

**Engineering Evaluation
Former Sunrise Cleaners
Plant # 20696
Application Number 23192**

Background

Former Sunrise Cleaners has applied for an Authority to Construct an SVE system abated by carbon beds in series. This soil vapor extraction/air sparging unit consists of a regenerative vacuum blower (S-1) with a maximum capacity of 500 scfm. Soil vapor will be extracted with vapor abatement achieved a minimum of two (200 pound) carbon beds in series. Any liquid phase wastewater that is collected from the knockout drums will be collected in 55 gallon drums and polished through a minimum of two liquid phase granular activated carbon prior to being discharged to the local POTW for further treatment. Emission monitoring for operation of the equipment will be conducted according to established Source Test methodology. Procedures are outlined in the conditions

The applicant will be conditioned to provide written notification at the start of the operation. Procedures are outlined in the conditions found below. The Carbon unit influent and effluent VOC concentrations will be monitored with a portable flame-ionization detector (OVA-FID) on a schedule reflecting current loading rates and predicted Carbon capacity. The facility has provided monitoring data, and it is agreed that monitoring shall be conducted on a daily basis. Monitoring schedule changes will be allowed only after District review of concentration measurements and subsequent receipt of District approval.

This source is located within 1,000 feet of the outer boundary of St. Matthew's Episcopal Day School, and as such this application requires Public Notification via Reg. 2-1-412. A Public Notice was prepared and sent out to the home address of the students of the schools and to each address within a radius of 1,000 feet of the source. This Evaluation Report was posted on the District Webpage along with the Public Notice. A phone line was set-up at the District to receive public comments. One comment from the public was sent via email and the District responded via email as well.

Emission Calculations

For a conservative estimate of yearly emissions, we shall assume that the system is operated for an entire year within an inlet concentration corresponding to the initial soil concentration level. Generalized assumptions follow:

- * Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21°C; 1 mole occupies 24.15L
- * Molecular weight of TPHg = 100 g/mole (value for "weathered gasoline"). Molecular weight of Benzene = 78 g/mole.
- * Influent values based on operational parameters of equipment: influent rate = 400 scfm (maximum); maximum influent concentration = 67 ppmv POC, 0.15 ppmv benzene destruction efficiency = 98% for throughout.

A/N 23192

MW TPH	102	COA =	8.9897E-05 lb-l-min/µg-ft ³ -day
efficiency	98.00%		
air flow rate	500		
days/yr	365		

Soil Vapor Extraction

Compound	MW	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{l}$)	unabated lbm/day	abated lbm/day	abated lbm/yr	abated tons/yr	Trigger Level lbm/yr
TPH	100	280000	280	12.5855276	0.25171055	91.87435	0.04593718	
Benzene	78.11	500	0.5	0.02247416	0.00044948	0.164061	8.2031E-05	3.8
Toluene	92.1402	500	0.5	0.02247416	0.00044948	0.164061	8.2031E-05	12000
Ethylbenzene	106.167	500	0.5	0.02247416	0.00044948	0.164061	8.2031E-05	43
Xylene	106.167	4600	4.6	0.20676224	0.00413524	1.509364	0.00075468	27000

Compound	Tons/yr
POCs	0.05

Cumulative Increase- tons/yr

	<i>Current</i>	<i>Total</i>
POCs	0	0.05

Emissions from the storage drums are exempt as the drum is closed treated effluent is discharged to local POTW and capacity of drum is less than 260 gallons and aqueous phase is less than 1% (wt) organic compounds. Exempt per 2-1-123.1 and per 2-1-123.2.

Toxics

Emissions of these toxic compounds do not warrant a Toxic Risk Screen Analysis, as the emissions are below the trigger level from Regulation 2 Rule 5 Table 2-5-1. The facility is utilizing TBACT. The facility is in compliance with Regulation 2 Rule 5. A condition limit of benzene, vinyl chloride, TCE and tetrachloroethylene will also be included in conditions, as they have stated that this was a dry cleaner facility in the past. Facility has agreed not to exceed toxic trigger level for these compounds. The limit will be set for benzene at 3.8 lbs/yr or 0.01 lbs/day; vinyl chloride at 1.4 lbs/yr or 0.0038 lbs/day and for tetrachloroethylene, the limit shall be set at 18 lbs/yr or 0.049 lbs/day, for TCE the limit is set at 54 lbs/yr or 0.148 lbs/day. The Toxics Section has recommended the issuing of this A/C with these compound emission limits.

New Source Review

This proposed project will not emit over 10 lbs per highest day and is therefore not required to implement BACT. For Soil Vapor Extraction operations, BACT is defined as attainment of set destruction efficiencies corresponding to set influent concentration values. Operation of the Carbon vessels will be conditioned to ensure attainment of the following required destruction efficiencies: $\geq 98.5\%$ if inlet POC ≥ 2000 ; $\geq 97\%$ if inlet POC ≤ 2000 to >200 ppmv; $\geq 90\%$ if inlet POC < 200 ppmv. Carbon units run in series will have an abatement efficiency greater than 90%; the facility would be in compliance with BACT guidelines.

Based on the information submitted, this operation is in compliance with Regulation 8-47-301, Emission Control Requirements, Specific compounds, and 8-47-302, Organic compounds. The POC emissions will be vented through carbon beds arranged in series at all times of operation.

Offsets

Offsets are not applicable for this application, as emissions do not exceed 10 tons/yr. Facility not subject to Reg 2-2-302.

CEQA

The project is considered to be ministerial under the Districts proposed CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. This project is in compliance with Chapter 9.2 of the permit handbook for soil treatment systems.

Compliance

Based on the information submitted, this operation is expected to be in compliance with Regulation 8-47-301, Emission Control Requirements, Specific compounds, and 8-47-302, Organic compounds. The POC emissions will be vented through an electric Catalytic Oxidizer, or Carbon adsorption system at all times of operation. The POC emissions will be vented through a Thermal/Cat Ox or Carbon adsorption system at all times of operation.

The storage drums will have a capacity less than 260 gallons. This results in emissions being below the trigger level and the facility meets the exemption criteria of Regulation 2-1-123.1 (Tank less than 260 gallons capacity) and Regulation 2-1-123.2 (aqueous solution contains less than 1% (wt) organic compounds).

This project is within 1,000 ft from the nearest public school and is therefore subject to the public notification requirements of Regulation 2-1-412.

PSD, NSPS, and NESHAPS are not triggered.

Recommendation

Recommend that a conditional Authority to Construct be issued for sources:

- S-1: Soil Vapor Extraction System with air sparging unit consisting of a 500 max scfm vacuum blower, and ancillary equipment, abated by A-1, SVE Abatement System, consisting of a minimum of two 200 lb capacity Carbon Adsorption Vessels arranged in series

And recommend that a C/E be issued for:

Enclosed Storage Drums less than 260 gallons exempt per 2-1-123.1 and 2-1-123.2

Conditions for S-1:

1. The owner/operator shall vent Source S-1 at all times to Abatement device A-1, two (200 lb minimum capacity) activated carbon vessels arranged in series. Influent vapor flow shall not exceed 500 scfm. In no event shall the owner/operator emit benzene emissions to the atmosphere exceeding 0.01 pounds per day or 3.8 pounds per year. In no event shall vinyl chloride emissions to the atmosphere exceed 0.0038 pounds per day or 1.4 pounds per year, in no event shall tetrachloroethylene (PERC) emissions to the atmosphere exceed 0.049 pounds per day or 18 pounds per year, in no event shall trichloroethylene (TCE) emissions to the atmosphere exceed 0.148 pounds per day or 54 pounds per year. (basis: Regulation 8-40-302, Cumulative Increase, BACT/TBACT)

2. The owner/operator of this source shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the Air Pollution Control Officer at the following locations:
 - a. At the inlet to the second to last carbon vessel in series.
 - b. At the inlet to the last carbon vessel in series.
 - c. At the outlet of the carbon vessel that is last in series prior to venting to the atmosphere.

When using an FID to monitor breakthrough, readings may be taken with and without a carbon filter tip fitted on the FID probe. Concentrations measured with the carbon filter tip in place shall be considered methane for the purposes of these permit conditions. (basis: Cumulative Increase, Regulation 2-5, BACT/TBACT)

3. The owner/operator shall record these monitor readings in a monitoring log at the time they are taken. The monitoring results shall be used to estimate the frequency of carbon change-out necessary to maintain compliance with conditions number 4 and 5, and shall be conducted on a daily basis. The owner/operator of this source may propose for District review, based on actual measurements taken at the site during operation of the source, that the monitoring schedule be changed based on the decline in organic emissions and/or the demonstrated breakthrough rates of the carbon vessels. Written approval by the District's Permit Services Division must be received by the owner/operator prior to a change to the monitoring schedule. (basis: Cumulative Increase, BACT/TBACT)
4. The owner/operator shall change out the second to last carbon vessel with unspent carbon upon breakthrough, defined as the detection at its outlet of the higher of the following:
 - a. 10 % of the inlet stream concentration to the Carbon vessel.
 - b. 10 ppmv or greater (measured as C1).(basis: Cumulative Increase, BACT/TBACT)
5. The owner/operator shall change out the last carbon vessel with unspent carbon upon detection at its outlet of 10 ppmv or greater (measured as C1). (basis: Cumulative Increase, BACT/TBACT)
6. The owner/operator of this source shall maintain the following records for each month of operation of the source:
 - a. The hours and times of operation.
 - b. Each monitor reading or analysis result for the day of operation they are taken.
 - c. The number of carbon beds removed from service.All measurements, records and data required to be maintained by the owner/operator shall be retained and made available for inspection by the District for at least two years [Note: This is five years for Title V facilities] following the date the data is recorded.
(basis: Cumulative Increase, BACT/TBACT)
7. The owner/operator shall report any non-compliance with parts 4 and/or 5 to the Director of the Compliance & Enforcement Division at the time that it is discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well at the time of occurrence.
(basis: Cumulative Increase, BACT/TBACT)

by _____
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