Waste Classification

Session 2

Examples

Industrial and Hazardous Waste Permits (I&HW) Section

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I&HW

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Environmental Trade Fair 2019

Presentation Agenda
Session 2

2:30 pm – 3:30 pm

Classification of Industrial & Hazardous Waste

Introduction: Handouts

I. Regulatory Compliance Recap

II. Texas Waste Code

III. Sample Classification Examples

IV. Texas Waste Code Examples

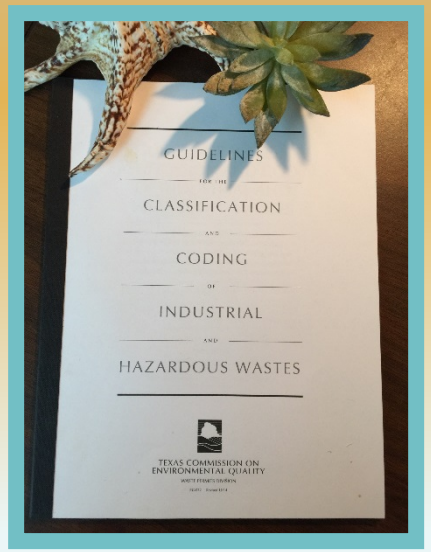
Questions?

Presentation Handouts

- **RG-022:** Guidelines for the Classification and Coding of Industrial and Hazardous Waste;
- **Laminate 1:** The Hazardous Waste Identification Process; Listed Hazardous Waste & Characteristically Hazardous Waste;
- **Laminate 2:** Industrial Waste Classification; and Industrial Waste vs. Nonindustrial Waste (Municipal Solid Waste)
- **Laminate 3:** Texas Waste Form Codes

I. Regulatory Compliance Recap

Presentation Based Upon TCEQ Regulatory Guidance RG-022



Guidelines For The Classification And Coding of Industrial and Hazardous Wastes

Rules are found in 30 Texas Administrative Code (TAC) Sections (§§) 335.501-.521 (Subchapter R).

Who Needs to Comply with 30 TAC 335 Subchapter R?

- Generators of industrial and hazardous wastes generated in Texas for disposal, storage and/or treatment; and
- Wastes generated outside of Texas and sent to Texas for disposal, storage and/or treatment.

What are you complying with?

Who Needs to Comply with 30 TAC §335 Subchapter R?

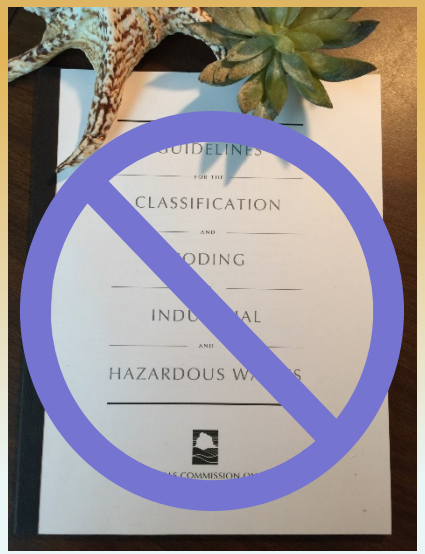
Regulatory Compliance

Having each hazardous and industrial waste stream identified by an 8-character Texas waste code which gives information about its origin, general nature and hazardous status to ensure proper and safe disposal.

Who Needs to Comply with 30 TAC 335 Subchapter R?

In Summary

Only generators of nonindustrial (municipal) and non-hazardous wastes, are excluded from requirements in 30 TAC Subchapter R.



II. Texas Waste Code Formula

Chapter 5 RG-022

Texas Waste Code Formula

Regulatory Compliance

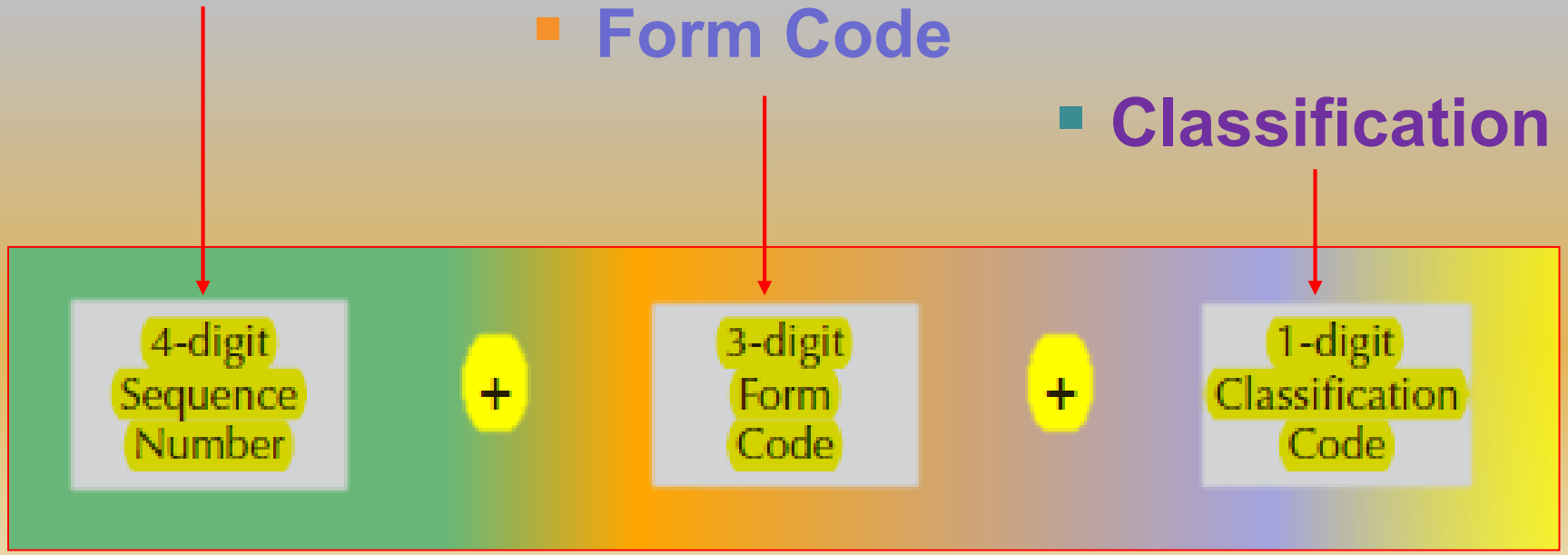
Unless exempt each hazardous and industrial waste stream must be identified by an 8-character Texas waste code which gives information about its:

- Origin;
- General nature; and
- Hazardous status

Texas Waste Code Formula

8-Character Identification Number

- **Sequence Number**
- **Form Code**
- **Classification**



Texas Waste Code Formula

Sequence Number

Sequence numbers may contain only numbers, alphanumeric or letters alone:

1. Only numbers - Arbitrary and unique 4-digit number from 0001 to 9999 assigned by generator when adding stream to Notice of Registration (NOR);
2. Alphanumeric – Assigned by TCEQ and used for the one-time shipment program; and

Texas Waste Code Formula

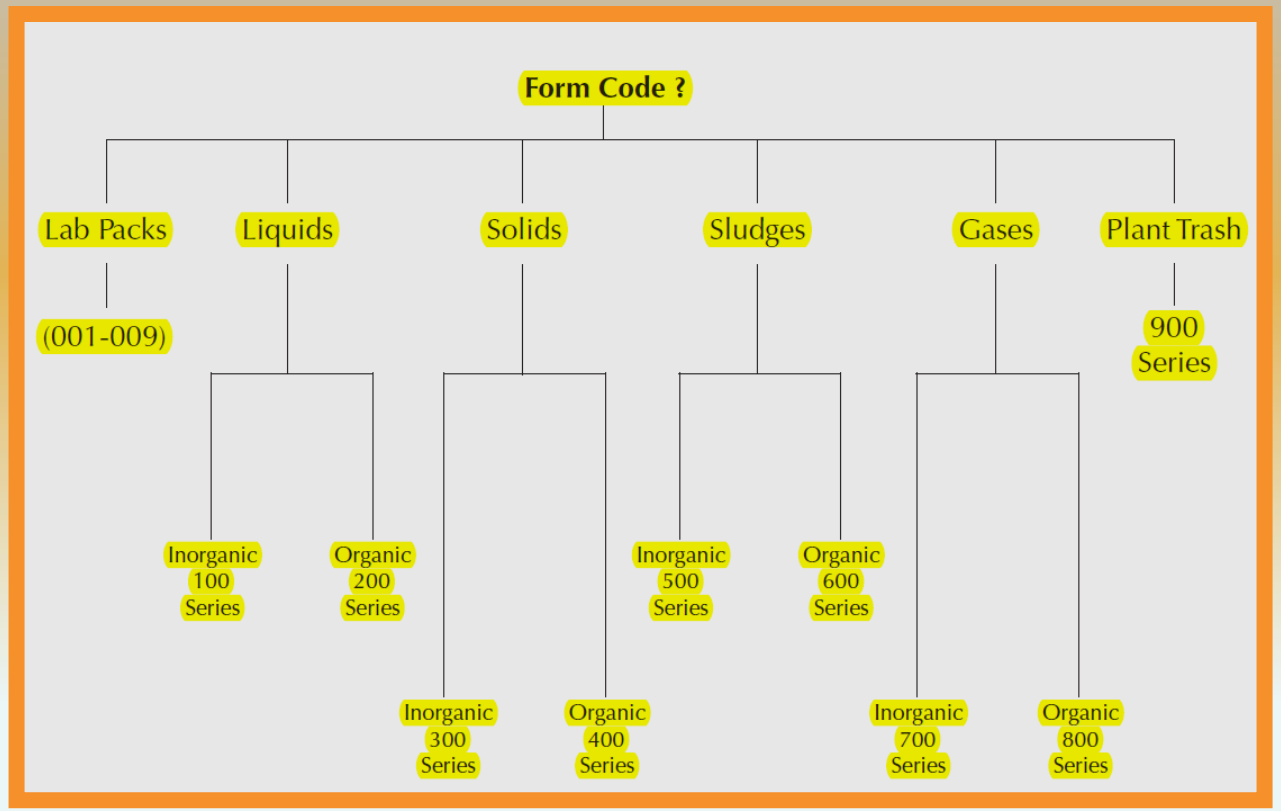
Sequence Number

3. Letters alone:
   - “SPIL” for spills regulated under the Emergency Response Program;
   - “OUTS” for wastes generated outside of Texas;
   - “RRCT” for Railroad Commission of Texas wastes
   - “TSDF” for facilities that perform these services for multiple generators;
   - “UNIV” for universal wastes; and
   - “CESQ” for CESQGs;

Texas Waste Code Formula

Form Code

Second series of numbers found in Appendix G of RG-022 (Pgs. 39 – 45).



Texas Waste Code Formula

Classification

The last digit completes the Texas waste code.

This will be an H, 1, 2 or 3.

Examples of Texas Waste Codes

00114882 (scrap wood on a NOR)

SPIL2091 (one-time spill of a paint waste)

OUTS301H (soil contaminated with organic solvents from an out-of-state clean-up project)

CESQ301H (in state CESQG facility with a soil clean up waste)

RRCT2051 (Oil water mixture from a RRCT regulated site being disposed at a TCEQ facility)

III. Sample Classification Examples

Listed Waste Exercises

Problem 1

Solid waste Description:

A generator has a potential listed spent acetone solvent that is 15% by volume. The spent solvent is not ignitable at the point of generation.

Determine the following:

1. Is the waste required to carry an F-listing for the acetone?
2. What would the EPA waste listing be if it did carry the code?

Listed Waste Exercises

Problem 1 Answers

1. No, because the waste does not exhibit the characteristic of ignitability when generated.
2. F003. Acetone is one of the solvents.

Listed Waste Exercises

Problem 2

Solid waste Description:

Dry Cleaning (fabric scouring) procedures on the premises of a major hotel generates **spent solvents** containing perchloroethylene (tetrachloroethylene) or 1,1,2-trichloro-1,2,2-trifluoroethane > 10% by volume.

Determine the following:

1. Is this an industrial or municipal facility?
2. Are the spent solvents a F listed waste?
3. Is dry cleaning waste generated from hotels excluded under the household waste exclusion?

Listed Waste Exercises

Problem 2 Answers

1. Municipal facility.
2. Yes. F002
3. No. Dry Cleaning wastes generated from hotels would not be excluded under the household waste exclusion because the spent solvents are not like wastes typically produced by a consumer at home.

Listed Waste Exercises

Problem 3

Solid Waste Description:

A commercial chemical Product (CCP) contains a P- and U-listed wastes. Both are active ingredients.

Determine the following:

1. Is this a P- or U-listed waste when disposed?

Listed Waste Exercises

Problem 3 Answer

1. No. The lists of CCPs apply only to formulas with a sole active ingredients or are pure and technical grade.

Characteristic Waste Exercises

Problem 1

An auto repair shop (CESQG) uses hi-flash mineral spirits as a parts-washing solvent. The solvent does not contain any halogenated or listed solvents. When the solvent becomes dirty, it is distilled. The solvent extracted from the distillation is placed back into use, and the still bottoms, or contaminants from the solvent extraction are the waste product. TCLP Laboratory analysis for the waste product gives the following results:

Lead 0.8 mg/L
Cadmium 0.5 mg/L
Chromium 8.0 mg/L

Characteristic Waste Exercises

Problem 1 Continued

Determine the following:

1. Is this an industrial or municipal facility?
2. Has the generator produced a hazardous waste and if so what is/are the EPA waste code/s?
3. Does the generator need to assign an 8-digit Texas waste code?
4. How long can this waste be stored?

Characteristic Waste Exercises

TCLP regulatory Limits in mg/L (40 CFR §261.24 Table 1, RG-22 page 6, Table 3-1)								
Arsenic	5.0	D004	1,4-dichlorobenzene	7.5	D027	Nitrobenzene	2.0	D036
Barium	100.0	D005	1,2-dichloroethane	0.5	D028	Pentachlorophenol	100.0	D037
Benzene	0.5	D018	1,1-dichloroethane	0.7	D029	Pyridine	5.0	D038
Cadmium	1.0	D006	2,4-dinitotoluene	0.13	D030	Selenium	1.0	D010
Carbon Tetrachloride	0.5	D019	Endrin	0.02	D012	Silver	5.0	D011
Chlordane	0.03	D020	Heptachlor	0.008	D031	Tetrachloroethylene	0.7	D039
Chlorobenzene	100.0	D021	Hexachlorobenzene	0.13	D027	Toxaphene	0.5	D015
Chloroform	6.0	D022	Hexachlorobutadiene	0.5	D033	Trichloroethylene	0.5	D039
Chromium	5.0	D007	Hexachloroethane	3.0	D034	2,4,5-trichlorophenol	100.0	D041
O-cresol	200.0	D023	Lead	5.0	D008	2,4,5-trichlorophenol	2.0	D042
M-cresol	200.0	D024	Lindane	0.4	D013	2,4,5-Silvex	1.0	D017
P-cresol	200.0	D025	Mercury	0.2	D009	Vinyl Chloride	0.2	D043
Cresol	200.0	D026	Methoxychlor	10.0	D014			
2,4-D	10.0	D016	Methyl ethyl ketone	200.0	D035			

Problem 1 Answers

1. Municipal facility.
2. Yes. The still bottoms exhibit toxicity due to high chromium levels and would be considered a hazardous waste. (D007)
3. A waste code is not required for CESQG.
4. No time limits.

Characteristic Waste Exercises

Problem 2

A general manufacturing company (LQG) receives large steel components which they re-manufacture. The process requires them to dismantle the components, and surface prepare the outer housing for re-finishing. The metal components are placed in a sand blasting cabinet, and cleaned with special high-pressure media. After months of use the blasting media has become ineffective. The old blasting material has been placed into a metal drum and labeled used blasting media pending analysis. A representative sample was taken and a laboratory performed TCLP analysis. The results are

Arsenic 0.5mg/L Barium 10 mg/L

Cadmium 2.0 mg/L Chromium 15.0 mg/L

Lead 25 mg/L

Characteristic Waste Exercises

Problem 2 Continued

Determine the following:

1. Is this an industrial or municipal facility?
2. Has the generator produced a hazardous waste, and if so what is/are the EPA waste code/s?
3. Does the generator need to assign an 8-digit Texas waste code, and if so what is it?

Characteristic Waste Exercises

TCLP regulatory Limits in mg/L (40 CFR §261.24 Table 1, RG-22 page 6, Table 3-1)								
Arsenic	5.0	D004	1,4-dichlorobenzene	7.5	D027	Nitrobenzene	2.0	D036
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Chlorobenzene	100.0	D021	Hexachlorobenzene	0.13	D027	Toxaphene	0.5	D015
Chloroform	6.0	D022	Hexachlorobutadiene	0.5	D033	Trichloroethylene	0.5	D039
Chromium	5.0	D007	Hexachloroethane	3.0	D034	2,4,5-trichlorophenol	100.0	D041
O-cresol	200.0	D023	Lead	5.0	D008	2,4,5-trichlorophenol	2.0	D042
M-cresol	200.0	D024	Lindane	0.4	D013	2,4,5-Silvex	1.0	D017
P-cresol	200.0	D025	Mercury	0.2	D009	Vinyl Chloride	0.2	D043
Cresol	200.0	D026	Methoxychlor	10.0	D014			
2,4-D	10.0	D016	Methyl ethyl ketone	200.0	D035			

Problem 2 Answers

1. Industrial facility.
2. Yes. The blaster media would be classified as hazardous due to high concentration of Cadmium (D006), Chromium (D007), and Lead (D008).
3. Yes. **0005389H** – sequence number was arbitrarily chosen.

Characteristic Waste Exercises

Problem 3

A distillery in Texas has produced wastes that may or may not be hazardous for the ignitability characteristic (D001). This company is a SQG. These wastes include the following:

A. Aqueous solution that is 22% alcohol with a flashpoint < 140 °F
B. Containers of non-halogenated solvents to be discard with a flash point < 140 °F

Determine the following:

1. Is this an industrial or municipal facility?
2. Has the generator produced a hazardous waste, and if so what is/are the EPA waste code/s?
3. If non-hazardous how would each be classified (i.e., Class 1, 2 or 3).
4. Does the generator need to assign an 8-digit Texas waste code(s), and if so what is/are it/they?

Characteristic Waste Exercises

Problem 3 Answers

1. Industrial facility.
2. (A) No. The aqueous waste is exempt from hazardous waste regulation by the alcohol-content exclusion §261.21(a)(1); and

   (B) Yes. Non-halogenated solvents would be hazardous because of the ignitability characteristic since the FP is well below 140 °F (D001).
3. (A) Class 1 Waste and (B) Hazardous.
4. Yes. (A) **0001102**1 and (B) **0002203H**.

Characteristic Waste Exercises

Problem 4

An auto dealer/repair shop (SQG) has generated three potentially corrosive wastes.

A. Battery with a pH of 1.8
B. Steel wool with a pH of 2
C. Liquid lime-based floor cleaner with a pH of 10.9

Determine the following:

1. Is this an industrial or municipal facility?
2. Is the battery acid corrosive? If so, what is the EPA waste code?
3. Is the steel wool corrosive? If so, what is the EPA waste code?
4. Is the liquid lime-based floor cleaner corrosive? Is so, what is the EPA waste code?
5. Do the wastes need to be manifested?

Characteristic Waste Exercises

Problem 4 Answers

1. Municipal facility.
2. Yes. The pH is <2 (D002).
3. No. There are no corrosive solids at the federal level. No EPA waste code.
4. The example did not give the steel corrosion rate, so this sample will still have to be tested for confirmation.
5. Only the hazardous waste.

IV. Texas Waste Code Examples

Example 1 - Container Waste

Example 1 - Container Waste

Background Information

A Texan owns a small manufacturing facility. The facility is a small quantity generator. The facility just started generating 3 new waste streams which are:

(1) Triple rinsed empty metal containers ≤ 5 gal;

(2) > 5 gal metal containers that are **RCRA empty**; and

(3) > 5 gal metal containers that are **RCRA empty** and that have been rendered unusable.

By process knowledge, Tony knows that all empty containers are metal previously containing the same liquid waste with a flash point <140° F (i.e., HW).

How are these wastes classified and coded?

Example 1 - Container Waste

Empty VS. RCRA-Empty

Understanding the difference between “Empty” and “RCRA-Empty” is worth your time, as hazardous containers that are defined as “RCRA-Empty” are not subject to EPA regulation even when residue remains.

Example 1 - Container Waste

Empty VS. RCRA-Empty

There are two separate sets of conditions for containers that held: 1) non-acute hazardous wastes; and

2) acute hazardous wastes.

A container or inner liner that held a ***non-acute hazardous*** waste is RCRA empty when:

1. All wastes have been removed that can be removed using 'commonly employed practices'; ***and***
2. No more than 2.5 centimeters (1 inch) of residue remains on the bottom of the container; ***or***
3. No more than 3% by weight of the total capacity of the container remains for containers ≤ 119 gal. **or**
4. No more than 0.35% by weight of the total capacity remains for containers > 119 gal.

Example 1 - Container Waste

Empty VS. RCRA-Empty

A container or inner liner that held an ***acute hazardous*** waste is RCRA empty when:

1. The container is triple rinsed with a solvent capable of removing the acute waste; ***or***
2. The container has been cleaned by another method that has been shown to achieve equivalent removal (e.g., scientific literature or by test conducted by the generator); ***or***
3. The inner liner that prevented contact between the acute waste and the container is removed.

Example 1- Container Waste

What do we know so far about the waste streams?

1. The Solid Waste is not exempt & is industrial.
2. Each container held the same hazardous waste.
3. There are two sizes of containers and a different condition for the containers >5 gal.
4. The waste streams are all new.

Example 1- Container Waste

Step 1 – Classify Waste

- Empty containers ≤5 gal. are a Class 2 waste, regardless of whether they held a hazardous waste.
- RCRA -Empty containers >5 gal. that held either a hazardous or Class 1 waste are a Class 1 waste.
- RCRA empty containers >5 gal. and that are rendered unusable are Class 2 waste.

Example 1- Container Waste

Step 2 – Determine Waste Streams

There are two distinct waste streams:

(1) Class 2 waste: (a) ≤5 gal. and (b) >5 gal. (*RCRA empty and rendered unusable*); and

(2) Class 1 waste: >5 gal (*RCRA empty*).

Example 1- Container Waste

Step 3 – Assign Sequence Numbers

Tony has assigned the 4-digit sequence number 0001 to the Class 1 container wastes and 0002 to the Class 2 container wastes.

Step 4 – Assign Form Codes

Tony has reviewed all 10 major categories, then reviewed all form code descriptions in each category. He selected category Solids (Inorganic 300 series), and selected 308 – Empty or Crushed Metal Drums or Containers.

Example 1- Container Waste

Step 5 – Texas Waste Code Assignment

Now putting it all together:

- Class 1 waste stream: **00013081**
- Class 2 waste stream: **00023082**

Example 2 - Know the Difference

Example 2 – Know The Difference

Background Information

Dr. Pain at Mercy hospital has generated a liquid waste that tested 2.0 ppm for lead, putting it below the hazardous waste regulatory limit for lead, but exceeding the regulatory limits for a Class 1 waste.

How does Dr. Pain classify this waste?

Example 2 – Know The Difference

- Solid waste is from a municipal source.
- Hospitals are not industrial facilities, and this is a non-hazardous waste. Non-hazardous, non-industrial wastes do not need to be classified beyond determining that they are not a hazardous waste.

Example 3 – Abrasive Blast Media Waste

Example 3 – Abrasive Blast Media Waste

Background Information

Houston Shipbuilding & Maintenance Company (HSMC) uses blasting media sand to remove paint from carbon and alloy steel during routine maintenance and repainting.

These paints usually contain heavy metals which act as anti-fouling and anti-corrosion agents necessary in the marine environment.

Facility has 10 waste codes on their NOR. Waste does not pass the 7- Day Distilled Water Leachate.

Example 3 – Abrasive Blast Media Waste

Background Information Continued

SDS - sandblast material contains no levels of regulated materials. carbon and alloy steel indicates that the steel also contains very small percentages of regulated metals.

The waste stream is comprised of sand, carbonized steel and dried paint.

A TCEQ accredited lab performs a TCLP analysis. All regulated metals test below hazardous and Class 1 regulatory levels.

How are these wastes classified and coded?

Example 3 – Abrasive Blast Media Waste

What do we know so far?

- Solid Waste (not exempt) & industrial
- Sequence number is 0011
- Waste is not hazardous
- Waste is not Class 1 or Class 3 – Class 2 by default
- Form Code - for non hazardous sand blast waste from Appendix G (RG-022 pg. 39 or 30 TAC § 335 Subchapter R, Appendix 3) is **389**
- Process knowledge and analytical were used to make this determination

Example 3 – Abrasive Blast Media Waste

Texas Waste Code Assignment

00113892

Example 4 - Wastewater Sludge

Example 4 - Wastewater Sludge

Background Information:

Brian's Industrial Plant generates wastewater sludge from sumps attached to their formaldehyde product tank. The sumps collect wash down water, transfer spills, pipe leaks and solids that settled in the product tank during cleaning.

How are these wastes classified and coded?

Example 4 - Wastewater Sludge

Brian knows the following:

- The aqueous waste stream is comprised of water, dirt/silt and formaldehyde;
- The SDS for formaldehyde, CAS# 500-00-0, states that it is a listed waste (U122), and is a characteristic waste for ignitability (D001) and reactivity (D003);
- There are two waste streams (wastewater and solids).

Example 4 – Wastewater Sludge

- Process knowledge used from initial sampling year's prior, shows the aqueous waste stream and the sludge waste stream are not reactive and not ignitable at hazardous, or Class 1 regulatory limits at point of generation.
- Assumption, the facility has assigned the sequence numbers of 0006 and 0007 on their NOR.

Are these waste streams hazardous?

Example 4 Wastewater Sludge

No!

- U-Listing only apply to unused chemical products per 40 CFR §261.33(a)-(f).
- The “mixture/derived from” rule found in 40 CFR §261.3(c)&(d). Waste streams do not exhibit any characteristics of hazardous waste.
- Wastewater is not characteristically hazardous.

Example 4 - Wastewater Sludge

Texas Waste Code Assignment

Putting It All Together

- Sequence numbers are 0006 and 0007.
- Form code (RG-22 Appendix G (30 TAC 335 Subchapter R, Appendix 3)

  - For sludge with organic contaminants is 609.

  - For wastewater is 102.
- Original sampling and process knowledge supports a Class 2 designation.

Sludge Waste Stream: 0006609 2

Wastewater Stream: 0007102 2

Have you signed up for the latest I&HW waste news from TCEQ?

- Keep up-to-date on changes that are occurring with I&HW in Texas

- Sign up today at https://www.tceq.texas.gov/goto/ihwgovdev.

More Information, Questions on Industrial & Hazardous Waste Management?

Texas Commission on Environmental Quality

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The End!

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