Permit No.:	10-12
Company Name:	Aevitas Specialty Services Corp.
SRN:	N7359
Engineer:	Paul Schleusener
Last Updated:	4/3/2012

SOURCE

Applicant proposes to move its operations from Redford Township to 633 Lycaste, Detroit. The facility will receive, process, and recycle wastewater and used industrial oils that are not hazardous waste. Some of the received materials are mostly water and sludge. The facility exhausts some emissions to a packed bed scrubber that uses caustic and sodium hypochlorite as reagents.

Note that the applicant's process description mentions "the sludge dryer," but there is no separate device that dries sludge. Both oil and sludge separated from the waste streams are dried in the processing tanks through two means: being heated with non-contact steam and having air passed over the tank contents. Applicant notes that "straight oil" (see below) is a declining part of the input, given the incentives for facilities that generate these wastes to recover and reuse the materials themselves.

NAICS: 562219

Applicant manages incoming material in three categories:

- Straight oil: >90% oil (<10% water)
- Oily Waste: between 10 and 90% oil (between 11 and 89% water and sludge)
- Oily Water <10% Oil (>90% water and sludge)

Most incoming material arrives in tankers. Some arrives in drums and totes.

Applicant's treatment processes yield two types of product and two types of waste requiring disposal.

Products:

- Primary Product: industrial oil that will be used to blend recycled oil products, such as lubricating oils.
- Secondary Product: supplementary fuel sold to customers for use as fuel. Applicant says this is commonly used in cement kilns and/or steel mills.

Wastes:

- Wastewater
- Solids from the filter press

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EU-Tank11	Fixed-roof heated storage tank that receives oily liquid industrial waste, working capacity 19,500 gallons. Located outdoors.	FG1
EU-Tank12	Fixed-roof heated storage tank that receives oily liquid industrial waste, working capacity 19,500 gallons. Located outdoors.	FG1

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EU-Tank13	Fixed-roof heated storage tank that receives oily liquid industrial waste, working capacity 19,500 gallons. Located outdoors.	FG1
EU-Tank14	Fixed-roof heated storage tank that receives oily liquid industrial waste, working capacity 19,500 gallons. Located outdoors.	FG1
EU-Tank15	Fixed-roof heated storage tank that receives oily liquid industrial waste, working capacity 19,500 gallons. Located outdoors.	FG1
EU-Tank16	Fixed-roof heated storage tank that receives oily liquid industrial waste, working capacity 19,500 gallons. Located outdoors.	FG1
EU-Tank21	Fixed-roof heated storage tank used to treat oily waste, working capacity 16,000 gallons. Located outdoors. Exhausts to scrubber.	FG2, FG-ProcessTanks
EU-Tank22	Fixed-roof heated storage tank used to treat oily waste, working capacity 16,000 gallons. Located outdoors. Exhausts to scrubber.	FG2, FG-ProcessTanks
EU-Tank31	Fixed-roof heated storage tank; used to dry wet oil product and sludge, working capacity 19,500 gallons. Located outdoors. Exhausts to scrubber.	FG3, FG-ProcessTanks
EU-Tank32	Fixed-roof heated storage tank used to dry wet oil product and sludge, working capacity 19,500 gallons. Located outdoors. Exhausts to scrubber.	FG3, FG-ProcessTanks
EU-Tank33	Fixed-roof heated storage tank used to dry wet oil product and sludge, working capacity 6,000 gallons. Located outdoors. Exhausts to scrubber.	FG3, FG-ProcessTanks
EU-Tank34	Fixed-roof heated storage tank used to dry wet oil product and sludge, working capacity 6,000 gallons. Located outdoors. Exhausts to scrubber.	FG3, FG-ProcessTanks
EU-Tank35	Fixed-roof heated storage tank used to dry wet oil product and sludge, working capacity 19,500 gallons. Located outdoors. Exhausts to scrubber.	FG3, FG-ProcessTanks
EU-Tank36	Fixed-roof heated storage tank used to dry wet oil product and sludge, working capacity 19,500 gallons. Located outdoors. Exhausts to scrubber.	FG3, FG-ProcessTanks
EU-Tank41	Fixed-roof heated storage tank for petroleum product, working capacity 19,500 gallons. Located outdoors.	---
EU-Tank42	Fixed-roof heated storage tank for petroleum product, working capacity 19,500 gallons. Located outdoors.	---
EU-Tank43	Fixed-roof heated storage tank for petroleum product, working capacity 19,500 gallons. Located outdoors.	---
EU-Tank44	Fixed-roof heated storage tank for petroleum product, working capacity 19,500 gallons. Located outdoors.	---
EU-Tank45	Fixed-roof heated storage tank for petroleum product, working capacity 19,500 gallons. Located outdoors.	---
EU-Tank46	Fixed-roof heated storage tank for petroleum product, working capacity 19,500 gallons. Located outdoors.	---
EU-Tank51	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-Tank52	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-Tank53	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-Tank54	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-Tank55	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EU-Tank56	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-TankD1	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-TankD2	Fixed-roof storage tank for wastewater, working capacity 11,000 gallons. Located indoors.	---
EU-TankC1	Fixed-roof storage tank for treatment chemicals (sodium hydroxide), working capacity 11,000 gallons. Located indoors.	---
EU-TankC2	Fixed-roof storage tank for treatment chemicals (sodium hydroxide), working capacity 11,000 gallons. Located indoors.	---
EU-TankA1	Fixed-roof storage tank for treatment chemicals (sulfonic acid and sulfuric acid), working capacity 3,500 gallons. Located indoors.	---
EU-Boiler	Natural gas-fired boiler that supplies steam to the heating coils of the tanks. Nominal heat input rating is 5 MMBTU/hr.	---
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.		

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG1	Storage tanks for incoming oily liquid industrial waste.	EU-Tank11, EU-Tank12, EU-Tank13, EU-Tank14, EU-Tank15, EU-Tank16
FG2	Processing tanks for oily liquid industrial waste.	EU-Tank21, EU-Tank22
FG3	Processing tanks used to dry wet oil product (supplementary fuel).	EU-Tank31, EU-Tank32, EU-Tank33, EU-Tank34, EU-Tank35, EU-Tank36
FG-ProcessTanks	Processing tanks for oily liquid industrial waste and wet oil product. All tanks exhaust to the scrubber.	EU-Tank21, EU-Tank22, EU-Tank31, EU-Tank32, EU-Tank33, EU-Tank34, EU-Tank35, EU-Tank36
FGFACILITY	All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.	---

MONITORING

- Material received for treatment, in the categories that have limits on the amount received for treatment.
- Daily and monthly batches of material with organic halides concentration of 100 ppmw or greater.
- Scrubber solution: pH, redox potential, and liquid flow rate.
- Maximum processing temperature for each batch.
- Generator and amount of waste received.
- Certain processing details.

BYPASS
None

WASTE DISPOSAL

- Water is discharged to the Detroit sewer system. The facility has a discharge permit.
- Solids from the filter press are disposed of at a solid waste disposal site.

GENERAL COMMENTS

Process and pollutants – overview: The facility processes waste oils and waste oily materials consisting largely of water and oils. Some of the wastes contain sludge-like components. The best-quality oil separated from the incoming materials is suitable as a feedstock for making lubricating oils. The lower-quality oil product is sold to be burned for energy recovery. The oily materials are not especially volatile, and generally have been exposed to heat or the air before being shipped to the facility. Therefore, the materials either have very little volatile material in them or have been somewhat depleted of their volatile constituents before they arrive at the facility.

So, while the oil components are generally "VOCs" in a regulatory sense, the vapor pressures are quite low. Therefore, VOC emissions are quite low. Facilities that carry out similar processes typically have VOC emission limits in the range of a fraction of a pound per hour. There is little regulatory benefit in limiting VOC emission rates when throughputs are inherently limited by processing time requirements and equipment capacity.

Control technology – Rules 702 and 224: As noted above, the pollutants are essentially all VOCs or similar to VOCs, but VOC emissions are clearly quite low. Based on AQD experience, the VOC emissions are low enough that emission control specific for VOCs would be too expensive to require under Rule 702(a) as BACT. No other subrules of Rule 702 apply in this case. Similarly, AQD experience shows that for the very small part of the organic volatiles that are not VOCs, add-on control would be far too expensive to require under Rule 224 as T-BACT. Emissions of other types of toxic air contaminants (TACs) are negligible, and T-BACT for them is also "no add-on control," based on AQD experience and the very low emissions of these TACs.

Emission impacts – Rule 225: The applicant's emission analysis focused on organic halides in the "straight oil" received. The AQD impact analysis used Table 21 and Table 22 to consider Rule 225 compliance for these materials. Looking over the list of TACs addressed by the applicant shows that the list is a reasonable subset of the contaminants observed in the past two years, which the applicant provided separately. The organic halides analysis includes a reasonable "worst case" pollutant in 1,2-dichloroethane, the pollutant that drove the stack height consideration. (See the AIR analysis, on the spreadsheet printout for Rule 227(1)(b).) Other TACs encountered in the past two years have higher screening levels and generally low volatility. In my estimation, the organic halides analysis adequately addresses TAC emission impacts for Rule 225.

The first tab of the spreadsheet is labeled Rule 227(1)(a), and relies on Table 21. The second tab of the spreadsheet, for Rule 227(1)(b), relies on Table 22. The (1)(a) tab lists all the TACs reviewed in detail. Those that do not pass with Table 21 are then listed on the (1)(b) tab. Note that all of these TACs pass at a stack height of 70 feet, but that 1,2-dichloroethane uses the secondary risk screening level (SRSL) to pass. The applicant preferred the slightly shorter stack

height, since it more nearly matched the stack segments of the existing scrubber, which they are moving to the new site.

"Organic halides" and Rule 225: The applicant noted that "organic halides" includes the very low volatility category of material known as "chlorinated paraffins," which often appear in cutting fluids, and would appear in some wastes the facility handles. One subset of these materials has a very low screening level. But these materials also have a vapor pressure several orders of magnitude lower than that of the materials reviewed under Rule 225. This low vapor pressure more than makes up for the lower screening level. Therefore, the conditions narrow the meaning of the term "organic halides" to those identified by the analytical method the applicant currently uses to check wastes it receives. This method does not measure "chlorinated paraffins."

Permit conditions, in general: The permit conditions appear in two flexible groups, one for the processing tanks (FG-ProcessTanks) and one for the entire facility (FGFACILITY). Conditions for the processing tanks center on three concepts:

- limits on "material received for treatment" for two categories of waste to be treated
- a maximum "organic halides" concentration in the material dried
- a malfunction abatement plan requirement for the processing tanks and the scrubber

Conditions for the entire facility:

- limit the maximum amount of organic halides in used oil received for treatment
- require an odor management plan and a fugitive dust plan.

Permit conditions, FG-ProcessTanks: The limits on material received for treatment serve to cap emissions of volatile compounds in general, including VOC. The phrase "received for treatment" in these limits accommodates the applicant's request that throughput limits not block them from receiving and blending high-quality oil, without any treatment. This activity might be exempt from the requirement to obtain a Permit to Install, but a limit on "material received" or on throughput could create difficulty. The "received for treatment" phrase, however, should prevent any impediment because such oil to be blended would not be "received for treatment." The two categories with "received" limits have the greatest amount of oil, and likely the greatest amount of VOC emissions, small though the emissions will be. Thus, these limits on material "received for treatment" effectively set a limit on VOC emissions.

As noted above, the toxics analysis focused on "organic halides" emissions caused by treatment. The conditions about "organic halides" reflect the results of the Rule 225 analysis.

The scrubber is essential to odor control and likely provides some additional emission control, which has not been calculated. A malfunction abatement plan will help ensure that the process and the control system work together to provide optimal emission control.

Permit conditions, FGFACILITY: The maximum concentration of organic halides in any used oil received for treatment is part of the Rule 225 review.

Both the odor management plan and the fugitive dust plan address activities at the entire facility, and thus belong in the conditions for FGFACILITY.

RECOMMENDATIONS

Applicant and District agree with the conditions, which properly address the applicable requirements. I recommend approval.