

**SMAQMD BACT CLEARINGHOUSE**

CATEGORY:

**SOIL REMEDIATION**

BACT Size: SMALL EMITTER (<10 LB/DAY) AND MIN

SOIL AERATION (STOCKPILING)

<b>BACT Determination Number:</b> 94	<b>BACT Determination Date:</b> 11/21/2014
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**Equipment Information**

**Permit Number:** N/A -- Generic BACT Determination  
**Equipment Description:** SOIL AERATION (STOCKPILING)  
**Unit Size/Rating/Capacity:** Uncontrolled soil aeration (stockpiling)  
**Equipment Location:**

**BACT Determination Information**

<b>ROCs</b>	<b>Standard:</b>	Soil Covers Unless Exempt (see comments)
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>NOx</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	
<b>SOx</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	
<b>PM10</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	
<b>PM2.5</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	
<b>CO</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	
<b>LEAD</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	
	<b>Basis:</b>	

**Comments:** Uncontrolled soil aeration projects are exempt from BACT if the following requirements are met:  
 1. Soil is contaminated only with gasoline and the average VOC (TPHg) concentration is 50 ppm by weight or less or involving 5 cubic yards of soil or less.  
 2. Benzene concentrations must be under the SMAQMD's significance level for cancer and non-cancer risks.  
 3. VOC (TPHg) emissions shall not exceed 50 lb/day.

**District Contact:** Michelle Joe \* Phone No.: (916) 874 - 4853 email: mjoe@airquality.org



**BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION**

**DETERMINATION NO.:** 94  
**DATE:** November 21, 2014  
**ENGINEER:** Michelle Joe

**Category/General Equip Description:** Soil Remediation  
**Equipment Specific Description:** Soil Aeration (Stockpiling)  
**Equipment Size/Rating:** Small Emitter (< 10 lb/day) and Minor Source BACT  
**Previous BACT Det. No.:** None

This BACT determination will create a new BACT determination for Soil Remediation – Soil Aeration (Stockpiling, Biopiles, Biocells, Bioheaps, Biomounds, and Compost Piles). Soil aeration involves heaping petroleum-contaminated excavated soils into piles and stimulating microbial activity within the soils through aeration and/or the addition of minerals, nutrients, and moisture to result in the degradation of petroleum constituents.

**BACT ANALYSIS**

**Step 1: Identify All Control Technologies**

The following control technologies are currently employed as BACT for Soil Remediation – Soil Aeration (Stockpiling) by the following BACT Clearinghouses:

BACT Clearinghouse	(A)	Best Available Control Technology (BACT)
SMAQMD	AP	<p><u>For VOC:</u>                      A BACT standard has not been established, but uncontrolled soil aeration projects are exempt from BACT if the following requirements are met:</p> <ol style="list-style-type: none"> <li>1. Soil is contaminated only with gasoline and the average VOC (TPHg) concentration is 50 ppm by weight or less or involving 5 cubic yards of soil or less.</li> <li>2. Benzene concentrations must be under the SMAQMD's significance level for cancer and non-cancer risks.</li> <li>3. VOC (TPHg) emissions shall not exceed 50 lb/day.</li> <li>4. Uncontrolled soil aeration must comply with volume limits listed in Table 1 (below) or must control VOC (TPHg) by at least 95% by weight and comply with the SMAQMD's significance level for cancer and non-cancer risks.</li> </ol>

BACT Clearinghouse	(A)	Best Available Control Technology (BACT)																				
		<p>Table 1</p> <table border="1"> <thead> <tr> <th>TPHg ppm (weight)</th> <th>Volume of Soil (cubic yards)</th> </tr> </thead> <tbody> <tr> <td>&lt;50</td> <td>exempt</td> </tr> <tr> <td>50 - 99</td> <td>600</td> </tr> <tr> <td>100 - 499</td> <td>120</td> </tr> <tr> <td>500 - 999</td> <td>60</td> </tr> <tr> <td>1000 -1999</td> <td>30</td> </tr> <tr> <td>2000 - 2999</td> <td>15</td> </tr> <tr> <td>3000 - 3999</td> <td>10</td> </tr> <tr> <td>4000 - 4999</td> <td>8</td> </tr> <tr> <td>&gt;5000</td> <td>0.1</td> </tr> </tbody> </table> <p>5. Contaminated soil stockpiles shall be completely and securely covered at all times.</p>	TPHg ppm (weight)	Volume of Soil (cubic yards)	<50	exempt	50 - 99	600	100 - 499	120	500 - 999	60	1000 -1999	30	2000 - 2999	15	3000 - 3999	10	4000 - 4999	8	>5000	0.1
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EPA RBLC	---	<u>For VOC:</u> A BACT standard has not been established.																				
CARB	---	<u>For VOC:</u> A BACT standard has not been established.																				
South Coast AQMD	---	<u>For VOC:</u> A BACT standard has not been established.																				
Bay Area AQMD	---	<u>For VOC:</u> A BACT standard has not been established.																				
San Joaquin Valley APCD	TF	<u>For VOC:</u> Soil covered with impervious material and sparge tank vented to carbon adsorption system @ 95% control.																				

(A) AP = Achieved in Practice, TF = Technologically Feasible

(B) Emissions limit was not specified because a limit that applies to all equipment within the category is not possible. Refer to discussion (below).

The following control technologies have been identified:

1. Soil Covers
2. Carbon Adsorption

**Step 2: Eliminate Technologically Infeasible Options**

All identified technologies are feasible.

### **Step 3: Rank Remaining Control Technologies by Control Effectiveness**

#### For VOC:

1. Carbon Adsorption
2. Soil Covers

Although carbon adsorption is listed in San Joaquin Valley APCD's clearinghouse as BACT, it has only been demonstrated to be technologically feasible and not as achieved in practice. Therefore, for the purpose of this BACT determination, BACT and the requirements for BACT exemption shall remain as currently required in the SMAQMD's Soil Aeration Policy, as described below:

Uncontrolled soil aeration projects are exempt from BACT if the following requirements are met:

1. Soil is contaminated only with gasoline and the average VOC (TPHg) concentration is 50 ppm by weight or less or involving 5 cubic yards of soil or less.
2. Benzene concentrations must be under the SMAQMD's significance level for cancer and non-cancer risks.
3. VOC (TPHg) emissions shall not exceed 50 lb/day.
4. Uncontrolled soil aeration must comply with volume limits listed in Table 1 (below) or must control VOC (TPHg) by at least 95% by weight and comply with the SMAQMD's significance level for cancer and non-cancer risks.

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4000 - 4999	8
>5000	0.1

5. Contaminated soil stockpiles shall be completely and securely covered at all times.

### **Step 4: Select BACT**

BACT for the control of VOC emissions from Soil Remediation – Soil Aeration (Stockpiling) are the following requirements:

Uncontrolled soil aeration projects are exempt from BACT if the following requirements are met:

1. Soil is contaminated only with gasoline and the average VOC (TPHg) concentration is 50 ppm by weight or less or involving 5 cubic yards of soil or less.
2. Benzene concentrations must be under the SMAQMD's significance level for cancer and non-cancer risks.
3. VOC (TPHg) emissions shall not exceed 50 lb/day.

4. Uncontrolled soil aeration must comply with volume limits listed in Table 1 (below) or must control VOC (TPHg) by at least 95% by weight and comply with the SMAQMD's significance level for cancer and non-cancer risks.

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REVIEWED BY:     *Ben F. Kuhl*     DATE:     12-1-14    

APPROVED BY:     *[Signature]*     DATE:     12-15-14