

Draft Engineering Evaluation: Sub-Slab Depressurization
2566 Leghorn
2566 Leghorn Street, Mountain View, CA 94043
Application No. 30868; Plant No. 24839

Background

2566 Leghorn has applied for an Authority to Construct for soil remediation at the site located at 2566 Leghorn Street in Mountain View, CA. 2566 Leghorn is a new facility.

S-1 Sub-Slab Depressurization System consisting of Four 50 scfm Fantech Rn4EC-3 Blowers

The purpose of the proposed sub-slab depressurization (SSD) system is to mitigate manufactured homes that will be deployed for COVID-19 affected families and individuals. This site consists of four blowers (S-1) each with a maximum capacity of 50 scfm (200 scfm total). Soil vapor samples taken for lab analysis have detected slight presence of chlorinated and petroleum hydrocarbons. However, the emissions estimates are well below Regulation 2-5 toxic thresholds. This project is exempt from Regulation 8-47-301 control requirements. The proposed system will not be abated.

The applicant will be conditioned to provide written notification at the start of the operation. Procedures are outlined in the conditions found below.

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
- A combined influent flow rate of 200 cfm was used to estimate emissions. Tetrachloroethylene (PCE), Chloroform, Dichlorobenzene, 1,4 Dichlorobenzene, and Ethylbenzene were reported in soil vapor laboratory results submitted by the applicant. Maximum concentrations found in the report can be seen in Table 1. Example calculations can be seen below.

$$140 \frac{\mu\text{g}}{\text{m}^3} (\text{PCE}) \times 200 \frac{\text{ft}^3}{\text{min}} \times 1440 \frac{\text{min}}{\text{day}} \times \frac{1}{35.31} \frac{\text{m}^3}{\text{ft}^3} \times \frac{1}{4.54 \times 10^8} \frac{\text{lb}}{\mu\text{g}} = 0.003 \frac{\text{lb}}{\text{day}} (\text{PCE}; \text{unabated})$$

$$0.003 \frac{\text{lb}}{\text{day}} (\text{TPH}) \times 365 \frac{\text{day}}{\text{year}} = 0.92 \frac{\text{lb}}{\text{year}} (\text{PCE}; \text{unabated})$$

Table 1 – S-1 SSD System Emissions

Pollutant	Influent vapor concentration [µg/m ³]	Influent vapor concentration [ppmv]	Unabated Emission [lb/day]	Unabated Emission [lb/yr]
Tetrachloroethylene (PCE)	140	0.02	0.003	0.92
Chloroform	32	0.01	0.001	0.21
Dichlorobenzene	3,100	0.51	0.056	20.3
1,4 Dichlorobenzene	940	0.15	0.017	6.15
Ethylbenzene	9	0.00	0.000	0.06
Total	4,221	0.69	0.076	27.6

Table – 2 S-1 Criteria Emissions

Pollutant	lb/day	lb/yr	TPY
POCs	0.073	26.72	0.013
NPOCs	0.003	0.92	0.000

PCE is considered to be a non-precursor organic compound (NPOC) per Regulation 1-234 and 40 CFR 51.100(s)(1). All other compounds in Table 1 are considered to be precursor organic compounds (POCs).

Cumulative Increase

Table 3 – Plant Cumulative Emissions

Compound	Current Permitted Emissions, Post 4/5/91 (TPY)	New Emission Increase with this Application (TPY)	Cumulative Emissions (TPY)
POCs	0.0	0.013	0.013

Toxic Risk Screening

Table 4 – S-1 Toxic Review

Toxic Pollutant	Unabated Emission (lb/hr)	Unabated Emission (lb/yr)	Acute Trigger lb/hr	Chronic Trigger lb/yr	HRA required
Tetrachloroethylene (PCE)	1.05E-04	0.92	44.00	14.00	N
Chloroform	2.39E-05	0.21	0.06	15.00	N
Dichlorobenzene	2.32E-03	20.3	-	-	N
1,4 Dichlorobenzene	7.03E-04	6.15	-	72.00	N
Ethyl Benzene	6.88E-06	0.06	-	33.00	N

The proposed project is not expected to exceed toxic trigger levels in Table 2.5.1.

New Source Review

The proposed project will not emit more than 10 lb/day of any criteria pollutant. Facility not subject to Reg 2-2-301. 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.

Compliance

Based on the information submitted, this operation is exempt from Regulation 8-47-301 requirements per Regulation 8-47-113. The operation is expected to be in compliance with 8-47-302.

Regulation 8-47-501.2 monitoring requirements are not applicable since control devices are not required. Monitoring requirements will not be added to the permit condition.

This project is within 1,000 ft of Palo Alto Preparatory School. The facility is subject to public notification requirements of Regulation 2-1-412.

PSD, NSPS, and NESHAPS are not triggered.

Permit Conditions

Permit Condition # 27371

1. S-1 shall consist up to four blowers. The owner/operator shall not exceed 50 scfm for each single blower located at S-1. In no event shall the Toxic Air Contaminants (TACs) emissions to the atmosphere from S-1 exceed the respective chronic trigger levels in District's Regulation 2-5, Table 2-5-1. [Basis: Cumulative Increase, Regulation 2-5].
2. 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. Total throughput of soil vapor from source S-1 in Standard Cubic Feet.

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 following the date the data is recorded. [Basis: Regulation 1-523]

3. The owner/operator of S-1 shall report any non-compliance with these conditions to the Compliance and Enforcement Division at the time that it is first discovered. The owner/operator of S-1 shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal. [Basis: Cumulative Increase, Regulation 2-5]

4. The owner/operator of S-1 shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this conditional Authority to Construct/Permit to Operate. All measurements, records and data required to be maintained by the owner/operator shall be retained for at least two years following the date the data is recorded. [Basis: Regulation 1-523]
5. Upon final completion of the remediation project, the operator of Source S-1 shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Cumulative Increase, Regulation 2-5, TBACT]

Recommendation

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source is located within 1000 feet of a school, which triggers the public notification requirements of District Regulation 2-1-412.6. After the comments are received from the public and reviewed, the District will make a final determination on the permit. I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance an Authority to Construct for the following source

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by 
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