

US EPA ARCHIVE DOCUMENT

TABLE 7-4

GENERAL MOTORS CORPORATION
 NAO FLINT OPERATIONS SITE - FLINT, MICHIGAN
 RFI PHASE II REPORT

COMPARISON OF UNDETECTED CHEMICAL CONCENTRATIONS IN SOIL SAMPLES FROM ECOLOGICAL AREAS OF INTEREST
 TO SCREENING LEVELS

Sample ID:			RFI-07-12	RFI-07-13	RFI-07-14	WL-B1A	WL-B2A	WL-B3A	WL-B4A	WL-B5A	WL-B6A
Sample Depth:	Screening		0.3-2.3	0.3-2.3	0-2	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Date Collected:	Units	Value	03/17/03	03/17/03	03/19/03	05/14/01	05/14/01	05/14/01	05/14/01	05/14/01	05/10/01
Volatiles											
1,1,1-Trichloroethane	mg/kg	29.8	ESL	0.02 U	0.0195 U	0.02 U					
1,1,2,2-Tetrachloroethane	mg/kg	0.127	ESL	0.04 U	0.0385 UJ	0.0405 UJ					
1,1,2-Trichloroethane	mg/kg	28.6	ESL	0.02 U	0.0195 U	0.02 U					
1,1-Dichloroethane	mg/kg	20.1	ESL	0.02 U	0.0195 U	0.02 U					
1,1-Dichloroethene	mg/kg	8.28	ESL	0.02 U	0.0195 U	0.02 U					
1,2,4-Trichlorobenzene	mg/kg	11.1	ESL	0.085 U	0.085 U	0.085 U					
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	0.0352	ESL	0.085 U	0.085 U	0.085 U					
1,2-Dibromoethane (Ethylene Dibromide)	mg/kg	1.23	ESL	0.085 U	0.085 U	0.085 U					
1,2-Dichlorobenzene	mg/kg	2.96	ESL	0.04 U	0.0385 U	0.0405 U					
1,2-Dichloroethane	mg/kg	21.2	ESL	0.02 U	0.0195 U	0.02 U					
1,2-Dichloropropane	mg/kg	32.7	ESL	0.02 U	0.0195 U	0.02 U					
1,3-Dichlorobenzene	mg/kg	37.7	ESL	0.04 U	0.0385 U	0.0405 U					
1,4-Dichlorobenzene	mg/kg	0.546	ESL	0.04 U	0.0385 U	0.0405 U					
2-Butanone (Methyl Ethyl Ketone)	mg/kg	89.6	ESL	0.17 UJ	0.165 UJ	0.175 UJ					
2-Hexanone	mg/kg	12.6	ESL	0.04 U	0.0385 UJ	0.0405 UJ					
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	mg/kg	443	ESL	0.85 U	0.85 UJ	0.85 UJ					
Acetone	mg/kg	2.5	ESL	0.17 UJ	0.165 UJ	0.175 UJ					
Benzene	mg/kg	0.255	ESL	0.02 U	0.0195 U	0.02 U					
Bromodichloromethane	mg/kg	0.540	ESL	0.04 U	0.0385 U	0.0405 U					
Bromoform	mg/kg	15.9	ESL	0.04 U	0.0385 U	0.0405 U					
Bromomethane (Methyl Bromide)	mg/kg	0.235	ESL	0.085 U	0.085 U	0.085 U					
Carbon disulfide	mg/kg	0.0941	ESL	0.085 U	0.085 U	0.085 UJ					
Carbon tetrachloride	mg/kg	2.98	ESL	0.02 U	0.0195 U	0.02 U					
Chlorobenzene	mg/kg	13.1	ESL	0.02 U	0.0195 U	0.02 U					
Chloroethane	mg/kg			0.085 U	0.085 U	0.085 U					
Chloroform (Trichloromethane)	mg/kg	1.19	ESL	0.02 U	0.0195 U	0.02 U					
Chloromethane (Methyl Chloride)	mg/kg	10.4	ESL	0.085 U	0.085 U	0.085 U					
cis-1,2-Dichloroethene	mg/kg			0.02 U	0.0195 U	0.02 U					
cis-1,3-Dichloropropene	mg/kg	0.398	ESL	0.02 U	0.0195 U	0.02 U					
Cyclohexane	mg/kg			0.085 U	0.085 U	0.085 U					
Dibromochloromethane	mg/kg	2.05	ESL	0.04 U	0.0385 U	0.0405 U					
Dichlorodifluoromethane (CFC-12)	mg/kg	39.5	ESL	0.04 U	0.0385 U	0.0405 U					
Ethylbenzene	mg/kg	5.16	ESL	0.02 U	0.0195 U	0.02 U					
Isopropylbenzene	mg/kg			0.085 U	0.085 U	0.085 U					
m&p-Xylene	mg/kg			0.04 U	0.0385 U	0.0405 U					
Methyl acetate	mg/kg			0.085 UJ	0.085 UJ	0.26 J					
Methyl cyclohexane	mg/kg			0.085 U	0.035 J	0.043 J					
Methyl Tert Butyl Ether	mg/kg			0.085 U	0.085 UJ	0.085 UJ					
Methylene chloride	mg/kg	4.05	ESL	0.055 J	0.085 U	0.085 U					
o-Xylene	mg/kg			0.02 U	0.0195 U	0.02 U					
Styrene	mg/kg	4.69	ESL	0.02 U	0.0195 U	0.02 U					
Tetrachloroethene	mg/kg	9.92	ESL	0.02 U	0.0195 U	0.02 U					

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 TO SCREENING LEVELS

Sample ID:	Sample Depth:	Date Collected:	Units	Screening Value	RFI-07-12	RFI-07-13	RFI-07-14	WL-B1A	WL-B2A	WL-B3A	WL-B4A	WL-B5A	WL-B6A
					0.3-2.3	0.3-2.3	0-2	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Toluene	mg/kg	5.45	ESL	0.04	U	0.0385	U	0.0405	U				
trans-1,2-Dichloroethene	mg/kg	0.784	ESL	0.02	U	0.0195	U	0.02	U				
trans-1,3-Dichloropropene	mg/kg	0.398	ESL	0.02	U	0.0195	U	0.02	U				
Trichloroethene	mg/kg	12.4	ESL	0.02	U	0.0195	U	0.02	U				
Trichlorofluoromethane (CFC-11)	mg/kg	16.4	ESL	0.04	U	0.0385	U	0.0405	U				
Trifluorotrchloroethane (Freon 113)	mg/kg			0.086	J	0.085	U	0.085	U				
Vinyl chloride	mg/kg	0.646	ESL	0.04	U	0.0385	U	0.0405	U				
Xylenes (total)	mg/kg	10	ESL	0.04	U	0.0385	U	0.0405	U				
Semivolatiles													
1,2,4-Trichlorobenzene	mg/kg												
1,2-Dichlorobenzene	mg/kg												
1,3-Dichlorobenzene	mg/kg												
1,4-Dichlorobenzene	mg/kg												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisoprop	mg/kg	19.9	ESL	0.10	U	0.095	U	0.1	U				
2,4,5-Trichlorophenol	mg/kg	14.1	ESL	0.10	U	0.095	U	0.1	U				
2,4,6-Trichlorophenol	mg/kg	9.94	ESL	0.10	U	0.095	U	0.1	U				
2,4-Dichlorophenol	mg/kg	87.5	ESL	0.10	U	0.095	U	0.1	U				
2,4-Dimethylphenol	mg/kg	0.01	ESL	0.10	U	0.095	U	0.1	U				
2,4-Dinitrophenol	mg/kg	0.06	ESL	0.395	U	0.375	U	0.39	U				
2,4-Dinitrotoluene	mg/kg	1.2	ESL	0.395	U	0.375	U	0.39	U				
2,6-Dinitrotoluene	mg/kg	0.03	ESL	0.10	U	0.095	U	0.1	U				
2-Chloronaphthalene	mg/kg	0.01	ESL	0.10	U	0.095	U	0.1	U				
2-Chlorophenol	mg/kg	0.24	ESL	0.10	U	0.095	U	0.1	U				
2-Methylnaphthalene	mg/kg	3.2	ESL	0.10	U	0.095	U	0.1	U				
2-Methylphenol	mg/kg	40.4	ESL	0.10	U	0.095	U	0.1	U				
2-Nitroaniline	mg/kg	74.1	ESL	0.395	U	0.375	U	0.39	U				
2-Nitrophenol	mg/kg	1.6	ESL	0.10	U	0.095	U	0.1	U				
3&4-Methylphenol	mg/kg	163	ESL	0.20	UJ	0.19	U	0.2	UJ				
3,3'-Dichlorobenzidine	mg/kg	0.64	ESL	0.395	U	0.375	U	0.39	U				
3-Nitroaniline	mg/kg	3.1	ESL	0.395	U	0.375	U	0.39	U				
4,6-Dinitro-2-methylphenol	mg/kg			0.395	U	0.375	U	0.39	U				
4-Bromophenyl phenyl ether	mg/kg			0.10	U	0.095	U	0.1	U				
4-Chloro-3-methylphenol	mg/kg	7.9	ESL	0.10	U	0.095	U	0.1	U				
4-Chloroaniline	mg/kg	1.1	ESL	0.395	U	0.375	U	0.39	U				
4-Chlorophenyl phenyl ether	mg/kg			0.395	U	0.375	U	0.39	U				
4-Nitroaniline	mg/kg	21.9	ESL	0.395	U	0.375	U	0.39	U				
4-Nitrophenol	mg/kg	5.1	ESL	0.395	U	0.375	U	0.39	U				
Acenaphthene	mg/kg	682	ESL	0.10	U	0.095	U	0.1	U				
Acenaphthylene	mg/kg	682	ESL	0.10	U	0.095	U	0.1	U				
Acetophenone	mg/kg	300	ESL	0.10	U	0.095	U	0.1	U				
Anthracene	mg/kg	1480	ESL	0.10	U	0.095	U	0.1	U				
Atrazine	mg/kg			0.10	U	0.095	UJ	0.1	U				
Benzaldehyde	mg/kg			0.10	UJ	0.095	UJ	R					

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TO SCREENING LEVELS**

	Sample ID:		Screening Value	RFI-07-12	RFI-07-13	RFI-07-14	WL-B1A	WL-B2A	WL-B3A	WL-B4A	WL-B5A	WL-B6A
	Sample Depth:	Units		0.3-2.3	0.3-2.3	0-2	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	Date Collected:			03/17/03	03/17/03	03/19/03	05/14/01	05/14/01	05/14/01	05/14/01	05/14/01	05/10/01
Benzo(a)anthracene	mg/kg	5.2	ESL	0.082 <i>J</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Benzo(a)pyrene	mg/kg	1.5	ESL	0.080 <i>J</i>	0.095 <i>UJ</i>	0.081 <i>J</i>						
Benzo(b)fluoranthene	mg/kg	59.8	ESL	0.099 <i>J</i>	0.095 <i>UJ</i>	0.12 <i>J</i>						
Benzo(g,h,i)perylene	mg/kg	119	ESL	0.10 <i>UJ</i>	0.095 <i>UJ</i>	0.1 <i>U</i>						
Benzo(k)fluoranthene	mg/kg	148	ESL	0.12 <i>J</i>	0.095 <i>UJ</i>	0.1 <i>J</i>						
Biphenyl	mg/kg			0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
bis(2-Chloroethoxy)methane	mg/kg			0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
bis(2-Chloroethyl)ether	mg/kg	23.7	ESL	0.0195 <i>U</i>	0.0185 <i>U</i>	0.019 <i>U</i>						
bis(2-Ethylhexyl)phthalate	mg/kg	0.925	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Butyl benzylphthalate	mg/kg	0.239	ESL	0.086 <i>J</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Caprolactam	mg/kg			0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Carbazole	mg/kg			0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Chrysene	mg/kg	4.7	ESL	0.091 <i>J</i>	0.095 <i>U</i>	0.087 <i>J</i>						
Di-n-butylphthalate	mg/kg	0.15	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Di-n-octyl phthalate	mg/kg	709	ESL	0.10 <i>U</i>	0.095 <i>UJ</i>	0.1 <i>U</i>						
Dibenz(a,h)anthracene	mg/kg	18.4	ESL	0.10 <i>UJ</i>	0.095 <i>UJ</i>	0.1 <i>UJ</i>						
Dibenzofuran	mg/kg			0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Diethyl phthalate	mg/kg	24.8	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Dimethyl phthalate	mg/kg	734	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Fluoranthene	mg/kg	122	ESL	0.12 <i>J</i>	0.095 <i>U</i>	0.17 <i>J</i>						
Fluorene	mg/kg	122	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Hexachlorobenzene	mg/kg	0.199	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Hexachlorobutadiene	mg/kg	0.039	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Hexachlorocyclopentadiene	mg/kg	0.755	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Hexachloroethane	mg/kg	0.596	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Indeno(1,2,3-cd)pyrene	mg/kg	109	ESL	0.10 <i>U</i>	0.095 <i>UJ</i>	0.1 <i>UJ</i>						
Isophorone	mg/kg	139	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Methylphenols, Total	mg/kg			0.20 <i>U</i>	0.19 <i>U</i>	0.2 <i>U</i>						
N-Nitrosodi-n-propylamine	mg/kg			0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
N-Nitrosodiphenylamine	mg/kg	0.545	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Naphthalene	mg/kg	0.099	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Nitrobenzene	mg/kg	1.31	ESL	0.0395 <i>U</i>	0.0375 <i>U</i>	0.039 <i>U</i>						
Pentachlorophenol	mg/kg	0.0018	EcoSSL	0.395 <i>U</i>	0.375 <i>U</i>	0.39 <i>U</i>						
Phenanthrene	mg/kg	45.7	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.083 <i>J</i>						
Phenol	mg/kg	120	ESL	0.10 <i>U</i>	0.095 <i>U</i>	0.1 <i>U</i>						
Pyrene	mg/kg	78.5	ESL	0.21	0.095 <i>U</i>	0.15 <i>J</i>						
Inorganics												
Antimony	mg/kg			0.03 <i>J</i>	0.026 <i>J</i>	0.089 <i>J</i>						
Arsenic	mg/kg			9.1 <i>J</i>	11 <i>J</i>	5.8						
Barium	mg/kg											
Beryllium	mg/kg			0.26	0.4	0.64						
Cadmium	mg/kg											
Chromium Total	mg/kg											

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Sample Depth:		Screening		0.3-2.3	0.3-2.3	0-2	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Date Collected:	Units	Value		03/17/03	03/17/03	03/19/03	05/14/01	05/14/01	05/14/01	05/14/01	05/14/01	05/10/01
Cobalt	mg/kg			5.0	7.4	3.6						
Copper	mg/kg											
Cyanide (total)	mg/kg	1.33	ESL	0.10 <i>U</i>	0.1 <i>U</i>	0.1 <i>U</i>						
Lead	mg/kg											
Manganese	mg/kg			460 <i>J</i>	430 <i>J</i>	1300 <i>J</i>						
Mercury	mg/kg											
Nickel	mg/kg			15	17	15						
Selenium	mg/kg			0.31	0.14	0.65						
Silver	mg/kg											
Thallium	mg/kg			0.13 <i>J</i>	0.15 <i>J</i>	0.12 <i>J</i>						
Vanadium	mg/kg			18	36	17						
Zinc	mg/kg			160 <i>J</i>	65 <i>J</i>	170						
PCBs												
Aroclor-1016 (PCB-1016)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.019 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.02 <i>U</i>	0.0195 <i>U</i>
Aroclor-1221 (PCB-1221)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.019 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.02 <i>U</i>	0.0195 <i>U</i>
Aroclor-1232 (PCB-1232)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.019 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.02 <i>U</i>	0.0195 <i>U</i>
Aroclor-1242 (PCB-1242)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.019 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.02 <i>U</i>	0.0195 <i>U</i>
Aroclor-1248 (PCB-1248)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.019 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.02 <i>U</i>	0.0195 <i>U</i>
Aroclor-1254 (PCB-1254)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.057	0.71	0.35	0.39	0.02 <i>U</i>	0.044
Aroclor-1260 (PCB-1260)	mg/kg			0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.02 <i>U</i>	0.14	0.071	0.02 <i>U</i>	0.02 <i>U</i>	0.0195 <i>U</i>
Total PCBs	mg/kg	0.000332	ESL	0.0205 <i>U</i>	0.0195 <i>U</i>	0.0205 <i>U</i>	0.057	0.85	0.42	0.39	0.02 <i>U</i>	0.044

Notes:

All concentrations are dry weight.
 Nondetects are reported at half the detection limit.
 Boxed concentrations exceed screening level.
J - estimated
R - rejected
U - undetected
 Eco-SSL = ecological soil screening level (EPA 2005)
 EPA = United States Environmental Protection Agency.
 ESL = Region 5 ecological screening level (EPA 2003)