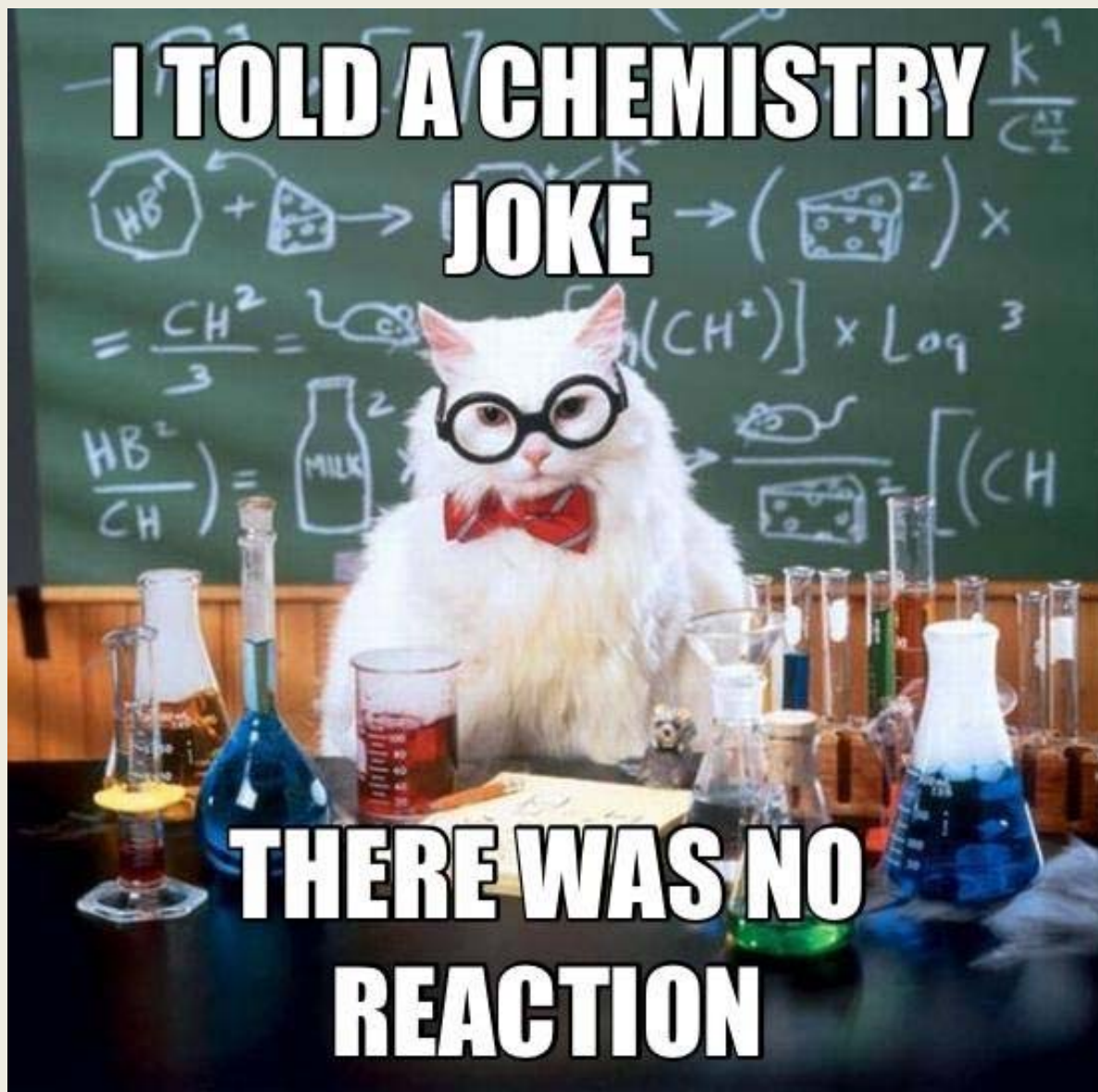


Adventures in Treated Wood: Oncor Change from Creosote to CCA Utility Poles

November 2017

**I TOLD A CHEMISTRY
JOKE**



**THERE WAS NO
REACTION**

Wood Preservation

- Why Preserve Wood?
- History
 - Romans preserved with olive oil
 - Creosote use in US c. 1860 on railroad cross-ties
 - c. 1940s Pressure treatment become common
 - c. 1970s CCA and PCP introduced as alternatives to creosote
 - Recent: 12/31/2003 – Voluntary ban on use of CCA for residential purposes.



What is Creosote?

- Petroleum-based
 - “Coal Tar”
- Creosote treated wood is everywhere
 - Dark brown to black color, feels rough or ‘tacky’
 - Distinct odor
- Dermal contact hazard
- Can leach to surrounding surface soils, but generally degrade in short period of time
 - Decomposition products generally less toxic



What is CCA?

- Uses Chromium, Copper and Arsenic
 - Water-based preservative
- Common outside of Texas and Louisiana
 - Green or even gold tint, smooth to touch
 - Some utility poles have petroleum-based surface treatment for ease of climbing
- Little/No Odor
- Low/No Dermal Contact Hazard





Creosote



CCA



CCA Poles

- Electrical Service
- Phone/Cable/Internet
- Guardrail Posts / Bollards
- Docks / Piers

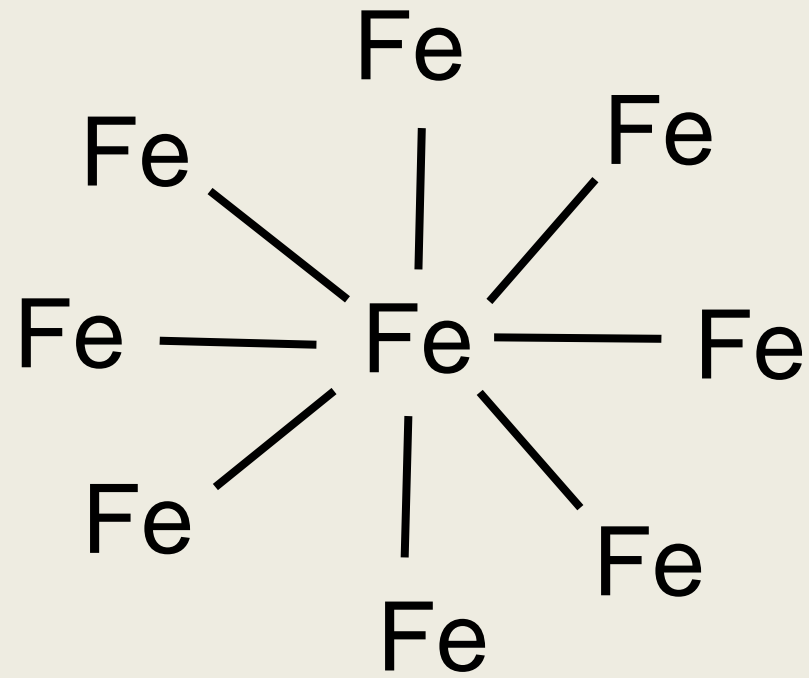
- Cross-Arms are usually preserved with PCP (pentachlorophenol)
 - Why different? Better shear strength and durability

Regulatory Status - Creosote

- Not much environmental regulation of new/in-use poles
 - Subject to “General Prohibitions” and “Unauthorized Discharge” in Texas, but defense is “usual and accepted practice”
- Whole / intact poles can be cut, piled, transported. Should not be ground up, mulched or burned.
 - Sawdust from “in the field” cutting is generally left in place
 - Broken pole butts are generally left in the ground
- Recycled or disposed as Class 2 Non-Hazardous / Special Waste in MSW Landfills

Regulatory Status - CCA

- Whole / intact (unburned) poles can be managed the same as creosote. Can be cut, piled, transported.
 - Exempted from Definition of Hazardous Waste per 40 CFR 261.4(b)(9)
- Can be recycled for use as pole or plank, but cannot be legitimately ground up, mulched or burned (“hog fuel”).
 - EPA Memo and concept of: “End Use” (1/6/2004)
 - Probably more accurately termed as “intended use”
- MSW Landfills generally require disposal of pieces as Class 1 Non-Hazardous
 - Concept of Industrial “Class 1-Like” applied to Non-Industrial Wastes



The “F” Word (Fires)

- Creosote-treated Wood Smolders
 - Destructive / “Reductive”
 - Black/sooty smoke
 - Smoke contains particulates and petroleum decomposition products
- CCA Burns
 - Releases contaminants from wood matrix
 - Black-to-grey and/or grey-green smoke
 - Smoke contains particulates and metal oxides
 - Ash and ash-contaminated materials can become Characteristically Hazardous Waste” per 40 CFR 261
 - “D004” for Arsenic, “D007” for Chromium
 - Arsenic has a Texas Class 1 Non-Hazardous level (1.8 mg/L)

Arsenic, Chromium and Copper

- Arsenic:
 - Systemic Toxicant and Suspected Carcinogen
 - Target organs: liver, kidneys, skin, lungs, lymphatic system
 - Primary routes of exposure: Inhalation and ingestion
- Chromium:
 - Systemic Toxicant
 - Target organs: Lungs
 - Primary routes of exposure: Inhalation and Ingestion
- Copper:
 - Systemic Toxicant in high doses
 - Target organs: Eyes, Skin, Lungs
 - Primary route of exposure: Inhalation, Ingestion, Absorption

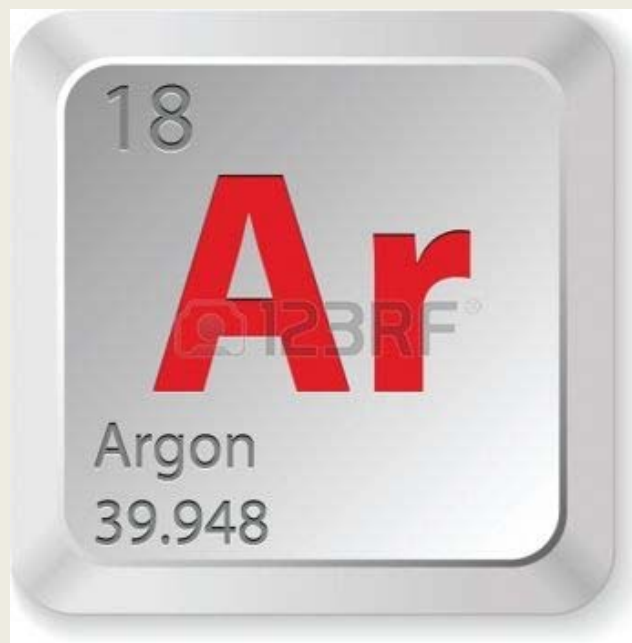
Sampling

- Creosote
 - Total/TCLP Cresols
 - TPH (TX1005)
 - PAHs
- CCA
 - Total and TCLP As, Cr and (maybe) Total Cu
 - TPH / PAHs generally not relevant
 - May require “wipe” sampling of some surfaces
- Background Sampling
 - “Similar but Unaffected”

Sampling Scenarios

- Assessment of Facilities with Bulk Storage
 - “Pole Yards”
- Unexpected near-surface “hits” for constituents that might be associated with utility poles
- Complaints / Strange Requests to Local, State and Federal Agencies

I'd show another chemistry joke, but all the good ones



Questions?

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