DRAFT
Engineering Evaluation
CalClean, Inc.; Plant Number 12568
Application Number 16470

Background

On behalf of Calclean, Inc., Edd Clark and Associates, Inc. (ECA) has applied for a modification to an existing Authority to Construct for a Portable Soil Vapor Extraction Unit. This portable unit consists of a regenerative vacuum blower (S-1) with a maximum operating capacity of 500 scfm. Vapor abatement will be achieved by a propane-fired thermal oxidizer. The thermal oxidizer will be equipped with continuous temperature monitoring to ensure that BACT destruction efficiencies are met. Emission monitoring for operation of the equipment will be conducted according to established Source Test methodology. Procedures are outlined in the conditions found below.

In accordance with Regulation 2-1-413, the District may issue "a single portable permit which will allow the source to operate anywhere in the District, provided the APCO approves the permit, and the source meets the definition of portable equipment set forth in Section 2-1-220." Operating conditions are worded to ensure that the requirements, and any expressed emission limits of that section are satisfied, through proper notification, source testing, and recordkeeping practices. Regarding emission limits, those of primary concern are the 10 ton per year limit for criteria pollutants, as well as the emission rates corresponding to the acceptable risk level as per Regulation 2, rule 5 (see toxic section below).

Regulation 2-1-220.4, provides the following restriction on use of Portable Equipment: “The equipment is not operated within 1000 feet of the outer boundary of any K-12 school site, unless the applicable notice requirements of Health and Safety Code Section 42301.6 have been met.” The purpose of this current application is to conduct that public notification and to amend the operating conditions to allow for operation at this location which is within 1,000 feet of the outer boundary of Napa Valley Language Academy. As such, this application requires Public Notification via Reg. 2-1-412. There are no other K-12 schools within ¼ mile of the source. A Public Notice was prepared and sent out to the home address of the students of the school 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 and ?? were received.

Attached to this report are copies of the Public Notice and a summary of the Public comments received. The total cost of the Public Notification amounted to $??.00. This amount exceeded the $2,000.00 Public Notice fee. All fees including the standard AC/PO fees of $2,780.00 have been paid.

Emission Calculations

As stated in the previous section, this system has an existing Authority to Construct (Ap. #13287) and has already been evaluated. Emission calculations from the previous evaluation follow:

Assumptions:

For a conservative estimate of POC emissions we assume that the combined system will be operated for the entire year with an influent concentrations equal to 6,000 ppmv, based on the maximum capacity of the equipment. Generalized assumptions follow:

* Standard conditions: Pressure = 1 Atm; Temperature = 70^{O}F; 1 mole occupies 24.15 l.
* Molecular weight of TPH = 100 g/mole (value for "weathered gasoline"). Molecular weight of benzene = 78 g/mole
* Influent values based on operational parameters of equipment: influent rate = 500 scfm (maximum); maximum influent concentration = 6000 ppmv POC, 90 ppmv benzene (assuming benzene is 1.5% of TPHg concentration); destruction efficiency = 98.5% for throughout.

Emissions of Precursor Organics:

$$6{,}000E\text{-}6 * \frac{500\ ft^3}{min} * \frac{1440\ min}{1\ day} * \frac{28.32\ l}{1\ ft^3} * \frac{1\ mole}{24.15\ l} * \frac{100\ g}{mole} * \frac{1\ \#}{454\ g} * (1 - 0.985) = \textbf{16.7 \#/day}\ (abated)$$

Emissions of Toxic Air Contaminants {benzene}:

$$90E\text{-}6 * \frac{500\ ft^3}{min} * \frac{1440\ min}{1\ day} * \frac{28.32\ l}{1\ ft^3} * \frac{1\ mole}{24.15\ l} * \frac{78\ g}{mole} * \frac{1\ \#}{454\ g} * (1 - 0.985) = \textbf{2.0E-1 \#/day}\ (abated)$$

Combined Emissions of Precursor Organics:

Highest Daily Emissions	=	**16.7 #/day**
Annual Average	=	**16.7 #/day**

Note: Since this modification will not result in any change to previously calculated emissions, no RFP will be assessed.

Toxics

A Toxic Risk Screen need not be prepared as the applicant has agreed to monitor emissions of benzene and determine the cumulative annual emissions. Annual emissions are conditioned to the toxic trigger level of 6.4 pounds. Highest daily emissions are limited to 0.25 pounds per day, which is less than the hourly acute toxic trigger. The equipment will most likely not be operated at this location for the entire year, so this annual limit should not be difficult to meet. In accordance with District Regulation 2, rule 5, the impact is then insignificant as emissions do not trigger a risk screen; therefore, the Toxics Section has recommended the issuing of this A/C with a daily benzene emission limit of **0.250 #/day**, and annual limit of **6.40 #/year**.

New Source Review

This proposed project will emit in excess of 10 pounds per highest day and is therefore required to implement BACT. It is achieved in practice and will be reflected in the permit conditions below. Offsets need not be provided, as annual emissions are not in excess of 10 tons per year. This meets the requirements of the Definition of Portable Equipment (Regulation 2-1-220).

CEQA

The project is considered to be ministerial under the District's 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 expected to be in compliance with Regulation 8-47-301, Emission Control Requirements, Specific compounds. The POC emissions will be vented through a thermal/catalytic oxidizer at all times of operation. Operating conditions have been worded to ensure that the equipment meets the criteria regarding portability as per Regulation 2-1-220. Criteria pollutants are not expected to exceed 10 tons per year, and emissions of toxic substances shall be below the trigger levels found in Table 2-5-1. The application triggered Public Notification as required by Regulation 2-1-412. This notification was performed by the District and ECA was invoiced for the services required. Fees in the amount of $??.00 (including the standard A/C and P/O fees) have been paid in full.

Recommendation

Recommend that a change in conditions be issued for source:

S-3: Portable Dual Phase Extraction System consisting of a 500 max scfm vacuum blower, and ancillary equipment, abated by A-3, Selleco Thermal Oxidizer.

Conditions

1. The operator of this source shall provide written notification to the Engineering Division at least 3 days prior to start-up of operation at any new location. The notification shall include:

    a. Application Number (16470, 13287) and Plant Number (12568).
    b. Street address, including zip code, for the location where the equipment will be operated.
    c. The name and telephone number of a contact person where the equipment will be operated.
    d. The date of initial start-up and estimated duration of operations at that location.
    e. The distance from the source to the outer boundary of the nearest K-12 school, or indication that the distance is greater than 1500 feet.

    In the event that the start-up is delayed less than 5 days, the operator may provide telephone notice of said change to the assigned Plant Engineer in the Engineering Division. If the start-up is delayed more than 5 days, written notification must be resubmitted.

2. This equipment shall not remain at any single location for a period in excess of 12 consecutive months, following the date of initial operation except as allowed under Section 2-1-220.10. If this portable equipment remains at any fixed location for more than 12 months, the portable permit will automatically revert to a conventional permanent location permit and will lose its portability. [basis: Reg. 2-1-220.2]

3. This portable equipment, S-3, shall operate at all times in conformance with the eligibility requirements set forth in Regulation 2-1-220 for portable equipment.

4. This equipment is not to be operated within 1000 feet of the outer boundary of any K-12 school, unless the applicable requirements of the California Health and Safety Code Section 42301.6 have been met. This will require the submittal of an application for a revised permit to operate. These notification requirements have been satisfied for operation at the 2500 Laurel Street in Napa, CA (94558). [basis: Reg. 2-1-220.4]

5. This equipment shall be used exclusively for the removal of non-chlorinated volatile organic compounds associated with petroleum products from extracted soil vapor. This shall be demonstrated by onsite sampling required in condition 10 below. [basis: Health Risk Management Policy]

6. Precursor Organic Compound (POC) emissions from Source S-3 shall be abated by abatement device A-3, thermal oxidizer during all periods of operation. Soil vapor flow rate shall not exceed 500 scfm. [basis: Reg. 8-47-301.1,2]

7. The POC abatement efficiency of abatement device A-3 shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (expressed as C6, hexane). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained. For inlet concentrations below 200 ppmv, a minimum abatement efficiency of 90% shall be maintained. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (expressed as C6, hexane). In no event shall benzene emissions to the atmosphere exceed 0.250 pounds per day. Annual emissions of benzene shall not exceed 6.40 pounds per year. [basis: BACT; Health Risk Management Policy]

8. At no time shall the minimum operating temperature of A-3 be less than 1400 degrees Fahrenheit.

9. To determine compliance with Condition Number 8, the thermal oxidizer shall be equipped with continuous measuring and temperature recording instrumentation. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date on which such data are recorded.

10. To determine compliance with Condition 7, within 24 hours after start-up of the thermal oxidizer at any new location, the operator of this source shall:

    a. Analyze the inlet gas stream to determine the vapor flow rate and concentration of POC present.
    b. Analyze exhaust gas to determine the flow rate, and the concentration of benzene and POC present.
    c. Calculate the benzene emission rate in pounds per day based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be decreased, if necessary, to demonstrate compliance with Condition 7.
    d. Calculate the POC abatement efficiency based on the inlet and exhaust gas sampling analysis. For the purpose of determining compliance with condition 7, the POC concentration shall be reported as hexane.
    e. Submit to the District's Engineering Division the test results and emission calculations within one month from the testing date. Samples shall be analyzed according to modified EPA test methods 8015 and 8021 or their equivalent to determine the concentrations of POC and benzene.

11. Within 30 days from the completion of each treatment operation at a given location, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division with a summary showing the following information:

    a. The dates and total number of days that the equipment was at that location and the dates, and total number of days that the equipment was operated at that location.
    b. A summary of the abatement efficiency and benzene emission rate as determined and reported in the start-up sampling report required by condition 10e above.
    c. The results of any additionally performed emission test, analysis, or monitoring result logged in for the day of operation they were taken.
    d. The total throughput of contaminated soil vapor processed by S-3 at that location (indicated in cubic feet).
    e. The total emissions of benzene at that location based on the sampling results required by conditions 10 above.

    [basis: Reg. 1-523]

12. Within 30 days after the end of every calendar year, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division a year-end summary showing the following information:

    a. The location(s) at which the equipment was operated including the dates operated at each location.
    b. The total throughput of contaminated soil vapor for the previous four quarters (indicated in cubic feet).
    c. The total benzene emissions for the previous four quarters (indicated in pounds).

    [basis Reg. 1-523]

13. 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 Permit to Operate. All measurements, records and data required to be maintained by the operator shall be retained for at least two years following the date the data is recorded. [basis Reg. 1-523]

14. 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.**

by_____ date 9/27/07

Robert Cave
Air Quality Engineer II