

Waste Characterization Workshop

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Workshop Reference Book

- § **HW regulations, including**
 - 2008 40 CFR 261.2, Table 1 & Part 115 inert rule
- § **Characterization record, steps, and Q & A**
- § **Interpretive letters/memos**
- § **LDR resources**
- § **Sampling resources**
- § **Subpart CC resources**
- § **LIW regulations and resources**
- § **Online resources**

Primary Workshop Goal

Provide practical tools and regulatory background to assist in performing site specific waste characterizations consistent with Michigan's regulations

Workshop Agenda

Hazardous waste defined, exclusions, & listed/characteristic criteria

LDRs, UHCs, sampling & analysis

Liquid industrial waste & used oil defined, exclusions, criteria

Example exercises

Luncheon & waste program updates

DEQ Highlights

Generator:

- § responsible for characterization
- § most familiar with waste and changes
- § must coordinate with disposal facility

Michigan:

- § Implements Part 111 regulations, not RCRA
- § Not adopted EPA DSW changes establishing RCRA hazardous secondary materials
- § Not adopted EPA disposable wipes rule

Today's Presenters

Kevin Berghuis
Drug and Laboratory Disposal

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Terra Contracting Services



Waste Characterization Workshop

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The Common Question

“Is my waste a hazardous waste regulated under Part 111 of Act 451 & the corresponding Resource Conservation and Recovery Act (RCRA) provisions?”

Hazardous Waste Determination

Rule 302 (40 CFR 262.11)

“A person who generates a waste as defined in R 299.9202 shall determine if that waste is a hazardous waste...”

How do you determine if your waste is a hazardous waste?

Hazardous Waste Determination

Answer the following:

§ **Is the waste **excluded** (full or partial)?**

See Rule 204 (40 CFR 261.4) and Rules 228, 206, 231, 831, etc.)?

§ **Is the waste **listed**?**

See Rules 213 and 214 (40 CFR 261.30)?

§ **Is the waste a **characteristic** waste?**

See Rule 212 (40 CFR 261.20)

What is a Solid Waste?

Rule 202 (40 CFR 261.2)

“A solid waste is any discarded material that is not excluded under Rule 204 (40 CFR 261.4(a))...”

A solid waste includes solids, liquids, semisolids, or gaseous materials

What Is a Discarded Material?

Any material which is:

- § **Abandoned**
- § **Recycled**
- § **Considered inherently waste-like**
- § **A military munition**

Abandoned Material

Materials are abandoned by being:

§ **Disposed; or**

§ **Burned or incinerated; or**

§ **Accumulated, stored, or treated before being disposed of, burned, or incinerated**

Point of Origination

When waste first becomes subject to waste regulation

Per Rule 203(2) this is when:

- § **It first meets a listing in Rule 213 or 214 OR**
- § **It is mixed with listed hazardous waste or severely toxic hazardous waste OR**
- § **It first exhibits a characteristic in Rule 212**

Hazardous Waste Determination

Answer the following:

§ Is the waste **excluded** (full or partial)?

See Rule 204, 205, and 207 (40 CFR 261.4) and Rules 228, 206, 231, 831, etc.)?

§ Is the waste **listed**?

See Rules 213 and 214 (40 CFR 261.30)?

§ Is the waste a **characteristic** waste?

See Rule 212 (40 CFR 261.20)

Is the Waste Excluded?

Three possible ways:

- § It is excluded from the definition of a *solid waste*
- § It is excluded from the definition of a *hazardous waste*
- § It is partially excluded and must be managed to meet a special rule (e.g. universal waste, recyclable material, CRT Rule or precious metals)

Solid Waste Exclusions

Rule 204(1) (40 CFR 261.4(a))

More than two dozen exclusions

Common examples:

- § **Domestic sewage**
- § **Shredded circuit boards**

More Solid Waste Exclusions

- § **POTW approved discharges (Rule 204(1)(b))**
- § **Secondary materials reclaimed and returned to original process (Rule 204(1)(h))**
- § **Scrap Metal (Rule 204(1)(p))**
- § **Shredded circuit boards (Rule 204(1)(a))**
- § **Comparable fuels (Rule 204(1)(w))**
- § **CRTs (Rule 204(1)(z))**

Hazardous Waste Exclusions

Rule 204(2) & (3) (40 CFR 261.4(b))

More than one dozen exclusions

Examples:

- § **Household waste**
- § **Agricultural waste – growing of crops and raising of livestock**

More Hazardous Waste Exclusions

- § **Household waste, including sanitary waste from hotels , motels, bunkhouse, campgrounds, etc. (Rule 204(2)(a))**
- § **Agricultural waste (Rule 204(2)(b))**
- § **Mining overburden (Rule 204(2)(c))**
- § **Petroleum contaminated media from an approved UST clean-up (Rule 204(2)(I))**
- § **Materials in product tank (Rule 204(3)(a))**

Is Waste a Listed Hazardous Waste?

Rules 213 and 214 (40 CFR 261.30)

Listings are a narrative description of a specific type of waste

Only the knowledge of the process that generated the waste is needed to determine if the waste is listed

EPA Criteria for Listing

Criteria include:

- § Toxic listed wastes
- § Acutely hazardous wastes
- § Characteristic wastes

Listed Hazardous Waste Hazard Codes

Toxic Waste = (T)

Acute Hazardous Waste = (H)

Ignitable Waste = (I)

Corrosive Waste = (C)

Reactive Waste = (R)

Toxicity Characteristic Waste = (E)

Four Types of Listed Hazardous Waste Codes

“F-Listed” Codes

“K-Listed” Codes

“P-Listed” Codes

“U-Listed” Codes

“F-Listed” Waste Codes

Rule 213(1)(a) Table 203a (40 CFR 261.31)

Includes hazardous wastes from non-specific sources

Hazardous waste codes F001 – F039

Seven manufacturing or industrial processes create the categories of F-Listed wastes

“F-Listed” Categories

Spent solvent wastes (F001 - F005)

Electroplating and other metal finishing operations (F006 - F012 and F019)

Dioxin-bearing waste (F020 – F023 and F026 – F028)

“F-Listed” Categories

Wastes from the production of certain chlorinated aliphatic hydrocarbons (F024 and F025)

Wastes from wood preserving (F032, F034, and F035)

“F-Listed” Categories

Petroleum refinery wastewater treatment sludges (F037 and F038)

Multisource leachate (F039)

Spent Solvent Wastes

Includes 31 specific halogenated and nonhalogenated organic solvents

The organic solvent must be spent and must have been used for its “solvent properties”

Includes the still bottoms from the recovery of these spent solvents

Spent Solvent Wastes

F001 - Spent halogenated solvents used in degreasing

F002 - Spent halogenated solvents

F003 to F005 - Spent nonhalogenated solvents

Spent Solvent Wastes

**F001, F002, F004, and F005
Spent Solvents include...**

**Mixtures and blends containing,
before use, a total of 10% or more
by volume of one or more of any of
the solvents listed in F001, F002,
F004, or F005.**

Spent Solvent Wastes

F003 spent solvents include...

- § Mixtures and blends containing, before use, only the solvents listed in F003.
- § Mixtures and blends containing, before use, one or more of the solvents listed in F003 and a total of 10% or more by volume of one or more of any of the solvents listed in F001, F002, F004, and F005.

Spent Solvent Wastes

Key information and knowledge

- § **“Spent” and “solvent properties”**
- § **Names of the solvents**
- § **Before use concentration for each of the Solvents**
- § **10% or more concentration**
- § **Aggregate of one or more of the solvents**

Example #1

Before use concentration mixture:

- § 5% Methylene Chloride (F002)
- § 3% Nitrobenzene (F004)
- § 2% Toluene (F005)
- § 90% Water

Spent solvent is F002, F004, and F005

Example #2

Before-use concentration mixture:

- § 5% Tetrachloroethylene (F002)
- § 3% Acetone (F003)
- § 7% Isobutanol (F005)
- § 85% Water

Spent Solvent is F002, F003, and F005

“K-Listed” Waste Codes

Rule 213(1)(b), Table 204a (40 CFR 261.32)

Includes hazardous wastes from specific sources

More than 100 K-Listed waste codes

Detailed descriptions of wastes generated from specific industries

“K-Listed” Waste Codes

Two primary questions to ask:

Is the facility listed as one of the industries that generate K-Listed wastes?

Does the waste match one of the specific K-List waste descriptions?

“K-Listed” Waste Codes

Thirteen industries generate K-Listed wastes:

- § Wood Preservation
- § Inorganic Pigments
- § Organic Chemicals
- § Inorganic Chemicals
- § Pesticides
- § Explosives
- § Petroleum Refining
- § Iron and Steel
- § Primary Aluminum
- § Secondary Lead
- § Veterinary Pharmaceuticals
- § Ink Formulation
- § Coking

“K-Listed” Waste Codes

K005 - Wastewater treatment sludge from the production of chrome green pigments

K101 - Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds

Discarded Commercial Chemical Products

Rule 214, Tables 205a, 205b, 205c
(40 CFR 261.33)

Includes discarded commercial chemical products, off-specification products, container and spill residues

Listed product not meeting customer specifications or contaminated with another material, requiring disposal

Discarded Commercial Chemical Products

Designated as hazardous wastes when discarded or intended to be discarded

Includes commercial chemicals with listed material as sole “active” ingredient, not all materials containing listed commercial chemical product

Discarded Commercial Chemical Products

**Commercial chemical product or
manufacturing chemical intermediate**

Commercially pure grade of chemical

Technical grade of chemical

Sole active ingredient

Discarded Commercial Chemical Products

Three lists of generic chemical names:

§ Table 205a (40 CFR 261.33(e))

P-Listed waste - ALL acutely hazardous!

§ Tables 205 b (federal) (40 CFR 261.33(f))

U-Listed wastes (federal)

§ Table 205c (state)

U-Listed wastes (Michigan only)

Match CAS to ensure accurate match

Discarded Commercial Chemical Products

Includes all commercial chemical products and manufacturing chemical intermediates having one of the generic chemical names

Includes off-specification products

Includes residues and spill cleanup debris

Discarded Commercial Chemical Products

The P-listing and U-Listings only applies to unused and discarded commercial chemical products

Characteristic Hazardous Waste

Wastes that exhibit properties that can cause death or injury to humans or lead to ecological damage

Characteristics are detectable using a standardized test method or by applying general knowledge of the waste properties

Four Characteristics

- § **Ignitability (D001)**
- § **Corrosivity (D002)**
- § **Reactivity (D003)**
- § **Toxicity (D004 – D043)**

Plus Michigan's Severely Toxic (001S – 007S)

Ignitability D001 Characteristic

Rule 212(1)(a) (40 CFR 261.21)

Wastes that can readily catch fire and sustain combustion

Includes both liquids and non-liquids

Four Properties of Ignitability

1. **Liquids, other than an aqueous solution containing less than 24% alcohol by volume, with a flash point $<140^{\circ}$ F**
 - § **Aqueous: $\geq 50\%$ water by weight**
 - § **Alcohol exclusion: $< 24\%$ by volume**
 - § **Flash point test: ASTM standard**

Four Properties of Ignitability

2. **Non-Liquids that can spontaneously catch fire and burn vigorously and persistently**
3. **Ignitable compressed gases (DOT regulations)**
4. **Oxidizers (DOT regulations)**

Corrosivity D002 Characteristic

Rule 212(2) (40 CFR 261.22)

Wastes that are highly acidic or highly basic

Wastes that can readily corrode or dissolve flesh, metal, or other materials

Two Properties of Corrosivity

Aqueous waste with $\text{pH} \leq 2$ or ≥ 12.5

Liquids that corrode steel at a rate of greater than 0.25 inches per year

Test if waste contains sufficient water to perform pH test

Characteristic of corrosivity does not apply to a waste that is physically solid

Reactivity D003 Characteristic

Rule 212(3) (40 CFR 261.23)

Wastes that readily explode or undergo violent reactions or react to release toxic gases or fumes

Narrative criteria to define a reactive waste

Eight Properties of Reactivity

1. **Normally unstable and undergoes violent change without detonating**
2. **Reacts violently with water**
3. **Forms potentially explosive mixtures with water**

Eight Properties of Reactivity

4. Produces toxic gases, vapors, or fumes when mixed with water
5. Cyanide- or Sulfide-bearing waste that releases toxic gases when exposed to pH conditions between 2 and 12.5
6. Is a forbidden DOT explosive

Eight Properties of Reactivity

7. Capable of detonation or explosive reaction if subjected to a strong initiating force or if heated under confinement
8. Is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure

Toxicity Characteristic

Rule 212(4) (40 CFR 261.24)

D004 – D043 Waste Codes

EPA identified 40 toxic compounds and elements known to have leached into the groundwater after being disposed of in landfills

Toxicity Characteristic

Eight elemental metals (D004-D011)

**Eight pesticides and herbicides
(D012-D017, D020, and D031)**

**Twenty-four nonhalogenated and
halogenated organic compounds
(D018, D019, D021-D030, and D032-
D043)**

Toxicity Characteristic

EPA designed a laboratory procedure to replicate the leaching process that occurs when wastes are buried in a landfill

EPA established threshold regulatory levels for each toxic compound and element

EPA Designated Laboratory Procedure

Toxicity Characteristic Leaching Procedure (TCLP)

- § Reduce the size of the waste by grinding
- § Add an acid to the grindings to create a leachate
- § Analyze the leachate and determine the concentration levels
- § Evaluate the concentration levels against the regulatory levels

20 Times Rule

TCLP allows use of total constituent analysis in lieu of TCLP for solids

For solid sample, divide total results by 20 and compare to TCLP limit in Table 201a

For semi-solid, see EPA formula in reference book

Mixture Rule

Rule 203(1)(c) (40 CFR 261.3(a)(2)(iv))

Any mixture consisting of a listed hazardous waste (F-, K-, U-, and P-Listed) and any other solid waste is still considered to be hazardous waste

Derived From Rule

Rule 203(3) (40 CFR 261.3(c)(2)(i))

Any waste generated from the treatment, storage, or disposal of a hazardous waste is also a hazardous waste

Land Disposal Restrictions (LDR)

Rule 311 (40 CFR 268)

**Requires treatment of hazardous
waste prior to disposal**

**Minimize the long-term threat posed
to human health and the environment**

Responsibilities

Identify the hazardous waste codes for each waste

Determine the treatment standards for each waste code

Identify any underlying hazardous constituents (UHC)

Review Hazardous Waste Codes

Hazardous only due to listed waste codes (F, K, P, and U)

Hazardous only due to characteristic waste Codes (D)

Hazardous due to both listed and characteristic waste codes

Determine the LDR Treatment Standards

Treatment standards for hazardous wastes in 40 CFR 268.40 table

Listed by hazardous waste code

Standards for wastewaters and nonwastewaters forms of each hazardous waste

Wastewater vs Nonwastewater

Wastewater - Waste containing <1% by weight total organic carbon (TOC) and <1% by weight of total suspended solids (TSS)

Nonwastewater – Aren't wastewaters or waste containing $\geq 1\%$ by weight total organic carbon (TOC) and $\geq 1\%$ by weight of total suspended solids (TSS)

What Are the Treatment Standards?

Three types of treatment standards:

- § **Total Concentration (mg/kg)**
- § **TCLP Results (mg/l TCLP)**
- § **Technology Standards (letter codes)**

Technology Standards

40 CFR 268.42 provides treatment code key

Treatment Standards that require a specific treatment technology

Expressed as a five-letter code like:

- § **INCIN = Incineration**
- § **NEUTR = Neutralization**

Underlying Hazardous Constituents (UHCs)

Listed in the universal treatment standards in 40 CFR 268.48 table

Applicable to all wastes that carry a characteristic hazardous waste code (D-Codes)

The UHCs are not what causes the waste to exhibit a characteristic

Definition of UHCs

40 CFR 268.2(i)

Any constituent listed in the Universal Treatment Standard table found in 40 CFR 268.48 which can reasonably be expected to be present at the point of generation of the hazardous waste at concentrations above the constituent specific treatment standards

Questions to Ask About Waste with UHCs

Does the waste carry a characteristic hazardous waste code (D-Code)?

Does the treatment standard for the D-Code at the 40 CFR 268.40 table specify “and meet 268.48 standards”?

Are the concentrations of the UHCs “reasonably expected” to be above the treated standard levels?

LDR Notifications

40 CFR 268.7

LQGs and SQGs must determine if the waste requires treatment before land disposal

LQGs and SQGs must provide notice of LDR information for the initial waste shipment to each off-site TSD

LDR Notifications

LDR notification must include:

- § Manifest document number
- § EPA hazardous waste numbers
- § Treatment standards

There is no standard EPA notification form for the LDR notice

Hazardous Waste Determination

Who is responsible?

**Completion of waste surveys and
waste characterizations**

**Analytical testing versus generator
knowledge**

Representative Waste Sampling

What is a “Representative Sample?”

40 CFR 260.10 – EPA definitions

“A sample of a universe or whole which can be expected to exhibit the average properties of the universe or whole”

How to Obtain a Representative Sample

Use EPA-approved sampling protocols

40 CFR 261, Appendix I

Methods and equipment vary based on the form and consistency of the waste

ASTM standards

What is Being Sampled?

Extremely viscous liquids

Crushed or powdered materials

Containerized liquid waste

**Liquid wastes in pits, ponds, lagoons,
and similar reservoirs**

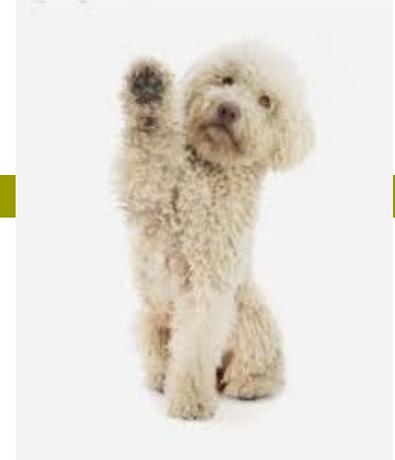
Subpart CC

Generally requires sampling to verify LQGs are < 500 ppmv and not subject

Only simple processes using 1 or 2 volatile organic products in consistent ratios can use calculations to determine ppmv

See reference book for calculations and testing details

Questions?



Waste Characterization Workshop

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Technical Definition of Liquid Industrial Waste

Per Part 121, MCL 324.12101(n)...

"Liquid industrial waste" means any brine, by-duct, industrial wastewater, leachate, off-specification commercial chemical product, sludge, sanitary sewer clean-out residue, storm sewer clean-out residue, grease trap clean-out residue, spill residue, used oil, or other liquid waste that is produced by, is incident to, or results from industrial, commercial, or governmental activity or any other activity or enterprise determined to be liquid by **method 9095 (paint filter liquids test)** ...

Technical Definition of Liquid Industrial Waste

Per Part 121, MCL 324.12101(n)...

Liquid industrial waste does not include any of the following:

- a) Hazardous waste regulated and required to be manifested under part 111**
- b) Septage waste regulated under part 117**
- c) Medical waste regulated under part 138 of the public health code...**
- d) A discharge to the waters of the state in accordance with a permit, order, or rule under part 31**
- e) A liquid generated by a household**
- f) A liquid regulated under 1982 PA 239, MCL 287.651 to 287.683 (vegetable and animal fats managed under Bodies of Dead Animals Act)**

Technical Definition of Liquid Industrial Waste

Per Part 121, MCL 324.12102a...

The following materials are not liquid industrial wastes when managed as specified:

- a) A material that is used or reused as an effective substitute...**
- b) A used oil that is directly burned to recover energy or used to produce a fuel if all of the following requirements are met...**
- c) A liquid fully contained inside a manufactured article, until the liquid is removed or the manufactured equipment is discarded...**
- f) A liquid vegetable or animal fat oil that is transported directly to a producer of biofuels for the purpose of converting the oil to biofuel.**
- g) An off-specification fuel, including a gasoline blendstock....**

Simple Definition of Liquid Industrial Waste

Non-hazardous waste that contains free liquids, is a liquid industrial waste

Used oils

Used coolants/cutting fluids

Grease traps

Catch basin waste

Used weak acidic or caustic cleaners

Floor drains and sump waste

Part 111 exempted liquid hazardous waste



Liquid Industrial Waste Statute

Part 121 of Act 451...

Go to www.michigan.gov/deqwaste,
“Hazardous and Liquid Industrial
Waste Hazardous,” “Liquid Industrial
Waste Management” (center of page)

See “Statutes and Rules” (near
bottom of page), select “Laws and
Rules,” then Part 121, Liquid
Industrial Waste” (scroll down)

Why Have a LIW Statute?

Michigan is one of a few states that have a separate law for non-hazardous liquid wastes

Most states regulate LIW under their solid waste regulations

Michigan's LIW law

- § **Provides better tracking of waste**
- § **Requires use of permitted/registered LIW transporter**
- § **Has goal of protecting our fresh water, the Great Lakes**

Why Have a LIW Statute?

Per a well scholared waste inspector...

“The state of Michigan lies completely within the watershed containing 20% of the world's fresh water.”

Hint: She's works out of the Kalamazoo District Office!



CESQG

Exempt from certain hazardous waste regulations

Not exempt from LIW statute

- § **Waste must still be managed by a licensed LIW designated facility**
- § **LIW must be hauled by a permitted and registered LIW transporter with spill insurance**

CESQG/LIW generator - most residential dry cleaners

Used Oil - Topics

What is a Used Oil?

Oil Testing

Rebuttable Presumption

Chlorinated Paraffins

Specification Used Oil

PCB's

Waste Segregation

Transportation of Mixed Loads

**Used oil has
management
standards under
both Part 121 and
the Part 111 rules
(40 CFR 279)**

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

Under Part 111, used oil is “any oil which has been refined from crude oil, or any synthetic oil, which has been used and as a result of use, is contaminated with physical or chemical impurities” and includes:

- § Used motor oils
- § Used hydraulic oils
- § Used transmission & brake fluids
- § All synthetic oils
- § Spent quench oils
- § Spent gear oils
- § Non-PCB transformer oils
- § Oil-water mixtures if sufficient oil exists for recycling

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

Under Part 111, used oil does NOT include petroleum based products that were not designed to function as lubricating agents or other protective applications

Under Part 111, used oil does NOT include:

- § Fuels (Gasoline, Diesel, Fuel Oils)
- § PCB oils (subject to TSCA)
- § Mineral spirits
- § Certain test/calibration fluids
- § Animal fat or vegetable based oil

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

Used oil is subject to waste regulation under Parts 111, 121, and 167 of the Michigan Natural Resource and Environmental Protection Act

Part 111 and 121 establish hazardous waste and liquid industrial management standards for the used oil

Part 167 requires that the used oil be recycled

Used Oil - Common Tests

Total Halogens - Used for testing used oils for chlorine, fluorine, bromine, etc. to determine if a “presumed” hazardous waste

Used oil test for halogens using SW-846 or equipment like “Chlor-D-Tect”

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

Used oil generally does not include used oil containing > 1000 PPM halogens

Used oil with > 1000 PPM halogens is a presumed listed hazardous waste unless sufficient characterization data can be presented to “rebut the presumption” that the halogens are present from mixing used oil with a listed hazardous waste (chlorinated solvents)

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

“Rebutting the presumption” is complicated for transporters & processors accepting used oil from multiple sources and most will not accept used oil > 1000 PPM halogens

Total halogens are usually tested using SW 846 or using on-site testing equipment like “Chlor-D-Tect”

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

If used oil contains > 1000 PPM halogens, it is presumed to have been mixed with listed halogenated hazardous waste unless rebutted

Can also use knowledge of waste to characterize, if feasible, but adequate documentation is required

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

Transporter usually tests oil prior to pick-up to verify LIW regulatory status

Generators should request and maintain copies of relevant test on file

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

If > 1000 PPM halogens present, additional, costly testing is required to “rebut” whether used oil was mixed with hazardous waste:

Analyze for all halogenated Appendix VIII constituent

If > 100 PPM used oil fails and must be managed as a hazardous waste

CONCLUSION: Do not mix used oil with other wastes to facilitate required recycling and avoid being required to manage the mixture as a hazardous waste

Rebuttable Presumption

EPA/DEQ has discretion in determining what concentration is a “significant concentration” prompting rebuttal

RCRA does not contain regulatory threshold for each halogenated hazardous constituent likely in used oil

Generally look for concentrations less than 100 ppm for common hazardous halogenated constituents per FR preamble

Used Oil

Part 111, Rules 109(p), 203(1)(e), and 809)

Chlorinated Paraffins:

Typically have a total organic halogen content of 4,000 ppm or more but can be recycled through a tolling agreement per Part 111, Rule 203(1)(e)(i)

Not as valuable as non-chlorinated used oil

Specification Used Oil

Specification Used Oil:

§ Heating Value	17,000 BTU/Lb.
§ Arsenic	< 5.0 ppm
§ Cadmium	<2.0 ppm
§ Chromium	<10 ppm
§ Lead	<100 ppm
§ Sulfur	< 1.0 %, Typical
§ Total Halogens	<1,000 ppm

PCB's

Polychlorinated biphenyls must be < 1 ppm for specification used oil blending use

1 ppm is detection limit for PCBs in oil using SW-846 Method 8082

Oil from certain sources or areas require verification analysis

Waste Segregation

Any LIW mixed with hazardous waste is a hazardous waste

Mixing high chlorinated oil with low chlorinated oil

- § **Reduces recycle value**
- § **Limits the potential market for the used oil**
- § **Increased the likelihood of expanded costly lab requirements**

Transportation of Mixed Loads

Commingling of used oil is common (e.g. route trucks picking up crankcase oil)

Mixing of bulk compatible LIW is authorized

Mixing bulk may increase treatment or disposal costs, even for compatible wastes as disposal sites may decline/reject the load if:

- § Advance approval not obtained
- § Cannot invoice separately based on weight

Notification

Site (EPA)

Identification (ID) Number



DEQ Site ID Number

Rule 303 and MCL 324.12103(1)(b)

Requires submittal of completed Site ID Form (EQP 5150)

<p>Required under authority of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Failure to submit this information may result in civil or criminal penalties.</p>	<p>MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY Waste and Hazardous Materials Division</p> <p>SITE IDENTIFICATION</p>			
<p>I. The form is being submitted</p> <p>CHECK CORRECT BOX(ES)</p> <p>If submitting a subsequent notification you can contact the MDEQ-WHMD District or Lansing office for a pre-populated form. For locations and phone numbers go to www.michigan.gov/deq.</p>	<p><input type="checkbox"/> as initial notification: to notify as a new site or new owner for the site: Mail this form and the user charge fee with either a receipt from paying the \$50.00 fee on-line using a Master Card, VISA, or Discover Card (https://www.thepayplace.com/mi/deq/siteid) or by check made payable to the State of Michigan. <u>Mail to MDEQ Revenue Office - HWCU, PO Box 30657, Lansing, MI 48909-8157</u> OR</p> <p><input type="checkbox"/> as subsequent notification: to change, update, or verify site information for an existing owner of a site with a previously issued site id number: <u>Mail directly to WHMD-MDEQ at WHMD-MDEQ, Notification Unit, PO Box 30241, Lansing, MI 48909-7741</u> if a fee is not required. Otherwise submit to MDEQ Revenue Office (see above).</p> <p>AND ANY OF THE FOLLOWING</p> <p><input type="checkbox"/> as a component of a Hazardous Waste Permit Part A (submit to WHMD-MDEQ)</p> <p><input type="checkbox"/> as a component of the Hazardous Waste (biennial) Report (submit to WHMD-MDEQ)</p>			
<p>II. Site's ID Number</p>	<p>A. Site's Identification (ID) Number:</p>			
<p>III. Name of Site</p> <p>TYPE OR PRINT CLEARLY</p>	<p>A. Legal Company Name:</p> <p>B. Site Specific Name (d/b/a):</p>			
<p>IV. NAICS for this Site</p>	<p>A.</p>	<p>B.</p>	<p>C.</p>	<p>D.</p>
<p>V. Site Location Address and Other</p>	<p>Street Address line 1:</p>			

DEQ Site ID Number

Like EPA ID all LIW Generators are required to have a Site ID which is...

Site specific

Issued by DEQ

Same format as EPA ID

Starts with MIK (LIW and HW)

Important to verify notification information is correctly represents site's waste activity

DEQ Site ID Number

Notification notifies DEQ & EPA of:

Site owner/operator

Site contact

Site waste activity

Activity reported includes:

CESQG, SQG, & LQG

LIW generator

Transportation - hazardous waste and/or LIW

Used oil collection & processing

Large quantity universal waste handlers

Treatment, storage, and/or disposal - hazardous waste and/or LIW

LIW Codes

§ Mixed Solvents	007L	§ Storm Sewer Cleanouts	031L
§ Pharmaceutical	014L	§ Sanitary Sewer Cleanout	032L
§ Crank Case Oil	017L	§ X-Ray & Photo Cleaning Solutions	033L
§ Coolants & Water Soluable Oil	019L	§ Water Based Cleaning Solutions	034L
§ Other Oil	021L	§ Car Wash Sludges	035L
§ Brine	022L	§ Grease Trap Wastes	036L
§ Other Wastes	029L		
§ Antifreeze	030L		

LIW Shipping Papers

EPA Form 8700-22 – Uniform Hazardous Waste Manifest

Use hazardous waste codes for manifesting:

- **CESQG exempted hazardous waste**
- **universal waste liquids**
- **Other exempted hazardous waste liquids that require manifesting under Part 121**

LIW Shipping Papers

Use LIW Codes for all other liquids

Note in Box 14 if manifest documents CESQG, universal waste, etc. shipment manifested pursuant to Part 121 to verify the non-hazardous regulatory status

Transporter Requirement

Specific authorizations include:

- § Act 138 permit/registration to transport hazardous waste/liquid industrial waste
- § U.S. DOT Registration - Motor carrier number for hazardous materials transport
- § Site/EPA ID No. – Current notification of hazardous waste/ liquid industrial waste transport/transfer activity or other activity
- § MCS-90 – Verification of adequate spill insurance

Questions?



Example Exercises

Example Exercises

**Refer to Reference Book Section 2
Waste Characterization Questions**

Example 1

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

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

What is the point of origin?

Upon removal from the tank

Is waste an unused raw material (P or U-Lists)?

NO

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

Is waste a spent solvent or wastewater treatment waste (F-list)?

NO

Is the process and waste on the K-list?

NO

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

Is there a listed waste exclusion?

SKIP as waste is not a listed

Does waste exhibit a characteristic?

Ignitable – YES, D001

Toxic - YES, Benzene D018

Corrosive – NO

Reactive - NO

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

Is there a characteristic waste exclusion?

YES - Commercial chemical products being recycled are not a waste under Rule 202

Does the waste pass the paint filter test?

NO – Waste is a LIW

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

Is there a LIW exclusion?

YES – Fuel direct shipped for re-refining for use as fuel is excluded from LIW under Part 121 Section 12102a(i)

LDR Review

Applies to LQG & SQG disposal and UHC is Benzene, per LDR table – See Reference Book and D018

Example 2

**Sludge with approximately
30% solids vacuumed from a
floor drain adjacent to
non-cyanide chrome and zinc
electroplating lines**

**Sludge with approximately 30% solids
vacuumed from a floor drain adjacent to non-
cyanide chrome and zinc electroplating lines**

What is the point of origin?

**Upon removal from the floor drain
tank**

**Is waste an unused raw material (P or
U-Lists)?**

NO

**Sludge with approximately 30% solids
vacuumed from a floor drain adjacent to non-
cyanide chrome and zinc electroplating lines**

**Is waste a spent solvent or wastewater
treatment waste (F-list)?**

YES, F006

Is the process and waste on the K-list?

NO

**Sludge with approximately 30% solids
vacuumed from a floor drain adjacent to non-
cyanide chrome and zinc electroplating lines**

Is there a listed waste exclusion?

**NO, but can treat per Rule 503(1)(i)
to dewater and reduce volume if
permitted by local wastewater
treatment operator to discharge
water**

**Sludge with approximately 30% solids
vacuumed from a floor drain adjacent to non-
cyanide chrome and zinc electroplating lines**

Does waste exhibit characteristic?

Ignitable – NO

Toxic - YES, Chromium D007

Corrosive – NO

Reactive - NO

**Sludge with approximately 30% solids
vacuumed from a floor drain adjacent to non-
cyanide chrome and zinc electroplating lines**

**Skip characteristic exclusion and LIW
since waste is listed**

LDR Review

**NO UHC for LQG and SQG shipments
because F007 treatment applies in
lieu of UHCs for D-code waste**

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

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

What is the point of origin?

When the rag is too soiled to use for intended purpose and is discarded

Is waste an unused raw material (P or U-Lists)?

NO

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

Is waste a spent solvent or wastewater treatment waste (F-list)?

NO – Waste includes the rag and is not a spent solvent alone, listing doesn't apply

Is the process and waste on the K-list?

NO

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

Is there a listed waste exclusion?

SKIP as waste is not a listed

Does waste exhibit a characteristic?

Ignitable – YES, D001

Toxic- YES, MEK D035

Corrosive – NO

Reactive - NO

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

Is there a characteristic waste exclusion?

YES – Commercially launder and reuse rag per Rule 206(3)(g) if no free liquids

SKIP LIW review because characteristic hazardous waste

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

LDR Review

UHC for LQG & SQG disposing of rags is MEK which is a D-code waste requiring treatment to meet 268.48 – **See Reference Book and D018**

Example 4

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

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

What is the point of origin?

Upon managing the soil or when the contaminated soil is picked up and moved

Is waste an unused raw material (P or U-Lists)?

YES, it is nearly pure acetone, a listed U002 spill, mixed with media and mixture rule applies

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

**Is waste a spent solvent or wastewater
treatment waste (F-list)?**

NO

Is the process and waste on the K-list?

NO

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

Is there a listed waste exclusion?

**NO – contaminated media is only for
petroleum UST releases for D018
through D043**

Does waste exhibit a characteristic?

Ignitable – NO

Toxic- NO

Corrosive – NO

Reactive - NO

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

Is there a characteristic waste exclusion?

NO

Does the waste pass the paint filter test?

SKIP LIW review as waste is haz waste

LDR Review

**LDR notification is required of LQG &
SQG however, there is no UHC**

Questions?

