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EPA Region 5 Records Ctr.
351611

July 15, 1998

Mr. Ralph Dollhopf, On-Scene Coordinator
United States Environmental Protection Agency
9311 Groh Road, Room 216
Gross Ile, Michigan 48138-1697

Ms. Deborah Orr, Remedial Project Manager
United States Environmental Protection Agency
77 W. Jackson Boulevard (SE-4J)
Chicago, Illinois 60604

RE: Toledo Tie Treatment Site Preliminary Air Sampling Data
PWM001.100.0067

Enclosed are the measured ambient air concentrations taken on May 27, 28, and 29, 1998. The air sampling program collected information in the ambient air concentrations for volatile organic compounds (VOC), polynuclear aromatic hydrocarbons (PAH), and particulate matter having a diameter less than 10 microns (PM-10). The air sampling program was designed to determine the background ambient air concentrations of the pollutants (VOCs, PAHs, and PM-10) around the perimeter of the site and to collect data on the ambient air pollutant concentrations during a controlled, "worst case," site excavation.

The preliminary data has not been data validated yet, however, results are pending. Should you have any questions or comments, please contact me.

Sincerely,

Gary Thiscallett for

Scott Lockhart, P.E.
Project Manager

ct: A. Keith Watson, Project Manager, Kerr-McGee
Peter Goetz, Project Coordinator, Kerr-McGee
Chris Schraff, Esq., Porter, Wright, Morris & Arthur
Cedric Gibson, Ecology and Environment

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Table 4.1 Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 1	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Freon 12		<1.0	< 0.96	< 0.96
Freon 114		<1.0	< 0.96	< 0.96
Chloromethane		**1.2**	**1.50**	**1.10**
Vinyl Chloride		<1.0	< 0.96	< 0.96
Bromomethane		<1.0	< 0.96	< 0.96
Chloroethane		<1.0	< 0.96	< 0.96
Freon 11		<1.0	< 0.96	< 0.96
1,1-Dichloroethene		<1.0	< 0.96	< 0.96
Freon 113		<1.0	< 0.96	< 0.96
Methlyene Chloride		<1.0	< 0.96	< 0.96
1,1-Dichloroethane		<1.0	< 0.96	< 0.96
cis-1,2-Dichloroethene		<1.0	< 0.96	< 0.96
Chloroform		<1.0	< 0.96	< 0.96
1,1,1-Trichloroethane		<1.0	< 0.96	< 0.96
Carbon Tetrachloride		<1.0	< 0.96	< 0.96
Benzene		<1.0	< 0.96	< 0.96
1,2-Dichloroethane		<1.0	< 0.96	< 0.96
cis-1,3-Dichloropropene		<1.0	< 0.96	< 0.96
Toluene		**1.7**	**2.20**	**1.90**
trans-1,3-Dichloropropene		<1.0	< 0.96	< 0.96
1,1,2-Trichloroethane		<1.0	< 0.96	< 0.96
Tetrachloroethene		<1.0	< 0.96	< 0.96
Ethylene Dibromide		<1.0	< 0.96	< 0.96
Chlorobenzene		<1.0	< 0.96	< 0.96
Ethyl Benzene		<1.0	< 0.96	< 0.96
m,p-Xylene		<1.0	< 0.96	< 0.96
o-Xylene		<1.0	< 0.96	< 0.96
Styrene		<1.0	< 0.96	< 0.96
1,1,2,2-Tetrachloroethane		<1.0	< 0.96	< 0.96
1,3,5-Trimethylbenzene		<1.0	< 0.96	< 0.96
1,2,4-Trimethylbenzene		<1.0	< 0.96	< 0.96
1,3-Dichlorobenzene		<1.0	< 0.96	< 0.96
1,4-Dichlorobenzene		<1.0	< 0.96	< 0.96
Chlorotoluene		<1.0	< 0.96	< 0.96
1,2-dichlorbenzene		<1.0	< 0.96	< 0.96
1,2,4-Trichlorobenzene		<1.0	< 0.96	< 0.96
Hexachlorobutadiene		<1.0	< 0.96	< 0.96
Propylene		<4.0	< 3.8	< 3.8
1,3-Butadiene		<4.0	< 3.8	< 3.8

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 1	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Acetone		**7.5**	**6.5**	**6.5**
Carbon Disulfide		<4.0	< 3.8	< 3.8
2-Propanol		<4.0	< 3.8	< 3.8
trans-1,2-Dichloroehtene		<4.0	< 3.8	< 3.8
Vinyl Acetate		<4.0	< 3.8	< 3.8
2-Butanone (Methyl Ethyl Ketone)		<4.0	< 3.8	< 3.8
Haxane		<4.0	< 3.8	< 3.8
Tetrahydrofuran		<4.0	< 3.8	< 3.8
Cyclohexane		<4.0	< 3.8	< 3.8
1,4-Dioxane		**7.0**	**4.4**	**7.8**
Bromdichloromethane		<4.0	< 3.8	< 3.8
4-Methyl-2-Pentanone		<4.0	< 3.8	< 3.8
2-Hexanone		<4.0	< 3.8	< 3.8
Dibromochloromethane		<4.0	< 3.8	< 3.8
Bromoform		<4.0	< 3.8	< 3.8
4-Ethyltoluene		<4.0	< 3.8	< 3.8
Ethanol		**5.1**	< 3.8	**6.0**
Methyl tert-Butyl Ether		<4.0	< 3.8	< 3.8
Heptane		<4.0	< 3.8	< 3.8

Tentatively Identified Compounds (TICs) (ppbv)	Site 1	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Heptane, 4-ethyl-2,2,6,6-tetramethyl-		6.1		
Heptane, 2,2,4-trimethyl-				
Naphthalene				
Aniline				
Undecane, 3,6-dimethyl				
Undecane, 2,6-dimethyl				3.9
Benzene, (1-methylethenyl)-				
Benzofuran				
Benzene, 1,2,3-trimethyl-				
1H-Indene, 2,3-dihydro-				
Benzene, 1-propenyl-				
Benzene , (1-methyl-1-propenyl)-, (E)-				
Benzofuran, 2-methyl-				
2,3-Dihydro-1-methylindene				
1H-Indene, 2,3-dihydro-2-methyl-				
Benzene, (1-methyl-2-cyclopropen-1-yl)-				
Benzothiophene				

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 2	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Freon 12		<1.1	< 0.94	**0.89**
Freon 114		<1.1	< 0.00	< 0.84
Chloromethane		**1.2**	**2.90**	**0.95**
Vinyl Chloride		<1.1	< 0.94	< 0.84
Bromomethane		<1.1	< 0.94	< 0.84
Chloroethane		<1.1	< 0.94	< 0.84
Freon 11		<1.1	< 0.94	< 0.84
1,1-Dichloroethene		<1.1	< 0.94	< 0.84
Freon 113		<1.1	< 0.94	< 0.84
Methlyene Chloride		<1.1	< 0.94	< 0.84
1,1-Dichloroethane		<1.1	< 0.94	< 0.84
cis-1,2-Dichloroethene		<1.1	< 0.94	< 0.84
Chloroform		<1.1	< 0.94	< 0.84
1,1,1-Trichloroethane		<1.1	< 0.94	< 0.84
Carbon Tetrachloride		<1.1	< 0.94	< 0.84
Benzene		**1.6**	< 0.94	< 0.84
1,2-Dichloroethane		<1.1	< 0.94	< 0.84
cis-1,3-Dichloropropene		<1.1	< 0.94	< 0.84
Toluene		**3.4**	**3.50**	**2.30**
trans-1,3-Dichloropropene		<1.1	< 0.94	< 0.84
1,1,2-Trichloroethane		<1.1	< 0.94	< 0.84
Tetrachloroethene		<1.1	< 0.94	< 0.84
Ethylene Dibromide		<1.1	< 0.94	< 0.84
Chlorobenzene		<1.1	< 0.94	< 0.84
Ethyl Benzene		<1.1	< 0.94	< 0.84
m,p-Xylene		<1.1	**0.99**	**0.91**
o-Xylene		<1.1	< 0.94	< 0.84
Styrene		<1.1	< 0.94	< 0.84
1,1,2,2-Tetrachloroethane		<1.1	< 0.94	< 0.84
1,3,5-Trimethylbenzene		<1.1	< 0.94	< 0.84
1,2,4-Trimethylbenzene		<1.1	< 0.94	< 0.84
1,3-Dichlorobenzene		<1.1	< 0.94	< 0.84
1,4-Dichlorobenzene		<1.1	< 0.94	< 0.84
Chlorotoluene		<1.1	< 0.94	< 0.84
1,2-dichlorbenzene		<1.1	< 0.94	< 0.84
1,2,4-Trichlorobenzene		<1.1	< 0.94	< 0.84
Hexachlorobutadiene		<1.1	< 0.94	< 0.84
Propylene		<4.3	< 3.7	**3.4**
1,3-Butadiene		<4.3	< 3.7	< 3.4

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 2	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Acetone		**8.6**	**10.0**	**6.3**
Carbon Disulfide		<4.3	< 3.7	< 3.4
2-Propanol		<4.3	< 3.7	< 3.4
trans-1,2-Dichloroehtene		<4.3	< 3.7	< 3.4
Vinyl Acetate		<4.3	< 3.7	< 3.4
2-Butanone (Methyl Ethyl Ketone)		<4.3	< 3.7	< 3.4
Haxane		<4.3	< 3.7	< 3.4
Tetrahydrofuran		<4.3	< 3.7	< 3.4
Cyclohexane		<4.3	< 3.7	< 3.4
1,4-Dioxane		**8.2**	< 3.7	< 3.4
Bromdichloromethane		<4.3	< 3.7	< 3.4
4-Methyl-2-Pentanone		<4.3	< 3.7	< 3.4
2-Hexanone		<4.3	< 3.7	< 3.4
Dibromochloromethane		<4.3	< 3.7	< 3.4
Bromoform		<4.3	< 3.7	< 3.4
4-Ethyltoluene		<4.3	< 3.7	< 3.4
Ethanol		**6.2**	< 3.7	**5.3**
Methyl tert-Butyl Ether		<4.3	< 3.7	< 3.4
Heptane		<4.3	< 3.7	< 3.4

Tentatively Identified Compounds (TICs) (ppbv)	Site 2	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Heptane, 4-ethyl-2,2,6,6-tetramethyl-				
Heptane, 2,2,4-trimethyl-				6.6
Naphthalene				
Aniline		6.0		
Undecane, 3,6-dimethyl				
Undecane, 2,6-dimethyl				
Benzene, (1-methylethenyl)-				
Benzofuran				
Benzene, 1,2,3-trimethyl-				
1H-Indene, 2,3-dihydro-				
Benzene, 1-propenyl-				
Benzene , (1-methyl-1-propenyl)-, (E)-				
Benzofuran, 2-methyl-				
2,3-Dihydro-1-methylindene				
1H-Indene, 2,3-dihydro-2-methyl-				
Benzene, (1-methyl-2-cyclopropen-1-yl)-				
Benzothiophene				

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 3	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Freon 12		<0.94	< 0.98	< 0.98
Freon 114		<0.94	< 0.98	< 0.98
Chloromethane		**1.1**	**1.30**	**1.20**
Vinyl Chloride		<0.94	< 0.98	< 0.98
Bromomethane		<0.94	< 0.98	< 0.98
Chloroethane		<0.94	< 0.98	< 0.98
Freon 11		<0.94	< 0.98	< 0.98
1,1-Dichloroethene		<0.94	< 0.98	< 0.98
Freon 113		<0.94	< 0.98	< 0.98
Methlyene Chloride		<0.94	< 0.98	< 0.98
1,1-Dichloroethane		<0.94	< 0.98	< 0.98
cis-1,2-Dichloroethene		<0.94	< 0.98	< 0.98
Chloroform		<0.94	< 0.98	< 0.98
1,1,1-Trichloroethane		<0.94	< 0.98	< 0.98
Carbon Tetrachloride		<0.94	< 0.98	< 0.98
Benzene		**1.1**	< 0.98	**1.50**
1,2-Dichloroethane		<0.94	< 0.98	< 0.98
cis-1,3-Dichloropropene		<0.94	< 0.98	< 0.98
Toluene		**1.7**	**1.70**	**1.70**
trans-1,3-Dichloropropene		<0.94	< 0.98	< 0.98
1,1,2-Trichloroethane		<0.94	< 0.98	< 0.98
Tetrachloroethene		<0.94	< 0.98	< 0.98
Ethylene Dibromide		<0.94	< 0.98	< 0.98
Chlorobenzene		<0.94	< 0.98	**1.10**
Ethyl Benzene		<0.94	< 0.98	< 0.98
m,p-Xylene		<0.94	< 0.98	< 0.98
o-Xylene		<0.94	< 0.98	< 0.98
Styrene		<0.94	< 0.98	< 0.98
1,1,2,2-Tetrachloroethane		<0.94	< 0.98	< 0.98
1,3,5-Trimethylbenzene		<0.94	< 0.98	< 0.98
1,2,4-Trimethylbenzene		<0.94	< 0.98	< 0.98
1,3-Dichlorobenzene		<0.94	< 0.98	< 0.98
1,4-Dichlorobenzene		<0.94	< 0.98	< 0.98
Chlorotoluene		<0.94	< 0.98	< 0.98
1,2-dichlorbenzene		<0.94	< 0.98	< 0.98
1,2,4-Trichlorobenzene		<0.94	< 0.98	< 0.98
Hexachlorobutadiene		<0.94	< 0.98	< 0.98
Propylene		<3.7	< 3.9	< 3.9
1,3-Butadiene		<3.7	< 3.9	< 3.9

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 3	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Acetone		**6.0**	**5.7**	**8.3**
Carbon Disulfide		<3.7	< 3.9	< 3.9
2-Propanol		<3.7	< 3.9	< 3.9
trans-1,2-Dichloroehtene		<3.7	< 3.9	< 3.9
Vinyl Acetate		<3.7	< 3.9	< 3.9
2-Butanone (Methyl Ethyl Ketone)		<3.7	< 3.9	< 3.9
Haxane		<3.7	< 3.9	< 3.9
Tetrahydrofuran		<3.7	< 3.9	< 3.9
Cyclohexane		<3.7	< 3.9	< 3.9
1,4-Dioxane		**6.9**	**17.0**	< 3.9
Bromdichloromethane		<3.7	< 3.9	< 3.9
4-Methyl-2-Pentanone		<3.7	< 3.9	< 3.9
2-Hexanone		<3.7	< 3.9	< 3.9
Dibromochloromethane		<3.7	< 3.9	< 3.9
Bromoform		<3.7	< 3.9	< 3.9
4-Ethyltoluene		<3.7	< 3.9	< 3.9
Ethanol		**7.6**	< 3.9	**8.4**
Methyl tert-Butyl Ether		<3.7	< 3.9	< 3.9
Heptane		<3.7	< 3.9	< 3.9

Tentatively Identified Compounds (TICs) (ppbv)	Site 3	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Heptane, 4-ethyl-2,2,6,6-tetramethyl-				
Heptane, 2,2,4-trimethyl-				
Naphthalene				
Aniline				
Undecane, 3,6-dimethyl		6.8		
Undecane, 2,6-dimethyl				
Benzene, (1-methylethenyl)-				
Benzofuran				
Benzene, 1,2,3-trimethyl-				
1H-Indene, 2,3-dihydro-				
Benzene, 1-propenyl-				
Benzene , (1-methyl-1-propenyl)-, (E)-				
Benzofuran, 2-methyl-				
2,3-Dihydro-1-methylindene				
1H-Indene, 2,3-dihydro-2-methyl-				
Benzene, (1-methyl-2-cyclopropen-1-yl)-				
Benzothiophene				

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 4	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Freon 12		< 1.0	< 0.98	<1.1
Freon 114		< 1.0	< 0.98	<1.1
Chloromethane		**1.1**	**1.10**	**1.7**
Vinyl Chloride		< 1.0	< 0.98	<1.1
Bromomethane		< 1.0	< 0.98	<1.1
Chloroethane		< 1.0	< 0.98	<1.1
Freon 11		< 1.0	< 0.98	<1.1
1,1-Dichloroethene		< 1.0	< 0.98	<1.1
Freon 113		< 1.0	< 0.98	<1.1
Methlyene Chloride		< 1.0	< 0.98	<1.1
1,1-Dichloroethane		< 1.0	< 0.98	<1.1
cis-1,2-Dichloroethene		< 1.0	< 0.98	<1.1
Chloroform		< 1.0	< 0.98	<1.1
1,1,1-Trichloroethane		< 1.0	< 0.98	<1.1
Carbon Tetrachloride		< 1.0	< 0.98	<1.1
Benzene		< 1.0	< 0.98	**3.0**
1,2-Dichloroethane		< 1.0	< 0.98	<1.1
cis-1,3-Dichloropropene		< 1.0	< 0.98	<1.1
Toluene		**1.0**	**1.80**	**1.6**
trans-1,3-Dichloropropene		< 1.0	< 0.98	<1.1
1,1,2-Trichloroethane		< 1.0	< 0.98	<1.1
Tetrachloroethene		< 1.0	< 0.98	<1.1
Ethylene Dibromide		< 1.0	< 0.98	<1.1
Chlorobenzene		< 1.0	< 0.98	<1.1
Ethyl Benzene		< 1.0	< 0.98	<1.1
m,p-Xylene		< 1.0	< 0.98	<1.1
o-Xylene		< 1.0	< 0.98	<1.1
Styrene		< 1.0	< 0.98	<1.1
1,1,2,2-Tetrachloroethane		< 1.0	< 0.98	<1.1
1,3,5-Trimethylbenzene		< 1.0	< 0.98	<1.1
1,2,4-Trimethylbenzene		< 1.0	< 0.98	<1.1
1,3-Dichlorobenzene		< 1.0	< 0.98	<1.1
1,4-Dichlorobenzene		< 1.0	< 0.98	<1.1
Chlorotoluene		< 1.0	< 0.98	<1.1
1,2-dichlorbenzene		< 1.0	< 0.98	<1.1
1,2,4-Trichlorobenzene		< 1.0	< 0.98	<1.1
Hexachlorobutadiene		< 1.0	< 0.98	<1.1
Propylene		< 4.1	< 4.0	<4.3
1,3-Butadiene		< 4.1	< 4.0	<4.3

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 4	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Acetone		**7.0**	**5.4**	**11.0**
Carbon Disulfide		< 4.1	< 4.0	<4.3
2-Propanol		< 4.1	< 4.0	<4.3
trans-1,2-Dichloroehtene		< 4.1	< 4.0	<4.3
Vinyl Acetate		< 4.1	< 4.0	<4.3
2-Butanone (Methyl Ethyl Ketone)		< 4.1	< 4.0	<4.3
Haxane		< 4.1	< 4.0	<4.3
Tetrahydrofuran		< 4.1	< 4.0	<4.3
Cyclohexane		< 4.1	< 4.0	<4.3
1,4-Dioxane		**4.2**	**20.0**	**8.2**
Bromdichloromethane		< 4.1	< 4.0	<4.3
4-Methyl-2-Pentanone		< 4.1	< 4.0	<4.3
2-Hexanone		< 4.1	< 4.0	<4.3
Dibromochloromethane		< 4.1	< 4.0	<4.3
Bromoform		< 4.1	< 4.0	<4.3
4-Ethyltoluene		< 4.1	< 4.0	<4.3
Ethanol		**8.2**	< 4.0	**6.2**
Methyl tert-Butyl Ether		< 4.1	< 4.0	<4.3
Heptane		< 4.1	< 4.0	<4.3

Tentatively Identified Compounds (TICs) (ppbv)	Site 4	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Heptane, 4-ethyl-2,2,6,6-tetramethyl-				
Heptane, 2,2,4-trimethyl-				
Naphthalene				
Aniline				
Undecane, 3,6-dimethyl				
Undecane, 2,6-dimethyl				
Benzene, (1-methylethenyl)-				6.2
Benzofuran				
Benzene, 1,2,3-trimethyl-				
1H-Indene, 2,3-dihydro-				
Benzene, 1-propenyl-				
Benzene , (1-methyl-1-propenyl)-, (E)-				
Benzofuran, 2-methyl-				
2,3-Dihydro-1-methylindene				
1H-Indene, 2,3-dihydro-2-methyl-				
Benzene, (1-methyl-2-cyclopropen-1-yl)-				
Benzothiophene				

Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Pit	28-May 8-Hour
Freon 12		< 1.0
Freon 114		< 1.0
Chloromethane		**1.7**
Vinyl Chloride		< 1.0
Bromomethane		< 1.0
Chloroethane		< 1.0
Freon 11		< 1.0
1,1-Dichloroethene		< 1.0
Freon 113		< 1.0
Methlyene Chloride		< 1.0
1,1-Dichloroethane		< 1.0
cis-1,2-Dichloroethene		< 1.0
Chloroform		< 1.0
1,1,1-Trichloroethane		< 1.0
Carbon Tetrachloride		< 1.0
Benzene		**19.0**
1,2-Dichloroethane		< 1.0
cis-1,3-Dichloropropene		< 1.0
Toluene		**27.0**
trans-1,3-Dichloropropene		< 1.0
1,1,2-Trichloroethane		< 1.0
Tetrachloroethene		< 1.0
Ethylene Dibromide		< 1.0
Chlorobenzene		< 1.0
Ethyl Benzene		**39.0**
m,p-Xylene		**51.0**
o-Xylene		**21.0**
Styrene		**2.9**
1,1,2,2-Tetrachloroethane		< 1.0
1,3,5-Trimethylbenzene		**10.0**
1,2,4-Trimethylbenzene		**19.0**
1,3-Dichlorobenzene		< 1.0
1,4-Dichlorobenzene		< 1.0
Chlorotoluene		< 1.0
1,2-dichlorbenzene		< 1.0
1,2,4-Trichlorobenzene		< 1.0
Hexachlorobutadiene		< 1.0
Propylene		< 4.0
1,3-Butadiene		< 4.0

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Table 4.1 (Cont.) Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Pit	28-May 8-Hour
Acetone		**8.7**
Carbon Disulfide		< 4.0
2-Propanol		< 4.0
trans-1,2-Dichloroehtene		< 4.0
Vinyl Acetate		< 4.0
2-Butanone (Methyl Ethyl Ketone)		< 4.0
Haxane		< 4.0
Tetrahydrofuran		< 4.0
Cyclohexane		< 4.0
1,4-Dioxane		**7.4**
Bromdichloromethane		< 4.0
4-Methyl-2-Pentanone		< 4.0
2-Hexanone		< 4.0
Dibromochloromethane		< 4.0
Bromoform		< 4.0
4-Ethyltoluene		**17.0**
Ethanol		< 4.0
Methyl tert-Butyl Ether		< 4.0
Heptane		< 4.0

Tentatively Identified Compounds (TICs) (ppbv)	Pit	28-May 8-Hour
Heptane, 4-ethyl-2,2,6,6-tetramethyl-		
Heptane, 2,2,4-trimethyl-		
Naphthalene		290.0
Aniline		
Undecane, 3,6-dimethyl		
Undecane, 2,6-dimethyl		
Benzene, (1-methylethenyl)-		
Benzofuran		7.2
Benzene, 1,2,3-trimethyl-		7.8
1H-Indene, 2,3-dihydro-		76.0
Benzene, 1-propenyl-		35.0
Benzene , (1-methyl-1-propenyl)-, (E)-		7.2
Benzofuran, 2-methyl-		7.1
2,3-Dihydro-1-methylindene		5.6
1H-Indene, 2,3-dihydro-2-methyl-		6.7
Benzene, (1-methyl-2-cyclopropen-1-yl)-		5.1
Benzothiophene		19.0

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Summary of Ambient Air Sampling Events
Kerr McGee Chemical, LLC
Toledo Tie Treatment Site

	Baseline Emissions Samples[1]					Excavation Test Samples[2]					Post Baseline Emission Samples[3]				
	Site 1	Site 2	Site 3	Site 4		Site 1	Pit	Site 2	Site 4	Site 3	Site 1	Site 2	Site 3	Site 4	
	27-May	27-May	27-May	27-May		28-May	28-May	28-May	28-May	28-May	29-May	29-May	29-May	29-May	
Measured Ambient Air Contaminants	24-Hr	24-Hr	24-Hr	24-Hr	Ave	8-Hr	8-Hr	8-Hr	8-Hr	8-Hr	24-Hr	24-Hr	24-Hr	24-Hr	Ave
Freon 12												0.89			0.9
Chloromethane	1.2	1.2	1.1	1.1	1.2	1.5	1.7	2.9	1.1	1.3	1.1	0.95	1.2	1.7	1.2
Benzene		1.6	1.1		1.4		19						1.5	3	2.3
Toluene	1.7	3.4	1.7	1.0	2.0	2.2	27	3.5	1.8	1.7	1.9	2.3	1.7	1.6	1.9
Chlorobenzene													1.1		
Ethyl Benzene							39								
Xylenes							72	0.99				0.91			0.9
Styrene							2.9								
1,3,5-Trimethylbenzene							10								
1,2,4-Trimethylbenzene							19								
Propylene												3.4			
Acetone	7.5	8.6	6.0	7	7.3	6.5	8.7	10	5.4	5.7	6.5	6.3	8.3	11	8.0
1,4-dioxane	7	8.2	6.9	4.2	6.6	4.4	7.4		20	17	7.8			8.2	8.0
4-ethyltoluene							17								
Ethanol	5.1	6.2	7.6	8.2	6.8						6	5.3	8.4	6.2	6.5
Heptane, 4-ethyl-2,2,6,6-tetramethyl-	6.1				6.1										
Heptane, 2,2,4-trimethyl-												6.6			6.6
Naphthalene[4]	0.0055	0.013	0.011	0.004	0.008	0.022	290	0.016	0.004	0.006	0.017	0.037	0.050	0.009	0.028
Aniline		6													
Undecane, 2,6-dimethyl											3.9				3.9
Benzene, (1-methylethenyl)-														6.2	6.2
Benzofuran							7.2								
Benzene, 1,2,3-trimethyl-							7.8								
1H-Indene, 2,3-dihydro							76								
Benzene, 1-propenyl-							35								
Benzene, (1-methyl-1-propenyl)-, (E)-							7.2								
Benzofuran, 2-methyl-							7.1								
2,3-dihydro-1-methylindene							5.6								
1H-Indene, 2,3-dihydro-2-methyl-							6.7								
Benzene, (1-methyl-2-cyclopropen-1-yl)-							5.1								
Benzithiophene							19								
Fluorene[4]	0.001	0.004	0.004	0.003	0.0032047	0.003		0.010	0.001	0.003	0.003	0.006	0.011	0.003	0.005697
Phenanthrene[4]	0.007	0.011	0.013	0.012	0.011	0.005		0.029	0.009	0.008	0.009	0.019	0.032	0.009	0.017
Anthracene[4]								0.001				0.001	0.001		0.0013
Fluoranthene[4]	0.001	0.001	0.001	0.001	0.0012	0.001		0.004	0.002	0.001	0.001	0.002	0.004	0.001	0.0020

Footnotes
1 Prevailing Wind Direction 230° from METAR Data at Toledo, Ohio Station
2 Prevailing Wind Direction 250° from METAR Data at Toledo, Ohio Station
3 Prevailing Wind Direction 260° from METAR Data at Toledo, Ohio Station
4 Estimated ppb's from Ambient Air PAH Samples with a standard temp of 70°F

Prepared by Derenzo and Associates, Inc.
(734) 464-3880

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Table 4.1 Measured Ambient Air VOC Concentrations

VOC Compound (ppbv)	Site 1	27-May 24-hour	28-May 8-Hour	29-May 24-Hour
Freon 12		<1.0	< 0.96	< 0.96
Freon 114		<1.0	< 0.96	< 0.96
Chloromethane		**1.2**	**1.50**	**1.10**
Vinyl Chloride		<1.0	< 0.96	< 0.96
Bromomethane		<1.0	< 0.96	< 0.96
Chloroethane		<1.0	< 0.96	< 0.96
Freon 11		<1.0	< 0.96	< 0.96
1,1-Dichloroethene		<1.0	< 0.96	< 0.96
Freon 113		<1.0	< 0.96	< 0.96
Methlyene Chloride		<1.0	< 0.96	< 0.96
1,1-Dichloroethane		<1.0	< 0.96	< 0.96
cis-1,2-Dichloroethene		<1.0	< 0.96	< 0.96
Chloroform		<1.0	< 0.96	< 0.96
1,1,1-Trichloroethane		<1.0	< 0.96	< 0.96
Carbon Tetrachloride		<1.0	< 0.96	< 0.96
Benzene		<1.0	< 0.96	< 0.96
1,2-Dichloroethane		<1.0	< 0.96	< 0.96
cis-1,3-Dichloropropene		<1.0	< 0.96	< 0.96
Toluene		**1.7**	**2.20**	**1.90**
trans-1,3-Dichloropropene		<1.0	< 0.96	< 0.96
1,1,2-Trichloroethane		<1.0	< 0.96	< 0.96
Tetrachloroethene		<1.0	< 0.96	< 0.96
Ethylene Dibromide		<1.0	< 0.96	< 0.96
Chlorobenzene		<1.0	< 0.96	< 0.96
Ethyl Benzene		<1.0	< 0.96	< 0.96
m,p-Xylene		<1.0	< 0.96	< 0.96
o-Xylene		<1.0	< 0.96	< 0.96
Styrene		<1.0	< 0.96	< 0.96
1,1,2,2-Tetrachloroethane		<1.0	< 0.96	< 0.96
1,3,5-Trimethylbenzene		<1.0	< 0.96	< 0.96
1,2,4-Trimethylbenzene		<1.0	< 0.96	< 0.96
1,3-Dichlorobenzene		<1.0	< 0.96	< 0.96
1,4-Dichlorobenzene		<1.0	< 0.96	< 0.96
Chlorotoluene		<1.0	< 0.96	< 0.96
1,2-dichlorbenzene		<1.0	< 0.96	< 0.96
1,2,4-Trichlorobenzene		<1.0	< 0.96	< 0.96
Hexachlorobutadiene		<1.0	< 0.96	< 0.96
Propylene		<4.0	< 3.8	< 3.8
1,3-Butadiene		<4.0	< 3.8	< 3.8

TABLE 8

SUMMARY OF ANALYTICAL RESULTS
WORST CASE AIR SAMPLE
KERR-MCGEE CHEMICAL, LLC
TOLEDO TIE TREATMENT SITE

[illegible]	[illegible]	[illegible]	[illegible]
Compounds Detected By EPA Method TO-14			
Chroloromethane	<5.6	0.86	<0.5
Bromomethane	<5.6	0.84B	0.92
Freon 11	<5.6	0.69	<0.5
1,1-dichloroethene	<5.6	1.6	<0.5
Benzene	500	0.95	<0.5
Toluene	1500	3	<0.5
Ethylbenzene	780	1.2	<0.5
m,p-Xylene	1200	5.1	<0.5
o-Xylene	380	1.2	<0.5
1,3,5-Trimethylbenzene	130	<0.70	<0.5
1,2,4-Trimethylbenzene	240	0.71	<0.5
Acetone	<22	9.3	<2
4 - ethyltoluene	210	<2.8	<2
Tentatively Identified Compounds			
1-methylethyl benzene	72	ND	ND
1-ethyl-2-methyl-benzene	35	ND	ND
unkown aromatic	47	ND	ND
Benzofuran	120	ND	ND
1-ethyl-3-methyl-benzene	39	ND	ND
2,3-dihydro-1H-indene	850	ND	ND
1-propynyl-benzene	140	ND	ND
Naphthalene	1200	ND	ND
2-methylnaphthalene	120	ND	ND
1-methylnaphthalene	54	ND	ND
Pentane	ND	12	ND

ND - Not Detected

All field samples collected on 08/13/98

Predominant Wind Direction - North/Northeast

Temperature - ~ 82 °F

HULL & ASSOCIATES, INC.
TOLEDO, OHIO

AUGUST 1998

TABLE 6

SUMMARY OF ANALYTICAL RESULTS
WORST CASE AIR SAMPLE
KERR-MCGEE CHEMICAL, LLC
TOLEDO TIE TREATMENT SITE

Compounds Detected By EPA Method TO-14			
Chroloromethane	<5.6	0.66	<0.5
Bromomethane	<5.6	0.84B	0.92
Freon 11	<5.6	0.69	<0.5
1,1-dichloroethene	<5.6	1.6	<0.5
Benzene	500	0.95	<0.5
Toluene	1500	3	<0.5
Ethylbenzene	780	1.2	<0.5
m,p-Xylene	1200	5.1	<0.5
o-Xylene	380	1.2	<0.5
1,3,5-Trimethylbenzene	130	<0.70	<0.5
1,2,4-Trimethylbenzene	240	0.71	<0.5
Acetone	<22	9.3	<2
4 - ethyltoluene	210	<2.8	<2
Tentatively Identified Compounds			
1-methylethyl benzene	72	ND	ND
1-ethyl-2-methyl-benzene	35	ND	ND
unkown aromatic	47	ND	ND
Benzofuran	120	ND	ND
1-ethyl-3-methyl-benzene	39	ND	ND
2,3-dihydro-1H-indene	850	ND	ND
1-propynyl-benzene	140	ND	ND
Naphthalene	1200	ND	ND
2-methylnaphthalene	120	ND	ND
1-methylnaphthalene	54	ND	ND
Pentane	ND	12	ND

ND - Not Detected

All field samples collected on 08/13/98

Predominant Wind Direction - North/Northeast

Temperature - ~ 82 °F