

April 20, 2009

Mr. Ed Olson and Allan Timm
Minnesota Pollution Control Agency
Voluntary Investigation and Cleanup Program
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: VRAP Addendum #2
Minnesota Bio Business Center, Rochester, Minnesota
221 First Avenue S.W., Rochester, MN
VP12562

Dear Mr. Olson and Mr. Timm:

On behalf of the City of Rochester (the "City"), Landmark Environmental, LLC (Landmark) has prepared this letter report as an Addendum #2 to the Voluntary Response Action Plan (VRAP) for the above referenced property (the Property). The purpose of Addendum #2 is to provide the additional technical information requested in an email dated April 13, 2009, from Mr. Timm concerning the proposed response actions (RAs) related to the installation of groundwater and emissions treatment systems in connection with the dual phase extraction (DPE) system.

As you know, the environmental work at the Property is being funded in part by a Department of Economic and Employment Development (DEED) contamination cleanup grant. The initial DEED grant did not include costs for installing equipment to treat the groundwater or emissions generated from the new DPE system. Therefore, the City is requesting approval at this time from the MPCA for installation of these systems to meet the May 1, 2009, deadline for submitting a supplemental DEED grant application.

Listed below are the MPCA's comments from the April 13, 2009, email, and Landmark's responses.

1. **MPCA Comments:** An Equipment Schedule (Tables listing the equipment) for the previous DPE system, and the newly installed DPE system. The equipment list should include blowers, separation tanks pumps;

Landmark's Response: Equipment Schedules for the previous DPE system and the new DPE system are included in Attachment 1, Tables 1 and 2, respectively.

2. **MPCA Comments:** An Equipment Schedule for the proposed wastewater system and the two options for the air treatment systems. We understand that the sizes may change after the system startup test, but we would like to see some information on what you are proposing as a basis for the grant applications;

Landmark's Response: Equipment Schedules for the proposed wastewater treatment system (an air stripper) and the proposed air treatment system (carbon vessels) are included in Attachment 1, Tables 3 and 4, respectively. The vapor combustion option for air treatment has been ruled out; therefore, an equipment schedule was not included in Attachment 1.

3. **MPCA Comments:** Operating parameters in the Equipment Schedule showing items such as the vacuum pump flow rate, vacuum developed by blower, water discharge flow rate from separator tank;

Landmark's Response: The operating parameters for the specified equipment is included in the Equipment Schedules included in Attachment 1.

4. **MPCA Comments:** Calculated air emissions using the Remediation Risk Analysis Spreadsheet (RRASS) instead of the old SER method. The RRASS provides updated emissions values (see <http://www.pca.state.mn.us/air/aera-risk.html>) and a user interface for evaluating emissions risk posed by soil vapor extraction and air stripper systems. Attached is a copy of the RRASS;

Landmark's Response: Air emissions were calculated using the RRASS method as requested. The RRASS Soil Vapor Extraction System Worksheet and the Risk Evaluation Summary are included in Attachment 2. The site specific emissions rate for tetrachloroethene (PCE) is 2.673E+4 micrograms per second. The Excess Lifetime Cancer Risk (ELCR) is 2.2E-05 which exceeds the chronic risk criteria of 10-5.

5. **MPCA Comments:** An updated schematic of the newly installed DPE system showing the proposed emission controls system components such as the control valves, check valves, gages (flow, pressure), sampling port locations, transfer pump locations and pipe sizes;

Landmark's Response: In a telephone conversation with Mr. Timm on April 13, 2009, Mr. Timm agreed with Landmark's request to prepare and submit the updated schematic at a later date with a RA design submittal.

6. **MPCA Comments:** Manufacturer's performance information for the newly installed DPE and proposed air and wastewater treatment equipment;

Landmark's Response: Attachment 3 includes the requested manufacturer's performance information. A Rotron Regenerative Blower (EN 404M) will be used as a booster pump forcing air through the carbon treatment vessels.

7. **MPCA Comments:** Information describing how the newly installed DPE system will operate during the start-up test. Describe the number of ports and identify which ports

which you expect will be open during startup. Indicate how you are using this data to estimate the emission rate for the system.

Landmark's Response: On April 9, 2009, Landmark conducted a site visit to perform DPE system startup activities. Each DPE well was operated individually to evacuate the groundwater from each well and collect DPE system flow rate and vacuum data. The groundwater discharge and air emissions discharge were sampled during operation at DPE-1, the source area well. The DPE system was shut down after start up activities on April 9, 2009, until analytical results are available to complete a final design of the groundwater and air treatment systems. Based on analytical data from the previous DPE system, the new DPE system will operate on DPE-1 for the first full month of system operation. At that time, the system may be adjusted to cycle between several DPE wells. Landmark's strategy is to start out the system operating on the most contaminated DPE wells. If cycling multiple wells, the emissions rate will be estimated from the concentration obtained from a summa canister with a 4 to 8 hour flow controller, and from an average of the flow rates observed during operation of each well being cycled.

8. **MPCA Comments:** Information on how the estimated emission data was used to size the air treatment equipment. Based on the estimated emission data, estimate how long the carbon will last until break through.

Landmark's Response: Product Level Control used the estimated air flowrate of 70 cubic feet per minute and concentration level of 810,000 micrograms per cubic meter as inputs for their carbon usage calculations for sizing the carbon vessels. Their calculations indicated that one carbon vessel containing 350 pounds of activated carbon would reach break through in approximately 30 days.

As discussed in the email you received from me dated April 20, 2009, Landmark also requests approval to proceed with RAs related to the impacted groundwater encountered in the elevator pit sump on April 9, 2009. As you know from the email, groundwater from the elevator pit drain tile sump was sampled on April 9, 2009, for laboratory analysis of total toxic organics (TTOs) by EPA Method 624. The TTOs concentration of the groundwater in the sump was 70,768 micrograms per liter (ug/L) which exceeds sanitary sewer discharge limits of 2,130 ug/L TTOs. PCE was detected at a concentration of 60,300 ug/L which is above the standard MPCA NPDES discharge limit of 5 ug/L. To address the contaminated groundwater discovered in the elevator pit sump, the City of Rochester requests approval to implement the following RAs:

1. Install an air tight cover on the sump pit;
2. Install vent piping to vent the sump pit to the passive venting system located on the north end of the building;
3. Install an explosion proof sump pump and intrinsically safe float switches; and,
4. Install groundwater discharge piping from the sump to the proposed DPE system air stripper for pretreatment.

On behalf of the City, Landmark requests that the MPCA review and approve the VRAP Addendum dated March 30, 2009, and this Addendum #2 in order for the City to proceed with the design and installation of the groundwater and emissions treatment systems, and the elevator pit sump modifications at the Property.

If you have any questions, please call me at (952) 887-9601, ext. 205.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason D. Skramstad". The signature is fluid and cursive, with the first name "Jason" written in a stylized script, followed by "D." and "Skramstad".

Jason D. Skramstad, P.E.
Enclosures

Cc: Doug Knott, City of Rochester
David Manns, CPMI
Nancy Quattlebaum Burke, Gray Plant Mooty

Attachment 1

Table 1 - Previous DPE System Equipment Schedule

Unit	Model #	Power	Design Flow	Operating Flow	Design Vacuum/Pressure	Operating Vacuum/Pressure	Temperature	Requirements
Vacuum Blower	Rietschle VLR100	3 HP; 3-phase	max 72 CFM	20 ACFM min; 43 ACFM average; 70 ACFM max	max 25.5 inches of Hg	5 inches Hg min; 14 inches Hg average; 19 inches Hg max	NA	NA
Condensate Tank	Condensate Tank designed specifically for use as a SVE	NA	NA	NA	NA	NA	NA	320 gal
Transfer Pump	Moyno 344	1/2 HP; 3 phase	20 GPM max	0.03 GPM min; 0.33 GPM average; 1.32GPM max	max 30 psi	NA	NA	NA

Table 2 - New DPE System Equipment Schedule

Unit	Model #	Power	Design Flow	Operating Flow*	Design Vacuum/Pressure	Operating* Vacuum/Pressure	Temperature	Requirements
Vapor Liquid Separator	PLC 08-007-AW5 100	NA	NA	NA	NA	NA	NA	100 gal
Transfer pump	Moyno 500	1/2 HP; 3 phase	20 GPM max	NA	max 30 psi	NA	NA	NA
Vacuum Pump	Rietschle VLR300	7.5 HP - 3 phase	Min flow 177 CFM; max flow of 212 CFM	5.3 SCFM min; 11.1 SCFM average; 34 SCFM max	25 inches of Hg	22 inches Hg min; 23.5 inches Hg average; 24 inches Hg max	NA	NA

* Operational data averaged from operation of each individual well with no air entrainment

Table 3 - Proposed Groundwater Treatment System Equipment Schedule

Unit	Model #	Power	Design Flow	Design Vacuum/Pressure	Temperature	Requirements
Air Stripper	Model 3102-10; 2-Stage Polypropylene Low Profile Airstripper	2 HP	max 20 GPM; 150 CFM	NA	NA	NA
Transfer Pump	Meyer CT 10	1 HP; 3 phase; 208-230/460 volt; Explosion Proof	5 - 55 GPM	97 feet pressure head	NA	NA

Table 4 - Proposed Air Treatment System Equipment Schedule

Unit	Model #	Power	Design Flow	Design Vacuum/Pressure	Temperature	Requirements
Carbon Vessel	Tetrasolv VFD 110	NA	350 CFM	3 psi max; 9" of water pressure drop	250 deg F max	Vapor phase - up flow series, 350 lb GAC
Booster Pump	Rotron EN404 Regenerative Blower	1 HP; 480V Explosion Proof Motor	107 SCFM	max pressure 57 IWG; max vacuum 52 IWG	NA	NA

Attachment 2

ROTRON® Regenerative Blowers

EN 404M & CP 404M

Sealed Regenerative Blower w/Explosion-Proof Motor

FEATURES

- Manufactured in the USA – ISO 9001 compliant
- Maximum flow: 107 SCFM
- Maximum pressure: 57 IWG
- Maximum vacuum: 52 IWG
- Standard motor: 1.0 HP, explosion-proof
- Cast aluminum blower housing, cover, impeller & manifold; cast iron flanges (threaded); teflon lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

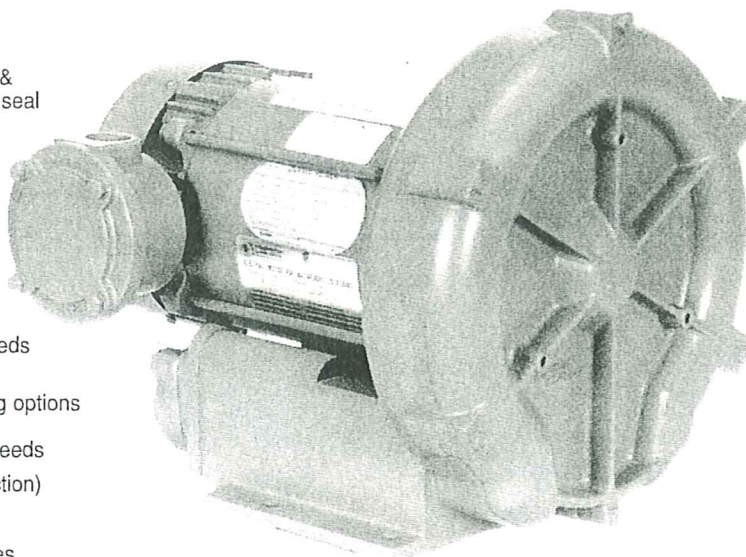
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepower for application-specific needs

BLOWER OPTIONS

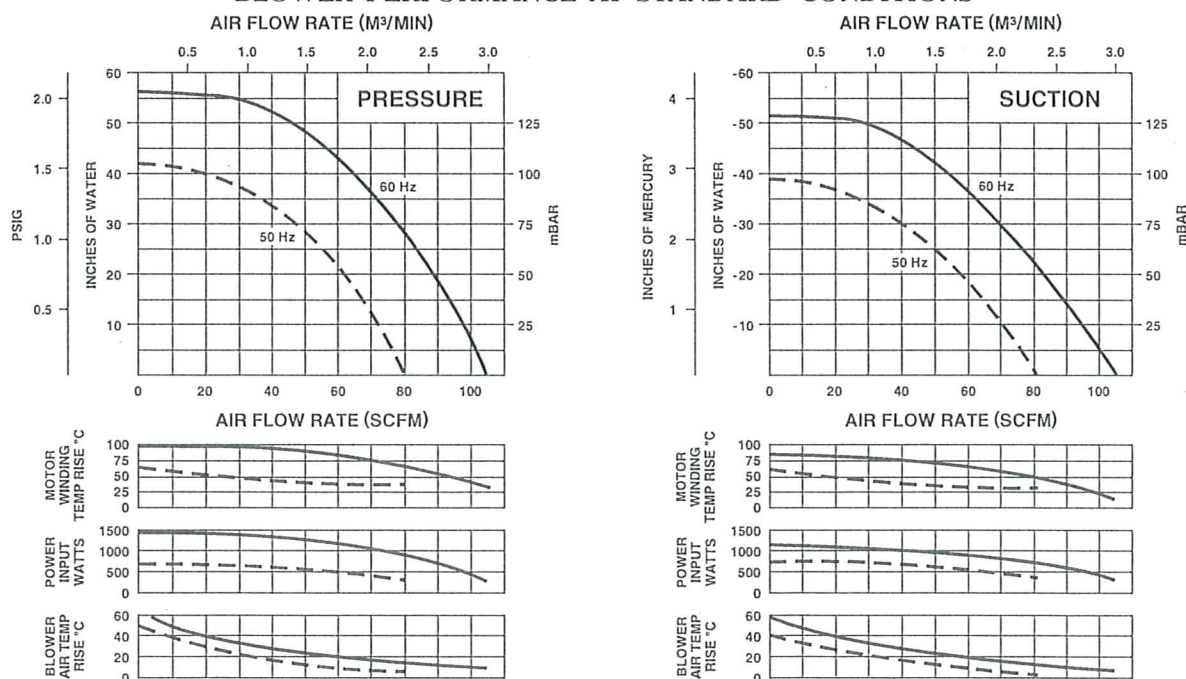
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES (See Catalog Accessory Section)

- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges & relief valves
- Switches – air flow, pressure, vacuum or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package



BLOWER PERFORMANCE AT STANDARD CONDITIONS



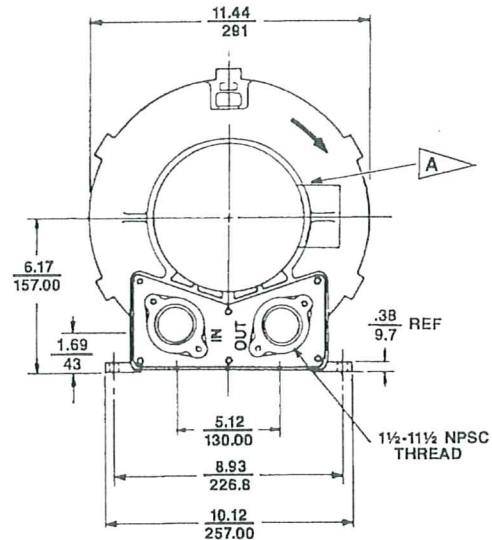
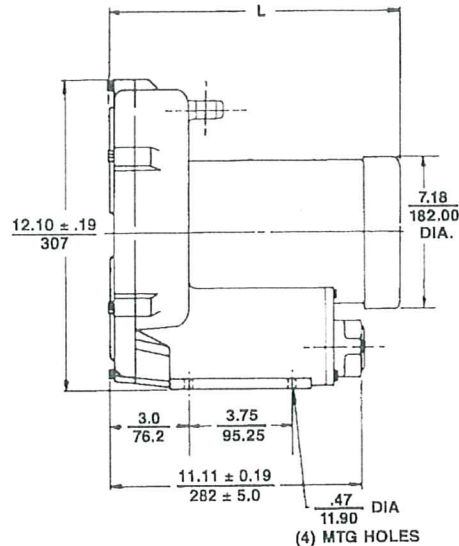
Rev. 2/04

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AMETEK Technical and Industrial Products, Kent, OH 44240 • e mail: rotronindustrial@ametek.com • internet: www.ametekmd.com

ROTRON[®] Regenerative Blowers**EN 404M & CP 404M**
Sealed Regenerative Blower w/Explosion-Proof Motor

Scale CAD drawing available upon request.



DIMENSIONS: $\frac{\text{IN}}{\text{MM}}$
 TOLERANCES: .XX $\pm \frac{.08}{2.0}$
 .XXX $\pm \frac{.030}{.800}$
 (UNLESS OTHERWISE NOTED)

MODEL	L (IN) $\pm .30$	L (MM) ± 8
EN/CP404AR72ML	14.58	370.3
EN/CP404AR58ML	15.58	396

Δ 0.75" NPT CONDUIT CONNECTION AT 12 O'CLOCK POSITION

SPECIFICATIONS

MODEL	EN404AR58ML		EN404AR72ML		CP404FQ58MLR	CP404FQ72MLR
Part No.	038173		038174		080075	038958
Motor Enclosure – Shaft Material	Explosion-proof – CS		Explosion-proof – CS		Chem XP – SS	Chem XP – SS
Horsepower	1.0		1.0		Same as EN404AR58ML – 038173 except add Chemical Processing (CP) features from catalog inside front cover	Same as EN404AR72ML – 038174 except add Chemical Processing (CP) features from catalog inside front cover
Phase – Frequency ¹	Single - 60 Hz		Three - 60 Hz			
Voltage ¹	115	230	208-230	460		
Motor Nameplate Amps	11.4	5.69	3.5-3.2	1.6		
Max. Blower Amps ³	14.4	7.2	4.2	2.1		
Inrush Amps	72	36	20.2	10.1		
Starter Size	0	00	00	00		
Service Factor	1.0		1.0			
Thermal Protection ²	Class B - Automatic		Class B - Pilot Duty			
XP Motor Class – Group	I-D, II-F&G		I-D, II-F&G			
Shipping Weight	72 lb (33 kg)		65 lb (30 kg)			

¹ Rotron motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: 208-230/415-460 VAC-3 ph-60 Hz and 190-208/380-415 VAC-3 ph-50 Hz. Our dual voltage 1 phase motors are factory tested and certified to operate on both: 104-115/208-230 VAC-1 ph-60 Hz and 100-110/200-220 VAC-1 ph-50 Hz. All voltages above can handle a $\pm 10\%$ voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

² Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

³ Maximum blower amps corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

Specifications subject to change without notice. Please consult your Local Field Sales Engineer for specification updates.

Rev. 2/04

AMETEK Technical and Industrial Products, Kent, OH 44240 • e mail: rotronindustrial@ametek.com • internet: www.ametekind.com

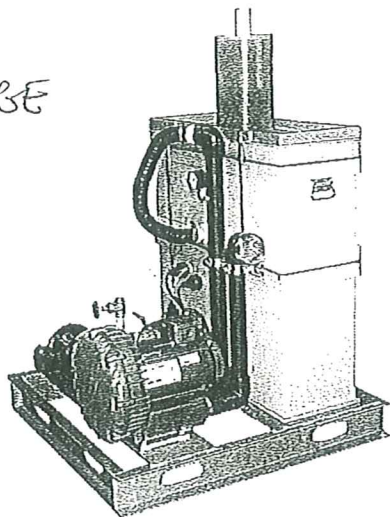
C-6



Product Level Control

Low-Profile Air Stripper AirRaider™ 3100 Series

model
3102
↳ 2 STAGE



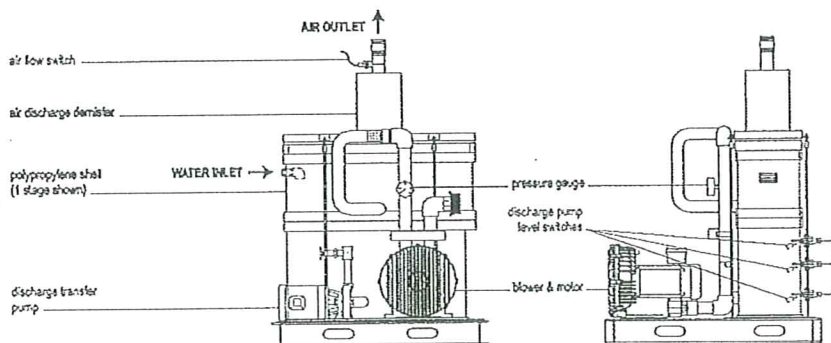
Product Level Control manufactures a variety of low-profile air strippers, custom-equipped for optimal on-site performance. By offering flexible system designs with a wide range of available product parts and accessories, we meet your individual project goals for the best possible value.

FEATURES

- Designed to meet client needs and budget
- Efficiencies up to 99.9%
- PowerClamp™ compression system creates a more reliable, water-proof seal
- Easily collapsible and expandable — stackable trays are quickly disassembled for cleaning or maintenance
- Polypropylene construction combats fouling
- Delivered fully assembled; piped & wired
- Factory wet-tested for reliable system operation

PROCESS OF OPERATION

Contaminated ground water enters the uppermost stage of the air stripper and passes over a series of polypropylene aeration trays. Fresh air is forced through the water in the stages, removing VOCs and dissolved gasses, to individual exhaust vents set at each stage. This prevents contaminant vapors from concentrating in the upper trays. The extracted contaminants are then released into the atmosphere or vented for treatment with vapor carbon or an oxidizer. The treated water is either discharged through a manual drain in the bottom tray or sent for further polishing with liquid carbon.



SPECIFICATIONS*

- 3100 models are rated for a maximum flow rate of 20 gpm
- Footprint dimensions equal 3 1/2' x 3 1/2'
- 1" NPT Water inlet connection
- 1 1/2" NPT Water outlet connection
- 2" Air discharge connection

* Due to the custom nature of our air stripper models, individual specifications and performance curves can be provided once proper air and water flow rates have been established. Specifications are subject to change without notice.

STANDARD CONSTRUCTION

- 1x3 polypropylene discharge sump
- Polypropylene aeration trays (up to 5)
- PowerClamp™ compression system
- Custom-sized blower & TEFC motor
- Flexible air hoses (up to 5)
- Stainless steel air discharge demister
- Polypropylene water inlet port
- Manual water drain
- Line sampling ports (2)
- Sump high level switch
- Pressure gauge
- Schedule 80 PVC piping
- Steel skid package

ACCESSORIES*

- Air flow meter
- Air flow switch
- Influent/Effluent flow meters
- Temperature gauge
- Pressure switch
- Pressure transducer
- Discharge pump level switches
- Discharge transfer pump
- Blower silencer

* Optional

SYSTEM UPGRADES*

- Custom shell size
- Explosion-proof motor
- Custom piping material
- UL listed control components
- Stainless steel or aluminum skid
- Trailer-mounted or custom enclosure
- UL system classification

* Optional



Our Company

News

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Catalog

Contents:

Liquid Filters

Vapor Filters

VFD Series

- VFD-30
- VFD-55
- VFD-85
- VFD-110

VFD Series

- VFV-250
- VFV-500
- VFV-1000
- VFV-2000
- VFV-3000
- VFV-5000
- VFV-10000

VF Series

- VF-500
- VF-1000
- VF-2000
- VF-3000
- VF-5000
- VF-10000

VR Series

- VR-140
- VR-170
- VR-225
- VR-400
- VR-700
- VR-1600
- VR-2600

Filtration Media

Special Products

VFD SERIES FILTERS

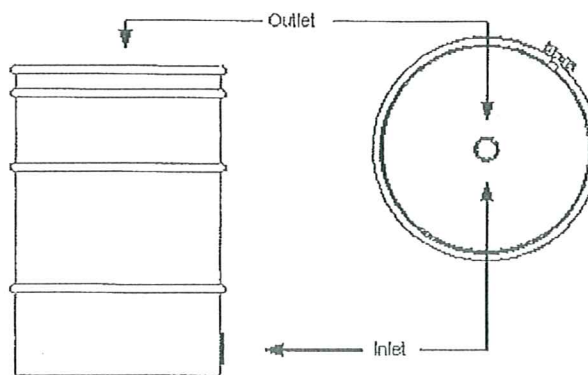
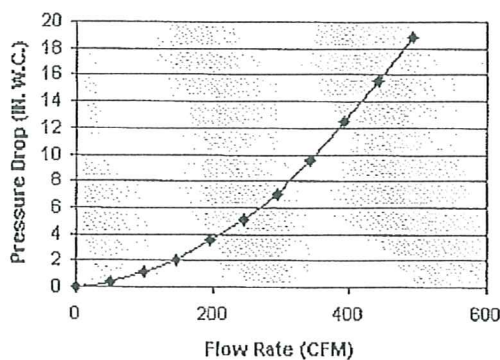
MODEL VFD-110

The VFD-110 filter is a media filter vessel designed to treat vapor streams. While the typical design application is a activated carbon adsorption unit, the filter can easily accommodate many medias. The sturdy construction makes these filter vessels ideal for long term treatment units. Some applications include:

- Soil Vapor Extraction Treatment
- Air Stripper Off Gas Treatment
- Odor Removal System
- Storage Tank Purge Vapor Treatment
- Pilot Study
- Industrial Process Treatment



PRESSURE DROP GRAPH
(As Filled 4"10 GAC)



VFD-110 SPECIFICATIONS

Overall Height	3'7"	Vessel/Internal Piping Materials	CS/CS (False Floor)
			Polyamide Epoxy

Diameter	32"	Internal Coating	Resin
Inlet / Outlet (FNPT)	2"	External Coating	Urethane Enamel
Drain / Vent (FNPT)	OPT	Maximum Pressure / Temp	4 PSIG / 250° F
GAC Fill (lbs)	350	Cross Sectional Bed Area	4.9 FT ²
Shipping / Operational Weight (lbs)	450/600	Bed Depth/Volume	2.6 FT / 12.5 FT ³

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Tetrasolv Filtration, Inc. • 1200 East 26th Street • Anderson, Indiana 46016 • USA
Toll Free: 800-441-4034 Telephone: 765-643-3941 • Fax: 765-643-3949
www.tetrasolv.com • info@tetrasolv.com



Attachment 3

Site Data Entry Worksheet for Soil Vapor Extraction Systems
Enter site data for up to 5 SVE stacks in yellow cells.

Project Name:		Enter Distance from Stack#1 to Nearest Receptor or Property Boundary (in meters, minimum 10):		Enter Measured Gas Flow Rate through Vent Stack#1 (m ³ /sec):		
MN Biobusiness Center		8	10	0.03		
Date of Emission Test:		STACK 1				
11/9/2006 DPRA Data		ENTER EMISSION CONCENTRATIONS FOR STACK#1 in Column C				
Chemical Name	CAS or MPCA#	Emission concentration stack #1 ug/m ³	Gas flow rate through vent stack#1 m ³ /sec	Emission rate stack#1 ug/sec	Emission rate stack#1 lb/hr	Emission rate stack#1 tons/year
SO2	SO2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
PM10	PM10		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
PM2.5	PM2.5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
NOx	NOx		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
CO	CO		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pb	Pb		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acetaldehyde	75-07-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acetamide	60-35-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acetone	67-64-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acetonitrile	75-05-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acrolein	107-02-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acrylamide	79-06-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acrylic acid	79-10-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Acrylonitrile	107-13-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Aldehydes	00-07-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Aldrin	309-00-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Allyl chloride	107-05-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Aminoanthraquinone, 2-	117-79-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ammonia	7664-41-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Aniline	62-53-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Antimony	7440-36-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Antimony Compounds	0-00-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Antimony trioxide	1309-64-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Aramite	140-57-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Arsenic	7440-38-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Arsenic Compounds	0-00-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Arsenic Trioxide	1327-53-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Arsine	7784-42-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Barium	7440-39-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Barium Compounds	00-03-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benz[a]anthracene	56-55-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzenamine, 2-Nitro-	88-74-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzene	71-43-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzene, Ethenylmethyl-	25013-15-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzidine	92-87-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzo(i)fluoranthene	205-82-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzo(k)fluoranthene	207-08-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzo(a)pyrene	50-32-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzo(b)fluoranthene	205-99-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Benzyl chloride	100-44-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Beryllium	7440-41-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Beryllium Compounds	0-00-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Bis(2-chloro-1-methylethyl)ether	108-60-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Bis(chloromethyl)ether	542-88-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Boron	7440-42-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Boron trifluoride	7637-07-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Bromoform	75-25-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Butadiene, 1,3-	106-99-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Butyl Cellosolve (ethylene glycol monobutyl ether)	111-76-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cadmium	7440-43-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cadmium Compounds	0-00-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Carbon disulfide	75-15-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Carbon tetrachloride	56-23-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cellosolve Acetate (ethylene glycol monoethyl ether acetate)	111-15-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlordane	57-74-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlorinated Paraffins (C12, 60% Chlorine)	108171-26-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlorine	7782-50-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlorine Oxide (ClO2)	10049-04-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloro-1,1-difluoroethane, 1- (HCFC-142b)	75-68-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloroacetophenone, 2-	532-27-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlorobenzene	108-90-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlorobenzilate	510-15-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chlorodifluoromethane (HCFC-22)	75-45-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloroform	67-66-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloro-o-phenylenediamine, 4-	95-83-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloro-o-toluidine, p-	95-69-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloropicrin	76-06-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloroprene	126-99-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chloropropane, 2-	75-29-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chromic acid mists and dissolved Cr(VI) aerosols	18540-29-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chromium (Hexavalent) (particulate)	18540-29-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Chromium Compounds	0-00-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00

Chrysene (Benzo(a)phenanthrene)	218-01-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Coal Tar	8007-45-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Coke Oven Emissions	0-00-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Copper	7440-50-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Copper Compounds	00-03-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cresidine, p-	120-71-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cresol, m-	108-39-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cresol, o-	95-48-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cresol, p-	106-44-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cresols/Cresylic acid (isomers and mixture)	1319-77-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cumene	98-82-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cupferron	135-20-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cyanide (Cyanide ion, Inorganic cyanides, Isocyanide)	57-12-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cyanide Compounds	0-00-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cyclohexane	110-82-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Cyclopentadiene	542-92-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
DDT	50-29-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Diaminoanisole, 2,4-	615-05-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Diazene, Diphenyl	103-33-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenz(a,h)acridine	226-36-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenz(a,i)acridine	224-42-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenz(a,h)anthracene	53-70-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenzo(a,e)pyrene	192-65-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenzo(a,h)pyrene	189-64-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenzo(a,i)pyrene	191-30-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenzo(c,q)carbazole, 7H-	194-59-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenzo(a,i)pyrene	189-55-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibenzofuran	132-64-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dibromo-3-chloropropane, 1,2-	96-12-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichloro-2-butene, 1,4-	764-41-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichlorobenzene(p), 1,4-	106-46-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichlorobenzene, 1,2-	95-50-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichlorobenzenes	25321-22-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichlorobenzidene, 3,3-	91-94-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichlorodifluoromethane (CFC-12)	75-71-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichloroethyl ether (Bis(2-chloroethyl)ethe	111-44-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichloroethane (trans-1,2-)	156-60-5	2100	3.3000E-02	6.9300E+01	5.5001E-04	2.4090E-03
Dichloroethylene (1,1-) (Vinylidene chloride)	75-35-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichloropropene, 1,3-	542-75-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dichlorvos	62-73-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dicyclopentadiene	77-73-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dieldrin	60-57-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Diesel exhaust particulate	0-02-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Diethanolamine	111-42-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Diethylene Glycol Monobutyl Ether	112-34-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Difluoroethane, 1,1-	75-37-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dimethyl aminoazobenzene	60-11-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dimethyl formamide	68-12-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dimethylamino ethanol, 2-	108-01-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dimethylbenz(a)anthracene, 7,12-	57-97-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dinitropyrene, 1,6- (BaP)	42397-64-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dinitropyrene, 1,8- (BaP)	42397-65-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dinitrotoluene, 2,4-	121-14-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Dioxane, 1,4- (1,4-Diethyleneoxide)	123-91-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Diphenylhydrazine, 1,2-	122-66-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	106-89-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Epoxycbutane, 1,2-	106-88-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethanol	64-17-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethoxyethanol, 2- (ethylene glycol monoethyl ether)	110-80-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethyl acetate	141-78-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethyl benzene	100-41-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethyl carbamate (Urethane)	51-79-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethyl chloride (Chloroethane)	75-00-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethylene dibromide (Dibromoethane)	106-93-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethylene dichloride (1,2-Dichloroethane)	107-06-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethylene glycol	107-21-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethylene oxide	75-21-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethylene thiourea	96-45-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Ethylidene dichloride (1,1-Dichloroethane)	75-34-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Formaldehyde	50-00-0		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Furancarboxaldehyde, 2-	98-01-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Glutaraldehyde	111-30-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Glycidyl	765-34-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Glycol ethers	0-01-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlor	76-44-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlor epoxide	1024-57-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlorodibenzodioxin, All Isomers	00-08-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	67562-39-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	55673-89-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlorodibenzofuran, All Isomers	00-08-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Heptachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8-	35822-46-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorobenzene	118-74-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorobutadiene	87-68-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorocyclohexane (technical grade)	608-73-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorocyclohexane, alpha-	319-84-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorocyclohexane, beta-1,2,3,4,5,6-	319-85-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorocyclopentadiene	77-47-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzodioxins, All Isomers	00-08-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzofuran, 1,2,3,4,7,8-	70648-26-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzofuran, 1,2,3,6,7,8-	57117-44-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzofuran, 1,2,3,7,8,9-	72918-21-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzofuran, 2,3,4,6,7,8-	60851-34-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzofurans, All Isomers	00-08-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzo-p-dioxin, 1,2,3,4,7,8-	39227-28-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00

Hexachlorodibenzo-p-dioxin, 1,2,3,6,7,8-	57653-85-7	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachlorodibenzo-p-dioxin, 1,2,3,7,8,9-	19408-74-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexachloroethane	67-72-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexamethylene-1,6-diisocyanate	822-06-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hexane	110-54-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrazine	302-01-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrazine sulfate	10034-93-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrochloric acid	7647-01-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrogen cyanide	74-90-8	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrogen fluoride (Hydrofluoric acid)	7664-39-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrogen selenide	7783-07-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Hydrogen sulfide	7783-06-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Indeno(1,2,3-cd)pyrene	193-39-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Isophorone	78-59-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Isopropyl alcohol	67-63-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Lead	7439-92-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Lead Chromate	7758-97-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Lead Compounds	0-01-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Lindane (all isomers)	58-89-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
m- and p-Xylenes	00-07-8	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Maleic anhydride	108-31-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Manganese	7439-96-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Manganese Compounds	0-01-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Manganese Dioxide	1313-13-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Mercury	7439-97-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Mercury Compounds	0-02-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methacrylonitrile	126-98-7	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methanol	67-56-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methoxyethanol, 2- (ethylene glycol monomethyl ether EG)	109-86-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl bromide (Bromomethane)	74-83-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl Cellosolve Acetate	110-49-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl chloride (Chloromethane)	74-87-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl chloroform (1,1,1-Trichloroethane)	71-55-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl cyclohexane	108-87-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl ethyl ketone (2-Butanone)	78-93-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl isobutyl ketone (Hexone)	108-10-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl isocyanate	624-83-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl methacrylate	80-62-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methyl tert butyl ether	1634-04-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylcholanthrene, 3-	56-49-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylchrysene, 5-	3697-24-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylene bis(2-chloroaniline), 4,4-	101-14-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylene chloride (Dichloromethane)	75-09-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylene diphenyl diisocyanate (MDI)	101-68-8	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylenedianiline, 4,4-	101-77-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Methylacetonitrile, 2-	75-86-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Michler's ketone	90-94-8	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosomethylethylamine	10595-95-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Naphthalene	91-20-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nickel	7440-02-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nickel Compounds	0-01-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nickel oxide	1313-99-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nickel refinery dust from the pyrometallurgical process	0-02-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nickel sulfide (Ni3S2)	12035-72-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitric acid	7697-37-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitroacenaphthene, 5-	602-87-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitrobenzene	98-95-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitrochrysene, 6-	7496-02-8	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitrofluorene, 2-	607-57-8	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitrogen oxide (NO2)	10102-44-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitropropane, 2-	79-46-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitropyrene, 1-	5522-43-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitropyrene, 4-	57835-92-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Nitrosodiphenylamine, p-	156-10-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosodiethylamine	55-18-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosodimethylamine	62-75-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosodi-n-butylamine	924-16-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosodi-n-propylamine	621-64-7	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosodiphenylamine	86-30-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosomorpholine	59-89-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
N-Nitrosopiperidine	100-75-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Octachlorodibenzofuran, 1,2,3,4,6,7,8,9-	39001-02-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Octachlorodibenzo-p-dioxin, 1,2,3,4,6,7,8,9-	3268-87-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pentachlorodibenzodioxins, All Isomers	00-08-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pentachlorodibenzofuran, 1,2,3,7,8-	57117-41-6	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pentachlorodibenzofuran, 2,3,4,7,8-	57117-31-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pentachlorodibenzofurans, All Isomers	00-09-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-	40321-76-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pentachlorophenol	87-86-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Petroleum Hydrocarbons, Aliphatic (C7 - C11)	00-07-7	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Phenol	108-95-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Phosgene	75-44-5	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Phosphine	7803-51-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Phosphoric acid	7664-38-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Phthalic anhydride	85-44-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polychlorinated biphenyls (Aroclors)	1336-36-3	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polychlorinated Dibenzodioxins, Total	00-05-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polychlorinated Dibenzofurans, Total	00-05-1	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polychlorinated Dibenzo-P-Dioxins And Furans, Total	00-08-0	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polycyclic Aromatic Hydrocarbons (PAH)	130498-29-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polycyclic Organic Matter (POM)	00-01-7	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Polymeric diphenylmethane diisocyanate	9016-87-9	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Potassium bromate	7758-01-2	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Propane sultone, 1,3-	1120-71-4	3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00

Propylene	115-07-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Propylene dichloride (1,2-Dichloropropane)	78-87-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Propylene Glycol Monomethyl Ether	107-98-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Propylene oxide	75-56-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Pyrrrolidine, 1-Nitroso-	930-55-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Selenium	7784-49-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Selenium Compounds	0-01-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Sodium hydroxide	1310-73-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Strontium chromate	7789-06-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Styrene	100-42-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Styrene oxide	96-09-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Sulfates	14808-79-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Sulfuric acid (aerosol forms only)	7664-93-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Sulfuric Acid mixture w. sulfur trioxide (oleum)	8014-95-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
TCDD Equivalents, 2,3,7,8-	00-09-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachlorodibenzodioxins, All Isomers	00-08-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachlorodibenzodioxins, Other (Excluding 2,3,7,8)	00-08-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachlorodibenzofuran, 2,3,7,8-	51207-31-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachlorodibenzofurans, All Isomers	00-08-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachlorodibenzofurans, Other (Excluding 2,3,7,8)	00-08-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	1746-01-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachloroethane, 1,1,1,2-	630-20-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachloroethane, 1,1,2,2-	79-34-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrachloroethylene (Perchloroethylene)	127-18-4	810000	3.3000E-02	2.6730E+04	2.1215E-01	9.2920E-01
Tetrachlorophenol	25167-83-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Tetrafluoroethane, 1,1,1,2-	811-97-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Thioacetamide	62-55-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Toluene	108-88-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Toluene diamine, 2,4-	95-80-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Toluene diisocyanate, 2,4-	584-84-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Toluene-2,6-diisocyanate	91-08-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Toluenediisocyanate (mixed isomers)	26471-62-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Toxaphene (chlorinated camphene)	8001-35-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trichloro-1,2,2-trifluoroethane, 1,1,2- (Freon 113)	76-13-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trichlorobenzene, 1,2,4-	120-82-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trichloroethane, 1,1,2-	79-00-5		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trichloroethylene	79-01-6	1100	3.3000E-02	3.6300E+01	2.8810E-04	1.2619E-03
Trichlorofluoromethane (CFC-11)	75-69-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trichlorophenol, 2,4,6-	88-06-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Triethylamine	121-44-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trimethylbenzene, 1,2,4-	95-63-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Trimethylbenzene, 1,3,5-	108-67-8		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Vanadium oxide, (V2O5)	1314-62-1		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Vinyl acetate	108-05-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Vinyl bromide	593-60-2		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Vinyl chloride	75-01-4		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Xylenes	1330-20-7		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Xylenes, m-	108-38-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Xylenes, o-	95-47-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Xylenes, p-	106-42-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Zinc	7440-66-6		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Zinc chromate	13530-65-9		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00
Zinc Compounds	00-03-3		3.3000E-02	0.0000E+00	0.0000E+00	0.0000E+00

Risk Evaluation Summary

RASS Version Used: RASS version number = 20060829 - RASS

This worksheet provides a summary of the results of the chronic and acute risk calculations based on site inputs from the Soil Venting and the Air Stripper worksheets. For both chronic and acute risk, an unacceptable risk is indicated in red if the Hazard Index exceeds 1. For chronic risk, an unacceptable risk is also indicated in red if the additive ELCR exceeds 10⁻⁵. This worksheet also indicates if levels of any acute developmental toxicants (which are considered ceiling values and should never be exceeded) pose an unacceptable risk.

CHRONIC RISK SUMMARY	
Number of Compounds with Hazard Quotient >1:	0
Number of Compounds with Cancer Risk > 10 ⁻⁵	1
Noncancer Hazard Index:	0.4
Excess Lifetime Cancer Risk (ELCR):	2.2E-05

ACUTE RISK SUMMARY	
Number of Compounds with Hazard Quotient >1:	0
Hazard Index:	0.0

Ceiling Values Exceeded?	
Arsenic	NO
Benzene	NO
Carbon disulfide	NO
Carbon tetrachloride	NO
Cellulosolve Acetate	NO
Chloroform	NO
Ethoxyethanol, 2-	NO
Ethylbenzene	NO
Ethyl chloride	NO
Mercury	NO
Methoxyethanol, 2-	NO
Propylene oxide	NO
Trichloroethylene	NO