Avoiding the Most Common Mistakes in Hazardous Waste Identification

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TH-J5

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CA Hazardous Waste

- California Health and Safety Code
- California Code of Regulations

Haz Waste Determination

1. Is it a waste?
2. Is it excluded?
3. Is it listed?
4. Is it characteristic?

Wastes

Relinquished Materials

- Disposed of
- Burned or incinerated
- Accumulated in lieu of being abandoned
- "Sham recycled"

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Recycled Materials

- Four ** instead of — non-RCRA hazardous wastes
- CCPs that become "retrograde materials" not wastes for 1 year

CA Table with the Asterisks

	Use constituting disposal [§66261.2(d)(1)] (1)	Energy recovery/fuel [§66261.2(d)(2)] (2)	Reclamation [§66261.2(d)(3)] (3)	Speculative accumulation [§66261.2(d)(4)] (4)
Spent materials	*	*	*	*
Sludges (listed in §66261.31 or 66261.32)	*	*	*	*
Sludges exhibiting a characteristic of hazardous waste	*	*	**	*
By-products (listed in §66261.31 or 66261.32)	*	*	*	*
By-products exhibiting a characteristic of hazardous waste	*	*	**	*
Commercial chemical products listed in §66261.33	*	*	**	**

Recycled Materials

- Four ** instead of — non-RCRA hazardous wastes
- CCPs that become "retrograde materials" not wastes for 1 year

Mislabeled or Packaged in Damaged Containers

Materials become wastes if:

- Mislabeled or inadequately labeled (10 days)
- In deteriorated or damaged containers (96 hours)

Haz Waste Determination

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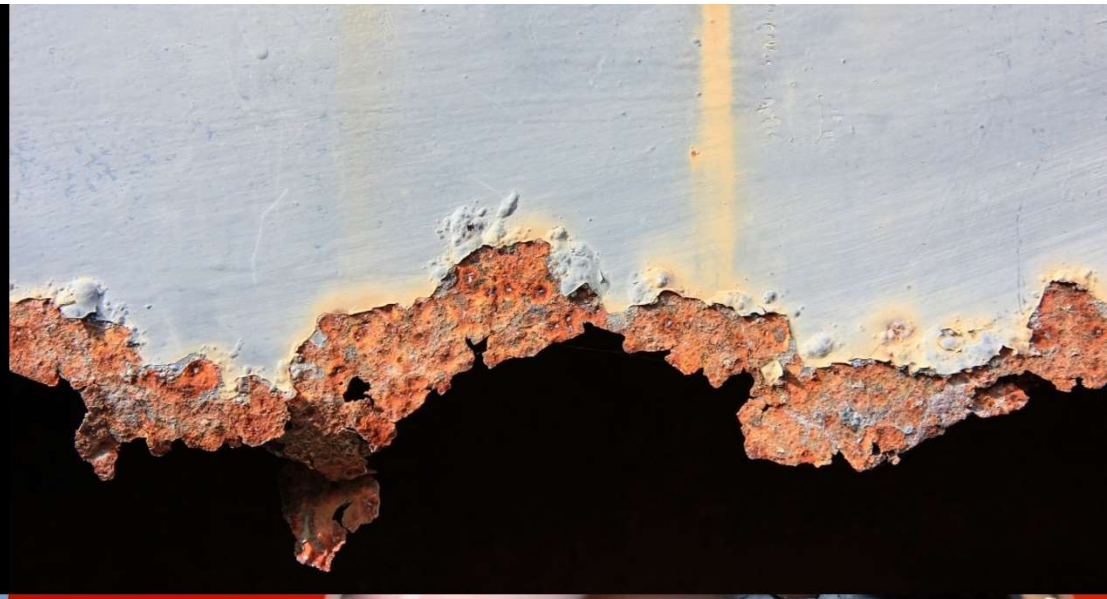
CA Hazardous Wastes

- Declared
- Characteristic
- Listed: F/K/P/U
- Mixtures
- Extremely hazardous wastes
- Special wastes
- M-listed waste
- Presumptive wastes (Appx. X)

Characteristic Wastes



Ignitable: D001 Wastes

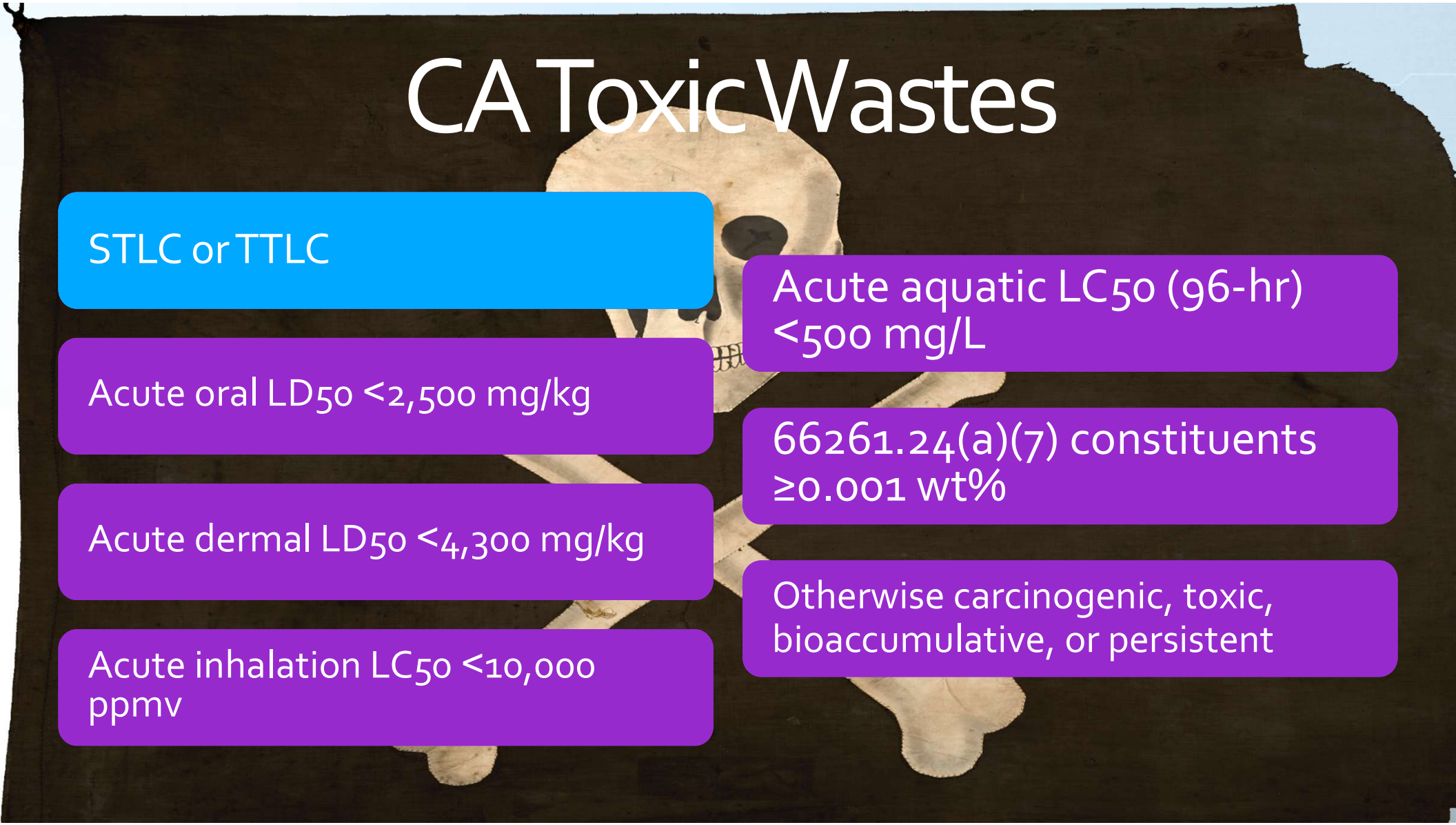
Corrosive: D002 Wastes


Sulphuric acid 98%

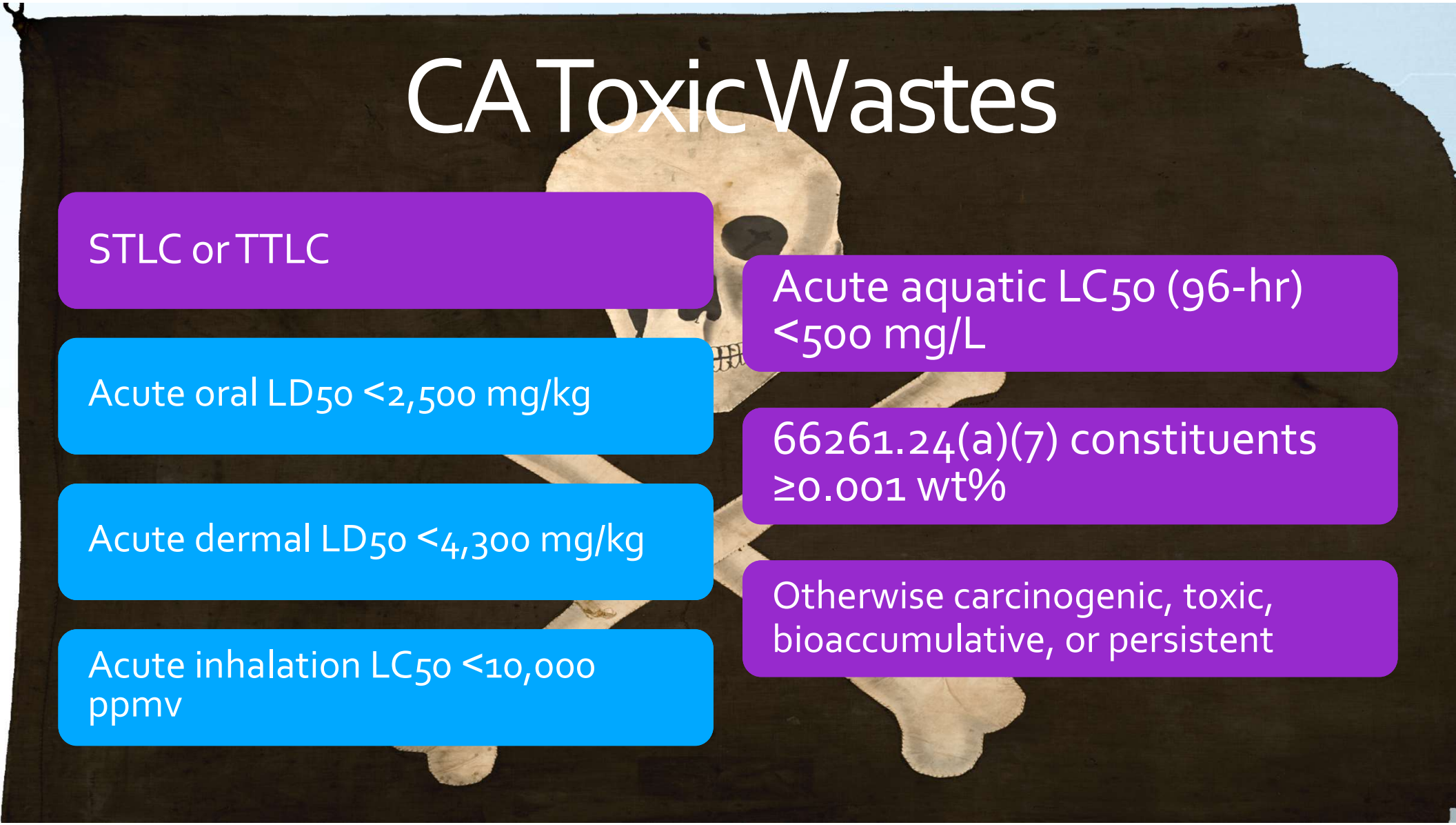
Reactive: D003 Wastes

Toxic: D004-D043 Wastes

CA Toxic Wastes



- STLC or TTLC
- Acute oral LD50 <2,500 mg/kg
- Acute dermal LD50 <4,300 mg/kg
- Acute inhalation LC50 <10,000 ppmv
- Acute aquatic LC50 (96-hr) <500 mg/L
- 66261.24(a)(7) constituents ≥0.001 wt%
- Otherwise carcinogenic, toxic, bioaccumulative, or persistent



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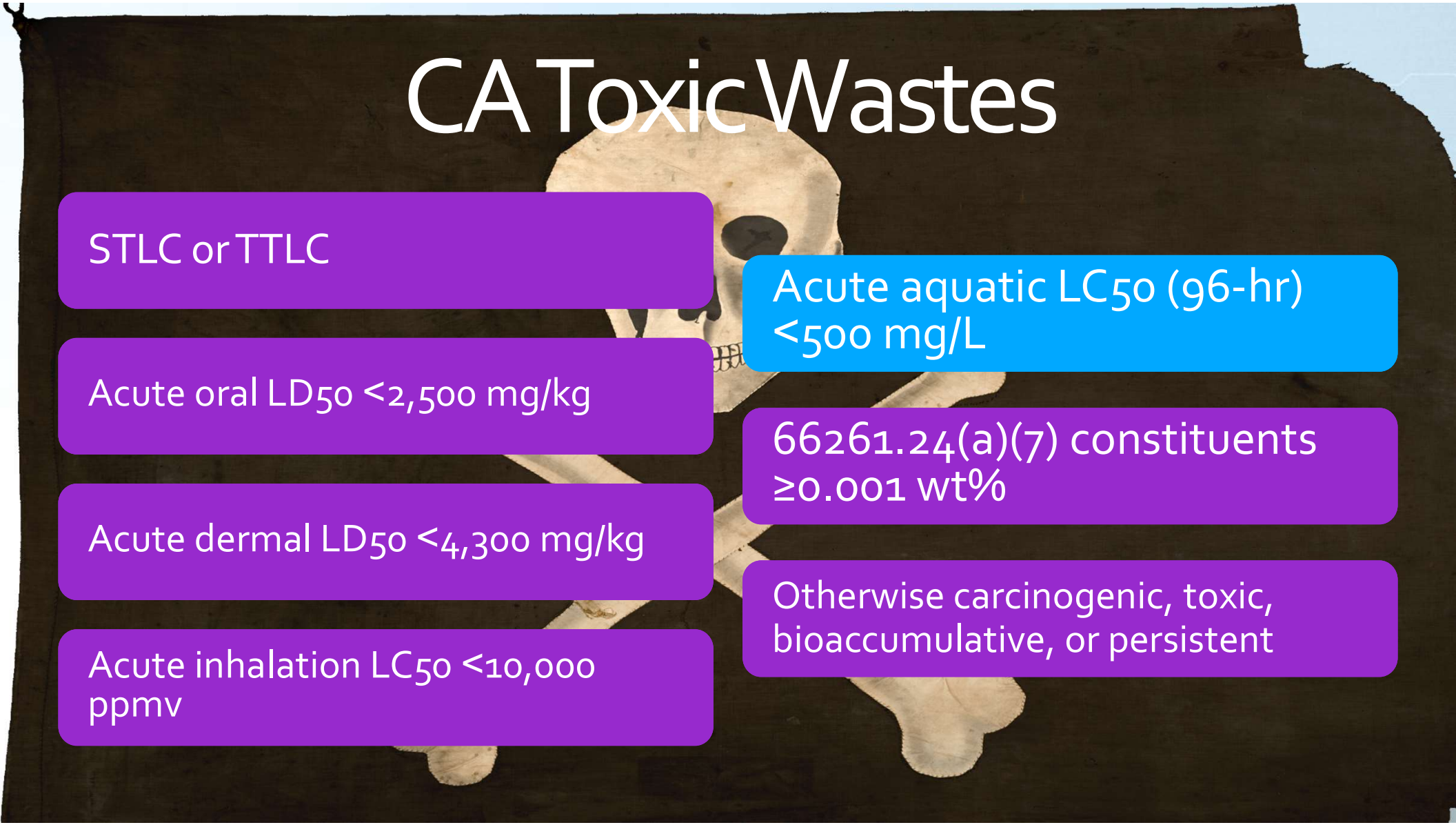

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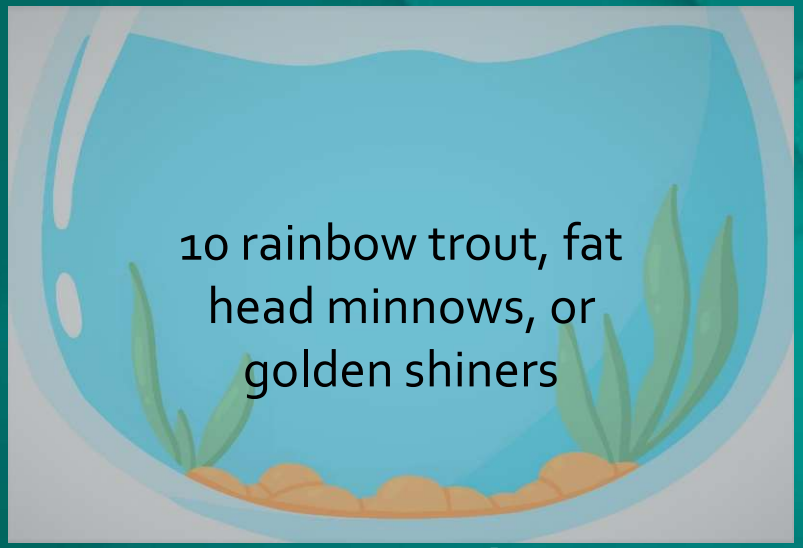
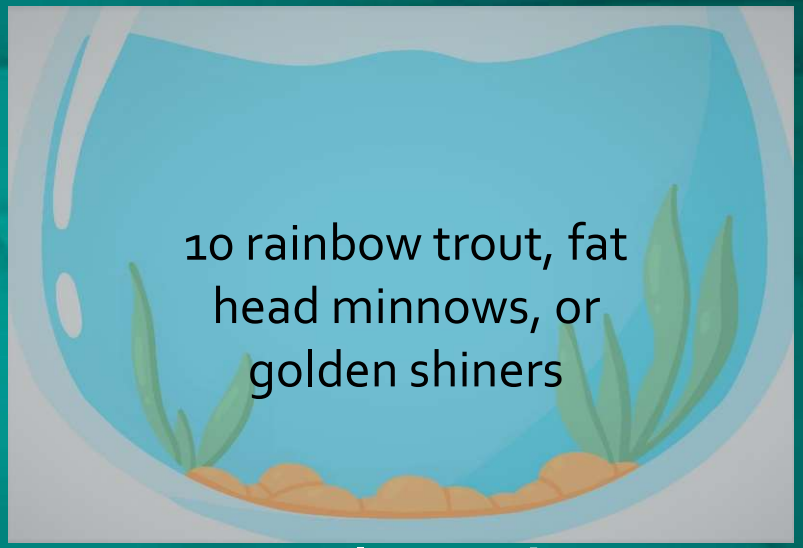
CA Toxic Wastes—Fish Test



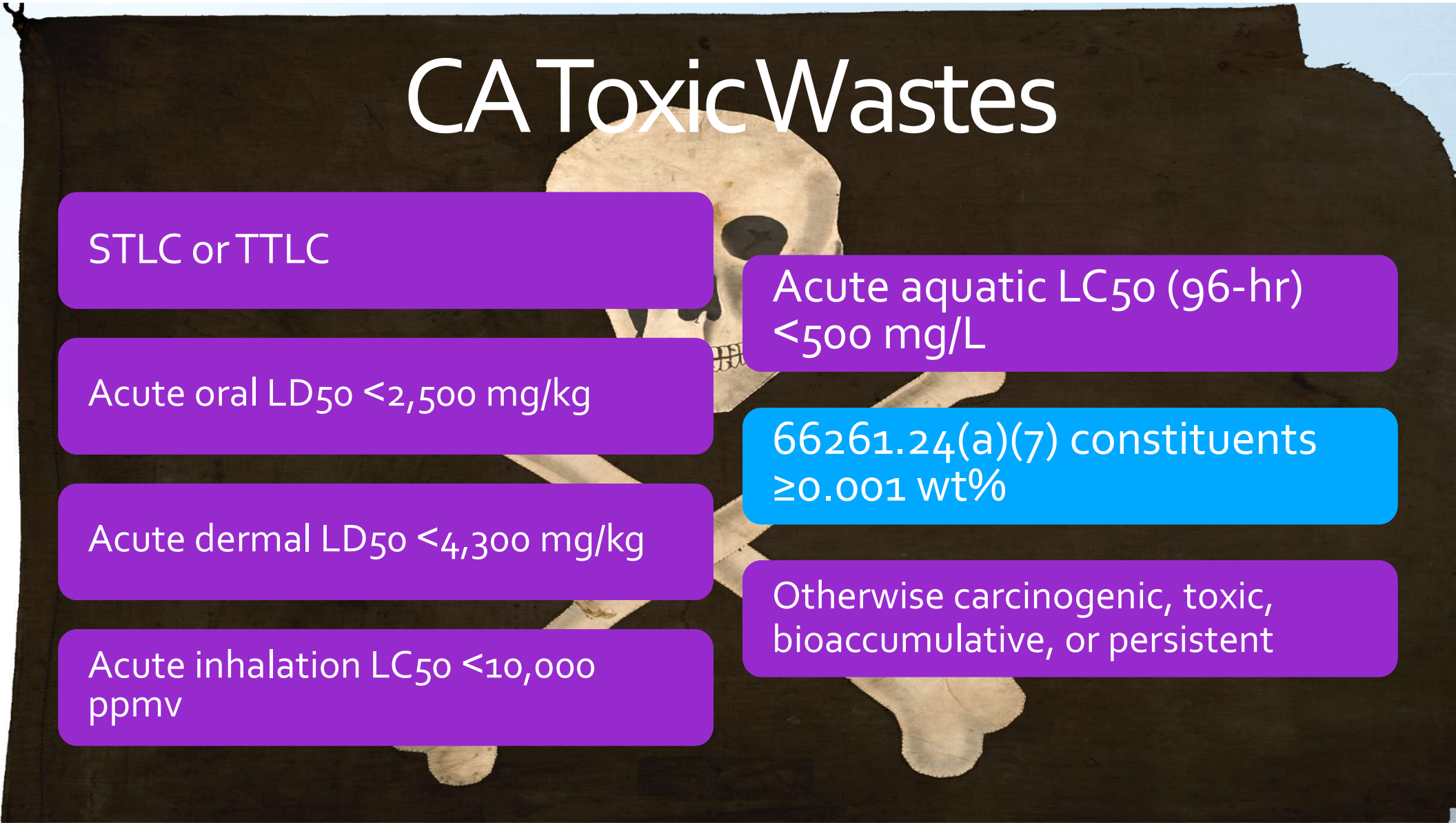
Test aquarium
(material dissolved to 500 mg/L)



Control aquarium
(pure water)

≥5 or more fish in 96 hours = toxic

CA Toxic Wastes



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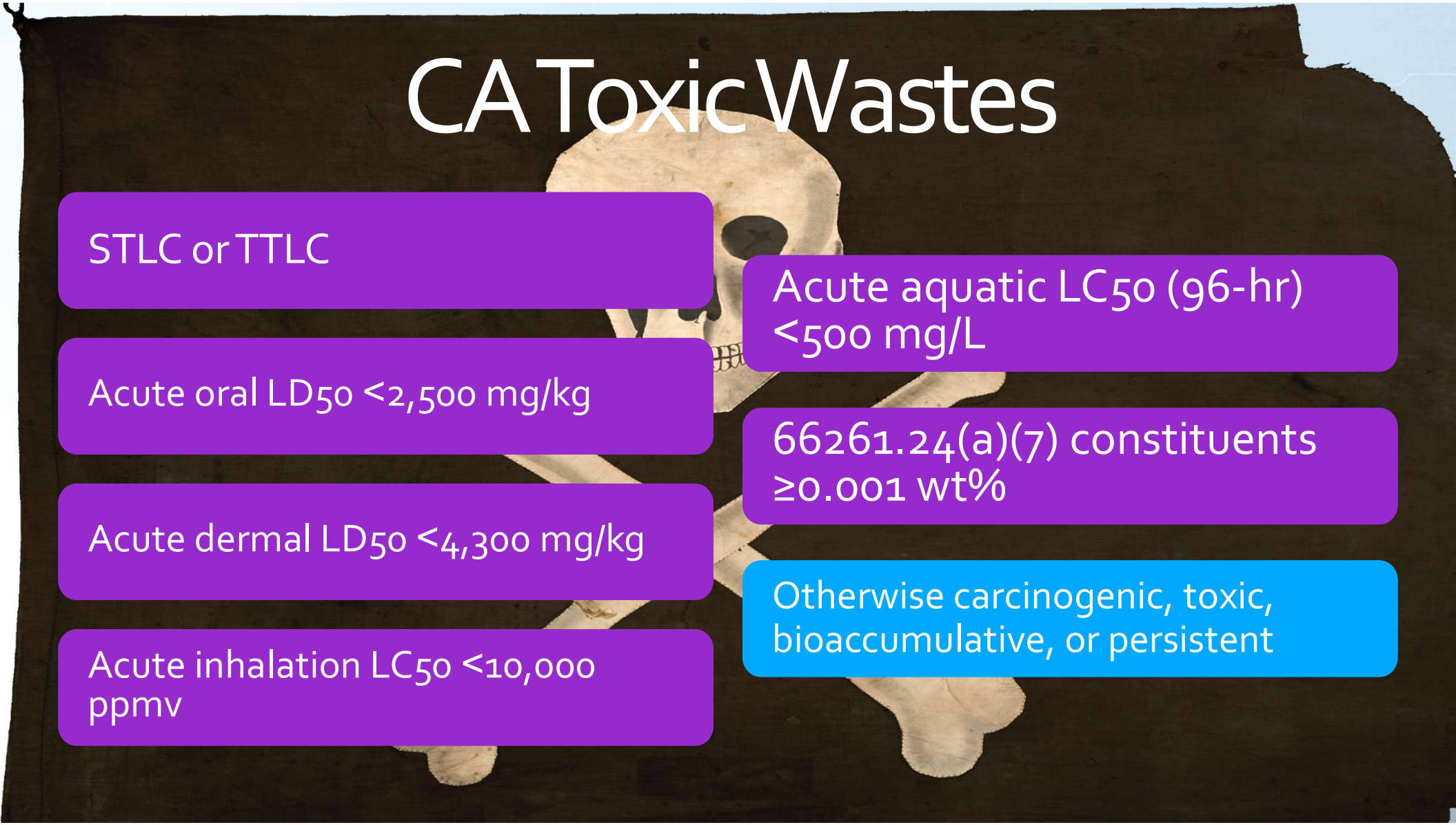

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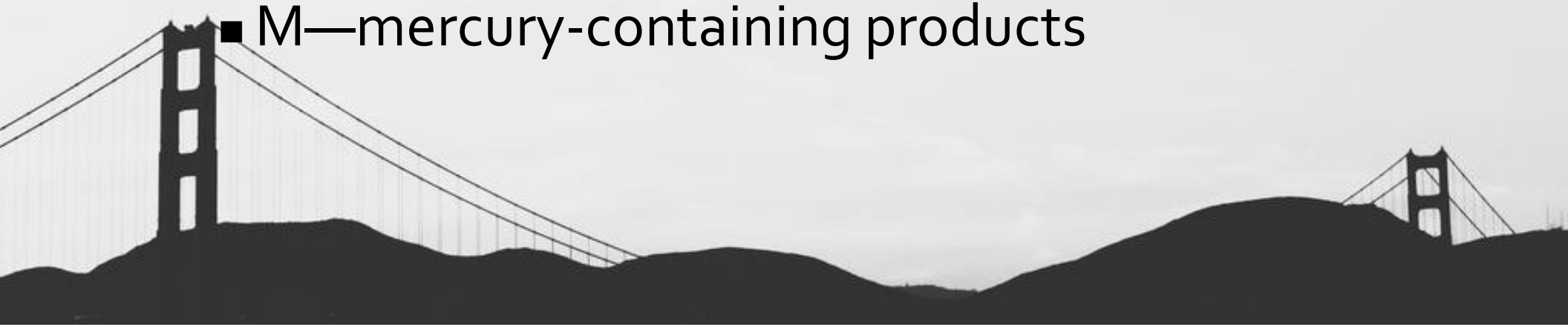
- 66261.24(a)(7) constituents ≥0.001 wt%
- Otherwise carcinogenic, toxic, bioaccumulative, or persistent

Extremely Hazardous Wastes

1. Certain toxics/reactives
2. High TTLC
3. Appendix X (a) (presumed)

CA Listed Wastes

- F—process wastes, nonspecific sources
- K—manufacturing process wastes, specific sources
- P—unused, acutely hazardous chemicals
- U—unused, toxic chemicals
- M—mercury-containing products



Spent Solvents

Must be used to solubilize or mobilize:

- Cleaning
- Degreasing
- Diluents
- Extractants
- Reaction and synthesis media

Includes still bottoms

NOT Spent Solvents

- Solvent chemicals used as reactants or ingredients
- Process wastes contaminated with solvents:
  - Aqueous waste from liquid-liquid extraction
  - Rinsewater following solvent cleaning

Spent Solvent Mixtures

K-Wastes

CCR doesn't include all from CFR…

…but still covered by HSC

P- and U-Wastes

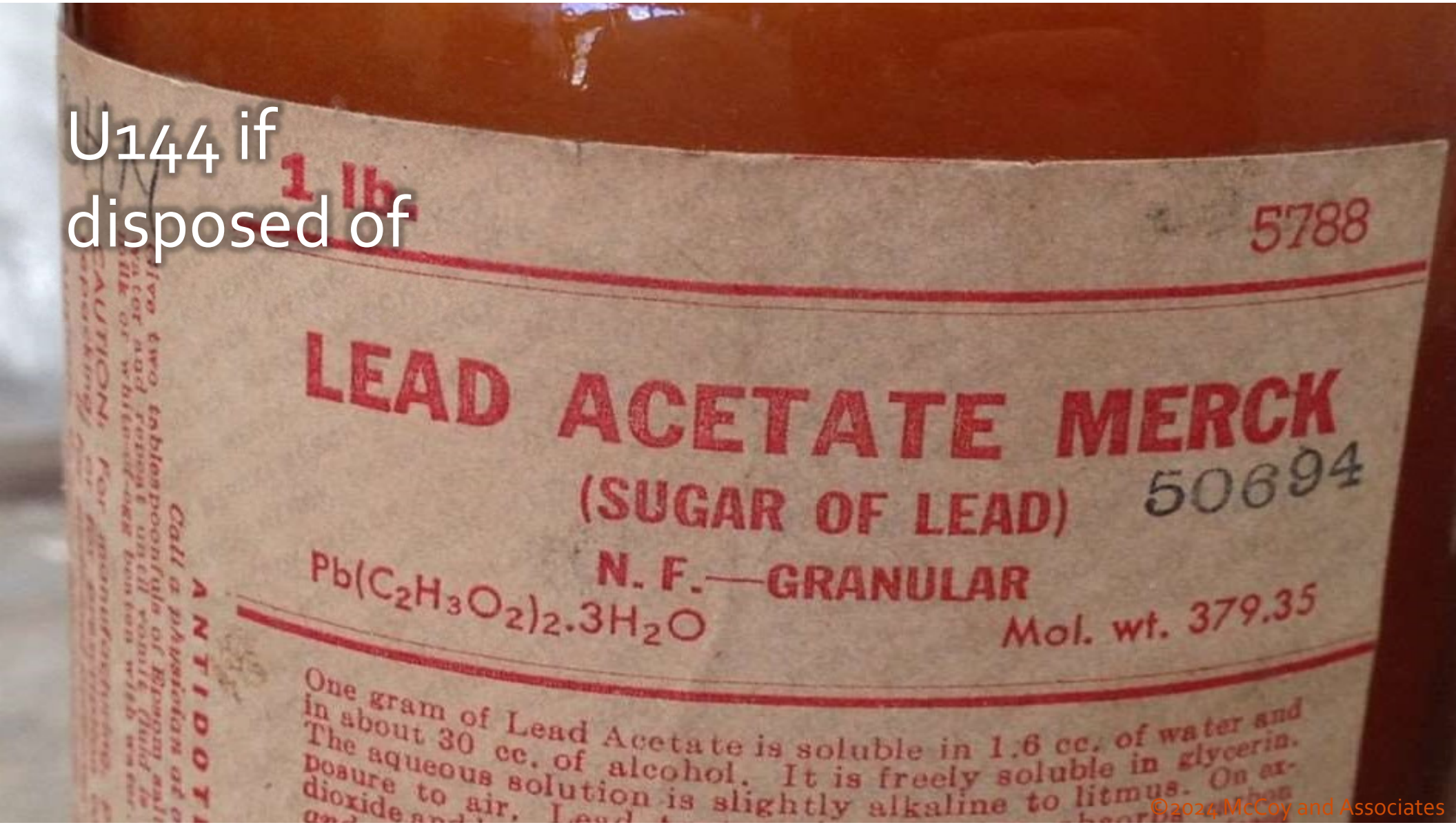
Discarded *unused* "commercial chemical products"

P-WASTES	U-WASTES
Acutely hazardous chemicals	Nonacute hazardous chemicals

📖 See §261.33(e) and (f), RU 3.5

P- and U-Listings Apply

- Essentially pure, unused chemicals
- Unused products with sole active ingredient



Weed Out with Q

Controls Crabgrass & Broadleaf Weeds in Lawns

KEEP OUT OF REACH OF CHILDREN

CAUTION

SEE BACK PANEL AND BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

Net Contents One Pint (16 FL. OZS.)

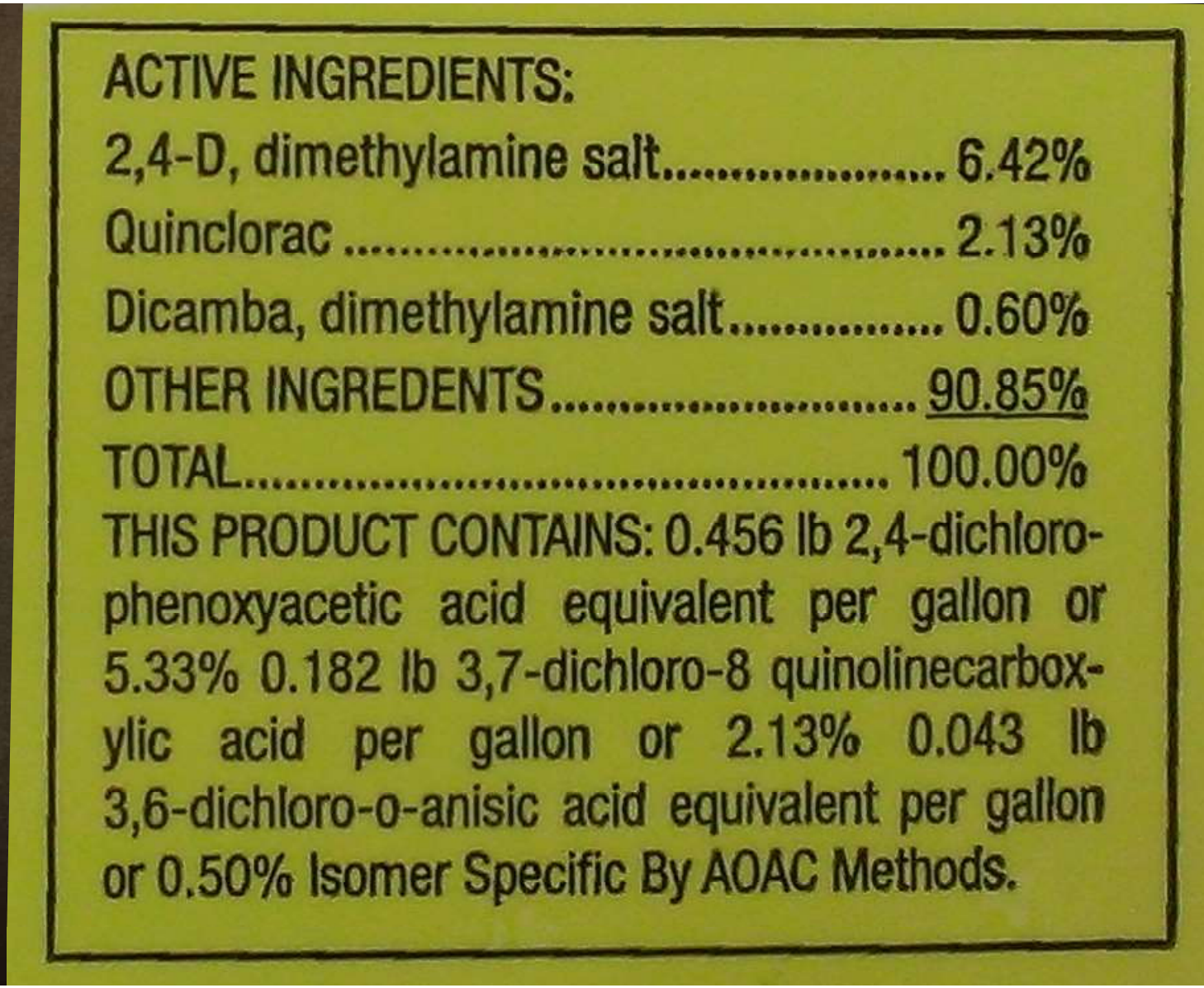
ACTIVE INGREDIENT:

2,4-D, dimethylamine salt	6.42%
Quinclorac	2.13%
Dicamba, dimethylamine salt	0.60%
INERT INGREDIENTS:	90.85%
TOTAL	100.00%

THIS PRODUCT CONTAINS:
0.456 lb. 2,4-dichlorophenoxyacetic acid equivalent per gallon or 5.33%
0.182 lb. 3,7-dichloro-8-quinolinecarboxylic acid per gallon or 2.13%
0.043 lb. 3,6-dichloro-o-anisic acid equivalent per gallon or 0.50%
Isomer Specific By AOAC Methods.

No U-code at federal level: three active ingredients

May be hazardous by toxicity—D016



ACTIVE INGREDIENTS:

2,4-D, dimethylamine salt..... 6.42%

Quinclorac 2.13%

Dicamba, dimethylamine salt..... 0.60%

OTHER INGREDENTS..... 90.85%

TOTAL..... 100.00%

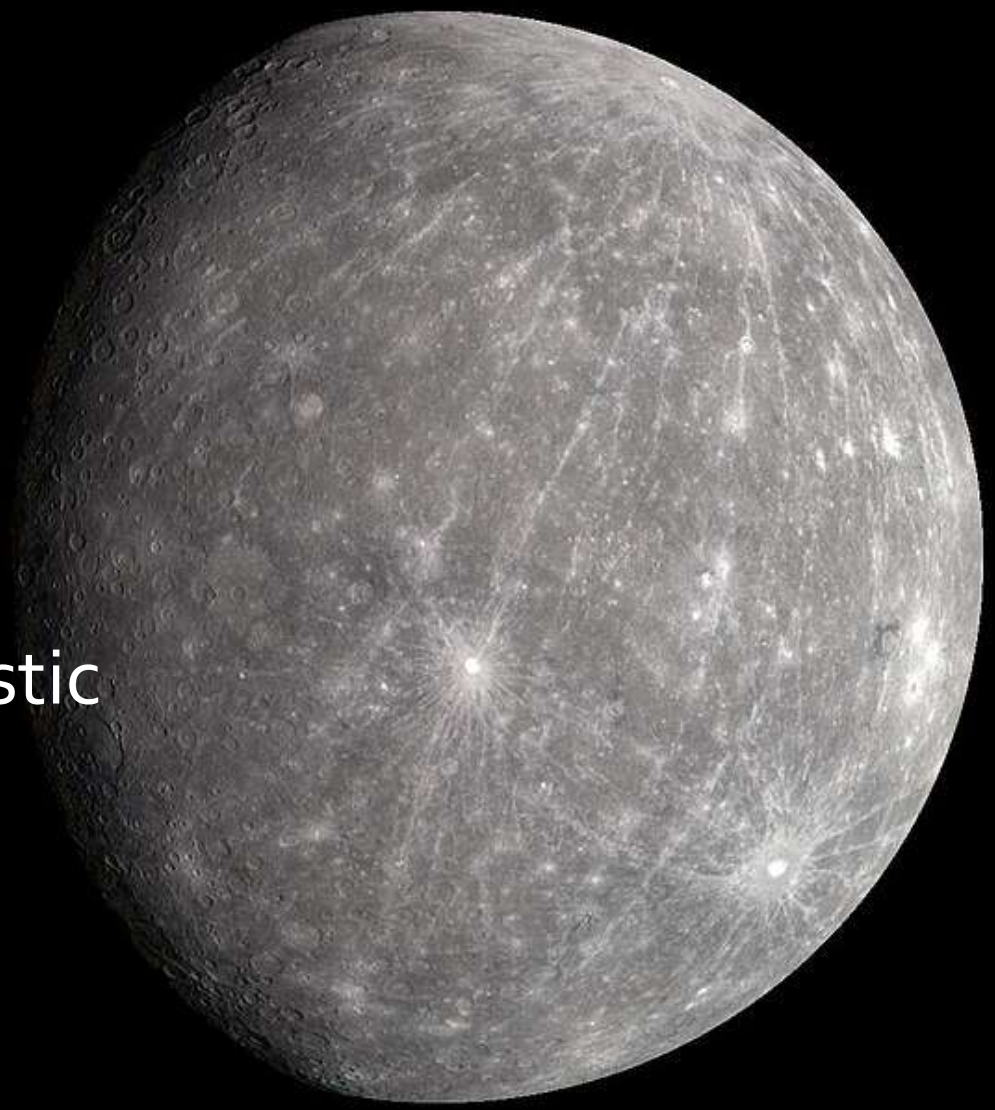
THIS PRODUCT CONTAINS: 0.456 lb 2,4-dichlorophenoxyacetic acid equivalent per gallon or 5.33% 0.182 lb 3,7-dichloro-8 quinolinecarboxylic acid per gallon or 2.13% 0.043 lb 3,6-dichloro-o-anisic acid equivalent per gallon or 0.50% Isomer Specific By AOAC Methods.

M-Wastes

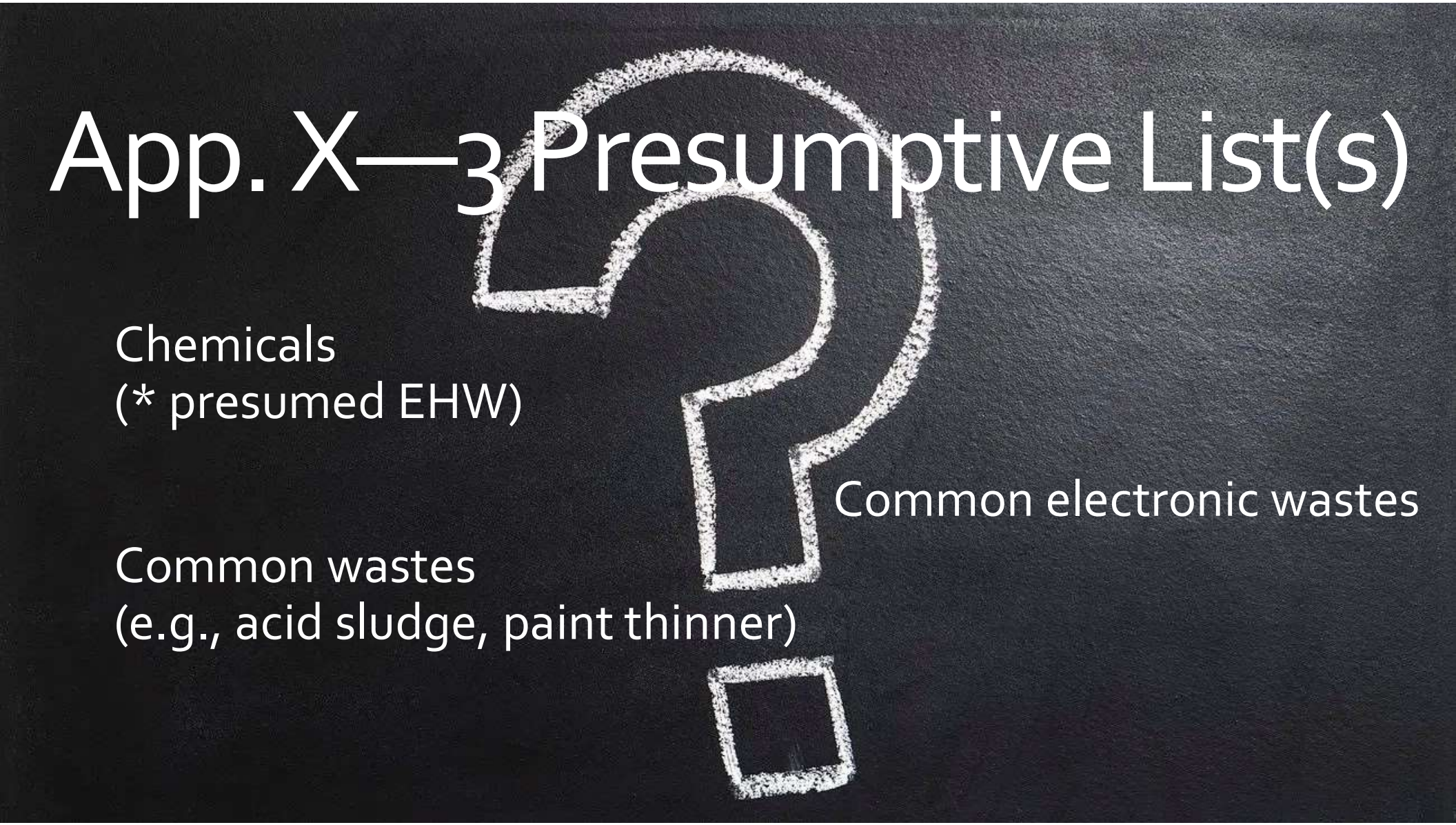
Mercury-containing

Listed even if not characteristic

Can manage as UW



App. X—3 Presumptive List(s)



Chemicals
(* presumed EHW)

Common electronic wastes

Common wastes
(e.g., acid sludge, paint thinner)

Case Study: Waste Determinations

Case Study: Waste Determinations

Review the SDSs and analytical results on pages 8 and 9 for the materials identified below. Complete the provided waste characterization forms on pages 10 and 11.


Description
Aluminum
Aluminum
Aluminum
Aluminum
Stainless Steel
Stainless Steel
Aluminum
JUSTRITE

Case Study: Waste Determinations

A. Waste process and description	
Waste description (including chemical/physical description): **Punctured paint and solvent aerosol can residue**	
Process generating the waste: **Aerosol can puncturing**	
B. Waste stream determination	
Waste determination based on: ☒ User knowledge (Process evaluation, SDSs, and interviews) ☐ Waste analysis (List all sampling dates and attach analytical results)	 Date: **1/4/24** Date:
Is the waste a "solid waste" according to §261.2? *If no, specify exclusion or exemption by regulatory citation and describe:*	☒ Yes ☐ No
Is the solid waste excluded under §261.4 or exempt from regulation as a hazardous waste? *If yes, specify exclusion or exemption by regulatory citation and describe:*	☐ Yes ☒ No
Is the waste a listed hazardous waste? (Detail rationale, as necessary) F-listed per §261.31 K-listed per §261.32 P-listed per §261.33(e) U-listed per §261.33(f) **U159 due to unused, essentially pure methyl ethyl ketone (2-butanone)**	 ☐ Yes ☒ No ☐ Yes ☒ No ☐ Yes ☒ No ☒ Yes ☐ No

Case Study: Waste Determinations

Is the waste a characteristic hazardous waste? (Detail rationale, as necessary)

Ignitable (D001) per §261.21	☒ Yes ☐ No
Corrosive (D002) per §261.22	☐ Yes ☒ No
Reactive (D003) per §261.23	☐ Yes ☒ No
Toxic (D004 – D043) per §261.24 (select constituents below)	☒ Yes ☐ No

Metals (mg/L)

D004 ☐ Arsenic (5.0)
D005 ☐ Barium (100.0)
D006 ☐ Cadmium (1.0)
D007 ☐ Chromium (5.0)
D008 ☐ Lead (5.0)
D009 ☐ Mercury (0.2)
D010 ☐ Selenium (1.0)
D011 ☐ Silver (5.0)

Volatiles (mg/L)

D018 ☐ Benzene (0.5)
D019 ☐ Carbon Tetrachloride (0.5)
D021 ☐ Chlorobenzene (100.0)
D022 ☐ Chloroform (6.0)
D028 ☐ 1,2-Dichloroethane (0.5)
D029 ☐ 1,1-Dichloroethylene (0.7)
D035 ☒ Methyl Ethyl Ketone (200.0)
D039 ☐ Tetrachloroethylene (0.7)
D040 ☐ Trichloroethylene (0.5)
D043 ☐ Vinyl Chloride (0.2)

Semi-Volatiles (mg/L)

D023 ☐ o-Cresol (200.0)
D024 ☐ m-Cresol (200.0)
D025 ☐ p-Cresol (200.0)
D026 ☐ Cresol - total (200.0)
D027 ☐ 1,4-Dichlorobenzene (7.5)
D030 ☐ 2,4-Dinitrotoluene (0.13)
D032 ☐ Hexachlorobenzene (0.13)
D033 ☐ Hexachlorobutadiene (0.5)
D034 ☐ Hexachloroethane (3.0)
D036 ☐ Nitrobenzene (2.0)
D037 ☐ Pentachlorophenol (100.0)
D038 ☐ Pyridine (5.0)
D041 ☐ 2,4,5-Trichlorophenol (400.0)
D042 ☐ 2,4,6-Trichlorophenol (2.0)

Pesticides/Herbicides (mg/L)

D020 ☐ Chlordane (0.03)
D012 ☐ Endrin (0.02)
D031 ☐ Heptachlor + epoxide (0.008)
D013 ☐ Lindane (0.4)
D014 ☐ Methoxychlor (10.0)
D015 ☐ Toxaphene (0.5)
D016 ☐ 2,4-D (10.0)
D017 ☐ 2,4,5-TP (Silvex) (1.0)

Is the waste PCB-contaminated? ☐ Yes ☒ No
If yes, verify RCRA status at §261.8. (TSCA regulations may apply.)

RCRA waste determination:

☒ Hazardous with waste codes **D001, D035, U159, 214 (unspecified solvent mixture)**
☐ Nonhazardous
☐ Exempt because _____
☐ Used oil
☐ Universal waste

Case Study: Waste Determinations

A. Waste process and description	
Waste description (including chemical/physical description): **Used parts washer solvent**	
Process generating the waste: **Cleaning greasy widgets**	
B. Waste stream determination	
Waste determination based on: ☒ User knowledge (Process evaluation, SDSs, and interviews) ☒ Waste analysis (List all sampling dates and attach analytical results)	 Date: **1/4/24** Date: **1/4/24**
Is the waste a "solid waste" according to §261.2? *If no, specify exclusion or exemption by regulatory citation and describe:*	☒ Yes ☐ No
Is the solid waste excluded under §261.4 or exempt from regulation as a hazardous waste? *If yes, specify exclusion or exemption by regulatory citation and describe:*	☐ Yes ☒ No
Is the waste a listed hazardous waste? (Detail rationale, as necessary) F-listed per §261.31 **F005 due to at least 10% benzene present before use.** K-listed per §261.32 **F003 due to the presence of ethyl acetate and the** P-listed per §261.33(e) **waste being F005.** U-listed per §261.33(f)	 ☒ Yes ☐ No ☐ Yes ☒ No ☐ Yes ☒ No ☐ Yes ☒ No

Case Study: Waste Determinations

Is the waste a characteristic hazardous waste? (Detail rationale, as necessary)	
Ignitable (D001) per §261.21	☒ Yes ☐ No
Corrosive (D002) per §261.22	☐ Yes ☒ No
Reactive (D003) per §261.23	☐ Yes ☒ No
Toxic (D004 – D043) per §261.24 (select constituents below)	☒ Yes ☐ No

Metals (mg/L)	Volatiles (mg/L)	Semi-Volatiles (mg/L)	Pesticides/Herbicides (mg/L)
D004 ☐ Arsenic (5.0)	D018 ☒ Benzene (0.5)	D023 ☐ o-Cresol (200.0)	D020 ☐ Chlordane (0.03)
D005 ☐ Barium (100.0)	D019 ☐ Carbon Tetrachloride (0.5)	D024 ☐ m-Cresol (200.0)	D012 ☐ Endrin (0.02)
D006 ☐ Cadmium (1.0)	D021 ☐ Chlorobenzene (100.0)	D025 ☐ p-Cresol (200.0)	D031 ☐ Heptachlor + epoxide (0.008)
D007 ☒ Chromium (5.0)	D022 ☐ Chloroform (6.0)	D026 ☐ Cresol - total (200.0)	D013 ☐ Lindane (0.4)
D008 ☐ Lead (5.0)	D028 ☐ 1,2-Dichloroethane (0.5)	D027 ☐ 1,4-Dichlorobenzene (7.5)	D014 ☐ Methoxychlor (10.0)
D009 ☐ Mercury (0.2)	D029 ☐ 1,1-Dichloroethylene (0.7)	D030 ☐ 2,4-Dinitrotoluene (0.13)	D015 ☐ Toxaphene (0.5)
D010 ☐ Selenium (1.0)	D035 ☐ Methyl Ethyl Ketone (200.0)	D032 ☐ Hexachlorobenzene (0.13)	D016 ☐ 2,4-D (10.0)
D011 ☐ Silver (5.0)	D039 ☐ Tetrachloroethylene (0.7)	D033 ☐ Hexachlorobutadiene (0.5)	D017 ☐ 2,4,5-TP (Silvex) (1.0)
	D040 ☐ Trichloroethylene (0.5)	D034 ☐ Hexachloroethane (3.0)	
	D043 ☐ Vinyl Chloride (0.2)	D036 ☐ Nitrobenzene (2.0)	
		D037 ☐ Pentachlorophenol (100.0)	
		D038 ☐ Pyridine (5.0)	
		D041 ☐ 2,4,5-Trichlorophenol (400.0)	
		D042 ☐ 2,4,6-Trichlorophenol (2.0)	

Is the waste PCB-contaminated? *If yes, verify RCRA status at §261.8. (TSCA regulations may apply.)*	☐ Yes ☒ No

RCRA waste determination:

☒ Hazardous with waste codes **D001, D007, D018, F003, F005, 213 (hydrocarbon solvents)**

☐ Nonhazardous

☐ Exempt because _____

☐ Used oil

☐ Universal waste

Haz Waste Determination

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Any Questions?

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