BACKGROUND

• Reactive waste can be hard to handle for any institution
• Found very dated materials that Hoarders Researchers wouldn’t dispose
• WV DEP cited some expired ethers as waste, and therefore not labeled
  – 2010-2012 EHS paid any waste penalties (EHS had some deficiencies to correct)
  – 2012-2014 Colleges had to pay waste penalties
  – 2014+ Departments pay penalties
  – 2016+ Individual research groups will have to pay any penalties (so far none)
• For Reactives, there is also the Insurance, State Fire Marshall (SFM), and Safety Aspects to consider…
BACKGROUND – WASTE SERVICE

- 25 EPA sites just on the main Morgantown, WV campus. 34 sites total.
- Standard fix for Waste problems
  - Evaluate then Take to CAA. WV DEP – Workup/Response. Other – Ship for Disposal
  - Either way shipments from CAA are usually within 1 week to 1 month
- Problems with Reactives
  - If too old and potentially more unstable, cannot be packaged and shipped normally
  - Call in the Reactive Materials Team (RMT) ($$$$
  - When RMT arrives, where do we put them? Traffic Control? Pedestrian Control? What If???
BACKGROUND – REACTIVES AUDIT

• Due to the LQG time in CAA, we consistently had a RMT on campus nearly every 90 days since 2012.

• 2015 - Completed Lab Chemical Inventory looking specifically for these products and users thereof.
  – Found total of 239 of Diethyl Ether, THF, Picric Acid, Dioxanes, Trinitrobenzene, Dinitrophenylhydrazine, and many others.
  – Removed expired, mismanaged, or abandoned containers and had vendor Remote Open over 150 individual containers at 5 different EPA sites.
  – Containers not opened were still in use and within their expiration.
BACKGROUND – REACTIVES AUDIT

• All Time Sensitive Materials (TSM) receive
• Placed into a tracking excel sheet
• Left Memo on Lab Door explaining:
  – What was found, Why it’s a problem
  – What label looks like
  – Contact info and web link for disposal request
• Many problems fixed at this point… Now on to training for new purchases.
BACKGROUND – POST REACT. AUDIT

• New Purchases – Contact all identified users
• Meet Personally and Train on Labeling:
  – Received Date and mark the “Expiration” of 1 year. (WV SFM)
  – Opened Date (used by our waste vendor <1 year = normal shipping)
  – 6 month peroxide test result (no test = shipped as waste)

Seemed to go well, Up

Until…
WELCOME TO THE CHEMICAL UNDERWORLD
These items in use at our Downtown Chemistry Building…
… ended up with these in another building across campus on our Disposal Request Form in late 2016.

Now everything is moving around!!
BACKGROUND – PROGRESS!

EHS Decision was finally made in 2016.

Expired products that are **TSM** and have potential to become shock sensitive or other hazards are **Waste**.

Help from Insurance Audit that was conducted and previous WV DEP reports.
CORRECTIVE ACTION OPTIONS

Items being Moved:

• Training
• Bill Back Disposal to Departments
• Another Inventory / Audit
• Tracking Tags
• Waste Bandits

New Purchases:

• Training
• Bill Back Disposal to Departments
• Administrative – Procurement
• Waste Bandits
CORRECTIVE ACTION DECISION

• Do a “quick” audit of known user areas

• All containers found will receive TSM Label - ongoing

• Update annual refresher training for focus
  – Describe potential for Departments to be billed for RMT services

• NEED: Acquire something that would lower lab risk, but not start our 90 clocks…
CORRECTIVE ACTION DECISION

• Keep TSM Reactive Waste in SAA to avoid “clock” starting.

• Easy Enough… Let’s install an Explosive Day Box.
  – Lab Occupant Protection
  – Lock
  – Big enough for most bottles
  – Can be bolted to floor or wall
PROBLEM AREAS

• **Lab Occupant Protection:** Boxes were not made for this use specifically. *Add packing to minimize impacts.*

• **Lock:** If box is locked, is it “Under the control of the operator” for SAA? *Use Pin and Serial Number Seal instead.*

• **Bottle Size:** Since most boxes are long and low, bottles would have to be placed on side. Bigger boxes are too big. *Small box placed on its side works well. Must add a Base.*

• **Securing to Floor or Wall:** Drilling lags thru box would compromise integrity and damage flooring or walls. *Use cable lock to secure box from “walking away.”*
PRODUCT DESIGN

• Purchased Box from ARMAG 14” x 12” x 8” Aluminum.

• Added Labeling for Hazards – Write in area for specific wastes.
PRODUCT DESIGN

• Labeling on all sides added.
PRODUCT DESIGN

- Base to stand on side fabricated and installed from storage crate.
- Closure with Pin and Seal
PRODUCT DESIGN

• Packing material placed inside to stabilize bottle(s).

• Cable lock used to secure box inside lab / SAA.
COST SAVINGS

• Implementation:
  – 5 Boxes cost $380 each = $1900
  – Pins, Locks, 50 Seals = $68
  – Laminate, Base, Labels = $0
  – Total = $1968 or ~$394 each

• This allows us to have up to 6 areas needing RMT before scheduling. Potential to avoid 5 unnecessary Mob/Labor costs.

  – 1 container openings = $25
  – Mobilization per site = ~$500
  – Materials / Labor per day = ~$1400
  – Total = $1925 min per RMT visit

• Potential cost savings if all boxes in use and each SAA required own RMT visit previously

  • (11,550 – 2,050) = $9500
REGULATORY 2017 GENERATOR RULE

- **SAA**: Labeled as Hazardous Waste and Hazard ID, Under control of operator, closed container, at point of generation.

- **In West Virginia**: Point of Generation is in lab that generated, but may be moved around inside lab, or placed into a cabinet (flammables)

- We consider the box similar to placing flammables into a cabinet.

- We don’t label our Flam Cabinets, but will label these boxes for users.
IN ACTION

• When walking thru the door of a lab with one of these boxes, be prepared for generators to be uneasy and potentially upset they will have to deal with this. They suddenly realize, they have a Dunce Box in their lab.
IN ACTION

Box ID#

DB1

Bldg/Rm

Seal #
SUPPLIER LIST

• Lowe’s Home Improvement: Cable Locks #656865 ~$ 10 / each

• ARMAG: Small Boxes 14x12x8 ~$ 380 / each

• ACE Hardware: Pins & Washers ~$ 8 / for 5 boxes

• ULINE: Serial Number Seals ~$10 / 50 pack.

• Base and Labels: uncalculated DIY costs.
FOR MORE INFORMATION PLEASE CONTACT:

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