

SOIL VAPOR EXTRACTION

Facility or Tank ID: _____

Leak ID: _____

Do not proceed unless a site characterization has been completed that fully delineates the extent of contamination.

I. Applicability Determination (Initial Screening)	Effective	Somewhat Effective	Ineffective
<p>1. Provide a general description of the intrinsic permeability (k)* of soils at the site in the area of remediation in cm^2.</p> <p><input type="checkbox"/> Based on soil type <input type="checkbox"/> Calculated <input type="checkbox"/> Field/lab test</p> <p><i>Stratified soils may require special consideration in design to ensure less-permeable stratum are addressed. This will require documentation.</i></p>	<input type="checkbox"/> $k \geq 1 \times 10^{-8}$	<input type="checkbox"/> $1 \times 10^{-8} \geq k \geq 1 \times 10^{-10}$	<input type="checkbox"/> $k < 1 \times 10^{-10}$
<p>2. What is the general boiling point range in $^{\circ}\text{C}$ for chemicals subject to remediation at this site?</p> <p><i>For complex mixtures, select the boiling point range that is most representative of the chemicals of concern to be remediated by using this remedy.</i></p>	<input type="checkbox"/> < 250	<input type="checkbox"/> $\geq 250 - \leq 300$	<input type="checkbox"/> ≥ 300
<p>3. What is the depth to groundwater based on the shallowest well in area where remediation is being performed?</p> <p><i>Groundwater at 10' or less will require special consideration in design of the SVE system. This will require documentation.</i></p>	<input type="checkbox"/> $> 10\text{ft}$	<input type="checkbox"/> $\geq 3 - \leq 10$	<input type="checkbox"/> $< 3\text{ft}$
<p>4. What is the moisture content (%) of soil in area of remediation?</p> <p><i>High moisture content reduces soil permeability by restricting air flow. This is of particular concern in the capillary fringe and may require special design requirements if contaminants are within the capillary fringe.</i></p>	<input type="checkbox"/> < 30	<input type="checkbox"/> $\geq 30 - \leq 50$	<input type="checkbox"/> > 50
<p>5. What is the vapor pressure range in mm of the chemicals being remediated?</p> <p><i>For complex mixtures, select the vapor pressure range that is most representative of the chemicals of concern to be remediated by using this remedy.</i></p>	<input type="checkbox"/> ≥ 1	<input type="checkbox"/> $< 1.0 - > 0.5$	<input type="checkbox"/> < 0.5
<p>6. What is the Henry's law constant** (atm) for the chemicals being remediated?</p> <p><i>For complex mixtures, select the Henry's law constant range that is most representative of the chemicals of concern to be remediated by using this remedy.</i></p>	<input type="checkbox"/> > 150	<input type="checkbox"/> $< 150 - \geq 100$	<input type="checkbox"/> < 100

* Intrinsic permeability is a measure of the ability of soils to transmit fluids and is the single most important factor in determining the effectiveness of SVE.

** Here is a link to an EPA website with common Henry's Law Constant for various chemicals. Choose H_{px} (partial pressure/mole fraction) <https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/esthenry.html>

Calculation of effective, moderately effective and ineffective results. See guidance document for more on SVE.

SOIL VAPOR EXTRACTION

II.a SVE System Design	Effective	Somewhat Effective	Ineffective
1. What is the radius of influence (ROI) for the proposed extraction wells? <i>The wells must be identified by showing the ROI on a site diagram.</i>	<input type="checkbox"/> > 20 ft.	<input type="checkbox"/> > 5 ft. but ≤ 20 ft.	<input type="checkbox"/> < 5 ft.
2. Has the radius of influence (ROI) been calculated for each soil type at the site?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
3. Is the proposed well density appropriate, given the total area to be cleaned up and the radius of influence for each well?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
4. Is the blower selected appropriate for the site conditions?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
5. Is the type of well proposed appropriate for the site conditions present?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
6. Do the proposed well screen intervals match soil conditions at the site?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
II.b SVE System Design			
1. Is air injection of passive inlet wells proposed?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
2. Is the proposed air injection/inlet well design appropriate for this site?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
3. Are proposed surface sealing materials appropriate for this site?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
4. Will groundwater depression be necessary?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
5. If groundwater depression is necessary, are the pumping wells correctly spread?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
6. Is a vapor treatment system required?	<input type="checkbox"/> YES		<input type="checkbox"/> NO
7. If a vapor treatment system is required, is the proposed system appropriate for the contaminate concentration at the site?	<input type="checkbox"/> YES		<input type="checkbox"/> NO

SOIL VAPOR EXTRACTION

III. Evaluation of Operation and Maintenance

1. What is the estimate of time to achieve cleanup of the site with the anticipated extraction flow rates?

_____ days

Daily monitoring of the SVE system must be performed for the first well of operation. At a minimum, the following should be monitored: flow measurements, vacuum readings, and vapor concentrations from each extraction vent, the manifold, and the effluent stack.

Monitoring of the SVE system every two weeks is recommended, but in no case should the monitoring of flow measurements, vacuum readings, and vapor concentrations from each extraction vent, the manifold, and the effluent stack be less than monthly.

List the monitoring and analytical parameters that will be sampled quarterly as part of the CAP monitoring report.

Use the CAP Analytical Attachment Sheet.

Example	
Well Name	Substance(s)
MW - 1	BTEX, MTBE
MW - 3	BTEX, MTBE

IV. Sitemap

Attach a site map to this document

Site map(s) drawn to scale illustrating the following:

- a. Location of all present and former tanks, piping and dispensers;
- b. Footprint of surface and/or subsurface soil contamination;
- c. Footprint of other structures (buildings, canopies, roads, utilities, etc.);
- d. Location of treatment systems;
- e. Extraction wells;
- f. Monitoring wells that will be used for sampling;
- g. Groundwater flow direction;
- h. North arrow, bar scale, and map legend