# *Cost Effective Environmental Management System*

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***AHMP National Conference***

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Eagle Environmental Management, LLC

# *EVERYBODY HAS AN EMS …*

- *Coffee-stained napkins;*
- *Paper notes, post-its;*
- *Written plan;*
- *Computerized program*

# *GREATEST CHALLENGES IN ANY ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)*

- *Management support and commitment*
- *Consistency of using the system*
- *Consistency of system users*
- *Tracking what you need to track*
- *Assembling (and maintaining) the right team of resources*

# *CASE HISTORY: "FILLING THE GAP"*

***Situation :*** *Chemical company had experienced turnover (4 changes) in environmental role due to retirement, departure, and promotion within a 4-year period.*

***Problem:*** *Each change had created an environmental information gap, which created the potential for something being overlooked. The latest change occurred during "reporting season".*

# *CASE HISTORY: "FILLING THE GAP"*

***Issues:***

- *Air compliance and emissions tracking issues;*
- *Waste issues;*
- *Waste tracking;*
- *Wastewater issues;*
- *Procedures and document control;*
- *Compliance calendar; and,*
- *Others, as necessary.*

# *CASE HISTORY: "FILLING THE GAP"*

***Solution:*** *Develop EMS elements concurrent with assisting the company complete the regulatory reports as they came due using our EMS*

***Benefits:***

1. *Allowed company to minimize costs for EMS since development was being done in the process of preparing the regulatory reports;*
2. *Most of system "de-bugging" was performed during actual use; and,*
3. *Cost is spread out over approximately 1 year as elements are addressed as regulatory reports are due.*

# Compliance Overview

**ENVIRONMENTAL REGULATORY OVERVIEW**

| REGULATORY ISSUE | FEDERAL CITATION | STATE CITATION (INCL. FEDL. REF. IF APPLICABLE | LOCAL CITATION | REPORTING REQUIREMENTS | CHANGES MADE? YES | CHANGES MADE? NO | DATE OF MOST RECENT CHANGE/ REPORT | DUE DATE | COMPL. STATUS |
|---|---|---|---|---|---|---|---|---|---|
| ***Resource Conservation & Recovery Act (RCRA):*** | REGULATED IN MISSOURI BY MDNR | 10 CSR 25; 40 CFR 260-279 | | | | | | | |
| **Small Quantity Generator:** • generates no more than 1 kg (2.2 lbs.) of acutely hazardous waste AND • more than 100 kg (220 lbs.) but less than 1,000 kg (2,200 lbs.) of non-acute hazardous waste in one month or is accumulated at any one time | | 10 CSR 25-5.262 | N/A | SQG/LQG (and active CESQG) Registration Fee | | | | 31-Dec | Y |
| Hazardous Waste Contingency Plan | | 10 CSR 25-5.262; 40 CFR 264.51-54 | N/A | Required to have plan onsite (SQG). The contingency plan must be reviewed, and immediately amended, if necessary, whenever changes occur which may impact facility's ability to respond to a release. Copy of plan supplied to LEPC | | | | As necessary | y |
| Hazardous Waste generation requirements | | 10 CSR 25-5; 40 CFR 260-279 | N/A | SQG/LQG Fee for waste Generated (7/05-6/06) | | | | 31-Dec | Y |
| Facility inspected & maintained | | 10 CSR 25-5.262; 40 CFR 265.174 | N/A | Maintain inspection reports | | | | Weekly | Y |

# Air:

## FACILITY AIR COMPLIANCE OVERVIEW

| | | | | | | AIR CONSTRUCTION PERMIT INFORMATION | | | | | | | | | | | | ###### |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | PERMIT CONDITIONS | | | | | FREQUENCY | | | | | |
| EMISS. POINT | POINT DESCRIPTION | POLL. | New Oper. Permit | Rept. On EIQ | Permit Copy Avail | Regulatory Citation OR MDNR Permit# | Permit Date | Limits | Units | Freq. | Type Limitation | Compliance Method | D | W | M | BI-AN | CURRENT LEVEL | IN COMPL. (Y/N) |
| 2A | Boiler - 6.6 MMBTU/ HR | PM10 | Y | Y | NR | NONE, report on EIQ | N/A | 0.21 | tons | year | emissions | NO PERMITTED LIMIT; limit listed based on MHDR. Fuel throughput recorded; 12-mon rolling avg. | | | X | | 0.00 | Y |
| | | PM2.5 | | | | | | NONE | tons | year | emissions | | | | X | | 0.00 | Y |
| | | S0x | | | | | | 0.017 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | N0x | | | | | | 2.76 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | VOC | | | | | | 0.152 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | CO | | | | | | 2.32 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | Lead | | | | | | NONE | tons | year | emissions | | | | X | | 0.00 | Y |
| | | NH3 | | | | | | NONE | tons | year | emissions | | | | X | | 0.00 | Y |
| | | | | | | | | NONE | tons | year | throughput | Throughput recorded; 12-mon rolling avg. | | | X | | 0.00 | |
| 3 | IPA Mixing | VOC | Y | Y | NR | NONE, report on EIQ | N/A | NONE | 1000 gals | year | emissions | Throughput recorded; 12-mon rolling avg. | | | X | | 0.00 | Y |
| | | VOC | | | | | | NONE | 1000 gals | year | throughput | | | | X | | 0.00 | Y |
| 4 | Fragrance Oils Mixing | VOC | Y | Y | NR | NONE, report on EIQ | N/A | 1.23 | tons | year | emissions | NO PERMITTED LIMIT; limit listed based on MHDR | | | X | | 0.00 | Y |
| | | VOC | | | | | | NONE | tons | year | throughput | Throughput recorded; 12-mon rolling avg. | | | X | | 0.00 | Y |
| 5 | Boiler - 12 MMBTU/ HR | PM10 | Y | Y | NR | 40 CFR 60 Subpart Dc | N/A | 0.4 | tons | year | emissions | Fuel throughput recorded; 12-mon rolling avg. | | | X | | 0.00 | Y |
| | | PM2.5 | | | | | | NONE | tons | year | emissions | | | | X | | 0.00 | Y |
| | | S0x | | | | | | 0.03 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | N0x | | | | | | 5.21 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | VOC | | | | | | 0.29 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | CO | | | | | | 4.38 | tons | year | emissions | | | | X | | 0.00 | Y |
| | | Lead | | | | | | NONE | tons | year | emissions | | | | X | | 0.00 | Y |
| | | NH3 | | | | | | NONE | tons | year | emissions | | | | X | | 0.00 | Y |
| | | | | | | | | NONE | tons | year | throughput | Throughput recorded; 12-mon rolling avg. | | | X | | 0.00 | |

# Generator Status:

## GENERATOR STATUS DETERMINATION

Businesses that produce hazardous waste must follow certain federal and state laws and regulations. The laws and regulations that apply to you depend on the amount and type of hazardous waste your business produces. There are three waste generator categories:

### GENERATOR CATEGORIES

**Conditionally Exempt Small Quantity Generator**

- Produce less than 100 kilograms (kg) (220 pounds) of hazardous waste, and
- Produce less than 1 kg (2.2 pounds) of acutely hazardous waste in one calendar month.
- Do not accumulate 100 kg of hazardous waste or 1 kg of acute hazardous waste.

**Small Quantity Generator**

- Produce or accumulate between 100 kg (220 pounds) and 1,000 kg (2,200 pounds) of hazardous waste, and
- Produce or accumulate less than 1 kg (2.2 pounds) of acutely hazardous waste in one calendar month.

**Large Quantity Generator**

- Produce 1,000 kg (2,200 pounds) or more of hazardous waste, or
- Produce or accumulate 1 kg or more (2.2 pounds) of acutely hazardous waste, or
- Produce or accumulate 1 gram or more of dioxin waste (2,3,7,8-tetrachlorodibenzo-p-dioxin) in one calendar month.

You cannot manage your business' acute hazardous wastes separately from your other hazardous wastes. For example: You cannot maintain Large Quantity Generator status for your acute waste and maintain Small Quantity Generator status for all other hazardous wastes.

### CHANGE IN GENERATOR STATUS

According to the Code of State Regulations (CSR), businesses that produce or accumulate100 kg or more of hazardous waste, or 1 kg or more of acutely hazardous waste, are required to register with the Missouri Department of Natural Resources (department). According to 10 CSR 25-5.262(2)(A)3.B., those businesses are also required to complete and file an updated generator registration form, known as a Notification of Regulated Waste Activity form, if any of their information changes.

This includes whenever there is any change in:

- Contact person,
- Business name,
- Mailing address,
- Phone number or area code,
- Ownership,
- Waste stream(s),
- Generator status, or
- Proper street address.

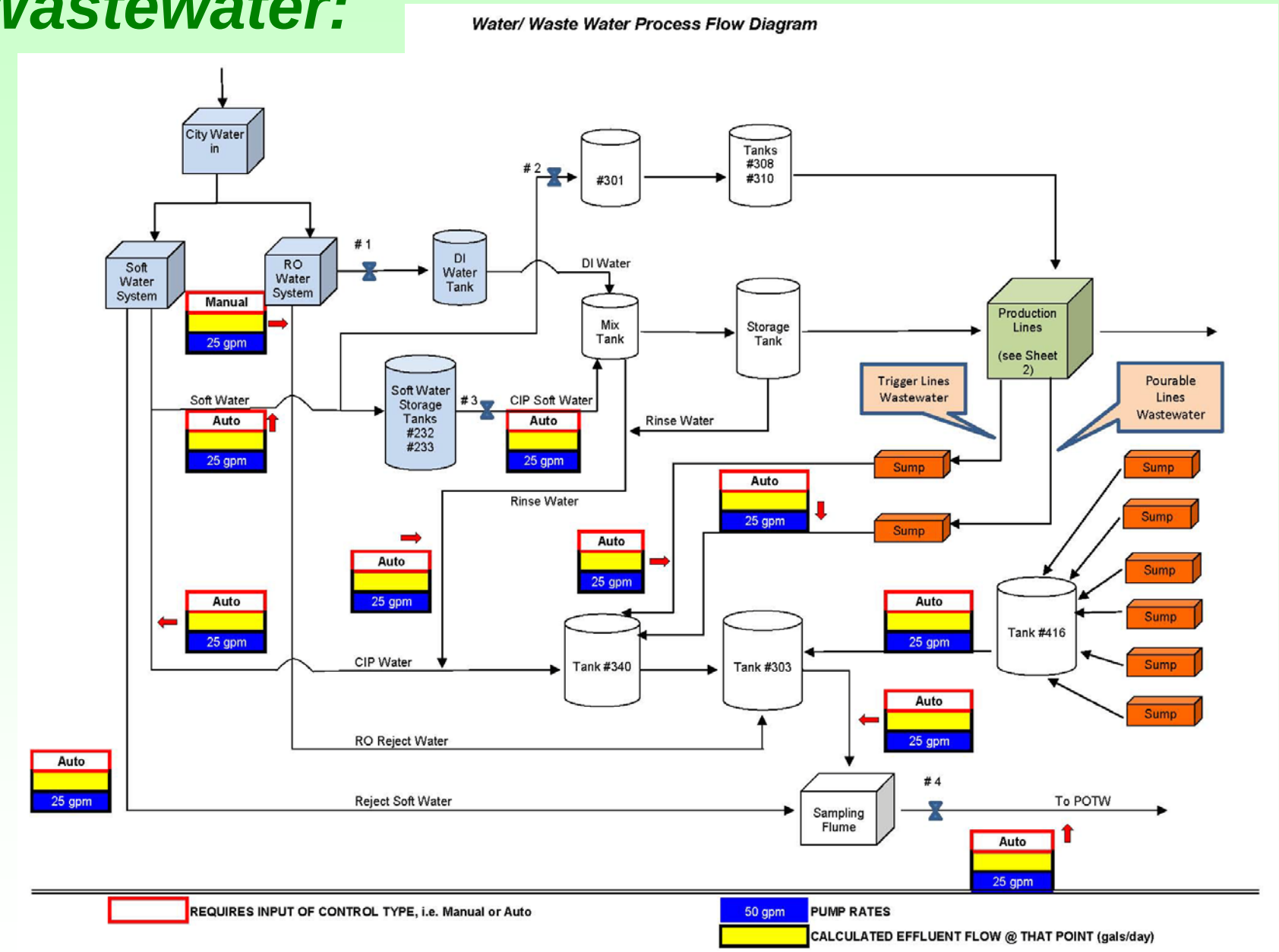
You must submit a Notification of Regulated Waste Activity form with any updated information to the department. For a change in ownership, businesses must pay the usual registration fee. If your proper street address changes, such as when a town renames a street or alters numbering on a block, your business will keep its original generator identification number. If your business changes locations, you will need to register the new location and request a new generator identification number using the Notification of Regulated Waste Activity form. Your old generator identification number is not transferable. The Notification of Regulated Waste Activity form is available on the department's Web site at

http://www.dnr.mo.gov/forms/780-0408.pdf

You can also contact the department's Hazardous Waste Program at (573) 751-2524 to obtain a form.

### EPISODIC GENERATORS

# Wastewater:


Water/ Waste Water Process Flow Diagram
City Water in
Soft Water System
RO Water System
# 1
DI Water Tank
# 2
#301
Tanks #308 #310
DI Water
Mix Tank
Storage Tank
Production Lines (see Sheet 2)
Manual
25 gpm
Soft Water
Auto
25 gpm
Soft Water Storage Tanks #232 #233
# 3
CIP Soft Water
Auto
25 gpm
Rinse Water
Trigger Lines Wastewater
Pourable Lines Wastewater
Sump
Auto
25 gpm
Rinse Water
Auto
25 gpm
Auto
25 gpm
Auto
25 gpm
Auto
25 gpm
Tank #416
Tank #340
Tank #303
CIP Water
Auto
25 gpm
RO Reject Water
Auto
25 gpm
Reject Soft Water
Sampling Flume
# 4
To POTW
Auto
25 gpm
REQUIRES INPUT OF CONTROL TYPE, i.e. Manual or Auto
50 gpm
PUMP RATES
CALCULATED EFFLUENT FLOW @ THAT POINT (gals/day)

# Waste Streams

WASTE STREAMS

Disposal / Recycling Summary

[redacted]

| category | Description | Process Points | Storage area | Report Annual Volume | Units | Waste -W or Recycle - R |
|---|---|---|---|---|---|---|
| Corrugated Cardboard | Cardboard boxes, tier sheets, totes, trays, etc | delivery of materials | Collection bins in production, compacted and baled | 1191 | metric tons | R |
| Corrugated Cardboard | Rebox cardboard boxes | | | | | R |
| Substrate | Stickups substrate | Production | Warehouse - West Dock (baled) | | | W |
| Substrate | wipes substrate | Production | Production line | | | W |
| HDPE | HDPE Purgings | Injection/extrusion molding | Warehouse outside moldings by west dock | 385 | metric tons | R |
| PPE | Polyproylene regrind | Injection/extrusion molding | | | | R |
| General | COMMINGLED Food containers - glass, metal, plastic | | | | | W |
| General | Food/organic waste | | East and West Dock areas and trash carts | | | W |
| General | Supersaks | | | | | W |
| General | Heat-sealed plastic waste | | | | | W |
| Wood | wood pallets | Shipping | Storage trailer supplied by pallet hauler | 518 | metric tons | R |
| Construction and demolition waste | wood, block, dunnage, concrete, metal, etc. | construction area | Trash compactor or open top | varies | metric tons | W |
| Scrap Metal | Scrap Metal | | | occasional | metric tons | W |
| Mixed Waste | General, Non-recyclable, non-chemical based waste | Processing and Production Li | East and West dock areas and trash carts | 1549 | metric tons | W |
| Wastewater | Dilute rinse water, restroom discharge, DI effluent | Mixing, piping, cleanouts, bac | Mixing Holding tank 340 | 20,109,308 | gallons | W |
| [redacted]washout Waste | Mixed OE oil and water | [redacted]clean outs | drums in mixing area | 2 | metric tons | R |
| Waste Oil | Used hydraulic and gear box oil | PM on Molding Machines | West side of warehouse near overhead door | 29 | metric tons | R |
| Used coding inks/solvents | ink and cleaning solvent | ink coder cleaning | mixing drum room | 50 | gallons | R |
| Used parts cleaners/solvents | used solvent for cleaning | PM of cleaning stations | Maintenance | 1 | metric tons | R |
| Aerosol cans | Aerosol cans - chain lube, spray silicone, cleaner, paint | Products used in PM of equip | Not assigned | very small | | W |
| Pesticides | Quaternary ammonium compounds and disinfectants | Empty raw mt'l containers | Compounding room and empty drum trailer | not reported | | W |
| Lamps* | Used Fluorescent bulbs | Replacing light bulbs | Electrians shop - contractor replaces | varies | | R |
| Batteries* | Dry cell batteries | all | | | | R |
| Non haz | Off-Spec Product | Batching process | Mixing Department | varies | | W |
| Non haz | Lab waste | Lab Testing | Tote tank in Warehouse | | | W |
| **Hazardous Waste (potential)**** | Spilled or leaked products | Spill | Haz waste storage area | | | W |
| **Hazardous Waste**** | Flammable and Toxic Lab Chemicals, methanol, mineral oil | Lab Testing | 30 gallon drum in Lab | 30 | gallons | W |
| **Hazardous Waste**** | Off-Spec Product including haz waste codes: | Batching process | Mixing Department | varies | | W |
| | D001, D002, D006, D018, D009, D027, D039, F03, U220, U151 and U196 (see Hazardous Waste Determination Procedure) | | | | | |
| | | | | | | |
| | | | | | | |

| Other | |
|---|---|
| **Wastewater treatment sludge** | None |
| **Flammable paints/thinners** | None |
| **Asbestos containing materials** | None |
| **Medical Waste** | None |
| **Disinfectant** | None |
| **Electronic Equipment** | None |

*** Special handling under separate Procedure (Universal Waste)**

**** Special handling under separate Procedure (Hazardous Waste)**

# *CASE HISTORY: "CHANGE IS NOT ALWAYS BETTER"*

***Situation :*** *Fortune 500 Title V Chemical company utilized system of rotating EHS Manager and Environmental Technician every 4 years on staggered cycle.*

***Problem:*** *Current positions were held by personnel who were getting consistent low marks in meeting Company's environmental goals and objectives across all media.*

# *CASE HISTORY: "CHANGE IS NOT ALWAYS BETTER"*

***Issues:***

- *Water issues;*
- *Effluent contributions;*
- *Air compliance and emissions tracking issues;*
- *Waste Management issues; and,*
- *Procedures and document control.*

# *CASE HISTORY: "CHANGE IS NOT ALWAYS BETTER"*

***Solution:*** *Worked onsite with initial task of defining effluent composition. Task soon expanded to air, waste management, and reporting issues. Used EMS to put issues in one place*

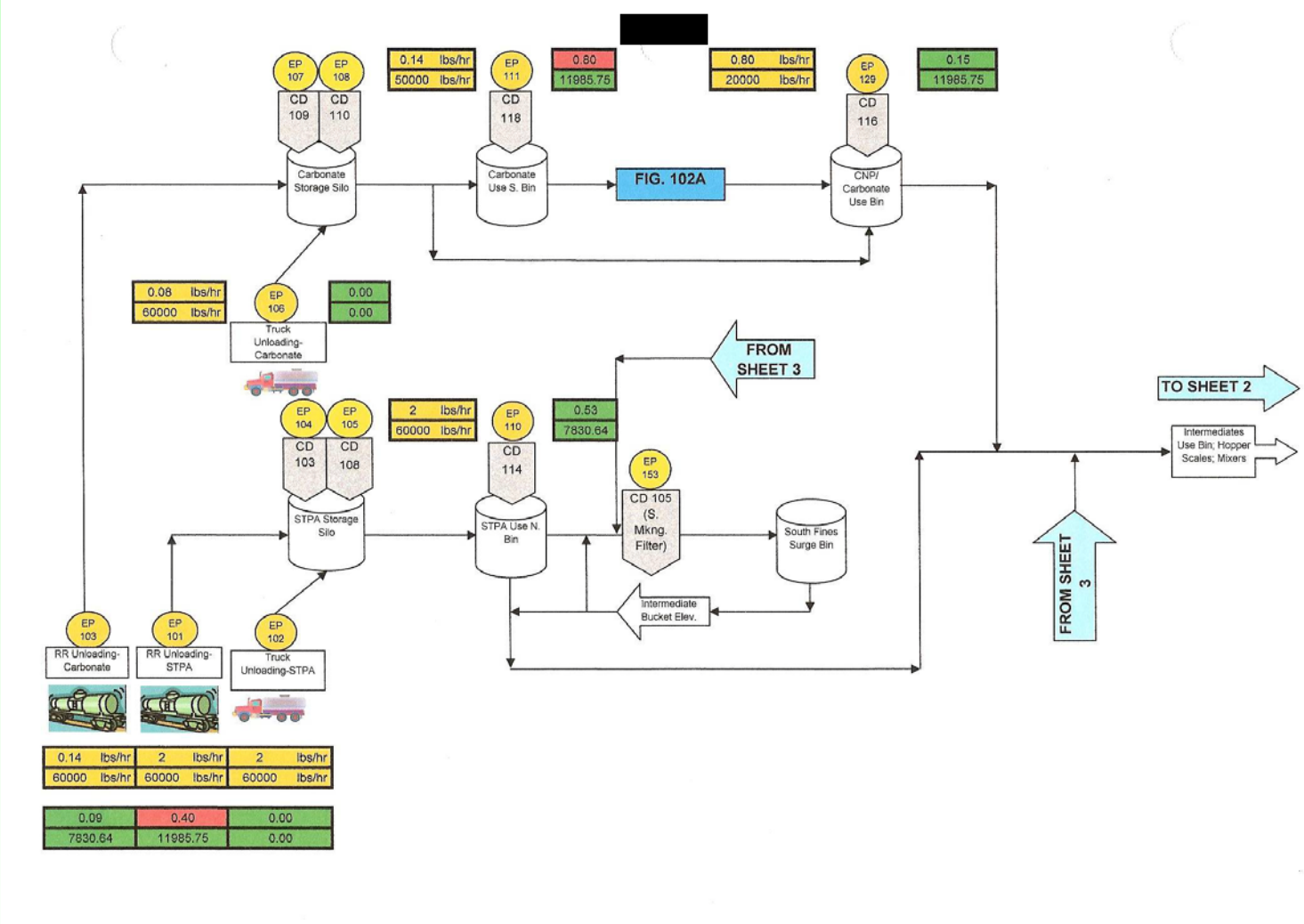
***Benefits:***

1. *Allowed company to simplify air emissions tracking;*
2. *Site Engineering Manager utilized Effluent Model to predict compliance at end of pipe for new chemical additives;*
3. *Combined all reporting tracking in one place allowing issues to be quickly identified.*

# Air:

| | | | AIR CONSTRUCTION PERMIT INFORMATION | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PERMIT CONDITIONS | | | | | FREQUENCY | | | | | | RECORDS | CURRENT | IN |
| EMISS. POINT | POINT DESCRIPTION | POLL. | Regulatory Citation OR STL APCP Permit/ SR# | Permit Date | Limits | Units | Freq. | Type Limitation | Compliance Method | D | W | M | BI-AN | OWNER | LOC. | LEVEL | COMPLI. (Y/ N) |
| 101 | STPA Railcar unloading | PM10 | | 9/1/78 | 2 | lbs. | hour | emissions | NONE | | | | | | | 0.10 | Y |
| | | | 2/3/1978 | " | 60000 | lbs. | hour | throughput | Throughput recorded | | | X | | | | 8023.62 | Y |
| | | | | " | | | | baghouse operation | Inspect condition 2X/ year | | | | X | | | 2.83 | Y |
| 102 | STPA Truck unloading | PM10 | | 9/1/78 | 2 | lbs. | hour | emissions | NONE | | | | | | | 0.14 | Y |
| | | | 5/24/1979 | " | 60000 | lbs. | hour | throughput | Throughput recorded | | | X | | | | 8023.62 | Y |
| | | | | " | | | | baghouse operation | Inspect condition 2X/ year | | | | X | | | 6.83 | Y |
| 106 | Carbonate truck unloading | PM10 | | 10/10/88 | 0.08 | lbs. | hour | emissions | NONE | | | | | | | 0.20 | N |
| | | | | " | 60000 | lbs. | hour | throughput | Throughput recorded | | | X | | | | 12756.95 | Y |
| | | | | " | | | | baghouse operation | Inspect condition 2X/ year | | | | X | | | 1.83 | Y |

# Air:


EP 107
EP 108
CD 109
CD 110
Carbonate Storage Silo
0.14 lbs/hr
50000 lbs/hr
EP 111
CD 118
Carbonate Use S. Bin
0.80
11985.75
FIG. 102A
0.80 lbs/hr
20000 lbs/hr
EP 129
CD 116
CNP/ Carbonate Use Bin
0.15
11985.75
0.08 lbs/hr
60000 lbs/hr
EP 106
Truck Unloading-Carbonate
0.00
0.00
FROM SHEET 3
TO SHEET 2
Intermediates Use Bin; Hopper Scales; Mixers
EP 104
EP 105
CD 103
CD 108
STPA Storage Silo
2 lbs/hr
60000 lbs/hr
EP 110
CD 114
STPA Use N. Bin
0.53
7830.64
EP 153
CD 105 (S. Mkng. Filter)
South Fines Surge Bin
Intermediate Bucket Elev.
FROM SHEET 3
EP 103
RR Unloading-Carbonate
EP 101
RR Unloading-STPA
EP 102
Truck Unloading-STPA
0.14 lbs/hr
60000 lbs/hr
2 lbs/hr
60000 lbs/hr
2 lbs/hr
60000 lbs/hr
0.09
7830.64
0.40
11985.75
0.00
0.00

# Air:

## BAGHOUSE STATIC AND DYNAMIC INSPECTION

**Emission Pt.:** 101
**Equip Name:** STPA Rail Silo
**Location:** Rail Yard
**Equip Model number and/ or description:**
**INSPECTOR:**
**DATE:**

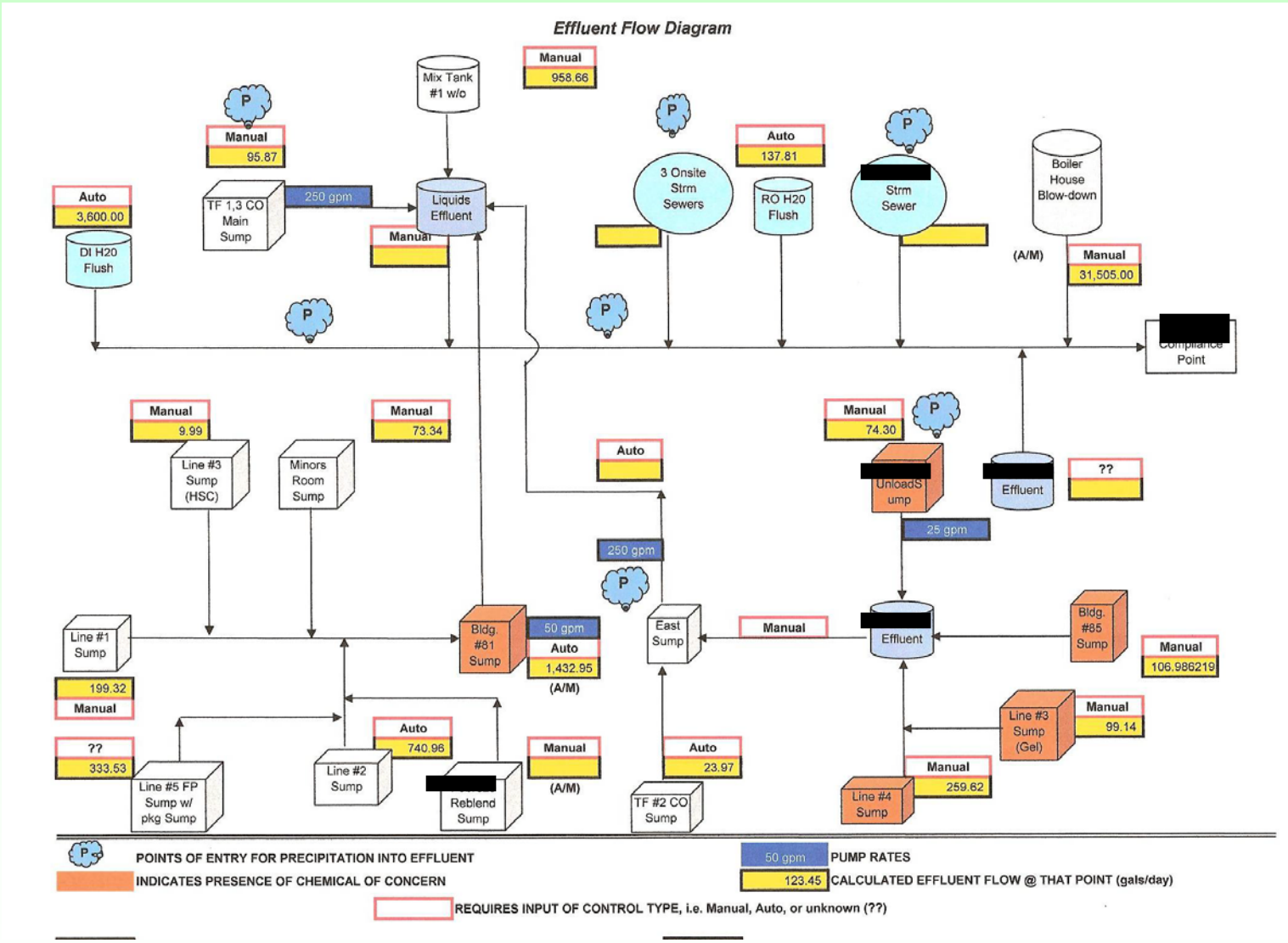
Support required: Mechanic / Electrician / Operator
Tools Req'd: Flashlight, wrenches 9/16 & 3/4" , screw driver, tape, Marker, dust mask, Db Meter, pen,Amp gauge,

| CONDITION static/dynamic | ITEM INSPECTED | EXPECTED RESULTS | COMMENTS | STATUS Passed/Failed |
|---|---|---|---|---|
| Static | Bag House Construction | Constructed as per design, smooth welds, no cracks, painted etc. | | |
| Static | Filters proper media & installed correctly | Filters are clean, properly attached and ready for start up | | |
| Static | Access Door operation | Ensure door opens freely & stays open when released (safety catch), also ensure door is properly gasketed (poured gasket) | | |
| Static | Back Blow system | Ensure system includes a pressure regulator & air filter with a guage | | |
| Static | Back Blow system | Record # of solenoids & diaphrams Label? | | |
| Static | Timer Board | Ensure timer board has time on & time of setting & is environmentally sealed | | |
| Static | Ducting | Ensure inlet & discharge ducting are clean and free of welding burrs | | |
| Static | Hopper level probe | Ensure level probe exists, is located below the access door and is wired up | | |
| | Flange between hopper & feeder valve | Ensure it is properly gasketed & bolted secure. | | |
| Static | Appearance | General appearance is acceptable as per plant standards? | | |
| | | | | |
| Dynamic | Safety | Ensure air dump works for back blows | | |
| Dynamic | Safety | Ensure air regulator is operational | | |
| Dynamic | Back Blow timer board | Test time on & time off when back blow is energized | | |
| Dynamic | Safety | No air leaks when compressed air is on. | | P |
| Dynamic | Differential pressure switch | Ensure that DP switch is operating and controls back blow timing & shut off | | |
| Dynamic | Filter media secure & properly installed | DP is achieved across bags upon start up. Loss of DP indicates leak in filter area. | | P |
| Dynamic | Bag Conditoning properly | Follow bag conditioning job aid. | | |
| Dynamic | Safety | Area meets Safety & EOG when running no visible dust no reoccuring spills etc | | P |
| | | | | 0 |

List any additonal information or actions required:

| DATE OF LAST CHECK OF BAGHOUSE PRESSURE DROP: | 28-Sep-05 |
|---|---|

# Water:


Effluent Flow Diagram
Mix Tank #1 w/o
Manual 958.66
Manual 95.87
Auto 3,600.00
DI H2O Flush
TF 1,3 CO Main Sump
250 gpm
Liquids Effluent
Manual
3 Onsite Strm Sewers
Auto 137.81
RO H2O Flush
Strm Sewer
Boiler House Blow-down
(A/M)
Manual 31,505.00
Compliance Point
Manual 9.99
Line #3 Sump (HSC)
Minors Room Sump
Manual 73.34
Auto
250 gpm
Manual 74.30
UnloadSump
Effluent
??
25 gpm
Line #1 Sump
199.32
Manual
Bldg. #81 Sump
50 gpm
Auto
1,432.95
(A/M)
East Sump
Manual
Effluent
Bldg. #85 Sump
Manual 106.986219
Line #3 Sump (Gel)
Manual 99.14
?? 333.53
Line #5 FP Sump w/ pkg Sump
Auto 740.96
Line #2 Sump
Reblend Sump
Manual
(A/M)
Auto 23.97
TF #2 CO Sump
Manual 259.62
Line #4 Sump
POINTS OF ENTRY FOR PRECIPITATION INTO EFFLUENT
INDICATES PRESENCE OF CHEMICAL OF CONCERN
REQUIRES INPUT OF CONTROL TYPE, i.e. Manual, Auto, or unknown (??)
50 gpm PUMP RATES
123.45 CALCULATED EFFLUENT FLOW @ THAT POINT (gals/day)

# *Hazardous Waste Storage:*

## HAZARDOUS WASTE STORAGE INSPECTION

| AREA | INSPECTION CRITERIA | Yes | No | COMMENTS |
|---|---|---|---|---|
| COMET | | | | |
| SATELLITE HAZARDOUS WASTE STORAGE | Is the area clear of trash, dirt and clutter? | | | |
| | Is used ink container closed? | | | |
| | Is used ink labeled as "Hazardous Waste" and "Waste Ink"? | | | |
| | Does the "Hazardous Waste" label have a start date? | | | |
| | Does the used ink container have a start date less than a year and is less than 55 gallons? | | | |
| | Has the weekly B.P./P.D. been done ? | | | |
| SPCC INSPECTION | | | | |
| | Have all containments subject to SPCC been inspected for liquid/debris accumulation? | | | |
| LIQUIDS LAB | | | | |
| SATELLITE HAZARDOUS WASTE STORAGE | Is container securely closed? | | | |
| | Is container free from leaks? | | | |
| | Is the area clear of trash, dirt and clutter? | | | |
| | Are the containers labeled as "Hazardous Waste" and "Waste Methanol/Acetone"? | | | |
| | Do the "Hazardous Waste" label have a start date? | | | |
| | Do the containers have a start date less than a year and is less than 55 gallons? | | | |
| | Are Bio-Haz. Waste containers clearly marked in Microbial Lab? | | | |
| | Has the weekly B.P./P.D. been done ? | | | |
| SPCC INSPECTION | Have all ASTs subject to SPCC plan been visually inspected within the area? | | | |
| | Have all containments subject to SPCC been inspected for liquid/debris accumulation? | | | |
| LIQUIDS WAREHOUSE | | | | |
| SATELLITE HAZARDOUS WASTE STORAGE | Are the light bulb containers closed? (Universal Waste Storage) | | | |
| | Is the area clear of trash, dirt and clutter? | | | |
| SPCC INSPECTION | | | | |
| | Have all containments subject to SPCC been inspected for liquid/debris accumulation? | | | |
| CENTRAL | | | | |
| 90 DAY HAZARDOUS | Are the light bulb containers closed? (Universal Waste Storage) | | | |
| | Is the battery container closed? (Universal Waste Storage) | | | |
| | Are drums labeled according to D.O.T.? | | | |
| | Are drums securely closed? | | | |
| | Is telephone working? | | | |

# *CASE HISTORY: "BE CAREFUL WHAT YOU MIX"*

***Situation :*** *Title V Chemical company with multiple locations (MO, IL, FL) uses over 1400 chemicals and has one Corporate Environmental Manager responsible for all reporting and compliance tracking.*

***Problem:*** *Really?? You have to ask.*

# *CASE HISTORY: "BE CAREFUL WHAT YOU MIX"*

***Issues:***

- *Chemical tracking for Tier II/ TRI;*
- *Air emissions tracking on monthly/ annual basis;*
- *Calculates air emissions for tanks using different chemicals;*

# *CASE HISTORY: "BE CAREFUL WHAT YOU MIX"*

***Solution:*** *Develop EMS robust enough to handle the 1400 chemicals and simplify chemical reporting and tracking of air emissions, including through tanks.*

***Benefits:***

1. *Simplified life (dramatically) of Env. Mgr.;*
2. *Incorporated TANKS formulas into system, thereby reducing the need for running TANKS program on monthly basis for multiple tanks;*
3. *Streamlined Tier II & TRI reporting*

# Tier II/ TRI:

*TIER II / TRI REPORTABLE CHEMICALS*

| CAS # | CHEMICAL NAME | ANNUAL QUANTITY | ** DAILY QUANTITY (rounded to whole #) | 313 CHEMICAL | REPORT-ABLE ON TIER II | REPORT-ABLE ON TRI | 2013 LIQUID WASTE QTY (lbs) | CHEMICAL % OF TOTAL LIQUIDS |
|---|---|---|---|---|---|---|---|---|
| 50-00-0 | Formaldehyde | - | - | Y | | | | 0.00% |
| 51-03-6 | Piperonyl butoxide | - | - | Y | | | | 0.00% |
| 56-81-5 | 1,2,3-Propanetriol | - | - | N | | | | 0.00% |
| 57-11-4 | Stearic acid | - | - | N | | | | 0.00% |
| 57-55-6 | Propylene glycol | - | - | N | | | | 0.00% |
| 64-17-5 | Ethanol, solution | 1,624,185.28 | 4,450 | N | Y | | | 5.95% |
| 67-56-1 | Methanol | 18,849.64 | 52 | Y | Y | | | 0.07% |
| 67-63-0 | Isopropyl alcohol | 177,815.01 | 488 | Y | Y | Y | | 0.65% |
| 67-64-1 | Acetone | 759,306.40 | 2,081 | N | Y | | | 2.78% |
| 71-36-3 | n-Butyl alcohol | 447,458.45 | 1,226 | Y | Y | Y | | 1.64% |
| 71-43-2 | Benzene | 18,114.43 | 50 | Y | Y | | | 0.07% |
| 74-98-6 | Propane | 1,202,379.88 | 3,295 | N | Y | | | 4.41% |
| 75-09-2 | Methylene chloride | 45,087.75 | 124 | Y | Y | Y | | 0.17% |
| 75-28-5 | Isobutane | 32,365.59 | 89 | N | Y | | | 0.12% |
| 75-37-6 | Difluoroethane | 8,961.04 | 25 | N | | | | 0.03% |
| 75-65-0 | tert-butyl alcohol | 1,625.79 | 5 | Y | | | | 0.01% |
| 78-93-3 | Methyl ethyl ketone | - | - | N | | | | 0.00% |
| 79-01-6 | Trichloroethylene | 494,651.26 | 1,356 | Y | Y | Y | | 1.81% |
| 79-20-9 | Methyl Acetate | 149,019.30 | 409 | N | Y | | | 0.55% |
| 91-20-3 | Naphthalene | - | - | Y | | | | 0.00% |
| 93-18-5 | 2-Ethoxynaphthalene | - | - | N | | | | 0.00% |
| 94-96-2 | 2-Ethyl-1,3-hexanediol | - | - | N | | | | 0.00% |
| 95-50-1 | 1,2-Dichlorobenzene | - | - | Y | | | | 0.00% |
| 95-63-6 | 1,2,4-Trimethylbenzene | 54,816.34 | 151 | Y | Y | Y | | 0.20% |
| 96-14-0 | 3-Methylpentane | - | - | N | | | | 0.00% |
| 96-37-7 | Methylcyclopentane | - | - | N | | | | 0.00% |
| 97-56-3 | C.I. Solvent Yellow 3 | - | - | Y | | | | 0.00% |
| 97-64-3 | Ethyl lactate | - | - | N | | | | 0.00% |
| 98-56-6 | p-Chlorobenzotrifluoride | - | - | N | | | | 0.00% |
| 98-82-8 | Cumene | 5,023.76 | 14 | Y | | | | 0.02% |
| 99-97-8 | N,N-dimethyl-p-toluidine | 413.82 | 2 | N | | | | 0.00% |
| 100-41-4 | Ethylbenzene | 66.86 | 1 | Y | | | | 0.00% |
| 100-52-7 | Benzaldehyde | - | - | N | | | | 0.00% |
| 103-09-3 | 2-Ethylhexyl acetate | - | - | N | | | | 0.00% |
| 105-54-4 | Ethyl butyrate | 22.06 | 1 | N | | | | 0.00% |
| 106-46-7 | 1,4-Dichlorobenzene | - | - | Y | | | | 0.00% |

# TANK Formulas:

**Chapter 7 of AP-42**
**7.1.3.1 Total Losses From Fixed Roof Tanks**

The following equations, provided to estimate standing storage and working loss emissions, apply to tanks with vertical cylindrical shells and fixed roofs. These tanks must be substantially liquid- and vapor-tight and must operate approximately at atmospheric pressure. The equations are not intended to be used in estimating losses from unstable or boiling stocks or from mixtures of hydrocarbons or petrochemicals for which the vapor pressure is not known or cannot be readily predicted. Total losses from fixed roof tanks are equal to the sum of the standing storage loss and working loss:

$L_T = L_S + L_W$

where:

$L_T$ = total losses, lb/yr

$L_S$ = standing storage losses, lb/yr, see Equation 1-2

$L_W$ = working losses, lb/yr, see Equation 1-29

***VERTICAL FIXED ROOF - STANDING (BREATHING) LOSSES***

[EQUATION 1-2]

$$L_S = 365 \times V_V \times W_V \times K_E \times K_S$$

where:

$V_V$ = vapor space volume, $ft^3$

$W_V$ = stock vapor density, $lb/ft^3$

$K_E$ = vapor space expansion factor, dimensionless

$K_S$ = vented vapor saturation factor, dimensionless

[EQUATION 1-3 & 1-18]

$$V_V = \left[ \frac{\pi}{4} \times D^2 \right] \times H_{VO}$$

[EQUATION 1-15]

$$H_{VO} = \left[ H_S - H_L + \left\{ H_R \times \left[ 0.5 + 0.17 \left( \frac{H_R}{R_S} \right)^2 \right] \right\} \right]$$

# Air:

**AIR EMISSIONS (by Emission Unit)**

| EMISSION UNIT ID | DESCRIPTION OF EMISSIONS UNIT | EMISSIONS METHOD USED | SINGLE HAP EMISSIONS (tons/ yr) | POTENTIAL VOC EMISSIONS (tons/ yr) | POTENTIAL CO EMISSIONS (tons/ yr) | POTENTIAL N0x EMISSIONS (tons/ yr) | POTENTIAL $S0_2$ EMISSIONS (tons/ yr) | POTENTIAL PM10 EMISSIONS (tons/ yr) |
|---|---|---|---|---|---|---|---|---|
| **EP-1 - 5** | **RAW MATERIAL BULK ASTS** | | | | | | | |
| EP-1 | 3900 gal AST - Isopar E or V | EPA TANKS pgm. | 0 | 0.0232 | 0 | 0 | 0 | 0 |
| EP-2 | 4000 gal AST - Isopar E or V | EPA TANKS pgm. | 0 | 0.0397 | 0 | 0 | 0 | 0 |
| EP-3 | 2000 gal AST - IPA | EPA TANKS pgm. | 0 | 0.0175 | 0 | 0 | 0 | 0 |
| EP-4 | 3900 gal AST - Ethyl Alcohol | EPA TANKS pgm. | 0 | 0.0241 | 0 | 0 | 0 | 0 |
| EP-5 | 8000 gal AST - Trichloroethylene | EPA TANKS pgm. | 0.2526 | 0 | 0 | 0 | 0 | 0 |
| **EP-6** | **BATCH MIXING BULK ASTs** | | | | | | | |
| | Emissions unit consists of 15 ASTs used for mixing products, ranging from 165 gals to 1900 gals. The majority of the tanks (9) are in the range of 418 gals to 550 gals, with the average of all tanks being 720 gals. | EPA TANKS pgm. | | | | | | |
| | Trichloroethylene | EPA TANKS pgm. | 0.0008 | 0 | 0 | 0 | 0 | 0 |
| | Methylene Chloride | EPA TANKS pgm. | 0.0004 | 0 | 0 | 0 | 0 | 0 |
| | Toluene | EPA TANKS pgm. | 0.0001 | 0 | 0 | 0 | 0 | 0 |
| | Tetrachloroethylene | EPA TANKS pgm. | 0.0000 | 0 | 0 | 0 | 0 | 0 |
| | Methyl Alcohol | EPA TANKS pgm. | 0.0000 | 0 | 0 | 0 | 0 | 0 |
| | Napthalene | EPA TANKS pgm. | 0.0000 | 0 | 0 | 0 | 0 | 0 |
| | Hexane | EPA TANKS pgm. | 0.0000 | 0 | 0 | 0 | 0 | 0 |
| | Ethyl Alcohol, IPA, Heptane, Naptha, etc. | EPA TANKS pgm. | 0 | 0.0083 | 0 | 0 | 0 | 0 |
| **EP-7** | **LOSSES FROM FILLING CANS** | | | | | | | |
| | Gas losses from filling cans | MFG. INFO | 0 | 1.9250 | 0 | 0 | 0 | 0 |
| **EP-8** | **CAN & BOX CODING INKS** | | | | | | | |
| | Inks and solvents in digital printing used to produce the product labels. | EPA WebFIRE FACTORS | 0 | 0.0102 | 0 | 0 | 0 | 0 |
| **EP-9** | **STEAM BOILER** | | | | | | | |
| | Natural gas fired steam boiler – 1.35 MMBtu/ hr | EPA WebFIRE FACTORS | | | | | | |
| | VOCs | EPA WebFIRE FACTORS | 0 | 0.0020 | 0 | 0 | 0 | 0 |

# MT USES TO DATE

***MULTI-MEDIA:***

- Management overview of environmental regs applicable to facility;
- Air compliance overview;
- Air emissions summary for annual reporting;
- Air process flow diagrams;
- Emission factor calculations and throughputs;
- Baghouse pressure drop logs and inspections;
- Summary of waste generation;
- Waste generator requirements including link to applicable reporting forms; and,
- Wastewater discharge process flow with contaminant of concern projections.

***AIR COMPLIANCE:***

***Compile air emissions permit requirements, data requirements, and inspections for source with approximately 240 emission points and multiple requirements for each point.***

***CHEMICAL REPORTING:***

***Compile chemical data for facility with over 1400 chemicals for Tier II, TRI, and air emissions reporting.***

# MT USES TO DATE

***WATER COMPLIANCE:***

***Process flow diagram used to predict concentrations of contaminants contained in new chemical formulations in CSO system. Facility utilized system for capital planning purposes for wastewater/ stormwater upgrades.***

***WASTE MANAGEMENT:***

***Used to segregate waste streams in facility including recycled materials. System also summarized waste quantities by category and included procedures w/ links to state forms for reporting purposes.***

# *OTHER EXAMPLES – Bad Ones!*

- ***Title V facility subject to multiple regulatory stds. is paying upper $xxx,xxx to implement a "custom" system that ONLY works within the EHS Dept.; process has taken 6.5 years so far;***

- ***Metals operation paid low $xxx,xxx for a "custom" system that is out-of-date and the company can't update w/o the vendor.***

# *QUESTIONS TO ASK ABOUT YOUR EMS*

- *Does it do what it needs to do?*
- *Does it cost you to use it or does it pay for itself?*
- *If the Environmental Manager left tomorrow, could you even find the pieces to pick up?*

# *DOES IT DO WHAT IT NEEDS TO DO?*

- *Track material usage*
- *Track waste streams*
- *Identify costs*
- *Identify reporting/ permitting requirements*
- *Provide a mechanism for identifying "issues" before they become "**PROBLEMS**"*
- *Compatibility with other systems onsite*
- *Can it be easily changed/ modified*

# *DOES IT COST YOU TO USE IT?*

- *Incompatibility with other systems; consequently you have to talk with everybody on site to get the info you need;*
- *Inconsistent tracking methods leads to under/ over reporting*
- *If it goes down OR has a built-in error, you lose!*
- *Without a mechanism for identifying "issues" they become "**PROBLEMS**"*
- *Once in-place, **YOU** can NEVER change it!!*

# *DOES IT PAY FOR ITSELF?*

- *Compatible with other systems*
- *Consistent tracking methods lead to accurate reporting*
- *If it goes down OR has a built-in error, you can fix it*
- *Has a mechanism for identifying "issues", so they never become "problems"*
- ***YOU** can change it when you need to*
- *It can identify potential cost & risk reduction opportunities*

# *PRACTICAL ADVICE*

- *It your system doesn't work (and doesn't appear that it EVER will), DON'T throw more money at more modules*
- *Meet with other departments to attempt to insure consistent tracking methods are used site-wide*
- *If you **YOU** can't make changes when you need to, look for another system*
- *Make sure it has a mechanism for identifying "issues", so they never become "problems"*

# *POSSIBLE SOLUTIONS & TOOLS*

- ***Consider utilizing MS Office tools***
- ***Global Environmental Management Initiative GEMI Metrics Navigator™ http://www.gemi.org/metricsnavigator***
- ***There are thousands of software AND hardcopy tracking tools; find what works for you WITHIN your system***
- ***Expensive does not always mean it's better!!***

# *QUESTIONS??*

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