhalation of the radionuclide of interest. These values may be obtained from WIPP-DOE-176 (Reference 7).

The waste generator can determine the PE-Ci quantity by any of the following techniques:

- o Knowledge of the isotopic distribution and calculating the PE-Ci quantity using the equation and factors given in WIPP-DOE-069.
- o Knowledge of the isotopic distribution of the waste stream and assaying the waste package to determine the total radionuclide content and calculation of the PE-Ci value.

5.4 CRITERION: SURFACE DOSE RATE

RH TRU waste packages shall have a surface dose rate at any point no greater than 1000 Rem/hr. Neutron contributions are limited to 270 mRem/hr. Neutron contributions of greater than 20 mRem/hr to the total package dose rate shall be reported in the data package. WIPP prior approval is required before RH TRU canisters with a dose rate in excess of 100 Rem/hr but less than 1000 Rem/hr may be shipped to the WIPP.

INTENT

The purpose for this criterion is to control the radiological exposure to operating personnel.

CONTROLLED PROPERTY

- o Surface radiation levels

COMPLIANCE REQUIREMENTS

RH TRU waste package will meet this criterion if the following conditions are met:

- 5.4.1 Data shall be presented to show that maximum surface dose rate is no greater than 100 Rem/hr.
- 5.4.2 Data shall be presented to show that the neutron contribution to the total package dose does not exceed 270 mRem/hr.
- 5.4.3 Neutron contributions to the total package dose rate exceeding 20 mRem/hr are reported in the data package.

DISCUSSION

The maximum surface dose rate and the neutron contribution, if greater than 20 mRem/hr, must be documented in the data package. Waste packages with a surface dose rate of 100 to 1,000 Rem/hr at any point on the surface will be considered on an exception basis, but waste packages which have a neutron contribution exceeding 270 mRem/hr are not acceptable for shipment to the WIPP. The total volume of RH TRU canisters with a surface dose rate from 100 to 1,000 Rem/hr cannot exceed 12,500 ft³ which represents 5% of the total RH TRU waste inventory to be disposed of in WIPP.

Waste placed in certified storage may have significant changes in radiation levels prior to the actual shipment to the WIPP. The shipper will need to check radiation levels prior to shipment to the WIPP as part of a certification verification. Significant changes in surface dose rate will require correction of the data package.

5.5 CRITERION: SURFACE CONTAMINATION

RH TRU waste packages shall have a removable surface contamination no greater than 50 picocuries per 100 cm² for alpha-emitting radionuclides and 450 picocuries per 100 cm² for beta-gamma-emitting radionuclides.

INTENT

The purpose for this criterion is to limit radiological exposure to operating personnel and to reduce the potential for the contamination of the WIPP.

CONTROLLED PROPERTY

- o Surface contamination levels

COMPLIANCE REQUIREMENT

RH TRU waste packages will comply with this criterion if the following condition is met:

- 5.5.1 Documented procedures are utilized for the measurement of surface contamination, and the results of these measurements showing compliance with the above criterion are documented.

DISCUSSION

The shipper must measure the degree of removable surface contamination for each waste package prior to shipment. The sampling methods are described in 49 CFR 173.443. The surface of each waste package should be free of any substance that would interfere with the measurement. Fixation of surface contamination shall not be allowed.

Possible contamination during certified storage will require the shipper to verify surface contamination levels prior to shipment to the WIPP.

5.6 CRITERION: THERMAL POWER

The thermal power generated by waste materials in any RH TRU waste package shall not exceed 300 watts. The thermal power shall be recorded in the data package.

INTENT

The purpose for this criterion is to control the thermal loading at the WIPP.

CONTROLLED PROPERTY

- o Limiting the waste package thermal power

COMPLIANCE REQUIREMENTS

RH TRU waste packages will comply with this criterion if the following conditions are met:

- 5.6.1 Thermal power data from measurements or assay-based calculations shall be presented for each waste package showing the total thermal power is less than 300 watts.
- 5.6.2 The thermal power shall be recorded in the data package.

DISCUSSION

The average thermal power of each RH waste package must be determined by measurement or assay-based calculations and documented in the data package.

Each waste package must meet the requirements of 49 CFR 173.442 for heat generation and temperature.

5.7 CRITERION: GAS GENERATION

All RH TRU waste canisters shall be vented.

INTENT

The purpose for this criterion is to prevent pressurization of the waste canisters.

CONTROLLED PROPERTY

- o Waste container design

COMPLIANCE REQUIREMENT

RH TRU waste containers will comply with this criterion if the following conditions are met:

- 5.7.1 The container shall be vented with a particulate filter as described in the RH TRU waste container design criteria.
- 5.7.2 Any drums overpacked in an RH TRU waste canister shall also be vented.

5.8 CRITERION: LABELING

Each waste package shall be uniquely identified by means of an identification number permanently attached to the container in a conspicuous location using characters at least 2 inches high.

The label must be reasonably expected to remain legible and affixed to the container for a period of 10 years under anticipated conditions of interim storage before shipment to the WIPP and emplacement underground.

INTENT

The purpose for this criterion is to provide information to operating personnel.

CONTROLLED PROPERTIES

- o Durable labeling methods
- o Unique identification number

COMPLIANCE REQUIREMENTS

RH TRU waste packages will comply with this criterion if the following condition is met:

- 5.8.1 Each waste package shall be labeled with a package identification number consisting of a series of letters, which identify the generating site, and numerals, which are the package serial number. The letters and numerals shall be at least 2 inches high and shall be placed in the location specified by the approved container design. The label placement must not interfere with remote handling of the waste.

5.9 CRITERION: DATA PACKAGE/CERTIFICATION

There shall be transmitted to the WIPP operator in advance of shipment, a data package/certification attesting to the fact that the waste package meets the requirements of these criteria. This data package/certification shall be based upon a quality assurance program subject to audit and verification and shall provide information on the items specified below:

- o Package identification number
- o Date of waste package certification
- o WAC exception number (if applicable)
- o Waste generation site
- o Date of packaging (closure date)
- o Maximum surface dose rate in Rem/hr and neutron dose rate in mRem/hr, if greater than 20 mRem/hr
- o Weight (in kg)
- o Internal container type
- o Physical description of waste form (content code)
- o Assay information, including PE-Ci and Pu-239 fissile gram equivalent content

- o Radionuclide information including radionuclide symbol, quantity, and unit of measure (in grams or curies)
- o Radioactive mixed waste (identity and quantity of hazardous waste characteristic(s))
- o Measured or calculated thermal power
- o Shipment number
- o Date of shipment
- o Vehicle type
- o Cask number
- o Other information considered significant by the shipper
- o Name of certifying official who certified the waste package
- o Name of person who certifies that the shipment meets the TRUPACT Authorized Payload Compliance Plan

A hard copy of the signed and dated Certification Statement, certifying that the waste content and packaging are in accord with the WIPP-WAC and that the waste is unclassified, shall be maintained on file at each site for WACCC audits.

INTENT

The purpose for this criterion is to provide documentation on waste shipped to the WIPP.

CONTROLLED PROPERTY

Transmittal of required information prior to each shipment

COMPLIANCE REQUIREMENTS

RH TRU waste package shall comply with this criterion if the following conditions are met:

- 5.9.1 The shipper shall have operating procedures with methods for determination of all data required in Criterion 5.9.

5.9.2 The data package in the format defined by WIPP-DOE-157 (Reference 9) shall be transmitted to the WIPP prior to the shipment of the waste.

5.9.3 A designated individual representing the waste certifying facility shall review the appropriate records for each waste package in the shipment to ensure that the compliance requirements in this document have been followed. A dated, signed Certificate of Compliance to this effect shall be maintained by the shipper's organization.

DISCUSSION

The certification statement indicates that the waste package is in full compliance with the WIPP-WAC as defined in the site's approved certification plan.

The date of shipment refers to the actual date of shipment. Other hazards requiring special consideration of the WIPP should be listed under other information.

Content codes developed by the shipper and approved by the WAC Certification Committee shall be used in lieu of physical descriptions. Other physical information, including neutron contribution (greater than 20 mRem/hr) to the surface dose rate, shall be included in the data package.

If hazardous materials (as defined in 40 CFR 261) are present, information or such materials shall be included in the data package under Hazardous Material sections.

5.10 CRITERION: RH TRU ACTIVITY CONCENTRATION

The maximum activity concentration for a RH TRU waste package shall not exceed 23 curies/liter. The concentration may be averaged over the waste container.

INTENT

The purpose for this criterion is to satisfy the WIPP design criterion (Reference 8). The 23 Ci/l limit was used to calculate shielding requirements and the consequences of single-canister accidents.

CONTROLLED PROPERTY

- o Activity concentration

COMPLIANCE REQUIREMENTS

RH TRU waste packages will meet this criterion if the following condition is met:

- 5.10.1 Data shall be presented to show that the activity concentration is not greater than 23 Ci/l.

DISCUSSION

The activity concentration of any RH canister must not exceed 23 Ci/l, averaged over the container volume.

6.0 REFERENCES

1. WIPP-DOE-069, Current Revision, TRU Waste Acceptance Criteria for the Waste Isolation Pilot Plant.
2. WIPP-DOE-114, Current Revision, TRU Waste-Certification Compliance Requirements for Acceptance of Newly Generated Contact-Handled Wastes to be Shipped to the Waste Isolation Pilot Plant.
3. WIPP-DOE-137, Current Revision, TRU Waste Certification Compliance Requirements for acceptance of Contact-Handled Wastes Retrieved from Storage to be shipped to the Waste Isolation Pilot Plant.
4. WIPP-DOE-120, Current Revision, Quality Assurance Requirements for Certification of TRU Waste for Shipment to the Waste Isolation Pilot Plant.
5. RHO-RE-MA-7, "User's Manual for Remote Handled Transuranic Waste Container," Rockwell International, Rockwell Hanford Operations, September 1984.
6. DOE Order 5820.2A "Radioactive Waste Management," September 1988.
7. WIPP-DOE-176, Revision 1, "Estimates of Internal Dose Equivalent from Inhalation and Ingestion of Selected Radionuclides."
8. WIPP-DOE-71, Rev. 3, Design Criteria, "WIPP Revised Mission Concept-IIA," December 1982.
9. WIPP-DOE-157, Current Version, "Data Package Format for Certified Transuranic Waste for the Waste Isolation Pilot Plant."