Tradebe Treatment and Recycling, LLC, response to USEPA's R5 follow up letter of December 15, 2016.

Non-CBI responses

Item 3: Please provide us with analytical data on the feed ash referred to in Request No. 2.

Item 3 - Tradebe Response:

The flow chart description of feed ash, feed metal and feed moisture illustrates the basic components of the containers of material fed into the SDS system. The feed material is comprised of: moisture, organic liquids, and items such as: plastic, rags, filters, cardboard, etc. The material containers fed into the system are typically constructed of metal (e.g., drums, pails), cardboard boxes, plastic bags, etc. Char material is generated through the pyrolysis of the fed material and the fed containers.

For reasons stated above, no analytical data is being provided.

The following narrative was provided to the EPA in the October 2016 submittal. The first sentence of the second paragraph below helps explain the feed ash.

Solid Distillation System

The Solids Distillation System (SDS) is a separation technology that processes various types of waste in multiple physical states (e.g., solid and sludge) contaminated with organic solvents and hydrocarbons. The SDS unit processes these materials in containers, following a shredding stage. SDS uses indirect heat to change the physical state of the organics along with any moisture that may be contained in the waste; the recoverable material travels along a cylindrical tube.

The processed materials dried solids, along with the recovered metal (from the containers and /or waste) exit the back end of the unit, where they are separated. The recovered organics are condensed using water. This liquid stream is also separated into an aqueous phase and an organic phase that contains organic solvents that are sold as a commercial-grade degreasing agent.

As with any separation technology, this process has a certain efficiency that varies depending on a number of characteristics of the waste stream:

- Concentration of organics
- Nature and boiling point of those organics
- Physical state
- Moisture
- Particle size

Also, a number of process parameters do influence the efficiency of the separation process:

- Residence time
- Temperature
- Vacuum

This separation process takes place in the absence of oxygen to inhibit combustion of the organic compounds. The unit operates under a nitrogen blanket to further inhibit combustion. As organic solvents are placed into a vaporized state for recovery, minimizing oxygen concentration is of the outmost importance to avoid an explosion, since the presence of organics above their ignition temperature would explode if oxygen was present at significant concentrations.

It is important to note that the thermal process is indirectly heated. This, along with the temperatures and lack of oxygen minimize product decomposition and avoid combustion.

Item 4: Tradebe included with its October 18, 2016 submittal an analytical report from TestAmerica for sample ID CHAR #15, taken on August 2, 2016, and received by the lab on August 4, 2016. Provide the source of this sample and its location with respect to the SDS Process Flow Diagram.

Item 4 - Tradebe Response:

The source of the sample was a twenty (20) cubic yard roll off box. Char (carbon and ash) is discharged from the process into roll off boxes. While being filled, a roll off box is physically located in units that are under the baghouse.

Item 5: Tradebe included with its October 18, 2016 submittal an analytical report from TestAmerica for sample ID CHAR #18, taken on August 3, 2016, and received by the lab on August 4, 2016. Provide the source of this sample and its location with respect to the SDS Process Flow Diagram.

Item 5 - Tradebe Response:

As with item 5, above, the source of the sample was a twenty (20) cubic yard roll off box. Char (carbon and ash) is discharged from the process into roll off boxes. While being filled, a roll off box is physically located in units that are under the baghouse.

Item 7: The following pertain to the carbon beds downstream of the shredder and upstream of the two-inch by two-inch metal screens; immediately following the oil water separator (OWS) downstream of the vapor recovery unit (VRU); and the carbon bed which serves as a back-up to the VRU when the flare is bypassed. For each Carbon bed, provide: (i) diameter and depth of carbon bed; (ii) adsorption isotherms (from vendor); (iii) mean and maximum hydrocarbon concentrations at the inlet; (iv) mean and maximum hydrocarbon concentrations at breakthrough; (v) mean and maximum volumetric air flowrate into the carbon bed; (vi) mean and maximum air temperature into the carbon bed; (vii) means by which breakthrough is monitored, including typical breakthrough set point and (viii) frequency of bed change out.

Item 7 - Tradebe Response:

(i) *Carbon drums are 24 inches diameter 36 inches tall with a carbon depth of 32 inches; totes are 42 inches by 48 inches by 60 inches with a carbon depth of 48 inches.*

(ii) Adsorption isotherms (from vendor) provided in attachment, 7.(ii)

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(iii) Mean and maximum hydrocarbon concentrations

Carbon(flare backup)		*Shredder*		*OWS*	
134.32	*1,446.00*	*517.95*	*9,999.*	*2,034.45*	*9,999.00*
mean	*max*	*mean*	*max*	*mean*	*max*

(iv) Mean and maximum hydrocarbon concentrations at breakthrough

Carbon(flare backup)	*Shredder*		*OWS*	
no change out	mean	0.7	mean	0.5
	max	1.9	max	1.8

(v) *Flow rate to carbons 0 to 70 CFM*

(vi) *Temperature of air to carbons is ambient to 150 degrees F*

(vii) *Inspection and monitoring is performed on each operating day of the unit and includes a visual inspection and the monitoring of the concentration level of the organic compounds in the exhaust vent stream for CCD operating in parallel and the monitoring port for the first CCD operating in series on a daily basis using a HNU or equivalent detector. Break-through is indicated when CCD is not providing 98% efficiency, using Method 21 in 40 CFR part 60. Any necessary corrective measures are implemented to ensure the CCD is operating in compliance with the requirements of Title V.*

Item 8: describe the various types of waste streams, liquid, solid or otherwise, that are introduced to the SDS, typical sources of these wastes and the most common types of hydrocarbons (e.g., spent solvents including toluene, xylene, etc.) that are fed into the SDS.

<u>Item 8 - Tradebe Response:</u>

MATERIALS: The SDS system processes materials that contain hydrocarbons for recovery that make up the Degreaser product. The following are some examples of material that are processed: rags, towels, cloths, etc. along with solvents for equipment clean ups; personal protection equipment worn by personnel doing the aforementioned cleanup activities; filter bags from a production process that employs hydrocarbon containing materials; items applied to protect equipment from being exposed to hydrocarbon containing materials at a production process; absorbent materials, e.g., mats, booms, granular items from the cleanup of spilled or released hydrocarbon containing material at production facilities or while the material is in transit; off-specification hydrocarbon containing materials not wanted by the manufacturer or end user; or hydrocarbon containing commercial chemical products that have exceeded their shelf life or that have been replaced by a different compound.

Containers of process feed material, fed into the SDS process are typically constructed of metal, cardboard, or plastic.

SOURCES: The business sectors that generate materials containing recoverable hydrocarbons includes but not limited to; automotive manufacturers; automotive repair shops; paint and chemical manufacturers and associated distribution centers; transportation organizations; and waste handling facilities.

COMMON TYPES OF HYDROCARBONS

Materials fed into the SDS system for recovery of hydrocarbons contains compounds such as: Toluene, Xylene, Methyl Ethyl Ketone, Acetone, Acetates, Glycol ethers, Alcohols, Ethylbenzene, Tri-methylene benzene; Isopropanol, Hexane, Heptane, Methyl Isobutyl Ketone among others.

Item 16: Does start-up and shut-down of the SDS process occur when waste is in the system or only when alternative fuel is used? If Tradebe does not use "clean start-up (i.e., only when natural gas or fuel oil or other non-waste derived fuel is being used), provide a percentage of time dedicated to start-up/shut-down of the overall time the SDS is in operation.

Item 16 - Tradebe Response:

Material for recovery is only fed into the SDS system when the unit has reached operational parameters.

The SDS – ATDU hydrocarbon recovery process operation is a natural gas fired indirect heated process. Alternative fuels cannot (and have never been) used as a fuel source for the indirect burners that heat the SDS unit.

Item 18: What is the destruction and removal efficiency (DRE) of the flare? How does Tradebe ensure this DRE is maintained? What measures are taken when the DRE falls below its permit-allowed DRE? What is the design capacity of the flare?

Item 18 - Tradebe Response:

Flares have a destruction removal efficiency identified as ninety-eight (98) percent as determined by the USEPA and the manufacturer of the Tradebe flare. To maintain flare performance, flares are to be operated and maintained in accordance with the manufacturer's recommendations. Along with routine maintenance, Tradebe has a representative from the flare manufacturer routinely inspects the Tradebe unit.

John Zink's (i.e., the manufacturer) flare specifications are attached, labeled Item 18.

Item 19: What are the mean and maximum quantities of solids generated from the baghouse(s) serving the SDS and for the Venturi Scrubber downstream of the VRU? How are these solids managed?

Item 19 - Tradebe Response:

The char baghouses are enclosed units that are automatically cleaned via a timed, pulsating system. Char from the char baghouses is discharged into the char box.

Solids (slurry) from the Venturi scrubber are placed into the SDS water that is fuel blended and then sent off site as a waste derived fuel.

Item 20: What is the mean and maximum flow of material to fuel blending from the knockout pot downstream of the tube and shell heat exchanger and demister filters which serve vapors from the VRU? Are these liquids sent directly to the fuel blending side of operations or are they included with the

water mass total from the process water tank downstream of the OWS in the process flow diagram referred to in request 1?

Item 20 - Tradebe Response:

Degreaser product removed from the knock out pot is placed into the SDS Degreaser product tank. The generation volume of this material is less than 100 gallons per day; the volume is included in the SDS Degreaser sales value.

Item 24: For the solvent degreaser referred to in Request 23, provide product specifications and Material Safety Data Sheets for same. Also, identify any comparable products available to end users for sale from other markets.

Item 24 - Tradebe Response:

A copy of a Tradebe SDS Degreaser Material Safety Data Sheet is provided Item 24 Attachment. Tradebe has made a degreaser that has a specialized market. The properties of the degreaser appeal to organizations that need the fluid to assist in their cleaning aspects.

Examples of other degreasers are: JMN Specialties Spec Sol 999; JMN Specialties Solvent 200 Degreaser; SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

Item 26: For the SDS fuels discussed in Request 25, what further blending and /or processing do they undergo once they are trucked away from the SDS? What are the minimum acceptance criteria by Essroc Cement Corporation, Cadence Environmental Energy and any other end-user of Tradebe's blended fuels?

Item 26 - Tradebe Response:

SDS by-products (water and OWS slurry) are pumped into blending tanks and mixed with other organic containing materials. This blending mixing process generates a Waste Derived Fuel that is sent to the cement kilns.

Cement Kiln Minimum Specifications					
Kiln name – location	BTUs /lb	Water %	Solids %	Chlorine %	pH
Cadence	2,500	0-75%	-	0-20.49%	-
ESSROC	6,000	0-40%	-	0-7%	-
Green America	2,500	0-30%	0-30%	0-3.5%	>3 < 12.5
Buzzi-Unichem	2,500	0-30%	-	0-2%	-
Systech					
Fredonia	2,500	0-60%	0-20%	0-20%	-
Paulding	2,500	0-99.9%	0-35%	0-20%	-