

STATE OF MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

LANSING



DIRECTOR

GRETCHEN WHITMER GOVERNOR

September 30, 2021

VIA U.S. CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Michael Dressler, Manager Hazardous Materials Program Occupational Safety & Environmental Health University of Michigan North Campus Transfer Facility 1655 Dean Road Ann Arbor, Michigan 48109-2159

Dear Mr. Dressler:

SUBJECT: Hazardous Waste Management Facility Renewal Operating License (License); The University of Michigan (U of M) Beck Road Facility, Belleville, Michigan; MIR 000 001 834, Waste Data System Number 409472

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Materials Management Division (MMD), has issued the U of M License for the above-referenced facility.

The License application review and public participation procedures were conducted in accordance with Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and the administrative rules. The License is based on this review, and the results of the public comment period held between August 12, 2021, and September 30, 2021. A copy of the License and the Notice of Final Decision are enclosed.

If you have any questions, please contact Ms. Ronda L. Blayer, Environmental Engineer Specialist, Materials and Tracking Unit, Hazardous Waste Section, MMD at 517-614-2630; <u>BlayerR@Michigan.gov</u>; or EGLE, MMD, PO Box 30241, Lansing, Michigan, 48909-7741

Sincerely,

Kimberly M. Super

Kimberly M. Tyson, Manager Hazardous Waste Section Materials Management Division 517-388-2797

Enclosures

cc/enc: Mr. Mark Nord, U of M

Mr. James Blough, United States Environmental Protection Agency, Region 5 Ms. Kimberly Tyson, EGLE Mr. Rich Conforti, EGLE Ms. Ronda L. Blayer, EGLE Mr. John McCabe, EGLE Ms. Nicole Sanabria, EGLE Ms. Jill Coulter, EGLE Operating License File



State of Michigan Department of Environment, Great Lakes, and Energy HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE

NAME OF LICENSEE: The Regents of the University of Michigan

NAME OF FACILITY OWNER: The Regents of the University of Michigan

NAME OF FACILITY OPERATOR: The Regents of the University of Michigan

NAME OF TITLEHOLDER OF LAND: The Regents of the University of Michigan

FACILITY NAME: The University of Michigan Beck Road Facility

FACILITY LOCATION: 8501 Beck Road, Belleville, Michigan 48111

SITE IDENTIFICATION (ID) NUMBER: MIR 000 001 834 EFFECTIVE DATE: September 30, 2021

REAPPLICATION DATE: March 30, 2031

EXPIRATION DATE: September 30, 2031

AUTHORIZED ACTIVITIES

Pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being §§324.11101 to 324.11153 of the Michigan Compiled Laws, and the hazardous waste management administrative rules (hereafter called the "rules") promulgated there under, being R 299.9101 *et. seq.* of the Michigan Administrative Code, by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), an operating license (hereafter called the "license") is issued to The Regents of the University of Michigan (hereafter called the "licensee") to operate a hazardous waste management facility (hereafter called the "facility") located at latitude 42°14'30" and longitude 83°30'00". The licensee is authorized to conduct the following hazardous waste management activities:

🖂 STORAGE		DISPOSAL	POSTCLOSURE
🖂 Container	Container	Landfill	🗌 Tank
🗌 Tank	🗌 Tank	Land Application	Surface Impoundment
Waste Pile	Surface Impoundmer	t 🗌 Surface Impoundment	Landfill
Surface Impoundment	Incinerator		Waste Pile
Drip Pad			

APPLICABLE REGULATIONS AND LICENSE APPROVAL

The conditions of this license were developed in accordance with the applicable provisions of the rules, effective August 3, 2020. The licensee shall comply with all terms and conditions of this license, Part 111, and its rules. This license consists of the 11pages of conditions attached hereto as well as those in Attachments 1 through 11, and the applicable rules contained in R 299.9101 through R 299.11008, as specified in the license. For purposes of compliance with this license, applicable rules are those that are in effect on the date of issuance of this license in accordance with R 299.9521(3)(a).

This license is based on the information in the license application submitted on August 29, 2019, and any subsequent amendments (hereafter referred to as the "application"). Pursuant to R 299.9519(11) (c), the license may be revoked if the licensee fails, in the application or during the license issuance process, to disclose fully all relevant facts or, at any time, misrepresents any relevant facts. As specified in R 299.9519(1), the facility shall be constructed, operated, and maintained in accordance with Part 111 of Act 451, the rules, and this license.

This license is effective on the date of issuance and shall remain in effect for 10 years from the date of issuance, unless revoked pursuant to R 299.9519 or continued in effect as provided by the Michigan Administrative Procedures Act, 1969 PA 306, as amended (Act 306).

Issued this 30th day of September 2021.

By: Kimberly M. Super

Kimberly M. Tyson, Manager Hazardous Waste Section Materials Management Division

HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE FOR THE UNIVERSITY OF MICHIGAN BECK ROAD FACILITY MIR 000 001 834

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LIST OF ATTACHMENTS

- Attachment 1 Chemical and Physical Analyses
- Attachment 2 Waste Analysis Plan
- Attachment 3 Inspection Schedule
- Attachment 4 Personnel Training Program
- Attachment 5 Preparedness and Prevention
- Attachment 6 Contingency Plan
- Attachment 7 Closure Plan
- Attachment 8 Subpart CC Air Emissions from Tanks, Containers, and Surface Impoundments
- Attachment 9 Engineering Plans and Specifications
- Attachment 10 List of Acceptable Hazardous Wastes
- Attachment 11 Operation and Maintenance Plan for Units 3 and 4

PART I STANDARD CONDITIONS

A. TERMINOLOGY AND REFERENCES

Throughout this license, the term "Division" means the Materials Management Division, and any successor organization, within EGLE responsible for administering Part 111 of Act 451 and the rules. Throughout this license, "Director" means the Director of EGLE or the Director's duly authorized designee such as the Division Director. All the provisions of Title 40 of the Code of Federal Regulations (CFR) referenced in this license are adopted by reference in Rule (R) 299.11003.

B. EFFECT OF LICENSE

Except as otherwise provided by law, any treatment, storage, or disposal of hazardous waste not specifically authorized in this license is prohibited. Issuance of this license does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of federal, state, or local law or regulations {R 299.9516(8)}; nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law. Compliance with the terms of this license does not constitute a warranty or representation of any kind by EGLE, nor does EGLE intend that compliance with this license constitutes a defense to any order issued or any action brought under Act 451 or any other applicable state statute or §106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) {42 U.S.C. 9606(a)}, the Resource Conservation and Recovery Act of 1976, as amended (RCRA), and its rules, or any other applicable federal statute. The licensee, however, does not represent that it will not argue that compliance with the terms of this license is a part of, and is incorporated into, this license and is deemed an enforceable part of the license.

C. SEVERABILITY

The provisions of this license are severable, and if any provision of this license, or the application of any provision of this license to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this license shall not be affected thereby.

D. **RESPONSIBILITIES**

The licensee shall comply with Part 111 of Act 451, the rules, and all conditions of this license, except to the extent authorized by EGLE pursuant to the terms of an emergency operating license. Any license noncompliance, except to the extent authorized by EGLE pursuant to the terms of an emergency operating license, constitutes a violation of Part 111 of Act 451 and is grounds for enforcement action, license revocation, license modification, or denial of a license renewal application. {§§11148, 11150, and 11151 of Act 451; R 299.9521(1)(a) and (c) and (3)(a) and (b); and 40 CFR §270.30(a)}

- 2. If the licensee wishes to continue an activity regulated by this license after the expiration date of this license, the licensee shall submit a complete application for a new license to the Division Director at least 180 days before this license expires, March **30**, 2031, unless an extension is granted pursuant to R 299.9510(5). To the extent the licensee makes a timely and sufficient application for renewal of this license, this license and all conditions herein will remain in effect beyond the license expiration date and shall not expire until a decision on the application is finally made by EGLE, and if the application is denied or the terms of the new license are limited, until the last day for applying for judicial review of the new license or a later date fixed by order of the reviewing court consistent with §91(2) of Act 306. {R 299.9521(1)(a) and (c) and (3)(a) and 40 CFR §270.30(b)}
- The licensee shall comply with the conditions specified in R 299.9521(1)(b)(i) to (iii) and 40 CFR §270.30(c) through (k), (l)(2), (3), (5), (7), and (11), and (m). {§§11123(3), 11146(1) and (2), and 11148(1) of Act 451 and R 299.9501(1), R 299.9516, R 299.9519, R 299.9521(1)(a) and (b) and (3)(a) and (b), R 299.9522, and R 299.9525}
- 4. The licensee shall give notice to the Division as soon as possible prior to any planned physical alterations or additions to the licensed facility. {R 299.9501, R 299.9519(1), and Part 6 of the Part 111 Rules}

E. SUBMITTAL DEADLINES

When the deadline for submittals required under this license falls on a weekend or legal state holiday, the deadline shall be extended to the next regular business day. This extension does not apply to the deadline for financial mechanisms and associated renewals, replacements, and extensions of financial mechanisms required under this license. The licensee may request extension of the deadlines for submittals required under this license. The licensee shall submit such requests at least five business days prior to the existing deadline for review and approval by the Division Director. Written extension requests shall include justification for each extension. {R 299.9519 and R 299.9521(3)(a)}

PART II GENERAL OPERATING CONDITIONS

A. GENERAL WASTE ANALYSIS

- The licensee shall ensure that any waste managed at the facility has been properly characterized pursuant to R 299.9302 and comply with the procedures described in the attached Chemical and Physical Analyses document and the Waste Analysis Plan, Attachments 1 and 2, respectively, of this license. {R 299.9605(1), and 40 CFR §264.13}
- 2. The waste profile form shall contain all the information listed in Figure A3.A.1 of the Waste Analysis Plan, Attachment 2, of the license, even if it means expansion of the waste profile form to include specific entries for each item listed to ensure each item has been considered and affirmative statements provided.

B. SECURITY

The licensee shall comply with the barrier, surveillance, and signage requirements of R 299.9605(1) and 40 CFR §264.14.

C. GENERAL INSPECTION REQUIREMENTS

- 1. The licensee shall inspect the facility in accordance with the Inspection Schedule, Attachment 3 of this license, and comply with the inspection requirements of R 299.9605(1) and 40 CFR §264.15.
- 2. The licensee shall develop and implement a procedure to ensure compliance with the requirements of R 299.9605(2) regarding transport vehicles and other containers leaving the facility.

D. PERSONNEL TRAINING

The licensee shall comply with the personnel training requirements of R 299.9605 and 40 CFR §264.16. The Personnel Training Program, Attachment 4 of this license, shall, at a minimum, cover all items in R 299.9605 and 40 CFR §264.16.

E. **PREPAREDNESS AND PREVENTION**

The licensee shall comply with the preparedness and prevention requirements of Preparedness and Prevention, Attachment 5 of this license, R 299.9606, and 40 CFR Part 264, Subpart C.

F. CONTINGENCY PLAN

The licensee shall comply with the contingency plan requirements of R 299.9607 and 40 CFR Part 264, Subpart D. The Contingency Plan, Attachment 6 of this license, and the prescribed emergency procedures shall be immediately implemented by the licensee whenever there is a fire, explosion, or other release of hazardous waste or hazardous waste

Part II General Operating Conditions

constituents that threatens or could threaten human health or the environment, or if the licensee has knowledge that a spill has reached surface water or groundwater.

G. DUTY TO MITIGATE

Upon notification from the Division Director or his or her designee that an activity at the facility may present an imminent and substantial endangerment to human health or the environment, the licensee shall immediately comply with an order issued by the Division Director pursuant to §11148(1) of Act 451 to halt such activity and conduct other activities as required by the Division Director to 6eliminate the said endangerment. The licensee shall not resume the halted activity without the prior written approval from the Division Director. {§11148 of Act 451 and R 299.9521(3)(b)}

H. MANIFEST SYSTEM

The licensee shall comply with the manifest requirements of R 299.9304, R 299.9305, and R 299.9608.

I. RECORD KEEPING AND REPORTING

- 1. The licensee shall comply with the written operating record requirements of R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I.
- 2. The licensee shall comply with the biennial report requirements of R 299.9610. {R 299.9521(1)(a) and 40 CFR §270.30(I)(9)}
- 3. The licensee shall submit the results of all environmental monitoring required by this license and any additional environmental sampling or analysis conducted beyond that required by this license to the Division Director within 60 days after any sample collection. The information shall be provided in the form of an Environmental Monitoring Report, using a format approved by the Division Director. The Report shall include, at a minimum, the laboratory report in pdf format and the data in an electronic spreadsheet format. {R 299.9521(1)(a) and R 299.9521(3)(b) and 40 CFR §270.30(l)(4)}
- 4. The licensee shall provide environmental monitoring information or data that is required pursuant to this license, to an authorized representative of an environmental or emergency response department of the city of Belleville or county of Wayne, who requests such information or data and that has jurisdiction over the facility. Such information or data shall be made available on the same day the licensee forwards this information to the Division Director. {R 299.9521(3)(b)}
- 5. The licensee shall immediately report to the Division Director any noncompliance with the license that may endanger human health or the environment by doing both of the following:
 - (a) The licensee shall immediately notify the Hazardous Waste Section at 517-284-6838, if the noncompliance occurs Monday through Friday during the period of 8:00 a.m. to 5:00 p.m., except state holidays, or by calling EGLE's Pollution

Emergency Alerting System (PEAS) at 1-800-292-4706 during all other times. This notice shall include the following:

- Information concerning the fire, explosion, release, or discharge of any hazardous waste or hazardous waste constituent that could threaten human health or the environment, that has reached surface water or groundwater, or that may endanger public drinking water supplies or the environment; and
- (ii) A description of the occurrence and its cause, including all the information outlined in R 299.9607(2)(a)-(i).
- (b) The licensee shall also follow up the verbal notice by providing a written report to the Division Director within five days of the time the licensee becomes aware of the circumstances. The written report shall contain all of the information in Condition II.I.5.(a)(i)-(ii) of this license along with a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance and when those activities occurred or will occur. The Division Director may waive the 5-day written notice requirement in favor of submittal of a written report within 15 days of the time the licensee becomes aware of the circumstances.

{R 299.9521(1)(a) and R 299.9607 and 40 CFR §270.30(I)(6)}

- 6. The licensee shall report all other instances of noncompliance with this license, Part 111 of Act 451, the rules, and any other applicable environmental laws or rules that apply to the licensed facility, at the time monitoring reports required by this license are submitted or within 30 days, whichever is sooner. The reports shall contain the information listed in Condition II.I.5. of this license. {R 299.9521(1)(a) and 40 CFR §270.30(l)(10)}
- 7. The licensee may make minor modifications to the forms contained in the attachments to this license. The modifications may include changing the format, updating existing references and information, adding necessary information, and changing certification and notification information in accordance with Part 111 of Act 451 and its rules and RCRA and its regulations. The licensee shall submit the modifications to the Division Director prior to implementing the use of the modified form(s). If the Division Director does not reject or require revision of the modified form(s) within 14 days of receipt, the licensee shall implement use of the modified form(s) and the form(s) shall be incorporated into this license as a replacement for the existing form(s).

J. CLOSURE

The licensee shall comply with the closure requirements of R 299.9613. The licensee shall close the facility in accordance with the Closure Plan, Attachment 7 of this license, all other applicable requirements of this license, and all other applicable laws. {R 299.9613 and 40 CFR Part 264, Subpart G, except 40 CFR §§264.112(d)(1), 264.115, and 264.120}

K. WASTE MINIMIZATION

The licensee shall certify, at least annually, that the licensee has a hazardous waste minimization program in place. {R 299.9609(1)(a) and 40 CFR §264.73(b)(9)}

L. LAND DISPOSAL RESTRICTIONS

The licensee shall comply with all the requirements of 40 CFR Part 268. {R 299.9627 and 40 CFR Part 268}

M. AIR EMISSION STANDARDS

- 1. The licensee shall comply with the requirements of 40 CFR Part 264, Subpart CC and Subpart CC Air Emissions from Tanks, Containers, and Surface Impoundments, Attachment 8 of this license.
- 2. The licensee shall notify the Division Director of any hazardous waste management unit or equipment that becomes subject to the requirements of 40 CFR Part 264, Subparts AA, BB, and/or CC within 30 days of the start of the regulated activity. If any hazardous waste management unit or equipment becomes subject to the requirements of 40 CFR, Part 264, Subparts AA, BB, and/or CC, the licensee shall request modification of this license, as appropriate.

{R 299.9630, R 299.9631, and R 299.9634, and 40 CFR Part 264, Subparts AA, BB, and CC}

N. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The licensee shall maintain at the facility the following documents and amendments required by this license, until closure/postclosure is completed, certified by an independent registered professional engineer, and the facility is released from financial assurance requirements for closure/postclosure by the Director:

- 1. Waste Analysis Plan, including Quality Assurance/Quality Control (QA/QC) Plans.
- 2. Inspection Schedules and records.
- 3. Personnel Training Program documents and records.
- 4. Contingency Plan.
- 5. Closure Plan.
- 6. Operating record.
- 7. Site Security Plan.
- 8. Facility engineering plans and specifications.
- 9. Record keeping procedures.
- 10. Environmental monitoring plans, including Sampling and Analysis Plans and QA/QC Plans.
- 11. Environmental monitoring data and statistical records.

Part II General Operating Conditions

- 12. Preventative procedures (Personnel Protection Plan).
- 13. Hazardous waste minimization program certification

{R 299.9521(3)(a)}

O. ENGINEERING PLANS

The licensee shall construct, operate, and maintain the facility in accordance with the Engineering Plans and Specifications, Attachment 9 of this license, and any modifications to those plans shall be made in accordance with this license.

PART III CONTAINER STORAGE CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste container storage areas at the facility, denoted as Rooms 109A, 109B, 111, 113, 116, and 117, as shown in Engineering Plans and Specifications, Attachment 9 of this license are covered by this license. Any expansion or enlargement beyond the facility boundary shown in Engineering Plans and Specifications, Attachment 9 of this license or beyond the 13,200-gallon storage design capacity requires a new operating license for the expansion, enlargement, or alteration of an existing facility from the Director. $\{R 299.9521(1)(b)\}$

B. WASTE IDENTIFICATION AND QUANTITY

- 1. The licensee shall store only hazardous wastes that are generated by persons performing work for the licensee at its campuses or at properties that the licensee owns or leases.
- 2. The licensee may store no more than a total volume of 13,200 gallons of the hazardous wastes listed in List of Acceptable Hazardous Wastes, Attachment 10 of this license in containers at the facility, subject to the terms of this license. The maximum number of containers of hazardous waste that may be stored at the facility is 240 55-gallon containers, or an equivalent volume in other size containers. {R 299.9521(2)(d)}
- 3. The type of hazardous wastes that may be stored in the individual container storage areas at the facility shall be restricted to those identified below. {R 299.9521(2)(d)}

Container Storage	Hazardous Wastes Managed
Area Room Number	
109A	Corrosive bases and reactive wastes
109B	Toxic wastes
111	Corrosive acids
113	Toxic and oxidizer wastes
116	Toxic wastes
117	Ignitable and toxic wastes

4. The maximum volume and number of 55-gallon containers, or an equivalent volume in other size containers, of hazardous waste that may be stored in the individual container storage areas at the facility shall be restricted as follows: {R 299.9521(2)(d)}

Container Storage	Hazardous Waste Container	Number of	
Area Room Number	Storage Design Capacity	55-Gallon Containers	
109A	880 gallons	16	
109B	2,530 gallons	46	
111	880 gallons	16	
113	2,310 gallons	42	

116	4,730 gallons	86
117	1,870 gallons	34

C. USE AND MANAGEMENT OF CONTAINERS

- 1. The licensee shall manage all containers in compliance with R 299.9521(3)(b), R 299.9614, and R 299.9627 and 40 CFR §§264.171, 264.172, 264.173, and 268.50(a)(2)(i).
- 2. The licensee shall only place containers, stacked no greater than two high, into the hazardous waste container storage area referenced in Condition III.A. of this license in accordance with the configuration shown in Drawing Sheet No. A2.0 in Engineering Plans and Specifications, Attachment 9 of this license, or an alternate configuration approved by the Division Director. {R 299.9521(3)(b)}
- 3. The licensee shall operate and maintain the containment system in accordance with the requirements of R 299.9614 and 40 CFR §264.175, and the attached plans and specifications in Engineering Plans and Specifications, Attachment 9 of this license.

D. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

- 1. The licensee shall locate containers holding ignitable or reactive wastes in accordance with R 299.9614 and 40 CFR §264.176.
- 2. The licensee shall take precautions to prevent the accidental ignition or reaction of ignitable or reactive wastes by following the procedures specified in Waste Analysis Plan and Preparedness and Prevention, Attachments 1 and 4, respectively, of this license. The licensee shall document compliance with this condition and place this documentation in the operating record. {R 299.9605 and 40 CFR §264.17(a) and (c)}

E. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

- 1. The licensee is prohibited from placing incompatible wastes or incompatible wastes and materials in the same container. {R 299.9521(2)(d) and (3)(b)}
- 2. The licensee shall prevent the placement of hazardous waste in an unwashed container that previously held an incompatible waste or material. {R 299.9614 and 40 CFR §264.177(b)}
- The licensee shall document compliance with Conditions III.E.1. and III.E.2. of this license and place this documentation in the operating record. {R 299.9605 and 40 CFR §264.17(c)}
- 4. The licensee shall separate containers of incompatible wastes as indicated in the procedures contained in Waste Analyses Plan and Preparedness and Prevention, Attachments 1 and 4, respectively, of this license. {R 299.9614 and 40 CFR §264.177(c)}

F. DISPOSITION OF ACCUMULATED LIQUIDS

The licensee shall remove all liquids accumulated in the containment system within 24 hours of detection and manage the liquids in accordance with the requirements of Part 111 of Act 451 and the rules, as specified in Preparedness and Prevention and Contingency Plan, Attachment 5 and 6, respectively, of this license. {R 299.9521(3)(b) and R 299.9614(1)(a) and 40 CFR §264.175(b)(5)}

PART IV CORRECTIVE ACTION CONDITIONS

A. CORRECTIVE ACTION AT THE FACILITY

- 1. The licensee shall implement corrective action for all releases of a contaminant from any waste management unit (WMU) at the facility, regardless of when the contaminant may have been placed in or released from the WMU. For the purposes of this license, the term "corrective action" means an action determined by the Division Director to be necessary to protect the public health, safety, welfare, or the environment, and includes, but is not limited to, investigation, evaluation, cleanup, removal, remediation, monitoring, containment, isolation, treatment, storage, management, the temporary relocation of people, and the provision of alternative water supplies, or any corrective action allowed under Title II of the federal Solid Waste Disposal Act, PL 89-272, as amended, or regulations promulgated pursuant to that act. For the purposes of this license, the process outlined in Part 111 of Act 451 and the environmental protection standards adopted in R 299.9629 shall be used to satisfy the corrective action obligations under this license. {§§11102 and 11115a of Act 451 and R 299.9629}
- 2. To the extent that a release of a hazardous substance, as defined in §20101(x) of Act 451, that is not also a contaminant, as defined in §11102(2) of Act 451, is discovered while performing corrective action under this license, the licensee shall take concurrent actions as necessary to address the Part 201, Environmental Remediation, of Act 451 remedial obligations for that release. {R 299.9521(3)(b)}

B. CORRECTIVE ACTION BEYOND THE FACILITY BOUNDARY

The licensee shall implement corrective action beyond the facility in accordance with §11115a of Act 451 and R 299.9629(2).

C. IDENTIFICATION OF WASTE MANAGEMENT UNITS [AND AREAS OF CONCERN]

The WMUs at the facility are identified below:

- WMU-1 Beck Road Storage Facility Building 2201 is a two-story, multiple-room building at the facility that is used to store both low level radioactive waste and mixed waste.
- WMU-2 Area of Concern A Former fuel oil underground storage tank farm consisting of two 9,000-gallon, steel underground storage tanks that were in operation from 1949 to 1960.
- WMU-3 Area of Concern B One 3,000-gallon, steel underground storage tank formerly used to store gasoline from 1949 to 1960.
- WMU-4 Area of Concern C Area near the northeast corner of the automotive maintenance building at the facility that contains low concentrations of polynuclear aromatic hydrocarbons at a depth of approximately four-to-six feet.

Part IV Corrective Action Conditions

- 1. The following WMUs do not require corrective action at this time:
 - (a) The following WMU, identified in the Preliminary Assessment/Visual Site Inspection Report for the University of Michigan Beck Road Storage Facility, dated April 16, 1998 (PA/VSI), that is currently operating pursuant to the act and its rules with no evidence of a release of any contaminants. Corrective action may be required when the unit undergoes final closure.
 - (i) WMU-1 Beck Road Storage Facility
 - (b) The following WMU, identified in the PA/VSI, based on the design of the unit and available information that indicates that no known or suspected releases of contaminants from the unit have occurred.
 - (i) WMU-2 Area of Concern A
 - (c) The following WMUs, identified in the PA/VSI; Corrective Measures Implementation Final Report, dated April 18, 2003 (CMI Final Report); Operation and Maintenance Plan for Waste Management Units 3 and 4 Inspection, Planned Excavation and Maintenance Protocol, dated August 17, 2004 (O&M Plan); and subsequent corrective action related documents approved by the Division Director on May 16, 2005, because the WMUs have undergone corrective action pursuant to the act and its rules and met the criteria for limited residential cleanups, provided the licensee complies with all of the requirements necessary to maintain this level of cleanup.
 - (i) WMU-3 Area of Concern B
 - (ii) WMU-4 Area of Concern C

{§§11102 and 11115a of Act 451 and R 299.9521(3)(b) and R 299.9629}

- 2. Within 30 days of discovery of a new WMU or a release of a contaminant from a new WMU, the licensee shall provide written notification to the Division Director. The written notification shall include all the following information:
 - (a) The location of the unit on the facility topographic map.
 - (b) The designation of the type of unit.
 - (c) The general dimensions and structural description, including any available drawings of the unit.
 - (d) The date the unit was operated.
 - (e) Specification of all waste(s) that have been managed in the unit.
 - (f) All available information pertaining to any release of a contaminant from the unit.

Part IV Corrective Action Conditions

3. Based on a review of all the information provided in Condition IV.C.2 of this license, the Division Director may require corrective action for the newly identified WMU. The licensee shall submit a written Investigation Work Plan to the Division Director within 60 days of written notification by the Division Director that corrective action for the unit is required. {§§11102 and 11115a of Act 451 and R 299.9504(1), R 299.9508(1)(b), and R 299.9629 and 40 CFR §270.14(d)}

D. OPERATION AND MAINTENANCE PLAN FOR WASTE MANAGEMENT UNITS 3 AND 4

The licensee shall comply with the O&M Plan for Units 3 and 4 that is incorporated into this license as Attachment 11. {Sections 11102 and 11115a of Act 451 and R 299.9521(3)(b) and R 299.9629}.

E. DETERMINATION OF NO FURTHER ACTION

- 1. The licensee shall continue corrective action measures to the extent necessary to ensure that the applicable environmental protection standards adopted in Part 111 of Act 451 are met if the limits are not less stringent than allowed pursuant to the provisions of RCRA.
- 2. Based on the results of the Corrective Action Investigation and other relevant information, the licensee shall submit a written request for a license minor modification to the Division Director if the licensee wishes to terminate corrective action for a specific WMU identified in Condition IV.C of this license. The licensee must demonstrate that there have been no releases of a contaminant(s) from the WMU and that the WMU does not pose a threat to public health, safety, welfare, or the environment.
- 3. Based on the results of the Corrective Action Investigation and other relevant information, the licensee shall submit a written request for a license major modification to the Division Director if the licensee wishes to terminate facility-wide corrective action. The licensee must conclusively demonstrate that there have been no releases of a contaminant(s) from any of the WMU at the facility and that none of the WMUs pose a threat to public health, safety, welfare, or the environment.
- 4. If, based upon a review of the licensee's request for a license modification pursuant to Condition IV.E.2 or IV.E.3 of this license, the results of the completed Corrective Action Investigation, and other relevant information, the Division Director determines that the releases or suspected releases of a contaminant(s) do not exist and that the WMU(s) do not pose a threat to public health, safety, welfare, or the environment, the Division Director will approve the requested modification, as appropriate.
- 5. A determination of no further action shall not preclude the Division Director from requiring continued or periodic monitoring of air, soil, groundwater, or surface water, if necessary, to protect public health, safety, welfare, or the environment, when facility-specific circumstances indicate that potential or actual releases of a contaminant(s) may occur.

Part IV Corrective Action Conditions

6. A determination of no further action shall not preclude the Division Director from requiring further corrective action in the future if new information or subsequent analysis indicates that a release or potential release of a contaminant(s) from a WMU at the facility may pose a threat to public health, safety, welfare, or the environment. The Division Director will initiate the necessary license modifications if further corrective action is required in the future.

{§§11102 and 11115a of Act 451 and R 299.9629(2)}

F. CORRECTIVE ACTION DOCUMENTS RETENTION

The licensee shall maintain all corrective action documents required by this license at the facility. The documents shall be maintained for the operating life of the facility or until the facility is released from financial assurance requirements for corrective action by the Director, whichever is longer. The licensee shall offer such documents to the Division Director prior to discarding those documents. {§§11102 and 11115a of Act 451 and R 299.9629}

Attachment 1

Chemical and Physical Analyses

FORM EQP 5111 ATTACHMENT TEMPLATE A2 CHEMICAL AND PHYSICAL ANALYSES

This document is an attachment to the Michigan Department of Environmental Quality's *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being R 299.9504, R 299.9508, and R 299.9605, and Title 40 of the Code of Federal Regulations (CFR) §§264.13(a) and 270.14(b)(2), establish requirements for chemical and physical analyses at hazardous waste management facilities. All references to the 40 CFR citations specified herein are adopted by reference in R 299.11003

This license application template addresses requirements for chemical and physical analyses at the hazardous waste management facility for the Beck Road Facility in Belleville, Michigan. The information included in the template demonstrates how the facility meets the chemical and physical analyses requirements for hazardous waste management facilities.

Type of applicant: (Check as appropriate)

- Applicant for Operating License for Existing Facility
- Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

Type of Facility: (Check as appropriate)

- On-site Facility (generates hazardous waste)
- Off-site Facility (accepts hazardous waste from other generators)

Type of Units to be Constructed or Operated at the Facility: (Check as appropriate)

- Containers
 Tank(s)
 Waste Pile(s)
 Landfilled Waste
 - □ Waste Incineration
 - Land Treatment
 - Miscellaneous Unit(s)
 - Boilers and Industrial Furnaces

This template is organized as follows:

- A2.A WASTE DESCRIPTION
 - A2.A.1 Waste Description (generate on-site wastes)
 - A2.A.2 Waste Description (receive wastes from off-site generators)
 - A2.A.2(a) Procedures for Obtaining Chemical and Physical Analyses from Off-Site Generators
 - Table A2.A.2 Hazardous Wastes Accepted at the Facility
- A2.B CONTAINERIZED WASTE
 - A2.B.1 Wastes Compatible with Container
 - A2.B.2 Containers without Secondary Containment System
- Attachment A2-1 Fingerprinting Documentation Sheet
- Attachment A2-2 Beck Road Facility Operation's Log
- Attachment A2-3 Chemical Compatibility Chart
- Attachment A2-4 Low Level Radioactive Waste (LLRW) Manifest
- Attachment A2-5 Hazardous / Chemical Waste Manifest
- Attachment A2-6 Precedence of Hazard Table
- Attachment A2-7 Chemical Compatibility Chart (for Containers)

A2.A WASTE DESCRIPTION

[R 299.9504(1)(c) and 40 CFR §270.14(b)(2)]

A2.A.1 Waste Description (generate on-site wastes)

[R 299.9504(1)(c) and 40 CFR §270.14(b)(2)]

Waste generated on-site will be incidental to the operation of the storage facility. See Table A2.A.2 for hazardous waste accepted at the facility.

A2.A.2 Waste Description (receive wastes from off-site generators) [R 299.9504(1)(c) and 40 CFR §270.14(b)(2)]

The wastes stored at Beck Road Facility are generated during teaching, research and support operations conducted at the authorized U-M facilities shown on Table A1-1 of Section A1, General Facility Description. Hazardous and mixed waste is stored in the RCRA licensed waste management units in compatible containers, which may include 5-, 15-, 30- and 55-gallon plastic, metal or fiber drums; or metal, and carton fiber boxes. Low level radioactive waste (LLRW) is stored in non- RCRA licensed areas in compatible containers, which may include 5-, 15-, 30- and 55-gallon plastic, metal or fiber drums; or metal or fiber drums; or metal and carton fiber boxes.

The following is a summary of hazardous and mixed waste and LLRW that may be stored at the facility.

- Liquids and solids containing RCRA and Michigan Act 451 regulated constituents.
- Liquids and solids containing short-lived or long-lived radioisotopes mixed with RCRA and Michigan Act 451 regulated constituents.
- Aqueous liquids and solids containing RCRA, and Michigan Act 451 regulated constituents being held for Nuclear Regulatory Commission (NRC) decay to background or deregulation.
- Aqueous liquids containing short-lived or long-lived radioisotopes in scintillation vials.
- Liquid and solid LLRW containing short-lived or long-lived radioisotopes.
- Sealed and plated sources, stock vials.

A2.A.2(a) Procedures for Obtaining Chemical and Physical Analyses from Off-Site Generators

U-M Hazmat personnel have extensive involvement with the hazardous and mixed waste destined for the Beck Road Facility. Hazardous and mixed waste is transported from the North Campus Transfer Facility (NCTF) or other U-M generator sites to the Beck Road Facility. Hazmat personnel perform specific activities at the site of generation, at the transfer facility and at the storage facility, and act as transporter from facility to facility. Activities are often duplicated at each step in the process to ensure proper and safe handling of the waste. A discussion of the activities performed at the generator site, the transfer facility and the storage facility follows.

At the site of generation, Hazmat personnel provide consultation on collection, labeling, manifesting and packaging of hazardous and mixed waste. The generator labels the waste and completes the U-M internal manifests. At the time of collection, Hazmat personnel perform visual inspection/fingerprinting, label and manifest reviews and completion of the Uniform Hazardous Waste Manifest and LDR notifications. Hazmat personnel perform all record keeping activities. Hazmat personnel act as the transporter from the site of generation to the transfer facility and to the Beck Road Facility. Hazmat personnel verify compatibility and commingle the accepted waste at the Beck Road Facility.

Prior to pick up, the Hazmat staff obtains a waste profile form, prepared by the generating laboratory, for each container of waste collected. The waste profile form consists of either the U-M Low Level Radioactive Waste (LLRW) Manifest (Attachment A2-4) or the U-M Hazardous / Chemical Waste Manifest (Attachment A2-5), as appropriate.

Re-characterization occurs with each collection of waste. A completed U-M internal manifest (waste profile form) will provide complete characterization of the waste prepared for collection.

Attachment Template A2, Chemical and Physical Analyses Form EQP 5111 (8-2-2021) Page 3 of 33 This documentation provides specific waste stream characterization by knowledge of the raw material and the waste generation process. Proper procedures for segregation will be in accordance with the "Precedence of Hazard Table" in 49 CFR §173.2a (Attachment A2-6), and the "Chemical Compatibility Chart, EPA-600/2-80-076 April 1980, A Method for Determining the Compatibility of Chemical Mixtures" (Attachment A2-3).

Additional testing, if indicated, and testing of unknowns is conducted through a commercial contract laboratory.

The hazardous characteristics and the basis for the hazardous waste designation for the hazardous and mixed waste generated at the U-M facilities and stored at the Beck Road Facility are described in Table A2.A.2.

The following describes in greater detail which activities are performed at the site of generation, at the transfer facility and at the storage facility.

GENERATOR SITE

- U-M manifest check: Check for EPA ID number, proper shipping name, waste codes, isotope and activity, volume, room location, generator's signature on manifest.
- Discussion with the generator, as necessary, for validation/confirmation of the waste generation process and the waste constituents.
- Label check: Ensure both radioactive label and RCRA/MI Act 451 labels are complete and accurate.
- Review of waste code suitability: Verify that the transfer facility (when applicable) and storage facility can accept waste codes generated. Each facility's permit is used as guidance in this review.
- Fingerprinting: U-M conducts visual inspection of each container and a visual observation of the waste, each time, at the time of collection. Inspection of the container assesses the condition of the waste container for safe transport to the storage facility. Observation of the waste includes the container type, the color, the presence of phasing, and the volume and the waste code(s) assigned.
- If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with the generator and may require analytical testing through a commercial contract laboratory.
- Complete the generator section of the Waste Fingerprinting Documentation Sheet (Attachment A2-1) for each of the containers (jug, box, pail, etc.) referenced on the manifest. For each container of waste, indicate in columns provided, the BRSF (Beck Road Facility) storage area designation; the container type; the color of the waste; if a phase is observed in the waste (yes or no); the volume of waste; and the waste code(s) assigned. Initial and date the sheet.
- Completion of the Uniform Hazardous Waste Manifest and LDR notifications.
- Prepare waste for transport.

Attachment Template A2, Chemical and Physical Analyses Form EQP 5111 (8-2-2021) Page 4 of 33 TRANSFER FACILITY

- Visual inspection of container for integrity.
- Enter waste onto the Operation's Log.
- Move to appropriate room in transfer facility.
- Manifest activities: Make appropriate copies of U-M internal manifest, Uniform Hazardous Waste Manifest and LDR notifications for transfer facility and storage facility records. File originals and copies in appropriate locations.
- Perform radiological evaluation, as appropriate.
- Prior to shipping to storage facility, sign waste off Operation's Log, prepare waste for transport, sign appropriate transporter box on Uniform Hazardous Waste Manifest, make appropriate copy of Uniform Hazardous Waste Manifest transporter sheet, if required. File transporter copy in appropriate location, if required.

STORAGE FACILITY

- Evaluation of U-M internal manifest, Uniform Hazardous Waste Manifest and LDR notifications to ensure accuracy and completeness.
- Evaluation of radioactive label and RCRA/MI Act 451 label to ensure that both are complete and accurate.
- Visual observation of waste, fingerprinting: Complete the BRSF (Beck Road Facility) section of the Waste Fingerprinting Documentation Sheet (Attachment A2-1) for each of the containers (jug, box, pail, etc.) referenced on the manifest. For each container of waste, indicate in columns provided, the BRSF (Beck Road Facility) storage area designation; the container type; the color of the waste; if a phase is observed in the waste (yes or no); the volume of waste; and the waste code(s) assigned. Initial and date the sheet.
- If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with the generator and may require analytical testing through a commercial contract laboratory.
- Accept or deny waste, note discrepancies, sign manifest.
- Sign waste onto Operation's Log (Attachment A2-2).
- Move waste to designated room, or area.
- Evaluation of isotope compatibility: Segregate short-lived and long-lived isotopes, as appropriate.
- Evaluation of compatibility of chemical constituents and waste codes for drum assignment: Each waste drum has a chemical constituent sheet associated with it that lists the chemicals contained in that drum. This sheet is updated prior to new waste being commingled into a drum. The constituent sheet and the constituents of the new waste are evaluated for compatibility using the "Chemical Compatibility Chart, EPA-600/2-80-076 April 1980, A Method for Determining the Compatibility of Chemical Mixtures" (Attachment A2-3). Commingle like waste codes as possible.
- Ensure receiving drum is updated and properly marked and labeled: drum number, isotopes contained in drum, EPA ID number, proper shipping name, waste codes, accumulation start date for specific drum (will be date drum first receives waste).

Attachment Template A2, Chemical and Physical Analyses Form EQP 5111 (8-2-2021) Page 5 of 33

- Update Operation's Log to indicate receiving drum.
 □ Update receiving drum worksheet.
- Commingle waste.
- Ensure drum is closed.
- Ensure waste profile sheet, and all other associated documents, are filed at the storage facility and/or returned to North Campus Transfer Facility, as appropriate.
- Return appropriate copies of Uniform Hazardous Waste Manifest to NCTF.

Characterization occurs with each collection of waste. The completed waste profile forms (U-M LLRW Manifest or U-M Hazardous / Chemical Waste Manifest and Fingerprinting Documentation Sheet) will provide complete characterization and profiling of the waste prepared for collection.

TABLE A2.A.2 HAZARDOUS WASTES ACCEPTED AT THE FACILITY

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
F002	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F003	Spent solvents generated by teaching, research and supporting operations	Ignitability	Listed wastes; ignitable waste hazard code	Room 117
F004	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F005	Spent solvents generated by teaching, research and supporting operations	Ignitability, toxicity	Listed wastes; ignitable and toxic waste hazard codes	Room 117
D001	Ignitables generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 117
D001	Oxidizers generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 113
D002	Corrosive acids generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 111
D002	Corrosive bases generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 109A

D003	Reactives generated by teaching, research and supporting operations	Reactivity	Reactive waste hazard code	Room 109A
D004	Waste containing arsenic generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D005	Waste containing barium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D006	Waste containing cadmium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D007	Waste containing chromium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D008	Waste containing lead generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D009	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D010	Waste containing selenium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D011	Waste containing silver generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D018	Waste containing benzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

D019	Waste containing carbon tetrachloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D021	Waste containing chlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D022	Waste containing chloroform generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D023	Waste containing o-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D024	Waste containing m-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D025	Waste containing p-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D026	Waste containing cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D027	Waste containing 1,4dichlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D028	Waste containing 1,2dichloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

D029	Waste containing 1,1dichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D030	Waste containing 2,4dinitrotoluene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D032	Waste containing hexachlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D033	Waste containing hexachlorobutadiene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D034	Waste containing hexachloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D035	Waste containing methyl ethyl ketone generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D036	Waste containing nitrobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D038	Waste containing pyridine generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

D039	Waste containing tetrachloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D040	Waste containing trichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D041	Waste containing 2,4,5trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D042	Waste containing 2,4,6trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D043	Waste containing vinyl chloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
U138	Waste containing methyl iodide generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116
U151	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116

A2.B CONTAINERIZED WASTE

[R 299.9504(1)(c) and 40 CFR §264.172]

A2.B.1 Wastes Compatible with Container

Hazardous and mixed wastes are commingled into new US DOT UN rated performance oriented packagings constructed of HDPE, or other compatible material. Hazardous and mixed waste may remain in the original container and not be commingled; waste and container compatibility is evaluated. Waste containers are kept closed, except when adding or removing waste. Waste containers holding flammable liquids are grounded to a grounding strip, while commingling is occurring. Hazardous and mixed wastes are segregated on site based on hazard characteristics. Waste containers are inspected at least weekly to evaluate their condition. A chemical compatibility chart (for containers) is available for reference (Attachment A2-7).

A2.B.2 Containers without Secondary Containment System

Hazardous and mixed waste is stored within the permitted area, which is designed as a secondary containment system. The secondary containment system is described in Template C1, Use and Management of Containers.

If a spill occurs, the spilled material is contained in the secondary containment area and retrieved using sorbent material. Checking the labels or markings on the leaking container identifies the spilled material. In the unlikely event that the specific spill source cannot be identified, representative samples are taken in conformance with *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (EPA Publication No. SW-846).* The sample is then analyzed for the suspected hazardous waste constituents based on the spill location (potential sources) and visual observations of the materials' characteristics. The analytical procedures used are those recommended by EPA Publication SW-846. If no applicable methods are provided in SW-846, an American Society for Testing and Materials (ASTM) method will be used.

University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Chemical and Physical Analyses, Revision 0

Attachment A2-1 Fingerprinting Documentation Sheet

University of Michigan Beck Road Storage Facility Fingerprinting Documentation Sheet

				U-M Manifest No.			
BRSF Area	Cont. No.		Container Type	Color	Phase Observed	Vol. (L)	Waste Codes
	1	Generator					
	1	BRSF					
	2	Generator					
	2	BRSF					
	3	Generator					
	3	BRSF					
	4	Generator					
	4	BRSF					
	5	Generator					
	5	BRSF					
	6	Generator					
	6	BRSF					
	7	Generator					
	7	BRSF					
	8	Generator					
	8	BRSF					

Comments:

	Initials	Date
Generator		
BRSF		

University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Chemical and Physical Analyses, Revision 0

Attachment A2-2 Beck Road Facility Operation's Log
Operations Log

EPA ID: MIR 000 001 834 University of Michigan Environment, Health and Safety (EHS) Beck Road Facility 8501 Beck Road Belleville, Michigan 48111

Authorized Handling Code S01

Month / Year _____/____

Date In	Manifest Number	Generator Name	Number of Containers	Total # of Liters	Waste Codes(s)	Drum MW #	Off Site Ship. Date	Initials

Attachment A2-2, Beck Road Facility, Operation's Log Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 16 of 33

Attachment A2-3 Chemical Compatibility Chart



Attachment A2-3, Chemical Compatibility Chart

Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 18 of 33

Attachment A2-4 Low Level Radioactive Waste (LLRW) Manifest

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s	SCINILLATION VIALS (Indicate on the box whether the vials are plastic or glass) RQ Box Activity Activity Activity Plastic Identify Scintillation Cocknall S # (kBq) (uCi) (kBq) (uCi) (kBq) (uCi) Identify Scintillation Cocknall										Cocktaal												
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Attachment A2-4 Low Level Radioactive Waste (LLRW) Manifest

Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 20 of 33

90 - sodium citrate

73 - sodium hydroxide 74 - sodium hypochlorite

124 - sodium lauryl sulfate

92 · sodium phosphate

125 sodium thiosulfate

76 · tetrachiorobenzene

77 · tetrachloroethene

79 - trichloroacetic acid

128 · tetrahydrofuran

(TCA)

87 · TRIS buffer

83 · urea

85 · xylene

99 · OTHER

81 · uranyl acetate

82 - uranyl oltrate

84 - vinyl chloride

130 · xylene cyanol

86 · zinc compounds

ABOVE)

(specify below)

(SEE INSTRUCTIONS

80 - trichloroethylene

129 - trifluoracetic acid

78 · toluene

123 · sodium lodide

(SLS)

75 · sulfuric acid

126 · sucrose

127 · taurine

(SDS)

93 · sodium docecyl sulfate

INSTRUCTIONS TO IDENTIFY CHEMICALS IN LIQUIDS

If chemical is listed below, please enter corresponding number code and approximate chemical concentration in % by volume in Section B on the front side of the manifest.

If chemical constituents are not listed below, please enter number code 99 and approximate concentration in % by volume in Section B on the front side of manifest, and list chemicals name(s) and concentrations(s) in Section E below.

00 - aqueous

2

- (water based with no added chemicals)
- 01 acetamide
- 02 · acetic acid
- 100 acetic anhydride
- 03 + acetone
- 04 + acetonitrile
- 05 · acrylamide 07 · ammonium compounds
- (specify below) 08 · arsenic compounds
- (specify below) 09 · barium compounds
- (specify below)
- 10 · benzene
- 11 · benzo(a)pyrene
- 95 blood
- 88 · boric acid
- 101 bovine albumin 102 - bromophenol blue dye
- 12 butanol
- 13 cadmium compounds
- (specify below)
- 103 · calcium chloride
- 104 · calcium sulfate
- 14 · carbon tetrachloride 16 chlorobenzene
- 17 chloroform
- 18 chlorophenol
- 105 choline chloride
- 19 · chromium compounds
- (specily below)
- 106 · citric acid
- 107 · coomassie blue dye 20 · copper compounds
- (specify below)
- 96 · culture medium

Jug # 1 2

3

4

5

6 7 8

S

E

C

E

22 + cyclohexane 23 - DOD/DOT 108 · dextran sulfate 24 · dichlorobenzene

21 - cvanide compounds

(specify below)

- 25 · dimethylsulfoxide
- (DMSO) 109 · DMEM media
- 26 · epinephrine 27 · ethanol
- 28 · ether 29 + ethidium bromide
 - (EtBr)
- 30 · ethyl acetate
 - 31 · ethylbenzene
 - 32 · ethylene diamine tetraacetic acid (EDTA)
 - tetraaceto ato teorem 33 ethylene glycol-bis(8-amino ethyl ether)- 64 phosphoric acid
- tetraacetic acid (EGTA) 34 - ethyl ether
 - 35 ethylphenol
- 38 formamide
- 39 formic acid 40 glutaraldehyde
- 110 glycine 111 - hams F12 media
- 112 HEPES buffer 41 - heptane
- 113 hexane

- 114 · isoamyl alcohol
- 46 isobutanol
- 47 Isopropanol

- 48 lead compounds (specify below) 115 · magnesium chloride 97 - magnesium phosphate
- 116 · magnesium suifate
- 49 mercaptoethanol 50 · mercury compounds
- (specify below) 51 - methanol
- 117 · methoxyethanol
 - 54 methyl benzene
- 52 · methylene chloride
- 53 methyl ethyl ketone 58 naphthalene
- 59 · nitric acid 60 · nitrobenzene
- 118 · perchloric acid

- 65 · phthalates
- 91 · potassium chloride
- 66 · potassium permanganate
- 35 Ethyphenov 36 formaldehyde 119 potastium phosphate

 - 67 propanoic acid 68 pyridine 94 saline sodium citrate (SSC)
 - 69 + scintillation fluid (specify below)
 - 70 selenium compounds
 - (specify below)
 - 71 · silver compounds (specify below)
 - 43 hydrochloric acid (HCI)
 (specify below)

 44 hydroxybenzene
 120 sodium acetate
 - 72 · sodium azide
 - 121 sodium bicarbonate
 - 122 · sodium carbonate
 - 89 · sodium chloride
- CODE 99 CHEMICAL NAMES(S), % BY VOL.

Attachment A2-4 Low Level Radioactive Waste (LLRW) Manifest

Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 21 of 33

Attachment A2-5 Hazardous / Chemical Waste Manifest

SIC		_	1.48		-						-			0022			y			0-
NATURE	GENERATOR'S CERTH and labeled, and are in proper	BUILDING	NAME		Mercury:	Antifreeze:	Batteries:		Additional Descriptions / Sa	7	6.	ŝ	+	3.	8	1.	CHEMICAL DE		(24 HOURS): (734)76	N CASE OF ENERG
	ECATION: This is to certify condition for transportation at				Thermostat(s)	Boxes Pails	Boxes Pails		fety Procautions for materials								SCRIPTION (Do Not		3-(13):	ENCY: AFE TY
	that the above named materials cording to the applicable regul			GENE	Thermometer(s)	Drums	Drums		listed above:								Abbreviate or Use Fo		1655 DEAN R	INVERSITY OF
DATE	s are property classified, descri- lations of the Department of Ti			RATOR INFORMAT	Switch(es)		Auto/Industrial	UNIVERSAL WAST									ormulas)	HAZARDOUS / CH	OAD, ANN ARBOR, M	WASTE MA
	bed, packaged, ransportation.			TION & CI	Device			'ES (Enter	EHS ONLY								Qy. Ty	EMICAL Continuer	11 48109-215	NIFES
	marked	-		RTIFICA	s (describe			quantity)									binpi.d bibo2 8	WASTES Physical F	9 (734)763	T
HMM ORDE		MOOM	DEPARTMEN	VTION	3												SE Volume	orm Wearla	4568	SAFETY
R#			-							19		6	5		15	P	levels Wa	-		
	-FOR EHS (PHON															ste Codes		EPA ID	
	USE ONLY-	£.															Manifest Tracking Number	EHS ONLY	#	164116
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Attachment A2-5 Hazardous / Chemical Waste Manifest

Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 23 of 33

COMPLETING THE WASTE MANIFEST

1. Enter the EPA Identification Number of the building in which the waste was generated.

HAZARDOUS / CHEMICAL WASTES

CHEMICAL DESCRIPTION:

- 2. Use one row for each unique waste. List all of the chemicals present in the container AND their approximate concentrations
 - (%). Do not abbreviate or use chemical formulas. Example:

-	INVESTIGATION IN POSTAL AND	Can	151121	Phys	ncai (form	Weight	1.0
C.	REMICAL DESCRIPTION (Do Not Abbreviate or Lise Formulas)	Qiy.	Туре	Solid	, squed	Gas	Volume	Unies
5	15% Acetone and 85% Methanol	4	bhp	1	x		4	G

CONTAINER:

- 3. Enter the total number of containers for each row.
- 4. Enter the appropriate abbreviation (see table.1) for the type of container used for each waste described on the manifest. (If the same waste is shipped in different containers, each type of container must be identified).

PHYSICAL FORM:

5. Mark the appropriate form(s) (Solid, Liquid, Gas) for each row. Check all that apply.

WEIGHT OR VOLUME:

- 6. Enter the total numerical weight or volume for each row.
- 7. Enter the appropriate abbreviation (see table 2) for the unit of measure for each row.

ADDITIONAL DESCRIPTIONS / SAFETY PRECAUTIONS:

 Enter any additional description / safety precaution, special handling, transportation, treatment, storage, or disposal information or specific properties that may be unique to the waste or pose additional concerns (i.e. acutely toxic, water reactive, etc.).

UNIVERSAL WASTE

9. Enter the total number of containers for each Universal waste category listed.

GENERATOR INFORMATION & CERTIFICATION

- 10. Enter the name of the waste generator.
- 11. Enter the name of the Department where the waste was generated.
- 12. Enter the name of the building in which the waste was generated.
- 13. Enter the building room number in which the waste was generated.
- 14. Enter the phone number at which the generator, or staff knowledgeable about the waste can be contacted.
- 15. The generator must read and sign (by hand), the certification statement, or the waste will not be picked up for disposal
- 16. Enter the date the certification statement was signed.

ADDITIONAL DESCRIPTIONS / SAFETY PRECAUTIONS:

- 17. Package waste bottles into a labeled box
 - Package only compatible chemicals together
 - · Cushion bottles to prevent breakage.
- 18. Place the Waste Manifest(s) with the shipment.





MANIFEST ABBREVIATION TABLES

Abbreviation	Container Type
DM	Metal drums, barrels, kegs
DF-F	Fiberboard drums, barrels, kegs
DF-P	Plastic drums, barrels, kegs
BOT-G	Glass bottles, jugs, tubes, containers
BOT-P	Plastic bottles, jugs, tubes, containers
CY	Cylinders
CM	Metal boxes, cartons, cases (including roll-offs)
105	Fiber or plastic boxes, cartons, cases
0	Other (Please specify)
	TABLE I



Attachment A2-5 Hazardous / Chemical Waste Manifest

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Attachment A2-6 Precedence of Hazard Table

PRECEDENCE OF HAZARD TABLE

§173.2a Classification of a material having more than one hazard.

(a) *Classification of a material having more than one hazard.* Except as provided in paragraph (c) of this section, a material not specifically listed in the §172.101 table that meets the definition of more than one hazard class or division as defined in this part, shall be classed according to the highest applicable hazard class of the following hazard classes, which are listed in descending order of hazard:

(1) Class 7 (radioactive materials, other than limited quantities; and shipments of UN 3507, Uranium hexafluoride, radioactive material, excepted package)

- (2) Division 2.3 (poisonous gases).
- (3) Division 2.1 (flammable gases).
- (4) Division 2.2 (nonflammable gases).

(5) Division 6.1 (poisonous liquids), Packing Group I, poisonous-by-inhalation only.

(6) A material that meets the definition of a pyrophoric material in 173.124(b)(1) of this subchapter (Division 4.2).

(7) A material that meets the definition of a self-reactive material in 173.124(a)(2) of this subchapter (Division 4.1).

(8) Class 3 (flammable liquids), Class 8 (corrosive materials), Division 4.1 (flammable solids),

Division 4.2 (spontaneously combustible materials), Division 4.3 (dangerous when wet materials), Division 5.1 (oxidizers) or Division 6.1 (poisonous liquids or solids other than Packing Group I, poisonous-by-inhalation). The hazard class and packing group for a material meeting more than one of these hazards shall be determined using the precedence table in paragraph (b) of this section.

- (9) Combustible liquids.
- (10) Class 9 (miscellaneous hazardous materials).

(b) *Precedence of hazard table for Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1.* The following table ranks those materials that meet the definition of Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1:

PRECEDENCE OF HAZARD TABLE

	4.2	4.3	5.1 I ¹	5.1 II ¹	5.1 III ¹	6.1, I dermal	6.1, I oral	6.1 II	6.1 III	8, I liquid	8, I solid	8, II liquid	8, II solid	8, III liquid	8, III solid
3 I ²		4.3				3	3	3	3	3	(3)	3	(3)	3	(³)
3 II^2		4.3				3	3	3	3	8	(3)	3	(3)	3	(³)
3 III^2		4.3				6.1	6.1	6.1	34	8	(3)	8	(³)	3	(³)
4.1 II^2	4.2	4.3	5.1	4.1	4.1	6.1	6.1	4.1	4.1	(3)	8	(3)	4.1	(³)	4.1
4.1 III^2	4.2	4.3	5.1	4.1	4.1	6.1	6.1	6.1	4.1	(3)	8	(3)	8	(3)	4.1
4.2 II		4.3	5.1	4.2	4.2	6.1	6.1	4.2	4.2	8	8	4.2	4.2	4.2	4.2
4.2 III		4.3	5.1	5.1	4.2	6.1	6.1	6.1	4.2	8	8	8	8	4.2	4.2
4.3 I			5.1	4.3	4.3	6.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4.3 II			5.1	4.3	4.3	6.1	4.3	4.3	4.3	8	8	4.3	4.3	4.3	4.3
4.3 III			5.1	5.1	4.3	6.1	6.1	6.1	4.3	8	8	8	8	4.3	4.3
5.1 I ¹						5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1 II^1						6.1	5.1	5.1	5.1	8	8	5.1	5.1	5.1	5.1
5.1 III^1						6.1	6.1	6.1	5.1	8	8	8	8	5.1	5.1
6.1 I, Dermal										8	6.1	6.1	6.1	6.1	6.1
6.1 I, Oral										8	6.1	6.1	6.1	6.1	6.1
6.1 II, Inhalation										8	6.1	6.1	6.1	6.1	6.1
6.1 II, Dermal										8	6.1	8	6.1	6.1	6.1
6.1 II, Oral										8	8	8	6.1	6.1	6.1
6.1 III										8	8	8	8	8	8

[Hazard class or division and packing group]

Attachment A2-6 Precedence of Hazard Table

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PRECEDENCE OF HAZARD TABLE

¹See §173.127.

²Materials of Division 4.1 other than self-reactive substances and solid desensitized explosives, and materials of Class 3 other than liquid desensitized explosives.

³Denotes an impossible combination.

⁴For pesticides only, where a material has the hazards of Class 3, Packing Group III, and Division

6.1, Packing Group III, the primary hazard is Division 6.1, Packing Group III.

NOTE 1: The most stringent packing group assigned to a hazard of the material takes precedence over other packing groups; for example, a material meeting Class 3 PG II and Division 6.1 PG I (oral toxicity) is classified as Class 3 PG I.

NOTE 2: A material which meets the definition of Class 8 and has an inhalation toxicity by dusts and mists which meets criteria for Packing Group I specified in §173.133(a)(1) must be classed as Division 6.1 if the oral or dermal toxicity meets criteria for Packing Group I or II. If the oral or dermal toxicity meets criteria for Packing Group III or less, the material must be classed as Class 8.

(c) The following materials are not subject to the provisions of paragraph (a) of this section because of their unique properties:

(1) A Class 1 (explosive) material that meets any other hazard class or division as defined in this part shall be assigned a division in Class 1. Class 1 materials shall be classed and approved in accordance with §173.56 of this part;

(2) A Division 5.2 (organic peroxide) material that meets the definition of any other hazard class or division as defined in this part, shall be classed as Division 5.2;

(3) A Division 6.2 (infectious substance) material that also meets the definition of another hazard class or division, other than Class 7, or that also is a limited quantity Class 7 material, shall be classed as Division 6.2;

(4) A material that meets the definition of a wetted explosive in §173.124(a)(1) of this subchapter (Division 4.1). Wetted explosives are either specifically listed in the §172.101 table or are approved by the Associate Administrator (see §173.124(a)(1) of this subchapter); and

(5) A limited quantity of a Class 7 (radioactive) material that meets the definition for more than one hazard class or division shall be classed in accordance with §173.423.

Attachment A2-6 Precedence of Hazard Table Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 29 of 33 [Amdt. 173-224, 55 FR 52606, Dec. 21, 1990, as amended at 56 FR 66264, Dec. 20, 1991; Amdt. 173-241, 59 FR

67490, Dec. 29, 1994; Amdt. 173-247, 60 FR 48787, Sept. 20, 1995; Amdt. 173-244, 60 FR 50307, Sept. 28, 1995; 64

FR 10776, Mar. 5, 1999; 66 FR 33426, June 21, 2001; 66 FR 45182, 45379, Aug. 28, 2001; 68 FR 45032, July 31, 2003; 80 FR 1151, Jan. 8, 2015]

Attachment A2-7 Chemical Compatibility Chart (for Containers)

Chemical Compatibility Chart

RATING SYSTEM*

The following codes are used to rate chemical resistance:

- G = Good
- F = Fair
- P = Poor
- N = Not Recommended (some swelling or degradation will probably occur)

 Unless otherwise sgreed upon in viriting, Porec products are sold without a chemical resistance warranty. Buyer/user should perform appropriate tests to determine performance under specific operating conditions.

SUBSTANCE AT 21°C (70°F)	HDPE UHMWPE	PP	PVDF	PTFE
Acetaldehvde	G	E.	Ň	G
Acetic acid, 10%	6	G	G	G
Acetic acid, 100% (glacial)	G	G	6	G
Acetic anhydride	G	G	F	G
Acetone	G	G	P	G
Acide aromatic	G	G.		G
Acrylonitrile	G	Ġ.	F	Ğ
Aallyl alcohol, 96%	G	G	G	Ğ.
Aluminum chlorida	G	G.	G	G
Alum	G	G	G	G
Âmano	5	G	N	6
Amonia aseaour	G	G	N	G
Ammonia, gaseous	C	c	G	C
Annuonum sans	C	C	E	6
Annyl declate	E	c	F	G
Antenanu kuchlanda	2	2	T	C
Antimony trichloride	G	C C	1	G
Adua regia	N	5	-	0
Beer	6	0	13	6
beeswax	6	6		6
Benzaldehyde	U	6	F	6
Benzene	E.	1	15	G
Bensenesulphonic acid	6	G	+	G
Benzoic acid	G	R	G	G
Benzol chloride	F	F	F	G
Borax	G	G	6	G
Boric acid	G	G	G	G
Brine (saturated)	G	G	G	G
Bromine (liquid)	N	N.	F	G
Bromochloromethane	N	N		
Butanol	G	G	G	G
Butylacetate	G	F	G	G
Butylene glycol	G	G	G	G
Butyric acid	G	G	G	G
Calcium chloride	G	G	G	G
Calcium hupochlorite	G	G	G	G
Calcium nitrate, 50%	G	G	G	G
Camphor	G	G		
Carbon disulphide	F.	G	Æ	G
Carbon tetrachloride	P	Ň	6	G
Carbonic acid	6	G	G	G
Castol oil	G	G	G	G
Caustic potash	G	G	G	G
Caustic soda	G	G	N	G
Chloral hydrate	G	F	6	G
Chlorine (liquid)	N	N	G	G
Chlorine mas (div)	F	N	G	G
Chlorine gas (wat)	F	P	R	G
Chloloracetic acid (mono)	G	G	G	R
Chlorohenzone	E	G	G	G
Chlorethanol	E	G	Q.	G

SUBSTANCE AT 21°C (70°F)	HDPE UHMWPE	PP	PVDF	PTFE
Chlochtom	Ď.	É	Ê	ô
Chlomsulphonic and	N	N	M	G
Chromic acid, 80%	R	G	G	G
Citric sold	G	G	G	G
Clophon A50 and A6	G	G	9	0
Coconit oil	G	G	G	G
Common call (anucous, catulated)	C	G	C	G
Connot calle	G	G	G	G
Corp oil	G	C	G	G
Croopato	G	G	G	C C
Greek	C	C	C C	C
Chelebourne	0	0	0	0
Ovelehevened	0	C	C C	0
Cyclonexanor	0	0	6	0
Cyclunexhole	Li I	0	La .	0
Dibutyrether	F	F		ä
Dibutyl phthalate	G	6	N	G
Dichloracetic acid, 50%	G	G	G	G
Dichloracetic acid, 100%	G	G	G	G
Dichloracetic acid methyl ester	G	G	8	G
Dichlorobenzene-o	F	F	G	G
Dichlorobenzene-p	-F	F	G	G
Dichloroethylene	N	G	G	G
Diesel oil	G	F	G	G
Diethyl ether	F	F	F	G
Dilsobutyl ketone	G	G	G	G
Dimethylamine	G	G	N	G
Dimethyl formamide	G	G	N	6
Dimethyl sulnboxide	G	G	F	G
Diceano	G	G	N	G
Emulsitions	G	G	14	G
Enichlorhydran	G	G	N	G
Letare alightic	G	C	13	G
Ethanol 06%	6	0		C
Ethila 101 30%	0	0		0
Ethul as stats	F	F	N	0
Ethyl acetate	0	0	N	4
Ethylene chloride (Dichloroethane)	F	F	0	0
Ethylenediaminetetraacetic acid	6	G	-	11
Ethylene gylcol	G	6	6	6
Fatty acids (C)	G	19	6	la la
Ferric chloride	G	G	G	G
Fluonne	N	N	F	1
Fluosificic acid	G	- P	G	G
Formaldehyde (40% aqueous)	Ģ	G	G	G
Formic acid	G	G	G	G
Frigen®	F	N		
Fruit juices	G	G		G
Fruit pulp	G	G	-	G
Fuel oil	G	G	G	6
Furfuryl alcohol	G	G	F	G
Gelatine	G	G	-	G
Glycerine	G	G	6	G
Givcol (concentrated)	G	G		G
Glycolic acid, 55%	G	G	F	G
Glycolic acid. 70%	G	G	F	6
Glycolic acid hetyl ester	G	6		G
Hylothana	F	F		-
Hydraulic fluid	5	ß	1 3	G
Hydrazine hydrate	Ġ	G		G
Hydrohromic acid, EDV	F	G	C.	G
Hydrochlalanc acid, all conc	G	G	C	C
Hydrochlane sold ass blac and watt	C	C	0	0
Hydrocunuing acid gas (dity and Wet)	0	in the second se	1	0
Hydrocyanic acid	6	0	6	0
myuloijuofic acid, 40%	6	6	6	6
Hydroffudric acid, 70%	6	6	6	6
Hydrogen peroxide, 30%	G	G	G	G
Hydrogen peroxide, 90%	G	G	G	G
Hydrogene sulphide	G	G	G	G
Hydrosulphine (10%, adueous)	G	G	-	G



Attachment A2-7, Chemical Compatibility Chart (for Containers) Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 32 of 33

Chemical Compatibility Chart

SUBSTANCE AT 21°C (70°F) UI	HMWPE	PP	PVDF	PTFE	SUBSTANCE A
lodine tinture. DAB 6					Potassium hydroxii
(German Phamaconneia)	G	G.	Ğ	Ğ	Potassium nitrate
Isoncatane	G	G		G	Potassium perman
Isopropanol	G	G	~	G	Propionic acid, 50
Isonronyl ether	F	Ē		G	Propionic acid, 100
Ketones	G	G.	100	G	Propylene glycol
Lantic acid	G	G	G	G	Pseudocumene
Inseed nil	G	G	G	G	Pyridine
Liquid paraffin	G	G		G	Sea water
Liquid paraffin	G	G		G	Silicie acid
Magnesum chloride	G	G	G	G	Silicone oil
Maleic acid	G	G	G	6	Silver nitrate
Malic acid 50%	G	Ğ	G	G	Sodium benzoate
Menthol	G	G	2	G	Sodium borate
Mercury	G	G	G	G	Sodium carbonate
Mercuric chlorine (corrosive sublimate)	G	G	G	G	Sodium chloride
Methanol	G	G	-	G	Sodium chloride, F
Methorybutanol	G	G		G	Sodium chloride h
Methovybutylacetate	G	G		G	Dodum dodecylbe
Mathylovclohavana	F	E		G	Sodium hydrovido
Methylene chlonne	E	F	N	G	Sodium hypochlon
Mathyl othyl katona	G	G	N.	G	Sodium nitrate
Methyl alveol	G	G	14	G	Sodium narovide
Manachloracatic acid	G	G	C	C	Sodium peroxide,
Monochloracetic acid athul actor	C.	C	0	C	Sodium culphido
Monochloradetic acid entry ester	G	C	1	C C	Sodium sulphue
Morobolino	C	C	Ē	C	Sparmacati
Mater oil /HD oill	0	C		C	Spindlo oil
Model bit (HD bit)	C	E	12	C	Storeb
Nephtheleng	0	6	G	C	Storace and
Napitinalene Niskol solta	C	G	6	G	Steand actu
Nitrie paid 25%	G	G	6	G	Succinic acid, 507
NITHE delu, 25%	C C	U E	C C	C	Sulphotos
Nitribartana	r c	6	G	G	Sulphates
Nitoteluese	C	0	1	0	Sulphur diavido la
Nitrous asian	0	0		G	Sulphur dioxide (u
Nicious yases	6	6	G	0	Sulphur dioxide (W
Oils (effeted)	C.	E C	C C	C	Sulphuric acid, 10
Olors (vegetable and annual)	0	G	G	G	Sulphuric acid, 00
Olever	6	D.	bi bi	C	Sulphumus acid
Ovelie and EOV	C .	C	is .	G	Sulphund chlorido
Otono	E	G	G	G	Surphary chloride
Dombleric cord, 20%	5	G	0	C	Tollow
Perchioric acia, 20%	0	0	6	6	Tanow Tanoic acid 10%
Perchloric acid, 50%	0	0	6	C	Tarterio poid
Petchionic acid, 707e	0	C C	0	0	Totrobrem oothorn
Petro Persona entre entr	6	5	0	G	Tetraphonoethane
Petro/benzene mixture	0	6	6	G	Tetrabudiation
Petroleum	6	0	6	b	Tetranyutorutan
Petroleum etner	6	0	6	6	Toluene
Phenol	6	6	6	Li C	Iransformer off
Phosphates	G	6	-	ti i	Inbutyi phosphate
Phosphoric acid, 25%	6	6	6	6	Trichloraecettic aci
Phosphoric acid, 50%	6	G	6	G	Trichloroacetic aci
Phosphoric acid, 95%	G	6	6	6	Trichloroethylene
Phosphorus oxychloride	6	G	G	G	Tricresyl phosphat
rnosphorus pentoxide	6	G	G	G	Triethanolamine
Phosphorus trichloride	6	G	G	G	Iurpentine oil
Photographic developers	6	G	G	G	Urea, 33%
Phthalic acid, 50%	G	G	G	G	Vaseline®
Polyglycois	G	G	G	G	White spirit
Potassium bichromate, 40%	G	G	-	G	P-Xylene
Potassium chloride	6	G	G	G	Yeast
Potassium evanide (anuenus, saturated)	G	G	G	G	Zinc chloride

SUBSTANCE AT 21°C (70°F)	UHMWPE	PP	PVDF	PTFE
Potassium hydroxide (30% aqueous)	G	G	G	G
Potassium nitrate (aqueous, saturated)	G	G	G	G
Potassium permanganate	G	G	G	G
Propionic acid. 50%	G	G		G
Propionic acid, 100%	Ğ	G.		G
Pronylone nivrol	G	G		G
Provideoumona	C	0	1	G
Paridice	G	-	ĥ	0
ryndine	u.	r	N.	u o
Sea water	F	h	G	6
Silicic acid	G	6		G
Silicone oil	G	G		G
Silver nitrate	G	G	G	G
Sodium benzoate	G	G	G	G
Sodium borate	G	G	G	G
Sodium carbonate	G	G	G	G
Sodium chloride	G	6	G	G
Sodium chloride, 50%	Ğ	G	G	G
Sodium chlorida blooch	E	G	G	G
Dedum dedeaubertane Sulemete	C	C	6	0
Codum budecyrpenzene-Surponate	6	0	0	0
Socium nyoroxide-30% aqueous	6	6	6	6
Sodium hypochlorite, all concs	G	G	G	G
Sodium nitrate	G	G	G	G
Sodium peroxide, 10%	G	6	G	G
Sodium peroxide, 10% saturated	F	F	G	G
Sodium sulphide	G	6		G
Sodium thiosulphate	G	G	G	G
Spermageti	G	G		G
Spindle oil	F	6		G
Starch	G	6		G
Starci acid	c	C	G	G
Sussaint actu	E .	C	C	C
Succinic acid, 50 %	G	0	0	0
sugar syrup	G	0		0
Sulphates	6	4		6
Sulphur	Li .	6		6
Suiphur dioxide (dry)	G	6	G	G
Sulphur dioxide (wet)	G	G	G	G
Sulphunc acid, 10%	G	G	G	G
Sulphuric acid, 50%	G	G	G	G
Sulphuric acid, 98%	F	E	G	G
Sulphumus acid	G	G		G
Sutphuryt chloride	Ň	N		G
Synthetic detergents	G	G		Ġ
Tallow	G	G	G	G
Toppic peid 100	G	C	6	G
Tartana and	G	0	0	0
lanane acid	15	0	6	6
letrapromoethane	P	P	G	6
letrachloroethane	P	F		G
Tetrahydrófuran	P	F	3	G
Toluene	P	6	G	G
Transformer oil	G	G	F	G
Tributyl phosphate	G	G	F	G
Trichloraecetic acid, 50%	G	G	G	G
Trichlomacetic acid. 100%	G	G	G	G
Trichloroothylena	R	F	G	G
Tricrosyl phoenhato	G	n	N	6
Tristbanolom una	C	C	R	G
Thenanciantine	G	0	0	0
iurpentine oli	E	N	6	6
Urea, 33%	G	G	G	G
Vaseline®	E	G	G	G
White spirit	E	6	4	G
P-Xylene	F	N	G	G
Veast	E	G	1	G
Zincichloride	G	G	G	G
any analysis			N	100

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Attachment A2-7, Chemical Compatibility Chart (for Containers)

Form EQP 5111 Attachment Template A2, Chemical and Physical Analyses (8-2-2021) Page 33 of 33 Attachment 2

Waste Analysis Plan

FORM EQP 5111 ATTACHMENT TEMPLATE A3 WASTE ANALYSIS PLAN (WAP)

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being R 299.9504, R 299.9508, and R 299.9605, and Title 40 of the Code of Federal Regulations (CFR) §§270.14(b)(3) and 264.13(b) and (c), establish requirements for WAPs for hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for a WAP for the hazardous waste management units and the hazardous waste management facility for the Beck Road Facility. All activities associated with the WAP will be conducted at the Beck Road Facility, 8501 Beck Road, Belleville, MI 48111 facility.

Ensure that all samples collected for the purposes of waste characterization are collected, transported, analyzed, stored, and disposed by trained and qualified individuals in accordance with the Quality Assurance/Quality Control (QA/QC) Plan. The QA/QC Plan should, at a minimum, include the written procedures outlined in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. Environmental Protection Agency (EPA) Publication No. SW-846, Third Edition, Chapter 1 (November 1986), and its updates.

This template is organized as follows:

A3.A.1	Initial Waste A3.A.1(a)	e Characterization Requirements for Generators Generator Waste Characterization Discrepancies
	A3.A.1(b)	Subsequent Waste Shipment Procedures
	A3.A.1(c)	Additional Waste Analysis Requirements
Figure A3.A.1	Information	to be on Each Generator's Waste Profile Form
Figure A3.A.1-1	U-M Low Le	evel Radioactive Waste Manifest (Waste Profile Form)
Figure A3.A.1-2	U-M Hazard	lous / Chemical Waste Manifest (Waste Profile Form)
A3.A.2	Waste Acce	ptance Procedures
	A3.A.2(a)	Review Paperwork
	A3.A.2(b)	Visual Inspection of Waste
	A3.A.2(c)	Waste Screening/Fingerprinting
Figure A3.A.2	Fingerprintir	ng Documentation Sheet
Table A3.A.1	Waste Analy	ysis Procedures
Table A3.A.2	Representat	tive Sampling Procedures
A3.A.3	Procedures	to Ensure Compliance with Land Disposal Restrictions (LDR)
	Requiremen	its
	A3.A.3(a)	Spent Solvent Wastes A3.A.3(b)
		Listed Wastes
	A3.A.3(c)	Characteristic Wastes
	A3.A.3(d)	Radioactive Mixed Waste

- A3.A.3(e) Leachates
- A3.A.3(f) Laboratory Packs
- A3.A.3(g) **Contaminated Debris**
- Waste Mixtures and Wastes with Overlapping Requirements A3.A.3(h)
- A3.A.3(i) Dilution and Aggregation of Wastes
- A3.B CAPTIVE FACILITY

A3.C NOTIFICATION, CERTIFICATION, AND RECORD KEEPING REQUIREMENTS

- A3.C.1 Retention of Generator Notices and Certifications
- A3.C.2 Notification and Certification Requirements for Treatment Facilities
- Waste Shipped to Subtitle C Facilities A3.C.3
- Waste Shipped to Subtitle D Facilities A3.C.4
- **Recyclable Materials** A3.C.5
- A3.C.6 Record Keeping
- A3.C.7 **Required Notice**
- Attachment A3-1 Precedence of Hazard Table
- Chemical Compatibility Chart Attachment A3-2
- Attachment A3-3 Chemical Constituent Sheet
- Attachment A3-4 Beck Road Facility Operation's Log
- Attachment A3-5 LDR Notifications
- Attachment A3-6
- Table A2.A.2, Hazardous Waste Accepted at the Facility

A3.A COMMERCIAL FACILITY

Beck Road Facility is a commercial facility that receives wastes generated off site. Beck Road Facility has developed a WAP to ensure that its facility at 8501 Beck Road, Belleville, MI 48111 will accept only wastes that it is authorized to accept. The hazardous wastes stored at Beck Road Facility will be properly characterized prior to waste acceptance. All generators will be required to provide a complete waste characterization, including chemical analysis when appropriate. Waste screening will be conducted on every shipment of waste to ensure that the waste conforms to the waste profile for the generator and information on incoming manifests and to ensure that the waste is properly managed within the facility.

All analysis performed pursuant to this application will be consistent with the QA/QC Plan included in Attachment A11-3. All samples for the purpose of waste characterization will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan.

In accordance with R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I, Beck Road Facility will retain all records and results of waste determinations performed as specified in 40 CFR §§264.13, 264.17, 264.314, 264.1034, 24.1063, 264.1083, 268.4(a), and 268.7 in the facility operating record until closure of the facility.

The University of Michigan does not transship waste.

A3.A.1 Initial Waste Characterization Requirements for Generators [R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §264.13(b)(5)]

Beck Road Facility will require the following waste profile information for initial waste shipments from all off-site generators prior to shipment.

Generators of waste at the U-M must provide all information required by the U-M standard turn-in requirements (described in the following text) before any waste is picked up at the point of generation. Hazardous and mixed waste is picked up from the generator at the generator's request. At the time of pickup, there is verification that the waste profile forms, U-M Low Level Radioactive Waste (LLRW) Manifest (Figure A3.A.1-1) or the U-M Hazardous / Chemical Waste Manifest (Figure A3.A.1-2), and labels are properly filled out. The information on the labels is compared with the following information on the manifest(s) for verification: the container number, volume of the waste, isotope, activity, chemical constituents as indicated on the back of manifest for specified chemicals, and concentration of the chemical constituents. Each laboratory has a reference document that includes the instructions for proper labeling and internal manifesting of hazardous and mixed waste. The U-M LLRW Manifest or the U-M Hazardous / Chemical Waste Manifest documents the total volume of the waste, the hazardous waste constituents, and the percent concentrations. The EPA Uniform Hazardous Waste Manifest is completed utilizing this information provided by the generator.

The characteristics of the initial hazardous waste constituents used are identified through generator knowledge, or as necessary, by analysis of the waste streams and are recorded on U-M internal manifests. Additional testing, if indicated, and testing of unknowns is conducted through a commercial contract laboratory. Table A2.A.2 lists the hazardous waste codes of the hazardous and mixed waste stored at the Beck Road Facility. Table A2.A.2 is included in this section as Attachment A3-6.

The waste generation and profiling processes yield wastes of known characteristics. From the characteristics of the initial products and the waste production process, the ignitable, corrosive, reactive or toxic characteristics are identified. Waste analyses for these characteristic parameters are usually unnecessary. A pH test may be conducted to verify whether a waste is corrosive. The waste generation and profiling processes also yield wastes which contain known RCRA listed hazardous waste constituents. Waste analyses for these RCRA listed constituents are usually unnecessary.

The U-M has specific manifest requirements for transporting hazardous wastes. The generator of hazardous and mixed waste is required to properly identify the hazardous characteristics (by constituent) of the waste on the waste profile forms so that they are immediately apparent to the receiving personnel. Prior to transport to the Beck Road Facility, the hazardous and mixed waste is evaluated for isotope(s) and activity, and as necessary, is sampled and analyzed to verify isotope(s) and activity. The hazardous and mixed waste transported to the storage facility are properly manifested in accordance with state and federal regulations on an EPA Uniform Hazardous Waste Manifest, accompanied by appropriate LDR Notifications (Attachment A3-5).

In addition to the waste profile information submitted by the generator, Beck Road Facility will:

Require submittal of a representative waste sample

Conduct an audit of the generator facility

Review industry literature to identify typical waste streams

Other:

A U-M LLRW Manifest or a U-M Hazardous / Chemical Waste Manifest and a U-M Fingerprinting Documentation Sheet (Figure A3.A.2) are completed for every hazardous and mixed waste shipment to Beck Road Facility. The information on the waste profile forms is verified and evaluated at the time of collection and verified and evaluated at arrival at Beck Road Facility to ensure accuracy and completeness.

Figure A3.A.1-1 U-M Low Level Radioactive Waste Manifest

		Nor	LOW-I Universi th Campus	UN3321, Rac ty of Michiga Transfer Facil	ADIOAC dioactive m an, Occupa lity, 1655 I	TIVE aterial, I tional Sa Dean Roa	WAST ow speci fety and id, Ann /	E (LL fic activ Enviro Arbor, N	RW) vity (L! nmenta MI 4810	MANI SA-II), 7 Il Health 09-2159,	FEST (OSEH (734)70) 63-456	.8	R 33	NIFE 970	ST #
		[SD	= 7.5 gal., LD	= 28 gal.]	1		SOLI	DS (Atta	ch Cont	ainer Labe	to deca	d on the	side of	the drum)	-	1
S			Size gallon		Ad	tivity				Activ	ity				Activity	
E	RQ	# on Drum	(Circle)	Isotope	(kBq)	(uCi) 1	sotope		(kBq)	(uCi)	b	otope	(kBa	0	(wCi)
С			7.5 28			()				()			C)
A			7.5 28		2.15	()				()		1993	()
-			7.5 28			()				()	_	1052	0)
	RQ	Jug Vol Isol	ope	Activity	Isotope		LIQU	ADS (P	lace labo	el around i ical(s) pres	handle) sent ente	r nomb	er code i	from back a	k concen	tration
S		1	(kBo	(uCi)		(kB4) (u	3))	Code	% by vol	Code	% by vo	Code	% by vol	Code	% by vol
E		2		()			C)							-	
С		3	1	())		(()								
B		4	1	())	1000	(-)	-				-	-		
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s	RQ	Box Isotop	(kBq)	vity (uCi)	Isotope	SCINI Acti (kBq)	ILLATIC vity (uCl)	DN VIA	LS (In otope	dicate on (Ad (kBq)	the box w ctivity (uC	i) c	the vial Plastic or Glass	s are plastic Identify Scin	or glass) Cocktail
E		1		()	_		()	_	-	()]	PG		_	_
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S E	RQ	Pkg. Sharps V # (%) (iais Other	Isotope	Activity (kBq)	(uCi))	Isotope	(kBc	Activity	(uCl))	Isotope	0	Activ (Bq)	(uCi)	PIG	S(Y)
С		2	_		()			()						
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-	-			-	R	etain pho	locopy for	your fil	es			-		_		
PL	EAS	SE Authori	zed User						D	P	hone:	_			_	-
PR	INI	Comp	pleted By:							*Sign	ature:					
	*	Signature indi	cates that eac	h container he	as been swip	ed for ex	ternal con	temine	tion (str	sple a cop	y of sur	vey resi	ults to n	nanifest).		
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90 - sodium citrate

73 - sodium hydroxide

124 - sodium lauryl sulfate

92 · sodium phosphate

125 · sodium thiosulfate

76 · tetrachiorobenzene

77 · tetrachloroethene

79 - trichioroacetic acid

80 - trichloroethylens

129 - trifluoracetic acid

128 · tetrahydrofuran

74 - sodium hypochlorite

(SDS)

123 - sodium lodide

(SLS)

75 · sulfuric acid

126 · sucrose

127 · taurine

78 · toluene

(TCA)

87 · TRIS buffer

83 - urea

85 · xylene

99 · OTHER

81 · uranyl acetate

82 · uranyl nitrate

84 - vinyl chloride

130 · xylene cyanol

86 + zinc compounds

ABOVE)

(specify below)

(SEE INSTRUCTIONS

(8-2-2021)

93 · sodium docecyl sulfate

INSTRUCTIONS TO IDENTIFY CHEMICALS IN LIQUIDS

If chemical is listed below, please enter corresponding number code and approximate chemical concentration in % by volume in Section B on the front side of the manifest.

If chemical constituents are not listed below, please enter number code 99 and approximate concentration in % by volume in Section B on the front side of manifest, and list chemicals name(s) and concentrations(s) in Section E below.

00 · aqueous

ì

2

- (water based with no added
- chemicals) 01 · acetamide
- 02 · acetic acid
- 100 acetic anhydride
- 03 · acetone
- 04 + acetonitrile
- 05 · acrylamide
- 07 · ammonium compounds
- (specify below)
- 08 · arsenic compounds
- (specify below)
- 09 · barium compounds (specify below)
- 10 · benzene 11 · benzolalowene
- 95 blood
- 88 · boric acid
- 101 bovine albumin
- 102 bromophenol blue dye
- 17 butanol
- 13 cadmium compounds
- (specify below)
- 103 · calcium chloride
- 104 · calcium sulfate
- 14 · carbon tetrachloride
- 16 chlorobenzene
- 17 · chloroform
- 18 chlorophenol
- 105 choline chloride
- 19 chromium compounds (specify below)
- 106 · citric acid
- 107

Jug # 1 2

3

4

5

6 7 8

Page 7 of 56

S

E

C

E

- coomassie blue dve 20
- copper compounds (specify below)
- 3.0
- culture medium

- 21 cyanide compounds (specify below)
- 22 · cyclohexane
- 23 DOD/DOT
- 108 · dextran sulfate
- 24 dichlorobenzene
- 25 · dimethylsulfaxide (DMSO)
- 109 DMEM media
- 25 · epinephrine
- 27 · ethanol
- 28 ether
- 29 + ethidium bromide
 - (EtBr)
- 30 · ethyl acetate
 - 31 · ethylbenzene
 - 32 · ethylene diamine
 - tetraacetic acid (EDTA) 33 · ethylene glycol-bis(B-
 - amino ethyl ether)-
 - tetraacetic acid (EGTA) 34 + ethyl ether
 - 35 ethylohenol
 - 36 formaldehvde
 - 37 formalin
 - 38 formamide
 - 39 formic acid
- 40 glutaraldehyde

- 41 heptane

- 119 potassium phosphate

- 110 stycine
- 111 hams F12 media
- 112 HEPES buffer
- 113 hexane
- 43 hydrochloric acid (HCI)
- 44 hydroxybenzene
- 114 · isoamyl alcohol
- 46 isobutanol
- 47 · Isopropanol

(specify below) 115 + magnesium chloride 97 - magnesium phosphate 116 · magnesium suifate 49 - mercaptoethanol

48 - lead compounds

- 50 · mercury compounds (specify below)
- 51 methanol
- 117 · methoxyethanol
- 54 methyl benzene
- 52 methylene chloride
- 53 methyl ethyl ketone
- 58 naphthalene
- 59 · nitric acid
- 60 · nitrobenzene
- 118 perchloric acid

65 - phthalates

67 · propanoic acid

69 · scintillation fluid

70 - selenium compounds

71 silver compounds

120 · sodium acetate

72 · sodium azide

121 · sodium bicarbonate

122 · sodium carbonate

89 · sodium chloride

CODE 99 CHEMICAL NAMES(S), % BY VOL.

Figure A3.A.1-1, U-M Low Level Radioactive Waste Manifest

Form EQP 5111 Attachment Template A3, Waste Analysis Plan

(specify below)

(specify below)

(specify below)

68 · pyridine

91 · potassium chloride

66 - potassium permanganate

94 - saline sodium citrate (SSC)

- 62 · perificur
- 63 phenol 64 · phosphoric acid

Figure A3.A.1-2 U-M Hazardous / Chemical Waste Manifest

24 HOURS);	UNIVERSITY OF MICHICAN - ENVIR	MI 48109-215	(134)	63-4568		EPA ID#	
	HAZARDOUS/CI	CHEMICAL V	VASTI	S			
CHEMIC	AL DESCRIPTION (Do Not Abbreviate or Use Formulas)	Qiy. Typ	Solid	Gas Liqui	The Units	Waste Codes	Manifest Tracking Number
			-				
			-				
-				_			
			-				
				_			
			_				
dditional Descrip	tions? Safety Proceations for materials listed above:	EHS ONLY					
	UNIVERSAL WAS	STES (Enter-	quantit	()			
atteries:	Boxes Pails Drums Auto/Industrial						
Aercury:	Thermostat(s) Thermometer(s) Switch(es)	Device:	s (descr	ibe)			
	GENERATOR INFORMA	ATION & CE	RTIFI	CATION			
AME				DEPART	MENT		
DUITDING				ROOM		PHONE	
ENERATOR'S ad labeled, and an	CERTIFICATION: The is to certify that the above named materials are properly classified, decerting to the applicable regulations of the Department of 1 is proper condition for transpartation according to the applicable regulations of the Department of 1 is proper condition.	cribed, packaged, r Transportation,	marked			-FOR EHS US	E ONLY-
IGNATURE	DATE			HMM	RDER#		

Figure A3.A.1-2, U-M Hazardous / Chemical Waste Manifest Form EQP 5111 Attachment Template A3, Waste Analysis Plan Page 9 of 56

COMPLETING THE WASTE MANIFEST

1. Enter the EPA Identification Number of the building in which the waste was generated.

HAZARDOUS / CHEMICAL WASTES

CHEMICAL DESCRIPTION:

 Use one row for each unique waste. List all of the chemicals present in the container AND their approximate concentrations (%). Do not abbreviate or use chemical formulas. Example:

0	IFINCAL DESCRIPTION IN FAILURE AND A	Cen	Physical Form			Weight	1	
-	TE SUCAL DESCRIPTION (Do Not Adureviate or Lise Portuulas)	Qıy.	Type	Solid	Inquid	Gas	Volume	Linies
ł.	15% Acetone and 85% Methanol	4	0 <i>1-1</i> °		x		4	G

CONTAINER:

- 3. Enter the total number of containers for each row.
- 4. Enter the appropriate abbreviation (see table 1) for the type of container used for each waste described on the manifest. (If the same waste is shipped in different containers, each type of container must be identified).

PHYSICAL FORM:

5. Mark the appropriate form(s) (Solid, Liquid, Gas) for each row. Check all that apply.

WEIGHT OR VOLUME:

- 6. Enter the total numerical weight or volume for each row.
- 7. Enter the appropriate abbreviation (see table 2) for the unit of measure for each row,

ADDITIONAL DESCRIPTIONS / SAFETY PRECAUTIONS:

 Enter any additional description / safety precaution, special handling, transportation, treatment, storage, or disposal information or specific properties that may be unique to the waste or pose additional concerns (i.e. acutely toxic, water reactive, etc.).

UNIVERSAL WASTE

9. Enter the total number of containers for each Universal waste category listed.

GENERATOR INFORMATION & CERTIFICATION

- 10. Enter the name of the waste generator.
- 11. Enter the name of the Department where the waste was generated.
- 12. Enter the name of the building in which the waste was generated.
- 13. Enter the building room number in which the waste was generated.
- 14. Enter the phone number at which the generator, or staff knowledgeable about the waste can be contacted.
- 15. The generator must read and sign (by hand), the certification statement, or the waste will not be picked up for disposal
- 16. Enter the date the certification statement was signed.

ADDITIONAL DESCRIPTIONS / SAFETY PRECAUTIONS:

17. Package waste bottles into a labeled box

- Package only compatible chemicals together
- Cushion bottles to prevent breakage.
- 18. Place the Waste Manifest(s) with the shipment.

19. Call (734)763-4568 to request a collection, or request a waste collection online using the QR code:



MANIFEST ABBREVIATION TABLES

Abbreviation	Container Type
DM	Metal dronts, barrels, kegs
DF-F	Fiberboard drums, barrels, kegs
DF-P	Plastic drums, barrels, kegs
BOT-G	Glass bottles, jugs, tubes, containers
BOT-P	Plastic bottles, jugs, tubes, containers
CY	Cylinders
CM	Metai boxes, cartons, cases (including roll-offs)
OF	Fiber or plastic boxes, cartons, cases
0	Other (Please specify)



A3.A.1(a) Generator Waste Characterization Discrepancies

 $[R\ 299.9605(1)\ and\ R\ 299.9504(1)(c)\ and\ 40\ CFR\ \S\&264.13(a)(3)\ and\ (4),\ 264.13(b)(c),\ and\ 264.72]$

If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with discussions with the generator and may require analytical testing through a commercial contract laboratory. All discrepancies will be resolved before accepting the waste.

A3.A.1(b) Subsequent Waste Shipment Procedures

[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(a)(3) and 264.13(b)(4)]

The initial analysis of waste from each generator will be reviewed or repeated at the time of each collection to ensure that the analysis is accurate and up-to-date.

The profiling process described in Section A3.A.1, Initial Waste Characterization Requirements for Generators, is repeated for each collection of waste. Recharacterization occurs with each collection of waste. A completed waste profile form, either the U-M LLRW Manifest or the U-M Hazardous / Chemical Waste Manifest, will provide complete characterization of the waste prepared for collection. This documentation provides specific waste stream characterization, precluding the need for annual analytical profiling. Additional testing, if indicated, and testing of unknowns is conducted through a commercial contract laboratory.

A3.A.1(c) Additional Waste Analysis Requirements

[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(b)(6) and 264.13(c(3)]

Beck Road Facility will review the waste profile information to ensure that the facility is authorized to receive the waste, and can manage the waste in compliance with the following:

R 299.9605 and 40 CFR §264.17	General requirements for ignitable, reactive, or incompatible wastes
R 299.9605 and 40 CFR §264.314	Special requirements for bulk and containerized liquids
R 299.9630 and 40 CFR §264.1034(d)	Test methods and procedures (Subpart AA)
R 299.9631 and 40 CFR §264.1063(d)	Test methods and procedures (Subpart BB)
40 CFR §264.1083	Waste determination procedures (Subpart CC)
R 299.9627 and 40 CFR §268.7	Waste analysis and record keeping LDR requirements
🗌 R 299.9228	Universal waste requirements

FIGURE A3.A.1

INFORMATION THAT MUST BE SHOWN ON A GENERATOR'S WASTE PROFILE FORM

The U-M waste profile form completed by the generator for each waste shipment is a LLRW Manifest or a U-M Hazardous / Chemical Waste Manifest).

Waste Generator Information:

Generator Name Street Address City, State/Province Zip Code County Customer Contact Billing Address Telephone Number Site ID #

Waste Stream Information:

Name of Waste **Process Generating Waste** Color Strong Odor [describe] Physical State at 70° F Lavers Free Liquid Range pH Range (pH values that differ by > two standard units, switch between acidic and alkaline conditions, or are < 2.0 or >12.5 should be evaluated as discrepancies) Liquid Flash Point Physical and Chemical Composition Constituents **Concentration Range** Oxidizer Carcinogen Pyrophoric Infectious\Biological Explosive Shock Sensitive Radioactive Water Reactive Poison - Inhalation Hazard

Does the waste represented by this profile contain dioxins? Does the waste represented by this profile contain asbestos? Is the waste subject to RCRA Subpart CC controls? Does the waste contain debris? Are all containers included in this waste stream empty and as defined in R 299.9207 and/or 40 CFR §761.79?

Quantity of Waste: (Including units)

Shipping Information:

Packaging Shipping Frequency Personal Protective Equipment Requirements

Generator Certification:

Is this a Part 111 of Act 451 hazardous waste (R 299.9201 to R 299.9229)?Does the waste represented by this Waste Profile Form contain any of the following pesticides or herbicides: Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, 2,4,5-TP (silvex), chlordane, Heptachlor (and its epoxide)?

Is the waste from a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (40 CFR, Part 300, Appendix B) or EGLE mandated cleanup?

Does the waste represented by this Waste Profile Form contain concentrations of radioactive elements regulated by the Nuclear Regulatory Commission?

Does the waste represented by this Waste Profile Form contain concentrations of PCBs regulated under 40 CFR, Part 147, PCB Compounds, of Act 451 or 40 CFR, Part 761?

Do the Waste Profile Form and all attachments contain true and accurate descriptions of the waste material and has all the relevant information within the possession of the generator regarding known or suspected hazards pertaining to the waste been disclosed to the generator?

Notes:

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

- EGLE Michigan Department of Environment, Great Lakes, and Energy
- EPA U.S. Environmental Protection Agency
- PCB Polychlorinated biphenyl
- RCRA Resource Conservation and Recovery Act of 1976, as amended
- TSDF Treat, Store, Disposal Facilities

A3.A.2 Waste Acceptance Procedures

[R 299.9605(1) and R 299.9504(1)(c), and 40 CFR §§264.13(c), 264.72(a) and (b), and 264.73(b)]

Waste shipments arrive at the facility in the following containers:

\ge	Drums
\boxtimes	Carboys

☐ Totes
U Wrangler box

Tanker trucks
Filter bags

Roll-off boxes

Vacuum trucks

Other: labpacks, overpacks, boxes, bags

Upon receipt of wastes from an off-site generator, Beck Road Facility will perform all the following tasks:

- Review paperwork
- Visually inspect the waste
- Perform waste screening/fingerprint analysis of waste

These tasks are discussed below.

A3.A.2(a) Review Paperwork

[R 299.9605(1) and R 299.9504(1)(c), and 40 CFR §§264.13(c), 264.72(a) and (b), and 264.73(b)]

Beck Road Facility will review all paperwork, including manifests and LDR notifications, before any wastes are accepted by the facility. Beck Road Facility will review all paperwork for completeness. In addition, the manifest and LDR notification will be compared for consistency. The manifest will also be compared to the waste profile and analytical information provided by the generator and to the waste shipment to ensure the accuracy of information provided on shipment paperwork. The manifest will also be compared to the number of containers, the volume, and/or the weight of the waste in the shipment. All discrepancies will be resolved before processing the waste.

Once the hazardous and mixed waste is received at the Beck Road Facility, a visual inspection is performed, prior to conducting a review of the paperwork, to ensure that the containers have not leaked during transport. Beck Road Facility will review all paperwork, including manifests and LDR notifications, before any wastes are accepted by the facility. Beck Road Facility will review all paperwork for completeness. In addition, the manifest and LDR notifications will be compared for consistency. The manifest will also be compared to the waste profile and analytical information provided by the generator and to the waste shipment to ensure the accuracy of information provided on shipment paperwork. The waste codes listed on both the EPA Uniform Hazardous Waste Manifest and RCRA/MI Act 451 labels are reviewed to verify that the chemicals and percent concentration of the chemicals listed are consistent with those listed on the U-M waste profile forms. The manifest will also be compared to the waste profile forms. The manifest will also be compared to the use profile forms. The manifest will also be compared to the U-M waste profile forms. The manifest will also be compared to the number of containers, the volume, and/or the weight of the waste in the shipment. All discrepancies will be resolved before accepting the waste.

U-M Hazmat personnel have extensive involvement with the hazardous and mixed waste destined for the Beck Road Facility. Hazardous and mixed waste is transported from the NCTF or other U-M generator sites to the Beck Road Facility. Hazmat personnel perform specific activities at the site of generation, at the transfer facility and at the storage facility, and act as transporter from facility to facility. Activities are often duplicated at each step in the process to ensure proper and safe handling of the waste. A discussion of the activities performed at the generator site, the transfer facility and the storage facility follows.

At the site of generation, Hazmat personnel provide consultation on collection, labeling, manifesting and packaging of hazardous and mixed waste. The generator labels the waste and completes the U-M internal manifests. At the time of collection, Hazmat personnel perform visual inspection/fingerprinting, label and manifest reviews and completion of the EPA Uniform Hazardous Waste Manifest and LDR notifications. Hazmat personnel perform all recordkeeping activities. Hazmat personnel act as the transporter from the site of generation to the transfer facility and to the Beck Road Facility. Hazmat personnel review and accept waste transported to the Beck Road Facility. Hazmat personnel verify compatibility and commingle the accepted waste at the Beck Road Facility.

Prior to pick up, the Hazmat personnel obtain a waste profile form, prepared by the generating laboratory, for each container of waste collected. The waste profile form consists of either the U-M LLRW Manifest or the U-M Hazardous / Chemical Waste Manifest, as appropriate.

Re-characterization occurs with each collection of waste. A completed U-M internal manifest will provide complete characterization of the waste prepared for collection. This documentation provides specific waste stream characterization by knowledge of the raw material and the waste generation process. Proper procedures for segregation will be in accordance with the "Precedence of Hazard Table" in 49 CFR §173.2a (Attachment A3-1), and the "Chemical Compatibility Chart, EPA-600/2-80-076 April 1980, A Method for Determining the Compatibility of Chemical Mixtures" (Attachment A3-2).

GENERATOR SITE

- U-M manifest check: Check for EPA ID number, proper shipping name, waste codes, isotope and activity, volume, room location, generator's signature on manifest. Discussion with the generator, as necessary, for validation/confirmation of the waste generation process and the waste constituents.
- Label check: Ensure both radioactive label and RCRA/MI Act 451 labels are complete and accurate.
- Review waste code suitability: Verify that the transfer facility (when applicable) and storage facility can accept waste codes generated. Each facility's permit is used as guidance in review.
- Fingerprinting: U-M conducts visual inspection of each container and a visual observation of the waste, each time, at the time of collection. Inspection of the container assesses the condition of the waste container for safe transport to the storage facility. Observation of the waste includes the container type, the color, the presence of phasing, and the volume and the waste code(s) assigned.
- If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with the generator and may require analytical testing through a commercial contract laboratory.
- Complete the generator section of the U-M Fingerprinting Documentation Sheet for each of the containers (jug, box, pail, etc.) referenced on the manifest. For each container of waste, indicate in columns provided, the BRSF (Beck Road Facility) storage area designation; the container type; the color of the waste; if a phase is observed in the waste (yes or no); the volume of waste; and the waste code(s) assigned. Initial and date the sheet.
- Completion of the Uniform Hazardous Waste Manifest and LDR notifications.
- Prepare waste for transport.

TRANSFER FACILITY

- Visual inspection of container for integrity.
- Enter waste onto the transfer facility's operation's log.
- Move to appropriate room in transfer facility.
- Manifest activities: Make appropriate copies of U-M internal manifest, EPA Uniform Hazardous Waste Manifest and LDR notifications for transfer facility and storage facility records. File originals and copies in appropriate locations.
- Perform radiological evaluation, as appropriate.
- Prior to shipping to storage facility, sign waste off transfer facility's operation's log, prepare

waste for transport, sign appropriate transporter box on EPA Uniform Hazardous Waste Manifest, make appropriate copy of EPA Uniform Hazardous Waste Manifest transporter sheet, if required. File transporter copy in appropriate location, if required.

STORAGE FACILITY

- Evaluation of U-M internal manifest, EPA Uniform Hazardous Waste Manifest and LDR notifications to ensure accuracy and completeness.
- Evaluation of radioactive label and RCRA/MI Act 451 label to ensure that both are complete and accurate.
- Visual observation of waste, fingerprinting: Complete the BRSF (Beck Road Facility) section of the U-M Fingerprinting Documentation Sheet for each of the containers (jug, box, pail, etc.) referenced on the manifest. For each container of waste, indicate in columns provided, the BRSF (Beck Road Facility) storage area designation; the container type; the color of the waste; if a phase is observed in the waste (yes or no); the volume of waste; and the waste code(s) assigned. Initial and date the sheet.
- If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with the generator and may require analytical testing through a commercial contract laboratory.
- Accept or deny waste, note discrepancies, sign manifest.
- Sign waste onto Operation's Log (Attachment A3-4).
- Move waste to designated waste management unit.
- Evaluation of isotope compatibility: Segregate short-lived and long-lived isotopes, as appropriate.
- Evaluation of compatibility of chemical constituents and waste codes for drum assignment: Each waste drum has a Chemical Constituent Sheet (Attachment A3-3) associated with it that lists the chemicals contained in that drum. This sheet is updated prior to new waste being commingled into a drum. The constituent sheet and the constituents of the new waste are evaluated for compatibility using the "Chemical Compatibility Chart, EPA-600/2-80-076 April 1980, A Method for Determining the Compatibility of Chemical Mixtures". Commingle like waste codes as possible.
- Ensure receiving drum is updated and properly marked and labeled: drum number, isotopes contained in drum, EPA ID number, proper shipping name, waste codes, accumulation start date for specific drum (will be date drum first receives waste).
- Update Operation's Log to indicate receiving drum.
- Update receiving drum worksheet.
- Commingle waste.
- Ensure drum is closed.
- Ensure waste profile form, and all other associated documents, are filed at the storage facility and/or returned to NCTF, as appropriate.
- Return appropriate copies of EPA Uniform Hazardous Waste Manifest to NCTF.

A3.A.2(b) Visual Inspection of Waste

[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §264.13(c)]

Beck Road Facility will visually inspect a minimum of one container and up to a maximum of 100 percent of the containers per waste code per generator. The contents of the container will be visually inspected for the following:

 \boxtimes Color \boxtimes pH (pH if generator knowledge identifies acids or bases.)

Physical State (Presence of phasing.)

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Other: U-M manifest and container ID numbers, container type, physical phasing observed, volume, and waste codes.

Visual observations will be recorded and compared to the waste profile information. All discrepancies will be resolved before processing the waste. The applicant should describe how the information gathered would help identify each movement of hazardous waste managed at the facility.

All containers of hazardous and mixed waste arriving at Beck Road Facility will be visually inspected to determine consistency with recorded information. Visual observations will be recorded and compared to the waste profile information. If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with discussions with the generator and may require analytical testing through a commercial contract laboratory. All discrepancies will be resolved before accepting the waste.

A3.A.2(c) Waste Screening/Fingerprinting

[R 299.9605(1) and R 299.9504(1)(c) and 40 CFR §§264.13(b)(14) and 264.13(c)(2)]

Table A3.A.1 lists the waste analysis procedures, including screening parameters for each hazardous waste, the rationale for the selection of these parameters, test methods that will be used to test for these parameters, the appropriate reference, whether the waste is specified in R 299.9216, the frequency of waste screening, and the rationale for the frequency. The sampling methods that will be used to obtain a representative sample of the waste to be analyzed and the sampling equipment and rationale are summarized in Table A3.A.2. The results of the waste screening/fingerprint analysis will be compared to the waste profile information and analytical results provided by the generator during the initial waste characterization process. The outside container of inner laboratory pack containers will be 100 percent visually inspected. Containers of personal protective equipment (PPE) or debris will undergo visual inspection. All discrepancies will be resolved before processing the waste.

The appropriate waste profiling documents, the U-M Fingerprinting Documentation Sheet, and the EPA Uniform Hazardous Waste Manifest, will be used for fingerprinting. The BRSF (Beck Road Facility) section of the U-M Fingerprinting Documentation Sheet will be completed. This will include a comparison of U-M internal manifest and container number, the BRSF (Beck Road Facility) area assignment, the container type, the color, if a phase is observed, the volume, and the waste codes assigned to the waste. The U-M Fingerprinting Documentation Sheet will then be initialed and dated.

If observed conditions are inconsistent with the waste profile provided by the generator, discrepancy resolution begins with discussions with the generator and may require analytical testing through a commercial contract laboratory. All discrepancies will be resolved before accepting the waste.

Sampling of waste, as necessary, will be in accordance with Table A3.A.2, Sampling Procedures.

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846), Update III plus variations. December 1996. EPA.

Waste Analysis at Facilities that Generate, Treat, Store, and Dispose Hazardous Waste; A Guidance Manual .EPA 530-R-94-024, OSWER Directive No. 9938.4-03. April 1994. EPA.
Figure A3.A.2 U-M Fingerprinting Documentation Sheet

Τ

LI-M Manifest No

University of Michigan Beck Road Storage Facility Fingerprinting Documentation Sheet

BRSF Area	Cont. No.		Container Type	Color	Phase Observed	Vol. (L)	Waste Codes
	1	Generator					
	1	BRSF					
	2	Generator					
	2	BRSF					
	3	Generator					
	3	BRSF					
	4	Generator					
	4	BRSF					
	5	Generator					
	5	BRSF					
	6	Generator					
	6	BRSF					
	7	Generator					
	7	BRSF					
	8	Generator					
	8	BRSF					

Comments:

	Initials	Date
Generator		
BRSF		

Table A3.A.1 Was	te Analysis Procedures
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Screening Parameter (Check as appropriate)	Rationale for Parameter	Test Method	Reference	Frequency	Rationale for Frequency
Waste Code					
Ignitability	Characteristic	Generator	40 CFR	Verified at	Generator Knowledge Provided by Waste
EPA HW No. D001	Hazardous Waste	Knowledge; SW- 846 1020 (liquids); SW- 846 1030 (solids)	261.21	Collection	Determination
Corrosivity	Characteristic	Generator	Regulated	Verified at	Generator Knowledge Provided by Waste
EPA HW No. D002	Hazardous Waste	Knowledge; SW-846 9040C	Level: pH <2 or <a>12.5	Collection	Determination
Reactivity	Characteristic	Generator	40 CFR	Verified at	Generator Knowledge Provided by Waste
EPA HW No. D003	Hazardous Waste	SW-846 9010C (Total and amendable cyanide)	261.23	Collection	Determination
Characteristics D004 to D043	Characteristic Hazardous Waste	Generator Knowledge; Test Method SW-846 1311 Then the Test Methods Cited Below			
Toxicity—Arsenic	Characteristic	Generator	Regulated	Verified at	Generator Knowledge Provided by Waste
EPA HW No. D004	Hazardous Waste	Knowledge; SW- 846 6010D or 6020D	Levei: 5.0 mg/L	Cllection	Determination
Toxicity—Barium	Characteristic	Generator	Regulated	Verified at	Generator Knowledge Provided by Waste
EPA HW No. D005	Hazardous Waste	Knowledge; SVV- 846 6010D or 6020D	Level: 100.0 mg/L	Collection	Determination
Toxicity—Cadmium	Characteristic Hazardous	Generator Knowledge; SW-	Regulated Level:	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste

		1			
EPA HW No. D006	Waste	846 6010D or 6020D	1.0 mg/L		Determination
Toxicity—Chromium EPA HW No. D007	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Lead EPA HW No. D008	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Mercury EPA HW No. D009	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 7470A or 7471B	Regulated Level: 0.2 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Selenium EPA HW No. D010	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 1.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Silver EPA HW No. D011	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
ToxicityBenzene EPA HW No. D018	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.5 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Carbon Tetrachloride EPA HW No. D019	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.5 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Chlorobenzene EPA HW No. D021	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 100.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Chloroform	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste

EPA HW No. D022	Hazardous Waste	Knowledge; SW- 846 8260D	Level: 6.0 mg/L	Collection	Profile to Comply with Hazardous Waste Determination
Toxicity—o-Cresol EPA HW No. D023	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8270E	Regulated Level: 200.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—m-Cresol EPA HW No. D024	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8270E	Regulated Level: 200.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—p-Cresol EPA HW No. D025	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8270E	Regulated Level: 200.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Cresol EPA HW No. D026	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8270E	Regulated Level: 200.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 1,4-Dichlorobenzene EPA HW No. D027	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 7.5 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 1,2-Dichloroethane EPA HW No. D028	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.5 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 1,1-Dichloroethylene EPA HW No. D029	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.7 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 2,4-Dinitrotoluene EPA HW No. D030	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8270E	Regulated Level: 0.13 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste

Hexachlorobenzene	Hazardous Waste	Knowledge; SW- 846 8270E	Level:	Collection	Profile to Comply with Hazardous Waste Determination
EPA HW No. D032			0.13 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
Hexachlorobutadiene	Hazardous Waste	Knowledge; SVV- 846 8270E	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D033			0.5 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
Hexachloroethane	Hazardous Waste	Knowledge; SW- 846 8270E	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D034			3.0 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
Methyl Ethyl Ketone	Hazardous Waste	Knowledge; SW- 846 8260D	Level:	Collection	Profile to Comply with Hazardous Waste Determination
EPA HW No. D035			200.0 mg/L		
Toxicity—Nitrobenzene	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. D036	Hazardous Waste	Knowledge; SW- 846 8270E	Level:	Collection	Profile to Comply with Hazardous Waste Determination
			2.0 mg/L		
Toxicity—Pyridine	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. D038	Waste	846 8270E	Level:	Collection	Determination
			5.0 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
Tetrachloroethylene	Waste	846 8260D		Collection	Determination
EPA HW No. D039			0.7 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
Trichloroethylene	Hazardous	Knowledge; SW- 846 8260D	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D040			0.5 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
2,4,5-Trichlorophenol	Hazardous Waste	Knowledge; SW- 846 8270E	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D041			400.0 mg/L		

Toxicity— 2,4,6-Trichlorophenol EPA HW No. D042	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8270E	Regulated Level: 2.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Vinyl Chloride EPA HW No. D043	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.2 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Chlorobenzene EPA HW No. F002 (See D021)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Methylene Chloride EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Ortho-Dichlorobenzene EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Tetrachloroethylene EPA HW No. F002 (See D039)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Trichloroethylene EPA HW No. F002 (See D040)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 1,1,1-Trichloroethane EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

Toxicity— 1,1,2-Trichloro-1,2,2- Trifluoroethane	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
EPA HW No. F002					
Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
Trichlorofluoromethane	Waste	846 8260D	261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination
EPA HW No. F002					
Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
1,1,2-Trichloroethane	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste
EPA HW No. F002			(
Ignitability— Acetone	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. F003	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination
Ignitability—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
Cyclohexanone	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste
EPA HW No. F003		0.0002002	(a)		
Ignitability— Ethyl Acetate	Listed Hazardous	Generator Knowledge; SW-	Spent Solvent per 40 CFR	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste
EPA HW No. F003	Waste	846 8260D	261.31(a)		Determination
Ignitability— Ethyl Benzene	Listed Hazardous	Generator Knowledge; SW-	Spent Solvent per 40 CFR	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste
EPA HW No. F003	Waste	846 8260D	261.31(a)		Determination
Ignitability— Ethyl Ether	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. F003	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination
Ignitability— Methanol	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. F003	Hazardous Waste	Knowledge; SW- 846 8260D & 8015C	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination

Ignitability— Methyl Isobutyl Ketone EPA HW No. F003	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability— n-Butyl Alcohol EPA HW No. F003	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D & 8015C	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability— Xylene EPA HW No. F003	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Cresols and Cresylic Acid EPA HW No. F004	Listed Hazardous Waste	Generator Knowledge; SW- 846 8270E	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
(See D026)					
Toxicity— Nitrobenzene EPA HW No. F004 (See D036)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8270E	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Benzene EPA HW No. F005 (See D018)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability, Toxicity— Carbon Disulfide EPA HW No. F005	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability, Toxicity— 2-Ethoxyethanol EPA HW No. F005	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D & 8015C	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

Ignitability, Toxicity— Isobutanol EPA HW No. F005	Listed Hazardous Waste	Generator Knowledge; SW- 846 8015C	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability, Toxicity— Methyl Ethyl Ketone EPA HW No. F005 (See D035)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability, Toxicity— 2-Nitropropane EPA HW No. F005	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability, Toxicity— Pyridine EPA HW No. F005 (See D038)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8270E	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Ignitability, Toxicity— Toluene EPA HW No. F005	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Methyl Iodide EPA HW No. U138	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Listed per 40 CFR 261.31(f)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Mercury EPA HW No. U151	Listed Hazardous Waste	Generator Knowledge; SW- 846 7470A or 7471B	Listed per 40 CFR 261.31(f)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Free Liquids	Determine if Waste Contains Free Liquids	Generator Knowledge; Paint Filter Liquids Test:	Liquid or Solid	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

		SW-846 9095B			
Compatibility	Occupational and Process Safety; Waste and Container Compatibility	EPA Chemical Compatibility Chart	40 CFR 264.17	Verified at Time of Collection	Occupational and Process Safety; Waste and Container Compatibility
Land Disposal Restrictions	40 CFR 268	40 CFR 268	40 CFR 268	Verified at Time of Collection	Required by Regulation
Volatile Organic Compound Content ¹					
Radioactivity	Check for Radioactive Materials	Generator Knowledge; Scintillation Counting; Survey Meter	10 CFR 20.1003	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile
Other: [describe]					

¹ According to R 299.9630 and 40 CFR §264.1034(d), TSDFs must identify and meet specific technical requirements for all process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air/stream stripping processes that manage wastes with 1 part per million by weight (ppmw) or greater total organics concentration on a time-weighted annual average basis. Total organic concentrations in the waste can be measured using SW-846 Method 8260B. According to R 299.9631 and 40 CFR §264.1050, TSDFs must also determine if its equipment contains or contacts organic wastes with10 percent or greater total organic content. The total organic content can be determined using (1) American Society of Testing and Materials Methods D2267-88, E169-87, or E260-85, (2) SW-846 Method 8260B, or (3) knowledge of the nature of the wastes stream or the waste generating process.

Table A3.A.2 Representative Sampling Procedures

Container Type or Material	Sampling Method ¹	Sampling Equipment	Rationale
Aqueous	Grab	Coliwasa	Representative Sampling
Oil or Organic Liquid	Grab	Coliwasa	Representative Sampling
Sludge	Grab	Trier	Representative Sampling
Solids	Grab	Auger or scoops and shovels	Representative Sampling

¹ The sampling method should demonstrate equivalence with the sampling methods described in 40 CFR, Part 261, Appendix I.

A3.A.3 Procedures to Ensure Compliance with Land Disposal Restrictions (LDR) Requirements [R 299.9627 and 40 CFR, Part 268]

All shipments of wastes subject to LDR received at the facility will be accompanied by appropriate generator notification and LDR notification in accordance with R 299.9627 and 40 CFR §268.7. The LDR notification accompanying generator wastes will be reviewed, and any discrepancies in the LDR notification and the associated manifest, analytical records, or Waste Profile Form will require shipment rejection unless additional, satisfactory, clarifying information is provided by the generator. All information obtained to document LDR compliance will be maintained in the facility operating record until closure of the facility.

If the facility receives a shipment of waste without LDR notification, or a notification with incorrect or incomplete information, the following actions will be conducted: LDR discrepancy resolution begins with discussions with the generator. If the LDR discrepancy can be resolved, corrections will be made to the LDR notification and the waste acceptance procedures will continue. If the LDR discrepancy cannot be resolved, the waste in question will be returned to the generator along with a copy of the completed discrepancy section of the EPA Uniform Hazardous Waste Manifest. Appropriate documentation will be made and maintained at the facility.

In accordance with the LDR regulations, all wastes shipped off site will be analyzed, or generator knowledge will be used when appropriate, to determine whether the waste meets the applicable LDR treatment standards specified in R 299.9627 and 40 CFR §§268.41-43. All analytical results will be maintained in the facility operating record until closure of the facility. Wastes that are determined through analysis to meet treatment standards as specified in R 299.9627 and 40 CFR §268.41-43 will be shipped off site in accordance with all other disposal regulations that may apply.

Beck Road Facility will supply LDR notifications and certification, including appropriate analytical records to support the certification, to the receiving facility with each shipment of waste. The notifications and certifications will contain the information required under R 299.9627 and 40 CFR §268.7. Any additional data obtained from the generators (e.g., Waste Profile Forms, original LDR notifications, analysis provided by generators) will be provided to the licensed TSDF where the waste will be sent.

A3.A.3(a) Spent Solvent Wastes

[R 299.9627 and 40 CFR §§264.13(a)(1), 268.7, 268.30, 268.31, 268.40, 268.41, 268.42, and 268.43]

Spent solvent wastes (F002-F005) are accepted at the facility. Generator process knowledge will be used to determine the presence of spent solvent wastes (F002-F005). Generator process knowledge will be documented on the waste material profile report and LDR notification. The LDR notification will provide additional information regarding the appropriate treatment standards for the waste and whether it has already been treated to the appropriate standards.

A3.A.3(b) Listed Wastes

[R 299.9627, R 299.9213, and R 299.9214 and 40 CFR §§264.13(a)(1), 268.7, 268.33, 268.34, 268.35, 268.36, 268.39, 268.40, 268.41, 268.42, and 268.43]

Generator process knowledge will be used to determine whether listed waste meets the

applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and

40 CFR §268.41, where treatment standards are based on concentrations in the waste extract, the facility will use toxicity characteristic leaching procedures (TCLP) to determine if wastes meet treatment standards. Generator process knowledge will be documented on the waste material profile report and LDR notification.

A3.A.3(c) Characteristic Wastes

[R 299.9627, R 299.9208, and R 299.9212 and 40 CFR §§261.3(d)(1), 264.13(a)(1), 268.7, 268.9, 268.37, 268.40, 268.41, 268.42, 268.43 and Part 268, Appendix I and Appendix IX]

Generator process knowledge will be used to determine whether characteristic waste meets the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and 40 CFR §268.41, where treatment standards are based on concentrations in the waste extract, generators shipping waste to the facility will determine if their wastes meet treatment standards.

Characteristic D008 lead nonwastewaters and D004 arsenic nonwastewaters will be analyzed using TCLP to determine compliance with treatment standards of 40 CFR §§268.40 and 268.48. If after treatment, a hazardous waste displays a characteristic for the first time, the characteristic waste code will be added to the LDR notification and facility records. Wastes will be retreated, as appropriate, to meet the characteristic treatment standards of 40 CFR §§268.40 and 268.48 prior to land disposal. In addition, the Generator process knowledge will be used to identify the underlying hazardous constituents that are expected to be present in the waste. Generator process knowledge will be documented on the waste material profile report and LDR notification.

A3.A.3(d) Radioactive Mixed Waste

[R 299.9627 and 40 CFR §§268.7, 268.35(c), 268.35(d), 268.36, and 268.42(d)]

Generator process knowledge will be used to determine whether a radioactive mixed waste meets the applicable treatment standard. If necessary, in accordance with R 299.9627 and 40 CFR §268.41, where treatment standards are based on concentrations in the waste extract, the facility will use toxicity characteristic leaching procedures (TCLP) to determine if wastes meet treatment standards. Generator process knowledge will be documented on the waste material profile report and LDR notification.

A3.A.3(e) Leachates [R 299.9627 and 40 CFR §260.10 and 40 CFR §§268.35(a) and 268.40]

The facility does not accept single-source or multi-source F039 leachates.

A3.A.3(f) Laboratory Packs

[R 299.9627 and 40 CFR §§268.7and 268.42(c) and Part 268, Appendix IV and Appendix V]

The laboratory packs accepted at the facility are not land disposed.

Generator process knowledge, or analytical testing, will be used to determine whether laboratory pack waste meets the applicable treatment standards. Generator process knowledge, or analytical testing, will be documented on the waste material profile form and LDR notification. No waste is treated on site.

A3.A.3(g) Contaminated Debris

[R 299.9627 and 40 CFR §§268.2(g), 268.7, 268.9, 268.36, 268.45, and 270.13(n)]

Contaminated debris is not accepted at the facility.

A3.A.3(h) Waste Mixtures and Wastes with Overlapping Requirements

[R 299.9627 and 40 CFR §§264.13(a), 268.7, 268.41(b), 268.43(b), and 268.45(a)]

Generator process information and analytical data will be used to demonstrate that those waste mixtures and wastes with multiple codes are properly characterized. Each waste that has more than one characteristic will be identified with a number for each characteristic. Waste identified as meeting a listing and exhibiting a characteristic will be primarily identified with the listed waste code for the purpose of manifesting, etc.

A3.A.3(i) Dilution and Aggregation of Wastes

[R 299.9627 and 40 CFR §268.3]

Listed wastes, if destined for land disposal, may not be diluted from the point of generation to the point of land disposal. Characteristic wastes may only be diluted if, (1) the waste is managed in a Clean Water Act (CWA)/CWA-equivalent surface unit or a Class I Safe Drinking Water Act injection well, (2) the waste has a concentration-based treatment standard or is treated using the DEACT technology-based treatment standard, and (3) the waste is not a D003 reactive waste.

The facility may not dilute or partially treat a listed waste to change its treatability category (i.e., from nonwastewater to wastewater), in order to comply with different treatment standards. If the wastes are all legitimately amenable to the same type of treatment to be performed, the facility may aggregate wastes for treatment.

A3.B CAPTIVE FACILITY

The U-M Beck Road Facility is not a Captive Facility. This section does not apply.

A3.C NOTIFICATION, CERTIFICATION, AND RECORDKEEPING REQUIREMENTS [R 299.9627 and R 299.9609 and 40 CFR §§264.73, 268.7, and 268.9(d)]

Beck Road Facility will perform the following procedures for preparing and/or maintaining applicable notifications and certifications to comply with LDRs:

All hazardous and mixed waste accepted at the Beck Road Facility will be accompanied by the appropriate LDR notifications. Beck Road Facility personnel will review all paperwork, including waste profile documents, EPA Uniform Hazardous Waste Manifests and LDR notifications, before any hazardous waste is accepted by the facility. Beck Road Facility personnel will review all paperwork for accuracy and completeness.

A3.C.1 Retention of Generator Notices and Certifications [R 299.9627 and 40 CFR §268.7(a)(7)]

Beck Road Facility will retain a copy of all notices, certifications, demonstrations, data, and other documentation associated with compliance to LDRs.

- Notices of restricted wastes not meeting treatment standards or exceeding levels specified in RCRA §3004(d), including the information listed in R 299.9627 and 40 CFR §268.7(a)(1).
- Notices of restricted wastes meeting applicable treatment standards and prohibition levels, including the information in R 299.9627 and 40 CFR §268.7(a)(2).

A3.C.2 Notification and Certification Requirements for Treatment Facilities [R 299.9627 and 40 CFR §268.7(b)]

No waste is treated on site.

If the waste will be further managed at a different treatment or storage facility, the facility will comply with the notice and certification requirements applicable to generators as specified in R 299.9627 and 40 CFR §268.7(b)(6).

A3.C.3 Waste Shipped to Subtitle C Facilities

[R 299.9627 and 40 CFR §§268.7(a) and 268.7(b)(6)]

For restricted waste or waste treatment residues that will be further managed at a Subtitle C (hazardous waste management) facility, the facility will submit notifications and certifications in compliance with the notice and certification requirements applicable to generators under R 299.9627 and 40 CFR §268.7(a) and (b)(6).

A3.C.4 Waste Shipped to Subtitle D Facilities

[R 299.9627 and 40 CFR §§268.7(d) and 268.9(d)]

The facility does not ship waste to Subtitle D facilities.

A3.C.5 Recyclable Materials

[R 299.9627 and 40 CFR §268.7(b)(7)]

The facility does not accept_recyclable materials used in a manner constituting disposal.

A3C.6 Record Keeping

[R 299.9608(4), R 299.9609, R 299.9610(3), and R 299.9627 and 40 CFR §§264.72, 264.73, 268.7(a)(5), 268.7(a)(6), 268(a)(7), and 268.7(d)]

Beck Road Facility maintains a facility operating log in accordance with R 299.9609 and 40 CFR §264.73. The operating log consists of the following:

- A description of each hazardous waste received, to include:
 - Date received and date disposed
 - o Quantity received
 - Method of storage
 - Location of storage within the facility
 - A cross reference to manifest document numbers
 - o Results of waste determinations and analyses.
- A summary of results and details of incidents that require implementation of the contingency plan.
- Records and results of facility inspections.
- Records and results of required corrective actions.
- 2 Page 33 of 56 Form EQP 5111 Attachment Template A3, Waste Analysis Plan

- Certification that a waste minimization program is in place.
- Appropriate copies of the EPA Uniform Hazardous Waste Manifest, Fingerprinting Documentation Sheets, and LDR notifications.

Copies of all necessary notifications and certifications, as well as relevant inspection forms and monitoring data, are also maintained on file at the facility. Files will be maintained for a minimum of three years (for inspection records and LDR notification), or until facility closure (for inventory records).

If a significant manifest discrepancy is discovered (such as variation in one-piece count or misrepresentation of the type of waste or corrosive rather than flammable) that cannot be resolved with the generator or transporter within 15 days of receipt, facility personnel will submit to the Director and Regional Administrator a letter describing the discrepancy and all attempts to reconcile the discrepancy. The letter will include a copy of the discrepant manifest or shipping document.

A3.C.7 Required Notice

[R 299.9605(1) and 40 CFR §264.12(a) and (b))]

The Beck Road Facility does not receive hazardous or mixed waste from foreign sources.

When the facility is to receive hazardous waste from an off-site source, the facility will inform the generator in writing that the facility has the appropriate license for and will accept the waste the generator is shipping. The facility will keep a copy of this written notice in the operating record.

Attachment A3-1 Precedence of Hazard Table

PRECEDENCE OF HAZARD TABLE

§173.2a Classification of a material having more than one hazard.

(a) Classification of a material having more than one hazard. Except as provided in paragraph (c) of this section, a material not specifically listed in the §172.101 table that meets the definition of more than one hazard class or division as defined in this part, shall be classed according to the highest applicable hazard class of the following hazard classes, which are listed in descending order of hazard:

(1) Class 7 (radioactive materials, other than limited quantities; and shipments of UN 3507, Uranium hexafluoride, radioactive material, excepted package)

(2) Division 2.3 (poisonous gases).

(3) Division 2.1 (flammable gases).

(4) Division 2.2 (nonflammable gases).

(5) Division 6.1 (poisonous liquids), Packing Group I, poisonous-by-inhalation only.

(6) A material that meets the definition of a pyrophoric material in §173.124(b)(1) of this subchapter (Division 4.2).

(7) A material that meets the definition of a self-reactive material in 173.124(a)(2) of this subchapter (Division 4.1).

(8) Class 3 (flammable liquids), Class 8 (corrosive materials), Division 4.1 (flammable solids), Division 4.2 (spontaneously combustible materials), Division 4.3 (dangerous when wet materials), Division 5.1 (oxidizers) or Division 6.1 (poisonous liquids or solids other than Packing Group I, poisonous-by-inhalation). The hazard class and packing group for a material meeting more than one of these hazards shall be determined using the precedence table in paragraph (b) of this section.

(9) Combustible liquids.

(10) Class 9 (miscellaneous hazardous materials).

(b) Precedence of hazard table for Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1. The following table ranks those materials that meet the definition of Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1:

PRECEDENCE OF HAZARD TABLE

[Hazard class o	r division and	packing group]
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	4.2	4.3	5.1 I ¹	5.1 II ¹	5.1 III ¹	6.1, I dermal	6.1, I oral	6.1 II	6.1 III	8, I liquid	8, I solid	8, II liquid	8, II solid	8, III liquid	8, III solid
3 I ²		4.3				3	3	3	3	3	(3)	3	(3)	3	(3)
3 II ²		4.3				3	3	3	3	8	(3)	3	(3)	3	(3)
3 III ²		4.3				6.1	6.1	6.1	34	8	(3)	8	(3)	3	(3)
4.1 II^2	4.2	4.3	5.1	4.1	4.1	6.1	6.1	4.1	4.1	(3)	8	(3)	4.1	(3)	4.1
4.1 III^2	4.2	4.3	5.1	4.1	4.1	6.1	6.1	6.1	4.1	(3)	8	(3)	8	(3)	4.1
4.2 II		4.3	5.1	4.2	4.2	6.1	6.1	4.2	4.2	8	8	4.2	4.2	4.2	4.2
4.2 III		4.3	5.1	5.1	4.2	6.1	6.1	6.1	4.2	8	8	8	8	4.2	4.2
4.3 I			5.1	4.3	4.3	6.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4.3 II			5.1	4.3	4.3	6.1	4.3	4.3	4.3	8	8	4.3	4.3	4.3	4.3
4.3 III			5.1	5.1	4.3	6.1	6.1	6.1	4.3	8	8	8	8	4.3	4.3
5.1 I ¹						5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1 II^1						6.1	5.1	5.1	5.1	8	8	5.1	5.1	5.1	5.1
$5.1 ext{ III}^1$						6.1	6.1	6.1	5.1	8	8	8	8	5.1	5.1
6.1 I, Dermal										8	6.1	6.1	6.1	6.1	6.1
6.1 I, Oral										8	6.1	6.1	6.1	6.1	6.1
6.1 II, Inhalation										8	6.1	6.1	6.1	6.1	6.1
6.1 II, Dermal										8	6.1	8	6.1	6.1	6.1
6.1 II, Oral										8	8	8	6.1	6.1	6.1
6.1 III										8	8	8	8	8	8

PRECEDENCE OF HAZARD TABLE

¹See §173.127.

²Materials of Division 4.1 other than self-reactive substances and solid desensitized explosives, and materials of Class 3 other than liquid desensitized explosives.

³Denotes an impossible combination.

⁴For pesticides only, where a material has the hazards of Class 3, Packing Group III, and Division 6.1, Packing Group III, the primary hazard is Division 6.1, Packing Group III.

NOTE 1: The most stringent packing group assigned to a hazard of the material takes precedence over other packing groups; for example, a material meeting Class 3 PG II and Division 6.1 PG I (oral toxicity) is classified as Class 3 PG I.

NOTE 2: A material which meets the definition of Class 8 and has an inhalation toxicity by dusts and mists which meets criteria for Packing Group I specified in §173.133(a)(1) must be classed as Division 6.1 if the oral or dermal toxicity meets criteria for Packing Group I or II. If the oral or dermal toxicity meets criteria for Packing Group I or II. If the oral or dermal toxicity meets criteria for Packing Group I or II. If the oral or dermal toxicity meets criteria for Packing Group III or less, the material must be classed as Class 8.

(c) The following materials are not subject to the provisions of paragraph (a) of this section because of their unique properties:

(1) A Class 1 (explosive) material that meets any other hazard class or division as defined in this part shall be assigned a division in Class 1. Class 1 materials shall be classed and approved in accordance with §173.56 of this part;

(2) A Division 5.2 (organic peroxide) material that meets the definition of any other hazard class or division as defined in this part, shall be classed as Division 5.2;

(3) A Division 6.2 (infectious substance) material that also meets the definition of another hazard class or division, other than Class 7, or that also is a limited quantity Class 7 material, shall be classed as Division 6.2;

(4) A material that meets the definition of a wetted explosive in §173.124(a)(1) of this subchapter (Division 4.1). Wetted explosives are either specifically listed in the §172.101 table or are approved by the Associate Administrator (see §173.124(a)(1) of this subchapter); and

(5) A limited quantity of a Class 7 (radioactive) material that meets the definition for more than one hazard class or division shall be classed in accordance with §173.423.

[Amdt. 173-224, 55 FR 52606, Dec. 21, 1990, as amended at 56 FR 66264, Dec. 20, 1991; Amdt. 173-241, 59 FR 67490, Dec. 29, 1994; Amdt. 173-247, 60 FR 48787, Sept. 20, 1995; Amdt. 173-244, 60 FR 50307, Sept. 28, 1995; 64 FR 10776, Mar. 5, 1999; 66 FR 33426, June 21, 2001; 66 FR 45182, 45379, Aug. 28, 2001; 68 FR 45032, July 31, 2003; 80 FR 1151, Jan. 8, 2015]

Attachment A3-2 Chemical Compatibility Chart

Chemical Compatibility Chart

EPA-600/2-80-076 April 1980

A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Municipal Environmental Laboratory Office of Research and Development U.S. Environmental Protection Agency Cincinnati, Ohio 45268

Caution: This Chart is intended as an indication of some of the hazards that can be expected on mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not solassified as hazardous on the chart, nor do any blanks necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.



Attachment A3-3 Chemical Constituent Sheet

Chemical Constituent Sheet

Mixed Waste Drum Number

01 · acetamide 02 · acetic acid 100 · acetic anhydride 03 · acetone 04 · acetonitrile 05 · acrylamide 07 · ammonium compounds (specify below) 08 · arsenic compounds (specify below) 09 · barium compounds (specify below) 10 · benzene 11 · benzo(a)pyrene 95 · blood 88 · boric acid 101 · bovine albumin 102 · bromophenol blue dye 12 · butanol 13 · cadmium compounds (specify below) 103 · calcium chloride 104 · calcium sulfate 14 · carbon tetrachloride 16 · chlorobenzene 17 · chloroform 18 · chlorophenol 105 · choline chloride 19 · chromium compounds (specify below) 106 • citric acid 107 · coomassie blue dye 20 · copper compounds (specify below) 96 · culture medium 21 · cyanide compounds (specify below) 22 · cyclohexane

23 · DDD/DDT 108 · dextran sulfate 24 · dichlorobenzene 49 · mercaptoethanol 25 · dimethylsulfoxide (DMSO) 109 · DMEM media 51 · methanol 26 · epinephrine 117 · methoxyethanol 27 · ethanol 54 · methyl benzene 28 • ether 29 · ethidium bromide (EtBr) 58 • naphthalene 30 · ethyl acetate 59 • nitric acid 31 • ethylbenzene 60 · nitrobenzene 32 · ethylene diamine 118 · perchloric acid tetraacetic acid (EDTA) 62 · periflour 33 • ethylene glycol-bis 63 · phenol $(\beta$ -amino ethyl ether)-64 · phosphoric acid tetraacetic acid (EGTA) 65 · phthalates 34 • ethyl ether 35 · ethylphenol 36 · formaldehyde 67 · propanoic acid 37 · formalin 38 · formamide 68 · pyridine 39 · formic acid 40 · glutaraldehyde 69 · scintillation fluid 110 · glycine 111 · hams F12 media 112 · HEPES buffer 41 · heptane 71 · silver compounds 113 · hexane 43 · hydrochloric acid (HCl) 120 · sodium acetate 44 • hydroxybenzene 72 · sodium azide 114 · isoamyl alcohol 46 · isobutanol 122 · sodium carbonate 47 · isopropanol 89 · sodium chloride 48 · lead compounds 90 · sodium citrate (specify below) 93 · sodium dodecyl sulfate 115 · magnesium chloride (SDS)

97 · magnesium phosphate 116 · magnesium sulfate 50 · mercury compounds (specify below) 52 • methylene chloride 53 · methyl ethyl ketone 91 · potassium chloride 66 · potassium permanganate 119 · potassium phosphate 94 · saline sodium citrate (SSC) (specify below) 70 · selenium compounds (specify below) (specify below) ABOVE) 121 · sodium bicarbonate

73 · sodium hydroxide 74 · sodium hypochlorite 123 · sodium iodide 124 · sodium lauryl sulfate (SLS) 92 · sodium phosphate 125 · sodium thiosulfate 126 · sucrose 75 · sulfuric acid 127 · taurine 76 · tetrachlorobenzene 77 · tetrachloroethylene 128 • tetrahydrofuran 78 · toluene 79 · trichloroacetic acid (TCA) 80 · trichloroethylene 129 · trifluoroacetic acid 87 • TRIS buffer 81 · uranyl acetate 82 · uranyl nitrate 83 · urea 84 • vinyl chloride 85 · xylene 130 · xylene cyanol 86 · zinc compounds (specify below) 99 · OTHER (SEE INSTRUCTIONS

Other Chemical Names



Attachment A3-4 Beck Road Facility Operation's Log

Operation's Log

EPA ID: MIR 000 001 834 University of Michigan Environment, Health and Safety (EHS) Beck Road Facility 8501 Beck Road Belleville, Michigan 48111

Month / Year____/

Authorized Handling Code S01

Date	Manifest	Generator	Number of	Total #	Waste	Drum	Off Site	Initials
In	Number	Name	Containers	of Liters	Codes(s)	MW #	Ship. Date	
<u> </u>				<u></u>				

Attachment A3-5 LDR Notifications

LAND DISPOSAL RESTRICTION NOTIFICATION AND CERTIFICATION FORM

Generator Name: _	U of M /				
Manifest Number:		LDR Continuation Page?	No No	∐Yes .	of

А

Applicable Certification/Notification Statement (found on reverse side):

F001 - F005 SPENT SOLVENTS

CONSTITUENT	ww	NWW	CONSTITUENT	ww	NWW
Acetone - F003			Methylene chloride - F002		
Benzene - F005 (D018)			Methyl ethyl ketone - F005 (D035)	incest the	State of the second state
n-Butyl alcohol - F003		000000000	Methyl isobutyl ketone - F003		
Carbon disulfide - F005			Nitrobenzene - F004 (D036)		Street Street Street
Carbon tetrachloride - F001 (D019)			2-Nitropropane - F005		
Chlorobenzene - F002 (D021)	S	Sold in the second	Pyridine - F005 (D038)		
m- & p-Cresol - F004 (D024 & D025)			Tetrachloroethylene - F001 (D039)		and the second
o-Cresol - F004 (D023)			Tetrachloroethylene - F002 (D039)		and the state of the
Cyclohexanone - F003			Toluene - F005		
1,2-Dichlorobenzene - F002			1,1,1-Trichloroethane - F001		
2-Ethoxyethanol - F005		25.545 - 144	1,1,1-Trichloroethane - F002	2	
Ethyl acetate - F003			1.1.2-Trichloroethane - F002		
Ethyl benzene - F003			1,1,2-Trichloro-1,2,2-trifluoroethane-F002		
Ethyl ether - F003			Trichloroethylene - F001 (D040)		1. T
Isobutanol - F005			Trichloroethylene - F002 (D040)		
Methanol - F003			Trichlorofluoromethane - F002		
Methylene chloride - F001			Xylene - F003		

Shaded areas indicate waste that can carry D waste numbers also. D waste numbers shown in parenthesis are for reference only.

OTHER RESTRICTED WASTES

EPA Hazardous Waste No.	ww	NWW	Subcategory of Waste	EPA Hazardous Waste No.	ww	NWW	Subcategory of Waste	None
D001		1005	High TOC-Ignitable Liquid (≥10%)					T
D001			Ignitable Waste in non-CWA/SDWA					1
D002		1.1	Corrosive Waste in non-CWA/SDWA					1
D003		121	Reactive Cyanides					1
D003			Reactive Sulfides					1
D003		2020	Water Reactive				2	1
D003			Other Reactive					
D009			High Mercury – Inorganic (≥260 mg/kg)					T
D009			High Mercury - Organic (≥260 mg/kg)			- 12 12		:
D009			Low Mercury (<260 mg/kg)					1
		1965 100 Kito M						
								+
								-

LRD:111706

HAZARDOUS DEBRIS

This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45.

The contaminants subject to treatment are indicated on the attached Underlying Hazardous Constituent form

UNDERLYING HAZARDOUS CONSTITUENTS (UHCs)

For D001 (except High (>10%) TOC Subcategory), D002 - D043, and F039 wastes; UHCs, which can reasonably be expected to be present at the point of generation at a concentration above the constituent-specific Universal Treatment Standard, must be indicated on the Underlying Hazardous Constituents Form. UHCs need not be determined for tab packs managed under the alternative treatment standards for tab packs.

No UHCs

UHCs identified on attached Underlying Hazardous Constituents Form

CERTIFICATION STATEMENTS

A. RESTRICTED WASTE REQUIRING TREATMENT

I am the initial generator of the restricted waste(s) listed on the reverse side which must be treated to the applicable treatment standard prior to land disposal.

B. RESTRICTED WASTE MEETING TREATMENT STANDARDS AT THE POINT OF GENERATION

I am the initial generator of the EPA hazardous waste number(s) listed on the reverse side. I have determined that the waste meets all applicable treatment standards set forth in 40 CFR Part 268 and therefore, can be land disposed without further treatment.

"I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment."

C. LAB PACKS MANAGED UNDER ALTERNATIVE TREATMENT STANDARDS

The lab packs identified on the reverse side do not contain any of the wastes specified in Appendix IV and are managed under the alternative treatment standards in 40 CFR 268.42(c).

"I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have not been excluded under appendix IV to 40 CFR part 268 and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at 40 CFR 268.42(c). I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment."

D. RESTRICTED WASTE CONSISTING OF CONTAMINATED SOIL NOT MEETING TREATMENT STANDARDS The contaminated soil identified on the reverse side does not meet the soil treatment standard in 40 CFR

268.49(c). "I certify under penalty of law that I personally have examined this contaminated soil and it [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and requires treatment to meet the soil treatment standards as provided by 268.49(c)."

E. DECHARACTERIZED WASTE CONTAINING UNDERLYING HAZARDOUS CONSTITUENTS REQUIRING FURTHER TREATMENT

The decharacterized hazardous waste listed on the reverse side contain underlying hazardous constituents requiring further treatment.

"I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet universal treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

F. RESTRICTED WASTE SUBJECT TO A VARIANCE OR EXEMPTION

The waste identified on the reverse side is exempt from LDR standards and subject to a nationwide variance which expires on

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Generator Signature

Date

*Concentration in mg1 TCLP

Carent evolution Warring (L)	UNDERLVING HAZARDOUS CONSTITUENTS FORM							
$\begin{aligned} \begin{array}{c} \text{recruption} \\ rec$	Generator Name: U of M /	1101//	1000000	Manafest Number:				
Construction 0.019 1.1 0.027 0.0031 0.019 0.033 Actors of a construction 0.01 7.1 2.1 Direct (Approxem 0.051 T.1 Actor infe 0.01 7.1 2.1 Direct (Approxem 0.011 T.1 Actor infe 0.01 7.1 2.1 Direct (Approxem 0.012 T.1 Actor infe 0.02 HA Direct (Approxem 0.012 T.1 T.1 Actor infer 0.02 HA Direct (Approxem 0.012 T.1	ORGANIC CONSTITUTINTS	WW(mg/l)	NWW(mg/kg)	ORGANIC CONSTITUTINTS	WW(mg/l)	NWW(mg/kg)		
Actionation 0.224 160 Distruct, Appendence 0.635 0.973 Accination 0.01 7.6 12-Ditrone-3-Enteropopate 0.061 NM. Accination 0.09 160 12-Ditrone-3-Enteropopate 0.011 NM. Accination 0.09 160 12-Ditrone-3-Enteropopate 0.011 NM. Accination 0.09 160 12-Ditrone-3-Enteropopate 0.011 NM. Accination 0.02 MA Dickhorebacrate 0.031 15 Accination 0.021 0.064 Dickhorebacrate 0.032 6 Addrin 0.011 0.06 Dickhorebacrate 0.031 7:2 Advansation 0.011 1.04 Dickhorebacrate 0.032 7:2 Advansation 0.011 1.06 Dickhorebacrate 0.034 6 Advansation 0.012 1.04 Dickhorebacrate 0.034 10 Advansation 0.013 0.06 Dickhorebacrate 0.034 10 </td <td>Acensphiliprene</td> <td>0.059</td> <td>3.4</td> <td>n n'-DDT</td> <td>0.0039</td> <td>0.087</td>	Acensphiliprene	0.059	3.4	n n'-DDT	0.0039	0.087		
Acctoning 5.6 18 Discription 0.601 PTA Acctophenose 0.01 9.7 140 12-Discons-Discrete alboration 0.111 15 Accolan 0.23 PAA Discrete alboration 0.111 15 Accolan 0.23 PAA Discrete alboration 0.111 15 Accolan 0.24 PAA Discrete alboration 0.011 15 Accolan 0.24 PAA Discrete alboration 0.011 15 Activation alboration 0.021 0.66 Discrete alboration 0.021 6 Activation 0.021 0.66 Discrete alboration 0.031 7.2 Aninge 0.31 14 1.2.Discrete alboration 0.031 6 Activation 0.030 14 0.2.Discrete alboration 0.044 14 State alboration 0.041 0.666 2.Discrete alboration 0.044 14 State alboration 0.031 0.666 2.Discliscrete alboratiobacobacob	Acetone	0.28	160	Dibenz(a h)anthracene	0.055	82		
Aceteghenoos 0.01 9.7 12-Dimens-J-ableopropues 0.11 13 Acrosian 0.29 140 L'abbonemethane d'hourside 0.12 15 Acrosian 0.29 140 Dimense-Interaction 0.11 15 Acrosian 0.23 2.1 Bachelinobearne 0.055 6 Adres 0.055 0.23 Dichlorobearne 0.037 6 Adres 0.055 0.23 Dichlorobearne 0.23 7.2 Adres 0.13 NA L'abcherobearne 0.23 6 Adres 0.010 0.66 L'abcherobearne 0.21 6 Adres 0.0014 0.064 L'abcherobearne 0.23 6 Adres 0.0024 0.064 L'abcherobearne 0.24 1.2	Acetonitrile	5.6	38	Dibenz(a,e)pyrene	0.061	NA		
2-AcytamagRizeres 0.059 140 12-Deconson-financeThylese altornaise 0.073 11 Acrylannic 0.59 NA Disconsentance 0.011 15 Acrylannic 0.54 0.2 an-Dichlorobenzane 0.055 6.5 Advian 0.021 0.024 PLDRAbornane 0.033 72 Advian 0.021 0.04 0.045 PLDRAbornane 0.033 72 Advian 0.031 NA 1.1D-Dichlorobenze 0.033 76 Animote 0.31 NA 1.4D-Dichlorobenze 0.021 6 Animote 0.31 TA 1.2D-Dichlorobenze 0.023 6 Animote 0.36 TA 1.2D-Dichlorobenze 0.023 6 Animote 0.36 TA 1.4D-Dichlorobenze 0.021 6 Animote 0.36 TA 1.2D-Dichlorobenze 0.035 1.4 Barban 0.055 TA 1.2D-Dichlorobenze 0.036 1.4	Acetophenone	0.01	9.7	1,2-Dibromo-3-chloropropane	0.11	15		
Acrolania 0.29 NA Disconsentance 0.11 15 Acrylania 0.9 2.3 P.Disknownerse 0.055 6 Adlera 0.056 0.23 P.Disknownerse 0.057 6 Adlera 0.056 0.23 P.Disknownerse 0.037 72 4-Amrohyberyl 0.13 NA 1, 2-Disknownershare 0.021 6 Admine 0.61 14 1, 2-Disknownershare 0.021 6 Admine 0.61 1, 2-Disknownershare 0.023 6 Admine 0.01 0.66 1, 2-Disknownershare 0.024 7 Admine 0.0014 0.066 2-Disknownershare 0.024 7 Admine 0.0014 0.066 1, 2-Disknownershare 0.035 18 Barban 0.0036 1.4 trans. 3-Disknownershare 0.036 18 Bardoard* 0.035 1.4 trans. 3-Disknownershare 0.017 0.72 Bardoard* 0.035	2-Acetylaminofluorene	0.059	140	1,2-Dibromoethane/Ethylene dibromide	0.028	15		
Acytantic D 2.4 m-bicknowszere 0.036 6 Acytantic 0.055 6.4 Dicknowszere 0.037 0.037 0.038 6 Advin 0.011 0.046 Dicknowszere 0.031 7.2 Advin 0.012 0.046 Dicknowszere 0.032 7.2 Aninto 0.01 0.66 I.1D-Dicknowszere 0.023 6 Aninto 0.01 0.66 I.1D-Dicknowszere 0.034 30 Aninto 0.059 3.4 run-1.2 Dicknowszere 0.034 30 Aninto 0.051 4.6 0.022 Dicknowszere 0.034 30 Aninto 0.055 1.4 Dicknowszere 0.037 0.066 1.2 Dicknowszere 0.036 18 Barban 0.055 1.4 Dichdrin 0.017 0.13 Bicknowszere 0.017 0.13 Bicknowszere 0.016 18 Barban 0.017 0.13 Bicknowszere 0.017 0	Acrolein	0,29	NA	Dibromomethane	0.11	15		
Activation 0.03 0.03 0.03 0.03 0.033 <th0.033< th=""> <th< td=""><td>Acrylamide</td><td>19</td><td>23</td><td>m-Dichlorobenzene</td><td>0.036</td><td>6</td></th<></th0.033<>	Acrylamide	19	23	m-Dichlorobenzene	0.036	6		
Adam 0.021 0.046 Dickhage/finanzanos 0.237 0 Animobio-program 0.031 PKA 1.1-Dechtoresthate 0.037 6 Animobio-program 0.01 0.66 1.1-Dechtoresthate 0.021 6 Animite 0.036 N.4 1.1-Dechtoresthate 0.037 6 Animite 0.35 N.4 rus-1_2-Dichtoresthytee 0.034 30 Animite 0.35 N.4 2.4-Dichtoresthytee 0.034 14 alphe BKC 0.00014 0.066 2.4-Dichtorestherest end/2.4-D 0.72 10 deta_BHC 0.0014 0.066 2.4-Dichtorestherest end/2.4-D 0.72 10 deta_BHC 0.0037 0.066 2.4-Dichtorestherest end/2.4-D 0.13 10 Bendorff 0.055 1.4 Dichtrin thintorestrytee 0.017 0.18 Bendorff 0.055 1.4 Dichtrin thintait 0.2 78 Bendorff 0.055 1.4 Dichtrin thintait 0.017 <td>Advised sulfage</td> <td>0,24</td> <td>0.28</td> <td>o-Dichlorobenzene</td> <td>0,088</td> <td></td>	Advised sulfage	0,24	0.28	o-Dichlorobenzene	0,088			
4-Amino-bytenyl 0.13 NA 11-Dechtrosethase 0.059 1 0-Antasidne 0.01 0.66 1,2-Dechtrosethase 0.025 6 Antinacene 0.025 0.64 1,2-Dechtrosethylene 0.025 6 Antinacene 0.025 0.64 1,2-Dechtrosethylene 0.034 30 Antinacene 0.026 1,2-Dechtrosethylene 0.034 30 Antinacene 0.026 1,2-Dechtrosethene 0.034 14 Antinacene 0.026 1,2-Dechtrosethene 0.034 14 Antinacene 0.026 1,4 <dechtrosethene< td=""> 0.016 16 Barban 0.056 1,4<dechtrosethene< td=""> 0.016 18 Barban 0.055 1,4<dechtrosethylene< td=""> 0.016 18 Barban 0.056 1,4<dechtrosethylene< td=""> 0.016 10 Barban 0.056 1,4<dechtrosethylene< td=""> 0.016 10 Barban 0.056 1,4<dechtrosethylene< td=""> 0.017 0.18 Baro</dechtrosethylene<></dechtrosethylene<></dechtrosethylene<></dechtrosethylene<></dechtrosethene<></dechtrosethene<>	Aldrin	0.000	0.066	Dichlorodifluoromethane	0.09	- 77		
Aniline 0.81 14 1.2-Dichlorentlylene 0.21 6 Antmarte 0.05 3.4 Turus-1,2-Dichlorentlylene 0.054 3.6 Antmarte 0.36 N.A. & 24-Dicklorentlylene 0.054 3.6 Antmarte 0.36 N.A. & 24-Dicklorentlylene 0.054 3.6 Antmarte 0.36 N.A. & 24-Dicklorentlylene 0.054 3.6 Algeba BIC 0.00014 0.066 2.4-Dicklorentlylene 0.056 1.6 Anta BIC 0.0017 0.066 2.4-Dicklorentlylene 0.016 1.6 Bendioust ^M 0.055 1.4 Dicklylethalte 0.017 6 Bendioust ^M 0.056 1.4 Dicklylethalte 0.017 7 Benzag Mantracece 0.057 6 2.4-Dimethylethalte 0.017 7 Benzag Mantracece 0.055 6 2.4-Dimethylethalte 0.017 2.8 Benzag Mantracece 0.055 6 2.4-Dimethylethalte 0.017 2.8 Ben	4-Aminobiphenyl	0.13	NA	1,1-Dichloroethane	0.059	6		
o-Anstaine 0.01 0.66 [1,1-DicKloreshylene 0.025 §.5 Anstancer 0.059 3.4 trues, 1_2-Dickloreshylene 0.054 3.0 Anstancer 0.059 3.4 trues, 1_2-Dickloreshylene 0.044 144 Babe BHC 0.0014 0.066 2.4-Dickloreshylene 0.051 1.0 Barnan BHC 0.0017 0.066 1.2-Dicklorespreame 0.85 1.8 Barnan BHC 0.0017 0.066 1.2-Dicklorespreame 0.056 1.8 Barnan BHC 0.055 1.4 Ortes, 1_Dicklorespreame 0.056 1.8 Benzare 0.14 Ortes, 1_Dicklorespreame 0.057 0.8 Benzare 0.14 0.55 1.4 Dickloreshylene 0.056 1.4 Benzare 0.14 0.55 1.4 Dickloreshylene 0.057 2.8 Benzare 0.055 1.5 2.4-Dimetrylenitive messare 0.031 0.64 Branzare 0.11 6.5 Dickloreshylene	Aniline	0.81	14	1,2-Dichloroethane	0.21	6		
Authancene 0.059 3.4 Turus-1_2-Dichlorothylene 0.054 30 Antmaine 0.36 N.A. 24-Dicklorophronal 0.044 14 alpha-BHC 0.00014 0.066 24-Dicklorophronal 0.044 14 alpha-BHC 0.0014 0.066 24-Dicklorophronal/cell exid2,4-D 0.72 10 defa_BHC 0.0017 0.066 (1.2-Dicklorophronycell exid2,4-D 0.72 10 defa_BHC 0.017 0.066 (1.2-Dicklorophronycell exid2,4-D 0.72 10 Barban 0.055 1.4 Diddim 0.017 0.11 Barban 0.056 1.4 Diddim 0.017 0.13 Berazd hubride 0.057 6 2.4-Dimetry lenent 0.036 14 Berazd hubride 0.057 1.8 1.4 Diddim 0.057 2.8 Berazd hubride 0.057 1.8 1.4 Dicklorothylene 0.057 2.8 Berazd hubride 0.011 6.8 Dich-acyl phylate	o-Anisidine	0.01	0.66	1,1-Dichloroethylene	0.025	6		
Aramite 0.36 NA 2.4-Decklerophenol 0.044 14 Dathe BHC 0.0014 0.062 2.5-Decklorophenol 0.044 14 Deta-BHC 0.0014 0.062 2.5-Decklorophenol 0.072 10 Deta-BHC 0.031 0.066 1.2-Decklorophenosyncetic acid/2.4-D 0.035 18 Deta-BHC 0.031 0.066 1.2-Decklorophenosyncetic 0.035 18 Bendicary ¹⁷ 0.055 1.4 Delehyl phthalate 0.017 10 Benzale 0.14 10 p-Dicehyl-synchree 0.036 14 Benzale Alberde 0.055 1.4 Delehyl phthalate 0.017 13 Benzale Alberde 0.055 1.4 Delehyl phthalate 0.036 14 Benzale Alberde 0.055 1.8 1.4-Denitrobylenoid 0.031 14 Benzale Alberde 0.055 1.8 1.4-Denitrobylenoid 0.012 128 Benzale Alberde 0.011 5.8 1.4-Denitrobylenoid <t< td=""><td>Anthracene</td><td>0.059</td><td>3.4</td><td>trans-1,2-Dichloroethylene</td><td>0.054</td><td>30</td></t<>	Anthracene	0.059	3.4	trans-1,2-Dichloroethylene	0.054	30		
alphe BHC 0.00014 0.000 24-bichicorphenolynetic isid/2,4-D 0.044 14 data BHC 0.00014 0.066 2,4-bichicorphenolynetic isid/2,4-D 0.072 10 data BHC 0.00014 0.066 1,2-bichicorpeopase 0.035 18 gamma BHC 0.0017 0.066 1,3-bichicorpeopase 0.035 18 Bandaront* 0.056 1,4 International State 0.035 18 Bandaront* 0.055 1,4 Derivery International State 0.01 0.036 14 Benzaly Illouranthene 0.011 6,5 Derivery International State 0.037 28 Benzaly Illouranthene 0.111 6,5 Derivery International State 0.037 28 Benzaly Illouranthene 0.011 6,5 Derivery International State 0.037 28 Benzaly Illouranthene 0.035 18 14,4-Dintrobuence 0.32 12,3 Benzaly Illouranthene 0.035 18 14,4-Dintrobuence 0.32 14	Aramite	0.36	NA	2,4-Dichlorophenol	0.044	14		
Outson Outson<	alpha-BHC	0.00014	0.066	2,6-Dichlorophenol	0.044	14		
Order DFLC O 0001 O 0005 I = 0005 I = 0005 Bardin Carl 0 0056 14 Trents J, 3-Dichloropropylene 0 0056 18 Bardin Carl 0 0056 14 Trents J, 3-Dichloropropylene 0 0056 18 Bardin Carl 0 0056 14 Dick J, and Andream 0 017 013 Bardin Carl 0 0159 14 Dick J, and Andream 0 017 018 Barado Muranchese 0 011 6.8 Dick Jy Immeshanilia 0 017 018 Barado Muranchese 0 011 6.8 Dick Jy Immeshanilia 0 0057 18 Barado Muranchese 0 011 6.8 Dick Jy Immeshanilia 0 0057 28 Barado Muranchese 0 011 3.4 4.4-Dinitroberane 0 032 10 Barado Muranchese 0 011 3.4 4.4-Dinitroberane 0 032 10 Barado Muranchese 0 011 3.4 4.4-Dinitroberane 0 032 10 Barado Muranchese 0 0.11 1.4 4.4-Dinitroberan	delta BHC	0,00014	0.000	2,4-Dichlorophenoxyacelic acid/2,4-D	0.72	10		
Backan 0.035 0.035 0.035 0.035 0.035 0.035 0.035 0.037 0.036 1.4 Dimetry phonol 0.036 1.4 Dimetry phonol 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 2.8 0.037 0.037 0.037 0.037 0.037	gamma-BHC	0.023	0.066	cis-1 3-Dichloropropulene	0.65	18		
Bendiscant ^a 0.035 1.4 Delafrin 0.017 0.13 Benzen 0.14 1.0 p-Dinedry phatase 0.2 28 Benzen 0.14 1.0 p-Dinedry phatase 0.2 28 Benzen 0.059 3.4 2.4-Dimethy phatase 0.01 0.65 Benzaly Divaranhene 0.011 6.8 Divershy phatase 0.039 1.4 Benzaly Divaranhene 0.11 6.8 Divershy phatase 0.032 2.1 Benzaly Divaranhene 0.11 6.8 Divershy phatase 0.032 2.1 Benzaly Divaranhene 0.11 1.5 2.4-Dimetry phatase 0.032 2.1 Benzaly Divaranhene 0.051 1.8 1.4-Divarane 0.12 1.6 Benzaly Divaranhene 0.051 1.5 2.4-Dimetry Divarane 0.12 1.6 Benzaly Divaranhene 0.055 1.5 2.5 Divarane 0.33 1.4 Benzaly Divaranhene 0.056 1.5 2.4-Dimatry Divarane	Barban	0.056	1.4	trans-1.3-Dichloropropylene	0.036	18		
Benory ¹ 0.055 1.4 Dethyl phrhaine 0.21 28 Benzen 0.14 10 p-binedtylamineazoberzene 0.13 NA Benzal chorica 0.059 3.4 2.4-Dimethylephenol 0.015 164 Benzal chorica 0.055 6 2.4-Dimethylephenol 0.017 164 Benzol chorizanthene 0.11 6.8 Dimethyle phrhalate 0.067 28 Benzol chorizanthene 0.055 1.8 1.4-Dinitrobenzene 0.032 2.3 Benzol chorizanthene 0.051 1.8 1.4-Dinitrobenzene 0.032 1.6 Bromonethane/Medwhyl bennick 0.11 15 2.4-Dinitrophenol 0.12 1.60 Bromonethane/Medwhyl bennick 0.055 1.5 2.4-Dinitrobhene 0.051 2.8 Bayd benzyl phrayl ether 0.055 1.5 2.4-Dinitrobhene 0.051 2.8 Bayd benzyl phralate 0.042 1.4 De-recorphranitrobhene 0.051 2.8 Bayd benzyl phralate 0.017	Bendiocarb	0.056	1.4	Dieldrin	0.017	0.13		
Benzene 0.14 10 p-Dimetry laminozobenzene 0.13 NA Benzal choride 0.059 3.4 2.4-Dimetry lphanol 0.016 0.65 Benzal Choride 0.055 6 2.4-Dimetry lphanol 0.036 14 Benzal Choride 0.011 6.8 Din-hury lphanolate 0.037 28 Benzal Churanthene 0.11 6.8 Din-hury lphanolate 0.032 2.3 Benzal Churanthene 0.055 1.8 1.4-Dinitobenzene 0.032 1.60 Bronodichloromethane 0.055 1.5 2.4-Dinitrotoblene 0.32 1.60 Bronodichloromethane 0.055 1.5 2.5-Dinitrotoblene 0.33 1.40 Bronodichloromethane 0.055 1.5 2.5-Dinitrotoblene 0.35 2.8 Bruylats* 0.042 1.6 Din-necyti phihalate 0.017 2.8 Burylats* 0.042 1.4 L-Discontintrosamine 0.4 1.4 Barylats* 0.0056 1.4 L-Diphinrylat	Benomyl*	0,056	1.4	Diethyl phthalate	0.2	28		
Bezal charther 0.059 1.4 2,4-Dimethylphenol 0.01 0.65 Bezal charther 0.11 6.8 Dractifyl phthalate 0.047 28 Bezal charther 0.11 6.8 Dractifyl phthalate 0.057 28 Bezal charther 0.055 1.8 1,4-Dinitrobenzene 0.32 23 Bezal charther 0.055 1.8 1,4-Dinitrobenzene 0.32 24 Bernoncharther 0.051 1.8 1,4-Dinitroblenzene 0.32 160 Bronnentharther 0.055 1.5 2,4-Dinitroblene 0.32 160 Bronnentharther 0.055 1.5 2,4-Dinitroblene 0.32 140 Hayd textr 0.042 1.4 Dir-ncetyl phthalate 0.017 28 Bayd benzyl phthalate 0.017 28 1,4-Dioxane 12 170 2-see-Enzyl phthalate 0.017 28 1,4-Dioxane 12 170 2-see-Enzyl phthalate 0.017 28 1,4-Dioxane 12	Benzene	0.14	10	p-Dimethylaminoazobenzene	0.13	NA		
Benza (horide 0.055 6 2,4-Dimethyl phenol 0.036 14 Benzo(f)/luorarthene 0.11 6.5 Directivi phthalate 0.047 28 Benzo(f)/luorarthene 0.11 6.5 Directivi phthalate 0.057 28 Benzo(f)/luorarthene 0.0055 18 1,4-Dinitrobearcen 0.32 2.3 Benzo(f)/luorarthene 0.051 18 4,4-Dinitrobearcen 0.32 2.3 Benzo(f)/luorarthene 0.055 15 2,4-Dinitrobleane 0.32 160 Bromodichboranethane/Methyl brom ide 0.11 15 2,4-Dinitrobleane 0.32 180 Bromodichboranethane/Methyl brom ide 0.11 15 2,4-Dinitrobleane 0.32 180 Benzyl alcohol 5.6 2.6 Dir-propylnitrosamine 0.042 180 Burylate* 0.042 1.4 Dirbenzylamine 0.057 137 Carbonarn 0.056 1.4 Dirbenzylamine 0.057 137 Carbonarn 0.056 1.4	Benz(a)anthracene	0.059	3.4	2,4-Dimethylaniline	0.01	0.66		
Bertol (Divoranthene 0.11 6.8 Directivy phthalate 0.047 28 Bertol (Linversithene 0.055 1.8 1,4-Dinitrobergene 0.32 23 Bertol (Linversithene 0.33 1.5 2,4-Dinitrobergene 0.32 160 Brononethane/Methyl Even 0.33 1.5 2,4-Dinitroblene 0.32 160 Brononethane/Methyl Even 0.35 1.5 2,4-Dinitroblene 0.32 140 4-Bronophenyl phenyl Ether 0.055 1.5 2,4-Dinitroblene 0.35 28 Buryl Lag' 0.042 1.4 Dir-neoryl phthalate 0.017 28 Buryl Lag' 0.042 1.4 Dir-neoryl phthalate 0.017 28 Buryl Lag' 0.044 1,4-Dironartonamine 0.92 13 Carbonartif 0.056 1.4 1,2-Diphenylhydrazine 0.047 NA Carbonartif 0.056 1.4 1,2-Diphenylhydrazine 0.047 NA Carbonartif 0.056 1.4 1,2-Diphenylhydrazine <td>Benzal chloride</td> <td>0.055</td> <td>6</td> <td>2,4-Dimethyl phenol</td> <td>0.036</td> <td>14</td>	Benzal chloride	0.055	6	2,4-Dimethyl phenol	0.036	14		
Dericod publication 0.11 0.6 Data publication 0.057 28 Bernod publication 0.0051 1.8 1.4-Dimitroberance 0.32 23 Bernod publication 0.011 3.4 4.6-Dimitroberance 0.32 123 Bernod publication 0.012 166 0.12 166 Bromodichloromethane/Methyl brownide 0.11 15 2,4-Dimitrobluene 0.32 140 Bernod publication 5.6 2.6 Dimitrobluene 0.33 140 Bernod publication 5.6 2.6 Dimitrobluene 0.35 28 Berlylate 0.042 1.4 Dimitrobluene 0.017 28 Berlylate 0.0417 28 1.4-Disconne 0.92 13 Carboraryf 0.005 0.14 Disconne 0.92 13 Carboraryf 0.005 1.44 Disconne 0.92 13 Carboraryf 0.005 1.44 Disconne 0.92 13 Carborara	Benzo(b)fluoranthene	0.11	6.8	Dimethyl phthalate	0.047	28		
Discrete 0.022 10 10 10 0.032 14 Bronocliphres 0.031 3.4 4.6 Dintrophenol 0.128 160 Bronocliphres 0.035 15 2.4 Dintrophenol 0.112 160 Bronocliphres 0.035 15 2.4 Dintrobluene 0.33 140 4-Bronophenyl phenyl ether 0.035 15 2.6 Dintrobluene 0.33 140 4-Bronophenyl phenyl ether 0.042 1.4 Din-nocyl phthalate 0.017 28 Bayl benzyl phthalate 0.042 1.4 Din-nocyl phthalate 0.017 28 Carborum* 0.056 1.4 12-Diphenylamine 0.92 13 Carborum* 0.056 1.4 Diphenylamines 0.017 62 Carbon disulfishe 3.8 8.8 Bronocliphyne 0.028 28 Carbon disulfishe 3.8 8.8 Bronocliphyne 0.029 0.13 Carbon disulfishe 3.8	Benzo(g h i)nervlene	0.0055	0.8	1 4-Dinitrobenzene	0.057	28		
Bromodichteromethane 0.35 1.5 2.4 Dinitrophenol 0.12 100 Bromonethane/Methyl bromide 0.11 15 2.4 Dinitrophenol 0.12 160 Bromonethane/Methyl bromide 0.11 15 2.4 Dinitrophenol 0.32 140 Bromonethane/Methyl bromide 0.55 15 2.6 Dinitrophenol 0.35 28 Hardmonthyl phenyl elber 0.057 15 2.6 Dinitrophenol 0.017 28 Baryl face 0.042 1.4 Dh-n-prophylminitrosamine 0.4 14 Baryl face 0.045 2.5 Diphenylminitrosamine 0.92 13 Carbeardin* 0.056 1.4 Di-Diphenylminitrosamine 0.92 13 Carbonitarn* 0.055 1.4 Dithiocramatis (total)* 0.052 28 Carbonitarn phenof* 0.055 1.4 Dithiocramatis (total)* 0.023 0.626 Carbon disulfide 3.8 4.8* Endosulfan 1 0.023 0.626 Carbonitarn* 0.057	Benzo(a)pytene	0.061	34	4 6-Dinitro-o-cresol	0.32	2.3		
Bromonsthane/Methyl bromide 0.11 15 2 4-Dimitrational intervaluence 0.33 140 ABromonhewyl phenyl betwi 0.55 15 2.6 Din-octyl phthalate 0.017 28 h-Butyl alcohol 5.6 2.6 Din-octyl phthalate 0.017 28 Batylate* 0.042 1.4 Din-propylnitrosamine 0.4 14 Batylate* 0.042 1.4 Din-propylnitrosamine 0.92 13 Carboruta* 0.066 0.14 Diphenylmitrosamine 0.92 13 Carboruta* 0.056 1.4 Diphenylmitrosamine 0.087 NA Carboruta* 0.056 1.4 Diphenylmitrosamine 0.087 NA Carborufa* 0.056 1.4 Diphenylmitrosamine 0.087 NA Carborufa* 0.056 1.4 Diphenylmitrosamine 0.087 NA Carborufa* 0.056 1.4 Edotsufa* 0.028 28 Carborufa* 0.057 6 Endotsufa*	Bromodichloromethane	0,35	15	2.4-Dinitrophenol	0.12	160		
4-Bromophenyl phenyl ether 0.055 15 25-Dinitrotoluene 0.55 28 Butyl fate ¹ 0.042 1.4 Din-epropyl nitrosamine 0.017 28 Butyl fate ¹ 0.042 1.4 Din-epropyl nitrosamine 0.04 14 Butyl fate ¹ 0.046 2.5 Diphenyl phinalate 0.02 13 Carboaryl 4-5-dintrophenol/Duoseb 0.066 2.5 Diphenyl phinitrosamine 0.92 13 Carboaryl 4-5-dintrophenol/Duoseb 0.066 0.14 Diphenyl hydrazine 0.077 NA Carboartan pheno ¹ 0.055 1.4 Diphenyl hydrazine 0.087 NA Carboartan pheno ¹ 0.056 1.4 Diphenyl hydrazine 0.087 NA Carboartan pheno ¹ 0.056 1.4 Dithioaramates (total) ¹ 0.023 0.28 28 Carboartan disalifide 3.8 4.8* Endosuffan 11 0.073 0.028 0.13 Chrobartan (adg isomers) 0.023 0.26 Endrin 0.0023 0.16 <td< td=""><td>Bromomethane/Methyl bromide</td><td>0.11</td><td>15</td><td>2,4-Dinitrotoluene</td><td>0.32</td><td>140</td></td<>	Bromomethane/Methyl bromide	0.11	15	2,4-Dinitrotoluene	0.32	140		
n-Buty lacohol 5.6 2.6 Din-octyl phthalate 0.017 28 Buty late 0.042 1.4 Din-propylnitrosamine 0.4 14 Buty late 0.017 28 14.4 Din-propylnitrosamine 0.2 13 2-sec-Buty l.4.6-dinitrophenol/Dinosch 0.066 2.5 Diphenylnitrosamine 0.92 13 Carborum 0.0066 0.14 Diphenylnitrosamine 0.027 13 Carborum 0.0066 0.14 Diphenylnitrosamine 0.017 6.2 Carborum 0.0056 1.4 12-Diphenylnitrosamine 0.017 6.2 Carborum 0.0056 1.4 Dithicorabaratistic (tal)* 0.028 28 Carborum 0.057 6 Endosulfan 1 0.023 0.026 Carborum 0.028 1.4 Endosulfan sulfate 0.028 0.13 Carborum 0.028 0.14 Endosulfan sulfate 0.028 0.023 Carborume 0.027 6 Endosu	4-Bromophenyl phenyl ether	0.055	15	2,6-Dinitrotoluene	0.55	28		
Butylas" 0.042 1.4 Dim-programmine 0.4 14 Bordy Deszy phrihate 0.017 2.8 1.4 Dim-programmine 0.92 13 Carbary" 0.066 0.14 Dipherylamine 0.92 13 Carbary" 0.056 1.4 I.2-Dipherylhydrazine 0.087 NA Carbordian 0.056 1.4 I.2-Dipherylhydrazine 0.087 NA Carbordian phenol" 0.056 1.4 I.2-Dipherylhydrazine 0.087 NA Carbordian phenol" 0.056 1.4 Disulfoton 0.017 6.2 Carbon tarberkleride 0.057 6 Endosulfan II 0.023 0.062 Carbon tarberkleride 0.057 6 Endosulfan sulfate 0.023 0.13 Chlorobarzene 0.057 6 EPTC" 0.042 1.4 Chlorobarzene 0.057 15 Ethyl acetate 0.34 33 2-Chiero-1,3-butadiene 0.057 15 Ethyl acetate 0.12	n-Butyl alcohol	5.6	2.6	Di-n-octyl phthalate	0.017	28		
Budy benzyi phthalate 0.017 28 1/4-Doxane 12 170 Sace-Bujl/4, 6-dintrophenol/Dimoseb 0.066 0.14 Diphenylamine 0.92 13 Carbonzadim* 0.006 0.14 Diphenylamine 0.087 NA Carbonzadim* 0.006 0.14 Diphenylamine 0.087 NA Carbon disulfide 3.8 4.8* Endosulfan I 0.028 28 Carbon disulfide 3.8 4.8* Endosulfan I 0.023 0.066 Carbon disulfide 0.057 6 Endosulfan I 0.028 0.13 Chiorobane (akg isomers) 0.0033 0.26 Endrin 0.0028 0.13 P-Chiorobanzene 0.057 6 Eproc* 0.042 1.4 Chiorobanzene 0.057 6 Eproc* 0.042 1.4 Chiorobanzene 0.057 15 Ebrlyl acetate 0.34 33 Chiorochanzene 0.057 15 Ebrlyl canidePropanenitrite 0.24 360	Butylate	0.042	1.4	Di-n-propyInitrosamine	0.4	14		
2-sec-staty:-4, s-dimicopheno/Dimoseb 0.066 2.5 Diphery/antine 0.92 13 Carbaryif 0.056 1.4 12-Diphery/introsamine 0.92 13 Carbaryif 0.056 1.4 12-Diphery/introsamine 0.087 NA Carbofuran 0.0066 0.14 Diuniforn 0.017 6.2 Carbofuran 0.056 1.4 Dithiocarbamates (total)* 0.028 28 Carbon tarachioride 0.057 6 Endosulfan I 0.029 0.13 Carbon tarachioride 0.057 6 Endosulfan II 0.029 0.13 Carbon tarachioride 0.057 6 EPTC* 0.0421 0.14 Chioroberzcee 0.057 6 EPTC* 0.042 1.4 Chioroberzitate 0.14 NA Ethyl actate 0.34 33 2-Chicroenhare 0.057 15 Ethyl expined/Propanentirule 0.24 360 Chioroberzone 0.036 7.2 Ethyl enter 0.12 <	Butyl benzyl phthalate	0.017	28	1,4-Dioxane	. 12	170		
Carbonzadim 0.005 0.14 Dipheny introduction 0.92 13 Carbonzan 0.035 1.4 12Dipheny lhydrazine 0.987 NA Carbonzan phenol* 0.035 1.4 Divisocrbannates (total)* 0.017 6.2 Carbonzan phenol* 0.056 1.4 Divisocrbannates (total)* 0.028 28 Carbon intrachloride 0.057 6 Endosulfan II 0.029 0.13 Carbon intrachloride 0.058 1.4 Endosulfan II 0.029 0.13 Chrothane (akg isomers) 0.0033 0.26 Endrin 0.0028 0.13 Chloroberzene 0.057 6 EPTC* 0.042 1.4 Chloroberzene 0.057 10 NA Ethyl benzene 0.042 1.4 Chloroberzene 0.057 15 Ethyl cyanide/Propanenitrile 0.24 360 Chloroethane 0.27 6 Ethyl entrile 0.24 360 Chloroethane 0.033 6 Ethyl entrether	2-sec-Buty1-4,6-dinitrophenol/Dinoseb	0.000	2.5	Diphenylamine	0.92	13		
Carbodiana 0.005 1.4 1.2 1.2 0.017 6.2 Carbodiana phenof* 0.036 1.4 Disulfoton 0.017 6.2 Carbodiana phenof* 0.035 1.4 Disulfoton 0.023 0.066 Carbon disulfide 3.8 4.8* Endosulfan II 0.029 0.13 Carbon disulfide 0.033 0.26 Endosulfan II 0.029 0.13 Chordane (a&g isomers) 0.0033 0.26 Endrin 0.0028 0.14 Chloroberzilate 0.057 6 EPTC* 0.0422 1.4 Chloroberzilate 0.057 0.28 Eibyl caetate 0.34 33 2-Chloroborzonmethane 0.057 0.28 Eibyl caetate 0.34 33 2-Chloroborzonmethane 0.057 15 Eibyl caetate 0.12 160 Dis2-Chlorochorzonymethane 0.033 6 Eibyl endretate 0.12 160 Dis2-Chlorochorzonymethane 0.035 7.7	Carbenzadim	0.006	0.14	Diphenyinitrosamine	0.92	- 13		
Carbofuran pleenof* 0.056 1.4 Dithiocarbamates (total)* 0.028 28 Carbon disulfide 3.8 4.8* Endosulfan 1 0.023 0.066 Carbon terschloride 0.037 6 Endosulfan 1 0.023 0.066 Carbon terschloride 0.037 6 Endosulfan sulfate 0.029 0.13 Chloroaniline 0.046 1.4 Endosulfan sulfate 0.028 0.13 Chlorobenzene 0.057 6 Endrin aldehyde 0.028 0.13 2-Chlorobenzilate 0.1 NA Ebbyl acetate 0.042 1,4 Chlorobenzilate 0.1 NA Ebbyl acetate 0.043 33 2-Chloroethane 0.057 15 Ebbyl canife/Propanenitrile 0.24 360 Chloroethane 0.27 6 Ebbyl canife/Propanenitrile 0.12 NA big2-Chloroethylmethane 0.033 6 Ebbyl canife/Propanenitrile 0.12 NA big2-Chloroethylwinyl ether 0.033 6	Carbofuran	0.006	0.14	Disulfoton	0.067	- NA 6.2		
Carbon disulfide 3.8 4.8* Endosulfan I 0.023 0.062 Carbon tetrachloride 0.057 6 Endosulfan II 0.023 0.13 Carbon tetrachloride 0.028 1.4 Endosulfan sulfate 0.029 0.13 Chorotane (a&g isomers) 0.0033 0.26 Endra 0.0028 0.13 Chloroberzizne 0.057 6 EPTC 0.042 1.4 Chloroberzizne 0.057 6 EPTC 0.042 1.4 Chloroberzizne 0.057 0.28 Eithyl acetate 0.34 33 2-Chloro-1, J-butadiene 0.057 0.28 Eithyl exaide/Propanenitrile 0.057 10 Disig2-Chloroethxylmethane 0.036 7.2 Eithyl methacrylate 0.12 MA Disig2-Chloroethylpether 0.033 6 Eithylene oxide 0.12 MA Chlorodbroromylpether 0.035 7.2 Famphur 0.017 15 Disig2-Chloroethylpether 0.055 7.2 Famphur	Carbofuran phenol®	0.056	1.4	Dithiocarbamates (total)	0.028	28		
Carbon tetrachloride 0.057 6 Endosulfan II 0.029 0.13 Carbonalfan ^a 0.028 1.4 Endosulfan sulfate 0.029 0.13 Chordnane (a&g isomers) 0.0033 0.26 Endrin 0.0028 0.13 p-Chloroannine 0.46 16 Endrin aldehyde 0.025 0.13 Chloroberizene 0.057 6 EPTC* 0.042 1.4 Chloroberiziate 0.1 NA Ethyl bezzene 0.34 33 2-Chlorobinomenthane 0.057 15 Ethyl bezzene 0.042 1.4 Chloroberiziate 0.357 0.28 Ethyl bezzene 0.357 10 Chloroboromonethane 0.057 15 Ethyl envide/Propanenitrile 0.24 360 Chloroborosthylether 0.033 6 Ethyl envide/Propanenitrile 0.12 NA Chloroborosthylether 0.035 7.2 Ethyl nethacrylate 0.12 NA Chloroborosthylether 0.035 7.2 Ethyl nethacrylate<	Carbon disulfide	3.8	4.8*	Endosulfan I	0.023	0.066		
Carbosulfan* 0.028 1.4 Endosulfan sulfate 0.029 0.13 Chlordane (akg isomers) 0.0033 0.26 Endrin 0.0028 0.13 p-Chlordane (akg isomers) 0.0033 0.26 Endrin 0.0028 0.13 Chlordoberzene 0.057 6 EPTC* 0.042 1.4 Chloroberzillate 0.1 NA Ethyl acetate 0.34 33 2-Chloro-1,3-butadiene 0.057 0.28 Ethyl quaride/Propanenitrile 0.27 10 Chlorobhorzenthane 0.057 15 Ethyl quaride/Propanenitrile 0.12 160 big2-Chloroethxy/methane 0.036 7.2 Ethyl methacrylate 0.14 160 big2-Chloroethxy/methane 0.046 6 big2-chloroethylphtalate 0.28 28 big2-Chloroethylphter 0.055 7.2 Famphur 0.017 15 D-Chloroisopropylphter 0.055 7.2 Famphur 0.017 15 p-Chloroendul 0.044 5.7 He	Carbon tetrachloride	0.057	6	Endosulfan II	0.029	0.13		
Chlorodane (a&g isomers) 0.0033 0.26 Endrin Endrin 0.0028 0.13 p-Chloroaniline 0.46 16 Endrin aldehyde 0.025 0.13 Chloroberzene 0.057 6 EPTC 0.042 1,4 Chloroberzalate 0.1 NA Ethyl acetate 0.34 33 2-Chlorodbromomethane 0.057 0.28 Ethyl cyanide/Propanenitrile 0.24 360 Chlorodbromomethane 0.057 15 Ethyl cyanide/Propanenitrile 0.12 160 Dig2-Chloroethoxymethane 0.036 7.2 Ethyl methacrylate 0.14 160 Dig2-Chloroethylether 0.033 6 Ethylene exide 0.12 NA Chlorodbrowtylether 0.035 7.2 Feanphur 0.017 15 Dig2-Chloroesthylether 0.035 7.2 Famphur 0.017 15 Dig2-Chloroesthylether 0.035 7.2 Famphur 0.017 15 Dig2-Chloroesthylether 0.055 5.6 Heptachlor 0.058 3.4 2-Chloroesthyl vinyl ether 0.062 NA Fl	Carbosulfan®	0.028	1.4	Endosulfan sulfate	0.029	0.13		
p-Chioronanime 0.46 16 Leftman addetyde 0.025 0 13 Chloroberzzane 0.057 6 EPTC* 0.042 1,4 Chloroberzzlate 0.1 NA Ethyl acetate 0.34 33 2-Chloroboromethane 0.057 15 Ethyl senzene 0.057 16 Chloroboromethane 0.057 15 Ethyl enzene 0.14 160 big2-Chloroethoxy)methane 0.036 7.2 Ethyl nethacrylate 0.14 160 big2-Chloroethoxy)methane 0.036 7.2 Ethyl nethacrylate 0.14 160 big2-Chloroethylyether 0.035 7.2 Fully methacrylate 0.12 NA big2-Chlorosiooropylether 0.035 7.2 Funphur 0.017 15 p-Chlorosiooropylether 0.035 7.2 Funphur 0.017 15 p-Chloromethyl vinyl ether 0.062 NA Fluoranthene 0.058 3.4 2-Chlorophthalene 0.055 5.6 Heptachlor <td< td=""><td>Chlordane (a&g isomers)</td><td>0.0033</td><td>0.26</td><td>Endrin</td><td>0.0028</td><td>0.13</td></td<>	Chlordane (a&g isomers)	0.0033	0.26	Endrin	0.0028	0.13		
Chlorobelizerie 0.037 0 DEPTC 0.042 1,4 Chlorobelizerie 0.1 NA Ethyl acetate 0.34 33 2-Chloro-1,3-butadiene 0.057 0.28 Ethyl acetate 0.057 10 Chlorobinomenthane 0.057 15 Ethyl cyanide/Propanenitrile 0.24 360 Chlorobethane 0.27 6 Ethyl cyanide/Propanenitrile 0.12 160 big(2-Chlorosthoxy)methane 0.036 7.2 Ethyl methacrylate 0.14 160 big(2-Chlorosthoxy)methane 0.036 7.2 Ethyl methacrylate 0.14 160 big(2-Chlorostopropyl)ether 0.035 7.2 Ethyl methacrylate 0.14 160 big(2-Chlorostopropyl)ether 0.055 7.2 Fumphur 0.017 15 p-Chlorostopropylether 0.055 7.2 Fumphur 0.017 15 p-Chlorosthyl vinyl ether 0.055 5.6 Heptachlor 0.059 3.4 2-Chlorosphylethe 0.055 5.6	p-Chioroannine Chiorobennene	0.46	10	Endrin aldehyde	0.025	0.13		
Chloroditative 0.1 10.1 10.1 10.1 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10.2 10.0 10.1 10.0 10.1 10.0 10.1 10.0 10.1 10.0 10.1 10.0 10.1 10.0 10.1 10.0 10.1 10.0 10.0 10.1 10.0 10.1 10.0 <th10.0< th=""> 10.0 10.0</th10.0<>	Chlorobenzilate	0.057	NA NA	EFIC Ethyl ansiste	0.042	1,4		
Chlorodibromomethane 0.057 15 Ethyl cyanide/Propanenitrile 0.024 360 Chloroethane 0.27 6 Ethyl cyanide/Propanenitrile 0.12 160 bis(2-Chloroethoxy)methane 0.036 7.2 Ethyl endstacrylate 0.14 160 bis(2-Chloroethy)methane 0.036 7.2 Ethyl methacrylate 0.14 160 bis(2-Chloroethy)methane 0.036 6 Ethyl methacrylate 0.12 NA Chloroothy)methane 0.046 6 bis(2-chloromorethylphthalate 0.28 28 bis(2-Chloromorethyl vinyl ether 0.055 7.2 Famphur 0.017 15 p-Chlorom-meresol 0.018 14 Fluorenne 0.058 3.4 Chloromethane/Methyl inler 0.062 NA Fluorenne 0.059 3.4 2-Chloroethalaethalene 0.055 5.6 Heptachlor 0.0012 0.066 2-Chloroethalaethalene 0.036 30 1.2,3.4,5,7.8-HpCDD 0.000035 0.0022 2-Chloroephenol	2-Chloro-1.3-butadiene	0.057	0.28	Ethyl henzene	0.057	33		
Chloroethane 0.27 6 Ehyl ether 0.12 160 big(2-Chloroethoxy)methane 0.036 7.2 Ethyl methacrylate 0.14 160 big(2-Chloroethoxy)methane 0.033 6 Ethyl methacrylate 0.12 NA Chlorootorm 0.046 6 bis(2-chlorostopropyl)ether 0.28 28 p-Chloron-m-cresol 0.018 14 Fluoranthene 0.068 3.4 2-Chloronsphthalene 0.055 7.2 Famphur 0.017 15 p-Chloron-m-cresol 0.018 14 Fluoranthene 0.068 3.4 2-Chloronsphthalene 0.055 5.6 Heptachlor 0.0012 0.066 2-Chlorophyl vightene 0.035 5.6 Heptachlor 0.0012 0.066 2-Chlorophylene 0.036 30 1,2,3,4,6,7,8-HpCDD 0.000035 0.002 2-Chlorophylene 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 p-Cresol 0.01 0.66 Heptachlor epoxide </td <td>Chlorodibromomethane</td> <td>0.057</td> <td>15</td> <td>Ethyl cyanide/Propanenitrile</td> <td>0.24</td> <td>360</td>	Chlorodibromomethane	0.057	15	Ethyl cyanide/Propanenitrile	0.24	360		
big(2-Chloroethoxy)methane 0.036 7.2 Ethyl methacrylate 0.14 160 big(2-Chloroethyl)ether 0.033 6 Ethylene oxide 0.12 NA Chloroform 0.046 6 bis(2-chloroisopropyl)ether 0.28 28 bis(2-Chloroisopropyl)ether 0.055 7.2 Famphur 0.017 15 p-Chloro-m-cresol 0.018 14 Fluorenthene 0.068 3.4 2-Chloroosphthalene 0.055 5.6 Heptachlor 0.056 1.4 2-Chloroomphthalene 0.055 5.6 Heptachlor 0.0012 0.066 2-Chlorophthalene 0.036 30 1.2,3.4,6,7.8-HpCDD 0.000035 0.002 2-Chlorophthalene 0.036 30 1.2,3.4,6,7.8-HpCDF 0.000035 0.002 3-Chlorophthalene 0.059 3.4 1.2,3.4,6,7.8-HpCDF 0.000035 0.002 0.011 0.66 Heptachlor epoxide 0.016 0.066 0.055 10 p-Cresidine 0.11 5	Chloroethane	0.27	6	Ethyl ether	0.12	160		
bis(2-Chloroethyl)ether 0.033 6 Ethylene oxide 0.12 NA Chloroform 0.046 6 bis(2-chloroisopropyl)ethatate 0.28 28 bis(2-Chloroisopropyl)ether 0.055 7.2 Famphur 0.017 15 p-Chloro-m-cresol 0.018 14 Fluoranthere 0.068 3.4 2-Chloroethyl vinyl ether 0.062 NA Fluorene 0.059 3.4 2-Chloroephralethane/Methyl chloride 0.19 30 Formetanate hydrochloride* 0.0668 1.4 2-Chlorophthalene 0.055 5.6 Heptachlor 0.0012 0.0662 2-Chlorophthalene 0.036 30 1,2,3,4,6,7,8-HpCDD 0.000035 0.002 2-Chlorophthalene 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 2-Chlorophthalene 0.011 0.66 Heptachlor opoxide 0.016 0.066 0-Cresol 0.11 5.6 Hexachlorobetazene 0.055 1.6 m-Cresol 0.77 5.6 </td <td>bis(2-Chloroethoxy)methane</td> <td>0.036</td> <td>7.2</td> <td>Ethyl methacrylate</td> <td>0.14</td> <td>160</td>	bis(2-Chloroethoxy)methane	0.036	7.2	Ethyl methacrylate	0.14	160		
Chicrotorm 0.046 6 bis(2-ethylhexyl)phthalate 0.28 28 bis(2-Chloroisopropyl)ether 0.055 7.2 Famphur 0.017 15 p-Chloro-m-cresol 0.018 14 Fluorenthene 0.068 3.4 2-Chloroethyl vinyl ether 0.062 NA Fluorene 0.059 3.4 Chloromethane/Methyl chloride 0.19 30 Formetanate hydrochloride* 0.056 1.4 2-Chlorophthol 0.055 5.6 Heptachlor 0.0012 0.066 2-Chlorophthol 0.044 5.7 1,2,3,4,6,7,8-HpCDD 0.000035 0.002 3-Chlorophthol 0.044 5.7 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 2-Chlorophthol 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 3-Chlorophylene 0.036 3.4 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 p-Cresol 0.11 5.6 Hexachlorobenzene 0.055 10 m-Cresol 0.11 5.6 H	bis(2-Chloroethyl)ether	0.033	6	Ethylene oxide	0.12	NA		
Dist_ct-Chloromsproprysether 0.035 7.2 Famphar 0.017 15 p-Chlorom-cresol 0.018 14 Fluorenthene 0.068 3.4 2-Chlorodethyl vinyl ether 0.062 NA Fluorene 0.059 3.4 Chloromethane/Methyl chloride 0.19 30 Formethanate hydrochloride* 0.056 1.4 2-Chlorophenol 0.044 5.7 1.2.3.4.6.7.8-HpCDD 0.000035 0.002 2-Chlorophenol 0.059 3.4 1.2.3.4.6.7.8-HpCDF 0.000035 0.002 3-Chlorophylene 0.036 30 1.2.3.4.6.7.8-HpCDF 0.000035 0.002 3-Chlorophylene 0.059 3.4 1.2.3.4.7.8.9-HpCDF 0.000035 0.002 Chrysene 0.059 3.4 1.2.3.4.7.8.9-HpCDF 0.000035 0.002 p-Cresidine 0.01 0.66 Heptachlor epoxide 0.016 0.06 o-Cresol 0.11 5.6 Hexachlorobenzene 0.055 5.6 p-Cresol 0.77 5.6	Chloroferm	0.046	6	bis(2-ethylhexyl)phthalate	0.28	28		
Description 0.018 14 Processing 0.068 3.4 2-Chloromethane/Methyl vinyl ether 0.062 NA Fluorene 0.059 3.4 2-Chloromethane/Methyl vinyl ether 0.052 NA Fluorene 0.059 3.4 2-Chloromethane/Methyl vinyl ether 0.055 5.6 Heptachlor 0.0012 0.066 1.4 2-Chloropphenol 0.044 5.7 1.2.3.4.6,7.8-HpCDD 0.000035 0.002 3-Chloroppylene 0.036 30 1.2.3.4.6,7.8-HpCDF 0.000035 0.002 Chrysene 0.059 3.4 1.2.3.4,7.8_9-HpCDF 0.000035 0.002 p-Cressiline 0.01 0.66 Heptachlor epoxide 0.016 0.065 o-Cresol 0.11 5.6 Hexachlorobenzene 0.055 5.6 p-Cressiline 0.77 5.6 Hexachlorobenzene 0.057 2.4 m-Curenyl methylcarbamate ^P 0.056 1.4 HxCDbs (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 o,p'-DDD	Dis(2-Chloroisopropyl)ether	0.055	7.2	Famphur	0.017	15		
Chloromethane/Methyl chloride 0.009 14A Purderice 0.059 3.4 Chloromethane/Methyl chloride 0.19 30 Formetanate hydrochloride* 0.056 1.4 2-Chloronghthalene 0.055 5.6 Heptachlor 0.0012 0.066 2-Chloropchenol 0.044 5.7 1.2,3,4,6,7,8-HpCDD 0.000035 0.002 3-Chloropropylene 0.036 30 1.2,3,4,6,7,8-HpCDF 0.000035 0.002 Chrysene 0.059 3.4 1,2,3,4,7,8,9-HpCDF 0.000035 0.002 p-Cressiline 0.01 0.66 Heptachlorobenzene 0.055 10 m-Cresol 0.11 5.6 Hexachlorobenzene 0.055 5.6 p-Cresol 0.77 5.6 Hexachlorobenzene 0.057 2.4 m-Cumenyl methylcarbamate* 0.056 1.4 HsCDDa (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachloropethane 0.055 30 o,p'-DDE 0.031	2-Chloroethyl vinyl ether	0.018	14 NA	Fluoranthene	0.068	3.4		
2-Chloronaphthalene 0.055 5.6 Heptachlor 0.000 1.7 2-Chloropchenol 0.044 5.7 1,2,3,4,6,7,8-HpCDD 0.000035 0.002 2-Chloropchenol 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 2-Chloropchenol 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 2-Chloropropylene 0.059 3.4 1,2,3,4,7,8,9-HpCDF 0.000035 0.002 Chrysene 0.01 0.66 Heptachlor epoxide 0.016 0.066 0-Cressiline 0.01 0.66 Heptachlor opoxide 0.016 0.066 m-Cressol 0.11 5.6 Hexachlorobenzene 0.055 5.6 p-Cressol 0.77 5.6 Hexachlorobenzene 0.057 2.4 m-Cumenyl methylcarbamate ⁶ 0.056 1.4 HscDDs (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachloropthane 0.055 30 o,p'-DDE 0.031 0.087 <td>Chloromethane/Methyl chloride</td> <td>0.002</td> <td>30</td> <td>Formetanate hydrochloride</td> <td>0.059</td> <td>3.4</td>	Chloromethane/Methyl chloride	0.002	30	Formetanate hydrochloride	0.059	3.4		
2-Chloropchenol 0.044 5.7 1,2,3,4,6,7,8-HpCDD 0.00012 0.0002 3-Chloropropylene 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 3-Chloropropylene 0.059 3.4 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 p-Cresidine 0.01 0.66 Heptachlor epoxide 0.016 0.066 o-Cresol 0.11 5.6 Hexachlorobenzene 0.055 10 m-Cresol 0.77 5.6 Hexachlorobenzene 0.055 5.6 p-Cresol 0.77 5.6 Hexachlorobenzene 0.055 5.6 p-Cresol 0.77 5.6 Hexachlorobenzene 0.00063 0.000 cyclohexanone 0.36 0.75 HxCDF (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachlorophene 0.035 30 o,p'-DDE 0.031 0.037 Idexachlorophene 0.035 30 o,p'-DDE 0.031 0.037 Idexachlorophene	2-Chloronaphthalene	0.055	5.6	Hentachlor	0.035	1,4		
3-Chloropropylene 0.036 30 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 Chrysene 0.059 3.4 1,2,3,4,6,7,8-HpCDF 0.000035 0.002 p-Cresidine 0.01 0.66 Heptachlor epoxide 0.016 0.066 o-Cresol 0.11 5.6 Hexachlorobenzene 0.055 10 m-Cresol 0.77 5.6 Hexachlorobutadiene 0.057 2.4 m-Cumenyl methylcarbamate ^a 0.056 1.4 HxCDD (All Hexachlorodbenzo-p-dioxins) 0.000063 0.001 Cyclohexanone 0.36 0.77 5.6 Hexachlorodbenzo-p-dioxins) 0.000063 0.001 o.p ² -DDD 0.023 0.087 Hexachlorodbenzo-futans) 0.000063 0.001 o.p ² -DDE 0.031 0.087 Hexachlorophylene 0.035 30 o.p ² -DDE 0.031 0.087 Itexachlorophylene 0.035 30	2-Chloropchenol	0.044	5.7	1.2.3.4.6.7.8-HpCDD	0.000035	0.0025		
Chrysene 0.059 3.4 1,2,3,4,7,8,9-HpCDF 0.000035 0.002 p-Cresidine 0.01 0.66 Heptachlor epoxide 0.016 0.066 o-Cresol 0.11 5.6 Hexachlorobenzene 0.055 10 m-Cresol 0.77 5.6 Hexachlorobutadiene 0.055 5.6 p-Cresol 0.77 5.6 Hexachlorobutadiene 0.057 2.4 m-Cumenyl methylcarbamate ⁰ 0.056 1.4 HsCDDe (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 Cyclohexanone 0.36 0.75* HxCDFs (All Hexachlorodibenzo-furans) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachlorodibenzo-furans) 0.000063 0.001 o,p'-DDE 0.031 0.087 Hexachlorodibenzo-furans) 0.0055 30 o,p'-DDE 0.031 0.087 Hexachlorodibenzo-furans) 0.0055 34	3-Chloropropylene	0.036	30	1,2,3,4,6,7,8-HpCDF	0.000035	0.0025		
p-Cressidine 0.01 0.66 Heptachlor epoxide 0.016 0.066 o-Cressol 0.11 5.6 Hexachlorobenzene 0.055 10 m-Cressol 0.77 5.6 Hexachlorobutadiene 0.055 5.6 p-Cressol 0.77 5.6 Hexachlorobutadiene 0.057 2.4 m-Curenyl methylcarbarnate ^a 0.056 1.4 HsCDD (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 Cyclohexanone 0.36 0.75* HxCDFs (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachloropylene 0.035 30 o,p'-DDE 0.031 0.087 Hexachloropylene 0.035 30 o,p'-DDE 0.031 0.087 Indeno(1,2,3-c,d) pyrene 0.0055 3.4	Chrysene	0.059	3.4	1,2,3,4,7,8,9-HpCDF	0.000035	0.0025		
In-Cresol 0.11 5.6 Hexachlorobenzene 0.055 10 m-Cresol 0.77 5.6 Hexachlorobutadiene 0.055 5.6 p-Cresol 0.77 5.6 Hexachlorobutadiene 0.057 2.4 m-Cumenyl methylcarbamate ⁰ 0.056 1.4 HxCDDs (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 Cyclohexanone 0.36 0.75* HxCDFs (All Hexachlorodibenzo-p-dioxins) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachlorodibenzo-furans) 0.000063 0.001 o,p'-DDE 0.031 0.087 Hexachlorodibenzo-furans) 0.0055 30 o,p'-DDE 0.031 0.087 Hexachlorodibenzo-furans) 0.0055 34	p-Cresidine	0.01	0.66	Heptachlor epoxide	0.016	0.066		
Im-Cresol 0.77 5.6 Hexachlorobutadiene 0.055 5.6 p-Cresol 0.77 5.6 Hexachlorobutadiene 0.057 2.4 m-Curenyl methylcarbamate ⁰ 0.056 i.4 HxCDbs (All Hexachlorodibetazo-p-dioxins) 0.000063 0.001 Cyclohexanone 0.36 0.75* HxCDbs (All Hexachlorodibetazo-p-dioxins) 0.000063 0.001 o,p'-DDD 0.023 0.087 Hexachlorodibetazo-p-dioxins) 0.0055 30 o,p'-DDE 0.031 0.087 Hexachlorophylene 0.035 30 o,p'-DDE 0.031 0.087 Indenso(1,2,3-c,d) pyrene 0.0055 3.4	o-Cresol	0.11	5.6	Hexachlorobenzene	0.055	10		
DP-Creation 0.77 5.6 Hexachlorocyclopentadtene 0.057 2.4 m-Cumenyl methylcarbamate ⁶ 0.056 1.4 HxCDDa (All Hexachlorodibeazo-p-dioxins) 0.000063 0.001 Cyclobexanone 0.36 0.75* HxCDFs (All Hexachlorodibeazo-p-dioxins) 0.000063 0.001 o.p'-DDD 0.023 0.087 Hexachloroethane 0.055 30 o.p'-DDE 0.031 0.087 Interschloropthene 0.035 30 o.p'-DDE 0.031 0.087 Indeno(1,2,3-c,d) pyrene 0.0055 34	m-Cresol	0.77	5.6	Hexachlorobutadiene	0.055	5.6		
Decomption 0.030 1.4 HNCDDB (All Hexachlorodibenzo-p-discans) 0.000063 0.001 Cyclohexanone 0.36 0.75 HxCDFs (All Hexachlorodibenzofurans) 0.000063 0.001 o.p'-DDD 0.023 0.087 Hexachlorodibenzofurans) 0.0055 30 o.p'-DDE 0.031 0.087 Interaction oppopulate 0.035 30 o.p'-DDE 0.031 0.087 Indenso(1,2,3-c,d) pyrene 0.0055 34	m-Cumenul methylcarbamate	0.77	5.6	Hexachlorocyclopentadiene	0.057	2.4		
o.p'-DDD 0.023 0.087 Hexachlorodination of the control of the contr	Cyclohexanone	0.050	0.75*	HyCDFs (All Heyschlorodibetzo-p-dioxins)	0.000063	0.001		
p.p'-DDD 0.023 0.087 Hexachioropropylene 0.035 30 o.p'-DDE 0.031 0.087 Indeno(1,2,3-c,d) pyrene 0.035 30 o.p'-DDE 0.031 0.087 Indeno(1,2,3-c,d) pyrene 0.0055 3,4	o,p'-DDD	0.023	0.087	Hexachloroethane	0.00003	0.001		
0.025 0.005	p,p'-DDD	0.023	0.087	Hexachioropropylene	0.035	30		
0.031 0.087 Hodowethene	o,p'-DDE	0.031	0.087	Indeno(1,2,3-c,d) pyrene	0.0055	34		
0.09 0.00 0.19 65	p,p'-DDE	0.031	0.087	lodomethane	0.19	65		

	UNDERLYING HA	ARDOUS	S CONSTITUENTS FORM	WW(mp/l)	NWW(mg/kg)
ORGANIC CONSTITUENTS	WW(mg/l) NWV	W(mg/kg)	Thiodicarb ²	0.019	1.4
Isobutyl alconol	0.021	0.066	Thiophanate-methyl [®]	0.056	1.4
Isodrin	0.021	2.6	Toluene	0.08	10
Isosairoie	0.0011	0.13	Toxaphene	0.0095	2.6
Kepone	0.24	84	Triallate	0.042	1.4
Methacryionitrile	5.6	0.75*	Tribromomethane/Bromoform	0.63	15
Methanol	0.081	15	1.2.4-Trichlorobenzene	0.055	19
Methapyriene	0.056	1.4	1.1.1-Trichloroethane	0.054	6
Methodarb	0.030	0.14	1.1.2-Trichloroethane	0.054	6
Methomyt	0.25	0.18	Trichloroethylene	0.054	6
Methoxychior	0.0055	15	Trichlorofluoromethane	0.02	30
4 Medulane his() shlaronniline)	0.5	30	2.4.5-Trichlorophenol	0.18	7.4
4,4-Methylene bis(2-chioroaniline)	0.080	30	2.4.6-Trichlorophenol	0.035	7.4
Methylene chloride	0.082	36	24.5-Trichlorophenosyacetic acid/2.4.5-T	0.72	7.9
Methyl chyl kelone	0.26	33	1.2.3-Trichloropropage	0.85	30
Methyl isoburyl ketone	0.14	160	1.1.2.Trichloro-1.2.2-trifluoroethane	0.057	30
Methyl methacrylate	0.14	NA	Triethylamine	0.081	1.5
Methyl methanesultonate	0.016	46	tris.(2 3-Dibromonropy)) phosphate	0.11	0,1
Methyl parathion	0.014	1.0	Vernolate ⁹	0.042	1.4
Metolcarb	0.036	14	Vinul chloride	0.27	6
Mexacarbate	0.050	14	Valence mixed isomers (sum of a. m. and a	0.32	30
Molinate	0.042	64	Whenessenteen montees (som or or, my, and p	0.52	
Naphthalene	0.039	3.0	INDRGAND CONSTITUTINTS	WW(mg/l)	NWW(mg/kg)
2-Naphthylamine	0.32	14	Antimony	1 9	1115*
o-Nitroaniline	0.27	14	Amenia	14	5.0*
p-Nitroaniline	0.028	28	Arsenic	17	21*
Nitrobenzene	0.068	14	Banum	0.82	1 220
5-Nitro-o-toluidine	0.32	28	Beryllium	0.62	0.11*
o-Nitrophenol	0.028	13	Cadmium	0.07	0.11
p-Nitrophenol	0.12	29	Chromium (Iotal)	4.11	0.00
N-Nitrosodiethylamine	0.4	28	Cyanides (Total)	1.2	390
N-Nitrosodimethylamine	0.4	2.3	Cyanides (Amenable)	0.86	30
N-Nitroso-di-n-butylamine	0.4	17	Fluoride	55	NA 0.374
N-Nitrosomethylethylamine	0.4	2.3	Lead	0.69	0.75*
N-Nitrosomorpholine	0.4	2.3	Mercury-Nonwastewater from Retort	NA	0.20*
N-Nitrosopiperidine	0.013	35	Mercury-All Others	0.15	0.025*
N-Nitrosopyrrolidine	0.013	35	Nickel	3.98	11*
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	0.000063	0.005	Selenium	0.82	5.7*
1,2,3,4,6,7,8,9-Octachlorodibenzofluran (OCDF)	0.000063	0.005	Silver	0.43	0.14*
Oxamyl	0.056	0.28	Sulfide'	. 14	NA
Parathion	0.014	4.6	Thallium	1.4	0.20*
Total PCBs (sum of all PCB isomers, or all	0.1	10	Vanadium	4.3	1.6*
Pebulate	0.042	1.4	Zinc'	2.61	4.3*
Pentachlorobenzene	0.055	10	*Concentration in mg/l TCLP		
PeCDDs (All Pentachlorodibenzo-p-dioxins)	0.000063	0.001			
PeCDFs (All Pentachlorodibenzofurans)	0.000035	0.001]		
Pentachloroethane	0.055	6			
Pentachloronitrobenzene	0.055	4.8			
Pentachlorophenoi	0.089	7.4]		
Phenacetin	0.081	16]		
Phenanthrene	0.059	5.6	1		
Phenol	0.039	6.2]		
1.3-Phenylenediamine	0.01	0.66]		
Phorate	0.021	4.6]		
Phthalic acid	0.055	28]		
Phthalic anhydride	0,055	28	1		
Physostiemine ⁶	0,056	1.4	1		
Physostiamine salicylate ⁸	0.056	1.4	1		
Promecarh ⁰	0.056	1.4	1		
Promemide	0.093	1.5	1		
Prontanioc	0.056	1.4	1		
Propaan	0.056	14	1		
Proposur	0.042	14	1		
Prosuriocaro	0.067	82	1		
Pytene	0.007	16	1		
Pyrigine	0.014	22	1		
Sairoie	0.081	70	-		
Silvex/2,4,5-TP	0.72	1.9	-		
1,2,4,5-Tetrachlorobenzene	0.055	0.001	-		
TCDDs (All Tetrachiorodibenzo-p-dioxins)	0.000063	0.001	-		
TCDFs (All Tetrachlorodibenzofurans)	0.000063	0.001	4		
1,1,1,2-Tetrachloroethane	0.057	6	-		
1.1.2.2-Tetrachl oroethanc	0.057	- 6			
Tetrachloroethylene	0.056	6	-		
2,3,4,6-Tetrachlorophenol	0.03	7.4	1		

Attachment A3-6 Table A2.A.2 Hazardous Waste Accepted at the Facility

(8-2-2021)

TABLE A2.A.2 HAZARDOUS WASTES ACCEPTED AT THE FACILITY

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
F002	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F003	Spent solvents generated by teaching, research and supporting operations	Ignitability	Listed wastes; ignitable waste hazard code	Room 117
F004	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F005	Spent solvents generated by teaching, research and supporting operations	Ignitability, toxicity	Listed wastes; ignitable and toxic waste hazard codes	Room 117
D001	Ignitables generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 117
D001	Oxidizers generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 113
D002	Corrosive acids generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 111

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D002	Corrosive bases generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 109A
D003	Reactives generated by teaching, research and supporting operations	Reactivity	Reactive waste hazard code	Room 109A
D004	Waste containing arsenic generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D005	Waste containing barium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D006	Waste containing cadmium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D007	Waste containing chromium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D008	Waste containing lead generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D009	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D010	Waste containing selenium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D011	Waste containing silver generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D018	Waste containing benzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D019	Waste containing carbon tetrachloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D021	Waste containing chlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D022	Waste containing chloroform generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D023	Waste containing o-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D024	Waste containing m- cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
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D025	Waste containing p-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D026	Waste containing cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D027	Waste containing 1,4- dichlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D028	Waste containing 1,2- dichloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D029	Waste containing 1,1- dichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D030	Waste containing 2,4- dinitrotoluene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D032	Waste containing hexachlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

(8-2-2021)

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D033	Waste containing hexachlorobutadiene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D034	Waste containing hexachloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D035	Waste containing methyl ethyl ketone generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D036	Waste containing nitrobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D038	Waste containing pyridine generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D039	Waste containing tetrachloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D040	Waste containing trichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D041	Waste containing 2,4,5- trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D042	Waste containing 2,4,6- trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D043	Waste containing vinyl chloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
U138	Waste containing methyl iodide generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116
U151	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116

Attachment 3

Inspection Schedule

FORM EQP 5111 ATTACHMENT TEMPLATE A5 INSPECTION REQUIREMENTS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being R 299.9504, R 299.9508, R 299.9605 and Title 40 of the Code of Federal Regulations (CFR) §§264.15 and 270.14(b)(5), establish requirements for inspections at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003

This license application template addresses requirements for inspections at the following hazardous waste management facility: Beck Road Facility in Belleville, Michigan.

(Check as appropriate)

Applicant for Operating License for Existing Facility

Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

This template is organized as follows:

INTRODUCTION

- A5.A WRITTEN SCHEDULE
 - A5.A.1 Types of Problems
 - A5.A.2 Frequency of Inspection
- A5.B REMEDY SCHEDULE
- A5.C INSPECTION LOG OR SUMMARY

INTRODUCTION

The storage facility is inspected for malfunctions, deterioration, discharges, operator errors, and other parameters that may cause or indicate a release of hazardous waste constituents. The inspections are conducted according to a regular schedule designed to minimize threats to human health or the environment. Scheduled inspections of the storage facility address areas where a release may occur from equipment malfunction or deterioration of equipment. In addition, equipment used for managing accidental occurrences and for monitoring will be inspected regularly according to an established schedule.

The inspection results are recorded on an inspection log maintained at the facility for at least three (3) years from the date of inspection. Information recorded on the inspection log includes the date and time of inspection, the name of the inspector, and all relevant observations. The results of all repairs or other remedial actions are systematically recorded on the inspection log to respond to any observations made by the inspector. The Inspection Log is shown in Section A5.C.

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A5.A WRITTEN SCHEDULE

[R 299.9605 and 40 CFR §264.15(b)(1)]

The inspection schedule outlined in Table A5.A.1 identifies the inspection items, the frequency, and the types of problems that the inspector routinely investigates. This written inspection schedule will be kept at the storage facility.

A5.A.1 Types of Problems

[R 299.9605 and 40 CFR §264.15(b)(3)]

The areas designated for container storage are inspected weekly for leaks, corrosion, and deterioration. The inspection indicates if there is container failure. In addition to container inspections, the secondary containment system, protective equipment, loading/unloading area are inspected for deterioration, and the general facility, the site compound and grounds are inspected and evaluated as outlined in Table A5.A.1.

A5.A.2 Frequency of Inspection

[R 299.9605 and 40 CFR §§264.15(b)(4), 264.174, 264.193, 264.195, 264.226, 264.254, 264.278, 264.303, 264.347, 264.602, 264.1033, 264.1052, 264.1053, 264.1058, and 264.1083 through 264.1089, where applicable]

The frequencies of inspection shown in Table A5.A.1 follow the requirements of 40 CFR 264.15(b)(4) and are based on the rate of probable deterioration of equipment and on the probability of an environmental or human health incident.

Table A5.A.1 Inspection Schedule			
Item	Frequency ¹	Types of Problems	
Containers	Weekly	Visually inspect the containers to verify they are closed. Visually inspect for leaking containers, deterioration of containers, rust, corrosion, or trends that indicate possible decline of structural integrity; check container for labels identifying the chemical(s) or chemical class in the drum, the EPA hazardous waste code(s), the date the container was placed in storage, and the generator's name and location.	
Containment System	Weekly	Inspect the floor and curbing of the storage area for cracking, flaking, chipping, or gouging, and for excessive wear or deterioration. Inspect secondary containment for liquids, weekly, when waste is brought to the facility.	
Communication Devices – Telephone	Weekly	Check for dial tone. Determine if outgoing calls can be made.	
General Area: Warning signs "No Smoking" signs Doors Windows Building	Weekly	Check that warning signs are posted; check that doors and windows are secured. Inspect container placement and stacking to determine if the required aisle space for inspection and use of emergency equipment exists. Check labels to determine if the waste indicated is stored in the proper/designated area. Annually inspect roof, walls, and entrances for settling, cracks, and spalling in concrete.	
Concrete Slab Loading/Unloading Area	Weekly (Daily when in use)	Visually inspect for cracking, flaking, chipping, gouging, and excessive wear or deterioration. Inspect the loading area for heavy stains.	
Safety Equipment: Eye Wash Shower	Monthly	Check for operability.	
Fence around the Unit	Bi-Annually	Check for integrity.	
Water	Annually	Verify inspection of fire hydrants for pressure, volume, and operability.	
Building	Weekly (Daily when in use)	Visually inspect building to ensure that it is secure.	
Area between Loading/Unloading Dock and Container Storage Area	Weekly	Visually inspect for stains and excessive wear or deterioration.	



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Item	Frequency ¹	Types of Problems	
Radiation Monitoring Equipment	Weekly (Daily when in use)	Check for operability.	
SPILL CLEANUP AND PERSONAL PROTECTION EQUIPMENT			
Goggles Protective Booties Protective Gloves Protective Coveralls Air Purifying Respirators Absorbents and Neutralizers Recovery Drums Air Monitoring Meters	Monthly and after each incident response requiring use of personal protection equipment	Check for sufficient inventory; verify that expiration dates have not lapsed. Check condition of protective equipment and gear. Safety Supply Inventory form shall be used to guide the inventory.	
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¹Daily refers to work days when operations involving hazardous waste occur

A5.B REMEDY SCHEDULE

[R 299.9605 and 40 CFR §264.15(c)]

If inspections reveal that non-emergency maintenance is needed, U-M will respond in a timely manner to preclude damage and to reduce the need for emergency repairs. If a hazardous waste constituent release is imminent, or has already occurred, remedial action will begin upon discovery. Appropriate authorities will be notified according to the U-M Emergency Response Contingency Plan (Template A7). In the unlikely event of an emergency involving the release of hazardous waste constituents to the environment, efforts will be directed towards containing the hazard, removing it, and subsequently decontaminating the affected area, as discussed in greater detail in the U-M Emergency Response Contingency Plan (Template A7).

A5.C INSPECTION LOG OR SUMMARY

[R 299.9605 and 40 CFR §264.15(d)]

INSPECTION LOG

University of Michigan

Occupational Safety & Environment Health and Safety (EHS)

Beck Road Storage Facility, EPA ID: MIR 000 001 834

8501 Beck Road, Belleville, MI 48111

(734) 487-3259

Instructions: Perform inspection of facility if conditions are satisfactory write "SAT" in the conditions

observed column. If there are any discrepancies, list them in the conditions observed column also.

A. General Facility	Conditions Observed on Date:
1. All door entrances and windows properly secured	
2. No signs of unauthorized entry	
3. No signs of vandalism or theft	
4. No signs of flooding or fire	
5. No electrical hazards identified	
6. Fire extinguishers in designated locations, and charged	
7. Ventilation and lighting system operating properly	
8. No evidence of eating, drinking, smoking	
9. Aisle space adequate for emergency equipment	
10. Emergency supplies, monitoring equipment & PPE available	
11. Emergency supplies storage cabinet inspected (needs noted below)	
12. Fire exits are clear and unobstructed	
13. Storage and work areas organized and uncluttered	
14. Emergency eyewash and shower station tested (1st week of month)	
15. Annual water availability inspection conducted on	
16. Biannual inspection of perimeter fences conducted on	
17. Operation's log up to date	
18. Forklift inspected and operational	
19. Verify telephones are operational - check for dial tone	
B. Appropriate Postings Throughout the Facility	Conditions Observed
1. NRC "Notice to Employee"	
2. EGLE "Notice to Employee" (Form EQC 1627)	
3. EGLE Radioactive Material Registration (Form EQP 1614)	
4. Radioactive Materials Restricted Area (entrances)	
5. No smoking signs (2+ entrances)	
6. Emergency phone numbers	
7. Radiological Emergency Procedures	
8. MSDS location poster	
RCRA Waste Storage Areas Properly Ider	ntified and Segregated
C. Corrosive Base and Reactive Area 109A	Conditions Observed
1. Waste containers identified and labeled properly	

(5-28-2021)

2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
D. Toxics Area 109B	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
E. Corrosive Acid Room 111	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
F. Toxic and Oxidizer Area 113	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
G. Toxic Room 116	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
H. Ignitable and Toxic Room 117	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. Ventilation system operating properly	
5. No evidence of odors	
6. Containment system in good condition	
I. Loading / Unloading Area 125	Conditions Observed
Trenches clear of debris	
Containment system in good condition	

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University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Inspection Schedules, Revision 0

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Comments:	
	_
Note: For any discrepancies noted in the conditions observed column list the corrective action taken to remedy each discrepancy below.	I
Corrective Actions:	
Corrective Actions performed by:	
Date corrective actions performed:	
Supplies needed:	
Cuppiloo noodod	
Increation performed by:	
Inspection performed by.	
Defe	
Date:	
Time:	
Reviewed by:	
Hazardous Materials Manager:	
Date:	
Radiation Safety Officer:	
Date:	

Attachment 4

Personnel Training Program

FORM EQP 5111 ATTACHMENT TEMPLATE A10 PERSONNEL TRAINING

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of the Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9501, R 299.9605 and Title 40 Code of Federal Regulations (CFR) §§264.16 and 270.14(b)(12), establish requirements for personnel training programs at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for a personnel training program at the hazardous waste management facility for the Beck Road Facility in Belleville, Michigan. The information included in the template demonstrates how the facility meets the personnel training requirements for hazardous waste management facilities.

This template is organized as follows:

- A10.A CONTENT OF INTRODUCTORY AND CONTINUING EDUCATION PROGRAMS A10.A.1 Outline for Introductory Training Program
 - A10.A.2 Outline for Continuing Education
- A10.B PERSONNEL SUBJECT TO TRAINING REQUIREMENTS
 - A10.B.1 Job Titles and Job Descriptions
 - A10.B.2 Description of How Training is Designed to Meet Actual Job Tasks

Table A10.B.1 Training Programs for Personnel Involved in Managing and Handling Hazardous and Mixed Waste

- A10.C FREQUENCY OF REQUIRED TRAINING
 - A10.C.1 Initial Training
 - A10.C.2 Continuing Education
- A10.D TRAINING DIRECTOR
- A10.E DOCUMENTATION AND RECORD KEEPING
 - A10.E.1 Documentation
 - A10.E.1(a) Job Titles
 - A10.E.1(b) Written Job Descriptions
 - A10.E.1(c) Written Description of Type and Amount of Training Given to Each Position
 - A10.E.1(d) Documentation That Training Has Been Given to and Completed by Facility Personnel

A10.E.2 Record Keeping

Attachment A10-1 Job Titles and Descriptions

A10.A CONTENT OF INTRODUCTORY AND CONTINUING EDUCATION TRAINING PROGRAMS

[R 299.9605 and 40 CFR §264.16(a)]

- A10.A.1 Outline for Introductory Training Program [R 299.9605 and 40 CFR §§264.16(a)(1) and 264.16(d)(3)]
- Page 1 of 19 Form EQP 5111 Attachment Template A10, Personnel Training

The information contained in this section outlines training programs for personnel handling hazardous and mixed waste at the Beck Road Facility.

Personnel who handle hazardous and mixed waste must successfully complete a program of classroom training and on the job training in order to work safely at the facility. The U-M EHS training program consists of formal classroom and supervised on the job training.

No individual works unsupervised until he or she has completed the formal training courses and on the job training requirements and demonstrates proficiency. New employees will complete the training requirements within 6 months of their employment or assignment to the facility; or to a new position at the facility, whichever is later.

An outline of the introductory waste management training program is provided below. A detailed description of each training course is provided in Section A10.C.1.

- (a) RCRA Generator
- (b) Commercial Driver's License (CDL)
- (c) Department of Transportation (DOT)
- (d) Emergency Response (HAZWOPER)
- (e) Hazard Communication (HAZCOM)
- (f) Blood Borne Pathogens (BBP)
- (g) Radiation Safety

A10.A.2 Outline for Continuing Education

[R 299.9605 and 40 CFR §§264.16(a)(1) and 264.16(d)(3)]

Continuing education includes refresher courses and the updating of credentials for the introductory training components outlined in Section A10.A.1. Additionally, EHS staff members are expected to participate in professional development.

A10.B PERSONNEL SUBJECT TO TRAINING REQUIREMENTS [R 299.9605 and 40 CFR §§264.16(a) and (d)]

A10.B.1 Job Titles and Job Descriptions

[R 299.9605 and 40 CFR §§264.16(d)(1) and (2)]

The job titles of personnel subject to training requirements are described in Table A10.B.1, along with the training course, the frequency of training, and which staff members are required to receive the training. A detailed description of each training course is provided in Section A10.C.1. Job descriptions are detailed in Attachment A10-1.

		Table	e A10.B.1			
Training Programs for Personnel Involved in Managing and Handling of Hazardous and Mixed Waste						
Training	Frequency	EHS	EHS	EHS	EHS	EHS
Program	of Training	Manager	Coordinator	Senior Rep.	Rep. II	Rep. I
On-the-Job	Continuous	Х	Х	Х	Х	Х
RCRA Generator	Initial, annual refresher.	Х	Х	Х	Х	Х
CDL	Every four years if required.	Х	X	X	X	X
DOT	Initial, refresher every three years.	Х	Х	Х	X	X
HAZWOPER	Initial, annual refresher.	Х	Х	Х	Х	Х
HAZCOM	Initial, additional training if new waste stream is added.	Х	X	X	X	X
BBP	Initial, annual refresher.	Х	Х	Х	Х	Х
Radiation Safety	Initial, annual refresher.	Х	Х	Х	Х	Х

A10.B.2 Description of How Training is Designed to Meet Actual Job Tasks [R 299.9605 and 40 CFR §§264.16(a)(1) and (d)(3)]

The formal classroom and supervised on-the-job training are designed to ensure that relevant regulatory citations and safety procedures are covered. Completion of formal classroom training is documented by a training record summary to ensure that all required trainings are conducted. On-the-job training is conducted to ensure that all aspects of the actual job tasks are covered.

A10.C FREQUENCY OF REQUIRED TRAINING

[R 299.9605 and 40 CFR §§264.16(b) and (c)]

A10.C.1 Initial Training

[R 299.9605 and 40 CFR §264.16(b)]

Personnel who handle hazardous and mixed waste must successfully complete a program of Page 3 of 19 Form EQP 5111 Attachment Template A10, Personnel Training (6-1-2021) classroom training and on the job training in order to work safely at the facility. The U-M EHS training program consists of formal classroom and supervised on-the-job training. The RCRA generator, HAZWOPER, BBP, and radiation safety training courses consist of an initial course with an annual refresher. The HAZCOM training course consists of an initial course with periodic updates. The DOT training is an initial course with an update every 3 years. The CDL with a hazmat endorsement is issued by the State of Michigan, with renewals every 4 years.

No individual works unsupervised until he or she has completed the formal training courses and on the job training requirements and demonstrates proficiency. New employees will complete the training requirements within 6 months of their employment or assignment to the facility; or to a new position at the facility, whichever is later. EHS staff members are expected to participate in professional development. A description and outline of the waste management training programs are provided below.

(a) RCRA Generator

The U-M employees who handle hazardous waste are trained in aspects of hazardous waste from the point of generation through disposal. The training complies with standards promulgated under 40 CFR 262 for hazardous waste generators. Training is conducted using in-house resources and commercially available programs. An outline of the training is provided below:

- The Manifest and LDR Notifications
- Accumulation Time
- Container Management
- Characteristic and Listed Wastes
- Transport Requirements
- Storage Facility Requirements
- Contingency Plan

(b) CDL

The CDL with a hazmat endorsement is issued by the state in accordance with the standards issued by the Federal Motor Carrier Safety Administration in 49 CFR Parts 325-399. The CDL authorizes an individual to operate a class of commercial vehicles, including a vehicle of a defined size used to transport hazardous materials. Employees who are involved in the handling and transportation of hazardous materials as defined by the Hazardous Materials Transportation Act (HMTA) receive appropriate training and testing for the CDL. The training includes a knowledge test, a driving test and annual DOT physical examinations.

(c) DOT

Employees who are involved in the handling and transportation of hazardous materials receive training in accordance with DOT's hazardous materials transportation regulations as set forth in 49 CFR 172 Subpart H. The training is conducted by in-house staff and commercially available programs. An outline of the training is provided below:

- Hazardous Materials Table, 49 CFR 172.101
- Shipping Papers
- Marking
- Labeling
- Placarding

- Emergency Response Information
- Training Requirements
- Security Awareness and Procedures

(d) HAZWOPER

Employees who respond to these emergencies are trained in accordance with the Occupational Safety and Health Administration (OSHA) HAZWOPER standard under 29 CFR 1910.120, and the Michigan standards. Initial training and annual refresher training is conducted by in-house staff and commercially available programs. Emergency response training includes field exercises and training on U-M emergency response plans, activities, equipment, and procedures. An outline of the training is provided below:

- Regulatory Overview
- Hazardous Chemicals/Potential Hazards at Incidents
- Contingency Plan/Emergency Response Plan U-M Implementation
- Monitoring at Emergency Response Incidents
- Personal Protective Equipment
- Emergency Response Techniques Spill Control
- Decontamination Procedures
- Termination of the Incident

(e) HAZCOM

HAZCOM training involves the safety precautions necessary to ensure that the hazards of chemicals stored or used by the U-M are evaluated and that information on the hazards associated with these chemicals is transmitted to the employers and employees. This training is conducted by U-M EHS department in accordance with the OSHA HAZCOM standards set forth in 29 CFR 1910.1200 and the Michigan OSHA (MIOSHA) Act 154 of 1974 as amended. An outline of the training is provided below:

- Written Hazard Communication
- Hazard Identification and Determination
- Labeling, Marking and Other Forms of Warning
- Material Safety Data Sheets
- Physical and Health Hazards
- Work Practices and Emergency Procedures
- Personal Protective Equipment
- Workplace Evaluation and Medical Monitoring
- Recordkeeping

(f) BBP

BBP training involves safety precautions necessary to reduce or eliminate the risk of occupational exposure to infectious agents carried in human and animal blood tissues. The content of the training is conducted by the U-M EHS department in accordance with the standards set forth in the OSHA BBP Standard, 29 CFR 1910.1030 and Michigan Act 154 of 1974 as amended. An outline of the training is provided below:

• Universal Precautions

- Exposure Determination
- Written Exposure Control Plan
- Hepatitis B Immunization Program
- Post-Exposure Evaluation and Follow-up
- Housekeeping
- Recordkeeping
- (g) Radiation Safety

This course is conducted by the U-M EHS Radiation Safety Service for students, staff, and faculty who handle radioactive materials. It is designed to provide safety precautions and controls necessary to reduce exposure to radioactive materials during handling to meet the As Low As Reasonably Achievable (ALARA) requirements of the Nuclear Regulatory Commission (NRC). Specialized on-the-job training is provided to those individuals that routinely handle radioactive materials. This training covers spill procedures, proper handling, and disposal. An outline of the training is provided below:

- Radioactive Decay
- ALARA Monitoring Equipment
- Contamination and Exposure Control
- Radioactive Spill Clean Up
- Notifications to RSS

A10.C.2 Continuing Education

[R 299.9605 and 40 CFR §264.16(c)]

The U-M EHS training program consists of formal classroom and supervised on-the-job training. Classroom training varies depending on the course. The RCRA generator, HAZWOPER, BBP, and radiation safety training courses consist of an initial course with an annual refresher. The HAZCOM training course consists of an initial course with periodic updates. The DOT training is an initial course with an update every 3 years. The CDL with a hazmat endorsement is issued by the State of Michigan, with renewals every 4 years. EHS staff members are expected to participate in professional development.

A10.D TRAINING DIRECTOR

[R 299.9605 and 40 CFR §264.16(a)(2)]

The EHS Manager will act as training director and is responsible for procuring qualified instructors for training personnel handling hazardous and mixed waste at the Beck Road Facility. Under the direction of the EHS Manager, an EHS Coordinator, EHS Senior Rep, or EHS Rep II may assist the EHS Manager with training. Instructors must be knowledgeable on the subject matter being presented. To be qualified as an instructor, an individual must demonstrate competency or have appropriate academic credentials and instructional experience. Training may be conducted, in part, by the use of U-M qualified instructors, qualified consultants, or available training programs. The EHS Manager is responsible for ensuring that employees receive necessary training for safe handling of hazardous and mixed waste.

A10.E DOCUMENTATION AND RECORD KEEPING REQUIREMENTS

[R 299.9605 and 40 CFR §§264.16(d) and (e)]

A10.E.1 Documentation

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[R 299.9605 and 40 CFR §264.16(d)]

Training documentation is kept at the U-M EHS office for all current employees and for employees who have managed hazardous and mixed waste within the past 3 years. Copies of training records will be kept at the Beck Road Facility.

A10.E.1(a) Job Titles and Names of Employees Filling Each Job [R 299.9605 and 40 CFR §264.16(d)(1)]

Written job titles and job descriptions are listed in Attachment A10-1. The names of employees filling each job are listed below.

Michael Dressler – EHS Manager Mark Nord – EHS Senior Rep Stuart Berry – EHS Senior Rep Greg Marquis – EHS Rep II Timothy Forbush – EHS Rep II Christopher Clements – EHS Rep II Daniel Maue – EHS Rep I Kyle Roberts – EHS Rep I Matthew Beer – EHS Rep I Pat Bostain – EHS Secretary III Currently Vacant – EHS Coordinator

A10.E.1(b) Written Job Descriptions [R 299.9605 and 40 CFR §264.16(d)(2)]

Written job titles and job descriptions are listed in Attachment A10-1.

A10.E.1(c) Written Description of Type and Amount of Training Given to Each Position [R 299.9605 and 40 CFR §264.16(d)(3)]

The description of the type and the amount of training given to each position are listed in Sections A10.A.1 and A10.A.2.

A10.E.1(d) Documentation That Training Has Been Given to and Completed by Facility Personnel [R 299.9605 and 40 CFR §264.16(d)(4)]

Training documentation is kept at the U-M EHS office for all current employees and for employees who have managed hazardous and mixed waste within the past 5 years.

A10.E.2 Record Keeping

[R 299.9605 and 40 CFR §264.16(e)]

Training documentation is kept at the U-M EHS office for all current employees and for employees who have managed hazardous and mixed waste within the past 3 years. Copies of training records will be kept at the Beck Road Facility.

Attachment A10-1 Job Titles and Job Descriptions

EHS MANAGER

Basic Function and Responsibility

To coordinate and manage the planning, development, implementation and administration of one or more University-wide occupational health, safety, radiological or environmental programs within the Department of Environment, Health and Safety.

Characteristic Duties and Responsibilities

• Coordinate and manage the planning, development, implementation and administration of one or more University-wide occupational health, safety, radiological, or environmental programs, policies, and procedures. Participate in the development and administration of departmental policies and procedures.

• Plan and manage administrative and operational activities, including budget, for program areas. Supervise, hire, train, and evaluate professional and support staff. Assure compliance with affirmative action programs.

• Represent and negotiate for the Department with University administrators and regulatory officials under direction of the Director. Ensure University compliance with federal, state, and local health, safety, radiological, and environmental rules and regulations, and University policies/procedures. Evaluate the impact of new or proposed regulations and modify existing services or procedures as necessary.

• Supervise the investigation of complaints and grievances and coordinate the development and implementation of effective corrective action. Supervise and conduct comprehensive inspections, studies, and on-site surveys for evaluation and correction of health, safety, radiological, or environmental hazards.

• Develop, coordinate, and conduct occupational health, safety, radiological, and environmental education and training programs. Train and coordinate the work of new staff members.

• Oversee or prepare special and periodic technical papers and reports for use in University planning or for distribution to external regulatory agencies. Prepare special and periodic guidelines, manuals, newsletters, summaries, and bulletins.

• Manage the purchase of equipment and supervise the routine maintenance and calibration of instruments and devices.

• Review plans for construction and renovation of University facilities for occupational health, safety, radiological, and environmental concerns, and evaluate designed effectiveness.

• Coordinate the procurement, review, and project management of contracts and service agreements with outside vendors. Assist Director with budget and re-billing activities.

• Participate in emergency response activities and assume role of on-scene emergency response director during major incidents.

• Comply with all occupational health, safety, and environmental rules and regulations, and University policies and guidelines. EHS HMM Program emphasis on hazardous and mixed waste, and EGLE regulated waste.

• Manage the department on interim basis in absence of the Director.

• Have authority to authorize shut down of operations representing immediate danger to the University community, following department guidelines/policies.

Supervision Received

Administrative and functional direction is received from the Director. Manager is expected to be self-directed in administrative and functional activities.

Supervision Exercised

Functional and administrative supervision will be exercised over professional, office, technical, and temporary staff.

Qualifications

• A Master's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is necessary.

• Ten years of experience in managing occupational health, safety, radiological, or environmental programs, and ten years experience in administering occupational health, safety, radiological, or environmental projects is necessary.

• Considerable knowledge of modern occupational health, safety, environmental, or engineering principles and practices, and rules/regulations is necessary.

• Reasonable knowledge of multiple program area activities is highly desirable.

• Appropriate professional certification such as a Certified Hazardous Materials Manager, Certified Health Physicist, Certified Industrial Hygienist, Certified Safety Professional, Registered Sanitarian or licensing as a Professional Engineer is necessary. Professional affiliations and participation in professional conferences, including presentations and committee work, is necessary.

• Moderate computer experience and familiarity with software programs is necessary.

• Must be able to pass physical examination to allow for emergency response and wearing of personal protective equipment (PPE).

Must have a valid driver's license

EHS COORDINATOR

Basic Function and Responsibility

To coordinate and manage the planning, development, implementation and administration of a University-wide occupational health, safety, radiological, or environmental program within the Department of Environment, Health and Safety.

Characteristic Duties And Responsibilities

• Coordinate and manage the planning, development, implementation and administration of a University-wide occupational health, safety, radiological, or environmental program, policies, and procedures. Participate in the development and administration of departmental policies and procedures.

• Plan and manage administrative and operational activities, including budget, for a specific program area. Supervise, hire, train, and evaluate professional and support staff. Assure compliance with affirmative action programs.

• Represent the Department to University administrators and regulatory officials under direction of the Director. Ensure University compliance with federal, state, and local health, safety, radiological, and environmental rules and regulations, and University policies/procedures. Evaluate the impact of new or proposed regulations and modify existing services or procedures as necessary.

• Supervise the investigation of complaints and grievances and coordinate the development and implementation of effective corrective action. Supervise and conduct comprehensive inspections, studies, and on-site surveys for evaluation and correction of health, safety, radiological, or environmental hazards.

• Develop, coordinate, and conduct occupational health, safety, radiological, and environmental education and training programs. Assist in training and coordination of work of new staff members.

• Oversee or prepare special and periodic technical papers and reports for use in University planning or for distribution to external regulatory agencies. Prepare special and periodic guidelines, manuals, newsletters, summaries and bulletins.

• Manage the purchase of equipment, and supervise the routine maintenance and calibration of instruments and devices.

• Review plans for construction and renovation of University facilities for occupational health, safety, radiological, and environmental concerns, and evaluate designed effectiveness.

• Coordinate the procurement, review, and project management of contracts and service agreements with outside vendors. Assist Director with budget and re-billing activities.

• Participate in emergency response activities.

• Comply with all occupational health, safety, and environmental rules and regulations, and University policies and guidelines. EHS HMM Program emphasis on hazardous and mixed waste, and EGLE regulated waste.

Attachment A10-1, Job Titles and Descriptions

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Supervision Received

Administrative and functional direction is received from the Director. Coordinator is expected to be very self directed in functional activities.

Supervision Exercised

Functional and administrative supervision will be exercised over professional, office, technical, and temporary staff.

Qualifications

• A Master's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is necessary.

• Three years of experience in managing occupational health, safety, radiological, or environmental programs, and six years of experience in administering occupational health, safety, radiological, or environmental projects is necessary.

• Considerable knowledge of modern occupational health, safety, environmental, or engineering principles and practices, and rules/regulations is necessary.

• Appropriate professional certification such as a Certified Hazardous Materials Manager, Certified Health Physicist, Certified Industrial Hygienist, Certified Safety Professional, Registered Sanitarian or licensing as a Professional Engineer is necessary. Professional affiliations and participation in professional conferences, including presentations and committee work, is highly desirable.

• Moderate computer experience and familiarity with software programs is necessary.

• Must be able to pass physical examination to allow for emergency response and wearing of personal protective equipment (PPE).

• Must have a valid driver's license.

EHS SENIOR REP

Basic Function and Responsibility

Assist the program manager/coordinator or Director in developing, supervising and coordinating EHS programs to assure compliance with applicable federal, state, and local occupational and environmental laws and regulations. Participate in developing and implementing policies and procedures designed to ensure the health and safety of the University community and environmental compliance.

Characteristic Duties and Responsibilities

• Assist in planning, developing and implementing departmental policies and procedures, and with maintenance of licensing and permitting. Review existing and proposed federal and state legislation, rules, or regulatory interpretations of external agencies, analyze potential impacts on University policies and procedures, and develop and update programs to meet new and existing standards and regulations. Advise EHS management, faculty and staff on recommended course of action.

• Plan, design, coordinate and maintain procedures and systems to investigate, evaluate, monitor, detect and record occupational health, safety, radiological, and environmental conditions, liabilities, and exposures.

• Respond to inquiries from staff and faculty regarding occupational health, safety, and environmental concerns. Conduct comprehensive studies and on-site surveys for recognition and evaluation of various occupational health, safety, radiological, and environmental conditions, including studies of environmental quality and exposures. Provide quality assurance/quality control of record keeping and oversee projects of special significance or importance.

• Participate in collecting, sampling, transporting, and disposal of biological, hazardous, and radioactive wastes, including manifesting, packaging, transporting and other duties related to waste management.

• Survey, inspect, and evaluate laboratories, shops, food facilities, housing units and other physical properties to identify occupational health, safety, radiological, and environmental concerns.

• Develop, coordinate, and conduct occupational health, safety, radiological, and environmental education and training programs. Assist in training and coordination of work of new staff members.

• Oversee or prepare special and periodic technical papers and reports for use in University planning or for distribution to external regulatory agencies. Prepare special and periodic guidelines, manuals, newsletters, summaries and bulletins.

• Advise on the purchase of equipment, and oversee the routine maintenance and calibration of instruments and devices.

• Review plans for construction and renovation of University facilities for occupational health, safety, radiological, and environmental concerns, and evaluate designed effectiveness.

• Coordinate the procurement, review, and project management of contracts and service agreements with outside vendors. Assist manager/coordinator with budget and re-billing activities.

• Participate in emergency response activities.

• Comply with all occupational health, safety, and environmental rules and regulations, and University policies and guidelines. EHS HMM Program emphasis on hazardous and mixed waste, and EGLE regulated waste.

Supervision Received

Administrative and functional supervision is received from the program manager/coordinator or Director.

Supervision Exercised

Functional and administrative supervision may be exercised over professional, office, technical, and temporary staff.

Qualifications

• A Bachelor's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is necessary. A Master's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is highly desirable.

• Six years of experience in administering occupational health, safety, radiological, or environmental projects, and some experience in managing occupational health, safety, radiological, or environmental programs is necessary.

• Considerable knowledge of modern occupational health, safety, environmental, or engineering principles and practices, and rules/regulations is necessary.

• Appropriate professional certification such as a Certified Hazardous Materials Manager, Certified Health Physicist, Certified Industrial Hygienist, Certified Safety Professional, Registered Sanitarian or licensing as a Professional Engineer is necessary. Professional affiliations and participation in professional conferences, including presentations and committee work, is desirable.

• Moderate computer experience and familiarity with software programs is necessary.

• Must be able to pass physical examination to allow for emergency response and wearing of personal protective equipment (PPE).

• Must have a valid driver's license

<u>EHS REP II</u>

Basic Function and Responsibility

Develop, implement, promote, and maintain occupational health, safety, radiological, and environmental programs and projects. Identify occupational and environmental health and safety conditions, and recommend corrective measures.

Characteristic Duties and Responsibilities

• Plan, design, coordinate and maintain procedures and systems to investigate, evaluate, monitor, detect and record occupational health, safety, radiological, and environmental conditions, liabilities, and exposures.

• Respond to inquiries from staff and faculty regarding occupational health, safety, and environmental concerns. Conduct comprehensive studies and on-site surveys for recognition and evaluation of various occupational health, safety, radiological, and environmental conditions, including studies of environmental quality and exposures.

• Participate in collecting, sampling, transporting, and disposal of biological, hazardous, and radioactive wastes, including manifesting, packaging, transporting and other duties related to waste management.

• Survey, inspect, and evaluate laboratories, shops, food facilities, housing units and other physical properties to identify occupational health, safety, radiological, and environmental concerns.

• Develop, coordinate, and conduct occupational health, safety, radiological, and environmental education and training programs. Assist in training and coordination of work of new staff members.

• Prepare special and periodic reports, guidelines, manuals, newsletters, summaries and bulletins.

• Advise on the purchase of equipment and oversee the routine maintenance and calibration of instruments and devices.

• Review plans for construction and renovation of University facilities for occupational health, safety, radiological, and environmental concerns, and evaluate designed effectiveness.

• Assist in the procurement, review, and project management of contracts and service agreements with outside vendors.

• Participate in emergency response activities.

• Comply with all occupational health, safety, and environmental rules and regulations, and University policies and guidelines. EHS HMM Program emphasis on hazardous and mixed waste, and EGLE regulated waste.

Supervision Received

Administrative and functional supervision is received from the program manager/coordinator or other designee.

Attachment A10-1, Job Titles and Descriptions

Supervision Exercised

Functional supervision may be exercised over professional, office, technical, and temporary staff.

Qualifications

• A Bachelor's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is necessary. A Master's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is desirable.

• Three years of experience in administering occupational health, safety, radiological, or environmental projects is necessary. Some experience in program development is desirable.

• Considerable knowledge of modern occupational health, safety, environmental, or engineering principles and practices, and rules/regulations is necessary.

• Appropriate professional certification such as a Certified Hazardous Materials Manager, Certified Health Physicist, Certified Industrial Hygienist, Certified Safety Professional, Registered Sanitarian or licensing as a Professional Engineer is highly desirable. Professional affiliations and participation in professional conferences, including presentations and committee work, is desirable.

• Moderate computer experience and familiarity with software programs is necessary.

• Must be able to pass physical examination to allow for emergency response and wearing of personal protective equipment (PPE).

• Must have a valid driver's license, and ability to obtain a commercial driver's license may be necessary, depending on specific program area within EHS.

<u>EHS REP I</u>

Basic Function and Responsibility

Review, analyze and evaluate procedures and programs, and perform activities to assure compliance with occupational health, safety, radiological, and environmental standards. Survey, inspect and evaluate health, safety, and environmental issues.

Characteristic Duties and Responsibilities

• Evaluate health, safety, radiological, and environmental procedures, practices, and plans against federal, state and local regulations and established department policies/guidelines, and recommend/assist in modifications or changes.

• Respond to inquiries from staff and faculty regarding occupational health, safety, radiological, and environmental concerns. Investigate grievances and complaints and make recommendations for corrective action. Conduct investigations of occupationally related accidents and diseases.

• Participate in collecting, sampling, transporting, and disposal of biological, hazardous, and radioactive wastes, including manifesting, packaging, transporting and other duties related to waste management.

• Survey, inspect, and evaluate laboratories, shops, food facilities, housing units and other physical properties to identify occupational health, safety, radiological, and environmental concerns.

• Conduct and assist in developing occupational health, safety, radiological, and environmental education and training programs.

• Assist in preparing periodic or special guidelines, manuals, newsletters, summaries and bulletins.

• Assist in the review of plans for construction and renovation of University facilities for occupational health, safety, radiological, and environmental concerns, and evaluate designed effectiveness.

• Assist in procurement, review, and project management of contracts and service agreements with outside vendors.

- Calibrate and maintain equipment.
- Participate in emergency response activities.

• Comply with all occupational health, safety, and environmental rules and regulations, and University policies and guidelines. EHS HMM Program emphasis on hazardous and mixed waste, and EGLE regulated waste.

Supervision Received

Administrative and functional supervision is received from the program area manager/coordinator or other designee.

Supervision Exercised

Functional supervision may be exercised over office, technical, and temporary staff.

Qualifications

• A Bachelor's degree in occupational health, safety, radiological, environmental, engineering, chemical sciences, or a related field or equivalent combination of education and experience is necessary.

• Reasonable knowledge of modern occupational health, safety, environmental, or engineering principles and practices, and rules/regulations is necessary.

• Some experience in program development and EHS project management is desirable.

• Appropriate professional certification such as a Certified Hazardous Materials Manager, Certified Health Physicist, Certified Industrial Hygienist, Certified Safety Professional, Registered Sanitarian, or licensing as a Professional Engineer is desirable.

• Some computer experience and familiarity with software programs is necessary.

• Must be able to pass physical examination to allow for emergency response and wearing of personal protective equipment (PPE).

• Must have a valid driver's license, and ability to obtain a commercial driver's license may be necessary, depending on specific program area within EHS.

EHS SECRETARY

Basic Function and Responsibility

Provide secretarial and administrative support to the program managers/coordinators and professional staff, and the Department as a whole.

Characteristic Duties and Responsibilities

• Assist in the resolution of program operating concerns.

• Initiate, compose, and edit correspondence regarding matters of a sensitive or confidential nature. Provide typing, filing, word processing and copying support to departmental staff.

- Compile special and periodic reports, charts, graphs and membership files.
- Respond to inquiries and complaints regarding matters of a sensitive or confidential nature.
- Maintain program manager/coordinator calendars and prioritize effective use of time.
- Receive, route, and respond to incoming departmental phone calls and walk-ins.

• Maintain timekeeping and payroll records. Provide assistance with financial record keeping for the program area. Provide support for scheduling and arranging travel plans for program area staff.

• Provide support for meetings and training programs including scheduling, preparing agendas, and attending to provide support in taking minutes.

- Participate in training programs applicable to the area of responsibility.
- Assist with other program areas and general EHS office functions on an as needed basis.

• Comply with all occupational health, safety, and environmental rules and regulations, and University policies and guidelines. EHS HMM Program emphasis on hazardous and mixed waste, and EGLE regulated waste.

Supervision Received

Administrative and functional supervision is received from the program manager/coordinator or other designee. Functional supervision for support of the EHS department as a whole may be received from Administrative Associate.

Supervision Exercised

No administrative or functional supervision is exercised.

Qualifications

• A high school diploma is required. A bachelor's degree is desirable.

• Two years secretarial experience with demonstrated excellent clerical skills including grammar and proofreading; moderate computer skills and experience with Windows, Word, and Excel is required.

• Excellent organizational and interpersonal skills with demonstrated ability to exercise professional judgment, set priorities and work against deadlines, and to work with extreme accuracy and careful attention to detail are required.

- The ability to work as a member of a team as well as independently is required.
- Reasonable knowledge of U-M policies, procedures and regulations is desirable.

Attachment A10-1, Job Titles and Descriptions

Attachment 5

Preparedness and Prevention

FORM EQP 5111 ATTACHMENT TEMPLATE A7 CONTINGENCY PLAN

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9501, R 299.9508(1)(b), R 299.9504(1)(c), R 299.9521(3)(b), R 299.9607, and Title 40 of the Code of Federal Regulations (CFR) §§264.50 through 264.56, and 270.14(b)(7), establish requirements for contingency plans at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for a contingency plan at the hazardous waste management facility for the Beck Road Facility in Belleville, Michigan. It is recommended that Beck Road Facility perform annual drill exercises with the local fire department and emergency responders using the contingency plan to make sure all staff are familiar with the plan and determine whether the plan needs any updating.

(Check as appropriate)

- Applicant for Operating License for Existing Facility
- Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility

This template is organized as follows:

INTRODUCTION

- A7.A BACKGROUND INFORMATION
 - A7.A.1 Purpose of the Contingency Plan
 - A7.A.2 Description of Facility Operations
 - A7.A.3 Identification of Potential Situations
- A7.B EMERGENCY COORDINATORS
 - A7.B.1 Identification of Primary and Alternate Emergency Coordinators
 - A7.B.2 Qualifications of the Emergency Coordinators

Table A7.B.1 Identification of Primary and alternate Emergency Coordinators

- A7.B.3 Authority to Commit Resources
- A7.C IMPLEMENTATION OF THE CONTINGENCY PLAN
- A7.D EMERGENCY PROCEDURES
 - A7.D.1 Immediate Notification Procedures for Facility Personnel and State and Local Agencies with Designated Response Roles
 - A7.D.2 Procedures to Be Used for Identification of Releases
 - A7.D.3 Procedures to Be Used to Assess Potential Hazards to Human Health and the Environment
 - A7.D.4 Procedures to Determine if Evacuation is Necessary and Immediate Notification of Michigan Pollution Emergency Alerting System and National Response Center
 - A7.D.5 Procedures to Be Used to Ensure That Fires, Explosions, and Releases Do Not Occur, Reoccur, or Spread During the Emergency
- Page 1 of 51Form EQP 5111 Attachment Template A7, Contingency Plan(6-1-2021)

Table A7.D.1 Federal, State, and Local Response Contacts

- A7.D.6 Procedures to Be Used to Monitor Equipment Should Facility Operations Cease
- A7.D.7 Procedures to Provide Proper Treatment, Storage, and Disposal for Any Released Materials
- A7.D.8 Procedures for Cleanup and Decontamination
- A7.E RESUMPTION OF OPERATIONS AND RECORD KEEPING REQUIREMENTS
 - A7.E.1 Procedures to Be Used Prior to Resuming Operations
 - A7.E.2 Record Keeping Requirements
 - A7.E.2(a) Operating Record
 - A7.E.2(b) Written Incident Report
- A7.F PROCEDURE FOR ASSESSING OFFSITE RISK DURING AND AFTER A FIRE/EXPLOSION INCIDENT OR SIGNIFICANT RELEASE
- A7.G PROCEDURES FOR REVIEWING AND AMENDING THE CONTINGENCY PLAN
- Attachment A7.1 Documentation of Arrangements with Local Authorities
- Attachment A7.2 Evacuation Plan and Routes

Attachment A7.3 Emergency Equipment Description

Attachment A7.4 Checklist for Tracking Facility Response Actions During and After a Fire/Explosion Incident

Attachment A7.5 Building Emergency Response Plan

Attachment A7.6 Location of Waste Management Units

Attachment A7.7 Hazardous Waste Accepted at the Facility

Attachment A7.8 U.S. DOT Precedence of Hazard Table

Attachment A7.9 U.S. EPA Chemical Compatibility Chart

Attachment A7.10 Emergency Response Incident Report

GUIDANCE/REFERENCES

EGLE, Policy and Procedure MMD-111-22: "Hazardous Waste Contingency Plan Implementation and Reporting Obligations," November 5, 2012.

INTRODUCTION

A7.A BACKGROUND INFORMATION

A7.A.1 Purpose of the Contingency Plan

[R 299.9607 and 40 CFR §§264.51 and 264.53]

This Contingency Plan has been prepared in accordance with the requirements of 40 CFR, Part 264, Subpart D, and R 299.9607. It is designed to establish the necessary planned procedures to be followed in the event of an emergency situation at the Beck Road Facility in Belleville, Michigan, such as a fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to the air, soil, or water.

The provisions of this plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.

Copies of the Contingency Plan have been provided to emergency response agencies in order to familiarize them with the facility layout, the properties of the material handled, locations of the working areas, access routes into and within the facility, possible evacuation routes from the facility, and types of injuries or illness that could result from releases of materials at the facility. This information has been Page 2 of 51 Form EQP 5111 Attachment Template A7, Contingency Plan (6-1-2021)

submitted to:

 U-M EHS Director U-M EPPP Manager U-M HMM Manager U-M RSS RSO U-M Police Dept. (U-M DPSS) U-M Strategic Space Planning U-M HMM Sr. Hazmat Rep. U-M BRSF Office 	Danielle Sheen Steve O'Rielly Michael Dressler Mark Driscoll Eddie L. Washington, Jr. Jennifer Magoon-Judge Mark Nord Office Copy	CSSB CSSB NCTF CSSB CSSB AEC NCTF BRSF
9. Jill Coulter, Environmental Quali EGLE, MMD	ity Analyst	Jackson, MI
10. Ronda Blayer, Environmental Er EGLE, MMD	ngineering Specialist	Lansing, MI
1. Larry Bean, Environmental Manager EGLE, MMD		Jackson, MI
12. Kevin McNamara, Township Su Van Buren Township	Belleville, MI	
13. Daniel Besson, Fire Chief Van Buren Township Fire Depar	rtment	Belleville, MI
4. Greg Laurain, Director of Public Safety Van Buren Township Police		Belleville, MI
15. Andy Savage, Vice President of Huron Valley Ambulance	5. Andy Savage, Vice President of Eastern Operations Huron Valley Ambulance	
16. Denise Bechard, Emergency Ma St. Joseph Mercy Hospital	nagement Coordinator	Ann Arbor, MI

Attachment A7.1 includes documentation that each of these agencies has received a copy of the Contingency Plan. Whenever the Contingency Plan is modified, the facility will provide the agencies with a copy of the modified plan.

A7.A.2 Description of Facility Operations

Facility Processes

The wastes stored at Beck Road Facility are generated during teaching, research and support operations conducted at authorized U-M facilities. Waste received at the facility may be stored in the original container or may be comingled with like, compatible waste. The facility stores hazardous and mixed waste in the licensed area in compatible containers, which may include 5, 15, 30 and 55-gallon plastic, metal or fiber drums; or metal, and carton fiber boxes. The facility stores non-RCRA-hazardous low level radioactive waste (LLRW) in the non-licensed areas in compatible containers, which may include 5, 15, 30 and 55-gallon plastic, metal or fiber drums; or metal or fiber drums; or metal and carton fiber boxes.

Facility Operations and Waste Management Practices

The hazardous waste code, description, characteristic and waste management unit for the hazardous and mixed waste generated from U-M facilities and stored at the BRSF (Beck Road Facility) are described in Attachment A7.7, which is Table A2.A.2, Hazardous Wastes Accepted at the Facility. The location of the waste management units in the facility are include in Attachment A7.6. Hazardous and mixed waste shall be stored in the appropriate licensed area. Low level radioactive wastes shall be stored within the facility, or the activity in each room, is described below in Table A7-1, Facility Operations Table.

Room Number	Authorized Activity	Waste Description (1)	
100	Mechanical room	None	
100J	Janitor storage or vacant	None	
101	Office	None	
102	File storage	None	
102A	File storage	None	
104	Supply storage	None	
105	Supply storage	None	
106	Supply storage	None	
107	Supply or document storage	None	
108	Waste storage	Low-level radioactive	
109	Waste storage	Low-level radioactive	
109A	Waste storage	Hazardous and mixed—corrosive base and reactive	
109B	Waste storage	Hazardous and mixed—toxic	
110	Supply storage	None	
110A	Supply storage	None	
111	Waste storage	Hazardous and mixed—corrosive acid	
112T	Toilet facilities	None	
113	Waste storage	Hazardous and mixed—toxic and oxidizer	
113J	Supply storage	None	
115	Telephone controls	None	
116	Waste storage	Hazardous and mixed—toxic	
117	Waste storage	Hazardous and mixed—ignitable and toxic	
117A	Mechanical room	None	
120	Mechanical room	None	
120A	Mechanical room	None	
120B	Mechanical room	None	
121	Vacant	None	
125	Loading / unloading area	None	
2 nd Floor	Document storage or vacant	None	

Table A7-1
Facility Operations Table

⁽¹⁾Various mixtures of hazardous and mixed, and low level radioactive waste, may be encountered. Waste assignment and storage will be guided by the U.S. DOT Precedence or Hazard Table, Attachment A7.8.
- 1. The following is a summary of hazardous and mixed waste and LLRW that may be stored at the facility.
 - Liquids and solids containing RCRA and Michigan Act 451 regulated constituents.
 - Liquids and solids containing short-lived or long-lived radioisotopes mixed with RCRA and Michigan Act 451 regulated constituents.
 - Aqueous liquids and solids containing RCRA and Michigan Act 451 regulated constituents being held for Nuclear Regulatory Commission (NRC) decay to background or deregulation.
 - Aqueous liquids containing short-lived or long-lived radioisotopes in scintillation vials.
 - Liquid and solid LLRW containing short-lived or long-lived radioisotopes.
 - Sealed and plated sources, stock vials.
- 2. Secondary Containment: Secondary containment structures/devices are used at the Beck Road Facility to capture and contain spills or leaks from liquid containers to avoid releases of these materials into the environment. The secondary containment structures presently being used to accomplish the above objectives are maintained in an operational condition at all times and include:
 - a. Floor Seal and Berming: The rooms designed and used for liquid material storage are bermed at the doors to contain leaks and spills. The floors of rooms designed and used for liquid storage are sealed with a chemical resistant finish to prevent seepage through the floor in the event of a spill. The floor of the loading and unloading area is sealed with a chemical resistant finish. Loading and unloading of waste occurs between two containment trenches that are also sealed with a chemical resistant finish.
 - b. Spill Pallets: The bulk liquid drums may be stored on spill pallets designed to contain 110% of the largest container stored on the pallet. These spill pallets serve as supplemental secondary containment.
 - c. Overpacks: The bulk liquid drums may be placed in overpacks. The overpacks serve as supplemental secondary containment.
- 3. Routine Visual Inspections: An inspection of the facility and containers stored at the facility is performed on a weekly basis by Hazmat personnel. The inspection follows a checklist format and looks at containment structures, housekeeping, security, and checks to determine if leaks are occurring from the containers. The inspection is performed by a member of the Hazmat personnel and is documented on the facility inspection log. Completed inspection logs are maintained at the North Campus Transfer Facility (NCTF), with copies on file at the Beck Road Facility.
- 4. Preventive Maintenance: The weekly inspection also includes a walk-through of the entire facility. The containers are visually checked for their integrity. If found necessary, containers are replaced to avoid potential leaks or spills. Secondary containment is also checked to see if any preventive maintenance is necessary.
- 5. Housekeeping: The facility is maintained in a clean and orderly condition; the floor is swept and Attachment A7.1, Documentation of Arrangements with Local Authorities Page 5 of 51 Form EQP 5111 Attachment Template A7, Contingency Plan (6-1-2021)

mopped on a regular basis. During routine inspections, hard copies of waste records at the facility are cross checked with the computer records, and hard copies are updated as necessary. Other efforts such as updating the emergency supplies, tools, spill response supplies, also are a part of the housekeeping activities performed by the Hazmat personnel. Efforts are made on a continuous basis to implement innovative methods and controls for effective waste management.

- 6. Security: The Beck Road Facility is protected from unauthorized entry by locked doors, and entry is provided by EHS staff or other authorized U-M personnel. The facility is within a compound, bordered by a security fence that is kept locked after daily operational activities are completed. Access to the compound is limited to approved individuals or companies.
- 7. Monitoring: Periodic air monitoring during routine operations is performed by Hazmat personnel. Surface radioactive contamination on the containers, the floors and other surfaces is checked weekly with swipes during routine facility inspections. The containers are also checked weekly for any obvious signs of vapor pressure buildup inside the headspace of the bulk liquid drums. In addition, exposure monitoring is performed by Hazmat personnel periodically to determine the occupational exposure to the Hazmat personnel handling waste materials. All Hazmat personnel working in the facility are part of a radiation personnel dosimetry program to monitor occupational exposure.
- 8. Evacuation: The building evacuation plans and emergency response plans for the facility are included in the attachments. Attachment A7.2 includes the Building Evacuation Plan—First Floor and Second Floor. Attachment A7.5 includes the Building Emergency Response Plan—First Floor and Second Floor. The evacuation routes of egress are marked on the Evacuation Plans, and are posted inside the facility. The need for an evacuation will be communicated to other personnel in the facility verbally and over two-way radios. The Beck Road Facility is not normally occupied other than by Hazmat personnel performing routine duties.

Work Areas

Work areas are described in Table A7-1, Facility Operations Table. Waste will be assigned to a waste management unit by its waste code and characteristics. Waste with multiple waste codes or characteristics will be assigned to a waste management unit based on the U.S. DOT Precedence of Hazard Table, 49 CFR 173.2a (see Attachment A7.8).

A7.A.3 Identification of Potential Situations

Refer to Sections A7.C and A7.D below.

A7.B EMERGENCY COORDINATORS

[R 299.9607 and 40 CFR §§264.52 and 264.55]

A7.B.1 Identification of Primary and Alternate Emergency Coordinators [R 299.9607 and 40 CFR §§264.52 and 264.55]

At all times there is at least one employee, either on the facility premises or on call and within reasonable travel distance of the facility, with the responsibility for coordinating all emergency response measures. The list of employees designated as emergency coordinators is contained in Table A7.B.1. The coordinators are listed in the order in which they will assume responsibility.

Table A7.B.1 Identification of Primary and Alternate Emergency Coordinators

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Priority	Name	Work Phone	Work Address	Home Phone	Home Address
Primary	Michael	734-763-4619	1655 Dean Rd.,	734-434-4959	3401 Merritt Road
Coordinator	Dressler	(734-763-4568)	Ann Arbor, MI	Cell: 734-678-1494	Ypsilanti, MI
First Alternate	Mark	734-763-9123	1655 Dean Rd.,	517-917-3355	426 Adrian St.
Coordinator	Nord	(734-763-4568)	Ann Arbor, MI	Cell: 517-917-3355	Manchester, MI
Second Alternate Coordinator	Mark Driscoll	734-647-2251 (734-764-6200)	1239 Kipke Dr., Ann Arbor, MI	734-834-9333 Cell: 734-834-9333	11403 Mart Whitmore Lake, MI
Third Alternate	Danielle	734-763-9132	1239 Kipke Dr.,	248-875-1328	2786 Arrowwood Ct.
Coordinator	Sheen	(734-647-1143)	Ann Arbor, MI	Cell: 248-875-1328	Sterling Heights, MI

A7.B.2 Qualifications of the Emergency Coordinators [R 299.9607 and 40 CFR §264.55]

Each emergency coordinator is trained in the operation of the storage facility. This training includes RCRA Operations (40 CFR 264.16 and 262.34), Emergency Response/Incident Command (29 CFR 1910.120) and may include U.S. DOT training (49 CFR 172 Subpart H) as appropriate. Recurrent training is provided.

The professional credentials of each emergency coordinator are listed below:

Michael Dressler, CHMM Mark Nord, BS Mark Driscoll, HP, RSO Danielle Sheen, CIH, CSP

A7.B.3 Authority to Commit Resources

[R 299.9607 and 40 CFR §264.55]

The emergency coordinator or his designee will be available to coordinate all emergency response measures. This individual will be familiar with the facility's contingency plan, activities, location and characteristics of waste handled, location of records, and site layout. The emergency coordinator also has the authority to commit the resources needed to complete the response actions in the contingency plan.

A7.C IMPLEMENTATION OF THE CONTINGENCY PLAN

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The emergency coordinator must be contacted immediately in the occurrence of any situation that may result in potential or actual threats to human health or the environment. The emergency coordinator must implement this plan whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.

The provisions of the plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.

Guidance is provided below in Emergency Procedures (A7.D) that defines the conditions or circumstances of potential incidents and initial actions for responders, including instructions for contacting additional personnel.

The U-M Ann Arbor Campus Emergency Procedures flip chart guides are posted in the facility, and site-specific emergency telephone numbers are posted by telephones and exits for ready accessibility in the event of an emergency. The emergency coordinator may be reached by cell phone, home phone or office phone. The U-M Police Department (U-M DPSS) may also contact the emergency coordinator or his designee and may contact additional EHS staff as necessary.

A7.D EMERGENCY PROCEDURES

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The following general procedures have been established for implementation by facility personnel and the emergency coordinator to efficiently respond to the release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. The facility's procedure for assessing offsite risk during and after a significant release is provided in Attachment A7.4.

The emergency procedures at the Beck Road Facility are written for the following anticipated conditions or circumstances: a high hazard emergency, a fire/explosion or fire-related emergency, an emergency response, an incidental spill, or a personal injury, which are further discussed below, including full descriptions of the actions to be taken for each situation. Each condition or circumstance will be monitored carefully and the response modified as conditions develop.

General guidance is also given, as well as guidance for decontamination procedures and communications.

General Guidance

- The U-M Ann Arbor Campus Emergency Procedures flip chart guides are posted in the facility, and site-specific telephone emergency numbers are posted by telephones and exits, for ready accessibility.
- Never respond to an emergency alone. Always use the buddy system.
- If an incident occurs, the person(s) finding the incident shall notify everyone in the immediate area of the situation. The type of situation (high hazard emergency, fire/explosion or fire-related emergency, emergency response, incidental spill or personal injury) will dictate the next step. Entry into a hazardous situation is contingent upon having the proper training.

Immediately notify the emergency coordinator, his designee, or local response agency, or as defined in the Emergency Procedures:

- Any Medical Emergency or Fire call 911. Request assistance and instruct Van Buren Township Emergency Response to notify U-M Police Department (U-M DPSS) at 734-763-1131.
- Chemical Spill during work hours call EHS at 734-763-4568. After hours call U-M DPSS at 734-763- 1131.
- Radioactive Spill during work hours call RSS at 734-764-6200. After hours call U-M DPSS at 734-763-1131
- Biological Spill during work hours call Biological Safety at 734-763-6973. After hours call U-M DPSS at 734-763-1131.

Describe the emergency, and request appropriate assistance. Provide the following:

- Your name, affiliation, and telephone number.
- The name, address, telephone number, and site identification number of the facility.
- Your exact location and the location of the emergency.
- A detailed description of the type of emergency, injuries to personnel, chemicals involved and quantities, radioactive material involved, and actions taken to contain the situation.
- An assessment of the potential or actual hazards.
- Use of the Emergency Response Incident Report is required (Attachment A7-10).

High Hazard Emergency

A high hazard emergency is an emergency of unknown nature; a situation which may be immediately dangerous to life and health; is a threat to personnel and/or the public; threatens the surrounding area or facility; and/or involves a reactive hazardous material. In the case of a high hazard emergency:

- Evacuate the immediate area and take actions to protect health and safety.
- Call 911 from a phone located out of the immediate area of danger. Request assistance and instruct Van Buren Township Emergency Response to notify U-M Police Department (U-M DPSS) at 734-763- 1131.
- For radioactive material spills, contact RSS immediately at 734-764-6200 or (after hours) U-M DPSS at 734-763-1131. Do not spread radioactive contamination beyond the immediate area. If other hazards exist (fire, explosion, chemical exposure, personal injury), move to the nearest area of safety.
- Isolate the area if possible.
- Do not attempt to rescue someone unless you know what caused the situation and you can properly protect yourself from the hazard.
- Do not move an injured person, unless the person is in harm's way.
- Provide first aid only if you are properly trained.
- For chemical splashes to the eyes and skin, immediately flush the exposed areas with water for 15 minutes. Remove all contaminated clothing and jewelry. Seek medical assistance.
- If time and the situation permits, have the MSDS readily available for emergency response personnel.

Fire/Explosion or Fire-Related Emergency

- Call 911 and request assistance. The Van Buren Township Emergency Response should be instructed to notify U-M Police Department (U-M DPSS) at 734-763-1131.
- Evacuate the area.
- Shut off equipment and other fuel sources to the fire only if it can be done without risk to health and safety.
- If the appropriate fire extinguisher is available and personnel have been trained on its usage, attempt to put out the fire only if it can be done without risk to health and safety.
- Isolate the fire, if possible, by closing doors to the area.

Emergency Response

An emergency response is a response effort by employees from outside the immediate release area or by other designated responders to an occurrence of a known nature, which is likely to result in an uncontrolled release of a hazardous material outside the immediate release area. Responses to releases of hazardous waste constituents where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered emergency responses). In the case of emergency response:

• Evacuate the immediate area and take action to protect health and safety.

- Call EHS at 734-763-4568, or (after hours) U-M DPSS at 734-763-1131 from a phone located out of the immediate area of danger.
- For radioactive material spills, if safe to do so, isolate and contain the spill to a localized area. Contact RSS immediately at 734-764-6200, or (after hours) U-M DPSS at 734-763-1131. Do not spread radioactive contamination beyond the immediate area. If other hazards exist (fire, explosion, chemical exposure, personal injury), move to the nearest area of safety.
- Isolate the area if possible.
- Do not attempt to rescue someone unless you know what caused the situation and you can properly protect yourself from the hazard.
- Do not move an injured person, unless the person is in harm's way.
- Provide first aid only if you are properly trained.
- For chemical splashes to the eyes and skin, immediately flush the exposed areas with water for 15 minutes. Remove all contaminated clothing and jewelry. Seek medical assistance.
- If time and the situation permits, have the MSDS readily available for emergency response personnel.

Incidental Spill

An incidental spill is a spill in which there is no fire hazard, of a known nature, in small amounts, which can be absorbed, neutralized, contained or otherwise controlled by employees in the immediate release area. In the case of an incidental spill:

- For chemical spills, isolate and contain the spill to a localized area. Do not spread chemical contamination beyond the immediate area. Follow procedures outlined in the standard operating procedures manual. If personnel do not have the appropriate protective equipment, training, or spill cleanup materials, call EHS at 734-763-4568, or (after hours) U-M DPSS at 734-763-1131 for assistance.
- For radioactive material spills, isolate and contain the spill to a localized area. Do not spread radioactive contamination beyond the immediate area. Contact RSS immediately at 734-764-6200, or (after hours) U-M DPSS at 734-763-1131.

Personal Injury

- For major injuries, call 911 and request medical assistance. The Van Buren Township Emergency Response should be instructed to notify U-M Police Department (U-M DPSS) at 734-763-1131. Do not move the injured person, unless the person is in harm's way. Begin providing first aid only if you are trained. Persons with life threatening injuries should be transported to the St. Joseph Mercy Hospital Emergency Room.
- For minor injuries, provide first aid if trained. All injuries, even those considered minor, should be checked by a physician. For medical evaluation and treatment employees should report to U-M Occupational Health Services (OHS).
- If the nature of the illness or injury allows, the supervisor will fax a completed Illness or Injury Report Form to the number on the form. This form may also be sent with the employee as authorization for treatment. If not completed and sent with the employee for treatment, the form will be completed and submitted as required by U-M policy. The Illness or Injury Report Form can be obtained at
- http://www.workconnections.umich.edu/wp-content/uploads/2017/02/IllnessOrInjuryReport.pdf .
- The receiving medical facility will be contacted and briefed on the potential exposure situation.

Decontamination Procedures

• Personnel responding to incidental spills shall decontaminate and/or properly dispose any equipment used in the cleanup process. All supplies and equipment used in the cleanup procedure must be replenished and such replenishment documented in the facility's operating record. All contaminated materials generated from a spill cleanup shall be properly packaged and given to HMM for disposal. Attachment A7.1, Documentation of Arrangements with Local Authorities

- For emergency response spill response, all suits, boots, and equipment used in the response shall be decontaminated prior to storage for reuse. If cleaning is not possible, the item shall be properly packaged and given to HMM for disposal. All supplies and equipment used in the cleanup procedure must be replenished.
- For high hazard emergency spill response, all suits, boots, and equipment used in the response shall be decontaminated prior to storage for reuse. If cleaning is not possible, the item shall be properly packaged and given to HMM for disposal. All supplies and equipment used in the cleanup procedure must be replenished.
- U-M DPSS or an EHS representative or their designee shall deem the site safe for re-entry.
- Upon termination of the incident, all barricade tape and posted signs shall be removed.
- All decontamination activities shall be conducted in a manner that protects human health and the environment and prevents the release of decontamination wastewaters and related wastes.

Communication

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• Coordinate with the responding teams, as necessary, to provide an update on the situation such as actions taken to contain the problem, injuries, evacuation areas, mitigation, conclusion of response, etc.

A7.D.1 Immediate Notification Procedures for Facility Personnel and State and Local Agencies with Designated Response Roles [R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The list of emergency contacts in Table A7.D.1 identifies local emergency response agencies, and state and federal authorities that must be notified in the event of an imminent or actual emergency situation requiring response.

The emergency coordinator will be responsible for ensuring that all appropriate authorities are notified as necessary.

Table A7.D.1 Federal, State, and Local Response Contacts

<u>Local</u> Van Buren Twp Police and Fire Departments Huron Valley Ambulance St. Joseph Mercy Hospital ER	Phone: 734-699-8930 Phone: 734-971-4420 Phone: 734-712-3000
State Michigan State Police—Brighton Post Michigan State Police—Lansing EGLE MMD—Lansing PEAS (EGLE Pollution Emergency Alerting System)	Phone: 810-227-1051 Phone: 517-241-8000 Phone: 517-284-6562 Phone: 800-292-4706
Emergency Management	Phone: 734-728-3711
<u>Federal</u> National Response Center EPA Region 5—Chicago	Phone: 800-424-8802N Phone: 312-886-3000
Nuclear Regulatory Commission Region III—Lisle, IL	Phone: 800-522-3025

The U-M Ann Arbor Campus Emergency Procedures flip chart guides are posted in the facility, and
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site- specific emergency telephone numbers are posted by telephones and exits for ready accessibility in the event of an emergency. The emergency coordinator may be reached by cell phone, home phone or office phone. The U-M Police Department (U-M DPSS) may also contact the emergency coordinator or his designee and may contact additional EHS staff as necessary.

Immediate emergency instructions will be physically communicated directly to all individuals in the facility by voice. This is possible due to the limited number of personnel having access to the facility and to the compact footprint of the regulated part of the facility, with all waste management units being contiguous to one another.

A7.D.2 Procedures to Be Used for Identification of Releases

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

Maps and room numbers are posted in the contingency plan and throughout the facility and are readily accessible by emergency coordinators to identify waste management unit locations. Hazardous waste accepted at the facility is assigned to specific waste management units based on characteristic and compatibility. Each container accepted at the facility is logged onto the operation's log and assigned to a waste management unit based on waste type and characteristic. The comingled waste is recorded on a mixed waste drum worksheet and the facility drum list. This information is stored in the office adjacent to the waste management units, and is remotely available on the U-M EHS network. In the event of a spill, the emergency coordinator can use this reference information to identify the location, container, contents, characteristic, and amount. Each waste management unit is equipped with a sloped floor designed to contain any release and a spill will be readily visible upon inspection.

A7.D.3 Procedures to Be Used to Assess Potential Hazards to Human Health and the Environment

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

The emergency coordinator will assess possible hazards, both direct and indirect, to human health or the environment that may result from the release, fire, or explosion.

The assessment will consider the effects of any gases that may be generated, surface runoff from water or chemical reagents used to control fires, and any chemical or physical reactions with equipment or structures.

Potential hazards to human health and the environment shall be assessed by evaluation of a release based on the hazardous waste characteristics for each waste management unit. Evaluation of the hazardous and mixed waste assigned to a waste management unit shall include potential incompatibilities using the EPA chemical compatibility chart (see Attachment A7.9). Hazardous and mixed waste assigned to a waste management unit shall be compatible with the waste in waste management unit. Each waste management unit is designed as secondary containment to prevent the migration of a release outside of the waste management unit. All waste is stored in closed containers. All waste is stored within the enclosed facility. No surface runoff is expected.

The floors of the licensed area are sealed with the Stonkote HT4 system from Stonhard, a manufacturer of floor systems and high performance lining systems. The Stonkote HT4 system is a two-component, 100% solids, epoxy coating specifically formulated to provide outstanding protection from a wide range of chemicals while increasing abrasion resistance and cleanability.

Waste management unit Room 117 is designed for storage of ignitable waste. Engineering controls in

place include a grounding strip to ground waste containers to an outside earth-ground, intrinsically safe electrical fixtures and the west wall is an explosion relief panel.

A7.D.4 Procedures to Determine if Evacuation Is Necessary and Immediate Notification of Michigan Pollution Emergency Alerting System and the National Response Center [R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56]

If the emergency coordinator's assessment indicates that evacuation of facility areas may be advisable, he will implement the evacuation plan for the facility. If the emergency coordinator's assessment indicates that evacuation of the surrounding local areas is also advisable, the appropriate local authorities will be immediately notified (see Table A7.D.1). The National Response Center will also be notified (see Table A7.D.1), and the following information will be provided:

- 1. Name and telephone number of the reporting individual
- 2. Name and address of the facility
- 3. Time and type of incident
- 4. Type and quantity of materials involved
- 5. Possible hazards to human health or the environment
- 6. Extent of injuries, if applicable

The facility's evacuation plan is included in this Contingency Plan as Attachment A7.2.

Evacuation routes are posted in the building. Site specific safety training shall include evacuation procedures and evacuation routes. Means of egress shall not be blocked and shall be maintained from each waste management unit.

Procedures for evacuation are based upon the type of hazard:

- For high hazard emergencies immediate evacuation is required. Call 911 from a phone located out of the immediate area of danger. Request assistance and instruct Van Buren Township Emergency Response to notify U-M Police Department (U-M DPSS) at 734-763-1131.
- For fire/explosion or fire-related emergencies, call 911, request additional support, and instruct Van Buren Township Emergency Response to notify U-M Police Department (U-M DPSS) at 734-763-1131; all building occupants shall be notified and shall evacuate the building.
- For emergency response or an incidental spill, personnel in the immediate area need to be notified of the situation and be ready to evacuate if the situation changes from an emergency response or incidental spill to a high hazard emergency or fire/explosion or fire-related emergency. Call EHS at 734-763-4568, or (after hours) U-M DPSS at 734-763-1131 from a phone located out of the immediate area of danger.

A7.D.5 Procedures to Be Used to Ensure that Fires, Explosions, and Releases Do Not Occur, Reoccur, or Spread During the Emergency [R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(e), 264.227, and 264.200]

Whenever there is an imminent or actual emergency situation where the potential or actual release of hazardous waste or hazardous waste constituents may threaten human health or the environment, the facility will implement the following procedures:

All hazardous and mixed waste is stored indoors in tightly closed containers. All waste is segregated by characteristic and stored in appropriate waste management units. All waste management units

incorporate secondary containment in the design to control the migration of released waste to adjacent waste management units. Ignitable waste is stored in Room 117 which has engineering controls in place to minimize the likelihood of fire or explosion. Containers are opened only when necessary to add or remove waste and air monitoring is conducted during commingling activities, when appropriate.

The procedures outlined in Sections A2, Chemical and Physical Analyses, and A3, Waste Analysis Plan, are designed to ensure that waste is accurately profiled and that the handling of waste from collection to comingling within the facility occurs without incident.

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, or releases do not recur or spread to other areas of the facility, or off site. Actions that may be employed include:

Hazardous and mixed waste is stored in closed containers only. There are no processes or operations at the storage facility. The engineering controls in place in the ignitable storage room, Room 117, are designed to prevent the initiation and spread of fire or explosion. Each waste management unit is designed as secondary containment to control the migration of released waste to adjacent waste management units.

Attachment A7.3 is a detailed description of the type, amount, and location of all emergency equipment at the Beck Road Facility.

A7.D.6 Procedures to Be Used to Monitor Equipment Should Facility Operations Cease [R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(f)]

Hazardous and mixed waste is stored in closed containers. General facility equipment and structures will be monitored during normal operations and inspections. Container integrity will be evaluated during normal operations and inspections. Stoppage of facility operations will not affect the operation of the facility.

A7.D.7 Procedures to Provide Proper Treatment, Storage, and Disposal for Any Released Materials

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(g)]

The following is a summary of hazardous and mixed waste and LLRW that may be stored at the facility:

- Liquids and solids containing RCRA and Michigan Act 451 regulated constituents.
- Liquids and solids containing short-lived or long-lived radioisotopes mixed with RCRA and Michigan Act 451 regulated constituents.
- Aqueous liquids and solids containing RCRA and Michigan Act 451 regulated constituents being held for Nuclear Regulatory Commission (NRC) decay to background or deregulation.
- Aqueous liquids containing short-lived or long-lived radioisotopes in scintillation vials.
- Liquid and solid LLRW containing short-lived or long-lived radioisotopes.
- Sealed and plated sources, stock vials.

Maps and room numbers are posted in the contingency plan and throughout the facility and are readily accessible by emergency coordinators to identify waste management unit locations. Hazardous waste accepted at the facility is assigned to specific waste management units based on characteristic and compatibility. Each container accepted at the facility is logged onto the operation's log and assigned to a waste management unit based on waste type and characteristic. The comingled waste is recorded on a

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mixed waste drum worksheet and the facility drum list. This information is stored in the office adjacent to the waste management units, and is remotely available on the U-M EHS network. In the event of a spill, the emergency coordinator can use this reference information to identify the location, container, contents, characteristic, and amount. Each waste management unit is equipped with a sloped floor designed to contain any release and a spill will be readily visible upon inspection. Disposal of released material will be in accordance with the material's contents and characteristics.

A7.D.8 Procedures for Cleanup and Decontamination

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(h)]

The following activities are required following emergency response actions to ensure the capability is maintained and improved, if necessary, to respond to future emergencies. The actions are also necessary to maintain compliance with environmental regulations.

<u>Clean-Up</u>

Upon completion of the response actions, all recovered waste, contaminated soil or surface water (if applicable), debris, or other material resulting from releases, fire, or explosion at the facility will be removed from the site by the EHS employees as designated by the emergency coordinator. All waste will be evaluated and profiled, as necessary, for proper disposal. Waste analysis will be consistent with the test methods indicated in Table A3.A.1, Waste Analysis Procedures. The waste will then be properly packaged, labeled, and either stored at the site, or collected directly at the site by a contracted waste hauler for disposal. No waste that may be incompatible with the released material will be handled at the facility until clean up is completed.

Upon return to the office, Hazmat personnel responding to the incident are required to fill out an Emergency Response Incident Report (Attachment A7.10) for documentation purposes. This form is maintained in the EHS files. EHS management reviews the form to determine if procedural improvements or modifications may be necessary.

Following the completion of the response actions, response equipment will be decontaminated for future use, if appropriate. If the equipment cannot be properly decontaminated, it will be disposed with the waste/debris disposal operation. Equipment that cannot be reused will be replaced before hazardous waste operations at the facility resume.

Personnel Exposure Concerns

For medical evaluation and treatment of minor injuries, employees should report to U-M Occupational Health Services (OHS). For serious injuries, dial 911 and request medical assistance. Do not move an injured person unless they are in further danger from the situation. Persons with life threatening injuries should be transported to the St. Joseph Mercy Hospital Emergency Room. The receiving medical facility will be contacted and briefed on the potential exposure situation.

If the nature of the illness or injury allows, the supervisor will fax a completed Illness or Injury Report Form to the number on the form. This form may also be sent with the employee as authorization for treatment. If not completed and sent with the employee for treatment, the form will be completed and submitted as required by U-M policy. The Illness or Injury Report Form can be obtained at

http://www.workconnections.umich.edu/wp-content/uploads/2017/02/IllnessOrInjuryReport.pdf .

Decontamination Procedures

• Personnel responding to incidental spills shall decontaminate and/or properly dispose any equipment

used in the cleanup process. All supplies and equipment used in the cleanup procedure must be replenished. All contaminated materials generated from a spill cleanup shall be properly packaged and given to Hazmat personnel for disposal.

- For emergency response spill response, all suits, boots, and equipment used in the response shall be decontaminated prior to storage for reuse. If cleaning is not possible, the item shall be properly packaged and given to Hazmat personnel for disposal. All supplies and equipment used in the cleanup procedure must be replenished.
- For high hazard emergency spill response, all suits, boots, and equipment used in the response shall be decontaminated prior to storage for reuse. If cleaning is not possible, the item shall be properly packaged and given to Hazmat personnel for disposal. All supplies and equipment used in the cleanup procedure must be replenished.
- U-M DPSS or an EHS representative or their designee shall deem the site safe for re-entry.
- Upon termination of the incident, all barricade tape and posted signs shall be removed.

A7.E RESUMPTION OF OPERATIONS AND RECORD KEEPING REQUIREMENTS

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(h) and (i)]

The following subsections identify procedures that must be followed to meet the notification and record keeping requirements.

A7.E.1 Procedures to Be Used Prior to Resuming Operations

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(h)]

Prior to resuming operations in the affected area(s), Beck Road Facility will inspect all emergency equipment to ensure that the proper cleanup procedures have been implemented and all equipment has been cleaned and is fit for its intended use.

Prior to resuming operations, the regional, state, and local authorities will be notified that no waste that may be incompatible with the released materials will be handled until cleanup is complete, and that all emergency equipment has been inspected for re-use.

Within 15 days after the incident, a report will be submitted by the U-M EHS Director, or his designee, to the Director of the MMD, as detailed in Section A7.E.2(b).

A7.E.2 Record Keeping Requirements

[R 299.9607 and 40 CFR §§264.51, 264.52, and 264.56(i)]

A7.E.2(a) Operating Record

In the event of an emergency situation that requires implementation of the Contingency Plan, the emergency coordinator will record in the operating record the time, date, and description of the event. The operating record is maintained by Beck Road Facility and can be found at the following location: 8501 Beck Road, Belleville, MI.

A7.E(2)(b) Written Incident Report

Within 15 days of an incident requiring implementation of the Contingency Plan, the Beck Road Facility will submit a written incident report to the EGLE at the following address:

Director of MMD EGLE P.O. Box 30241 Lansing, MI 48909

The report will contain the following information:

- 1. Name, address, telephone number, and site identification number of the facility and the owner/operator.
- 2. Date, time, and type of incident.
- 3. Type and quantity of materials involved.
- 4. Assessment of actual or potential hazards to human health and the environment.
- 5. Extent of injuries, if applicable.
- 6. Estimated quantity and disposition of recovered materials that resulted from the incident.

A7.F PROCEDURE FOR ASSESSING OFFSITE RISK DURING AND AFTER A FIRE/EXPLOSION INCIDENT OR SIGNIFICANT RELEASE

[R 299.9521(3)(b) and R 299.9607 and 40 CFR §264.56(d)]

A checklist is presented in Attachment A7.4 (Checklist for Tracking Facility Response Actions During and After a Fire/Explosion Incident).

Any of the actions incorporated into this procedure are to be performed by Beck Road Facility personnel to the extent possible. However, much of the offsite sampling and monitoring will, in all likelihood, have to be performed by a duly authorized governmental agency as such activities can present legal barriers to Beck Road Facility.

A7.G PROCEDURES FOR REVIEWING AND AMENDING THE CONTINGENCY PLAN [R 299.9607 and 40 CFR §264.54]

This contingency plan will be periodically reviewed and amended as appropriate. The frequency of the review will be determined as follows:

- A review will be completed on an annual basis to determine if changes to the facility, personnel, or operations require change and amendment of the plan.
- A review will be completed whenever the facility operating license is revised under Part 111 of the Natural Resource and Environmental Protection Act, 1994 PA 451 as amended.
- The Contingency Plan will be reviewed after implementation, and immediately amended if necessary, if the plan fails in an emergency.
- An amendment will be completed if the list of emergency coordinators changes.
- An amendment will be completed if the list of emergency response equipment changes.
- A review will be completed if changes occur to the facilities design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.

Whenever the Contingency Plan is modified, the facility will provide the agencies with a copy of the modified plan.

Attachment A7.1 Documentation of Arrangements with Local Authorities

University of Michigan--Beck Road Facility Site ID No.: MIR 000 001 1834 Contingency Plan, Revision 0

University of Michigan--Beck Road Facility Site ID No.: MIR 000 001 1834 Contingency Plan, Revision 0

Attachment A7.2 Evacuation Plan and Routes

Attachment A7.2 Evacuation Plan and Evacuation Plan Maps

Evacuation Plan

Procedures for evacuation are based upon the type of hazard:

- For high hazard emergencies immediate evacuation is required. Call 911 from a phone located out of the immediate area of danger. Request assistance and instruct Van Buren Township (VBTW) Emergency Response to notify U-M Police Department (U-M DPSS) at 734-763-1131.
- For fire/explosion or fire-related emergencies, call 911, request additional support, and instruct Van Buren Township Emergency Response to notify U-M Police Department (U-M DPSS) at 734-763-1131; all building occupants shall be notified and shall evacuate the building.
- For emergency response or an incidental spill, personnel in the immediate area need to be notified of the situation and be ready to evacuate if the situation changes from an emergency response or incidental spill to a high hazard emergency or fire/explosion or fire-related emergency. Call EHS at 734-763-4568, or (after hours) U-M DPSS at 734-763-1131 from a phone located out of the immediate area of danger.
- The verbal signal will be "evacuation required, proceed to the nearest unobstructed exit."

If the emergency coordinator determines that the area surrounding the facility should be evacuated, then the VBTFD will be notified.

When necessary, notification will be made to the National Response Center with the following information:

- 1. Name and telephone number of the reporting individual
- 2. Name and address of the facility
- 3. Time and type of incident
- 4. Type and quantity of materials involved
- 5. Possible hazards to human health or the environment
- 6. Extent of injuries, if applicable

The facility's evacuation maps are included below. The evacuation maps are posted in the building. Site specific safety training shall include evacuation procedures and evacuation routes. Means of egress shall not be blocked and shall be maintained from each waste management unit.





Attachment A7.3 Emergency Equipment Description

Emergency Equipment Description Safety Supply Inventory

Date / / (Check if items are stocked)

Room 101

Documents	Purpose or Capability	Minimum Quantity	Quantity Needed
Contingency Plan	Response Protocols	1 Copy	
Phone Numbers	Contact Information	1 Copy	
Tools and Equipment	Purpose or Capability	Minimum Quantity	Quantity Needed
Flashlights	Portable Illumination	2 Triple D Cell	
Flashlight—Rechargeable	Portable Illumination	1	

Room 109

PPE	Purpose or Capability	Minimum Quantity	Quantity Needed
Personal Protection	Personal Protection	1 Copy Located in Safety	
Equipment (PPE) Selection	Equipment (PPE) Selection	Supply Cabinet	
Guides	Guides		
North Air Purifying Respirator	Respiratory Protection—	4 pair Organic Vapor/	
Cartridges	See PPE Selection Guide	HEPA/Acid Gas	
North Air Purifying	Respiratory Protection—	2 Large	Large
Respirator—1/2 face	See PPE Selection Guide	2 Medium	Medium
Madh Air Durifair a	Desciratory Destantion	2 Small	Small
North Air Puritying	Respiratory Protection—	2 Med / Large	Med / Large
Nitrile Olavas, Hassa Duty	See PPE Selection Guide	2 Small	Smail
Nithle Gloves, Heavy Duty	Find Protection—	12 Pairs, Size 10 (13	
Nitrile Clause, Single Lles	Hand Distostion	2 Bayas VI	XI.
Nithle Gloves, Single Use	See DDE Selection Cuide	2 Boyes La	
Butyl Gloves	Hand Protection	6 Daire Size 10 (17 mil)	
Dulyi Gloves	See PPE Selection Guide	0 Pans, 5126 10 (17 mil)	
Silver Shield / 4H Gloves	Hand Protection—	6 Pairs, Large	
	See PPE Selection Guide	. 2	
Leather Palm Gloves	Hand Protection	12 Pairs	
Shoe Covers (Booties)-	Splash Protection—	12 Pairs	
Saranex / Polycoat	See PPE Selection Guide		
Shoe Covers (Booties)-	Splash Protection—	12 Pairs	
Latex Response Boots	See PPE Selection Guide		
Coverall Protective Suits	Splash Protection—	2 CPF3, XXL	XXL
	See PPE Selection Guide	2 CPF3, XL	XL
		6 Proshield 2/NexGen, XXL	XXL
		6 Proshield 2/NexGen, XL	
Cafaty Oceanian	Eve Salash Distantion	6 Proshield 2/NexGen, Lq	Lq
Salety Goggles	Eye Splash Protection	6 Cente (sizes: 40 to 46)	
Lab Coals	Splash Protection	6 Coals (sizes: 40 to 46)	Quantity Needed
Diagtia Showal	Purpose or Capability	Minimum Quantity	Quantity Needed
Flastic Shover	Liquid Movement	1	
Vermiculte	Liquid Absorption (5 gal/93)	4 Page (4 ft ³ each)	
Floor Dri	Oil Absorption (5 gal/IC)	4 Days (4 it each)	
Floor Dfl Salvant Adaashant	Cill Absorption (4 gal/bag)	4 Dags (40 pounds each)	
Solvent Adsorbent	Solvent Absorb (Up to 15 gal)	160 Pounds	
Aciu Neutralizer	gal)	Soo Pounds	

Emergency Equipment Description Safety Supply Inventory

Date: __/__/___

Room 109 (Cont.)			
Spill Supplies	Purpose or Capability	Minimum Quantity	Quantity Needed
Caustic Neutralizer	Neutralize Bases (Up to 4 gal)	50 Pounds	
Blue Pads	Liquid Absorption	1 Packet (new bundle)	
Paper Towels	Liquid Absorption	4 Packets	
Heavy Duty Wipes	Liquid Absorption	4 Packets	
Litmus (pH) Paper	pH Testing of Liquids	1 Roll (range 1 to 12)	
Radiation Safety Kit	Radioactive Clean Up	1	
Sorbent Booms P-200	Spill Containment (12 Gallons per Box of 12)	8 (3 inch x 4 feet)	
Sorbent Pillows P-300	Spill Containment (8 Gallons per Box of 16)	8 (7 x 15 inch)	
Broom	Debris Collection	1	
Dust Pan	Debris Collection	1	
Tools and Equipment	Purpose or Capability	Minimum Quantity	Quantity Needed
First Aid Kit	Minor Injuries up to 25 People	1 Johnson & Johnson Kit No. 8161	
Rotary Drum Pump	Liquid Transfer	1 (1 inch ID hose)	
Flashlight Batteries	Replacement Batteries	6 D Cell	
9 Volt Batteries	Replacement Batteries	2	
GM Meter	Radiation Detection	1 (uses 2 D cell batteries)	
Ion Chamber	Radiation Exposure Measurement	1 (uses 2 x 9 volt batteries)	
Drum Truck	Drum Movement	1	
Floor Mop with Wringer	Floor Cleaning	1	
Containers	Purpose or Capability	Minimum Quantity	Quantity Needed
Plastic Pails	Material Collection	12 x 5 gal, HDPE	
Plastic Bags	Material Collection	10 (4 mil, 38 x 72") (55 gal)	
Empty Drums	Material Collection	2 x 30 gal Poly Closed Head	
Empty Drums	Material Collection	2 x 55 gal Poly Closed Head	
Empty Drums	Material Collection	1 x 30 gal DM Closed Head	
Empty Drums	Material Collection	1 x 55 gal DM Closed Head	
Empty Drums	Material Collection	2 x 15 gal Poly Closed Head	
Empty Drums	Material Collection	2 x 30 gal Poly Open Head	
Empty Drums	Material Collection	2 x 55 gal Poly Open Head	
Empty Drums	Material Collection	2 x 30 gal DM Open Head	
Empty Drums	Material Collection	2 x 55 gal DM Open Head	
Bung Gaskets	Replacement Gaskets	20 x 2" 20 x ¾"	2" 3⁄4"
Drum Lid Gaskets	Replacement Gaskets	8 (55 DM open head)	
4 Gallon Boxes	Material Collection	12 (holds 4 x 1 gallon each)	

Storage and Waste Areas

Tools and Equipment	Purpose or Capability	Minimum Quantity	Quantity Needed
Non-Sparking Bung Wrench	Open/Close Drum Bungs	1 Beryllium Copper	
Speed Wrench	Open/Close Drum Bolts	1 With 15/16 Inch Socket	
Organic Vapor Detector	Organic Vapor Detection	1 (From NCTF As Necessary)	

Emergency Equipment Description Fire Extinguisher Monthly Inventory

Date: __/__/ By ____

No.	Location	Туре	Size	Seal	Gauge	Mount	Visible	Cylinder
1	Outside Room 218	ABC	5 Lbs					
2	2 nd Floor Hall Near Room 200	ABC	10 Lbs					
3	Outside Room 207	ABC	10 Lbs					
4	Outside Room 105	ABC	10 Lbs					
5	Room 109 (S.E. Door)	ABC	10 Lbs					
9	Outside Rooms 115/125	CO2	10 Lbs					
6	Room 109B	ABC	10 Lbs					
7	Room 113	ABC	10 Lbs					
8	Outside Room 117	ABC	20 Lbs					
10	1 st Floor North Exit	ABC	10 Lbs					
13	Room 120	CO2	10 Lbs					
14	Room 120	ABC	10 Lbs					
12	Room 100	ABC	10 Lbs					
11	Outside Room 101	ABC	10 Lbs					

Comments:

A check mark ($\sqrt{}$) indicates that the conditions observed are satisfactory. Unsatisfactory conditions are noted in the comments.

Attachment A7.4 Checklist for Tracking Facility Response Actions During and After a Fire / Explosion Incident

Checklist for Tracking Facility Response Actions During and After a Fire / Explosion Incident

1. Air Monitoring During Incident				
University of Michigan EHS st	University of Michigan EHS staff in combination with Van Buren Township hazmat response.			
mutual aid agencies, and stat	e and federal officials—as soon as can be mobilized.			
Status Date	Action			
Completed				
	1.a If possible, model dispersion and deposition of the			
	release with real time parameters to determine likely			
	extent of plume and assist local authorities making			
	shelter-in-place or evacuation recommendations.			
	1.b Establish air monitoring equipment in locations upwind			
	and downwind of the incident using			
	visual/meteorological data, and update, as needed, with			
	modeling results. Monitoring should continue until			
	downwind data is consistent with upwind values.			
	1.c Conduct air monitoring utilizing approved methods and			
	include as many of the identified substances as			
	possible. Using a multi gas meter, the main parameters			
	may include VOC, O ₂ , CO, H ₂ S and LEL. In the event of			
	a fire/explosion, continuous particulate matter less than			
	2.5 microns in diameter ($PM_{2.5}$) should be monitored as			
	well. Drager tubes may be used to monitor specific			
	substances beyond the capability of a multi gas meter.			
Comments or notes:	Comments or notes:			

2. Record Incident Parameters U-M Beck Road Facility and FHS staff—as soon as access is available to employees or			
witnesses			
Status	Date Completed		Action
		2.a	Document the time line. Include the time incident began, the duration of the incident (end point), and the specific location of the incident and all other locations and equipment involved.
		2.b	Identify employees/witnesses having direct involvement or direct knowledge of the incident.
		2.c	Identify any relevant witnesses to the incident
		2.d	Gather local meteorological data. <u>www.weather.gov/dtx/</u> Detroit, Willow Run Airport (KYIP) Record relevant information and note observations by personnel with direct involvement of the incident
Comments or	notes:		

3. Develop a Narrative U-M Beck Road Facility and EHS staff—develop a narrative of the incident.			
Status	Date	Action	
	Completed		
		3.a Sequence of events and time line leading up to and throughout the incident. Review the incident with employees directly involved and other on-site witnesses. Include all staff and truck drivers as appropriate. Access all manifests, drum worksheets and Excel files, as appropriate.	
		3.b Identify specific event locations, materials, substances, and equipment involved in incident. Include drum numbers or manifest information as appropriate.	
		3.c Identify and characterize, to the extent possible, the size and scope of incident. Include estimated drum volumes or manifest container volumes.	
Comments or	notes:		

4. Comprehensive List of Wastes, Materials or Substances Involved				
U-M Beck Ro	U-M Beck Road Facility and EHS staff—characterize or profile the involved material.			
Status	Date	Action		
Claide	Completed			
	Completed			
		4.a Identify all of the constituents and waste codes from the drum worksheets, chemical constituent sheets or waste manifests that may have been involved in the incident. Use a generic list initially, and then develop a final list as specifics become available. Verify that the most up-to-date records are used.		
		4.b Determine the volume, concentration, and weight of substances identified above, and determine how they may have been altered by the incident (e.g., pyrolysis products, decomposition, degradation, and both known and potential mixture reactions). Based on this information, begin developing a list of substances of potential concern.		
		4.c Ensure that information critical to the response activity is kept in the information repository identified by the EGLE.		
Comments or	notes:	<u> </u>		

5. Post In	cident Sample C	ollection			
U-M Beck Ro	U-M Beck Road Facility and EHS staff—to characterize or profile the post incident material.				
Status	Date	Action			
	Completed	5.a Develop a sampling plan, as appropriate, for the collection of waste, groundwater, soil, ash, airborne dust, debris, surface water, and/or wipe samples. The plan may take into account fallout density, air monitoring data, visual observation, or air modeling. A statistical sampling design may not be necessary for the screening evaluation. Post-incident, off-site sampling may not be necessary based on air monitoring data and lack of off-site migration or deposition.			
		5.b Collect a sufficient number of samples to identify and characterize concentrations of substances involved in the incident. Include sampling for background concentrations.			
		5.c Complete the analysis of collected samples and review by comparison to relevant environmental protection standards. Environmental protection standards may have to be developed for some chemicals or environmental media.			
		5.d Identify and document any substances found to be present in levels that exceed environmental protection standards.			
Comments or	notes:				

 Evaluate Data for Screening Potential Risk U-M Beck Road Facility and EHS staff—to evaluate risk and guide additional action. 				
Status	Date Completed	Action		
		6.a Compare existing data to relevant environmental protection standards.		
		6.b Prepare risk assessment report and submit it to the EGLE, Office of Waste Management and Radiological Protection (MMD) within 90 days after the incident.		
		6.c If less than environmental protection standards, no further action is needed for off-site potential releases upon approval of the MMD.		
6.d If the data is greater than the environmental protection				

		standards, proceed with corrective action after notification from the EGLE.		
Comments or notes:				

Attachment A7.5 Building Emergency Response Plan



Figure 4 Beck Road Storage Facility Emergency Response Plan - First Floor

Attachment A7.5, Building Emergency Response Plan Form EQP 5111 Attachment Template A7, Contingency Plan

Figure 5 Beck Road Storage Facility Emergency Response Plan - Second Floor MIR 000 001 834 - 8501 Beck Rd. Belleville, MI 48111 734-763-4568



(6-1-2021)

Attachment A7.6 Location of Waste Management Units



Beck Road Storage Facility

Attachment A7.7 Hazardous Waste Accepted at the Facility

TABLE A2.A.2 HAZARDOUS WASTES ACCEPTED AT THE FACILITY

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
F002	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F003	Spent solvents generated by teaching, research and supporting operations	Ignitability	Listed wastes; ignitable waste hazard code	Room 117
F004	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F005	Spent solvents generated by teaching, research and supporting operations	Ignitability, toxicity	Listed wastes; ignitable and toxic waste hazard codes	Room 117
D001	Ignitables generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 117
D001	Oxidizers generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 113
D002	Corrosive acids generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 111
D002	Corrosive bases generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 109A
D003	Reactives generated by teaching, research and supporting operations	Reactivity	Reactive waste hazard code	Room 109A
D004	Waste containing arsenic generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D005	Waste containing barium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D006	Waste containing cadmium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D007	Waste containing chromium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D008	Waste containing lead generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D009	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D010	Waste containing selenium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D011	Waste containing silver generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D018	Waste containing benzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D019	Waste containing carbon tetrachloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

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Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D021	Waste containing chlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D022	Waste containing chloroform generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D023	Waste containing o-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D024	Waste containing m-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D025	Waste containing p-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D026	Waste containing cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D027	Waste containing 1,4- dichlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D028	Waste containing 1,2- dichloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D029	Waste containing 1,1- dichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

Attachment A7.7, Hazardous Waste Accepted at the Facility

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Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D030	Waste containing 2,4- dinitrotoluene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D032	Waste containing hexachlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D033	Waste containing hexachlorobutadiene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D034	Waste containing hexachloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D035	Waste containing methyl ethyl ketone generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D036	Waste containing nitrobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D038	Waste containing pyridine generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

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Hazardous Waste Code	Waste Description	Hazardous Waste Characteristics	Basis for Hazardous Designation	Hazardous Waste Management Unit
D039	Waste containing tetrachloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D040	Waste containing trichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D041	Waste containing 2,4,5- trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D042	Waste containing 2,4,6- trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D043	Waste containing vinyl chloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
U138	Waste containing methyl iodide generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116
U151	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116

Attachment A7.8 U.S. DOT Precedence of Hazard Table

PRECEDENCE OF HAZARD TABLE

§173.2a Classification of a material having more than one hazard.

(a) *Classification of a material having more than one hazard.* Except as provided in paragraph (c) of this section, a material not specifically listed in the §172.101 table that meets the definition of more than one hazard class or division as defined in this part, shall be classed according to the highest applicable hazard class of the following hazard classes, which are listed in descending order of hazard:

(1) Class 7 (radioactive materials, other than limited quantities; and shipments of UN 3507, Uranium hexafluoride, radioactive material, excepted package)

(2) Division 2.3 (poisonous gases).

- (3) Division 2.1 (flammable gases).
- (4) Division 2.2 (nonflammable gases).

(5) Division 6.1 (poisonous liquids), Packing Group I, poisonous-by-inhalation only.

(6) A material that meets the definition of a pyrophoric material in §173.124(b)(1) of this subchapter (Division 4.2).

(7) A material that meets the definition of a self-reactive material in 173.124(a)(2) of this subchapter (Division 4.1).

(8) Class 3 (flammable liquids), Class 8 (corrosive materials), Division 4.1 (flammable solids), Division 4.2 (spontaneously combustible materials), Division 4.3 (dangerous when wet materials), Division 5.1 (oxidizers) or Division 6.1 (poisonous liquids or solids other than Packing Group I, poisonous-by-inhalation). The hazard class and packing group for a material meeting more than one of these hazards shall be determined using the precedence table in paragraph (b) of this section.

(9) Combustible liquids.

(10) Class 9 (miscellaneous hazardous materials).

(b) *Precedence of hazard table for Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1.* The following table ranks those materials that meet the definition of Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1:

PRECEDENCE OF HAZARD TABLE

[Hazard class or divisio	n and packing group]
--------------------------	-----------------------

	4.2	4.3	5.1 I ¹	5.1 II ¹	5.1 III ¹	6.1, I dermal	6.1, I oral	6.1 II	6.1 III	8, I liquid	8, I solid	8, II liquid	8, II solid	8, III liquid	8, III solid
3 I ²		4.3				3	3	3	3	3	(3)	3	(3)	3	(3)
3 II^2		4.3				3	3	3	3	8	(3)	3	(3)	3	(3)
3 III ²		4.3				6.1	6.1	6.1	34	8	(3)	8	(3)	3	(3)
4.1 II ²	4.2	4.3	5.1	4.1	4.1	6.1	6.1	4.1	4.1	(3)	8	(3)	4.1	(3)	4.1
4.1 III ²	4.2	4.3	5.1	4.1	4.1	6.1	6.1	6.1	4.1	(3)	8	(3)	8	(3)	4.1
4.2 II		4.3	5.1	4.2	4.2	6.1	6.1	4.2	4.2	8	8	4.2	4.2	4.2	4.2
4.2 III		4.3	5.1	5.1	4.2	6.1	6.1	6.1	4.2	8	8	8	8	4.2	4.2
4.3 I			5.1	4.3	4.3	6.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4.3 II			5.1	4.3	4.3	6.1	4.3	4.3	4.3	8	8	4.3	4.3	4.3	4.3
4.3 III			5.1	5.1	4.3	6.1	6.1	6.1	4.3	8	8	8	8	4.3	4.3
5.1 I ¹						5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1 II^1						6.1	5.1	5.1	5.1	8	8	5.1	5.1	5.1	5.1
$5.1 ext{ III}^1$						6.1	6.1	6.1	5.1	8	8	8	8	5.1	5.1
6.1 I, Dermal										8	6.1	6.1	6.1	6.1	6.1
6.1 I, Oral										8	6.1	6.1	6.1	6.1	6.1
6.1 II, Inhalation										8	6.1	6.1	6.1	6.1	6.1
6.1 II, Dermal										8	6.1	8	6.1	6.1	6.1
6.1 II, Oral										8	8	8	6.1	6.1	6.1
6.1 III										8	8	8	8	8	8

PRECEDENCE OF HAZARD TABLE

¹See §173.127.

²Materials of Division 4.1 other than self-reactive substances and solid desensitized explosives, and materials of Class 3 other than liquid desensitized explosives.

³Denotes an impossible combination.

⁴For pesticides only, where a material has the hazards of Class 3, Packing Group III, and Division 6.1, Packing Group III, the primary hazard is Division 6.1, Packing Group III.

NOTE 1: The most stringent packing group assigned to a hazard of the material takes precedence over other packing groups; for example, a material meeting Class 3 PG II and Division 6.1 PG I (oral toxicity) is classified as Class 3 PG I.

NOTE 2: A material which meets the definition of Class 8 and has an inhalation toxicity by dusts and mists which meets criteria for Packing Group I specified in §173.133(a)(1) must be classed as Division 6.1 if the oral or dermal toxicity meets criteria for Packing Group I or II. If the oral or dermal toxicity meets criteria for Packing Group III or less, the material must be classed as Class 8.

(c) The following materials are not subject to the provisions of paragraph (a) of this section because of their unique properties:

(1) A Class 1 (explosive) material that meets any other hazard class or division as defined in this part shall be assigned a division in Class 1. Class 1 materials shall be classed and approved in accordance with §173.56 of this part;

(2) A Division 5.2 (organic peroxide) material that meets the definition of any other hazard class or division as defined in this part, shall be classed as Division 5.2;

(3) A Division 6.2 (infectious substance) material that also meets the definition of another hazard class or division, other than Class 7, or that also is a limited quantity Class 7 material, shall be classed as Division 6.2;

(4) A material that meets the definition of a wetted explosive in 173.124(a)(1) of this subchapter (Division 4.1). Wetted explosives are either specifically listed in the 172.101 table or are approved by the Associate Administrator (see 173.124(a)(1) of this subchapter); and

(5) A limited quantity of a Class 7 (radioactive) material that meets the definition for more than one hazard class or division shall be classed in accordance with §173.423.

[Amdt. 173-224, 55 FR 52606, Dec. 21, 1990, as amended at 56 FR 66264, Dec. 20, 1991; Amdt. 173-241, 59 FR 67490, Dec. 29, 1994; Amdt. 173-247, 60 FR 48787, Sept. 20, 1995; Amdt. 173-244, 60 FR 50307, Sept. 28, 1995; 64 FR 10776, Mar. 5, 1999; 66 FR 33426, June 21, 2001; 66 FR 45182, 45379, Aug. 28, 2001; 68 FR 45032, July 31, 2003; 80 FR 1151, Jan. 8, 2015]

(e-CFR data is current as of December 20, 2018)

Attachment A7.9 U.S. EPA Chemical Compatibility Chart

Chemical Compatibility Chart

EPA-600/2-80-076 April 1980 A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Municipal Environmental Laboratory Office of Research and Development U.S. Environmental Protection Agency Cincinnati, Ohio 45268

Caution: This Chart is intended as an indication of some of the hazards that can be expected on mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not sclassified as hazardous on the chart, nor do any blanks necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.



Attachment A7.10 Emergency Response Incident Report

University of Michigan Emergency Response Incident Report for Spill, Odor or Smoke

Include the following in your report of the incident.

Date:
Time:
Location:
Material:
Quantity:
EHS Responder:
Personal Injuries/Exposures:
Time Complete:
Response Actions (provide a detailed account of the response actions taken to the incident):

Attachment 6

Contingency Plan

FORM EQP 5111 ATTACHMENT TEMPLATE A6 PREPAREDNESS AND PREVENTION

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9504, R 299.9508, and R 299.9606 and Title 40 of the Code of Federal Regulations (CFR) §§264.30 through 264.37 establish requirements for preparedness for and prevention of releases of hazardous wastes or constituents at hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses requirements for preparedness for and prevention of releases of hazardous wastes or constituents at the following hazardous waste management facility for the Beck Road Facility in Belleville, Michigan.

(Check as appropriate)

Applicant for Operating License for Existing Facility:

- No waiver requested
- Waiver requested for one or more units for required equipment
 - Waiver requested for one or more units for required aisle space

Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility:

No waiver requested



Waiver requested for one or more units for required equipment

Waiver requested for one or more units for required aisle space

This template is organized as follows:

INTRODUCTION

- A6.A REQUIRED EQUIPMENT
 - A6.A.1 Internal Communication System
 - A6.A.2 Emergency Response Communication System
 - A6.A.3 Fire, Spill, and Decontamination Equipment
 - A6.A.4 Adequate Water Volume
- A6.B TESTING AND MAINTENANCE OF EQUIPMENT
- A6.C ACCESS TO COMMUNICATIONS OR ALARM SYSTEM
 - A6.C.1 Multiple Employees Present
 - A6.C.2 Single Employee Present

- A6.D REQUIRED AISLE SPACE
- A6.E STATE OR LOCAL AUTHORITIES
 - A6.E.1 Arrangements with State or Local Authorities
 - A6.E.2 Refusal of State or Local Authorities to Enter into Emergency Response Agreements

Attachment A6-1	Inspection Schedule
Attachment A6-2	Emergency Equipment Description
Attachment A6-3	Fire Hydrant Locations
Attachment A6-4	Inspection Log

INTRODUCTION

To meet the preparedness and prevention standards, facilities must be operated and maintained in a manner that minimizes the possibility of a fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents. The regulations require maintenance of equipment, alarms, minimum aisle space, and provisions for contacting local authorities (R 299.9606 and 40 CFR §264.31).

A6.A REQUIRED EQUIPMENT

[R 299.9606 and 40 CFR §264.32]

The Beck Road Facility is equipped for an efficient response to a release of hazardous and mixed waste and to minimize its effect on the environment. The resources used in this process include an internal communication system, an external emergency response communication system, emergency equipment to contain and decontaminate a release, and fire-control procedures.

A6.A.1 Internal Communication System

[R 299.9606 and 40 CFR §264.32(a)]

Immediate emergency instructions will be physically communicated directly to all individuals in the facility by voice. This is possible due to the limited number of personnel having access to the facility and to the compact footprint of the regulated part of the facility, with all waste management units being contiguous to one another.

A6.A.2 Emergency Response Communication System

[R 299.9606 and 40 CFR §264.32(b)]

U-M Beck Road Facility operators carry hand-held two-way radios which are capable of communication with U-M emergency responders and the U-M Police Department (DPS). No voice communication is required to trigger a response from DPS. Each radio is equipped with an emergency button (coded directly to the individual assigned to the radio) that alerts DPS when pressed. Telephones are located near the licensed area (Room 115) and in the office (Room 101). Emergency contact telephone numbers are posted at each phone and at each building exit. Facility operators also carry personal mobile telephones.

A6.A.3 Fire, Spill, and Decontamination Equipment

[R 299.9606 and 40 CFR §264.32(c)]

Fire extinguishers and an emergency eyewash unit and shower are located at the storage facility. The facility is also equipped with decontamination materials for on-site cleanup operations. The equipment used for decontamination is listed in Table A5.A.1 (Attachment A6-1) under Spill Cleanup and Personal Protection Equipment. Details of the emergency equipment available at the facility are presented in the Safety Supply Inventory (Attachment A6-2), which is Figure 3 of the U-M Emergency Response Contingency Plan.

A6.A.4 Adequate Water Volume

[R 299.9606 and 40 CFR §264.32(d)]

Water for fire control is provided by fire hydrants located near the facility as shown in Attachment A6-3. Fire hydrants are inspected annually, as coordinated by U-M Environment, Health and Safety (EHS) department, to determine adequate flow rates.

A6.B TESTING AND MAINTENANCE OF EQUIPMENT

[R 299.9606 and 40 CFR §264.33]

The schedule for testing and maintenance of equipment is detailed in Table A5.A.1 (Attachment A6-1) in Section A5.A, Written Schedule, of this document and is recorded in the facility inspection log (Attachment A6-4).

A6.C ACCESS TO COMMUNICATIONS OR ALARM SYSTEM

[R 299.9606 and 40 CFR §264.34]

A6.C(1) Multiple Employees Present [R 299.9606 and 40 CFR §264.34(a)]

Immediate emergency instructions will be physically communicated directly to all individuals in the facility by voice. This is possible due to the limited number of personnel having access to the storage facility and to the compact footprint of the regulated part of the facility, with all waste management units being contiguous to one another.

A6.C(2) Single Employee Present

[R 299.9606 and 40 CFR §264.34(b)]

U-M Beck Road Facility operators carry hand-held two-way radios which are capable of communication with U-M emergency responders and the U-M Police Department (DPS). No voice communication is required to trigger a response from DPS. Each radio is equipped with an emergency button (coded directly to the individual assigned to the radio) that alerts DPS when pressed. Telephones are located near the licensed area (Room 115) and in the office (Room 101). Emergency contact telephone numbers are posted at each phone and at each building exit. Facility operators also carry personal mobile telephones.

A6.D REQUIRED AISLE SPACE

[R 299.9606 and 40 CFR §264.35]

Aisle space will be maintained at the storage facility by appropriate placement of containers, equipment and supplies to allow unobstructed movement of personnel, fire protection equipment, and spill containment equipment throughout the facility.

Containers of hazardous and mixed waste at the facility may be stored two tiers high on the floors of Rooms 109A, 109B, 111, 113, 116, and 117. The floors in these rooms are sloped to low areas in the centers of the rooms and have secondary containment.

A6.E STATE AND LOCAL AUTHORITIES

[R 299.9606 and 40 CFR §264.37]

A6.E.1 Arrangements with State and Local Authorities [R 299.9606 and 40 CFR §264.37(a)(1)]

The Van Buren Township Police and Fire Departments, the Huron Valley Ambulance and St. Joseph Mercy Hospital staff are invited to tour the Beck Road Facility and the surrounding buildings on the property. The tour of the facility will familiarize them with the floor plan of the facility, and the nature and characteristics of the waste stored in the facility. A review of the engineering controls in place at the facility designed to facilitate management of hazardous wastes will also be provided. A record of attendance at the facility tour will be kept on file at the Beck Road Facility. Copies of the contingency plan have been submitted to each of the organizations listed above.

A6.E.2 Refusal of State or Local Authorities to Enter into Emergency Response Agreements

[R 299.9606 and 40 CFR §264.37(b)]

No state or local authority has declined to enter into emergency response arrangements.

Attachment A6-1 Inspection Schedule (Table A5.A.1)

	Attachment A6-1 Table A5.A.1						
Item	Frequency ¹	Types of Problems					
Containers	Weekly	Visually inspect the containers to verify they are closed. Visually inspect for leaking containers, deterioration of containers, rust, corrosion, or trends that indicate possible decline of structural integrity; check container for labels identifying the chemical(s) or chemical class in the drum, the EPA hazardous waste code(s), the date the container was placed in storage, and the generator's name and location.					
Containment System	Weekly	Inspect the floor and curbing of the storage area for cracking, flaking, chipping, or gouging, and for excessive wear or deterioration. Inspect secondary containment for liquids, weekly, when waste is brought to the facility.					
Communication Devices – Telephone	Weekly	Check for dial tone. Determine if outgoing calls can be made.					
General Area: Warning signs "No Smoking" signs Doors Windows Building	Weekly	Check that warning signs are posted; check that doors and windows are secured. Inspect container placement and stacking to determine if the required aisle space for inspection and use of emergency equipment exists. Check labels to determine if the waste indicated is stored in the proper/designated area. Annually inspect roof, walls, and entrances for settling, cracks, and spalling in concrete.					
Concrete Slab Loading/Unloading Area	Weekly (Daily when in use)	Visually inspect for cracking, flaking, chipping, gouging, and excessive wear or deterioration. Inspect the loading area for heavy stains.					
Safety Equipment: Eye Wash Shower	Monthly	Check for operability.					
Fence around the Unit	Bi-Annually	Check for integrity.					
Water	Annually	Verify inspection of fire hydrants for pressure, volume, and operability.					
Building	Weekly (Daily when in use)	Visually inspect building to insure that it is secure.					
Area between Loading/Unloading Dock and Container Storage Area	Weekly	Visually inspect for stains and excessive wear or deterioration.					
Radiation Monitoring Equipment	Weekly (Daily when in use)	Check for operability.					
SPILL CLEANUP AND F	PERSONAL PROTECTI	ON EQUIPMENT					
Goggles Protective Booties Protective Gloves Protective Coveralls Air Purifying Respirators Absorbents and Neutralizers Recovery Drums Air Monitoring Meters	Monthly and after each incident response requiring use of personal protection equipment	Check for sufficient inventory; verify that expiration dates have not lapsed. Check condition of protective equipment and gear. Safety Supply Inventory form shall be used to guide the inventory.					
¹ Daily refers to work day	s when operations invol	ving hazardous waste occur					

Attachment A6-2 Emergency Equipment Description (Figure 3 of Beck Road Facility Contingency Plan)

Figure 3

Beck Road Storage Facility MIR 000 001 834 Emergency Equipment Description Safety Supply Inventory

Date: / / By: ____

(Check if items are stocked)

Room 101		(
Documents	Purpose or Capability	Minimum Quantity	Quantity Needed
Contingency Plan	Response Protocols	1 Сору	
Phone Numbers	Contact Information	1 Сору	
Tools and Equipment	Purpose or Capability	Minimum Quantity	Quantity Needed
Flashlights	Portable Illumination	2 Triple D Cell	
Flashlight—Rechargeable	Portable Illumination	1	

Room 109

PPE	Purpose or Capability	Minimum Quantity	Quantity Needed
Personal Protection	Personal Protection	1 Copy Located in Safety	
Equipment (PPE) Selection	Equipment (PPE) Selection	Supply Cabinet	
Guides	Guides		
North Air Purifying Respirator	Respiratory Protection—	4 pair Organic Vapor/	
Cartridges	See PPE Selection Guide	HEPA/Acid Gas	
North Air Purifying	Respiratory Protection—	2 Large	Large
Respirator—1/2 face	See PPE Selection Guide	2 Medium	Medium
		2 Small	Small
North Air Purifying	Respiratory Protection—	2 Med / Large	Med / Large
Respirator—Full Face	See PPE Selection Guide	2 Small	Small
Nitrile Gloves, Heavy Duty	Hand Protection—	12 Pairs, Size 10 (13	
	See PPE Selection Guide	inches)	
Nitrile Gloves, Single Use	Hand Protection—	2 Boxes XL	XL
	See PPE Selection Guide	2 Boxes Lg	Lg
Butyl Gloves	Hand Protection—	6 Pairs, Size 10 (17 mil)	
	See PPE Selection Guide		
Silver Shield / 4H Gloves	Hand Protection—	6 Pairs, Large	
	See PPE Selection Guide		
Leather Palm Gloves	Hand Protection	12 Pairs	
Shoe Covers (Booties)—	Splash Protection—	12 Pairs	
Saranex / Polycoat	See PPE Selection Guide		
Shoe Covers (Booties)—	Splash Protection—	12 Pairs	
Latex Response Boots	See PPE Selection Guide		
Coverall Protective Suits	Splash Protection—	2 CPF3, XXL	XXL
	See PPE Selection Guide	2 CPF3, XL	XL
		6 Proshield 2/NexGen, XXL	XXL
		6 Proshield 2/NexGen, XL	XL
		6 Proshield 2/NexGen, Lg	Lg
Safety Goggles	Eye Splash Protection	6 Pairs	
Lab Coats	Splash Protection	6 Coats (sizes: 40 to 46)	
Spill Supplies	Purpose or Capability	Minimum Quantity	Quantity Needed
Plastic Shovel	Debris Collection	1	
Floor Squeegee	Liquid Movement	1	
Vermiculte	Liquid Absorption (5 gal/ft ³)	4 Bags (4 ft ³ each)	
Floor Dri	Oil Absorption (4 gal/bag)	4 Bags (40 pounds each)	
Solvent Adsorbent	Solvent Absorb (Up to 15 gal)	160 Pounds	
Acid Neutralizer	Neutralize Acids (Up to 30 gal)	300 Pounds	

Attachment A6-2, Emergency Equipment Description Page 8 of 17 Form EQP 5111 Attachment Template A6, Prevention and Preparedness

Figure 3 Beck Road Storage Facility MIR 000 001 834 Emergency Equipment Description Safety Supply Inventory (Cont.)

Date: / /

Room 109 (Cont.)			
Spill Supplies	Purpose or Capability	Minimum Quantity	Quantity Needed
Caustic Neutralizer	Neutralize Bases (Up to 4 gal)	50 Pounds	
Blue Pads	Liquid Absorption	1 Packet (new bundle)	
Paper Towels	Liquid Absorption	4 Packets	
Heavy Duty Wipes	Liquid Absorption	4 Packets	
Litmus (pH) Paper	pH Testing of Liquids	1 Roll (range 1 to 12)	
Radiation Safety Kit	Radioactive Clean Up	1	
Sorbent Booms P-200	Spill Containment (12 Gallons per Box of 12)	8 (3 inch x 4 feet)	
Sorbent Pillows P-300	Spill Containment (8 Gallons per Box of 16)	8 (7 x 15 inch)	
Broom	Debris Collection	1	
Dust Pan	Debris Collection	1	
Tools and Equipment	Purpose or Capability	Minimum Quantity	Quantity Needed
First Aid Kit	Minor Injuries up to 25	1 Johnson & Johnson	
	People	Kit No. 8161	
Rotary Drum Pump	Liquid Transfer	1 (1 inch ID hose)	
Flashlight Batteries	Replacement Batteries	6 D Cell	
9 Volt Batteries	Replacement Batteries	2	
GM Meter	Radiation Detection	1 (uses 2 D cell batteries)	
Ion Chamber	Radiation Exposure	1 (uses 2 x 9 volt batteries)	
	Measurement		
Drum Truck	Drum Movement	1	
Floor Mop with Wringer	Floor Cleaning	1	
Containers	Purpose or Capability	Minimum Quantity	Quantity Needed
Plastic Pails	Material Collection	12 x 5 gal, HDPE	
Plastic Bags	Material Collection	10 (4 mil, 38 x 72") (55 gal)	
Empty Drums	Material Collection	2 x 30 gal Poly Closed Head	
Empty Drums	Material Collection	2 x 55 gal Poly Closed Head	
Empty Drums	Material Collection	1 x 30 gal DM Closed Head	
Empty Drums	Material Collection	1 x 55 gal DM Closed Head	
Empty Drums	Material Collection	2 x 15 gal Poly Closed Head	
Empty Drums	Material Collection	2 x 30 gal Poly Open Head	
Empty Drums	Material Collection	2 x 55 gal Poly Open Head	
Empty Drums	Material Collection	2 x 30 gal DM Open Head	
Empty Drums	Material Collection	2 x 55 gal DM Open Head	
Bung Gaskets	Replacement Gaskets	20 x 2" 20 x ¾"	2" 3⁄4"
Drum Lid Gaskets	Replacement Gaskets	8 (55 DM open head)	
4 Gallon Boxes	Material Collection	12 (holds 4 x 1 gallon each)	

Storage and Waste Areas

Tools and Equipment	Purpose or Capability	Minimum Quantity	Quantity Needed
Non-Sparking Bung Wrench	Open/Close Drum Bungs	1 Beryllium Copper	
Speed Wrench	Open/Close Drum Bolts	1 With 15/16 Inch Socket	
Organic Vapor Detector	Organic Vapor Detection	1 (From NCTF As Necessary)	

Date: /_/__ By: ____

Figure 3 Beck Road Storage Facility MIR 000 001 834 Emergency Equipment Description Fire Extinguisher Monthly Inventory

No.	Location	Туре	Size	Seal	Gauge	Mount	Visible	Cylinder
1	Outside Room 218	ABC	5 Lbs					
2	2 nd Floor Hall Near Room 200	ABC	10 Lbs					
3	Outside Room 207	ABC	10 Lbs					
4	Outside Room 105	ABC	10 Lbs					
5	Room 109 (S.E. Door)	ABC	10 Lbs					
9	Outside Rooms 115/125	CO2	10 Lbs					
6	Room 109B	ABC	10 Lbs					
7	Room 113	ABC	10 Lbs					
8	Outside Room 117	ABC	20 Lbs					
10	1 st Floor North Exit	ABC	10 Lbs					
13	Room 120	CO2	10 Lbs					
14	Room 120	ABC	10 Lbs					
12	Room 100	ABC	10 Lbs					
11	Outside Room 101	ABC	10 Lbs					

Comments:

A check mark ($\sqrt{}$) indicates that the conditions observed are satisfactory. Unsatisfactory conditions are noted in the comments.

Attachment A6-2, Emergency Equipment Description

Page 10 of 17 Form EQP 5111 Attachment Template A6, Prevention and Preparedness (

Attachment A6-3 Fire Hydrant Locations

Beck Road Storage Facility Fire Hydrant Locations



Attachment A6-4 Inspection Log

INSPECTION LOG

University of Michigan Environment, Health and Safety (EHS) Beck Road Storage Facility, EPA ID: MIR 000 001 834 8501 Beck Road Belleville, MI 48111 (734) 487-3259

Instructions: Perform inspection of facility, if conditions are satisfactory write "SAT" in the conditions

observed column. If there are any discrepancies list them in the conditions observed column also.

A. General Facility	Conditions Observed on Date:
1. All door entrances and windows properly secured	
2. No signs of unauthorized entry	
3. No signs of vandalism or theft	
4. No signs of flooding or fire	
5. No electrical hazards identified	
6. Fire extinguishers in designated locations, and charged	
7. Ventilation and lighting system operating properly	
8. No evidence of eating, drinking, smoking	
9. Aisle space adequate for emergency equipment	
10. Emergency supplies, monitoring equipment & PPE available	
11. Emergency supplies storage cabinet inspected (needs noted below)	
12. Fire exits are clear and unobstructed	
13. Storage and work areas organized and uncluttered	
14. Emergency eyewash and shower station tested (1st week of month)	
15. Annual water availability inspection conducted on	
16. Biannual inspection of perimeter fences conducted on	
17. Operation's log up to date	
18. Forklift inspected and operational	
19. Verify telephones are operational - check for dial tone	

B. Appropriate Postings Throughout the Facility	Conditions Observed
1. NRC "Notice to Employee"	
2. EGLE "Notice to Employee" (Form EQC 1627)	
3. EGLE Radioactive Material Registration (Form EQP 1614)	
4. Radioactive Materials Restricted Area (entrances)	
5. No smoking signs (2+ entrances)	
6. Emergency phone numbers	
7. Radiological Emergency Procedures	
8. MSDS location poster	

RCRA Waste Storage Areas Properly Identified and Segregated

C. Corrosive Base and Reactive Area 109A	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	

D. Toxics Area 109B	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	

E. Corrosive Acid Room 111	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	

F. Toxic and Oxidizer Area 113	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	

G. Toxic Room 116	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	

H. Ignitable and Toxic Room 117

Conditions Observed

1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. Ventilation system operating properly	
5. No evidence of odors	
6. Containment system in good condition	

I. Loading / Unloading Area 125	Conditions Observed
Trenches clear of debris	
Containment system in good condition	

Comments:

Note: For any discrepancies noted in the conditions observed column list the corrective action taken to remedy each discrepancy below.

Corrective Actions:

Corrective Actions performed by: _____

Date corrective actions performed: _____

Supplies needed: _____

Inspection performed by:

Date: _____

Time: _____

Reviewed by:

Hazardous Materials Manager: _____

Date: _____

Radiation Safety Officer:

Date: _____

Attachment 7

Closure Plan

FORM EQP 5111 ATTACHMENT TEMPLATE A11 CLOSURE AND POSTCLOSURE CARE PLANS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (Act 451), R 299.9613 and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart G, establishes requirements for the closure and, if necessary, postclosure care of hazardous waste management facilities. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003. This license application template addresses requirements for the proper closure and, if necessary, postclosure care of the hazardous waste management units and the hazardous waste management facility for the Beck Road Facility in Belleville, Michigan.

Ensure that all samples collected for waste characterization and environmental monitoring during closure and postclosure care activities are collected, transported, analyzed, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan. The QA/QC Plan should, at a minimum, include the written procedures outlined in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition, Chapter 1 (November 1986), and its Updates.

This template is organized as follows:

A11 A	CLOSURE PLAN
/ \ ./ \	

- A11.A.1 Closure Performance Standard
- A11.A.2 Unit-Specific Information
- Table A11.A.1
 Hazardous Waste Management Unit Information
- A11.A.3 Schedule of Final Facility Closure
- A11.A.4 Notification and Time Allowed for Closure
 - A11A.4(a) Extensions for Closure Time
- A11.A.5 Unit-Specific Closure Procedures
 - A11.A.5(a) Closure of Container Storage Areas
- A11.A.6 Certification of Closure
- A11.A.7 Postclosure Notices Filed
- A11.B POSTCLOSURE CARE PLAN
 - A11.B.1 Applicability
 - A11.B.2 Postclosure Care Objectives
 - A11.B.3 Postclosure Care Period Point of Contact
 - A11.B.4 Postclosure Care Activities
 - Table A11.B.1Postclosure Monitoring and Maintenance
 - A11.B.5 Postclosure Care Plan Amendment
 - A11.B.6 Certification of Postclosure
- Attachment A11-1 Location of Waste Management Units
- Attachment A11-2 Waste Analysis Procedures
- Attachment A11-3 Quality Assurance Plan

A11.A CLOSURE PLAN

(Check as appropriate)

A11.A.1 Closure Performance Standard

[R 299.9613 and 40 CFR §264.111]

This Closure Plan is designed to ensure that the facility will be closed in a manner that achieves the following:

- a. Minimizes the need for further maintenance; and
- b. Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, postclosure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition byproducts to the groundwater, surface water, or atmosphere; and, as applicable
- c. Complies with the unit-specific closure requirements for each of the following units:

\boxtimes	Use and management of containers	R 299.9614 and 40 CFR §264.178
	Tank systems	R 299.9615 and 40 CFR §264.197
	Surface impoundments	R 299.9616 and 40 CFR §264.228
	Waste piles	R 299.9617 and 40 CFR §264.258
	Land treatment ^a	R 299.9618 and 40 CFR §264.280
	Landfill	R 299.9619 and 40 CFR §264.310
	Incinerators	R 299.9620 and 40 CFR §264.351
	Drip pads ^b	R 299.9621 and 40 CFR §264.575
	Miscellaneous units	R 299.9623 and 40 CFR §§264.601-603
	Hazardous waste munitions and explosive $\ensuremath{storage}\xspace^{\ensuremath{b}}$	R 299.9637 and 40 CFR §264.1202
	Boilers and industrial furnaces	R 299.9808 and 40 CFR §266.102(e)(11)

^a Not included in the template

^b Not yet included in 40 CFR §264.111; therefore not considered

Unit-specific closure procedures are discussed in Section A11.A.5 of this template for each unit type indicated above.

A11.A.2 Unit-Specific Information [R 299.9613 and 40 CFR §§264.112(b)(3) and (6)]

Table A11.A.1 Hazardous Waste Management Units Information

The following table identifies each hazardous waste management unit at the Beck Road Facility subject to the closure requirements of this hazardous waste management facility operating license. The table also includes: each unit's maximum licensed hazardous waste inventory, a list of the waste codes managed in the unit, the anticipated date of closure (if known), and the Page 2 of 40 Form EQP 5111 Attachment Template A11, Closure and PostClosure Care Plans (6-2-2021)

estimated duration of closure activities once closure begins. Unit-specific methods for closure and detailed schedules are discussed in Section A11.A.5 of this template.

Unit Designation	Maximum Inventory (Include Units)	Waste Codes of Hazardous Wastes Managed	Scheduled Closure Date	Estimated Duration of Closure
Room 109A RCRA Corrosive Base and Reactive	880 gallons	D002, D003	2050 (Estimated Date)	180 Days
Room 109B RCRA Toxic	2530 gallons	D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D038, D039, D040, D041, D042, D043, F002, F004, U138, U151	2050 (Estimated Date)	180 Days
Room 111 RCRA Corrosive Acid	880 gallons	D002	2050 (Estimated Date)	180 Days
Room 113 RCRA Toxic and Oxidizer	2310 gallons	D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D038, D039, D040, D041, D042, D043, F002, F004, U138, U151	2050 (Estimated Date)	180 Days
Room 116 RCRA Toxic	4730 gallons	D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D032, D033, D034, D035, D036, D038, D039, D040, D041, D042, D043, F002, F004, U138, U151	2050 (Estimated Date)	180 Days
Room 117 RCRA Ignitable and Toxic	1870 gallons	D001, F003, F005	2050 (Estimated Date)	180 Days

 Table A11.A.1 Hazardous Waste Management Units Information

Note: Hazardous and mixed waste with multiple hazardous waste characteristics will be assigned to a waste management unit based on the US DOT Precedence of Hazard Table, Page 3 of 40 Form EQP 5111 Attachment Template A11, Closure and PostClosure Care Plans (6-2-2021)

49 CFR 173.2a (See Attachment A7-8).

A11.A.3 Schedule of Final Facility Closure

[R 299.9613 and 40 CFR §264.112(b)(6)]

The Beck Road Facility is not expected to be closed before the permit expires. For the purpose of this closure plan, 2050 is estimated to be the year of closure. The estimated schedule for closure activities is described in the table below.

Detailed Closure Schedule for Facility Closure

Closure Activity	Time Completed	
Notification of intent to close facility	-60 days	
Receipt of final volume of hazardous and mixed waste	-10 day	
Begin closure activities	0 days	
Conduct final drum inventory, inspect and repack	0-15 days	
drums (if needed); prepare waste manifest; prepare		
drums for shipment		
Removal/disposal of final waste inventory	15-45 days	
Collect samples	45-50 days	
Sample analysis	50-70 days	
Steam cleaning and decontamination of drum storage areas	70-80 days	
(if necessary)		
Confirmatory sampling	80-85 days	
Sample analysis	85-105 days	
Additional steam cleaning (if necessary)	105-115 days	
Confirmatory sampling and analysis	115-135 days	
Accounting for all waste shipment manifests	170 days	
Completion of closure and certification submittal by facility	180 days	
representatives and an independent registered		
Professional Engineer		

A11.A.4 Notification and Time Allowed for Closure

[R 299.9613 and 40 CFR §§264.112(d)(2) and 264.113(a) and (b)]

Final closure activities will be initiated within 90 days of receipt of the final volume of hazardous wastes and completed within 180 days of receipt of the final volume of waste. The tasks and estimated time required for closure shall follow the schedule specified in Section A11.A.3. The Director will be notified by Beck Road Facility 60 days before final closure begins. Final closure will be certified by both Beck Road Facility and an independent, qualified, registered professional engineer of the state of Michigan.

A11.A.4(a) Extensions for Closure Time

[R 299.9613 and 40 CFR §264.113(a) and (b)]

In the event an extension for closure for the facility or any unit is necessary, the Beck Road Facility will request an extension in accordance with the requirements of 40 CFR §264.113(a).

No extension beyond the 180 days required under the regulations is anticipated for closure of the facility. If however, an extension would be necessary to properly close the facility, a petition would be sent to the EGLE. The petition would detail requested amendments to the closure schedule listed in Section A11.A.3. This petition must, according to 40 CFR 264.113(a) and (b), demonstrate that the activities required for removal of waste will, of necessity, take longer than 90 days to complete; or

- The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or has the capacity to receive non-hazardous wastes if the owner or operator complies with paragraphs 40 CFR 264.113 (d) and (e); and
- There is a reasonable likelihood that he or another person will recommence operation of the hazardous waste management unit or the facility within one year; and
- Closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and
- The facility has taken and will continue to take all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements.

The Director of the Materials Management Division (MMD) may approve an extension to the closure period if the owner or operator complies with all applicable requirements for requesting a closure plan modification.

Any requests for a change in operating plans, facility design, or the approved closure plan will be submitted in writing to the EGLE in a closure plan amendment and will be in compliance with state and federal regulations as outlined in this section.

A11.A.5 Unit-Specific Closure Procedures

Unit-specific closure procedures are provided for each unit identified in Section A11.A.2 of this template.

GUIDANCE/REFERENCES

- Part 201, Environmental Remediation, of Act 451. September 1996.
- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW 846, Update III plus Variations. December 1996. EPA

A11.A.5(a) Closure of Container Storage Areas

[R 299.9614 and 40 CFR §264.178]

This section describes the procedures for closure of Beck Road Facility. The general closure requirement and specific closure procedures are discussed below.

A. General Closure Requirement

At closure, all hazardous waste and hazardous waste residues will be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues will be decontaminated or removed.

B. <u>Specific Closure Procedures</u>

Specific procedures for inventory management, unit inspection, decontamination, sampling and analysis, and additional waste management are discussed below.

1. Inventory and Remedial Waste Management Procedures

Upon formal notification to proceed with closure, no additional hazardous and mixed waste will be accepted at the facility. Furthermore, all hazardous and mixed waste remaining in the inventory will be profiled, packaged, manifested and transported, by contractual agreement, to an approved EPA and/or NRC licensed treatment, storage or disposal facility. Remediation wastes will be characterized for disposal and managed in accordance with Parts 111, 115 and 121 of Act 451 and their administrative rules, as appropriate. Sampling of remediation waste, as necessary, will be based on EPA SW-846 guidelines. After the final inventory has been removed, the facility will be inspected for non-waste items. These non-waste items will be removed and properly disposed.

2. Unit Inspection Procedures

A complete historical record of spills and/or releases at the facility will be reviewed to identify spills requiring decontamination and decommissioning and to locate areas where significant releases may have occurred. These historical records, together with the visual inspection of the empty waste management units, will determine whether the sampling plan needs to be modified. If a modification is required, a closure plan amendment will be submitted to EGLE for review and approval.

3. Decontamination Procedures

The waste management units, including the loading/unloading area, are the structures to be decontaminated. The waste management units are Rooms 109A, 109B, 111, 113, 116 and 117, and the loading/unloading area, all of which are listed on Attachment A11-1, Location of Waste Management Units. All equipment coming into contact with hazardous and mixed waste will be decontaminated at closure or will be characterized, packaged, manifested and transported, by contractual agreement, to an approved EPA and/or NRC licensed treatment, storage or disposal facility.

After all stored hazardous and mixed waste has been removed from the waste management units, a comprehensive radiological survey will be performed. The comprehensive radiological survey will be conducted in each waste management unit, loading/unloading area, and at applicable areas where waste was transported from the loading/unloading area to the waste management units following applicable EGLE, EPA, and NRC protocols. The survey will include the use of appropriate radiation survey meters, and swipes. Collected swipes will be analyzed using a sensitive and calibrated liquid scintillation counter. All identified radiological contamination will be decontaminated using detergents and water. Following decontamination activities, the former areas of contamination will be resurveyed to verify that the areas are at or below background levels. Decontamination activities will be repeated as necessary to reach background levels. Should the decontamination activities fail to adequately clean any surface or equipment, the contaminated material will be segregated and removed for proper
disposal.

During the radiological decontamination activities appropriate measures (collection, containment, berms, etc.) will be in place to prevent any associated liquids from migrating to subsurface soils or to surface waters. All wash water and rinsate liquids will be collected, characterized, and properly disposed.

Following the radiological survey and any radiological decontamination activities, any solid surfaces exhibiting chemical contamination (e.g., staining, discoloration, chemical odors) will be decontaminated. Trained personnel wearing appropriate personal protective equipment will wash each solid surface requiring decontamination. They will first wash the surface with water containing anionic surfactant, followed by high pressure triple rinsing. Washing will be repeated as necessary until there is no longer visual evidence of chemical contamination. Should the decontamination activities fail to adequately clean any surface or equipment the contaminated material will be segregated and removed for proper disposal.

During the chemical decontamination activities, appropriate measures (e.g., collection, containment, berms, etc.) will be in place to prevent any associated liquids from migrating to subsurface soils or to surface waters. All decontamination liquids will be recovered and collected in drums. Samples will be collected using a composite liquid waste sampler (COLIWASA), and will be analyzed for the chemicals of concern listed in Table A3.A.1, Waste Analysis Procedures (Attachment A11-2), Following characterization, all liquids will be properly disposed.

Expendable items used in the decontamination activities--such as mops, brooms, gloves, coveralls, and boots--will be placed in containers and properly disposed. Hand tools (e.g., shovels) and buckets will be washed and rinsed in containers during and following the procedures used to decontaminate the facility. All wastes generated in conjunction with the closure of Beck Road Facility will be characterized for disposal and managed in accordance with Parts 111, 115 and 121 of Act 451 and their administrative rules, as appropriate.

Decontamination procedures and sampling and analytical testing at the facility will be conducted by trained U-M personnel. If necessary, the services of non U-M trained personnel will be obtained at the time of closure notification using contractual procedures established by U-M. The U-M will specify procedures for decommissioning, decontamination, sampling, and testing, and will require the contractor(s) to provide all necessary equipment, training, and protective clothing to safely decontaminate, sample, and test the appropriate areas.

Once the decontamination process for the facility is completed, an independent registered Professional Engineer will visually inspect the Beck Road Facility; review the analytical results; and, if all criteria described above are met, certify the Beck Road Facility as closed.

4. Sampling and Analysis Procedures

If the inspection of the empty waste management units and loading/unloading area reveals no cracks in the floors or evidence of spills, then samples of the low areas on the

floor surface will be taken at a frequency prescribed in EGLE, EPA, and NRC guidance for closure of NRC- licensed facilities to confirm that the surfaces are free of any contamination above background levels. In areas where there are cracks in the floor or evidence of spills, additional swipe samples will be taken at each location to determine if the surface is contaminated. Sampling size will be determined by using a statistical formula as described in *Methods for Evaluating the Attainment of Cleanup Standards*, EPA 230/02-89-042, February 1989, and the *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (NUREG-1575)* developed by four U.S. federal agencies: EPA, Nuclear Regulatory Commission, Department of Energy and Department of Defense. Prior to sampling, sampling locations will be submitted to EGLE for approval in the form of a closure plan amendment.

If a spill or release had occurred, and there is a history or visual indication that the floor is in poor condition, tests will be performed on the subsurface. The concrete will be cored at spill areas where cracks or signs of deterioration exist, and subsurface soil samples will be collected using standard drilling techniques. At a minimum, soil samples will be collected directly beneath the concrete floor. Deeper samples may be collected depending on field indicators (e.g., staining, odors, photoionization detector readings). If any contaminated soil or groundwater is found, further sampling and analysis will be conducted to determine the lateral and vertical extent of contamination. Sampling locations and the number of samples will continue until a contamination profile can be constructed. If groundwater is encountered during soil sampling, or if the potential for groundwater contamination exists, it will be sampled and analyzed for chemicals of concern.

If subsurface sampling is required, a closure plan amendment will be submitted to the EGLE for approval detailing the subsurface sampling plan, including standard field operating procedures, prior to the commencement of field work.

Subsurface investigative activities, including sample collection and preservation techniques, and laboratory requirements, will be conducted using procedures described in the *Quality Assurance Plan* (Attachment A11-3), and in a manner that meets EGLE Part 201 requirements, including, at the time, current Part 201 guidance documents and operational memoranda as allowed under Part 111.

All soil and groundwater laboratory analytical results will be compared to Part 111 cleanup criteria. Soil determined to be contaminated will be fully evaluated for proper treatment, disposal, or implementation of site controls to minimize exposure to human health and the environment. This analysis will be conducted using a comprehensive analysis of future site usage and applicable state, including Part 201, and federal regulations.

As described above, analytical and sampling methods described in SW-846 will be used when available.

Hazardous and mixed waste stored at the facility is segregated by waste characteristic. The waste management units within the facility are separated by concrete walls and secondary containment berms that minimize the potential of cross-contamination from one unit to another as a result of a spill or leakage. Therefore, confirmatory samples collected within each waste management unit will be analyzed only for the hazardous waste constituents waste stored in that unit. Samples from the loading/unloading area will be analyzed for all hazardous waste constituents in Attachment A11-2. Attachment A11-2 indicates the hazardous waste constituents that the samples will be analyzed for in each unit. See Attachment A11-2 for analytical methods and reference levels.

5. Additional Waste Management Procedures

Decontamination wastes and materials will be analyzed by the methods outlined in item Number 4 above, Sampling and Analysis Procedures. All wastes generated in conjunction with the closure of this facility will be characterized, classified, and managed in accordance with Parts 111, 115, and 121 of Act 451 and their administrative rules, as appropriate.

A11.A.6 Certification of Closure [R 299.9613]

Within 60 days of completion of closure Beck Road Facility will submit to the Director of the MMD, by registered mail, a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification will be signed by the Beck Road Facility and by an independent registered professional engineer. Documentation supporting the independent registered engineer's certification will be furnished to the Director of the MMD in accordance with R 299.9613(3), including:

- 1. The results of all sampling and analysis;
- 2. Sampling and analysis procedures;
- 3. A map showing the location where samples were obtained;
- 4. Any statistical evaluations of sampling data;
- 5. A summary of waste types and quantities removed from the site and the destination of these wastes; and
- 6. If soil has been excavated, the final depth and elevation of the excavation and a description of the fill material used.

The certification must be worded as follows:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A11.B POSTCLOSURE PLAN

[R 299.9613 and 40 CFR §264.118]

A11.B.1 Applicability

(Check as appropriate)

Not applicable: Hazardous waste will not be left behind at closure. A survey plat, postclosure care, postclosure certifications, and other notices are not required.

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University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Closure and PostClosure Care Plans, Revision 0

Attachment A11-1 Location of Waste Management Units



Beck Road Storage Facility

Attachment A11-2 Waste Analysis Procedures

Waste Analysis Procedures (Table A3.A.1)

Screening Parameter (Check as appropriate)	Rationale for Parameter	Test Method	Reference	Frequency	Rationale for Frequency
Waste Code					
Ignitability EPA HW No. D001	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 1020 (liquids); SW- 846 1030 (solids)	40 CFR 261.21	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Corrosivity EPA HW No. D002	Characteristic Hazardous Waste	Generator Knowledge; Hydrion Paper; SW-846 9040C	Regulated Level: pH ≤2 or ≥12.5	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Reactivity EPA HW No. D003	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 9010C (Total and amendable cyanide)	40 CFR 261.23	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Characteristics D004 to D043 First Utilize Test Method SW-846 1311		Then The Test Methods Cited Below			
Toxicity—Arsenic EPA HW No. D004	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Barium EPA HW No. D005	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 100.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Cadmium EPA HW No. D006	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or	Regulated Level: 1.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

Attachment A11-2, Waste Analysis Procedures

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		6020D			
Toxicity—Chromium EPA HW No. D007	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Lead EPA HW No. D008	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Mercury EPA HW No. D009	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 7470A or 7471B	Regulated Level: 0.2 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Selenium EPA HW No. D010	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 1.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Silver EPA HW No. D011	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 6010D or 6020D	Regulated Level: 5.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
ToxicityBenzene EPA HW No. D018	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.5 mg/L	Verified at Time of Collection	Gnerator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Carbon Tetrachloride EPA HW No. D019	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.5 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Chlorobenzene EPA HW No. D021	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 100.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Chloroform EPA HW No. D022	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 6.0 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

Attachment A11-2, Waste Analysis Procedures Page 14 of 40 Form EQP 5111 Attachment Template A11, Closure and PostClosure Care Plans (6-2-2021)

		T			
Toxicity—o-Cresol	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. D023	Waste	846 8270E	Level:	Collection	Profile to Comply with Hazardous waste Determination
			200.0 mg/L		
Toxicity—m-Cresol	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. D024	Waste	846 8270E	Level:	Collection	Determination
Taulaita a Oracal		Oceanates	200.0 mg/L	Marilla Lat The and	
l oxicity—p-Cresol	Hazardous	Generator Knowledge: SW-	Regulated	Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste
EPA HW No. D025	Waste	846 8270E		Collection	Determination
			200.0 mg/L		
Toxicity—Cresol	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. D026	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste
	Waste	040 0270L	200.0 mg/L		Determination
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
1,4-Dichlorobenzene	Hazardous Waste	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D027	Wallo	01002002	7.5 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
1,2-Dichloroethane	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D028	Waste	040 02000	0.5 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
1,1-Dichloroethylene	Hazardous Waste	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D029	Waste	040 02000	0.7 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
2,4-Dinitrotoluene	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D030	Waste	040 02702	0.13 mg/L		
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste
Hexachlorobenzene	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste
EPA HW No. D032	waste	846 8270E	0.13 mg/L		Determination
	1	1			

Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
Hexachlorobutadiene	Hazardous Waste	Knowledge; SW- 846 8270F	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D033	Walto	01002102	0.5 mg/L		Determination	
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
Hexachloroethane	Hazardous Waste	Knowledge; SW- 846 8270E	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D034			3.0 mg/L			
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
Methyl Ethyl Ketone	Hazardous Waste	Knowledge; SW- 846 8260D	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D035		0.0002002	200.0 mg/L			
Toxicity—Nitrobenzene	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. D036	Hazardous Waste	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste	
		0.0002.02	2.0 mg/L			
Toxicity—Pyridine	Characteristic Hazardous	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. D038	Waste	846 8270E	5 0 mg/l	Concention	Determination	
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
Tetrachloroethylene	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D039	Waste	846 8260D	0.7 mg/L		Determination	
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
Trichloroethylene	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D040	Waste	846 8260D	0.5 mg/L		Determination	
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
2,4,5-Trichlorophenol	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D041	vvaste 846 8270E		400.0 mg/L		Determination	
Toxicity—	Characteristic	Generator	Regulated	Verified at Time of	Generator Knowledge Provided by Waste	
2,4,6-Trichlorophenol	Hazardous	Knowledge; SW-	Level:	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. D042	VVASIC	040 027 UE	2.0 mg/L			

Toxicity—Vinyl Chloride EPA HW No. D043	Characteristic Hazardous Waste	Generator Knowledge; SW- 846 8260D	Regulated Level: 0.2 mg/L	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity—Chlorobenzene EPA HW No. F002 (See D021)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Methylene Chloride EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Ortho-Dichlorobenzene EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Tetrachloroethylene EPA HW No. F002 (See D039)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— Trichloroethylene EPA HW No. F002 (See D040)	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 1,1,1-Trichloroethane EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination
Toxicity— 1,1,2-Trichloro-1,2,2- Trifluoroethane EPA HW No. F002	Listed Hazardous Waste	Generator Knowledge; SW- 846 8260D	Spent Solvent per 40 CFR 261.31(a)	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

					,	
Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Trichlorofluoromethane	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. F002		0.0002002	(a)		Determination	
Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
1,1,2-Trichloroethane	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
EPA HW No. F002						
Ignitability— Acetone	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. F003	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
Ignitability—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Cyclohexanone	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
EPA HW No. F003						
Ignitability— Ethyl Acetate	Listed Hazardous	Generator Knowledge; SW-	Spent Solvent per 40 CFR	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste	
EPA HW No. F003	Waste	846 8260D	261.31(a)		Determination	
Ignitability— Ethyl Benzene	Listed Hazardous	Generator Knowledge; SW-	Spent Solvent per 40 CFR	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste	
EPA HW No. F003	Waste	846 8260D	261.31(a)		Determination	
Ignitability— Ethyl Ether	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. F003	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
Ignitability— Methanol	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. F003	Hazardous Waste	Knowledge; SW- 846 8260D & 8015C	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
Ignitability—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Methyl Isobutyl Ketone	Hazardous Waste	Knowledge; SW-	per 40 CFR 261 31(a)	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. F003			201.01(0)			
Ignitability—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
n-Butyl Alcohol	Hazardous	Knowledge; SW-	per 40 CFR 261 31(a)	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. F003	Waste 846 8260D & 8015C		201.01(0)		Determination	

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Ignitability— Xylene	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. F003	Waste	846 8260D	261.31(a)	Collection	Determination	
Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Cresols and Cresylic Acid	Hazardous Waste	Knowledge; SW- 846 8270E	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. F004			(-)			
(See D026)						
Toxicity— Nitrobenzene	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. F004	Hazardous Waste	Knowledge; SW- 846 8270F	per 40 CFR 261 31(a)	Collection	Profile to Comply with Hazardous Waste	
(See D036)	maono	010 02/02	201101(0)			
Toxicity—Benzene	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
EPA HW No. F005	Hazardous Waste	Knowledge; SW- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste	
(See D018)			(-)			
Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Carbon Disulfide	Hazardous Waste	Knowledge; SVV- 846 8260D	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
EPA HW No. F005						
Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
2-Ethoxyethanol	Hazardous Waste	Knowledge; SW- 846 8260D &	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination	
EPA HW No. F005		8015C				
Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Isobutanol	Hazardous Waste	Knowledge; SW-	per 40 CFR 261 31(a)	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. F005	Walto		201101(0)		Determination	
Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste	
Methyl Ethyl Ketone	Hazardous Waste	Knowledge; SW-	per 40 CFR 261 31(a)	Collection	Profile to Comply with Hazardous Waste	
EPA HW No. F005			(
(See D035)						

Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
2-Nitropropane	Waste	846 8260D	261.31(a)	Collection	Determination
EPA HW No. F005					
Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
Pyridine	Hazardous Waste	Knowledge; SW- 846 8270E	per 40 CFR 261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination
EPA HW No. F005					
(See D038)					
Ignitability, Toxicity—	Listed	Generator	Spent Solvent	Verified at Time of	Generator Knowledge Provided by Waste
Toluene	Waste	846 8260D	261.31(a)	Collection	Profile to Comply with Hazardous Waste Determination
EPA HW No. F005			· · · ·		
Toxicity—Methyl Iodide	Listed	Generator	Listed per 40	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. U138	Hazardous Waste	Knowledge; SW- 846 8260D	CFR 261.31(f)	Collection	Profile to Comply with Hazardous Waste Determination
Toxicity—Mercury	Listed	Generator	Listed per 40	Verified at Time of	Generator Knowledge Provided by Waste
EPA HW No. U151	Hazardous Waste	Knowledge; SW- 846 7470A or 7471B	CFR 261.31(f)	Collection	Profile to Comply with Hazardous Waste Determination
Free Liquids	Determine if Waste Contains Free Liquids	Generator Knowledge; Paint Filter Liquids Test: SW-846 9095B	Liquid or Solid	Verified at Time of Collection	Generator Knowledge Provided by Waste Profile to Comply with Hazardous Waste Determination

¹ According to R 299.9630 and 40 CFR §264.1034(d), TSDFs must identify and meet specific technical requirements for all process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air/stream stripping processes that manage wastes with a 1 part per million by weight (ppmw) or greater total organics concentration on a time-weighted annual average basis. Total organic concentrations in the waste can be measured using SW-846 Method 8260B. According to R 299.9631 and 40 CFR §264.1050, TSDFs must also determine if its equipment contains or contacts organic wastes with 10 percent or greater total organic content. The total organic content can be determined using (1) American Society of Testing and Materials Methods D2267-88, E169-87, or E260-85, (2) SW-846 Method 8260B, or (3) knowledge of the nature of the wastes stream or the waste generating process.

Attachment A11-3 Quality Assurance Plan

University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Closure and PostClosure Care Plans, Revision 0

Section 1 QUALITY ASSURANCE OBJECTIVES

Data Quality Objectives (DQOs) will be established for each major sample collection effort. DQOs are the quantitative and qualitative descriptions of the data required to support an environmental decision or action. As target values for data quality, they are not necessarily criteria for acceptance or rejection of data. The data user develops DQOs for a specific purpose. The DQO development process involves three stages--including (1) defining the question or decision to be made, (2) clarifying and precisely identifying the information required, and (3) designing a data collection program.

The DQOs for sample collection and analysis at the Beck Road Storage Facility are:

- To document that hazardous waste and hazardous wastes constituents have not been released from the storage facility
- To document that hazardous waste and hazardous waste constituents are not present in quantities of concern in the soil beneath the facility

The following parameters are indicators of data quality: accuracy, precision, completeness, representativeness, and comparability. Quantitative goals for the data quality indicator parameters are discussed in detail in Section 5 (see Table 5-1). These parameters will be determined by quality control measures taken in the field and in the laboratory. Field activities will be assessed by blanks and replicates and laboratory activities will be subject to compliance screening. Frequencies of quality control measures are discussed in detail in Section 8 (see Table 8-1).

ACCURACY AND PRECISION

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter. Analytical accuracy can be determined using known reference materials or matrix spikes. Spiking of reference materials into the actual sample matrix is the preferred technique because it quantifies the effects of the matrix on the analytical accuracy. Accuracy can be expressed as the percent recovery (P) as determined by the following equation:

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$$P = \frac{SSR - SR}{SA} \times 100$$

where:

SSR = spiked sample result SR = sample result (native) SA = spike added

Precision is the measure of the agreement or repeatability of a set of replicate results obtained from repeat determinations made under the same conditions. The precision of a duplicate determination can be expressed as the relative percent difference (RPD), which is determined by the following equation:

$$RPD = \frac{|X_1 - X_2|}{X_1 + X_2} \times 200$$

where:

 $X_1 = first duplicate value$ $X_2 = second duplicate value$

For a given laboratory analysis, the replicate RPD values are tabulated and the mean and standard deviation of the RPD are calculated. Control limits for precision are usually plus or minus two standard deviations from the mean.

Accuracy and precision will be monitored by using field replicate, matrix spike, and matrix spike duplicate samples. These data alone cannot be used to evaluate accuracy and precision of individual samples but will be used to assess the long-term accuracy and precision of the analytical method.

COMPLETENESS

Completeness is defined as the percentage of analytical measurements made that are judged to be valid with validity being defined by the DQOs. Percent completeness is calculated as the number of valid analyses divided by the total number of analyses performed multiplied by 100. Nationwide, the Contract Laboratory Programs data have been found to be 80 to 85 percent complete.

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REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent parameter variations at a sampling point. Representativeness is a measure of how closely the measured results reflect the actual distribution and concentration of certain chemical compounds in the medium sampled. Section 2 describes the procedures to be used to collect samples. This process will generate samples that are as representative as possible. Documentation of laboratory and field procedures will be used to establish that protocols have been followed and that sample identification and integrity have been maintained.

COMPARABILITY

Comparability is the term that describes the confidence with which one data set can be compared to another. Comparability refers to such issues as using standard field and analytical techniques and reporting data in the same units. This criterion becomes important if more than one field team is collecting samples or more than one laboratory is analyzing the samples.

Section 2 SAMPLE HANDLING

A required part of any sampling and analytical program is the integrity of the sample, from sample collection to data reporting. This includes the ability to trace the possession and handling of samples from the time of collection, through analysis and final disposition. The essential components of this chain are summarized below.

SAMPLE CUSTODY

The field sampling personnel are responsible for the care and custody of samples until they are delivered (or shipped) to the laboratory custodian.

The sample custody procedures to be used for this program conform to the guidelines established in SW-846, Section 2. The sampling coordinator will be responsible for implementing and maintaining sample custody in the field.

Laboratory sample custody procedures will be implemented and maintained by sample custodians at the receiving laboratories. Copies of all field and laboratory custody records will be returned to the central project file.

FIELD CHAIN OF CUSTODY

Before collecting field samples, the sampling coordinator will issue containers with labels attached to field samplers. Field samplers will label each sample collected, filling in the appropriate information in waterproof ink. The cap of each container will be sealed with a tape bearing the sample number. The field sampler will be responsible for collecting the samples and for logging the samples into assigned field notebooks until they are transferred to the sampling coordinator. The sampling coordinator will acknowledge receipt of the samples from the field sampler in writing and verify that chain-of-custody procedures have been followed. The sampling coordinator will then transcribe the field sample information to the chain-of-custody

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record in duplicate. One copy will be retained by the sampling coordinator, and the other will accompany the samples during shipment.

TRANSFER OF SAMPLES

The sample will be clearly labelled with sample identification number, analysis required, media, date and time of sampling, and sampling initials. The person receiving the samples will sign, date, and note the time of sample receipt on the documentation form. Each sample shipment will be accompanied by documentation, which identifies the contents of the shipment.

LABORATORY SAMPLE HANDLING

A custodian at the laboratory will verify that the containers are intact and that the documentation accompanying the samples matches the actual contents. Any anomalies, such as broken bottles, elevated temperatures, and missing labels, will also be documented by the laboratory custodian. The laboratory will retain sample identification tags, data sheets, original instrument output records, and logbooks, as part of the final file.

SAMPLE DISPOSAL

The samples will be disposed of at a licensed hazardous waste facility in accordance with RCRA regulations after the analyses have been completed.

DATA DOCUMENTATION BY THE LABORATORY

All data will be documented to meet the specific requirements for data submitted for analyses as described in Section 3.

FINAL FILE

The final file will contain raw laboratory data in addition to sample transfer documentation summaries of quality control checks and analytical results.

Section 3 ANALYTICAL PROCEDURES

Samples collected during the investigation will be analyzed at the selected laboratory, using analytical methods selected from SW-846, Test Methods for Evaluating Solid Waste, Third Edition, December 1986, as amended.

SAMPLE MATRICES

Soil samples will be analyzed for the parameters stored at the facility. The following analyses will be performed as described below.

VOLATILE ORGANIC COIWPOUNDS

Samples will be analyzed for volatile organic compounds by the analytical methods indicated in Table A3.A.1, Waste Analysis Procedures (Attachment A11-1).

SEMI-VOLATILE ORGANIC COMPOUNDS

Samples will be analyzed for semi-volatile organic compounds by the analytical methods indicated in Table A3.A.1, Waste Analysis Procedures, (Attachment A11-1).

METALS

Samples will be analyzed for metals by the analytical methods and extraction procedure indicated in Table A3.A.1, Waste Analysis Procedures, (Attachment A11-1).

METHOD SUBSTITUTION

The analytical plan will be reviewed before closure to assess the continued applicability and appropriateness of the listed methods to satisfy the objectives of the closure plan.

Section 4

DATA REDUCTION, VALIDATION, AND REPORTING

Data reduction, validation, and reporting are steps in the overall management and use of analytical data.

DATA REDUCTION

Data reduction is the review, manipulation, and calculations performed to translate the raw laboratory output to the final reported concentrations. All data reduction will be performed in the laboratory. The laboratory will retain copies of all laboratory worksheets, laboratory notebooks, calculation worksheets, standards records, maintenance records, calibration records, and associated quality control records. These sources will be available for inspection and audit and to assess the quality of the analytical data.

DATA VALIDATION

Data validation is the review of laboratory analytical data to assess the quality of the data and to evaluate if it can be used to meet the project objectives. The data validation will be performed by a qualified reviewer who is not directly involved in laboratory operations nor in performing the analyses.

The reviewer will assess sample-specific analytical data, associated field and laboratory QA/QC data, and the raw laboratory data to evaluate the performance of the laboratory as compared to the requirements of the laboratory analytical method, the laboratory QA/QC procedures, and the QA/QC requirements of this guidelines document.

The reviewer will evaluate instrument calibration and performance, compliance with required holding times, analyte identification and quantitation, and the possible presence of contamination in the samples on the basis of the analysis of field and laboratory blanks. The accuracy of the analysis will be determined by assessing recoveries of surrogate compounds and analyzing spiked samples. The precision of the analysis will be determined by analyzing

duplicate samples. Matrix spike and matrix spike duplicate analyses will also be evaluated to assess whether there are qualities of the sample matrix that may lower the quality of the analytical results.

The actual performance of the laboratory will be compared to the performance criteria of the analytical method and the Quality Assurance Project Plan (QAPP). The reviewer will note any deficiencies and, where possible, assess the effect of the deficiencies on the quality of the data. The reviewed data will then be compared to the DQOs and the project-specific requirements to determine if it is usable to support project decisions. Data may be found to be acceptable for use, acceptable for use with qualifications or unacceptable for use. Where the data is found to be acceptable with qualifications, or unacceptable, it may be necessary to analyze additional samples to obtain sufficient usable data to meet project DQOs.

REPORTING

CONTENTS OF REPORT

The laboratory report shall contain at a minimum, but not be limited to, such information for samples as:

- Date report was prepared
- Sample identification number
- Name and location of sample
- Type of sample (water, soil, etc.)
- Date on which analysis was performed
- Any special circumstances or comments that may be relevant for interpretation of the data
- Name of parameter analyzed, name or number of approved analytical method used, results of analysis, and the units of the reported results

RECORDS

Copies of all records related to field sampling and laboratory analysis of the samples will be retained by the laboratory. These records will include, but not necessarily be limited to, field notebooks, laboratory notebooks, laboratory worksheets, copies of raw laboratory data, copies of QA/QC results associated with each sample, and laboratory instrument performance data associated with the samples. There will be sufficient information in the files to identify the record, the sample it is associated with, and the activity to which it applies.

Section 5 QUALITY CONTROL CHECKS

A number of QA/QC samples will be collected to check the adequacy of sample collection and analysis and to monitor laboratory performance.

Duplicates, blanks, and spiked samples are used to test the sampling technique to determine if the technique affects the analytical results, to measure the internal consistency of the samples, and to estimate any variance or bias in the analytical process. The field and laboratory QA/QC sampling procedures are described below.

FIELD SAMPLING QUALITY CONTROL PROCEDURES

Quality control replicate (split) samples and blanks are used to provide a measure of the internal consistency of the samples and an estimate of variance and bias. Table 5-1 shows the collection frequencies of the field QC samples.

Table 5-1 COLLECTION FREQUENCIES OF FIELD QC SAMPLES							
Analysis	Field Blank	Trip Blank	Replicate	Additional Volume Needed for MS/MSD			
Acid/Base Neutral Extractable	1/day		1/20 samples	Triple volume per 20 samples			
Volatiles	1/day	1/day	1/20 samples	Triple volume per 20 samples			
Metals	1/day		1/20 samples	Double volume per 20 samples			

Blanks provide a measure of cross-contamination sources, decontamination efficiency, and other potential errors that can be introduced from sources other than the sample. Two types of blanks can be generated during sampling activities: trip blanks and field blanks.

One trip blank will be included with each daily shipment of volatile organic samples. The trip blanks will be prepared before each sampling event, shipped or transported to the field with the

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sampling bottles, and returned unopened for analysis. Trip blanks will indicate if there is any contamination during shipment to the field, from storage in the field, or from shipment from the field to the analytical laboratory.

One field blank will be included with each daily shipment of samples. The field blanks will indicate if there is any contamination by the sampler or from handling of the sample bottle in the field. The sample container will be filled with distilled, deionized water in the field at the time of sampling. Preservatives will be added as appropriate and the sample container capped, packed, and shipped with the samples.

One field replicate (duplicate) sample will be obtained for every 20 field samples collected. The sampling station from which the duplicate is taken will be randomly selected for each event. Each replicate sample will be split evenly into two sample containers and submitted for analysis as two independent samples.

LABORATORY ANALYTICAL QUALITY CONTROL PROCEDURES

Laboratory quality control procedures will be consistent with those required for SW-846. These procedures will include the use of matrix spikes and matrix spike duplicates in separate aliquots of one sample selected from 20 field samples. These spikes will be used to assess accuracy and precision.

Section 6

PERFORMANCE AND SYSTEMS AUDITS

An audit of field activities will be conducted during sample collection activities. The audit will cover, in general, verification that approved procedures are in place and used, an organization structure is in place, personal responsibilities are clearly defined, a training program for personnel is in place and current, a chain-of-custody program and records retention program are in place, and corrective action of variances taken by laboratory and field personnel is responsive and timely.

LABORATORY PERFORMANCE AND SYSTEMS AUDITS

The analytical laboratory will conduct internal quality control checks. Internal quality control checks will consist of replicates, spikes, and duplicates.

Section 7 PREVENTIVE MAINTENANCE

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Maintenance procedures and schedules for all laboratory analytical instruments will be in strict accordance with the recommendations of the equipment manufacturers. Routine maintenance will be performed by laboratory personnel as needed. All records of inspection and maintenance will be dated and documented in laboratory record books.

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Section 8

DATA ASSESSMENT PROCEDURES

The precision and accuracy of data will be routinely assessed to ensure that they meet the requirements of the DQOs presented in Table 8-1. If enough data are generated, the precision, accuracy, and completeness may be assessed using statistical procedures.

PRECISIC	Table 8- DN, ACCURACY, AND CO	1 MPLETENESS OBJECTI	VES					
Precision (Relative Percent Accuracy % Parameters Difference) % Spike Recovery Completeness								
Acid/Base Neutral Extractables	< ± 20	80-120	85					
Volatiles	< ± 20	80-120	85					
Metals	< ± 20	80-120	85					

Precision is commonly determined from duplicate samples; thus precision is usually expressed as RPD or relative standard deviation (RSD). These quantities are defined as follows.

$$RPD = 100 \ x \ 2 \ \frac{|X_1 - X_2|}{(X_1 + X_2)}$$

$$RSD = (100/2) x [2|X_1 - X_2|/(X_1 + X_2)]$$

where $X_1 \mbox{ and } X_2$ are the reported concentrations for each duplicate sample

Accuracy is commonly presented as percent bias or percent recovery. Percent bias is a standardized average error, that is, the average error divided by the actual or spiked

Attachment A11-3, Quality Assurance Plan Page 37 of 40 Form EQP 5111 Attachment Template A11, Closure and PostClosure Care Plans (6-2-2021) concentration and converted to a percentage. Percent bias is unitless, so it allows the accuracy of analytical procedures to be compared easily.

Percent recovery provides the same information as percent bias. Accuracy is often determined from spiked samples. Percent recovery is defined as:

% Recovery =
$$\frac{R}{S} \times 100$$

where S = spiked concentration R = reported concentration

Given this definition, it can be shown that

% bias = % recovery - 100

Section 9 CORRECTIVE ACTIONS

Corrective Action plans and procedures will include the corrective actions, maintenance instructions, and calibration procedures for each piece of equipment specified or suggested by the manufacturer. Corrective actions will also include training/retraining of personnel, as necessary and appropriate. Corrective actions may also include revised procedures and validation testing of revised procedures before implementation, as experience may suggest.

As part of routine performance monitoring and system and performance audits, each sampling and analysis method will be monitored for precision, accuracy, and compliance with the QC/performance requirements of the method.

If, during routine performance monitoring or system or performance audits, weaknesses or problems are uncovered, corrective action will be initiated immediately. Corrective action will include, but not necessarily be limited to the following:

- Recalibration of instruments using freshly prepared calibration standards
- Replacement of lots of solvent or other reagents that have given unacceptable blank values
- Additional training of personnel in correct implementation of sample preparation and analysis methods

Whenever long-term corrective action is necessary to eliminate the cause of nonconformance, the following closed-loop corrective action system will be used. The appropriate field personnel will ensure that each of these steps is followed:

- The problem will be defined.
 - Responsibility for investigating the problem will be assigned.
 - The cause of the problem will be investigated and determined.

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- Corrective action to eliminate the problem will be determined.
- Responsibility for implementing the corrective action will be assigned and accepted.
- The effectiveness of the corrective action will be established, and the correction will be implemented.
- The fact that the corrective action has eliminated the problem will be verified.

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Attachment 8

Subpart CC Air Emissions from Tanks, Containers, and Surface Impoundments

FORM EQP 5111 ATTACHMENT TEMPLATE C11 - SUBPART CC AIR EMISSIONS FROM TANKS, CONTAINERS, AND SURFACE IMPOUNDMENTS

This document is an attachment to the Michigan Department of Environment, Great Lakes, and Energy's (EGLE) *Instructions for Completing Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities.* See Form EQP 5111 for details on how to use this attachment.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9504, R 299.9508, R 299.9605, and R 299.9634; and Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart CC, and 40 CFR §270.27, establish requirements for controlling organic air emissions from tanks, containers, and surface impoundments. All references to 40 CFR citations specified herein are adopted by reference in R 299.11003.

This license application template addresses air emission control requirements for tanks, containers, and surface impoundments at the hazardous waste management facility for the Beck Road Facility in Belleville, Michigan.

(Check as Appropriate)

- Applicant for Operating License for Existing Facility
- Applicant for Operating License for New, Altered, Enlarged, or Expanded Facility
- Tanks, Containers, or Surface Impoundments Subject to 40 CFR Part 264, Subpart CC (R 299.9634)
- No Tanks, Containers, or Surface Impoundments Subject to 40 CFR Part 264, Subpart CC, Exist at the Facility (R 299.9634)

EPA 1990. Hazardous Waste TSDF – Technical Guidance Document for RCRA Air Emission Standards for Process Vents and Equipment Leaks. Document No. EPA-450/3-89-021. July.

This template is organized as follows:

- C11.C AIR EMISSIONS FROM TANKS, CONTAINERS, AND SURFACE IMPOUNDMENTS C11.C.1 Waste Streams
 - C11.C.1(a) Average Volatile Organic (VO) Concentration Determination Via Direct Measurement at the Point of Waste Origination
 - C11.C.1(b) Average VO Concentration Determination Via Process Knowledge at the Point of Waste Origination
 - C11.C.1(c) Average VO Concentration Determination Via Direct Measurement at the Point of Waste Treatment
 - C11.C.1(d) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Direct Measurement
 - C11.C.1(e) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Process Knowledge
 - C11.C.1(f) Description of Procedures for Determining No Detectable Organic Emissions
- C11.C.2 Tanks Description
- C11.C.3 Surface Impoundment Description
- C11.C.4 Container Descriptions

C11.C.4(a) Description of Container Level 1 Controls

- C11.C.4(a)(1) Michigan Department of Transportation
 - Specifications
- C11.C.4(a)(2) Cover and Closure Devices

C11.C.4(a)(3) Open-Top Containers with Organic Vapor-Suppressing Barrier

C11.C.4(a)(4) Inspection Procedures

C11.C.4(b) Description of Container Level 2 Controls

C11.C.4(c) Description of Container Level 3 Controls

- C11.C.5 Description of Closed-Vent Systems and Control Devices
- C11.C.6 Description of Record Keeping Procedures

Attachment C11-1 Inspection Log

C11.C AIR EMISSIONS FROM TANKS, CONTAINERS, AND SURFACE IMPOUNDMENTS [R 299.9634 and 40 CFR Part 264, Subpart CC]

Tanks

Containers

Surface Impoundments

C11.C.1 Waste Streams [R 299.9634 and 40 CFR §264.1082(c)]

Hazardous and mixed waste is generated from teaching, research and supporting operations at the University of Michigan. The Beck Road Facility accepts hazardous and mixed waste generated from these activities. Hazardous and mixed waste is commingled into containers with a capacity of 55 gallons (0.212 m³) or less. Hazardous and mixed waste may remain in the original container and not be commingled; waste and container compatibility is evaluated.

C11.C.1(a) Average VO Concentration Determination Via Direct Measurement at the Point of Waste Origination [R 299.9634 and 40 CFR §264.1083]

No exemption is claimed. As per instructions, go to Section C11.C.1(c).

C11.C.1(b) Average VO Concentration Determination Via Process Knowledge at the Point of Waste Origination [R 299.9634 and 40 CFR §264.1083(a)(2)]

No exemption is claimed. As per instructions, go to Section C11.C.1(c).

C11.C.1(c) Average VO Concentration Determination Via Direct Measurement at the Point of Waste Treatment [R 299.9634 and 40 CFR §264.1083(b)]

No exemption is claimed. As per instructions, go to Section C11.C.1(d).

C11.C.1(d) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Direct Measurement [R 299.9634 and 40 CFR §264.1083(c)]

This section does not apply. No tanks are in use at the storage facility.

C11.C.1(e) Maximum Organic Vapor Pressure Determination of Hazardous Waste in a Tank Using Level 1 Controls Via Process Knowledge [R 299.9634 and 40 CFR §264.1083(c)]

This section does not apply. No tanks are in use at the storage facility.

C11.C.1(f) Description of Procedures for Determining No Detectable Organic Compound Emissions [R 299.9634 and 40 CFR §§264.1083(d) and 270.27(a)(6)]

No exemption is claimed.

C11.C.2 Tanks Description [R 299.9634 and 40 CFR §270.27(a)(1) and (3)]

This section does not apply.

C11.C.3 Surface Impoundment Description [R 299.9634 and 40 CFR §264.1085]

This section does not apply.

C11.C.4 Container Descriptions [R 299.9634 and 40 CFR §§264.1086, and 270.27(a)(2)]

Hazardous and mixed waste is commingled into new US DOT UN rated performance oriented packagings constructed of HDPE, metal, or other compatible material, with a capacity of 55 gallons (0.212 m³) or less. The design specifications rate the containers at PG-I/ PG-II/ PG-III or PG-II/PG- III.

Hazardous and mixed waste may also be received at the facility and not be commingled. The receipt container volume is from 15 to 55 gallons (0.212 m³), or a lab pack of containers from 5 gallons or less. Each receipt packaging is a US DOT UN rated performance-oriented packaging and is compatible with the contents. The design specifications rate the receipt packagings at PG-I/ PG-II/ PG-III or PG-II/PG-III.

The waste management units are referenced in Template A7, Contingency Plan, Attachment A7.6, Location of Waste Management Units. Subpart CC requirements are met.

C11.C.4(a) Description of Container Level 1 Controls

[R 299.9634 and 40 CFR §264.1086(b) and (c)]

Level 1 controls are appropriate because containers used to manage hazardous and mixed waste are 55 gallons (0.212 m³) or less in capacity. Each container is equipped with a cover or closure devices that forms a continuous barrier over the container openings such that when the cover and

closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces into the interior of the container.

The covers and closure devices that are used are supplied by the manufacturer and are composed of suitable materials to minimize exposure of the hazardous and mixed waste to the atmosphere and to maintain the container integrity, for as long as the container is in service.

When hazardous and mixed waste is in a container all covers and closure devices for the container shall be installed and secure, as applicable to the container, and each closure device shall be maintained in the closed position except as follows:

- For the purpose of adding waste to the container.
- For the purpose of removing waste from the container.
- When access inside the container is needed to perform routine activities other than transfer of
 waste. Examples of such activities include those times when a worker needs to open a cover or
 closure device to measure the depth of or to sample the material in the container. Following
 completion of the activity, the closure device shall be promptly secured in the closed position or
 the cover shall be reinstalled, as applicable to the container.

Waste containers are inspected upon arrival at the storage facility. The storage facility is inspected weekly, at a minimum, for container integrity and for other items shown on the Inspection Log (Attachment C11-1). As part of the facility inspection, waste containers are inspected to evaluate their condition, which includes leaking, deterioration, corrosion, bulging or other signs of container failure. In addition to waste container inspections, the secondary containment system and loading area are inspected weekly for system integrity as outlined in Table A5.A.1, Inspection Schedule. Remedial action will begin immediately upon discovery of a defect in a container, cover, or closure device.

C11.C.4(a)(1) Michigan Department of Transportation Specifications [R 299.9634 and 40 CFR §264.1086(c)(1)]

Hazardous and mixed waste is commingled into new US DOT UN rated performance oriented packagings constructed of HDPE, metal, or other compatible material, with a capacity of 55 gallons (0.212 m³) or less. The design specifications rate the containers at PG-I/ PG-II/ PG-III or PG-II/PG-III. Waste containers meet the applicable requirements, and are managed, as specified in 40 CFR 264.1086(f).

Hazardous and mixed waste may also be received at the facility and not be commingled. The receipt container volume is from 15 to 55 gallons (0.212 m³), or a lab pack of containers from 5 gallons or less. Each receipt packaging is a US DOT UN rated performance-oriented packaging and is compatible with the contents. The design specifications rate the receipt packagings at PG-I/ PG-II/ PG-III or PG-II/PG-III. Waste containers meet the applicable requirements, and are managed, as specified in 40 CFR 264.1086(f).

C11.C.4(a)(2) Cover and Closure Devices

[R 299.9634 and 40 CFR §264.1086(c)]

Containers used to manage hazardous and mixed waste are 55 gallons (0.212 m³) or less in capacity. Each container is equipped with a cover or closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces into the interior of the container.

C11.C.4(a)(3) Open-Top Containers with Organic Vapor-Suppressing Barrier [R 299.9634 and 40 CFR §264.1086(c)]

This section is not applicable.

C11.C.4(a)(4) Inspection Procedures

[R 299.9634 and 40 CFR §264.1086(c)(4)]

Containers are inspected upon arrival at the storage facility. As part of the facility inspection, waste containers are inspected weekly to evaluate their condition, which includes leaking, deterioration, corrosion, bulging or other signs of container failure. The inspection will show if there is waste container failure. Waste containers that are not in good condition will be overpacked or replaced. The contents of a waste container that is not in good condition will be transferred to a new container by direct transfer or by the means of an appropriate drum pump. In addition to waste container inspections, the secondary containment system and loading area are inspected weekly for system integrity.

If inspections reveal that non-emergency maintenance is needed, EHS will respond in a timely manner to preclude further damage. If a hazardous waste constituent release is imminent, or has occurred, remedial action will begin immediately upon discovery. In the unlikely event of an emergency involving the release of hazardous waste constituents to the environment, efforts will be directed towards containing the hazard, removing it, and subsequently decontaminating the affected area, as discussed in greater detail in the U-M Emergency Response Contingency Plan (Template A7).

The inspection schedule outlined in Table A5.A.1, Inspection Schedule, lists the types of problems that the inspector routinely examines. Items that are examined during the container inspection are documented on the Inspection Log (Attachment C11-1).

C11.C.4(b) Description of Container Level 2 Controls

[R 299.9634 and 40 CFR §264.1086(d)]

This subsection does not apply to the application. No containers as defined by Level 2 Controls are in use.

C11.C.4(c) Description of Container Level 3 Controls [R 299.9634 and 40 CFR §264.1086(e)]

This subsection does not apply to the application. No containers as defined by Level 3 Controls are in use.

C11.C.5 Description of Closed-Vent Systems and Control Devices [R 299.9634 and 40 CFR §§264.1087 and 270.27(a)(5)]

This section does not apply.

C11.C.6 Description of Record Keeping Procedures [R 299.9634 and 40 CFR §264.1089(a)]

The Beck Road Facility is not claiming the VO concentration exemption, nor does the facility use tanks or surface impoundments for waste management. The record keeping requirements of this section do not apply.

University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Air Emissions Subpart CC, Revision 0

Attachment C11-1 Inspection Log

INSPECTION LOG

University of Michigan

Occupational Safety & Environment Health and Safety (EHS)

Beck Road Storage Facility, EPA ID: MIR 000 001 834

8501 Beck Road, Belleville, MI 48111

(734) 487-3259

Instructions: Perform inspection of facility if conditions are satisfactory write "SAT" in the conditions

observed column. If there are any discrepancies, list them in the conditions observed column also.

A. General Facility	Conditions Observed on Date:		
1. All door entrances and windows properly secured			
2. No signs of unauthorized entry			
3. No signs of vandalism or theft			
4. No signs of flooding or fire			
5. No electrical hazards identified			
6. Fire extinguishers in designated locations, and charged			
7. Ventilation and lighting system operating properly			
8. No evidence of eating, drinking, smoking			
9. Aisle space adequate for emergency equipment			
10. Emergency supplies, monitoring equipment & PPE available			
11. Emergency supplies storage cabinet inspected (needs noted below)			
12. Fire exits are clear and unobstructed			
13. Storage and work areas organized and uncluttered			
14. Emergency eyewash and shower station tested (1st week of month)			
15. Annual water availability inspection conducted on			
16. Biannual inspection of perimeter fences conducted on			
17. Operation's log up to date			
18. Forklift inspected and operational			
19. Verify telephones are operational - check for dial tone			
B. Appropriate Postings Throughout the Facility	Conditions Observed		
1. NRC "Notice to Employee"			
2. EGLE "Notice to Employee" (Form EQC 1627)			
3. EGLE Radioactive Material Registration (Form EQP 1614)			
4. Radioactive Materials Restricted Area (entrances)			
5. No smoking signs (2+ entrances)			
6. Emergency phone numbers			
7. Radiological Emergency Procedures			
8. MSDS location poster			
RCRA Waste Storage Areas Properly Identified and Segregated			
C. Corrosive Base and Reactive Area 109A	Conditions Observed		
1. Waste containers identified and labeled properly			

2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
D. Toxics Area 109B	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
E. Corrosive Acid Room 111	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
F. Toxic and Oxidizer Area 113	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
G. Toxic Room 116	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. No evidence of odors	
5. Containment system in good condition	
H. Ignitable and Toxic Room 117	Conditions Observed
1. Waste containers identified and labeled properly	
2. No signs of leakage from waste containers	
3. No signs of deterioration or damaged containers	
4. Ventilation system operating properly	
5. No evidence of odors	
6. Containment system in good condition	
I. Loading / Unloading Area 125	Conditions Observed
Trenches clear of debris	
Containment system in good condition	

Comments:
Note: For any discrepancies noted in the conditions observed column list the corrective action taken to remedy each discrepancy below.
Corrective Actions:
Corrective Actions performed by:
Date corrective actions performed:
Cumling wooded
Supplies needed:
Inspection performed by:
Date:
Time:
Reviewed by:
Hazardous Materials Manager:
Date:
Date
Radiation Safety Officer:
Date:

Attachment 9

Engineering Plans and Specifications

FORM EQP 5111 ATTACHMENT B6 ENGINEERING PLANS

Engineering plans used to construct the licensed areas of Beck Road Facility, and the service drive, are presented in Attachment B6-1. Six plans are included in Attachment B6-1:

- Remodel for Secondary Containment, Demolition and Construction Plans, Sheet A1.0
- Remodel for Secondary Containment, Floor Slope Plan/Sections/Details, Sheet No. A2.0
- Remodel for Loading Dock, Plan, Elevations, Sections, Details, Sheet No. A2.1
- Beck Road Storage Facility, Service Drive, Sheet No. C-1
- Exhaust Ventilation in Room 117, Sheet No. ME 1
- Remodel for Secondary Containment, Plan, Sections & Details, Sheet No. S-1









University of Michigan--Beck Road Facility Site ID No. MIR 000 001 834 Engineering Plans, Revision 0

Attachment B6-1 Engineering Plans

(6-2-2021)





Attachment 10

List of Acceptable Hazardous Wastes

TABLE A2.A.2 HAZARDOUS WASTES ACCEPTED AT THE FACILITY

Hazardous	Waste	Hazardous	Basis for	Hazardous Waste
Waste Code	Description	Waste Characteristics	Hazardous Designation	Management Unit
F002	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F003	Spent solvents generated by teaching, research and supporting operations	Ignitability	Listed wastes; ignitable waste hazard code	Room 117
F004	Spent solvents generated by teaching, research and supporting operations	Toxicity	Listed wastes; toxic waste hazard code	Rooms 109B, 113, or 116
F005	Spent solvents generated by teaching, research and supporting operations	Ignitability, toxicity	Listed wastes; ignitable and toxic waste hazard codes	Room 117
D001	Ignitables generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 117
D001	Oxidizers generated by teaching, research and supporting operations	Ignitability	Ignitable waste hazard code	Room 113
D002	Corrosive acids generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 111
D002	Corrosive bases generated by teaching, research and supporting operations	Corrosivity	Corrosive waste hazard code	Room 109A
D003	Reactives generated by teaching, research and supporting operations	Reactivity	Reactive waste hazard code	Room 109A
D004	Waste containing arsenic generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D005	Waste containing barium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D006	Waste containing cadmium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D007	Waste containing chromium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D008	Waste containing lead generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D009	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

D010	Waste containing selenium generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D011	Waste containing silver generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D018	Waste containing benzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D019	Waste containing carbon tetrachloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D021	Waste containing chlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D022	Waste containing chloroform generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D023	Waste containing o-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D024	Waste containing m-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D025	Waste containing p-cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D026	Waste containing cresol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D027	Waste containing 1,4- dichlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D028	Waste containing 1,2- dichloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D029	Waste containing 1,1- dichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D030	Waste containing 2,4- dinitrotoluene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116

D032	Waste containing hexachlorobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D033	Waste containing hexachlorobutadiene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D034	Waste containing hexachloroethane generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D035	Waste containing methyl ethyl ketone generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D036	Waste containing nitrobenzene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D038	Waste containing pyridine generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D039	Waste containing tetrachloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D040	Waste containing trichloroethylene generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D041	Waste containing 2,4,5- trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D042	Waste containing 2,4,6- trichlorophenol generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
D043	Waste containing vinyl chloride generated by teaching, research and supporting operations	Toxicity	Hazard code for toxicity characteristic waste	Rooms 109B, 113, or 116
U138	Waste containing methyl iodide generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116
U151	Waste containing mercury generated by teaching, research and supporting operations	Toxicity	Listed waste; hazard code for toxic waste	Rooms 109B, 113, or 116

Attachment 11

Operation and Maintenance Plan for Units 3 and 4

Operation & Maintenance Plan for Waste Management Units 3 & 4 Inspection, Planned Excavation and Maintenance Protocol University of Michigan Beck Road Storage Facility Belleville, Michigan

1.0 INTRODUCTION

1.1 Status of Corrective Action

The Beck Road Storage Facility (BRSF) is a 134-acre, fenced compound owned by the University of Michigan (U-M), located at 8501 Beck Road in Belleville, Michigan (see Plate 1, BRSF Location Map included in Appendix A). The State of Michigan, Department of Environmental Quality (MDEQ) issued a Resource Conservation and Recovery Act (RCRA) Part B Operating License on July 16, 1999, to allow U-M to manage and store mixed (hazardous and low-level radioactive) waste in Building 2201. The Operating License includes requirements for Corrective Action at two Waste Management Units (WMU-3 and WMU-4) located on the site.

On April 18, 2003, U-M completed a Corrective Measures Implementation Final Report for the BRSF. As described in the report, "The remaining corrective action for the BRSF consists of preventing exposure to groundwater exceeding Residential and Commercial I (R&C I) Drinking Water Criteria at WMU-3 and soils exceeding the R&C I Direct Contact Criteria at WMU-4." Data developed through groundwater modeling completed during the corrective action process indicated that groundwater concentrations of the observed constituents would be attenuated on site.

In a letter dated July 24, 2003, the MDEQ presented results from Slug Testing Wells for Groundwater Velocity Determination conducted by Waste and Hazardous Materials Division (WHMD) staff. Following review of the collected data, Mr. Dale Bridgford, Senior Geologist, MDEQ – WHMD concluded, "Based on the amount of time that has passed since utilization of the tanks ceased at the facility and the time calculated for the plume to attenuate, it is concluded that groundwater monitoring has been completed for Waste Management Unit 3 and does not need to continue."

Therefore, to complete requirements of the Corrective Measures Implementation, the following tasks remain:

- Develop an MDEQ approved Operation and Maintenance (O&M) Plan to prevent exposure to groundwater in the vicinity of WMU-3 and to soils located 4 feet below ground surface (bgs) in the vicinity of WMU-4.
- File an MDEQ approved Restrictive Covenant, including the installation of permanent marker, with Wayne County Register of Deeds for both WMUs.

This document presents the O&M Plan for both WMUs. A copy of this plan will be available at the BRSF Building 2201. Additionally, the U-M Occupational Safety and Environmental Health Department (OSEH) Hazardous Materials & Remediation Services (HMRS) Program Manager will provide copies upon request.

1.2 Site History

The BRSF Site (the Site), for purposes of the Corrective Measures Investigation, includes WMU-3 and WMU-4 in a 32,000 square-foot (approximately) investigation area, as shown on Plate 2, Site Location, included in Appendix A.

1.2.1 WMU-3

WMU-3 is the former location of a 2,000-gallon gasoline underground storage tank (UST), which was removed in 1996. A gasoline release was noted when the tank was removed and notifications were made to the MDEQ. Plate 3, Limit of Restricted Areas, in Appendix A, depicts the limits of WMU-3. Impacted soils surrounding the tank (130 cubic yards) were excavated and removed to a depth of seven feet bgs. Following removal of contaminated soils, remaining soils in WMU-3 did not exceed applicable criteria. However, concentrations of benzene, ethyl benzene, naphthalene, toluene, and xylenes were detected in groundwater

(1

above the groundwater surface water interface (GSI) and/or R&C I Drinking Water Criteria in the immediate vicinity of the former tank. Subsequent modeling studies and activities conducted for the Corrective Measures Investigation demonstrated that contaminants in groundwater exceeding Drinking Water Criteria (benzene, ethyl benzene, and xylenes) would be attenuated on site, and that the GSI is not a relevant pathway. As noted earlier, the MDEQ conducted hydraulic conductivity tests (slug tests) of the aquifer within WMU-3 (at MW-101) and in downgradient wells VW-1, VW-2, and VW-3 that verified groundwater velocity determinations used in the modeling. Therefore groundwater use within the vicinity of WMU-3 (Restricted Groundwater Use Area) shall be restricted. Plate 3 in Appendix A depicts the limits of the Restricted Groundwater Use Area.

Because the MDEQ has concluded that groundwater monitoring has been completed for WMU-3, select monitoring wells and piezometers at the Site will be abandoned as part of this O&M Plan. The wells/piezometers will be abandoned in accordance with the procedures and requirements outlined in the Part 111 Administrative Rules of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The verification wells (VW-1, VW-2, VW-3) and MW-101 will not be abandoned. VW-1, VW-2, and VW-3 will remain as Restricted Groundwater Use Area boundary markers, and if needed, used as monitoring wells at a later date. MW-101 serves as the basis for evaluating any results of the verification wells.

1.2.2 WMU-4

WMU-4 is beneath a paved driveway / parking area adjacent to Building 2205 as shown on Plate 3 in Appendix A. The area of WMU-4 has no history of waste management, handling, or storage activities. It was identified as a WMU when a polynuclear aromatic (PNA) benzo(a)pyrene was discovered in soil at concentrations greater than the R&C I Direct Contact criterion. The soil samples containing these elevated PNA concentrations were located at a depth of four to six feet bgs. Groundwater sampling in the area has not found PNA contamination. An exposure barrier consisting of four feet of soil including existing pavement is currently in place across WMU-4. The existing barrier within the vicinity of WMU-4 (Restricted Excavation Area) shall be maintained. The Restricted Excavation Area is

-3-

an approximately thirty-foot by thirty-foot area at the northeast corner of Building 2205. As shown in Plate 3 on Appendix A, WMU-4 is within the area designated as the Restricted Excavation Area.

1.3 Corrective Action Requirements

As part of the Corrective Action at the Site, U-M is required to implement institutional controls to prohibit groundwater use within the Restricted Groundwater Use Area and to prevent contact with soils beneath the exposure barrier within the Restricted Excavation Area. These institutional controls shall be left in place until appropriate criteria are met and the MDEQ authorizes the lifting of the restrictions in writing. The Restricted Groundwater Use and Restricted Excavation Areas are depicted on Plate 3 in Appendix A. Institutional controls will include:

- Filing a Deed Restriction with the Wayne County Register of Deeds,
- Implementing inspection protocol of the areas, and
- Placing a permanent marker describing the area of WMU-3 and WMU-4 and delineating the Restricted Groundwater Use Area and the Restricted Excavation Area.

1.3.1 Restricted Groundwater Use Area

The inspection protocol for the Restricted Groundwater Use Area will be performed on a semi-annual basis to verify that no new wells are installed within the Restricted Groundwater Use Area, and that there is no evidence of tampering or deterioration of the verification wells and MW-101.

1.3.2 Restricted Excavation Area

In addition to the institutional controls described above, U-M will implement protocols to maintain the exposure barrier and permanent marker, restrict excavation and prevent exposure to soils exceeding direct contact criteria within the Restricted Excavation Area.

The exposure barrier for the Restricted Excavation Area currently consists of sand with varying amounts of silt and gravel overlain by several inches of gravel aggregate covered by asphalt. U-M will maintain a four-foot thick exposure barrier layer in the Restricted Excavation Area in order to prevent human contact with potentially contaminated subsurface soils which exist at depths between four to six feet bgs. The Restricted Excavation Area is depicted on Plate 3 in Appendix A.

Although elevated contaminants were only found in a limited area in subsoils within WMU-4 between four to six feet bgs, this corrective action conservatively prevents contact with all subsurface soil deeper than three feet bgs within the Restricted Excavation Area. The inspection protocol for the Restricted Excavation Area will be performed on a semi-annual basis to verify that the exposure barrier is in good condition and that it has not been significantly disturbed. In addition, the inspections shall confirm that the permanent marker is visible and legible.

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2.0 INSPECTION, EXCAVATION, AND REPAIR PROTOCOLS

2.1 Inspection Scope

A site inspection will be performed two times per year on three areas/features (inspection areas are shown on Plate 3 in Appendix A):

- 1. Restricted Groundwater Use Area;
- 2. The exposure barrier area in the Restricted Excavation Area; and
- 3. The permanent marker located as noted on Plate 3 in Appendix A.

The inspection procedure for each area/item is detailed below.

2.1.1 Restricted Groundwater Use Area

The inspector shall walk the entire Restricted Groundwater Use Area two times per year. The inspector shall look for evidence of well installation within the Restricted Groundwater Use Area. The inspector shall verify the integrity of the protective casings/flush mounts, locks, and guard posts (as appropriate) of VW-1, VW-2 and VW-3, and MW-101. If evidence of new well installation, tampering or deterioration is identified, the HMRS Program Manager shall be notified immediately. The details of the inspection shall be noted on the record keeping forms discussed in Section 2.1.4.

2.1.2 Restricted Excavation Area

The inspector shall walk over the designated Restricted Excavation Area, inspect the entire ground surface, and identify any major damage, which is defined as excavation of soil more than three feet bgs. If any major damage is noted, the repair protocol described in Section 2.3 shall be initiated as soon as is practical.

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2.1.3 Permanent Marker

The inspector shall confirm that the permanent marker is not removed, covered, obscured, or otherwise altered. The inspections shall confirm that the permanent marker is visible and legible. If the marker is damaged, repairs shall be completed as soon as is practical.

2.1.4 Inspection Form

The inspector shall note any major damage on the Semi-Annual Inspection Form. A copy of this form is included in Appendix B. The following procedure will be used:

- Restricted Groundwater Use Area. If neither no evidence of new well installation nor evidence of tampering or deterioration of the verification wells or MW-101 is observed, the inspector shall record "OK" in the "Comments" box of the Semi-Annual Inspection Form. If evidence of new well installation or tampering or deterioration of wells is found, the inspector shall record the location in the "Comments" box and notify the HMRS Program Manager immediately. The inspector shall locate each new well or evidence of tampering or deterioration of the wells on a map of the site (provided on the back side of the log).
- Restricted Excavation Area. If no major damage is observed, the inspector shall record "OK" in the "Comments" box on the Semi-Annual Inspection Form. If major damage is found, the inspector shall record the location and type of damage in the "Comments" box on the Semi-Annual Inspection Form. Similarly, if a building or grounds maintenance issue arises that is currently causing damage or has the potential to cause major damage to the exposure barrier if not repaired, the inspector shall note the maintenance issue in the "Comments" box on the Semi-Annual Inspection Form. The inspector shall locate each area of exposure barrier damage or maintenance needed on a map of the site (provided on the reverse side of the log).

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 Permanent Marker. The marker shall be inspected to verify it is in good condition and is readable. If no damage is observed, the inspector shall record "OK" in the "Comments" box on the Semi-Annual Inspection Form. If damage is found, the inspector shall record the type of damage in the "Comments" box on the Semi-Annual Inspection Form.

In addition, the inspector shall answer the "yes or no" questions regarding evidence of wells, exposure barrier condition, permanent marker damage, or maintenance issues at the bottom of the Semi-Annual Inspection Form. The inspector shall print and sign his or her name, record the date of the inspection, and submit the log to the HMRS Program Manager. The HMRS Program Manager shall review the form, print and sign his or her name, and record the date of the review.

2.2 Protocol for Planned Excavation in the Restricted Excavation Area

If the exposure barrier in the Restricted Excavation Area must be excavated (i.e. for subsurface utility work), the HMRS Program Manager shall be notified prior to opening the exposure barrier (except in the case of an emergency). The HMRS Program Manager or his/her designee shall:

- Notify the MDEQ in writing if the proposed work will breach the integrity of the exposure barrier (i.e., activities at depths greater than 3 feet). The notice shall briefly describe the planned work and the schedule for conducting the work.
- Arrange for the work to be supervised to document that excavated soils are properly managed.
- Direct the persons excavating the exposure barrier to maintain excavated soils on plastic sheeting or other suitable impervious surface.
- Arrange for disposal of excavated soil from beneath the exposure barrier layer or, alternatively, return excavated soil to its original location beneath the exposure barrier. All soil shall be properly managed in accordance with appropriate federal & Michigan law.

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2.3 Protocol for Repair of Restricted Excavation Area Exposure Barrier

For routine maintenance of the asphalt in the restricted excavation area, the following protocol shall be used:

- During the semiannual inspections, any observed damage to the asphalt cover shall be recorded on the inspection form.
- For linear cracking of the asphalt that is ½" wide and longer than 5 feet, asphalt sealant shall be used to repair the affected area within ten business days, weather-permitting.
- For linear cracking of the asphalt that is greater than ¾" wide and longer than 5 feet, asphalt cold patch shall be used to repair the affected area within ten business days, weather-permitting. If cold patch is deemed unsuitable, an alternative means of repair shall be determined and scheduled within one month, and repairs shall be conducted as soon as practical.
- For damaged areas less than ten square feet (e.g. potholes, rubbling), asphalt cold patch shall be used to repair the affected area within ten business days, weather-permitting.
- For damaged areas greater than ten square feet, U-M OSEH shall consult with the U-M Architecture, Engineering and Construction Department to determine the most effective means of restoring the asphalt to its original condition, or to a condition that provides an equivalent exposure barrier. Scheduling of the repair work shall be conducted within one month. Restoration or replacement of the asphalt is weather dependent (as hot mix asphalt paving is not practical during cold temperatures), but shall be conducted as soon as practical.'
- Any maintenance activities to restore damaged asphalt shall be recorded on the inspection form.

When unscheduled excavations occur below three feet in the Restricted Excavation Area, the following steps shall be taken:

- Notify the MDEQ in writing of the proposed repair work. The notice shall briefly describe the planned work and the schedule for conducting the work.
- The area will be secured to prevent direct contact with the underlying subsoil. The area of
 major damage shall be cordoned off until the repairs are complete and the area has been re-

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inspected. Additionally, appropriate measures shall be taken to minimize dust emissions from soil beneath the exposure barrier layer.

- Soil and aggregate shall be used to restore the excavated area to its original condition, or to a condition providing an equivalent exposure barrier.
- The entity conducting repairs shall provide written verification that repairs have been completed in accordance with industry standard construction practices.
- The area shall be re-inspected as indicated in the re-inspection protocol contained in Section 2.4.

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3.0 RESPONSIBILITIES

3.1 Inspections and Repairs

The U-M HMRS Program Manager or his or her designee shall be responsible for facilitating timely semi-annual inspections, completing necessary repairs, and maintaining proper documentation. The HMRS Program Manager may designate a staff member or hire a consultant to conduct the inspections, but the responsibility for maintaining compliance with this O&M Plan resides with the HMRS Program Manager. U-M staff, a contractor, or a consultant may complete repairs.

A copy of this O&M Plan and copies of completed Semi-Annual Inspection Forms will be kept on file in the BRSF Building 2201 office and be made available for agency review upon request.

3.2 Notifications

The HMRS Program Manager shall be notified if any of the following occurs:

- An unplanned exposure barrier breach exposes soil deeper than three feet bgs within the Restricted Excavation Area.
- Any groundwater well installation is planned in the Restricted Groundwater Use Area.

A copy of all notifications shall be placed in the records kept at the BRSF Building 2201 office, and the HMRS Program Manager shall maintain a copy.

The HMRS Program Manager or his or her designee shall arrange to implement the appropriate protocols discussed in Section 2.

3.3 Record Retention

The HMRS Program Manager will coordinate the retention of records generated during the implementation of this O&M Plan.

Records and notifications associated with semi-annual inspections and exposure barrier repairs shall be retained on-site for the duration of the U-M's ownership or until the MDEQ lifts the land use restrictions. Repair records shall be detailed and include field notes and documentation of soil disposal, if appropriate.

If the BRSF property is sold, a copy of the O&M Plan, records and notifications shall be provided to the new owner. If other portions of the property are sold outside of the restricted areas as described in this document, the U-M shall maintain access to these areas through an easement or an alternative arrangement to facilitate compliance with this O&M Plan.

3.4 Responsibilities of the Inspector

The following list includes basic responsibilities for the designated site inspector:

- The inspector shall be familiar with the property and the design of the barrier layer.
- The inspector shall review the inspection protocol before each semi-annual inspection.
- The inspector shall be capable of walking the restricted areas on a semi-annual basis and shall promptly investigate and report damage.
- The inspector shall promptly re-inspect any areas where repairs have been made.
- The inspector shall submit the Semi-Annual Inspection Form promptly to the HMRS Program Manager.

4.0 ABANDONMENT OF MONITORING WELLS AND PIEZOMETERS

Eleven wells/piezometers will be abandoned as part of this O&M Plan. These include MW-2, MW-3, MW-4, MW-5, MW-9, MW-14, MW-102, MW-103, PZ-1, PZ-2, and PZ-3. The wells/piezometers will be abandoned within 60-days after filing the Restrictive Covenant with the Wayne County Register of Deeds. The wells/piezometers will be abandoned in accordance with the procedures and requirements outlined in the Part 111 Administrative Rules of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

U-M will prepare a brief report summarizing abandonment operations for submittal to the MDEQ within 30 days of completion of the work The report will include necessary certification statements as outlined in 40 CFR 270.11(d).

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APPENDIX A

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BRSF Location Map, Plate 1; Site Location, Plate 2; and Limit of Restricted Area, Plate 3






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APPENDIX B

Semi-Annual Inspection Form and Map

THE UNIVERSITY OF MICHIGAN BECK ROAD STORAGE FACILITY SEMI-ANNUAL INSPECTION FORM

Instructions:

This form must be completed at the time of each inspection.

. Complete a full site inspection as detailed in the Inspection Protocol at least twice per year.

. Note the condition of each WMU area in the designated area of this sheet.

• Indicate (by circling) if repairs are necessary or if a maintenance issue has developed that is currently or could potentially impact the Restricted Excavation Area exposure barrier in the future.

· Sign and date form upon completion of each semi-annual inspection.

• If any major damage is noted, follow the procedures outlined in the Inspection, Excavation, and Repair Protocols (Section 2 of the Operation & Maintenance Plan).

 If repairs are necessary, upon completion of repairs, re-inspect the area where repairs have been made, indicate when they were completed, and initial the appropriate area on this form.

 This form, completed inspection records, and records of repair must be kept onsite by the facility owner until the MDEQ approves the lifting of the restrictions.

WMU-3 Restricted GW Use Area	Comments:	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
Inspect Restricted GW Use Area for evidence of new well installation and tampering or deterioration of VW-1, VW-2, VW-3, and MW-101.		
WMU-4 Restricted Excavation Area	Comments:	
Inspect Exposure Barrier In the Restricted Excavation Area		
Permanent Marker	Comments:	
Lettering in good condition and legible		

Evidence of new well installation?	If Yes, date wells No / Yes removed?		Initials:		
Evidence of tampering or deterioration of VW/MW wells?	No / Yes	If Yes, date verification wells repaired?	Initials:		
Exposure Barrier Repairs Necessary?	No / Yes	If Yes, date Repaired?	Initials:		
Marker Repairs Necessary?	No / Yes	If Yes, date Repaired?	Initials;	Initials;	
Maintenance Repair Issue?	No / Yes	If Yes, date Repaired?	Initials;		
Inspector:			-		
Signature:	a a		Date:	<u></u>	
HMRS Program I	Manager:				
Signature:			Date:		
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Note: Map of Restricted Areas on back of form

