RCRA ORGANIC AIR EMISSION SEMINAR
(SUBPART AA, BB, AND CC)

CASE STUDY

Manufacturing Process Description

XYZ Chemical Company is a permitted RCRA facility which manufactures 50,000 tons/yr of product. Approximately 1,800 tons of hazardous waste is produced per year. During the manufacturing process the unreacted manufacturing constituent is recycled to the main reactor. All wastes managed have organic concentrations greater than 10 ppmw.

Questions

Using the schematic provided for XYZ Chemical, answer the following questions:

1. Six process vents are identified in the schematic. The emission rate associated with each vent is provided next to the vent. For each vent, determine the applicability of the Subpart AA regulations and provide the basis for your determination. Note: for the first part of this case study ignore the carbon adsorber associated with the steam stripper. The process vent is from the condenser at a rate of 3.2 lb/h.

2. A carbon adsorber was added after the condenser associated with Vent #5. After installing the carbon adsorber, XYZ monitored emissions at Vent #5 and have reported results of 0.05 lb/h. Make a determination as to the compliance status of XYZ considering the addition of the carbon adsorption system.

3. What additional actions should XYZ Chemical Company take in order to comply with Subpart AA regulations?

4. There are many pieces of equipment associated with the XYZ manufacturing process, however, for the purposes of this case study, only four pieces of equipment are identified on the schematic. Make a determination on the applicability of Subpart BB for the two valves and two pumps identified. The organic composition of the flow through the equipment is identified on the schematic

5. There are two tanks associated with this manufacturing process. Method 25D was used by XYZ to determine the volatile organic concentrations in the tank. Determine the applicability of Subpart CC for the surge tank and the storage tank. Provide the basis for your determination.

6. The waste leaving the distillate receiver is collected in 55-gallon containers. XYZ determined the volatile organic concentration of the waste at the point of origination to equal 610 ppmw. Are these containers subject to Subpart CC? Provide your justification for your determination.

7. What would be required of the facility if the containers meet DOT regulations?

ANSWERS

1. The following vents are subject to Subpart AA regulations:

   Vent #4: The exhaust gases from the condenser serving the air stripper are considered a process vent. Emissions from the control device are directly related to the air stripping operations.

   Vent #5: The exhaust gases from the condenser serving the steam stripper are considered a process vent. Emissions from the control device are directly related to the steam stripping operations.

   The following vents are **not** subject to Subpart AA regulations:

   Vent #1: The vent on the surge tank is not subject to Subpart AA regulations since it does not meet the definition of a process vent as specified in the rule. The tank emissions are not process related.

   Vent #2: This unit is a part of the manufacturing operations, therefore, under 40 CFR 261.4 (c) a hazardous waste that is regulated in a manufacturing process unit is not subject to regulations under Parts 262 through 265 until it exits the unit in which it was generated, unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing. Therefore, because the unit is not subject to RCRA permitting, the vent on this unit is not subject to the Subpart AA process vent regulations.

   Vent #3: The vent on the distillate receiver is not subject to Subpart AA. Under 40 CFR 261.3(c)(2)(i), the definition of hazardous waste materials that are reclaimed from solid waste and that are used beneficially are not solid wastes and hence, are not hazardous waste unless reclaimed material is burned for energy recovery or used in a manner constituting disposal.

   Vent #6: The vent from the boiler used to burn the hazardous waste is not subject to Subpart AA because the boiler is not one of the unit operations specified in the rule.

2. Prior to the installation of the carbon adsorption system, the total organic emissions from the process vents was:

   Total Emission Rate = $ER_4 + ER_5$
   Total Emission Rate = 2.3 lb/h + 0.05 lb/h = 2.35lb/h

   The total organic emission rate from the process vents is below 3 lb/h, therefore, the facility is now in compliance with Subpart AA. The total organic emissions from process vent #4 were also reduced by over 95%.

3. The facility is in compliance with Subpart AA regulations with the installation of the carbon adsorber. No further action is required.

4. The following equipment is subject to Subpart BB:

   Pump (P-202): This pump is associated with a waste stream that contacts hazardous waste with organic concentrations of at least 10 percent by weight.

   Valve (V-401): This valve is associated with a waste stream that contacts hazardous waste with organic concentrations of at least 10 percent by weight.

   The following equipment is **not** subject to Subpart BB:

   Pump (P-201): The pump contacts a stream which contains mostly compound A, which will be reclaimed. Under 40 CFR 261.3(c)(2)(1), the definition of hazardous waste materials that are reclaimed from solid waste and that are used beneficially are not solid wastes and hence, are not hazardous waste unless reclaimed material is burned for energy recovery or used in a manner constituting disposal.

   Valve (V-301): The valve contacts a stream primarily composed of compound A, which will be reclaimed. Under 40 CFR 261.3(c)(2)(1), the definition of hazardous waste materials that are reclaimed from solid waste and that are used beneficially are not solid wastes and hence, are not hazardous waste unless reclaimed material is burned for energy recovery or used in a manner constituting disposal.

5. The surge tank is **not** subject to Subpart CC regulations because it contains compound A, which will be reclaimed. Under 40 CFR 261.3(c)(2)(1), the definition of hazardous waste materials that are reclaimed from solid waste and that are used beneficially are not solid wastes and hence, are not hazardous waste unless reclaimed material is burned for energy recovery or used in a manner constituting disposal.

   The storage tank is subject to Subpart CC regulations because it contains hazardous waste with a volatile organic concentration greater than 500 ppmw.

6 The containers are subject to Subpart CC regulations because they contain hazardous waste with volatile organic concentration greater than 500 ppmw.

7. The facility would be required to keep covers on all openings and closure devices. Transferring of waste should be done as quickly as possible. If transfers occur in batch operations, the cover should be in place when no more waste will be added within 15 minutes.