



Contact Handled Waste Acceptance Criteria

Implementation Date: 10/11/2007

Approved by:

[Signature]
Deputy General Manager

10/10/2007
Date

UNCLASSIFIED
Charlotte W. Kimbrough *CKW*
LeGacy-Critique
Date: 3/17/08
not ueni, ECI or oua

TABLE OF CONTENTS

1.0 PURPOSE..... 4

2.0 SCOPE 4

3.0 REFERENCES..... 4

4.0 GENERAL ACCEPTANCE 5

5.0 WASTE TYPES 5

 5.1 Low Level Waste (LLW)..... 5

 5.2 Mixed Low Level Waste (MLLW)..... 5

 5.3 Transuranic Waste (TRU Waste)..... 5

 5.4 Mixed Transuranic Waste 6

6.0 NOTIFICATIONS 6

 6.1 Waste Transfers 6

 6.2 Packaging Changes 6

 6.3 Transfer Paperwork..... 7

7.0 WASTE ACCEPTANCE CRITERIA 7

 7.1 Free Liquids 7

 7.2 Radioactive Material Content 8

 7.3 Dose Limits 8

 7.4 Size/Volume of Waste Containers 9

 7.5 Loose Surface Contamination (exterior surface of container) 9

 7.6 Waste Matrix..... 9

 7.7 Adequate Acceptable or Process Knowledge 9

 7.8 Waste Container Identification 10

 7.9 Waste Container Integrity 10

 7.10 Vented Containers..... 10

 7.11 Non-Compliant Hazardous Wastes 10

8.0 WASTE ACCEPTANCE 11

9.0 NON-COMPLIANT WASTE 11

10.0 ATTACHMENTS 11

Revision Summary

| <u>Revision</u> | <u>Change Summary</u> | |
|---|--------------------------------|---------------------------------|
| 0 | Initial issue | |
| 1-5 | Previously issued | |
| 6 | Implement Criticality program. | |
| 7 | Corrective Actions from IVR | |
| <u>Current Revision Specific Changes</u> | | |
| Specific Changes | | |
| Location | Description | Reason |
| 8 | Delete text | No longer applicable |
| 9 | Added Box minimum volume | Criticality program requirement |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Contact Handled Waste Acceptance Criteria

Page 4

1.0 PURPOSE

This document establishes the Transuranic (TRU) Waste Processing Center (TWPC) Waste Acceptance Criteria (WAC) for the acceptance of Contact Handled (CH) waste (hereinafter, waste) at the TWPC for characterization and processing.

By establishing and implementing this WAC the TWPC:

- ensures the safe and compliant processing of contracted waste materials in accordance with the applicable permits and authorizations
- protects TWPC personnel, co-located workers, and the environment from chemical and radiological hazards associated with the contracted waste in compliance with applicable federal, state, and local laws and regulations

Subject to the terms and conditions of the contract, the TWPC accepts waste material for processing that meets this WAC. The WAC has been developed to capture the requirements of the TWPC permits, Documented Safety Analysis (DSA) and other requirements as determined applicable.

The TWPC revises the WAC as determined appropriate to reflect changes to the contract, additional or alternate administrative controls, temporary physical controls, or other appropriate actions to ensure a safe and regulatory-compliant handling of the waste.

NOTE: This document is not used to determine acceptability of waste or waste packages for shipment to the Waste Isolation Pilot Plant (WIPP) or Nevada Test Site.

2.0 SCOPE

The WAC applies to the CH waste stream described in the current U.S. Department of Energy (DOE) Contract governing waste processing activities at the TWPC. The portion of these wastes that are Resource Conservation and Recovery Act (RCRA) wastes are stored by the TWPC in accordance with the applicable facility RCRA Hazardous Waste Management Permit. The gaseous effluents from these wastes are permitted to be released to the environment by the Tennessee Department of Environment and Conservation (TDEC) Permit Number #057077P, Operating Permit Issued Pursuant to Tennessee Air Quality Act.

3.0 REFERENCES

- "TRU Waste Baseline Inventory Report for Oak Ridge," Revision 3, June 14, 1996.
- DOE Facility CH-TRU Inventory, Revision 1, March 18, 1998.
- Applicable facility RCRA Hazardous Waste Management Permit.

Contact Handled Waste Acceptance Criteria

Page 5

- Operating Permit Issued Pursuant to Tennessee Air Quality Act, Tennessee Air Pollution Control Board, Department of Environment and Conservation, Number # 057077P.
- Documented Safety Analysis, CM-R-AD-001.
- Contact Handled Transuranic Waste Acceptance Criteria for Waste Isolation Pilot Plant, DOE/WIPP-02-3122.
- Nevada Test Site, Waste Acceptance Criteria, DOE/NV-325.

4.0 GENERAL ACCEPTANCE

Waste containers are authorized onto the TWPC for the purposes of verifying Acceptable and Process Knowledge (AK/PK), characterization, packaging or repackaging. Accordingly, certain conditions or characteristics of the waste may not be known prior to receipt of wastes at the TWPC. Initial waste receipt and/or the conduct of other preliminary characterizations shall not be construed as unqualified acceptance of the waste or portions thereof. The TWPC reserves the right, in accordance with its contract, Memoranda of Understanding, permits, and approved DSA, to segregate and/or return to the DOE wastes determined at any point in the process to exhibit non-compliant characteristics. This is particularly the case for the wastes packaged in boxes or in numerous layers of confinement in drums. The constituents therein may only be revealed or determined by Non-Destructive Examination (NDE), and successive disassembly and dissection during Repackaging.

5.0 WASTE TYPES

The TWPC accepts radioactive wastes, that once fully characterized by the TWPC meets one of the following definitions:

5.1 Low Level Waste (LLW)

Waste that contains at least a regulatory threshold concentration of radioactivity and is not classified as high-level waste, TRU waste or spent nuclear fuel or by-product material. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium may be classified as LLW provided the concentration of TRU is less than or equal to 100 nCi/g.

5.2 Mixed Low Level Waste (MLLW)

MLLW that contains hazardous constituents as defined by the RCRA. The hazardous constituents shall be limited to F001, F002, F004, F005, D004, D005, D006, D007, D008, D009, D010, D011, and D022.

5.3 Transuranic Waste (TRU Waste)

Contact Handled Waste Acceptance Criteria

Page 6

Waste that is contaminated with alpha-emitting TRU radionuclides with half-lives greater than 20 years, at concentrations greater than 100 nCi/g at the time of assay. The origin of the waste must be designated as defense waste as defined by the DOE-Oak Ridge Operations (ORO).

5.4 Mixed Transuranic Waste

TRU waste that contains hazardous constituents as defined by the RCRA. The hazardous constituents shall be limited to F001, F002, F004, F005, D004, D005, D006, D007, D008, D009, D010, D011, and D022. The origin of the waste must be designated as defense waste as defined by the DOE-Oak Ridge Operations (ORO).

6.0 NOTIFICATIONS**6.1 Waste Transfers**

The transfer of waste (i.e., delivery of waste containers to the TWPC site) is controlled by approved TWPC procedures using transfer authorization forms submitted by the TWPC to the DOE or DOE designated Point of Contact (POC), such as the appropriate Management and Integration Contractor (M&I) subcontractor. This authorization form serves as a formal request to DOE for container transfer. When completed by DOE and approved by the TWPC, it serves to "notify" the TWPC of incoming transfers. A just-in-time approach for the receipt of waste is utilized by the TWPC. Transfers may be cancelled or suspended due to severe weather, mutual agreement between the parties, other transfer route concerns, or inventory limits at the TWPC.

6.2 Packaging Changes

The contract references identify several characteristics of individual waste containers to be received (e.g., weight, volume, dimensions, etc.). Significant discrepancies identified during receipt inspection and initial processing shall be formally recorded by the TWPC and reflected during update of the waste stream AK report. However, if overpacking or other packaging changes are made prior to transfer, or discrepancies from the contract description are observed by the POC prior to transfer, these changes should be brought to the attention of TWPC management prior to the transfer to the TWPC of the affected containers (with as much advance notice as possible). Containers that are delivered to the TWPC without prior approval will be returned to DOE if they cannot be accepted.

No formal pre-approval for packaging changes is required, assuming the changes are bounded by the contract documents (e.g., a 55-gallon waste drum may be overpacked in a 79-gallon drum prior to transfer and both drums are vented and sampled as required by Section 8.10).

Contact Handled Waste Acceptance Criteria

Page 7

The following information shall be communicated via the transfer authorization form, as applicable:

- date and time of intended transfer
- descriptions of atypical configurations for package loading
- extra packaging applied to original waste containers at the time of loading

6.3 Transfer Paperwork

6.3.1 As per agreement between Foster Wheeler Environmental Corporation and DOE, no further manifesting of the waste transferred is expected.

6.3.2 The POC will provide a record of the transferred inventory that lists the individual unique numbers of the containers in each transfer.

7.0 WASTE ACCEPTANCE CRITERIA**7.1 Free Liquids**

No containerized/confined free liquids greater than 1 percent of container volume are allowed. Free liquids greater than 1 percent of container volume in the waste shall not be known to exist in the containers to be transferred (e.g., to have been previously detected by NDE). The term liquid, as used in this criteria, does not include gelatinous materials such as absorbed or solidified liquids as long as the material can be determined not to flow under its own weight. Drums of suspected TRU waste that are known to be non-compliant because they contain liquids greater than 1% are allowed only in the Contact Handled Staging Area (CHSA) for screening by Non-Destructive Assay (NDA) to determine if the waste is TRU or LLW, which is an exception to the TWPC WAC. If such a drum is determined to be TRU with less than 1% liquids, it can be processed in the Contact Handled Glove Box (CHGB). However, if it is greater than 1% liquids, it is staged in the CHSA pending return to DOE (introduction into the CHGB is not analyzed). If the NDA shows the non-compliant drum is LLW, it is further analyzed by NDE. If the LLW drum shows less than 1% free liquids, it is staged in the CHSA pending disposition (introduction into the CHGB is allowable). Otherwise, LLW waste with greater than 1% liquids is staged in the CHSA for return to DOE. If the LLW is determined to be mixed waste, it is staged in the CHSA pending disposition. If a drum of MLLW is less than 1 % liquids, introduction into the CHGB is allowable, but if greater than 1% liquids, introduction into the CHGB is not analyzed. MLLW cannot be returned to DOE.

This criteria does not apply to free flowing or gelatinous liquids that are introduced by the TWPC as a part of the waste processing operations, so long as compliance with WIPP criteria are achieved.

Contact Handled Waste Acceptance Criteria

Page 8

7.2 Radioactive Material Content

Waste accepted by the TWPC is limited by the DSA such that criticality concerns are not credible.

Each container is evaluated based on best available generator and/or AK information to ensure that the individual container Pu-239 Fissile Gram Equivalent (FGE) and Plutonium Equivalent Curie (PE-Ci) values (as calculated in accordance with CH-P-OP-014, Contact Handled Waste and Activity Inventory Control) are within the limits established in the DSA.

Incoming waste containers shall not exceed 308 PE-Ci individually (or less if the TWPC's established administrative limit of PE-Ci is lower). High Material at Risk containers (greater than 200 PE-Ci per container), shall be overpacked after receipt.

Incoming waste containers shall not exceed 200 FGE (Pu-239) individually (or less if the TWPC's established administrative limit of FGE (Pu-239) is lower).

The above limits, as of the issue date of this document, are summarized below. The TWPC has additional limits for containers going into the CHGB for sorting, segregating, and repackaging.

Receipt Limits:

FGE \leq 200/container – individual containers

PE-Ci \leq 308/container – individual containers

$<$ 25/container – containers going into the CHGB

Processing Limits (CHGB):

PE-Ci $<$ 25/container

7.3 Dose Limits

The TWPC DSA limits contact dose rates for individual waste containers acceptable for receipt and characterization to $<$ 200 mR/hr.

The TWPC administratively limits contact dose rates for individual waste containers acceptable for receipt and characterization to \leq 40 mR/hr contact (localized higher doses may be case-approved by the TWPC).

Contact Handled Waste Acceptance Criteria

Page 9

7.4 Size/Volume of Waste Containers

Drum sizes (nominal gal.)

55 – 110

Incoming waste boxes shall not exceed the maximum length, width, or height dimensions of boxes identified in the contractual references. These dimensions are approximately:

Box sizes (max. dimensions)

8 ft x 6 ft x 10 ft
(L x W x H)

Box sizes (min. volume)

Standard B12 waste box or equivalent OR
21 cubic foot in volume

7.5 Loose Surface Contamination (exterior surface of container)

Beta Gamma

 $< 1,000 \text{ dpm}/100 \text{ cm}^2$

Alpha

 $\leq 20 \text{ dpm}/100 \text{ cm}^2$

7.6 Waste Matrix

Wastes shall be classified as debris as defined by the WIPP Waste Acceptance Plan.

7.7 Adequate Acceptable or Process Knowledge

Incoming waste containers shall be identifiable as part of a waste stream for which adequate Acceptable Knowledge (per WIPP and Environmental Protection Agency requirements) has been accumulated, reviewed, and summarized by the TWPC. Wastes shall be defense-origin based on this information as defined by the DOE-ORO.

Contact Handled Waste Acceptance Criteria

Page 10

7.8 Waste Container Identification

Incoming waste containers shall exhibit a unique container identification number consistent with contractual references.

7.9 Waste Container Integrity

Wastes shall be packaged in securely lidded metal boxes and drums. Incoming containers shall demonstrate the integrity defined in the DSA, which is verified by inspecting each container upon receipt using the following general criteria:

- no denting, deformation, breaches, creasing, cracking, or gouging that might reasonably compromise container integrity, expose the internal contents, or affect the closure of the container
- no significant rusting or a readily observable loss of metal due to oxidation (e.g., flaking, bubbling, pitting, or perforation) that causes perforation of the container
- no bulging or distortion indicative of over pressurization
- closure devices properly installed and secure

7.10 Vented Containers

Incoming drums shall be equipped with a securely installed or fastened filtered vent, including overpacked inner containers (drum overpacks shall not be used to obviate venting of the waste containers).

Prior to acceptance by the TWPC, incoming drums shall either be headspace gas sampled, by direct method, or analyzed by calculation to ensure that headspace gases do not exceed 32,000 ppm Hydrogen equivalent content, and 6,000 ppm Volatile Organic Compounds.

Boxes that contain unvented drums or drums that do not have headspace gas sampling results below above limits established herein will not be accepted onto the TWPC.

External shipping containers or overpacked containers, which are welded closed or fitted with a tight sealing closure device, are considered unvented containers. Containers which are not fitted with tight sealing closure devices and incorporate metal to metal sealing surfaces or are fitted with closure gaskets are considered self-venting containers, and are not required to be mechanically vented.

7.11 Non-Compliant Hazardous Wastes

Characteristic or listed RCRA wastes other than those identified in Section 6 of this document are not acceptable and will not be authorized onto the TWPC.

Contact Handled Waste Acceptance Criteria

Page 11

Additionally, incoming waste containers shall not be known to contain:

- regulated concentrations of polychlorinated biphenyl (PCB) or other Toxic Substances Control Act of 1976 (TSCA)-regulated materials (e.g., ≥ 50 ppm PCBs and asbestos) – EXCEPTION: PCB bulk products and remediation wastes, e.g., ballasts, wiring, paint chips, are allowable.
- dangerous constituents such as explosives, pyrophorics, pressurized gases, etiologic agents, biological waste, or beryllium except for encased beryllium sources
- classified materials

8.0 WASTE ACCEPTANCE

Acceptance of waste is accomplished in accordance with approved TWPC procedures. The first steps for acceptance of transferred wastes are accomplished through the waste container request and authorization process. Transferred waste containers are verified as being consistent with the request for transfer document upon receipt of the conveyance. The unique container numbers are verified, as the waste is off-loaded. Waste packaging integrity, dose rates, surface contamination levels, sizes, venting, and hazardous waste labeling of the waste containers are verified at various points in the receipt process.

Some or all of the following techniques are used to confirm that WAC are satisfied for individual waste containers:

- Weighing
- NDA
- NDE
- Repackaging
- Headspace Gas Sampling

9.0 NON-COMPLIANT WASTE

Waste containers or waste articles discovered to be non-compliant with this WAC shall be segregated from the waste stream as appropriate to maintain worker and public safety. The non-compliant condition shall be reported to DOE and TDEC, as appropriate. Disposition and return transfer to DOE of non-compliant wastes shall be completed as promptly and safely as the DSA and permits require.

10.0 ATTACHMENTS

Attachment A: Acronyms

ATTACHMENT A: ACRONYMS

| | |
|-------|---|
| AK | Acceptable Knowledge |
| BBA | Box Breakdown Area |
| CH | Contact Handled |
| CHGB | Contact Handled Glove Box (includes Box Breakdown Area) |
| CHSA | Contact Handled Staging Area |
| DOE | U.S. Department of Energy |
| DSA | Documented Safety Analysis |
| FGE | Fissile Gram Equivalent |
| LLW | Low Level Waste |
| M&I | Management and Integration Contractor |
| MLLW | Mixed Low Level Waste |
| PCB | polychlorinated biphenyl |
| PE-Ci | Plutonium Equivalent Curie |
| PK | Process Knowledge |
| POC | Point of Contact (for waste transfers) |
| RCRA | Resource Conservation and Recovery Act |
| SB | Safety Basis |
| TDEC | Tennessee Department of Environment and Conservation |
| TRU | Transuranic |
| TWPC | TRU Waste Processing Center |
| WAC | Waste Acceptance Criteria |
| WIPP | Waste Isolation Pilot Plant |

END OF DOCUMENT