DRAFT
Engineering Evaluation
General Electric Company
Plant Number 13888
Application Number 22867

Background

On behalf of Kaiser Foundation Hospital, Haley & Aldrich, Inc. is applying for an unabated sub-slab depressurization system at 2130 O'Farrell Street in San Francisco.

The unabated Sub Slab Depressurization (SSD) system (S-2 and S-3) consists of two continuously operating vacuum fans with a maximum operating capacity of 50 scfm per fan. The fans are not manifold, therefore the District considers as two sources. The total emissions of toxic compounds are expected to be below the respective triggers found in Regulation 2-1-316. The operation then qualifies for an exemption from Regulation 8-47-301 (at least 90% abatement) via Reg. 8-47-113 (combined emissions of benzene, vinyl chloride, PCE, methylene chloride, and trichloroethylene will be less than 1 pound per day). Operation of this source will be conditioned to collect bag samples for subsequent laboratory analysis on each of the first two days of operation. Thereafter, effluent concentrations will be determined by laboratory analysis on a monthly schedule.

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^{O}C; 1 mole occupies 24.15L
* Molecular weight of Tetrachloroethylene (PCE) = 165.83 g/mole.
* Influent values based on operational parameters of equipment and applicant supplied soil vapor test results: influent combined flow rate 100 scfm throughout with no abatement device.

Emissions of Toxic Air Contaminants (PCE):

$$0.8E\text{-}6 * \frac{100\ ft^3}{min} * \frac{1440\ min}{1\ day} * \frac{28.32L}{1\ ft^3} * \frac{1\ mole}{24.15L} * \frac{165.83g}{mole} * \frac{1\ lb}{454g} = \textbf{0.049 lb/day} \text{ (abated)}$$

Highest Daily Emissions	**=**	**0.049 #/day**
Annual Average	**=**	**0.049 #/day**
RFP	**=**	**0.009 t/yr**

Toxics

Under the trigger levels as per Regulation 2-1-316, the emissions of toxic substances are not considered sufficient to warrant a Risk Screen Analysis. Perchloroethylene trigger = 0.049 #/day; trichloroethylene trigger = 0.15 #/day. In accordance with the District's Regulation 2-5, the impact is then insignificant since this risk is within the threshold of 10 in a million as required for sources implementing TBACT; therefore, the Toxics Section has recommended the issuing of this A/C with standard operating conditions limiting emissions to the toxic trigger levels.

New Source Review

The proposed project is not expected to emit more than 10 pounds per day, nor is emissions to exceed 15 tons per year; therefore, implementation of BACT is not required and emission Offsets need not be provided.

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.

Compliance

Based on the information submitted, this operation is exempt from the requirements of Regulation 8-47-301, Emission Control Requirements, Specific compounds via Regulation 8-47-113. Combined emissions of benzene, vinyl chloride, perchloroethylene, methylene chloride, and/or trichloroethylene are expected to be less than 1 pound per day and a Risk Screen is not needed as emissions of toxic compounds will be limited to the established trigger levels. The emission rates for each toxic compound corresponding to the trigger are included in the operating condition text found below.

Recommendation

Recommend that the Authority to Construct be issued for the following source:

S-2: Unabated Sub Slab Depressurization system consisting of one 50 scfm maximum vacuum fan
S-3: Unabated Sub Slab Depressurization system consisting of one 50 scfm maximum vacuum fan

Conditions

1. In no event shall emissions to the atmosphere of the following compounds exceed the corresponding emission limits in pounds per day:

Toxic Compound	Emissions in #/day
Benzene	1.0E-2
Vinyl Chloride	3.8E-3
Perchloroethylene	4.9E-2
Methylene Chloride	3.0E-1
Trichloroethylene	1.5E-1

In addition, emissions of total volatile organic compounds shall not exceed 10 pounds per day. Sub-Slab vapor flow rate shall not exceed 50 scfm per fan at S-2 and S-3.

2. To determine compliance with Condition 1, the operator of this source shall:

   a. Analyze exhaust gas to determine the concentration of the compounds listed in Condition 1 and the total volatile organic compounds present for each of the first two days of operation. Thereafter, the exhaust gas shall be analyzed to determine the concentration of the compounds listed in condition 1 and total volatile organic compounds present once every 30 days. After 6 months of operation, the operator may propose for District review that the sampling schedule be reduced from monthly to quarterly. Written authorization must be received from the District before any change in sampling frequency.
   b. Emissions in pounds per day shall be calculated for those compounds listed in condition 1 as well as the total volatile organic compounds.
   c. Submit to the District's Permit Services Division the test results and emission calculations for the first two days of operation within one month of the testing date. Samples shall be analyzed according to modified EPA test methods TO-14 or equivalent to determine the concentrations those compounds listed in condition 1 as well as the total volatile organic compounds.

3. The operator of this source shall maintain the following information in a District-approved log for each month of operation of the source:

   a. dates of operation;
   b. exhaust flow rate:
   c. exhaust sampling date;
   d. analysis results;
   e. calculated emissions of POC and listed compounds in pounds per day.

   Such records shall be retained and made available for inspection by the District for two years following the date the data is recorded.

4. Any non-compliance with these conditions shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence.

5. The operator 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 applicant shall be retained for at least two years following the date the data is recorded.

6. Upon final completion of the remediation project, the operator of Source S-2 and S-3 shall notify the district within two weeks of decommissioning the operation.

by_____date_____

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