

Chapter 2



Waste Characterization Questions, Records, & Examples

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Waste Characterization Record

To meet the waste characterization recordkeeping requirements of Rule 307 (MAC R 299.9307), consider creating a record that details your answers to the waste characterization questions provided below. This detail would ensure thorough documentation of your determination and would be in addition to the following records that should already be assembled and available at the site of generation for each waste stream requiring review:

- the waste type
- a narrative description of the waste
- the source of waste
- any test results obtained from sampling and analyzing the waste
- a description of the sampling procedure used
- details on how the sample was determined to be representative of the waste stream
- a copy of Safety Data Sheets (SDS) or other reference materials relied upon for making the waste determination, including calculations used to evaluate subpart BB and CC applicability (to determine the ppmv volatile organic compound content of the waste)

Waste Characterization

Basic Steps

1. Is waste listed? Review lists of waste types & codes in rules.
2. Is waste characteristic? Analytic test or by knowledge (MSDS, knowledge of process, etc.).
3. Does an exclusion or exemption apply?
4. Do other regulations apply? (liquid industrial or solid waste, etc.).
5. Create & maintain records of characterization for at least 3 years from the date waste was last shipped offsite.
6. Re-characterize if there is a change in process or materials.



Waste Characterization Questions

The questions below do not address radioactive waste, infectious or pathogenic medical waste, or Toxic Substance Control Act applicability. Consult with a specialist on these topics if you have a waste that may be subject to these regulations. To locate assistance on these topics, contact the Environmental Assistance Center at 1-800-662-9278 or deq-assist@michigan.gov. When reviewing each question, advance to the next question if you answer NO.

Listed Hazardous Waste Review

1. Is this an unused raw material chemical product containing a sole active ingredient?
If Yes: Is there a SDS available?
If Yes: Is material a commercial chemical product listed in Part 111 Table 205a, 205b, or 205c (**P or U Listed**)?
If Yes = Waste is a listed hazardous waste, advance to listed waste exclusion review.
2. Does the waste contain spent solvents or is it a wastewater treatment waste not discharged directly to the wastewater treatment plant pursuant to a permit issued by the treatment authority (**F Listed**)?
If Yes: Does the spent solvent or process generating the waste make the waste a hazardous waste, by definition because it is listed in Part 111, Table 203a?
If Yes = Waste is a listed hazardous waste, advance to listed waste exclusion review.
3. Does the process generating the waste make the waste a hazardous waste, by definition because the process waste is listed in Part 111 Table 204a (**K Listed**)?
If Yes = Waste is a listed hazardous waste, advance to listed waste exclusion review.

Listed Hazardous Waste Exclusion Review

Do any Part 111 exclusions or exemptions apply?

If Yes: Specify the exclusion found in Rule 202 (waste), Rule 203 (hazardous waste) 204 (exclusion), Rule 205 (CESQG), Rule 206 (recyclable material), Rule 228 (universal waste), etc. and include any relevant documentation substantiating the exclusion applicability in your waste characterization record, then advance to question 4 to determine if waste exhibits any characteristics that make it a hazardous waste.

If No – Waste remains a listed hazardous waste that must be managed using the listed hazardous waste code(s). Continue to step 4 if desiring to identify the hazardous waste characteristics that apply.

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Characteristic Hazardous Waste Review

4. Does the waste exhibit a characteristic that makes it a characteristic hazardous waste? Review each characteristic:
- ✓ **Ignitable** - Review whether the waste exhibits a flashpoint ≤ 140 F using the Penske Martin closed cup test (**D001**).
 - ✓ **Toxic** - Are there constituents on the SDS for the materials used found in Part 111, Table 201a?
If Yes: Presume the waste exceeds the limit(s) in table 201a and manage the waste as a characteristic hazardous waste for the relevant constituent(s) and waste code(s) or sample and analyze the waste using the Toxicity Characteristic Leaching Procedure or totals test using the 20X rule to determine whether it meets or exceeds the TCLP extract concentration in Table 201a. If it meets or exceeds the limit, the waste is a characteristic hazardous waste for the relevant waste codes (**D004 through D043**).
 - ✓ **Corrosive** - Review whether the waste exhibits a pH ≤ 2 or ≥ 12.5 (**D002**).
 - ✓ **Reactive** - Review whether the waste is reactive and reacts violently at standard atmospheric conditions or meets any U.S. DOT reactive class standards.
If Yes: Waste is a characteristic hazardous waste, be sure to use all the applicable hazardous waste codes when managing the waste (**D003**).

Ensure that the product manufacturer has listed all the hazardous constituents on the SDS and not just those relevant to occupational exposure when characterizing waste.

Characteristic Hazardous Waste Exclusion Review

Do any Part 111 exclusions or exemptions apply?

If Yes: Specify the exclusion found in Rule 202 (waste), Rule 203 (hazardous waste), Rule 204 (exclusion), Rule 205 (CESQG), Rule 206 (recyclable material), Rule 228 (universal waste), etc. and include any relevant documentation substantiating the exclusion applicability in your waste characterization record, then advance to question 5 to determine what waste regulations apply to the waste.

Liquid Industrial Waste Review

5. Does the waste pass through the paint filter (liquids break through the filter) using Test Method 9095 under SW-846 (e.g. the waste "fails" the paint filter test and liquids break through the filter)?
If Yes: Manage as a liquid industrial waste to meet the applicable Part 121 requirements.

Liquid Industrial Waste Exclusion Review

Do any exclusions or exemptions apply?

If yes: Specify the exclusion found in the Section 12101(n) (the definition of liquid industrial waste) or Section 12102a (materials not specified as liquid industrial waste), then advance to question 6.

Solid Waste Exclusion Review

6. Is the material specifically excluded from the definition of solid waste? See Part 115, Section 11506(1).
7. Is the material an inert material as defined in Part 115? See Part 115, Section 11504(2).
8. Is the material a recyclable material under Part 115? See Part 115, Section 11505(1) and (9), and 11506(6).
9. Has the material been granted an exclusion from Part 115? See Part 115, Rule 118a or former Part 115 Rules 113 through 118.
10. Is the material a beneficial use by-product as defined under Part 115? See Part 115, Sections 11502(8), 11551, 11551a, 11552, and 11553?
11. Is the material a source separated diverted waste under Part 115? See Part 115, Section 11503(6) and 11521b.
12. Is the material a low-hazard industrial waste under Part 115? See Section 11553(7).

If analytical data exists, consider whether the process generating the waste changed since the analysis was conducted. Also consider instituting measures to ensure environmental staff is informed by operations and purchasing staff in advance of making any changes. This will allow for the waste to be evaluated prior to waste origination and the waste implications to be considered before the change. Also consider supplementing the characterization records with periodic analysis, even if process and materials are not known to have changed. This will help confirm continued proper management of the waste and that a change was not overlooked.

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Waste Characterization Record

Completed by:

Completion date:

Waste description:

Waste source:

Waste type:

Waste codes:

Waste sample details including date sampled, location(s) sampled, collection procedure, analysis method, etc.):

Product name for SDS considered:

Subpart BB or CC applicability:

LDR underlying hazardous constituents:

Listed Review

1. Is this an unused raw material that is commercial chemical product listed in Part 111 Table 205a, 205b, or 205c (P or U listed)?
2. Does the waste contain spent solvents that meets the listing in Table 203a or is the waste a wastewater treatment sludge meeting the listing in Table 203a (F listed)?
3. Does the process generating the waste make the waste a hazardous waste, by definition because the process waste is listed in Part 111 Table 204a (K listed)?

Listed Waste Exclusion Review - List any exclusion relied upon to exclude waste from hazardous waste regulation (e.g. continued use).

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Waste Characterization Record

Characteristic Review

4. Does the waste exhibit a characteristic that makes it a characteristic hazardous waste?

Ignitable

Toxic/Acutely Toxic

Corrosive

Reactive

Characteristic Waste Exclusion Review - List any exclusion relied upon to exclude waste from full hazardous waste regulation (e.g. CESQG, universal waste, scrap metal, recycled ignitable rags, etc.)

Liquid Industrial Waste Review

5. Does the waste pass through the paint filter (liquids break through the filter) using Test Method 9095 under SW-846 (e.g. the waste "fails" the paint filter test and liquids break through the filter)?

Liquid Industrial Waste Exclusion Review - List any exclusion relied upon to exclude waste from liquid industrial waste regulation (e.g. off-specification fuel direct shipped for re-refining as fuel, vegetable or animal fat, CESQG, universal waste, scrap metal, recycled ignitable rags, etc.)

Solid Waste Review

6. Is the material excluded from the definition of solid waste?

7. Is the material an inert material?

8. Is the material a recyclable material?

9. Has the material been granted an exclusion from Part 115?

10. Is the material a beneficial use byproduct?

11. Is the material a source separated diverted waste?

12. Is the material a low-hazard industrial waste under Part 115?

Attach all supporting documents (lab results, SDS's, calculations, etc.)

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Waste Characterization Examples

Example 1

Unleaded gas contaminated with 10% water and solids removed from tanks in preparation for an underground storage tank removal ○ ○ ○

Listed Review

1. Is this an unused raw material? **YES**
If Yes: Is there a SDS available? **YES**
If Yes: Is material a commercial chemical product listed in Part 111 Table 205a, 205b, or 205c (P or U listed)? **NO**
2. Does the waste contain spent solvents or is it a wastewater treatment waste not discharged directly to the wastewater treatment plant pursuant to a permit issued by the treatment authority? **NO**
3. Does the process generating the waste make the waste a hazardous waste, by definition because the process waste is listed in Part 111 Table 204a (K listed)? **NO**

Point of generation is upon removal from the tank. This is when it is generated and first becomes subject to regulation.

Listed Waste Exclusion Review

- **SKIP BECAUSE WASTE IS NOT A LISTED HAZARDOUS WASTE**

Characteristic Review

4. Does the waste exhibit a characteristic that makes it a characteristic hazardous waste?
 - ✓ Ignitable – **YES, WASTE IS D001**
 - ✓ Toxic – **YES for BENZENE (CAS NO. 71-43-2), WASTE IS D018**
 - ✓ Corrosive – **NO**
 - ✓ Reactive – **NO**

Prove via testing or knowledge that gas destined for disposal is not ignitable or toxic; otherwise manage it as a D001 and D018 hazardous waste.

Characteristic Waste Exclusion Review

YES – Commercial chemical products (CCP) when recycled and not speculatively accumulated are not a waste pursuant to Rule 202 (1)(b)(iv). See speculative accumulation definition in Part 1 of Part 111 rules. At least 75% of the material must be recycled and re-refined then marketed or burned as fuel meeting combustor fuel specifications in an air permit or FDA fuel standards within 1 year.

- **RECYCLED FUEL IS NOT A WASTE** under Part 111, **ADVANCE TO STEP 5**

Other Waste Regulations Review (Liquid Industrial Waste or Solid Waste)

5. Does the waste pass the paint filter test (e.g. is solid)?
NO: WASTE IS LIQUID INDUSTRIAL WASTE, manage to meet the liquid industrial waste generator requirements.

See Part 121, Section 12102a for exclusions from being a liquid industrial waste when transmix or contaminated fuel is direct shipped for re-refining and use as a fuel.

LDR Review

If gas was generated by a SQG or LQG and shipped for disposal, then the LDRs apply. An LDR notification is required and the UHCs is **BENZENE** per 40 CFR 268.40 which points to 40 CFR 268.48.

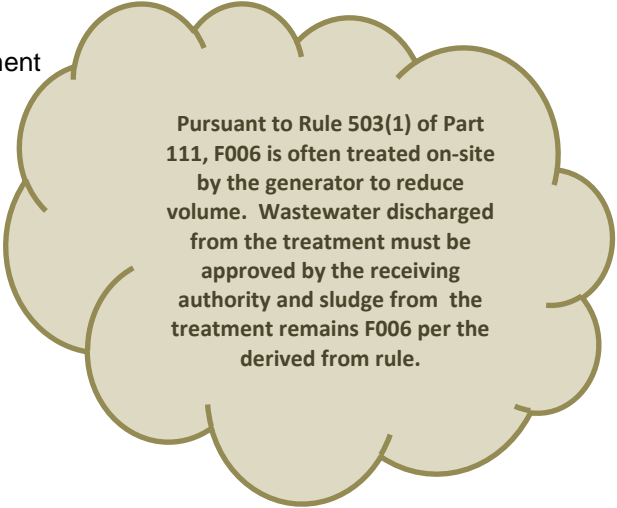
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Example 2

Wastewater treatment sludge with approximately 30% solids vacuumed from a floor drain adjacent to a non-cyanide chrome and zinc electroplating line

Listed Review

1. Is this an unused raw material? **NO**
If Yes: Is there a SDS available? **NA**
If Yes: Is material a commercial chemical product listed in Part 111 Table 205a, 205b, or 205c (P or U listed)? **NA**
2. Does the waste contain spent solvents or is it a wastewater treatment waste not discharged directly to the wastewater treatment plant pursuant to a permit issued by the treatment authority (F listed)?
YES, WASTE IS F006
3. Does the process generating the waste make the waste a hazardous waste, by definition because the process waste is listed in Part 111 Table 204a (K listed)? **NO**



Pursuant to Rule 503(1) of Part 111, F006 is often treated on-site by the generator to reduce volume. Wastewater discharged from the treatment must be approved by the receiving authority and sludge from the treatment remains F006 per the derived from rule.

Listed Waste Exclusion Review

Do any exclusions or exemptions apply? **NO**

Characteristic Review

4. Does the waste exhibit a characteristic that makes it a characteristic hazardous waste?
 - ✓ Ignitable – **NO**
 - ✓ Toxic – **YES for CHROMIUM (CAS NO. 7440-47-3), WASTE IS D007**
 - ✓ Corrosive – **NO**
 - ✓ Reactive – **NO**

Characteristic Waste Exclusion Review

NO

Other Waste Regulations Review (Liquid Industrial Waste or Solid Waste)

5. Does the waste pass the paint filter test (e.g. is solid)?
NA, F006/D007 hazardous waste

LDR Implications

F-listed electroplating waste generated by SQGs and LQGs must submit a LDR notification, however there is no UHC as 40 CFR 268.40 provides the treatment limits for F006 hazardous constituents and 40 CFR 268.9 .

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Example 3

Waste rags from a process using a solvent comprised of 7% acetone, 8% MEK, and 85% mineral spirits where the solvent is placed on the rag and used to wipe the manufactured items to remove lint and debris

1. Is this an unused raw material? **NO**
If Yes: Is there a SDS available? **NA**
2. Does the waste contain spent solvents or is it a wastewater treatment waste not discharged directly to the wastewater treatment plant pursuant to a permit issued by the treatment authority (F listed)? **NO**
If YES: Does the solvent or process generating the waste make the waste a hazardous waste, by definition because it is listed in Part 111, Table 203a (F listed)? **NA**
3. Does the process generating the waste make the waste a hazardous waste, by definition because the process waste is listed in Part 111 Table 204a (K listed)? **NO**

Listed Waste Exclusion Review

Do any exclusions or exemptions apply? **SKIP**
because

- **WASTE IS NOT A LISTED HAZARDOUS WASTE**

Characteristic Review

4. Does the waste exhibit a characteristic that makes it a characteristic hazardous waste?
 - ✓ Ignitable – **YES, WASTE IS D001**
 - ✓ Toxic – **YES for MEK (CAS NO. 78-93-3), WASTE IS D035**
 - ✓ Corrosive – **NO**
 - ✓ Reactive – **NO**

Characteristic Waste Exclusion Review

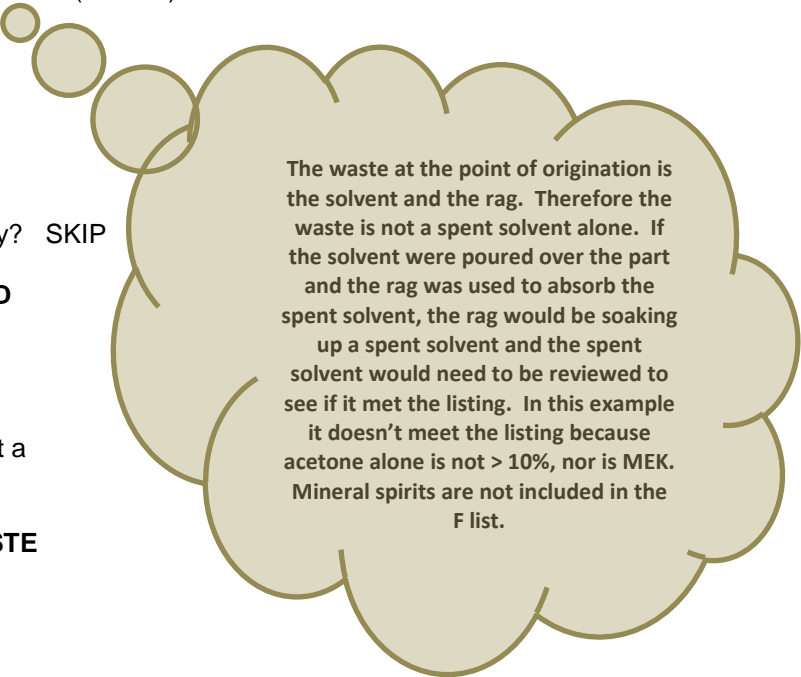
YES – Solvent rags when recycled and reused are excluded from hazardous waste regulation and don't have to be counted when determining generator status pursuant to Rule 206(3)(g); however they cannot contain free liquids and must be managed to meet the on-site satellite accumulation requirements until shipped for laundering. Michigan has not adopted [the new federal disposable wipes rule](#), so that exclusion is not an option in Michigan.

Other Waste Regulations Review (Liquid Industrial Waste or Solid Waste)

5. Does the waste pass the paint filter test (e.g. is solid)?
NA, D001/D035 hazardous waste if disposed (including burned for fuel) and may not have free liquids if recycled pursuant to Part 111 exclusion.

LDR Implications

Rags generated by SQGs and LQGs are subject to the LDR requirements and an LDR notification is required. The UHC is **MEK**.



The waste at the point of origination is the solvent and the rag. Therefore the waste is not a spent solvent alone. If the solvent were poured over the part and the rag was used to absorb the spent solvent, the rag would be soaking up a spent solvent and the spent solvent would need to be reviewed to see if it met the listing. In this example it doesn't meet the listing because acetone alone is not > 10%, nor is MEK. Mineral spirits are not included in the F list.

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Example 4

Soil contaminated with acetone as a result of a release from an underground product tank storing 99.5% acetone

1. Is this an unused raw material? **YES**
If Yes: Is there a SDS available? **YES**
If Yes: Is material a commercial chemical product listed in Part 111 Table 205a, 205b, or 205c (P or U listed)? **YES, WASTE IS U002**
2. Does the waste contain spent solvents or is it a wastewater treatment waste not discharged directly to the wastewater treatment plant pursuant to a permit issued by the treatment authority?
➤ **SKIP BECAUSE WASTE IS ALREADY LISTED**
3. Does the process generating the waste make the waste a hazardous waste, by definition because the process waste is listed in Part 111 Table 204a (K listed)?
➤ **SKIP BECAUSE WASTE IS ALREADY LISTED**

Listed Waste Exclusion Review –

NO – Exclusion for contaminated media relates only to underground storage tank releases of petroleum products (fuel) and the waste cannot be ignitable and must only fail to meet the toxicity characteristics for D018 through D043. only fail Rule 204(2)(l)

Characteristic Review.

Does the waste exhibit a characteristic that makes it a characteristic hazardous waste?

- ✓ Ignitable – **NO**
- ✓ Toxic – **NO**
- ✓ Corrosive – **NO**
- ✓ Reactive – **NO**

Characteristic Waste Exclusion Review

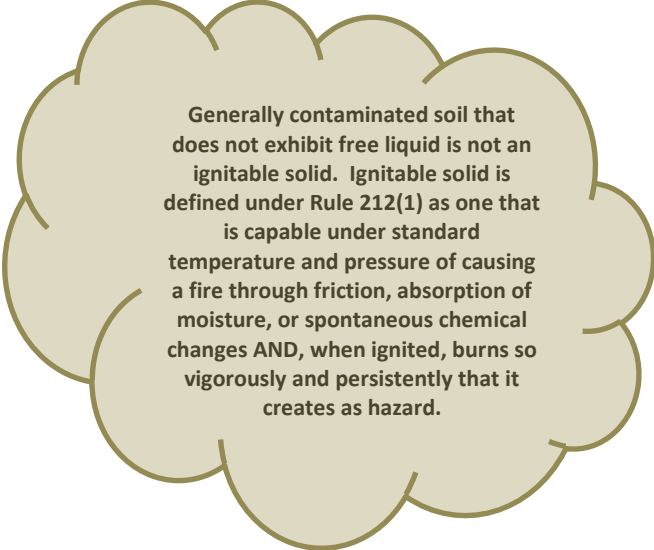
NO as described above

Other Waste Regulations Review (Liquid Industrial Waste or Solid Waste)

5. Does the waste pass the paint filter test (e.g. is solid)?
NA, U002 hazardous waste

LDR Implications

LDR notification is required of sites generating SQG and LQG volumes, however there is no UHC.



Generally contaminated soil that does not exhibit free liquid is not an ignitable solid. Ignitable solid is defined under Rule 212(1) as one that is capable under standard temperature and pressure of causing a fire through friction, absorption of moisture, or spontaneous chemical changes AND, when ignited, burns so vigorously and persistently that it creates as hazard.