Form S Chemical Reporting Challenges

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Before You Get Started

- Review and know what chemicals are on the list
- Know what chemicals are used & how much
- Know what each chemical and chemical category reporting thresholds are
- Do not assume what has been done in the past is correct this reporting cycle
- **Ask yourself these questions:**
  - ❑Am I taking over reporting responsibilities from someone else who previously prepared and filed the Form-S report?
  - ❑Have I accounted for all chemical use - especially those chemicals used in excess of 1,000 pounds?
  - ❑Do I have current SDS for all chemicals?
  - ❑Do we use PBTs? Rule this out!
  - ❑Do we use Higher Hazard Substances (HHS)?

Commonly Overlooked or Incomplete Reporting Requirements

- Evaluating chemicals previously reduced below thresholds and were not reported on last year.
- Checking for chemical name synonyms
- Evaluating all processes where the chemical is used when determining the quantity of chemical use
- Including water pretreatment & treatment chemicals (acids and bases)
- Accounting for coincidentally manufactured chemicals

- ❑ **Ask: Do we use large quantities of products that contain a reportable chemical?**

Commonly Missed Reports – **Additional $1,000 Fee & NON**

- Higher Hazard Substances (HHS)
  - 1,000 lb threshold
- Use of PBTs
- Acids and Bases
- Chemical Categories
- Differences in TRI and TURA Reporting List
- Wastewater Treatment and Cleaning Chemicals
- New Listings
  - Hexabromocyclododecane (HBCD) Category for RY 2018
- Reporting Water Dissociable Nitrate Compounds
  - Do you use nitric acid?
- Coincidently Manufactured Chemicals

Water-Dissociable Nitrate Compounds

Coincidental manufacture of water-dissociable nitrate compounds

- Requires Form S & Form R reporting
- Can trigger reporting even though < 25,000 pounds of nitric acid are treated

Threshold Determination

Nitrate Compounds Generated in Waste Treatment

	HNO_3	+ NaOH ----	$NaNO_3$	+ H_2O
Molecular Weight =	**63**		**85**	

Threshold Determination: How Much HNO_3 Usage Needed to Trip Threshold?

Nitrate Compounds Generated in Waste Treatment

$$\frac{\text{MW } HNO_3}{\text{MW } NaNO_3} = \frac{\text{X lbs of } HNO_3}{25{,}000 \text{ lb}}$$

$$\frac{63}{85} = \frac{X}{25{,}000 \text{ lb}}$$

$$X = 18{,}529 \text{ lbs (Form S)}$$

Ammonia Reporting

- The total quantity of the **anhydrous ammonia** manufactured, processed, or otherwise used is reportable.

- When calculating byproduct it's the total amount of ammonia that is released, transferred, or otherwise managed.

Ammonia Reporting (cont)

- If a facility manufactures, processes, or otherwise uses aqueous ammonia (or a water dissociable ammonium salt in water), the quantity applied toward threshold determinations for the ammonia listing is 10 percent of the total quantity of the aqueous ammonia (or water dissociable ammonium salt in water) manufactured, processed, or otherwise used.

- When calculating byproduct it is 10 percent of the total quantity of aqueous ammonia released, transferred, or otherwise managed.

Rules for Reporting Individual Chemicals and Chemical Categories

- If a specific chemical is part of an EPCRA Category

  AND

- The same chemical is a specifically listed CERCLA chemical

  DO YOU REPORT AS AND INDIVDUAL CHEMICAL OR PART OF A CATEGORY?

  *Check table on page 73 of the Toxics Use Reporting Appendices

Lead Arsenate Reporting - PBT

- The compound is part of the Lead Compounds category
  - AND
- Arsenic Compounds category

- Report as part of Lead Compounds category, DEP CODE 1026 and report as part of Arsenic Compounds category, DEP CODE 1090.
- Report both categories and pay one fee. Do not report as an individual CERCLA chemical
- WHAT ARE THE REPORTING THRESHOLDS?

  *See page 6 of the TUR Reporting Guidance

New Higher Hazard Substances- Report Each CAS# Individually

2,4-Toluene diisocyanate	2,6-Toluene diisocyanate	Toluene diisocyanate mixed isomers
• 2,4-TDI • CAS 584-84-9	• 2,6-TDI • CAS 91-08-7	• TDI-mixed isomers • CAS 26471-62-5

Higher Hazard Substances

- Trichloroethylene (TCE)
- Cadmium
- Cadmium Compounds
- Perchloroethylene (PCE, or PERC)
- Hexavalent Chromium Compounds
- Formaldehyde
- Methylene chloride
- 1-Bromopropane (n-propyl bromide)
- Hydrogen fluoride
- Cyanide Compounds
- Dimethylformamide (DMF)
- 2,4 Toluene Diisocyanate
- 2,6 Toluene Diisocyanate
- Toluene Diisocyanate Mixed Isomers

2016 Higher Hazard Substances – **Plans Due**

First plans due July 1, 2018 for these unless RY 2017 was the first reporting year for these chemicals:

- 1-Bromopropane (n-propyl bromide)
- Hydrogen fluoride (HF)
- Cyanide Compounds (CN Compounds)
- Dimethylformamide (DMF)

Persistent Bio-Accumulative Toxics (PBTs)

- U.S. EPA PBTs are automatically designated as HHS by 2007 TURA Amendments. These chemicals have no di-minimis and lower thresholds. A partial list of these chemicals includes:
  - Dioxin and dioxin-like compounds
  - Lead and lead compounds
  - Mercury and mercury compounds
  - Polycyclic Aromatic Compounds (PACs) category – 25 listed chems
  - Benzo (g,h,i) perylene
  - Hexachlorobenzene
  - Polychlorinated Biphenyls (PCBs)
  - Tetrabromobisphenol A
  - Hexabromocyclododecane (HBCD) category – RY 2018

Do I Trip a Reporting Threshold for Hydrogen Fluoride?

Under TURA, when a given listed substance is introduced into production anywhere at the facility, it's use is counted *only once at the facility level*, regardless of how many times that listed substance is used, recycled or reused onsite.

Manufacture, Process, or Otherwise Use of HF from Ammonium Bifluoride or Other Fluoride Salts

- When dry ammonium bifluoride (ABF) contacts water, it generates hydrofluoric acid (HF). The hydrogen fluoride derived from fluoride salts (such as ABF) is considered *manufactured*. (EPA guidance 745-R-00-005)

- When the manufactured HF is used to etch a metal, its *otherwise use* is counted at the production unit level but not reported as otherwise use at the facility-wide level

- ABF in dry blends for resale are not likely to have reportable quantities of HF

- Is ABF a reportable chemical?

Hydrogen Fluoride Example

- **Example:** In the calendar year, 3000 pounds of ABF is used to *manufacture* HF and is subsequently *otherwise use* to etch metal

- **Solution:** 3000 pounds of ABF in water *manufactures* 1050 pounds of HF. The HF is *otherwise used to etch a metal, however it is only reported once at the facility level*, and this amount **would not** be added to other quantities otherwise used.

- Byproducts and reportable chemical consumed are reportable at the production unit and facility-wide level

Hydrogen Fluoride Solution

Manufactured = 1050 pounds	Byproduct = ?? pounds
Processed = 0 pounds	Shipped as Product = 0 pounds
Otherwise Used = 0 pounds	

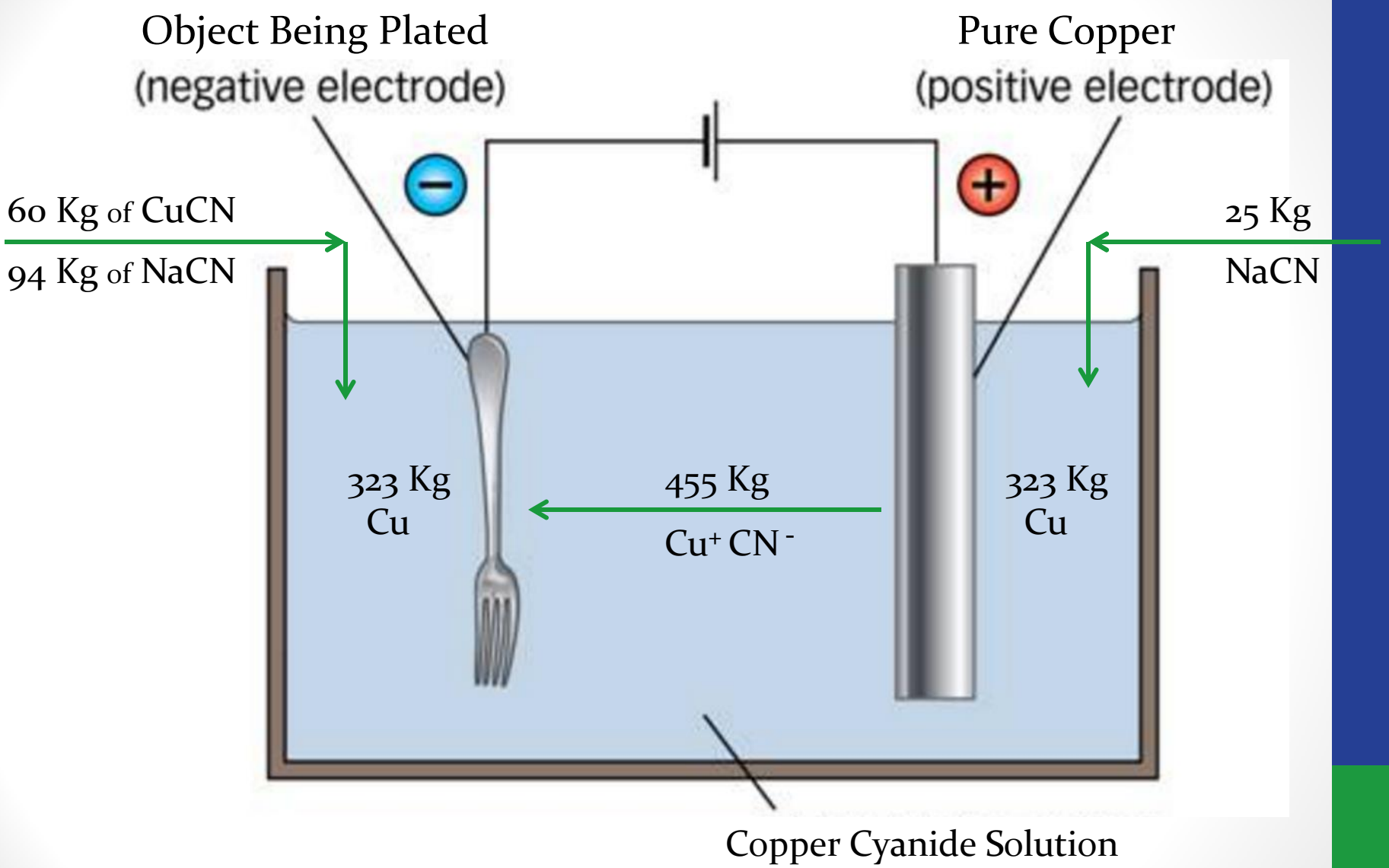
Materials Balance?

Cyanide Compounds Example

- 300 gallon copper plating tank operates with 1000 liters of solution. A fresh solution is made up at the beginning of the calendar year and discarded at the end of the year, with 60 kilograms of copper cyanide (*process*) and 94 kilograms of sodium cyanide (*otherwise use*) .

- Over the course of the year, 323 kilograms of copper are consumed from the anode, that *manufacture* 455 kg of copper cyanide as 323 kilograms of copper are plated from the solution onto steel parts.

- Also, 25 kg of cyanide salts (*otherwise use*) have been added to maintain tank concentrations due to dragout losses.


Object Being Plated
(negative electrode)
Pure Copper
(positive electrode)
60 Kg of CuCN
94 Kg of NaCN
25 Kg
NaCN
323 Kg
Cu
455 Kg
Cu+ CN -
323 Kg
Cu
Copper Cyanide Solution

Cyanide Compounds Solution

In that case: Form S, Section 1: Facility-Wide Use of Listed Chemical (Cyanide Compounds)

c. Manufactured = 455 kg X (2.20 lb/kg) = 1001 pounds of Copper Cyanide

d. Processed = 60 kg X (2.20 lb/kg) = 132 pounds of Copper Cyanide

e. Otherwise used = *(94 kg + 25 kg) = 119 kg x (2.20 lb/kg)* = 262 pounds of Sodium Cyanide

f. Byproduct = 179 kg X (2.20 lb/kg) = 394 pounds CuCN and NaCN

g. Shipped as Product = 0 kg = 0 pounds

Form S, Section 2: Materials Balance

Cyanide Compounds Solution

Manufactured = 1001 pounds	Byproduct = 394 pounds
Processed = 132 pounds	Shipped as Product = 0 pounds
Otherwise Used = 262 pounds	

Formaldehyde (CAS 50-00-0) Synonyms Include:

- Formalin
- Formol
- Methylene Glycol
- Methyl Aldehyde
- Methylene Oxide

Chemical Categories – Some are HHS or PBT's – Different Thresholds

- Nickel, Silver, Zinc, Copper & Antimony Compounds Category(25,000 lb threshold)

- Cadmium, Cyanide & Hexavalent Chromium Compounds Category(1,000 lb threshold)
  - Use DEP Category # 1216 for Cr (VI) compounds (total compound weight towards threshold 1,000 lb threshold)
  - Use DEP Category # 1217 for Non Cr(VI) Chromium Compounds (25,000 lb threshold)

- Lead Compounds(100 lb threshold)

Difference in TRI and TURA Reporting

- Reporting of Hydrochloric Acid and Sulfuric Acid (Both Aerosol and Non-Aerosol on Form-S)
- Sodium Hydroxide & Potassium Hydroxide
- Bleach (Sodium Hypochlorite)
- Phosphoric Acid
- Acetone
- Benzoic Acid
- Ferrous Sulfate
- Ferric chloride
- Tri-sodium Phosphate (TSP)
- Paraformaldehyde

Coincidentally Manufactured Chemicals

- Water Dissociable Nitrate Compounds
  - Nitric acid neutralization
- Hydrogen fluoride (HF) manufactured from amonium bifluoride (ABF) and ammonium fluoride (AF) (1,000 pound reporting threshold)

Which Sectors Recently Missed A Reportable Chemical?

21 Fabricated Metals
18 Chemical Manufacturing
12 Concrete
13 Food and Beverage
9 Utilities
6 Plastics and Rubber
6 Computer and Electronics
6 Chemical Distributors

Which Chemicals Were Most Commonly Missed?

19 Sodium Hydroxide
11 Nitrate Compounds
10 Sulfuric Acid
11 Lead or Lead Compounds
7 Acetone
6 Phosphoric Acid
6 Hypochlorous Acid
5 Acetic Acid

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THANK YOU

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