



MATERIAL ACCEPTANCE CRITERIA

DOC-003

Rev. 13

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1.0 Scope

This material acceptance criteria provides detailed criteria for the acceptance of radioactive material and radioactive waste for processing or storage at TMMC in Oak Ridge, Tennessee. It applies to all shipments of radioactive material made to the TMMC. It specifies the requirement for advance shipment notification and provides the mechanism for evaluation of material which does not meet the standard acceptance criteria specified in Appendix A of this Material Acceptance Criteria (MAC).

2.0 Policy

TMMC will accept material for storage or processing which meets standard acceptance criteria, can be safely stored, or processed, and meets TMMC license and contractual criteria. Material which does not meet general or specific acceptance criteria included in this MAC may be accepted after evaluation and approval by the TMMC Radiation Safety Officer.

3.0 Responsibilities

- 3.1 The TMMC Radiation Safety Officer (RSO) is responsible for establishing radiological criteria to ensure that TMMC can receive and process radioactive material in accordance with applicable licenses, permits, and regulations. The RSO will assist in determining that material meets Department of Transportation regulations and (for waste or material which when processed generates waste) burial site criteria.
- 3.2 The TMMC RSO or designee is responsible for evaluating Advance Shipment Notification (ASN) forms and assuring that the proposed shipment meets the standard acceptance criteria.
- 3.3 The General Manager is responsible for determining how material in a proposed shipment can be safely processed and ensuring that a proposed shipment will not cause fence-line dose limits to be exceeded while in storage.

4.0 Definitions

- 4.1 Radioactive Equipment – Radioactive equipment is non-waste material received for storage, processing, decontamination, or maintenance at TMMC's site.
- 4.2 Radioactive Waste – Radioactive material that is waste intended for processing or storage with subsequent disposal or return to the client as waste. Note that waste requires manifesting as waste by NRC regulations in 10 CFR 20 Appendix G (or equivalent state regulations.)
- 4.3 Standard Radioactive Material – Radioactive material (equipment or waste) that meets the general or specific material acceptance criteria in Appendix A in this MAC.

- 4.4 Non-standard Radioactive Material – Radioactive material which deviates from the general or specific acceptance criteria in Appendix A and requires submittal for further TMMC review prior to approval.
- 4.5 Dry Active Waste (DAW) – Radioactive waste consisting primarily of paper, plastic, cloth, rubber, wood, metal, etc., is dry active waste. This excludes resins, sludges, wet filter media, aqueous liquids, oils, etc.
- 4.6 Natural Uranium (U-Nat) – As used in this document U-Nat means: Natural material and ores containing naturally occurring radionuclides existing in nature, not produced by humans.
- 5.0 NOTICE – TN Division of Radiological Health (TDRH) and Radioactive Material License Requirements
- 5.1 TDRH Fee (Tax)
- In accordance with the TDRH (ref: Rule 0400-20-10-.31(8) (d)), TMMC must collect and remit to the State of Tennessee a fee (tax) of two cents per pound (\$0.02/lb.) on all items contaminated or potentially contaminated with radioactive material or low-level radioactive waste received at TMMC from a client.
- 5.2 License for Delivery
- TMMC’s Radioactive Material License Condition 18 states, “TMMC shall not accept either radioactive waste and/or items contaminated or potentially contaminated with licensable quantities of radioactive material or radioactive materials or items from licensable activities for repackaging, processing, refurbishing, storage pending disposal or disposal unless the shipper of such waste possesses a valid license for delivery issued pursuant to 0400-20-10-.32 of “State Regulations for Protection Against Radiation.”
- 5.3 Right to Return Radioactive Materials
- 5.3.1 TMMC’s Radioactive Material License Condition 19 states, “Written assurances must be furnished by the facility shipping the radioactive material indicating that the facility may accept return of the material processed or unprocessed. In addition, for states outside the Southeast Compact the state or appropriate Compact must be a signatory to the Interregional Access Agreement for Waste Management or assurances shall be obtained from the appropriate state governor's office, the state radiation control program, and the appropriate Compact official, if any.”
- 5.3.2 TMMC’s Radioactive Material License Condition 20 states, “The licensee shall establish in every contractual obligation relating to radioactive materials the ability to return radioactive materials, processed or unprocessed, to the prior licensed or exempt possessor.”

6.0 Acceptance of Standard Radioactive Material

- 6.1 Standard radioactive material acceptance criteria are in Appendix A. Materials meeting these criteria require that the client's Representative submit a completed Advance Shipment Notification (ASN) (Appendix C) in accordance with section 8.0 of this MAC prior to shipping.
 - 6.1.1 Each completed ASN that indicates the shipment(s) contains material from compact states requiring export permits must have each corresponding export permit letter(s) attached to the ASN or with the associated manifest when the material arrives at the TMMC site.
 - 6.1.2 Each completed ASN indicating the shipment contains U-Nat must ensure that the U-Nat meets the definition listed in section 4.6 above. Shipped uranium not meeting the definition of U-Nat herein shall be manifested by each applicable uranium nuclide.
 - 6.1.3 Shipments arriving at the TMMC that do not meet the requirements of 6.1 and 6.1.1 above SHALL NOT be permitted access to the TMMC site.
- 6.2 Radioactive material meeting the acceptance criteria may be delayed if receipt would cause radioactive material inventory limits to be exceeded. Other business or process related factors may cause delay. The TMMC RSO will inform the client's Radioactive Material Manager if any of these factors will cause a delay in shipping at the time of review of the ASN.
- 6.3 Approval for shipment of standard radioactive material is made by the TMMC RSO, who will return a copy of the approved ASN to the client's Radioactive Material Manager prior to shipment.

7.0 Acceptance of Non-standard Radioactive Material

- 7.1 Not all radioactive material meets the standard acceptance criteria. In many cases, TMMC may still be able to receive this non-standard material. It is important that non-standard material receive special approval prior to shipment to ensure that the material can be processed safely, license/permits limits are not exceeded, radiation and radioactive material exposures to TMMC personnel can be minimized, and the material can be processed by the method requested by the client. This review and approval will also ensure that a specific contract/purchase order is in place. TMMC may accept non-standard material by the following steps.
 - 7.1.1 The GM will work with the client to determine and document information required by the Non-standard Radioactive material Acceptance Form (NRAF).

- 7.1.2 The Radiation Safety Officer will review the NRAF considering ALARA and safety, regulatory/license/permit limitations, and waste disposal/shipping.
- 7.1.3 When review of the NRAF is complete and appropriate approvals are obtained, the TMMC RSO will notify the client.

8.0 Shipment Scheduling

8.1 5 Working-Day Advanced Shipment Notification

Clients must schedule the shipment to arrive at the facility a minimum of five (5) working days prior to the requested shipment arrival date. A complete Advance Shipment Notification (ASN) package must be sent to Shipping@tmmc-radwaste.com to establish an arrival date for each shipment. The ASN form may be downloaded from TMMCs' website at www.tmmc-radwaste.com. Once the ASN package has been received and accepted by TMMC, the shipment's arrival date will be confirmed with the shipper. If all required information is not available at the time of submission, updates may be provided as the information becomes available. TMMC must be informed in the event that there are delays in the shipments' scheduled arrival date.

8.2 Shipping Paperwork

Advance copies of the Uniform Low-Level Radioactive Waste Manifest (Forms 540/541, and 542 if applicable) and Bills of Lading, as appropriate, must be submitted electronically in LowTrack compatible *format via email to Shipping@tmmc-radwaste.com. Hard copies may be faxed to "Shipping and Receiving – Manifest" at (865) 482-5605.

*See note on page three (3) of Appendix C for "Administrative Fees" associated with the submittal of non-compatible electronic manifests/shipping papers.

8.3 Receiving Hours of Operation

Shipments are typically received at the TMMC site Monday through Thursday from 7:30 A.M. to 11:30 A.M and 1:00 P.M. hours to 3:30 P.M. Alternate receipt arrangements must be approved in advance. Contact the TMMC GM at Shipping@tmmc-radwaste.com to arrange for alternate receipt hours.

¹ A complete Advanced Shipment Notification package includes a completed ASN form (Appendix C) and an electronic manifest(s) file in LowTrack format.

8.4 Holidays

TMMC is closed for business on:

- New Years Day;
- Memorial Day;
- Independence Day;
- Labor Day;
- Thanksgiving Day and the day after; and
- Christmas Day

9.0 Records

MAC prescribed forms completed as a result of this document are project records and shall be maintained with the corresponding shipment file.

STANDARD ACCEPTANCE CRITERIA

Applicability

These are general criteria for all material received at the TMMC. Each of TMMC's processing methods has specific criteria that must also be met.

RCRA Limits

TMMC is not a permitted Treatment, Storage, or Disposal Facility (TSDF) under RCRA regulations.

Radiological Limits

All incoming material shall meet Class A waste acceptance criteria unless the waste has been approved per Appendix B; “*Non-standard Radioactive Material Acceptance Form*” by both the Radiation Safety Officer and General Manager.

The radiological material acceptance criteria at TMMC are determined by the amount of each radionuclide or groups of radionuclides on site at any one time. To ensure compliance with our Tennessee radioactive materials license each manifest of radioactive material must be reviewed and compared to the current site inventory.

TMMC maximum on site inventory is:

Material Radioactive	Maximum Radioactivity (Curies) or Quantity (grams)
1. Hydrogen 3	1500 Curies
2. Carbon 14	50 Curies
3. Fe-55	100 Curies
4. Ni-63	100 Curies
5. Radioactive materials with atomic numbers 93 and 95-100 inclusive	100 Curie
6. Radioactive materials with atomic numbers 84-91 inclusive (excluding Source material)	10 Curies
7.5 Source Material (natural or depleted uranium, thorium)	19 Curies
8. Mixed activation and fission products with atomic numbers 3-83 (excluding C-14, Fe-55, Ni-63)	200 Curies
9.7 Uranium-233	200 grams*
10. Uranium-235	350 grams*
11. Plutonium	200 grams* or 2 Curies

*Special nuclear material shall not exceed unity of “1”

Packaging

All material shall be packaged per U.S. Department of Transportation regulations 49 CFR 173 sub-part I. Package radiological conditions must be in accordance with U.S.D.O.T. criteria.

Paper product containers, including fiberboard drums and corrugated fiberboard boxes, when used as an outer container, are considered Non-Standard items for delivery to TMMC. Pre-approval of paper product containers must be requested by the client on an Appendix B, "Non-Standard Radioactive Material Acceptance Form" and approved by the RSO and/or GM prior to shipment to TMMC.

Material should be loaded so that it may be removed from the delivering vehicle by fork truck. Containers should be arranged on flat bed trailers so that a fork truck can unload from the side. Materials requiring a crane for off-loading (items < 40,000 pounds on a flat bed excepted) require specific prior approval.

Shipments containing items greater than 40,000 pounds and casks must be pre-approved and documented by the RSO and GM on an Appendix B.

SHIPPING DOCUMENTATION

Advance Notification

See Section 8.0 above.

Radioactive Material Manifest:

Radioactive material must be accompanied by a manifest (when required) that meets the current NRC and DOT requirements for the material being transported. Low level radioactive waste intended for ultimate disposal at a licensed low-level radioactive waste land disposal facility must be manifested on applicable NRC Low Level Waste Manifest forms 540, 541 and 542. If not included in a manifest, additional documentation must be provided that identifies each package or bulk container by a unique number and supplies the following information for each package:

- Radionuclides and activity of each radionuclide (minimum listing is that required by 49 CFR 173.433;
- Detailed description of contents such as: serial numbers and inventory with contamination levels for equipment; or composition % paper, plastic, cloth, wood, metal, resin (provide the specific activity in $\mu\text{Ci/cc}$ for each isotope present in resins), etc. for waste,
- Estimated weight and volume,
- Grams of Special Nuclear Material,
- Radiation levels and removable contamination levels,
- Any special conditions that require precautionary handling requirements.

Permits

Waste defined as low-level radioactive waste in accordance with the Low-Level Radioactive Waste Policy Amendments Act of 1985 or in DOE Order 435.1 requires a copy of a LLRW Compact Export letter to be submitted, if applicable.

All radioactive shipments shall include a current and valid Tennessee License for Delivery permit number.

EQUIPMENT STORAGE ACCEPTANCE CRITERIA

Applicability

These criteria apply to equipment received for storage/maintenance/repair/decontamination (not intended for waste processing).

The client must certify that the equipment has a continuing use and value (other than scrap value).

Equipment will be packaged in containers that meet US Department of Transportation (DOT) regulations 49 CFR 173, subpart I (minimum requirement is 49 CFR 173.410)

COMPACTABLE DAW STANDARD ACCEPTANCE CRITERIA

Applicability

These criteria apply to Dry Active Waste (DAW) intended for compaction. These criteria also apply to the compactable portion of shipments consisting of commingled compactable and non-compactable wastes.

DAW suitable for compaction includes paper, plastic, and cloth. DAW must meet the criteria for Low Specific Activity (LSA) in 49 CFR 173.403.

Non-Standard Material Examples

The following wastes are non-standard for compaction:

- RCRA/TSCA Hazardous Wastes
- Explosives
- Pyrophoric material
- Liquid
- Biological Materials
- Resins
- Material with a dose rate greater than 400 mR/hr on contact.
- Gas cylinders
- Flammable solids
- Absorbed Liquids
- Sludges
- Radioactive Sealed Sources

NON-COMPACTABLE DAW STANDARD ACCEPTANCE CRITERIA

Applicability

These criteria apply to non-compactable waste and to equipment that will be scrapped following decontamination or processing.

Non-Standard Material

Wastes or equipment containing the following are non-standard for processing:

- RCRA/TSCA Hazardous Wastes
- Explosives
- Pyrophoric material
- Components with a stored energy source (i.e., snubbers, springs, compressed air or liquids).
- Material with a dose rate greater than 400mR/hr on contact.
- Gas cylinders
- Gas sources
- Flammable solids

NON-STANDARD RADIOACTIVE MATERIAL ACCEPTANCE FORM

CLIENT INFORMATION

Company: _____ Plant/Unit # _____

Address: _____

Address: _____ Contact person: _____

Telephone: _____ Facsimile: _____ e-mail: _____

Material description: _____

TMMC ACCEPTANCE AUTHORIZATION

Conditions for acceptance: _____

General Manager _____

Signature

Date

Radiation Safety Officer _____

Signature

Date

Appendix C
ADVANCE SHIPMENT NOTIFICATION

Material Acceptance Criteria

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Generator Name: _____ Client PO & Quote ID: _____ TN LFD ID: _____

Client Shipment Data: Shipping Paper ID: _____ Est. Arrival Date: _____

Weight (lbs.) Gross: _____ ²Net: _____ Volume (ft3): _____ Activity (mCi): _____

Highest Contact Dose Rate (mR/hr): _____ SNM Grams: _____ (≥ 0.5gm requires DOE/NRC Form 741)

A) **Material Properties:** **WASTE** **RECYCLABLE** **OTHER:** _____

1. Physical State: Solid Semi-Solid Powder/Dust Free Liquid Other: _____

2. Flash Point (°F): ≤ 72° >72° - 100° >100° - 140° >140° - 200° > 200° N/A

3. Reactivity: Water Reactive Acid Reactive Alkaline Reactive Oxidizer Pyrophoric
 Explosive Shock Sensitive Thermally Sensitive Autopolymerizable N/A

4. Odor - describe: _____ None Mild Strong

5. pH: ≤ 2 2.1 - 5.0 5.1 - 9.0 9.1 - 12.4 ≥ 12.5 N/A

6. Contains Asbestos?: Yes No If Yes, Is the Asbestos Friable?: Yes No

B) Does the material contain, or is it suspected to contain any of the following: Yes No

Free Cyanide Free Sulfide Organic Compounds OSHA Substances Infectious Agents

Virgin Oils Used Oils PCBs Oxidizing Agents Solvents

Pesticides Reducing Agents Volatile Organics Herbicides

WASTE MATERIAL

C) Is the waste subject to LLRW Compact Export Approval? Yes No

The following states require permits: AK, AZ, CA, CO, HI, ID, MT, NV, NM, ND, OR, SD, TX, UT, VT, WA, WY
(If yes, list generators and attach permits.) _____

***** Waste received without a required Export Permit or NORM Exemption Letter WILL BE REJECTED *****

D) Is this waste a characteristic hazardous waste per 40 CFR 261.21 - 24? Yes No

Has a TCLP analysis been performed? Yes No (If yes, attach the results.)

E) Is this waste an F, K, P, or U Listed hazardous waste per 40 CFR 261.31-33? Yes No N/A

F) Is this waste derived from the treatment, storage, or disposal of hazardous waste as described in 40 CFR 261?

Yes No If yes, explain: _____

G) Is this a "Hazardous Waste" as defined by State, Provincial, or Local Regulations? Yes No

If yes, enter the waste identification number, if one has been assigned: _____

H) If the waste is a sewer sludge, has analyses been performed in accordance with 40 CFR 503.8 Yes No

(If yes, please submit a copy of the analyses.) If no, explain why sampling has not been performed:

I) Does the shipment contain Natural Uranium (U-Nat) as defined in the TMMC MAC section 4.6? Yes No

² The TDRH \$0.02/lb. fee will be assessed based upon the net material/waste weight listed in this section. (Ref. TMMC MAC section 5.1)

Appendix C
ADVANCE SHIPMENT NOTIFICATION

Material Acceptance Criteria
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SERVICE OPTIONS

- | | | |
|---|--|---|
| <input type="checkbox"/> Asbestos | <input type="checkbox"/> DAW | <input type="checkbox"/> Sealed Sources - <input type="checkbox"/> Exempt <input type="checkbox"/> Non-Exempt |
| <input type="checkbox"/> Best Way | <input type="checkbox"/> Lead | <input type="checkbox"/> Sort & Segregate (S2) |
| <input type="checkbox"/> Bonded Space Lease | <input type="checkbox"/> Liquids - <input type="checkbox"/> Oil <input type="checkbox"/> Water | <input type="checkbox"/> Special: (Describe Below) |
| <input type="checkbox"/> Bulk Survey For Release (BSFR) | <input type="checkbox"/> Metals | <input type="checkbox"/> Storage of Asset Materials |
| <input type="checkbox"/> Container Rental/Lease/Repair | <input type="checkbox"/> Resin | <input type="checkbox"/> Survey for Release |

NOTES: _____

FINAL DISPOSITION OPTIONS

- Unrestricted Release* Recycle/Reuse* Disposal: BSFR ES Clive WCS Return To Client

NOTES: _____

* *Surface Contamination Only. No activated materials are permitted.*

SPECIAL HANDLING

- Live Offload Laboratory Analysis

NOTES: _____

CONTAINER DISPOSITION

- TMMC Owned Dispose of Container Return Container(s) to: (List Below)

NOTES: _____

SERVICE TYPE

- ³Standard ⁴Expedited

NOTES: _____

³ Length of services: Standard Services takes up to 365 days from site arrival to complete.

⁴ For "Expedited Service" (i.e., the Client's service must be completed within 1 to 90 days from the date of receipt) shall be assessed an additional 50% charge applied to the standard services rate.

⁵**Advanced Shipment Notification:** Clients must submit and have approved an Advanced Shipment Notification (ASN) form five (5) working days prior to the associated shipment's arrival at the TMMC.

Administrative Fees: Clients who do not submit LowTrack compatible electronic shipping papers shall be assessed an administrative document handling fee at standard professional staff billing rates per submitted manifest/shipping paper.

⁶ **Client's Certification:** *I certify that all information submitted on this form is complete and accurate and that material being offered is compliant with the TMMC Material Acceptance Criteria (MAC). Additionally, I acknowledge and agree that TMMC must, in accordance with its Tennessee Radioactive Materials License, retain the right to return radioactive material (processed or unprocessed) to the prior licensed or exempt processor (e.g., generator).*

Client Representative Printed Name	Signature	Title
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Email completed ASN forms to Shipping@tmmc-radwaste.com or fax the information to 865-482-5605. Phone: 865-482-5532. To expedite our review, please attach applicable laboratory analyses, SDSs and any additional information regarding this material.

TMMC Approval Signature	Date	TMMC Shipment ID
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⁵ A complete Advanced Shipment Notification includes: A completed ASN form, completed ASN form (Appendix C) and an electronic manifest(s) file in LowTrack format.

⁶ Material received at TMMC that is determined to be not as represented on this ASN or other associated contractual documents is nonconforming, is subject to rejection, and return unless TMMC and the client establish an acceptable alternative.