2014 Elk River, West Virginia Chemical Spill
Briefing Paper

The Facility & the Leaky Tank

- Etowah River Terminal, owned by Freedom Industries, is located on the Elk River in Charleston, WV.
- Freedom Industries acts as a broker, purchasing bulk chemicals and selling them to industrial users.
- **No processing or manufacturing on site**, just mixing and storage. Total capacity is 4 million gallons.
- On Jan 9, 2014, State air inspectors visit the facility in response to odor complaints and find the leak.
- About 7,500 gallons are estimated to have leaked from a 40,000 gallon capacity tank during the spill.

The Chemicals that Leaked from the WV Storage Facility

- "Crude MCHM" is a mix of six compounds, including 4-methylcyclohexanemethanol:
    - The only HAP in the mixture is methanol, which accounts for 1% by weight.
    - Crude MCHM is used at some coal processing plants as a frothing agent to better remove impurities. **It is mainly used to process coking coal for metallurgy rather than steam coal for power plants.**
- "PPH, stripped" (estimated to be 7.3% of the material in the leaking tank) is a proprietary blend thought to contain DiPPH Glycol Ether, and PPH Glycol Ether (both HAPs, though not very volatile)

Superfund Emergency Response

- During the response, Region 5 mobilized an OSC to coordinate and communicate analytical information regarding the MCHM plume in the Ohio River. Regions 4, 5 and ORSANCO, in coordination with public water facilities, tracked the plume until it was no longer detectable.
- For response purposes, EPA responded to the spill as a "**pollutant or contaminant**" under CERCLA.
- MCHM is not considered an oil under OPA.
- Region 3 continues its sampling, monitoring, and oversight of cleanup at the site. WVDEP continues to be the lead enforcement agency. Region 5 continues to communicate with Region 3 regarding the spill.

Chemical Storage in Region 5

- In Illinois alone, at least 49 facilities offer storage of liquid chemicals operating on a commercial scale.
- For example, one of the largest is Fort Transfer located in Morton, Illinois
    - Total capacity of 2.6 million gallons
    - No air permit or air inspections. (Possibly subject to NSPS Subpart Kb and others, see below)
- Because of the way SIC/NAICS codes are set up, it is difficult to use them to identify bulk chemical storage facilities, though large ones can be identified through commercial data.
- There are four Ohio companies that have reported MCHM >10,000 lbs on Tier II (EPCRA reporting) forms.

Regulatory Authority Applicable to Chemical Storage Facilities

- Multiple regulations for storage tanks at major sources of HAPS:

- Part 63, Subpart EEEE: Organic Liquids Distribution
- Part 63, Subpart OO: National Emission Standards for Tanks—Level 1
- Part 63, Subpart WW: National Emission Standards for Tanks—Control Level 2

- No area source MACTs for storage facilities
- NSPS, Subpart Kb: Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. (The Etowah facility would not have been subject due to age.)
- General Duty Clause from 112(r) – tanks that are leaking chemicals to the air can potentially be identified with an IR camera and may be subject to 112(r), if the material is listed or is "extremely hazardous."
- Region 5 is currently participating in a National Tank Enforcement Initiative (with HQ OECA and others) to identify tank farms in sensitive areas, standardize inspection methods and develop enforcement cases. The plan is based on using available technology (such as FLIR cameras) to identify leaking hydrocarbons.
- These facilities are required to have NPDES permits for the discharge of Industrial Stormwater:
  - Most such permits are in the form of NPDES industrial stormwater general permits;
  - All Region 5 States have issued NPDES general permits for industrial storm water discharges;
  - EPA is the permitting authority on Tribal lands;
  - EPA has issued "Multi-Sector General Permits" (MSGP) for Storm Water Discharges Associated with Industrial Activities;
  - Stormwater permits require the Permittee to implement stormwater control measures to minimize the discharge of pollutants in storm water to receiving waters.
- Under EPCRA, MCHM and PPH storage are reportable to the state emergency response commissions. Under SPCC, oil storage is not reported to EPA, but SPCC plans must be kept at the site.
- Above ground storage tank registration regulations vary by state
- Minnesota and Michigan require secondary containment for hazardous chemical storage, in addition to oil.

Coal Preparation Background

- Coal preparation (also called washing, cleaning or beneficiation) removes sulfur, ash, rock and other impurities, resulting in a coal product with higher thermal energy and less potential air pollutants.
- Coal preparation uses a variety of unit operations depending on the characteristics of the raw coal and the requirements of the end user. Most methods exploit the difference in density between coal and impurities.
- Because coal preparation is water intensive, the plants are typically designed as closed loop utilizing storage ponds or impoundments to recycle water. However, they also typically have permitted outfalls and discharges that occur by seepage through impoundment walls.
- At some plants, fine coal is processed using froth floatation. In this process, chemical agents are added to a mixture of coal and water. The agents are designed to enhance the physical separation of coal from impurities by selectively attaching to the coal particles and causing the particles to float in a more efficient manner.

- See attached map for the location of coal preparation facilities in Region 5. Often smaller mines transport raw coal to regional coal preparation facilities, and larger mines have co-located coal preparation facilities.
- According to a 2013 industry survey, there are 17 plants operating in Illinois, 14 in Indiana, and 21 in Ohio.

Regulatory Authority Applicable to Coal Preparation Plants

- The NSPS for coal preparation plants (Subpart Y) was promulgated in 1976 and revised in 2009. The standards specify emission limits from thermal dryers and pneumatic cleaning equipment sources; and opacity limits for fugitive emissions. They do not address chemical washing or chemical storage.
- AP-42 establishes emission factors for various physical coal cleaning processes (1995).
- The construction of coal preparation plants and associated impoundments that result in the discharge of dredged and fill material into waters of the US requires a CWA 404 Permit.
- Federal effluent limitations guidelines (40 CFR 434) are applicable to coal mining and preparation facilities. The ELG's establish technology based limitations for iron, manganese, pH, and TSS.
- According to EPA's ELG development document written in 1982, 292 out of 458 prep plants nationwide were utilizing froth floatation at that time.
- NPDES permitting for coal preparation facilities varies across the three states.
- None of the Region 5 states require that facilities monitor discharges from prep plants for parameters which may be present due to the use of chemicals in the coal preparation process.
- In Ohio, there have been slurry spills from an impoundment that accepts waste from plants utilizing froth floatation. OEPA collected samples and found 17 semi-volatile organic compounds to be present in the slurry.