

US EPA ARCHIVE DOCUMENT

**Appendix E-1A**  
**Summary of Analytical Results for Vapor Samples - Pilot Area**  
 SVE Pilot Test Report  
 W.G. Krummrich Facility, Sauget, Illinois

Sample Location		SVE PILOT TEST AREA <sup>1</sup>														
Sample ID		WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>					
Sample Collection Time		2/17/10 14:30			3/1/10 14:50			3/29/10 15:00			4/30/10 17:00			5/11/10 13:00		
System Flow Rate at Sample Collection Point (scfm)		116			310			79			151			152		
Total VOCs (ppmv) <sup>3</sup>		> 9,999			> 9,999			3,918			2,184			2,409		
Operating Shallow SVE Wells		SVE-01A, SVE-02A, SVE-03A, SVE-04A, SVE-06A, SVE-08A, SVE-09A, SVE-10A, SVE-11A			SVE-01A, SVE-02A, SVE-03A, SVE-04A, SVE-06A, SVE-08A, SVE-09A, SVE-10A, SVE-11A			SVE-01A, SVE-02A, SVE-03A, SVE-04A, SVE-06A, SVE-08A, SVE-09A, SVE-10A, SVE-11A			SVE-01A, SVE-02A, SVE-03A, SVE-04A, SVE-06A, SVE-08A, SVE-09A, SVE-10A, SVE-11A			SVE-01A, SVE-02A, SVE-03A, SVE-04A, SVE-06A, SVE-08A, SVE-09A, SVE-10A, SVE-11A		
Compound	Compound-Specific Conversion Factor	Concentration		Mass Removal Rate <sup>4</sup>	Concentration		Mass Removal Rate <sup>4</sup>	Concentration		Mass Removal Rate <sup>4</sup>	Concentration		Mass Removal Rate <sup>4</sup>	Concentration		Mass Removal Rate <sup>4</sup>
	1 ppmv = (X) mg/M <sup>3</sup>	ppmv	U	LBS/Hour	ppmv	U	LBS/Hour	ppmv	U	LBS/Hour	ppmv	U	LBS/Hour	ppmv	U	LBS/Hour
Ethylbenzene	4.34	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Trichlorofluoromethane	5.70	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Methylene chloride	3.47	80	U	0.000	58	U	0.00	80	U	0.00	44	U	0.00	97	U	0.00
Benzene	3.19	5,100		7.1	3,500		13.0	1,400		1.3	1,100		2.0	2,400		4.4
Tetrachloroethene	6.78	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Toluene	3.77	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
1,1,2-Trichloroethane	5.55	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
1,2,4-Trimethylbenzene	4.92	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Vinyl chloride	2.60	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
o-Xylene	4.34	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
m-Xylene & p-Xylene	4.34	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Carbon tetrachloride	6.39	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Chlorobenzene	4.68	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Chloroethane	2.68	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Chloroform	4.96	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
1,1-Dichloroethane	4.12	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
1,2-Dichloroethane	4.12	32	U	0.000	23	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
cis-1,2-Dichloroethene	4.03	32	U	0.000	230	U	0.00	32	U	0.00	18	U	0.00	39	U	0.00
Total Mass Removal Rate	lbs/hour (PID) <sup>5,6</sup>	8.3			22.2			2.2			2.4			2.6		
	lbs/hour (TO-15 analytical)	7.1			13.0			1.3			2.0			4.4		

scfm = standard cubic feet per minute  
 VOCs = volatile organic compounds  
 ppmv = parts per million by volume  
 mg/M<sup>3</sup> = milligrams per cubic meter

lbs = pounds  
 U = compound not detected above the indicated concentration (laboratory reporting limit)  
 PID = photoionization detector  
 > 9,999 = total VOC result is greater than the upper limit of the PID

- Notes:
- The SVE system operated in the SVE Pilot from February 16, 2010 through May 13, 2010.
  - Vapor samples were collected and shipped to TestAmerica, Inc. of Knoxville, Tennessee for analytical analysis of VOCs by United States Environmental Protection Agency Method TO-15.
  - Vapor samples were screened in the field for total VOCs using a PID.
  - Mass removal rate is calculated using the following equation: compound concentration (ppmv) x compound-specific conversion factor (mg/M<sup>3</sup>) x flow rate (scfm) x 3.74\*10<sup>-6</sup> units conversion factor.
  - To calculate the mass removal rate, the total VOC screening result was multiplied by 0.60, the benzene reference factor for the PID.
  - For total VOC concentrations that exceeded the upper limit of the PID (> 9,999 ppmv), the mass removal rate was calculated using 9,999 ppmv. Actual rate may be higher.

**Appendix E-1B**  
**Summary of Analytical Results for Vapor Samples - Sub Area**  
 SVE Pilot Test Report  
 W.G. Krummrich Facility, Sauget, Illinois

Sample Location		SVE PILOT TEST - SUB AREA <sup>1</sup>																				
Sample ID <sup>2</sup> (See D-1)		WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-LINE A-V <sup>2</sup>			WGK-BIGMO-SVE-05A-V <sup>2</sup>					
Sample Collection Time		5/13/10 15:30			5/18/10 14:30			5/26/10 15:00			6/9/10 15:00			6/21/10 15:00			7/6/10 15:00			7/16/10 15:35		
System Flow Rate at Sample Collection Point (See D-1)		153			142			107			131			125			183			27		
Total VOCs (ppmv) <sup>3</sup>		898			986			382			642			1,306			1,113			2,394		
Operating Shallow SVE Wells		SVE-05A			SVE-05A			SVE-05A, SVE-07A			SVE-05A, SVE-07A			SVE-01A, SVE-02A, SVE-05A, SVE-07A, SVE-09A, SVE-10A			SVE-01A, SVE-02A, SVE-05A, SVE-07A, SVE-09A, SVE-10A			Wellhead		
Compound	Compound-Specific Conversion Factor	Concentration		Mass Removal Rate <sup>4</sup> [a]	Concentration		Mass Removal Rate <sup>4</sup> [a]	Concentration		Mass Removal Rate <sup>4</sup> [a]	Concentration		Mass Removal Rate <sup>4</sup> [a]	Concentration		Mass Removal Rate <sup>4</sup> [a]	Concentration		Mass Removal Rate <sup>4</sup> [a]	Concentration		Mass Removal Rate <sup>4</sup> [a]
	1 ppmv = (X) mg/M <sup>3</sup>	ppmv		LBS/Hour	ppmv		LBS/Hour	ppmv		LBS/Hour	ppmv		LBS/Hour	ppmv		LBS/Hour	ppmv		LBS/Hour	ppmv		LBS/Hour
Ethylbenzene	4.34	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Trichlorofluoromethane	5.70	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Methylene chloride	3.47	15	U	0.00	46	U	0.00	48	U	0.00	32	U	0.00	0.4	U	0.00	50	U	0.00	140	U	0.00
Benzene	3.19	<b>650</b>		<b>1.2</b>	<b>260</b>		<b>0.4</b>	<b>180</b>		<b>0.2</b>	<b>620</b>		<b>1.0</b>	<b>9</b>		<b>0.01</b>	<b>1,000</b>		<b>2.19</b>	<b>3,700</b>		<b>1.2</b>
Tetrachloroethene	6.78	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Toluene	3.77	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
1,1,2-Trichloroethane	5.55	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
1,2,4-Trimethylbenzene	4.92	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Vinyl chloride	2.60	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
o-Xylene	4.34	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
m-Xylene & p-Xylene	4.34	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Carbon tetrachloride	6.39	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Chlorobenzene	4.68	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Chloroethane	2.68	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Chloroform	4.96	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
1,1-Dichloroethane	4.12	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
1,2-Dichloroethane	4.12	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
cis-1,2-Dichloroethene	4.03	5.8	U	0.00	18	U	0.00	19	U	0.00	13	U	0.00	0.2	U	0.00	20	U	0.00	58	U	0.00
Total Mass Removal Rate	lbs/Hour (PID) <sup>5,6</sup>	1.0			1.0			0.3			0.6			1.2			1.5			0.5		
	LBS/Hour (TO-15 analytical)	<b>1.2</b>			<b>0.4</b>			0.2			1.0			0.0			2.2			<b>1.2</b>		

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  - To calculate the mass removal rate, the total VOC screening result was multiplied by 0.60, the benzene reference factor for the PID.
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