Setting Up and Operating a Waste Management Program

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About East Side Plating

- 3 Facilities
- During 2008 averaged 170 employees
- One of the USA's 10 Largest Job Shops

Waste Types

- The majority of our hazardous waste is produced by drag-in from planting baths into rinse water baths.
- This includes:
  - Cadmium
  - Chromium
  - Copper
  - Nickel
  - Silver
  - Gold
  - Zinc

Waste Types

- We also have:
  - Barium
  - Lead
  - Chromates
- As well as:
  - Cleaners
  - Electrocleaners
  - Acids (mainly, but not limited to)
    - Nitric
    - Hydrochloric
  - Selenium
  - Molybdenum
  - Vapor Degreasing using TCE

Waste Reduction

- There are almost 100 rinse tanks.
- Most of them are 200 GAL, but some are 1,000 GAL, or 1,500 GAL.
- Flow rates are approximately 45 gal/minute.
- In 1979 we began a project to evaluate our rinsewater and find where we could reduce our water usage and our hazardous waste generated.
- Every rinse tank was fitted with a variable shut-off valve and a "dole" valve.
- This allowed us to control not only manually shutting off the water system, but controlling the flow rate.

Waste Reduction

- We added a cycling switch on a timer that allowed us to control how much water was flowing into our tanks and therefore reduce our water usage by 60%.
- To further help us out, we placed a water meter on each plating line and monitor our usage each week.

*Cycling switch and water meter.

Waste Reduction

- In water flowing to the rinse tanks there is a "gap" above the tank which allows the operators to visually see the amount of rinsewater going into a tank.
- The water is directed into the bottom of a tank via a funnel and pipe.
- Water entering from the bottom of the tank allows better rinsing across the parts.
- This has worked out so well we are doing the same thing with Natural Gas.

*Picture of a dole valve and the rinsewater gap.

Wastewater Discharge Limits

The EPA/ DEQ/ City Wastewater Permit limits for this facility are:

- Cd 0.07 mg/l
- Cr 1.71 mg/l
- Cu 2.07 mg/l
- Pb 0.43 mg/l
- Ni 2.38 mg/l
- Ag 0.24 mg/l
- Zn 1.48 mg/l

*Atomic absorption spectrophotometer used at East Side Plating.

Wastewater Treatment

- The first rule to help with the rinsewater is SEGREGATION.
- We segregate the rinsewater from the tanks to:
  - Acids
  - Alkalies
  - Cyanides
  - Chromium
  - Chromates
  - Metals (not associated as above)
  - EL'SS Processes
- All cyanides are pretreated to oxidize them to Nitrogen gas and liquid CO_2.

*Sludge tower in Plant 2 waste treatment.

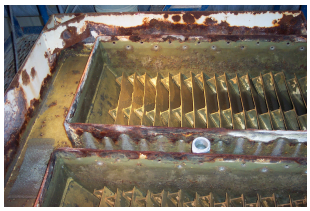
Wastewater Treatment

- All Chromium and Chromates are pretreated in reductions to a trivalent state.
- We then use a conventional system of neutralization: (X2) clarification, a sludge tower, filter (plate) press, and sludge drier.
- All of these are based on water purification or reduction.

*Plate Press in Plant 2 waste treatment.

Wastewater Treatment

- Selenium and Molybdenum do not precipitate in our system – so we don't use them.
- Cadmium is difficult to precipitate, so we use a special agent that targets Cadmium.
- The used TCE is recycled to a mid-west facility that burns it as fuel.



*Inclined Plate Clarifier in Plant 2 waste treatment.

Waste Storage

- We accumulate the final dried sludge in lined poly supersacks.
- These are stored in our waste treatment building. Provided that we recycle the product as -F006- we can store the supersacks for up to 180 days.
- Last year, from our 3 facilities we sent out for recycling more than 336,000 pounds of F006. No F006 was landfilled.

*F006 supersacks for hazardous waste collection in Plant 2 waste treatment.

Toxics Reduction

- We have done some chemical changes to our facilities to promote less toxic chemicals.
- Switched from a cyanide based zincate to a non-cyanide zincate for plating on aluminum.
- One of our facilities has been cyanide free for ten years.
- Experimented with an alkaline based copper plating bath instead of a cyanide based copper bath – but with mixed results.
- In our EL'SS baths we have substituted a lead free, cadmium free – compliant, but with a dull finish.
- We have also switched some chromates from hexavalent to trivalent.

Tracking Toxics Reduction

- Our three facilities have 3 wastewater permits, 2 stormwater permits, and 2 ACDP – all of which promote toxics reduction.
- Other items we consider are:
  - Oregon Hazardous Waste Reduction Reports
  - TRI (Form R) Toxic Chemical Reduction Report – EPCRA (SARA Title 3)
  - Toxic Use Reduction Plans
  - Hazardous Waste Reduction Plans

Regulatory Change

- New regulations, per EPA's Federal Register has changed the definition of Hazardous Waste.
- Oregon has not yet adopted this definition of Hazardous Waste.
- It is possible that the F006 that we recycle now, could change to non-hazardous waste.
- This designation would lead to TSP facility audits, we do these audits every 2 years and for every new facility in consideration.

Auditing the TSDF You Use

The TSDF facility audit process includes:

- Facility Classification
- Permits
- Processes
- Products
- Liability Requirements
- State Permits
- Years in Business
- Waste Analysis
- Security Systems
- And any other General Inspection Requirements

Recordkeeping

- For record keeping, I have seven 4-drawer filing cabinets full of documentation.
- Keep records:
  - Profile – min. 2 years
  - Manifest – min. 3 years
  - Disposal – min. 3 years
  - TRI – min. 3 years
  - Wastewater discharge – min. 5 years
  - Air discharge – min. 7 years
  - Oregon Hazardous Waste Generator Reports – min. 3 years

Recommendation – Keep all waste records for as long as possible. You never know what issues the future will bring!

Questions?

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