

Neville Island Bucket Brigade Air Sampling Results
Chart A: Volatile Organic Compounds (VOCs) and Sulfur Compounds

Chemical	sample #7 1-28-02 Ben Avon	sample #8 6-16-02 Ben Avon	sample #9 6-17-02 Avalon	sample #10 7-17-02 Avalon	sample #11 9-15-02 Ben Avon	sample #12 12-30-02 Robinson Twp	sample #13 12-30-02 Neville Twp	background sample 12-9-02 South Fayette
Acetone	34.0	6.3	17.0	16.0	6.1			3.2
Acrylonitrile		28.0		31.0	22.0			
Benzene	11.0		1.7	8.0	1.9	4.7		
2-Butanone (MEK)			2.1			2.0		
Carbon Disulfide		3.9		4.7	3.5	6.0		
Carbonyl Sulfide						5.1		
Dichlorodifluoromethane				0.8				
Ethanol		16.0	15.0	13.0	15.0	25.0	12.0	7.3
Ethylbenzene			2.3				2.2	
4-Ethyltoluene							1.1	
n-Hexane			4.4					
Hydrogen Sulfide	6.8							
Isopropyl Alcohol		9.7	3.9	8.1	2.7	2.4		10.0
d-Limonene			1.4		1.2			
Methylene Chloride	10.0						3.8	
Toluene	11.0	4.1	13.0	4.6	7.0	3.7	3.4	
1,2,4-Trimethylbenzene		1.2	1.1				2.1	
1,3,5-Trimethylbenzene							1.1	
<i>m,p</i> -Xylenes	3.4	1.6	9.3			1.4	4.4	
<i>o</i> -Xylene			2.0				2.3	

~ all figures are in ppb_v (parts per billion by volume)

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Chart B: Tentatively Identified Compounds

Chemical	sample #8 6-16-02 Ben Avon	sample #9 6-17-02 Avalon	sample #10 7-17-02 Avalon	sample #11 9-15-02 Emsworth	sample #12 12-30-02 Robinson Twp	sample #13 12-30-02 Neville Twp	background sample 12-9-02 South Fayette
n-Butane					30	20	
C ₅ H ₁₀ Compound *						200	
C ₈ H ₁₈ Branched Alkane *			20		200		
C ₉ H ₂₀ Branched Alkane *					70		
C ₁₀ H ₂₂ Branched Alkane *					40		
C ₁₂ H ₂₆ Branched Alkane *	30		60	70			
C ₁₃ H ₂₈ Branched Alkane *	20		30				
Cyclopentane	20						
Cyclopentene	20					200	
Cyclopropylbenzene + C ₁₀ H ₁₂ Aromatic Compound						20	
n-Decane	40	30	20	40	40		
2,2-Dimethylbutane	20					100	
n-Dodecane	20	20	20	20	30		20
2-Ethyl-1-hexanol							10
Hexamethylcyclotrisiloxane (<i>Possible Artifact</i>)			20	40			
Isobutane		40			20		
Isooctane		10					
2-Methylbutane		200					
2-Methylpentane						30	
alpha-Methylstyrene						20	
n-Octane			40				
Pentadiene Isomer						200	
n-Pentane	30	70			10	200	
Propene + Propane					30	30	
Propylbenzene						20	
Sesquiterpene	20	10					
C ₁₅ H ₂₄ Sesquiterpene *				20			20
Unidentified C ₁₅ H ₂₄ Sesquiterpene *			30				
Unidentified Siloxane (<i>Possible Artifact</i>) *			30		10		20
Sulfur Dioxide				40			
n-Undecane		40					

* **Compounds detected at varying GC/MS Ret. Time. Entered highest level detected in each sample for each compound, regardless of GC/MS Ret. Time.**

~ **all figures are approximate and measured in ug/m³ (micrograms per cubic meter)**

Neville Island Bucket Brigade Air Sampling Results
Chart C: Highest Detected Levels Compared to Various Standards

Chemical	Sample Number	Highest Level Detected	EPA Region 3 Risk-Based Concentrations	Texas Short-Term Effects Screening Level	Texas Long-Term Effects Screening Level	North Carolina Annual Ambient Air Standard
Acetone	7	34.0	155.3	2,440.0	244.0	
Acrylonitrile	10	31.0	0.01	19.4	1.9	0.07
Benzene	7	11.0	0.06	3.7	0.9	0.04
2-Butanone (MEK)	9	2.1		1,300.0	130.0	
Carbon Disulfide	13	6.0	234.1	9.5	0.9	
Carbonyl Sulfide	12	5.1		3.2	0.3	
Dichlorodifluoromethane	10	0.8	20.9	9,840.0	984.0	
Dicyclopentadiene	13	37.0	0.04	5.7	0.6	
Ethanol	12	25.0		9,810.0	981.0	
Ethylbenzene	9	2.3	0.4	452.0	45.2	
n-Hexane	9	4.4	57.8	490.0	49.0	
Hydrogen Sulfide	7	6.8	0.7	0.7		
Isopropyl Alcohol	Background	10.0		3,140.0	314.0	
Methylene Chloride	7	10.0	1.1	73.5	7.4	6.79
alpha-Methylstyrene	13	4.1	7.6			
Propylbenzene	13	4.1	30.5			
Toluene	9	13.0	109.2	490.0	49.0	
1,2,4-Trimethylbenzene	13	2.1	1.3	250.0	25.0	
1,3,5-Trimethylbenzene	13	1.1	1.2	250.0	25.0	
<i>m,p</i> -Xylenes	9	9.3	1,679.0	837.0	83.7	
<i>o</i> -Xylene	13	2.3	1,679.0	837.0	83.7	

~ *all figures are in ppb, (parts per billion by volume)*

~ *see appendix for further explanation*

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Chart D: Health Effects of Detected Chemicals

Chemical	Nasal/throat irritant	Eye irritant	Skin irritant	Respiratory irritant	Neurotoxic effects	Birth defects	Reproductive/Developmental effects	Carcinogen	Blood disorders	Liver/kidney damage
Acetone	Y	Y			Y-w/high exposure	unk	unk	unk		
Acrylonitrile	Y	Y		Y	Y	Possible	Possible	Y		Y
Benzene		Y	Y	Y	Y	unk	Y	Y	Y	
Butane					Y	unk	unk	unk		
Carbon Disulfide	Y	Y		Y	Y	Y	Y	unk		Y
Carbonyl Sulfide		Y	Y		Y	unk	unk	unk		
Cyclopentane	Y	Y			Y	unk	unk	unk		
Decane	Y			Y	Y	unk	unk	unk		
Dichlorodifluoromethane	Y	Y	Y		Y	N	N	N		
Dicyclopentadiene	Y			Y	Y	unk	unk	unk		Y
2,2-Dimethylbutane	Y			Y	Y	unk	unk	unk		Y
Ethanol	Y	Y	Y		Y					
Ethylbenzene	Y	Y		Y	Y			unk	Y	Y
n-Hexane	Y	Y	Y		Y	unk	unk	unk		
Hydrogen Sulfide	Y	Y		Y	Y	N	N	unk		
Isobutane	Y	Y		Y	Y	unk	unk	unk		
Isooctane	Y			Y	Y	unk	unk	unk		
Isopropyl Alcohol	Y				Y	N	N	unk		
2-Methylbutane	Y	Y			Y	unk	unk	unk		
Methylene Chloride	Y				Y	unk	unk	Y		Y
n-Octane	Y	Y	Y	Y	Y	unk	unk	unk		
n-Pentane	Y			Y	Y	unk	unk	unk		
Propane					Y	unk	unk	unk		
Propylbenzene	Y				Y	unk	unk	unk		
Sulfur Dioxide	Y	Y	Y	Y	Y	unk	Y	Possible		
Toluene	Y	Y	Y	Y	Y	Y	Possible	unk		Y
Trimethylbenzene	Y	Y	Y	Y	Y	unk	unk	unk	Y	Y
Undecane	Y	Y	Y	Y		unk	unk	unk		
Xylenes	Y	Y		Y-esp. w/toluene	Y	unk	Y	unk	Possible	Y

* **unk** = chemical has not yet been tested for this health effect

* **sources:** US Environmental Protection Agency and NJ Dept. of Health

Chart E: Neville Island Facility Emissions

	Benzene	Dicyclo- pentadiene	Ethyl- benzene	Hexane	Hydrogen Sulfide	Methylene Chloride	Toluene	1,2,4-Trimethyl- benzene	Xylenes
Ashland Chemical		548	22,200	620					83,488
Clearwater, Inc.							16		5
Exxon	1,068		149	1,900			1,572		690
Gulf Oil	6,000		1,720	40			2,840		1,700
Liberty-Pittsburgh Systems									20
Neville Chemical	8,360	22,300	4,160	380		20	13,320	5,900	10,660
Shenango	16,020		20	80	18,480		1,500		500
Trumbull	120		80	280			40		60
Valley Proteins				160					
Watson Standard			60				0	591	244
Total	31,568	22,848	28,389	3,460	18,480	20	19,288	6,491	97,367

** All emissions listed as pounds per year.*

** Figures from Allegheny County Health Dept.'s 2000 Emission Inventory and US EPA's 2000 Toxic Release Inventory*