PERMIT GUIDELINE DOCUMENT

5. Contaminated Soil and Water Remediation Projects

5.1 Description

This permit guideline document covers the permitting of contaminated soil and water cleanup (CSC) projects focusing on commonly used soil remediation technologies. Soil decontamination is the cleaning up of contaminated soil either through in-situ (in place) technologies where petroleum hydrocarbon vapors are extracted and treated, or ex-situ technologies such as excavation and hauling, and bioremediation. This document will provide permitting guidance for in-situ remediation projects. Emission devices associated with these projects vary from carbon canisters to external combustion units such as catalytic and thermal oxidizers. These units are the most common remediation devices and are typically used to remediate gasoline contaminated soil in-situ. Other units such as internal combustion engines are also used in CSC projects. These units, however, are used very infrequently and require a more detailed analysis that they will not be considered in this document.

Note that this document is intended for CSC applications for remediation of sites contaminated from gasoline. Soil contaminated with diesel or crude oil generally do not require an APCD permit. A request for written determination of permit exemption, however, would be required for projects with soil contamination other than gasoline.

Source Classification Codes (SCC) and Standard Industrial Codes (SIC) vary depending on the process. Please refer to the APCD's Internet Web Page for a listing of SCC and SIC codes.

5.2 Application Contents

(a) Forms: The forms listed below must be submitted with all permit applications for new or modified devices for which an Authority to Construct ("ATC") permit is required. These forms are also required for devices that are no longer exempt from permit pursuant to Rule 202 (*Exemptions to Rule 201*).

APCD Form-01:	Application
APCD Form-29:	Equipment and Emissions Summary
APCD Form-77:	Contaminated Soil/Groundwater Cleanup Summary Form

In addtion, the following guidance documents are also available and should be carefully reviewed prior to submitting a permit application:

APCD Form-06:	Requirements for Submitting Authority to Construct Applications for Contaminated Soil/Groundwater (CSC) Projects
APCD Form-07:	Guidance Document for Emssion Verification of Contaminated Soil/Groundwater Cleanup (CSC) Processes
APCD Form-7b:	Requirements for Performing Pilot Tests for Soil Remediation Sites

Often times soil cleanup will be done in two or three phases. For example, a thermal oxidizer will initially be used to remediate contaminated soil, but will be replaced by a carbon system once inlet concentrations of total petroleum hydrocarbons are reduced to a certain level (usually around 1,000 ppm). In these cases, a single APCD Form-29 and Form-77 may be completed for each device being applied for in an ATC application. Additionally, only one ATC is required for multi-phase CSC projects. An example of a completed APCD Form-77 may be found in Attachment "A". For a Permit to Operate ("PTO") application, the applicant need only submit the APCD Form-01 and the required

filing fee. Note, however, that for multi-phase CSC projects, a PTO application, emission verification testing, and appropriate filing fee are required for each phase of the project.

(b) Additional Information: The following information is required for processing ATC permit applications (not required for PTO applications if an ATC permit was previously obtained):

- Site and plot plan, with dimensions, showing the location of the emission units, extraction wells.
- General description of the project.
- Piping instrumentation diagram for the entire system.
- Approved Fire Protection Services (LUFT) Remedial Action Plan (RAP).
- Pilot test results with total TPH and BTEX concentrations.
- Emission Verification Test Plan (see APCD Form-07).
- Emissions data: When default emission factors or fuel specifications are not used, provide detailed supporting documentation for the use of the site-specific data. Include: manufacturer guarantees, analyses, source test reports and calculations.
- Manufacturer Data: Where noted on APCD Form-77, provide manufacturer literature, catalog or equivalent information.

5.3 Completeness

Upon receipt of a permit application, the permit engineer will evaluate the application for its completeness. The applicant should use the *Contaminated Soil Cleanup Projects Completeness Review* checklist (Attachment "B") in preparing the permit application as the permit engineer will use this completeness checklist as the primary criteria for determining the application's completeness. The applicant should consult with APCD staff if there are any questions regarding specific items on the checklist or any other permit related issue. Once deemed complete, the permit engineer will issue a completeness letter to the applicant and will commence processing the application. Please refer to Rule 208 (*Action on Applications - Time Limits*) for a complete description of the completeness determination process and the timelines for permit issuance.

5.4 Applicable Requirements and Standards

The rules and regulations listed below are applicable to CSC projects. A brief summary of the applicable requirements and standards are provided. The applicant should refer to each rule for the specific details and requirements. Applicability of individual rules or regulations are dependent upon numerous factors such as burner rating, annual fuel use and date of installation.

Rule 201 - Permits Required: Requires an Authority to Construct permit for any new or modified emission unit that may emit air contaminants. Requires a Permit to Operate once an ATC permit is used, or when an exemption is no longer applicable.

Rule 206 - Conditional Approval of Authority to Construct or Permit to Operate: This rule provides the Control Officer the ability to issue permits subject to specified conditions which ensure that construction and operation of the source complies with all applicable air regulations. Typical permit conditions for CSC projects are found in Section 5.7 of this guideline document.

Rule 208 - Actions on Applications - Time Limits: This rule specifies the time limits for processing ATC and PTO applications.

Rule 302 - Visible Emissions: This rule prohibits any combustion unit from having visible emissions equal to or greater than the Ringlemann No. 1 opacity standard.

Rule 303 - Nuisance: This rule prohibits any source from creating a public nuisance.

Rule 309 - Specific Contaminants: Under Section "A", no source may discharge sulfur compounds and combustion comtaminants in excess of 0.2 percent as SO_2 (by volume) and 0.3 gr/scf (at 12% CO_2), respectively.

Rule 311 - Sulfur Content of Fuels: This rule limits the sulfur content of gaseous fuels 15 grains per 100 cubic feet and 50 grains per 100 cubic feet (calculated as H2S at standard conditions) in the Southern Zone and Northern Zone, respectively. Additionally, the sulfur content of liquid and solid fuels is limited to 0.5% by weight in both zones.

Reg. VIII - New Source Review: This regulation contains both the nonattainment review (NAR) and Prevention of Significant Deterioration (PSD) rules that apply to new of modified sources. Emission thresholds are defined in those rules for when an applicant needs to install Best Available Control Technology (BACT), perform an Air Quality Impact Analysis (AQIA), including the potential need for pre-construction monitoring, and when emission Offsets are required. Typically, BACT is required when the emissions from the unit are 25 lb/day or higher, an AQIA is required when the source's Net Emission Increase (NEI) exceeds 120 lb/day, and emission Offsets are required when the source's NEI exceeds 55 lb/day or 10 tpy. Please refer to the rules of this regulation for specific details.

5.5 Emission Control/Abatement Equipment

Nearly all CSC projects involve the use of an emission control device. The typical control devices are thermal oxidizers, catalytic oxidizers, and carbon adsorption units. Additional information on control equipment may be found in the USEPA's OAQPS Control Cost Manual (4^{th} Edition; 1990 EPA 450/3-90-006).

5.6 Emissions

Emissions from external combustion units, such as catalytic and thermal oxidizers, consist of the criteria pollutants (NO_x, ROC, CO, SO_x, PM, PM_{10}) and a variety of hazardous air pollutants (HAPs). ROC and HAPs are emitted when using carbon canisters. Criteria pollutant emission calculations are needed for short term (hourly, daily, ppmv concentrations) and long term (annual) rates. Actual total petroleum hydrocarbon emissions are verified during the SCDP test periods. NO_x, CO, SO_x, PM, PM_{10} emission rates are used to determine whether additional controls are necessary or whether AQIA or offsets are necessary. It is assumed that TPH emissions are equal to ROC emissions. This assumption is necessary since health risk values used in the required screening health risk assessment are based on TPH emissions (gasoline vapor) rather than ROC emissions.

There are many techniques available for estimating emissions from catalytic and thermal oxidizers. Site specific data (based on actual CEMS or PEMS data), equipment specific (manufacturer) data and material balance data are preferred over source test data and generic emission factors when estimating emissions. Typically, site-specific data are not available for

these sources at CSC sites. In these cases, emissions should be based on the emission factors presented in section (a) below.

(a) Emission Calculations

General: Emission calculations are needed to determine the applicability of, and compliance with, the APCD, state and federal rules and regulations. Common CSC emission devices are carbon canisters, and thermal and catalytic oxidizers. Generally, gasoline vapors are drawn from the subsurface by a vapor extraction pump and routed to the control device. For carbon canisters, only TPH emissions are calculated. Combustion devices, such as catalytic and thermal oxidizers, must also include emissions of NO_x, SO_x, CO, and PM_{10} in addition to TPH.

What to Submit: All permit applications require hourly (lb/hr), daily (lb/day) and annual (tpy) TPH mass emission rate calculations. In addition, TPH outlet concentrations in parts per million by volume (ppmv) must also be calculated. TPH emissions are calculated from the following equations:

i. ***Catalytic/Thermal Oxidizers***

$$TPH_{cd} = (\chi_{cd}/F1) \times (1.0/F2) \times MW \times F3 \times V_{cd} \times [(1\text{-eff})/100)]$$

where,

TPH_{cd} = TPH mass flow rate at the combustion device outlet in pounds per hour;
χ_{cd} = TPH concentration at control device inlet;
F1 = ppm conversion factor = 1E+06;
F2 = volume to mass conversion factor = 379 scf/lb-mol;
MW = molecular weight of TPH = 86 lb/lb-mol;
F3 = hour to minute conversion = 60 min/hr;
V_{cd} = vapor volume flow rate;
eff = TPH removal efficiency for combustion device.

ii. ***Carbon Canister Emissions***

$$TPH_{cc} = (\chi_{cc}/F1) \times (1.0/F2) \times MW \times F3 \times V_{cc} \times [(1\text{-eff})/100)]$$

where,

TPH_{cc} = TPH mass flow rate at the carbon canister outlet in pounds per hour;
χ_{cc} = TPH inlet concentration at canister inlet;
F1 = ppm conversion factor (10^6);
F2 = volume to mass conversion factor = 379 scf/lb-mol;
MW = molecular weight of TPH = 86 lb/lb-mol;
F3 = hour to minute conversion = 60 min/hr;
V_{cc} = vapor volume flow rate through carbon canister (scfm);
eff = TPH removal efficiency for carbon.

TPH outlet concentrations in ppmv are calculated as follows:

$$\chi_{out} = (TPH_{cc}/V_{out}) \times (1/MW) \times 1/F3 \times F2 \times F1$$

where,

χ_{out} = TPH concentration at exhaust outlet;
TPH_{out} = TPH mass flow rate at the control device outlet in pounds per hour;
MW = molecular weight of TPH = 86 lb/lb-mol;
V_{out} = vapor volume flow rate through control device (scfm)
F1 = ppm conversion factor (10^6);
F2 = volume to mass conversion factor = 379 scf/lb-mol;
F3 = hour to minute conversion = 60 min/hr;

Addtionally, external combustion units must include emission calculations for NO_x, SO_x, CO, and PM_{10}. For these combustion units, the primary emission calculation involves use of an emission factor coupled with the amount of fuel consumed. The APCD uses emission factors that are "energy" based (i.e., lb/MMBtu). Fuel based emission factors (e.g., lb/MMscf, lb/1000 gal) from USEPA's AP-42 are in fact developed from energy based emission factors. By permitting in this manner, errors due to incorrect fuel heating values are eliminated. All energy based emission factors are reported on a higher heating value (HHV) basis. To convert a lower heating value (LHV) based emission factor to a HHV based emission factor, multiply the LHV based factor by 1.10 for natural gas or LPG fuels.

(b) Control Efficiencies

Total petroleum hydrocarbon control efficiencies (mass basis) for the three basic CSC remediation units are shown in the following table. These control efficiencies should be used when calculating TPH mass emission rates. Control efficiencies are verified during the EVT as part of the SCDP.

UNIT	TPH CONTROL EFFICIENCY
Thermal Oxidizer	99%
Catalytic Oxidizer	98%
Carbon Canisters	95%

(c) Emission Factors for Combustion Devices

USEPA AP-42 Emission Factors: In the absence emission factors for gasoline-fired external combustion devices, the natural gas "uncontrolled" emission factors based on USEPA AP-42 that are provided in the tables below should be used for thermal and catalytic oxidizers.

Natural Gas: Uncontrolled

RATING (MMBtu/hr)	NOx (lb/MMBtu)	CO (lb/MMBtu)	PM (lb/MMBtu)	PM10 (lb/MMBtu)
> 100	0.5500	0.0400	0.0050	0.0050
10 to 100	0.1400	0.0350	0.0137	0.0137
0.3 to < 10	0.1000	0.0210	0.0120	0.0120
< 0.3	0.0940	0.0400	0.0112	0.0112

Notes:
(a) Emission factors based on USEPA AP-42, 5th Edition (1/95), Chapter 1.4, Tables 1.4-1, 1.4-2 and 1.4-3.
(b) Emission factors converted from fuel to energy basis using heating value of 1,000 Btu/scf (ref: AP-42, Table 1.4-2).
(c) Total PM based on sum of filterable and condensable PM. NO_x as NO_2.
(d) PM10 fraction is assumed to be 1.0 (ref: AP-42, Chapter 1.4)

SOx Emission Factors: Emission factors for oxides of sulfur (SO_x, reported as SO_2) are based on material balance calculations. For gaseous fuels, the streamlined equation for determining the SO_x emission factor (in units of lb/MMBtu - HHV basis) is:

$$= [0.169] \times \left[\frac{ppmvd}{HHV_g} \right]$$

where:

ppmvd = concentration of total sulfur (as S) in the gaseous fuel. Default = 85
HHV = higher heating value. Default = 1,050 Btu/scf

The basic equations for deriving the emission factor above are found in the APCD document (SOx Emission Factors for Gaseous Fuels, 1/31/97). Standard default SO_x emission factors for common fuels are provided below. The gasoline emission factor should be used when combustion devices are used for contaminated soil remediation purposes.

FUEL	SO_x Emission Factor (lb/MMBtu)
PUC Natural Gas	0.0137
Gasoline	0.0285

(d) Example Calculations

Calculations use the emission factor in units of lb/MMBtu (HHV basis) coupled with the fuel use of the combustion unit to determine the mass emission rates. Fuel use equates to the equivalent "heat input" to the combustion unit and is measured in units of million BTU[1]. The heat input is determined by assuming full load operation at the maximum rating of the combustion unit's burner(s) for the time period in question (i.e., 24 hours per day, and 8760 hours per year). Due to enforceability issues, short-term mass emission calculations (hourly and daily) are always based on maximum usage, unless the potential to emit is limited by a practically enforceable permit condition. For long-term mass emission calculations, the applicant may propose heat input values based on reduced usage from maximum design.

Example #1: Calculate the NO_x and SO_x emissions from a thermal oxidizer rated at 2.500 MMBtu/hr

[1] For example, 1 standard cubic foot of natural gas typically has a heating value of 1050 Btu. A "therm" is equivalent to 100,000 Btu (approximately 95 standard cubic feet of natural gas).

Step 1: Determine the Heat Input (Q)

Hourly: Q_H = 2.500 MMBtu/hr
Daily: Q_D = (2.500 MMBtu/hr) × (24 hr/day) = 60.000 MMBtu/day
Annual Q_A = (2.500 MMBtu/hr) × (8760 hr/yr) = 21,900.000 MMBtu/yr

Step 2: Select the Emission Factors (EF)

NOx EF_{NOx} = 0.100 lb/MMBtu
SOx EF_{SOx} = 0.0285 lb/MMBtu (ref: APCD default EF for gasoline)

Step 3: Calculate the Mass Emissions (E)

Hourly	E_H = $EF \times Q_H$		(pounds per hour, lb/hr)
Daily	E_D = $EF \times Q_D$		(pounds per day, lb/day)
Annual	E_A = $EF \times Q_A \times$ ton/2000 lb		(tons per year, tpy)

NOx E_H = (0.100 lb/MMBtu) × (2.500 MMBtu/hr)
= 0.25 lb/hr

E_D = (0.100 lb/MMBtu) × (60.000 MMBtu/day)
= 6.00 lb/day

E_A = (0.100 lb/MMBtu) × (21,900.000 MMBtu/yr) × (ton/2000 lb)
= 1.10 tpy

SOx E_H = 0.07 lb/hr , E_D = 1.71 lb/day , E_A = 0.31 tpy

Example #2: Calculate the TPH emissions and outlet TPH concentration from carbon canisters with a flow rate of 250 scfm and an inlet concentration of 2,000 ppmv.

Step 1: Determine appropriate TPH emission equation

$TPH_{cc} = (\chi_{cc} / 10^6) \times (1.0/379 scf/lb\text{-}mol) \times 86$ lb/lb-mol × 60 min/hr × $V_{cc} \times [(1\text{-}eff)/100)]$

where,

χ_{cc} = adsorption system inlet concentration (ppmv);
V_{cc} = vapor volume flow rate through carbon canister (scfm);
eff = sysem efficiency (95% for carbon adsorption system).

Step 2: Calculate the Mass Emissions (E)

Hourly: $E_H = (2{,}000 / 10^6) \times (1/379$ scf/lb-mol) × (86 lb/lb-mol) × (250 scfm) × (60 min/hr) × (1-(95/100))
= 0.34 lb/hr

Daily: $E_D = E_H$ (lb/hr) × (24 hr/day)
= 8.16 lb/day

Annual: $E_A = E_H$ (lb/hr) × (8760 hr/yr) × (ton/2000 lb)
= 1.49 tpy

Step 3: Calculate outlet concentration of TPH in ppmv (χ_{cc})

$\chi_{cc} = (E_H / V_{out}) \times (1/MW) \times (1/60 \text{ min/hr}) \times (379 \text{ scf/lb-mol}) \times 10^6$
$= (0.34 \text{ lb/hr}/250 \text{ scfm}) \times (1/86 \text{ lb/lb-mol}) \times (1/60 \text{ min/hr}) \times 379 \text{ scf/lb-mol}) \times 10^6)$
$= 100$ ppmv

5.7 Typical Permit Conditions

The typical permit conditions that are found in contaminated soil and groundwater permits are presented below. Condition 2, Operation Limitations, is specific to the type of remediation system that is used at the project site. Conditions applicable only to Authority to Construct (ATC) permits are noted as such.

1. **Emission Limitations**. At no time shall the emissions to the atmosphere including those of reactive organic compounds (ROC) as total petroleum hydrocarbons (TPH) exceed the following:

Table 1. Total Permitted Emissions

Carbon Canister(s)	*TPH*
lb/hr	0.34
lb/day	8.16
TPY	1.49
PPMV	100

[or, for a two-phase CSC project:]

Table 1
Total Permitted Emissions

	NO_x	TPH	CO	SO_x	PM	PM10
Thermal Oxidizer						
lb/hr	0.25	0.09	0.08	0.07	0.01	0.01
lb/day	6.00	2.16	1.92	1.71	0.24	0.24
TPY	1.10	1.67	1.14	0.31	0.04	0.04
Carbon Canister(s)						
lb/hr		0.34				
lb/day		8.16				
TPY		1.49				
PPM		100				

Compliance with these emission limits shall be determined by sampling and laboratory analysis required in Condition 6 (Monitoring).

2. **Operation Limitations**

a. *Carbon Canisters*

The exhaust gas flow rate shall not exceed 100 scfm for the carbon canisters.

The carbon canisters shall be replaced prior to any imminent control device failure, as indicated by the TPH levels at the entrance and at the outlet of the control device. The vacuum extraction system shall not be operated while the emissions control device (carbon) is being replaced.

b. *Thermal Oxidizer*

The combustion chamber temperature shall be maintained between 1,400 and 1,800°F.

c. *Catalytic Oxidizer*

The catalyst bed temperature shall be maintained between 650 and 900°F.

The catalyst shall be replaced prior to any imminent control device failure, as indicated by the TPH levels at the entrance and at the outlet of the control device. The vacuum extraction system shall not be operated while the emissions control device (catalyst) is being replaced.

Compliance with these conditions are determined through recordkeeping and stack testing as required through monitoring and recordkeeping, or through other District-approved methods.

3. **Source Compliance Demonstration Period (ATC only).** Once construction is complete **for each individual phase of the project** (e.g., thermal oxidizer and carbon canisters for a multi-phase project), the equipment covered by this permit shall be allowed to temporarily operate during a 60 calendar day time period after the initial date of equipment operations (subject to the requirements of this condition).

This time period is termed the "Source Compliance Demonstration Period" (SCDP). During the SCDP, the permit holder is not considered in violation of this permit if the emission limits stated in this permit are exceeded due to testing requirements and/or process debugging operations. However, enforcement action may be taken against operations which result in a violation of any emission limit stipulated by a prohibitory rule in the District's Rules and Regulations.

The permit holder is responsible for ensuring the following actions are taken during the SCDP:

a. Notify the District in writing (**attn:** CSC Project Manager) **when each individual phase of equipment operation will occur** (i.e., the "Start-up Date" or commencement of the SCDP). This written notification must be made **prior to** initial operations.

b. Maintain written records which document the emissions, equipment operation process parameters, dates and times of operation and system testing. Upon completion of the SCDP, these records shall be submitted to the District as an attachment to the Permit to Operate application.

c. Conduct an Emissions Verification Test **for each phase of equipment operation**. See Condition 4 for the requirements of the EVT.

d. Apply for a Permit to Operate. See Condition 5 for the requirements of the Permit to Operate application.

e. Conduct equipment monitoring and sampling as specified in Condition 6

At the discretion of the District, a time extension of the SCDP may be granted for the following reasons:

a. A complete Permit to Operate application has been received prior to the end of the SCDP (see Condition 5) and the permit holder has shown that the facility will operate in compliance with all permit conditions and District Rules, and

b. The permit holder requests, in writing, a specific time extension. The reasons for the time extension must be stated along with a report on the state of compliance to date and the actions to be taken during the extension. The time extension will not be considered valid until the District responds in writing to the permit holder.

Unless otherwise noted, all correspondence concerning this project shall be addressed to the District **Attn: CSC Project Manager**.

4. **Emission Verification Test and Report (ATC only).** Within the first 14 calendar days after commencement of the SCDP, the permittee shall conduct system testing for a 3-hour time period. This testing is termed the "Emission Verification Test" (EVT). The EVT shall be consistent in content and format with guidelines contained in the "Guidance Document for Emission Verification of Contaminated Soil/Groundwater Cleanup Process (August 1991)" (Guidance Document) and the approved EVT Plan submitted with the ATC application. A District representative may be present during the 3-hour EVT and may participate in the sampling of the influent and effluent gases. Please notify the District source test staff a minimum of 10 days before scheduling the EVT test date.

   Test results shall be prepared and presented in the EVT Report, consistent in form and content with the Guidance Document and the approved EVT Plan submitted with the ATC application. Data shall be compiled using the tables provided in the Guidance Document (or equivalent). The EVT Report shall contain results of all testing and field monitoring performed to date. The EVT Report shall be received by the District within 10 days after each test completion if continued equipment operations are desired.

   If the results of the EVT indicate discrepancies in the data, specifications, or assumptions included with the application (and supplements thereof) or the District's Engineering Evaluation under which this permit is issued, then the project may be subjected to reevaluation and require the permittee to apply for a permit modification or perform an additional EVT.

5. **Permit to Operate (PTO) Application (ATC only).** Prior to operations beyond its SCDP, the permittee shall apply for and obtain a PTO for **each phase of equipment operation** covered under this Authority to Construct (ATC). If compliance with all rules and ATC permit conditions has been documented and the PTO application is complete, the District may extend the SCDP to allow for continued operations while the District processes the PTO application. Facility operations beyond the SCDP without a PTO are considered a violation of District Rule 201.B.

6. **Monitoring/Sampling Requirements.** Upon completion of EVT, the permittee shall initiate a system monitoring/sampling program consistent with the Guidance Document and the approved EVT Plan submitted with the ATC application. The following components shall be monitored:

   Monthly: The ROC and benzene, toluene, ethylbenzene and xylene (BTEX) content (ppmv and lb/hr), or other parameters required by the District, of both the control device influent and effluent shall be sampled using gas tedlar bags (or District approved equivalent) within 15 minutes of each other. These samples shall be analyzed by a State Certified Laboratory for ROC (TPH) and BTEX. All system process parameters shall be recorded.

   Upon showing reasonable need, the District may require an increased (or decreased) monitoring frequency. Backup documentation such as instrument calibration, equipment maintenance, chain of custody records and sampling logs shall be available for District review. If documentation is not onsite, the permittee shall produce the required documentation within 7 calendar days of request by the District. The instruments shall be maintained according to manufacturer's specifications.

7. **Fugitive Emissions**

   Contaminated soils, excavated soils, or soil borings shall not aerate onsite, except soils approved under this Authority to Construct (ATC)/Permit to Operate (PTO), unless prior written approval is obtained from the District.

   a. ROC Emissions. All equipment items which come in contact with hydrocarbons shall not have detectable leaks. A leak is defined as any emission which produces a reading greater than 100 ppmv above background as detected by an organic vapor analyzer that is calibrated to methane.

   b. Particulate Matter Emissions. During dry periods (defined here as no measurable precipitation during past three calendar days), water sprays or other adequate measures shall be applied twice daily to all areas disturbed by construction with the potential to emit fugitive dust. Additionally, adequate dust control shall be used to prevent fugitive dust from being transmitted offsite. Upon completion of soil-disturbing activities in each area, soil shall be stabilized to prevent wind erosion.

8. **Recordkeeping.** The following records shall be maintained by the permittee and shall be made available to the District upon request:

   a. A copy of the manufacturer- or permittee-designed operations procedures for the monitoring and control equipment.

   b. Monthly TPH and BTEX sampling results for the control device influent and effluent gas in units of ppmv and lbs/hr.

   c. Monthly monitoring results of process parameters.

   d. Monthly usage rate of the amount of supplemental fuel combusted in the oxidizer burner **(for permits that specify thermal or catalytic oxidizers)**.

9. **Reporting**.

   a. Annual Report: By March 1 of each year or completion of the project, whichever occurs earlier, a written report shall be provided by the permittee to the District (Attn: Annual Report Coordinator) detailing the information required by Condition 8 b. and c. above for the previous calendar year.

   b. Emission Limit Violation: The permittee shall notify the District (by phone or fax) within four hours of discovery when monthly lab results show TPH concentrations in excess of the permitted values listed in Condition 1.

10. **Reimbursement of Costs.** All costs reasonably incurred by the District, including District consultants and Legal Counsel (but not attorney's fees in litigation) related to this permit and implementation and enforcement of these permit conditions shall be reimbursed by the permittee within 30 days of invoicing by the District.

11. **Equipment Operation and Maintenance.** Operation under this permit shall be conducted in compliance with all data, specifications, assumptions included with the applications (and supplements thereof) and the District's Engineering Evaluation under which this permit is issued.

    The equipment listed in this permit shall be maintained in accordance with the equipment manufacturer's or the permittee-designed (if any) maintenance manuals. Those maintenance manuals shall be made available within seven (7) calendar days to the District upon request.

12. **Nuisance.** A person shall not discharge from any source whatsoever such quantities of air contaminants or other material in violation of Section 41700 of the Health and Safety Code which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which cause or have a natural tendency to cause injury or damage to business or property.

13. **Compliance.** Nothing contained within this permit shall be construed as allowing the violation of any local, state or federal rules, regulations, air quality standards or increments.

14. **Severability.** In the event that any condition herein is determined to be invalid, all other conditions shall remain in force.

5.8 Enforcement

Permits are enforced by the Regulatory Compliance Division. Compliance personnel are responsible for witnessing the Emission Verification Test that occurs within two weeks after system startup (i.e., at the start of the SCDP). Additionally, APCD inspectors are responsible for conducting routine inspections (typically annual), review of annual reports and response to citizen nuisance complaints. The inspector will check to see if the source is complying permit conditions and applicable rules (e.g., Rule 302 - Visible Emissions).

5.9 Fees

General: Fees for CSC projects are assessed on a cost reimbursment basis. A deposit of $1,000 is required and is maintained throughout the life of the project. Any permitting or compliance work done for the project is drawn off the deposit, then is subsequently billed to the applicant so that the deposit is maintained at $1,000. The fees (as of July 1997) for CSC projects are:

→ Application Filing Fee: $242 (Schedule F)

→ Deposit: $1,000

The application fee applies to each permit issued (e.g., ATC, PTO). The PTO is valid for three years from the date of issuance. After three years, the permit is reevaluated by the APCD. Permit revaluation fees are assessed on a cost reimbursement (hourly) basis.

5.10 Toxics

A screening health risk assessment is required for CSC projects. The EPA-approved dispersion model SCREEN3 is used to determine the maximum ambient air pollutant concentration under different meteorological conditions; the CAPCOA Air Toxics Manual is used as the basis for making the initial worst-case screening risk assessment. The risk management policy established by the APCD is that the risk must be reduced to less than 1 cancer case per million, or apply T-BACT and reduce the cancer risk to less than 10 cases per million. A risk under 10 per million is presumed to be an insignificant risk based on the provisions of Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986. The SCREEN3 printout for atmospheric dispersion is included with the Authority to Construct as an attachment.

The risk posed by emissions from a device is calculated by estimating the maximum ground level concentration of TPH predicted for the project by using the mass emission rate (lb/hr), design flow rate, the stack height, stack diameter, and exhaust exit velocity as input to the SCREEN3 dispersion model. Once the maximum ground-level concentration is known, the estimated cancer risk can be determined from the following equation:

$R = [X_a] \times [0.1] \times [UR]$

where,

R = individual excess lifetime cancer risk
X_a = maximum hourly concentration
UR = Unit Risk Value for Gasoline Vapors = 1.6×10^{-6}
0.1 = factor to convert one-hour concentrations to annual concentrations

5.11 Permitting Notes

(a) Applicability: This permitting standard was written exclusively for gasoline CSC projects using thermal and/or catalytic oxidizers, and/or carbon adsorption units. Other types of soil/groundwater remediation units will need site-specific data for permit analysis.

(b) Permitting for multi-phase remediation projects: Often times more than a single remediation technology is utilized for CSC projects. Emission limits are specified for each emissions unit in the multi-phase CSC ATC. The ATC is then conditioned so that emission verification testing and a subsequent PTO (including the appropriate filing fee) are needed for each phase of equipment operation. It is important to note that when the first phase of the project enters the PTO stage, the ATC is not superseded. Additionally, an ATC for a three-phase CSC project would not be superseded until a PTO is obtained by the applicant for the last phase of the project.

5.12 References

(a) United States Environmental Protection Agency. AP-42, Volume I, Fifth Edition. *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources*. Research Triangle Park, NC: GPO, January 1995.

(b) Santa Barbara County APCD. *Gaseous and Liquid Fuel SOx Emission Factor*. Versions 1.0. January 31, 1997.

(c) Air Toxics Source Assessment Manual for California Air Pollution Control Districts, Volume I; Engineering Science, Inc.; October, 1986.

5.13 Document Revisions:

Version No.	Date	Reason for Revision	Initials
1.0	1/6/1998	Original issuance	jep

5.14 Attachments

Attachment A - Example of Completed APCD Form -77

Attachment B - Contaminated Soil Cleanup (CSC) Completeness Review Checklist

Attachment "B" - Contaminated Soil Cleanup (CSC) Completeness Review Checklist

#	Yes	No	Completeness Review Item
1	☐	☐	Filing Fee and Deposit Submitted?
2	☐	☐	Has an APCD-01 Form (*General Permit Application Form*) been Submitted and filled in completely?
3	☐	☐	Notice of Certification Statement on APCD-01 Form signed?
4	☐	☐	Is the project located within 1000 feet of a school?
4a	☐	☐	*If Yes, then the requirements of H&SC Section 42301.6 are applicable and public notification is required.*
5	☐	☐	Is this application for a new stationary source?
5a	☐	☐	*If no, does the application clearly identify what the "project" is?*
6	☐	☐	Are Site and Plot Plans (with dimensions) showing the location of the wellls and/or combustion units submitted?
7	☐	☐	Has a general description of the project been provided?
8	☐	☐	Has a piping diagram been submitted?
9	☐	☐	Has a Remedial Action Plan (RAP) been provided?
10	☐	☐	Are all fees/invoices current?
11	☐	☐	Have APCD-77 Forms (*Contaminated Soil/Water Systemt Summary Form*) been submitted?
12	☐	☐	Is the APCD-77 Form filled in completely?
13	☐	☐	Has manufacturer literature, catalogs or equivalent technical information been submitted for the combustion unit and/or the burners or carbon system?
14	☐	☐	If the Potential to Emit of the new source or the PTE of the "project" is greater than 25 pounds per day of any nonattainment pollutant, has the applicant proposed BACT and submitted an APCD Form-02 (BACT Analysis Summary Form)?
14a	☐	☐	*If Yes, has initial feedback from the EBT been sought on whether TF BACT should be investigated?*
14b	☐	☐	*If Yes and TF BACT will be investigated, has detailed input from the EBT been obtained {per section 11.3(b) of Engineering P&P 6100.064.97}?*
15	☐	☐	Does the new source or the "project" by itself exceed the NAR emission offset threshold?
15a	☐	☐	*If Yes,emission offsets are required (netting is not allowed). Has the applicant provided adequate information per Section E.5 of Rule 204 to identify the source of the ERCs?*
16	☐	☐	Does the new source or the "project" by itself exceed the NAR AQIA threshold?
16a	☐	☐	*If Yes, an AQIA is requied (netting is not allowed). Has the applicant provided adequate information per Section E.4 of Rule 204 to perform an AQIA and has the APCD Modeling Group approved the information as complete?*
17	☐	☐	Has the applicant submitted an EVT Plan?
18	☐	☐	Is the risk from the proposed project less than 10 per million with T-BACT?
18a	☐	☐	*If No, then control device not considered T-BACT and another control must be implemented or emission limit must be lowered.*
19	☐	☐	Have pilot test results showing soil vapor and well vapor concentrations been submitted?