

**FISH TISSUE**  
**BOTTOM SEDIMENT**  
**SURFACE WATER**  
**ORGANIC & METAL CHEMICAL EVALUATION**  
**OTTAWA RIVER / TENMILE CREEK**  
**TOLEDO, OHIO**

**Ohio EPA**  
**Division of Water Quality Planning and Assessment**  
**May 17, 1991**

## FISH TISSUE SUMMARY

Fish tissue samples were collected from the Ottawa River and Tenmile Creek (Figure 1, Tables 1, 3-8) by the Ohio EPA during 1986 (4 samples analyzed for organic priority pollutants) and 1990 (36 samples analyzed for organic priority pollutants and RCRA metals). Whole body composites and fillets (individual and composite) representing 8 species and one hybrid were analyzed in 1990. Whole body composites representing 2 species were analyzed in 1986.

- o Three PCB aroclor mixtures (PCBs) were identified and quantified (Table 1 and 4). Twenty-three samples representing eight species were analyzed for PCBs in Ottawa River and Tenmile Creek fish collections from 1986 and 1990. Fifteen samples (9 whole body composites, 6 fillets) exceeded the F.D.A. 2.0 ppm total PCB level of concern in edible portions. The highest total PCB levels in fish occurred at RM 5.2, where common carp fillet and whole body PCB concentrations were 65 ppm and 84 ppm, respectively. All sampling locations in the Ottawa River experienced elevated levels of PCBs in the fish community (RM 9.8 - 1.0). All fish samples analyzed in the Ottawa River from 1986 and 1990 had PCB levels in violation of Ohio's Water Quality Standards (any whole sample of any representative aquatic organism shall not exceed 0.64 ppm PCBs)(Ohio WQS 1990). During 1986, fish collected from Tenmile Creek at RM 4.1 revealed elevated levels of total PCBs (4.8 ppm). All samples (whole body and fillet) collected in Tenmile Creek during 1990 reported PCB compounds at less than the lab detection limit (generally less than 10 ppb).
- o Sixteen pesticide compounds were identified in fish tissue samples (1986 and 1990 data) at low concentrations (range 0.20 ppb to 670 ppb) (Tables 1 and 5).
- o Fifty-three (53) semivolatile organic compounds were analyzed in fish tissue samples from 1990. All semivolatile chemical analyses were less than the lab detection limit at all sampling sites. Results from 1986 revealed all analytical results less than the lab detection limit (65 semivolatiles analyzed).
- o Volatile organic compounds were measured in fish tissue samples from 1986 only (four samples). Seven volatile compounds were identified (Tables 1 and 8) at low concentrations (range 3 ppb to 160 ppb).
- o Five heavy metal contaminants (barium, cadmium, chromium, lead and selenium) were measured in fish tissue fillet and whole body samples from the 1990 sampling sites (Table 1 and 7). Seventeen (17) of 18 samples had measurable levels of total lead, with values ranging from 0.0508 ppm to 0.809 ppm. Eleven (11) of 18 samples had measurable levels of total cadmium, with values ranging from 0.00586 ppm to 0.0797 ppm. Twelve (12) of 18 samples had measurable levels of total selenium, with values ranging from 0.0496 ppm to 0.244 ppm. Barium and chromium values ranged between 0.79 ppm and 1.94 ppm.

## SEDIMENT SUMMARY

Sediment samples were collected from the Ottawa River and Tenmile Creek (Figure 1, Tables 2-8) by the Ohio EPA during 1986 (3 samples analyzed for metals, 2 samples analyzed for organic priority pollutants) and 1990 (7 samples analyzed for organic priority pollutants and RCRA metals). Ohio EPA conducted a PCB specific study, during 1988, in the Ottawa River and a small drainage ditch in the vicinity of RM 6.0. Additional sediment sampling has been conducted by Hull Consultants and URS in the Ottawa River in the vicinity of Dura Landfill (1986 and 1988).

- o Three PCB mixtures were identified and quantified (Table 2 and 4). PCB values ranged between 0.710 ppm and 110 ppm in the Ottawa River sediment, with the highest concentrations occurring between RM 5 and 6. Extremely elevated PCBs (56 ppm and 1,200 ppm) were recorded in a drainage ditch which is tributary to the Ottawa River at RM 5.97. The drainage ditch receives storm water runoff and discharges of industrial wastewater.
- o Fourteen pesticide compounds were identified in sediment samples at 8 locations in the Ottawa River and Tenmile Creek (Tables 2 and 5). Concentrations ranged between 0.51 ppb and 107.24 ppb.
- o Seventeen semivolatile organic compounds were quantified in sediment samples collected from the Ottawa River and one compound [bis-2(ethylhexyl) phthalate] was identified in Tenmile Creek sediment (Tables 2 and 6). Of the 17 semivolatile chemicals identified in sediment from the Ottawa River, 14 were polynuclear aromatic hydrocarbons (PAHs). PAH parameters ranged in concentrations from 100 ppb to 17,400 ppb. The highest semivolatile chemical measured in sediment was bis(2-ethylhexyl) phthalate (54,900 ppb).
- o Only 2 volatile organic compounds (acetone and trichloroethene) were detected in sediment collected by the Ohio EPA during 1986 (1990 samples were not analyzed for volatiles). Concentrations for these two parameters were low, ranging between 5.3 ppb and 6.8 ppb (Table 8). Toluene was detected at 12 ppb in sediment from the Ottawa River (RM 5.59) collected by URS Consultants.
- o Eleven heavy metal parameters were detected in the sediment from the Ottawa River and Tenmile Creek between 1986 and 1990 (Table 2 and 7). Generally, the highest metal concentrations in sediment were measured in the Ottawa River between RM 7.1 and 1.0.
- o Using sediment evaluation criteria developed by Kelly & Hite (1984), the following chemicals and areas are considered extremely elevated above background conditions (based on 1986 and 1990 data):

- PCBs - Ottawa River from RM 6.4 to 1.0
- Dieldrin - Ottawa River from RM 7.1 to 3.0
- Heptachlor epoxide - Ottawa River from RM 5.0 - 3.0
- Chromium - Ottawa River at RM 6.4
- Lead - Ottawa River from RM 7.1 to 1.0
- Zinc - Ottawa River at RM 6.4

## SURFACE WATER SUMMARY

- o Ten water samples from the Ottawa River (Figure 1, Tables 3-5,7) were collected in 1986, 1988 and 1990 to assess PCB contaminant levels. Sampling locations were located between RM 6.4 and 4.9. Five samples indicated PCB levels at less than lab detection limits. Four samples identified detectable levels of total PCBs; all concentrations (0.2 ppb - 0.5 ppb) exceeded the Ohio WQS aquatic life criteria of 0.001 ppb. One surface water (oil fraction) sample collected in 1990 behind a boom adjacent to Dura Landfill contained 375 ppm total PCBs.
  
- o Three water samples from the Ottawa River were collected in 1988 and 1990 between RM 5.6 and RM 5.0 to assess pesticide contaminant levels. Pesticide levels were less than detection limits in the 1988 samples. The 1990 sample, collected by Ohio EPA as a surface sample oil fraction behind a boom along the Dura Landfill, contained elevated levels of a-BHC (108 ppb) and aldrin (814 ppb). Both quantified pesticide concentrations exceeded the Ohio Water Quality Standards.
  
- o Six stations in the Ottawa River and two sites in Tenmile Creek were sampled for heavy metals during a survey conducted in 1986 by the Ohio EPA. Of 37 total samples collected, three exceedances of Ohio WQS occurred: one copper exceedance at Ottawa River RM 4.9 and two lead exceedances at Ottawa River RM 8.8 and RM 6.4. Two stations in the Ottawa River (RM 6.4 and 5.0) have been sampled for several metal parameters biannually by the Toledo Environmental Services Agency. In addition, URS collected single samples of Ottawa River surface water at two stations. Of the two URS samples, three exceedances of Ohio WQS occurred: one exceedance each for copper, lead and zinc.

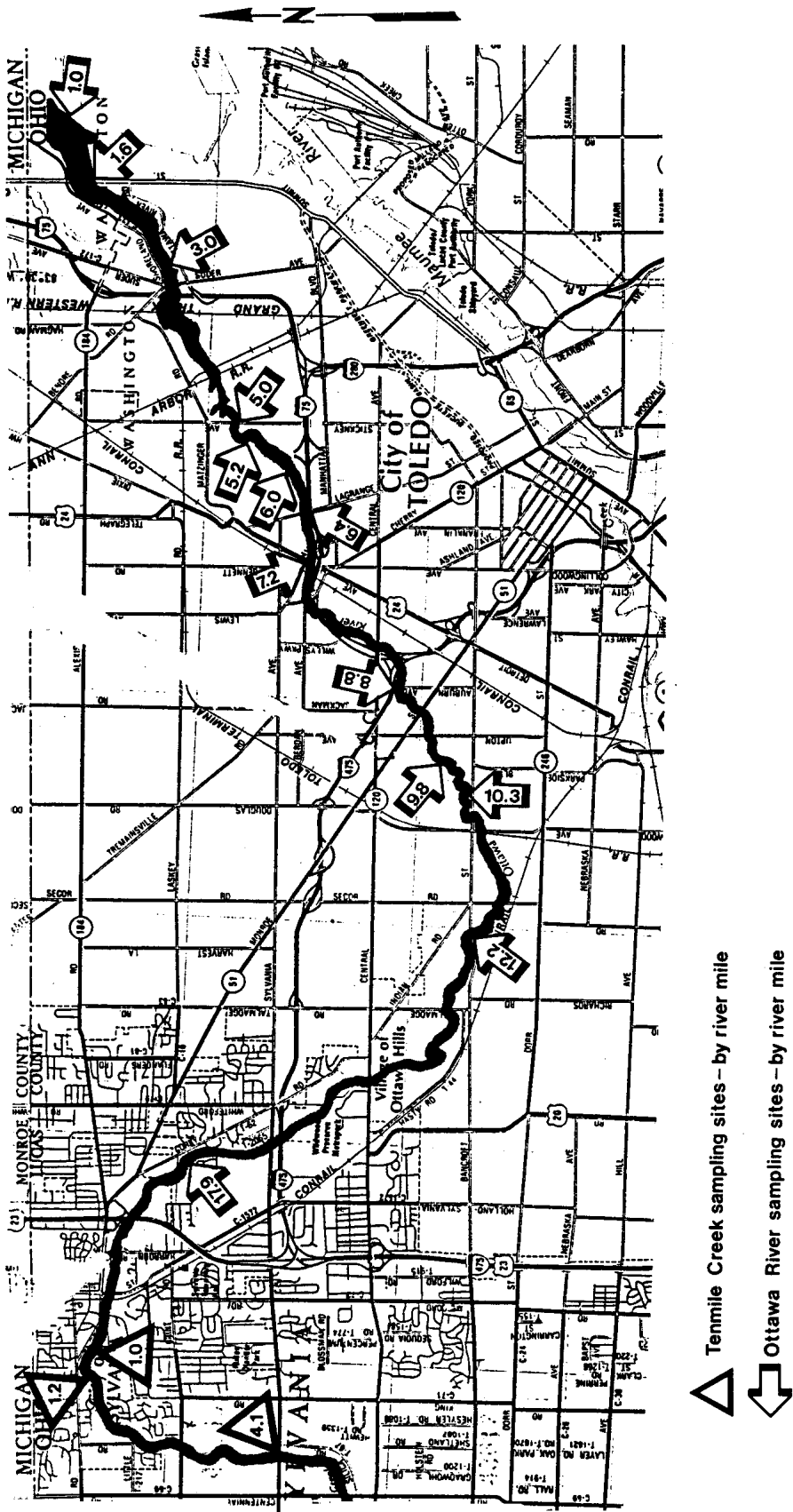


Figure 1. Map of the Ottawa River study area showing Ohio EPA sampling locations from 1986-1990.

Table 1. Ottawa River/ Tenmile Creek **fish tissue** PCBs, pesticides, volatile organic compounds and metals contamination (Ohio EPA 1986 and 1990).<sup>a</sup>

Parameter	Range
<b>PCBs (ppm)</b>	
PCB-1242	1.94916 - 79.01599
PCB-1248	0.68110 - 16.000
PCB-1260	0.08578 - 9.400
<b>PESTICIDES (ppb)</b>	
a-BHC	0.27 - 0.69
b-BHC	0.79 - 1.20
d-BHC	0.20 - 2.04
γ-BHC	0.66
4,4'-DDE	34.99 - 670
4,4'-DDD	11.32 - 210
4,4'-DDT	2.14 - 12.32
Aldrin	0.34 - 1.93
Dieldrin	0.84 - 149.67
Endrin	0.33 - 2.09
Endrosulfan I	0.69 - 3.37
Endosulfan sulfate	1.34 - 3.41
Heptachlor	0.23 - 0.77
Heptachlor epoxide	2.48 - 70.35
Methoxychlor	2.06 - 4.43
Mirex	1.75 - 2.30
<b>VOLATILE COMPOUNDS (ppb)</b>	
Carbon disulfide	30J
Tetrachloroethene	5J - 29J
Total Xylenes	7J - 11J
Benzene	3J
Acetone	51J - 160
2-Butanone	18J - 27J
Toluene	5J - 16J
<b>METALS (ppm)</b>	
Barium, Total	0.790 - 1.94
Cadmium, Total	0.00586 - 0.0797
Chromium, Total	1.14 - 1.69
Lead, Total	0.0508 - 0.809
Selenium, Total	0.0496 - 0.244

<sup>a</sup> J = estimated concentration when the concentration detected is below the detection limit.

Table 2. Ottawa River/ Tenmile Creek **sediment** PCBs, pesticides, semivolatile organic compounds and metals contamination, 1986 - 1990 (see tables 4-7 for data sources).<sup>a</sup>

Parameter	Range
<b>PCBs (ppm)</b>	
PCB-1242	0.860 - 110 (1,200 in tributary)
PCB-1248	0.33466 - 4.61262
PCB-1254	0.710
<b>PESTICIDES (ppb)</b>	
a-BHC	1.45 - 3.27
b-BHC	0.76 - 28.66
d-BHC	1.37 - 4.96
y-BHC	0.51 - 2.94
4,4'-DDE	5.42 - 70.60
4,4'-DDD	3.57 - 80.69
4,4'-DDT	3.99 - 26.50
Aldrin	2.26 - 6.39
Dieldrin	2.21 - 59.51
Endrin	13.15
Endosulfan II	0.78 - 8.07
Endosulfan sulfate	8.26
Heptachlor	107.24
Heptachlor epoxide	27.72 - 49.56
<b>SEMIVOLATILE COMPOUNDS (ppb)</b>	
Fluoranthene	1,600 - 17,400
Pyrene	1,300 - 8,200
Chrysene	800 - 5,200
Benzo(K) fluoranthene	1,800 - 11,400
Benzo(A) pyrene	1,000J - 5,700
Indeno(1,2,3-CD) pyrene	630J - 4,900
Benzo(G,H,I) perylene	580J - 5,500
Phenanthrene	1,400J - 4,700
Anthracene	320J - 2,800
Benzo(A) anthracene	1,200 - 6,200
Acenaphthylene	100J - 140J
Acenaphthene	330J
Dibenzofuran	260J
Fluorene	470J
Dibenzo(a,h) anthracene	930J
Bis(2-ethylhexyl) phthalate	10,700 - 54,900
Di-N-Octyl phthalate	1,100 - 15,000
Butyl benzylphthalate	4300
<b>METALS (ppm)</b>	
Arsenic, Total	2.13 - 7.26
Barium, Total	55.0 - 175
Cadmium, Total	0.0743 - 2.13
Chromium, Total	6.46 - 72.2
Copper, Total	5 - 87.2
Lead, Total	8.01 - 195
Nickel, Total	5 - 53.4
Zinc, Total	21 - 333
Beryllium, Total	0.072
Mercury, Total	0.16
Cobalt, Total	4.7
<b>VOLATILE COMPOUNDS (ppb)</b>	
Toluene	12

<sup>a</sup> J = estimated concentration when the concentration detected is below the detection limit.

**Table 3. Summary of PCB contamination in the Ottawa River 1990**

River Mile (Location)	Sample Fish /Sediment/Water	Total PCB's (ppm)
<b>FISH FILLETS</b>		
<u>Ottawa River</u>		
7.2 (Detroit Ave.)	Common carp	17.277
7.2 (Detroit Ave.)	Goldfish	3.227
5.2 (Adj. Dura Landfill)	Channel catfish	5.515
5.2 (Adj. Dura Landfill)	Common carp	65.075
2.9 (Suder Ave.)	Largemouth bass	2.041
2.9 (Suder Ave.)	Freshwater drum	2.581
1.0 (Dst. Summit St.)	Largemouth bass	0.803
1.0 (Dst. Summit St.)	Pumpkinseed	0.767
<b>FISH - WHOLE BODY</b>		
<u>Ottawa River</u>		
9.8 (E. Circle Lane)	White sucker	2.497
7.2 (Detroit Ave.)	Common carp	20.244
5.2 (Adj. Dura Landfill)	Common carp	84.177
2.9 (Suder Ave.)	Common carp	8.398
1.0 (Dst. Summit St.)	Common carp	9.255
<b>SEDIMENT</b>		
<u>Ottawa River</u>		
10.3 (Adj. Golf Course)	Sediment	<Detection Limit
7.1 (Detroit Ave.)	Sediment	0.335
5.0 (Adj. Dura Landfill)	Sediment	4.613
3.0 (Suder Ave.)	Sediment	2.425
1.0 (Dst. Summit St.)	Sediment	1.582
<b>SURFACE WATER</b>		
<u>Ottawa River</u>		
5.0 (Adj. Dura Landfill)	Oil Fraction	375.685



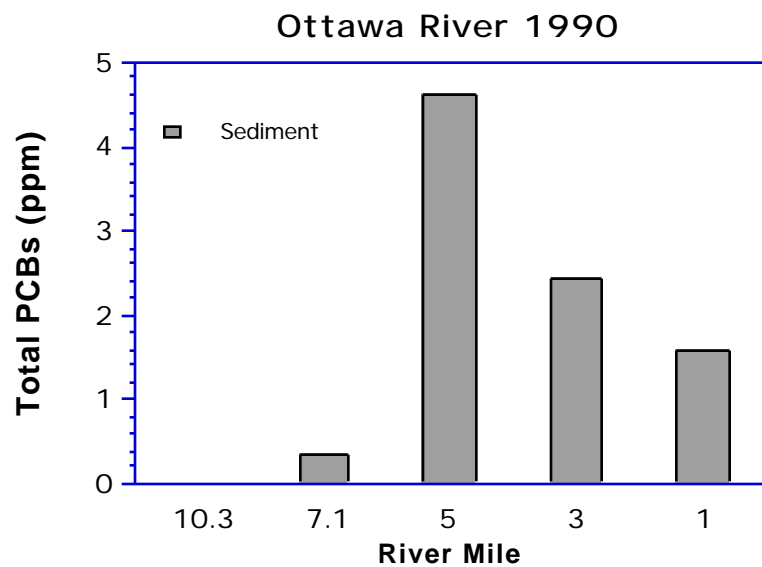
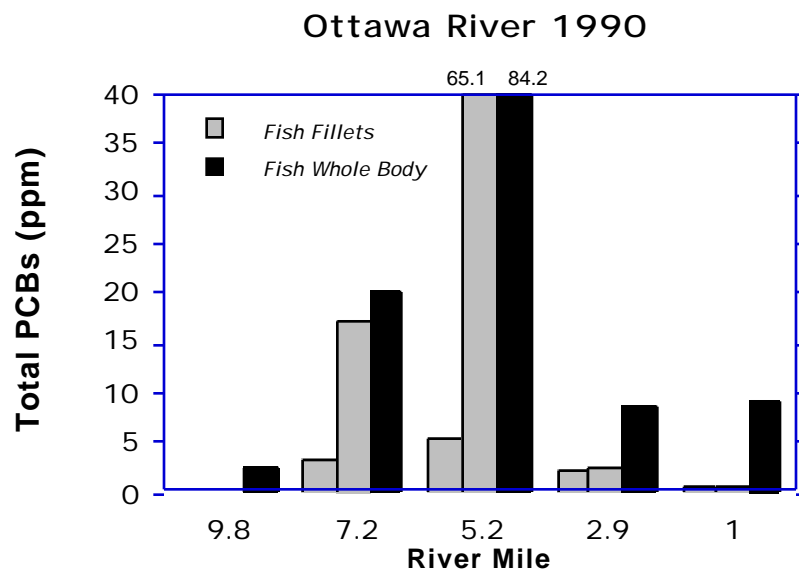


Figure 2. Summary of fish tissue and sediment PCB levels in the Ottawa River during 1990. Dura Landfill is located between RM 5.2 and RM 5.6. Each fish tissue fillet bar represents a specific fish species (individual or composite sample).

Table 4. PCB contaminant levels in fish tissue, sediment and surface water collected from the Ottawa River and Tenmile Creek, Toledo, Ohio.

<b>PCB'S</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
9.8 (E. Circle Lane)	1990	03979	White sucker	WBC	PCB-1248 PCB-1260	2.34113 0.15562
7.2 (Detroit Ave.)	1990	03946	Common carp	WBC	PCB-1242 PCB-1260	18.47671 1.76751
7.2 (Detroit Ave.)	1990	03947	Common carp	SOFC	PCB-1242 PCB-1260	15.15252 2.12496
7.2 (Detroit Ave.)	1990	03948	Goldfish	SOFC	PCB-1242 PCB-1260	2.75350 0.47397
7.1 (Detroit Ave.)	1990	03965	Sediment	Comp.	PCB-1248	0.33466
6.4 (Lagrange St.)	1986	V162929R2 (TMA)	Sediment	Grab	PCB-1242 PCB-1254	0.860 0.710
6.4 (Lagrange St.)	1986	DSW#7 (Jones & Henry)	Surface water	Grab	Total PCBs	0.0002
6.4 (Lagrange St.)	1986	DSS#9 (Jones & Henry)	Sediment	Grab	Total PCBs	0.86
<b><i>Unnamed Tributary</i></b>						
5.97 (Trib. mouth)	1988	3100-80332 (Wadsworth)	Sediment	Grab	PCB-1242	66
5.97, 0.05 (Tributary)	1988	3100-80334 (Wadsworth)	Sediment	Grab	PCB-1242	56
5.97, 0.03 (Tributary)	1988	3100-80333 (Wadsworth)	Sediment	Grab	PCB-1242	1,200
<b><i>Ottawa River</i></b>						
5.96 (Dst. Tributary)	1988	3100-80328 (Wadsworth)	Sediment	Grab	PCB-1242	110
5.95 (Dst. Tributary)	1988	3100-80329 (Wadsworth)	Sediment	Grab	PCB-1242	3

Table 4. Continued.

<b>PCB'S</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
<b>5.60</b> (Upst. Sibley Cr.)	1986	DSS#1 (Jones & Henry)	Sediment	Grab	Total PCBs	3.1
<b>5.59</b> (Upst. Sibley Cr.)	1988	SS-4 (URS)	Sediment	Grab	PCB-1248	0.710
<b>5.59</b> (Upst. Sibley Cr.)	1986	DSS#2 (Jones & Henry)	Sediment	Grab	Total PCBs	2.1
<b>5.59</b> (Upst. Sibley Cr.)	1986	DSS#3 (Jones & Henry)	Sediment	Grab	Total PCBs	9.7
<b>5.58</b> (Dura Landfill)	1986	DSS#4 (Jones & Henry)	Sediment	Grab	Total PCBs	7.9
<b>5.58</b> (Dura Landfill)	1986	DSW#2 (Jones & Henry)	Surface water	Grab	Total PCBs	0.0003
<b>5.58</b> (Dura Landfill)	1986	DSS#8 (Jones & Henry)	Sediment	Grab	Total PCBs	1.2
<b>5.58</b> (Dura Landfill)	1986	DSB#1 (Jones & Henry)	Bank Sediment	Grab	Total PCBs	135
<b>5.57</b> (Dura Landfill)	1986	DSS#5 (Jones & Henry)	Sediment	Grab	Total PCBs	2.0
<b>5.57</b> (Dura Landfill)	1986	DSS#6 (Jones & Henry)	Sediment	Grab	Total PCBs	6.5
<b>5.57</b> (Dura Landfill)	1986	DSS#7 (Jones & Henry)	Sediment	Grab	Total PCBs	4.9
<b>5.57</b> (Dura Landfill)	1986	DSB#3 (Jones & Henry)	Bank Sediment	Grab	Total PCBs	13
<b>5.57</b> (Dura Landfill)	1986	DSW#3 (Jones & Henry)	Surface water	Grab	Total PCBs	0.0004
<b>5.2</b> (Adj. Dura Landfill)	1990	03955	Common carp	WBC	PCB-1242 PCB-1260	79.01599 5.16114
<b>5.2</b> (Adj. Dura Landfill)	1990	03957	Channel catfish	SFFI	PCB-1242 PCB-1260	5.12452 0.39056

Table 4. Continued.

<b>PCB'S</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
5.2 (Adj. Dura Landfill)	1990	03958	Common carp	SOFC	PCB-1242 PCB-1260	62.85150 2.22332
5.3 <i>Duplicate of sample number 03958, RM 5.2</i>	1990	03956	Common carp	SOFC	PCB-1242 PCB-1260	57.84089 1.99966
5.0 (Adj. Dura Landfill)	1990	03964	Sediment	Comp	PCB-1248	4.61262
11.0 <i>Duplicate of sample number 03964, RM 5.0</i>	1990	03967	Sediment	Comp	PCB-1248	5.15710
5.0 (Adj. Dura Landfill)	1990	03961	Surface Water (oil fraction)	Grab	PCB-1248 PCB-1260	169.876 205.809
4.9 (Stickney Ave.)	1986	V167373 (TMA)	Common carp	WBC	PCB-1248 PCB-1260	8.400 6.700
4.9 (Stickney Ave.)	1986	V162930R (TMA)	Sediment	Grab	PCB-1242	2.500
4.9 (Stickney Ave.)	1986	DSS#10 (Jones & Henry)	Sediment	Grab	Total PCBs	1.6
4.9 (Stickney Ave.)	1986	DSW#6 (Jones & Henry)	Surface water (Surface film)	Grab	Total PCBs	0.0005
3.0 (Suder Ave.)	1990	03963	Sediment	Comp	PCB-1248	2.42464
2.9 (Suder Ave.)	1990	03952	Largemouth bass	SOFC	PCB-1242 PCB-1260	1.94916 0.09209
2.9 (Suder Ave.)	1990	03953	Freshwater drum	SOFI	PCB-1242 PCB-1260	2.38404 0.19663
2.9 (Suder Ave.)	1990	03954	Common carp	WBC	PCB-1242 PCB-1260	7.75470 0.64351
1.6 (Summit St.)	1986	V167372 (TMA)	Largemouth bass	WBC	PCB-1242	12.000
1.6 (Summit St.)	1986	V167374 (TMA)	Common carp	WBC	PCB-1248 PCB-1260	16.000 9.400

Table 4. Continued.

<b>PCB'S</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
1.0 (Dst. Summit St.)	1990	03950	Common carp	WBC	PCB-1248 PCB-1260	8.61117 0.64365
1.0 (Dst. Summit St.)	1990	03949	Largemouth bass	SOFC	PCB-1248 PCB-1260	0.71739 0.08578
1.0 (Dst. Summit St.)	1990	03951	Pumpkinseed	SOFC	PCB-1248 PCB-1260	0.68110 0.08630
1.0 (Dst. Summit St.)	1990	03962	Sediment	Comp	PCB-1248	1.58246
<b><i>Tenmile Creek</i></b>						
4.1 (Sylvania Ave.)	1986	V167391R (TMA)	Common carp	WBC	PCB-1248 PCB-1260	3.300 1.500

1 - Numbers are Ohio EPA lab sample numbers unless noted otherwise.

URS = Data reported in URS Dura Landfill Remediation Investigation report, 1989.

TMA = Ohio EPA data analyzed by TMA/ERG Laboratory.

Jones & Henry = Sampling site number as reported by Hull Consulting, analyses conducted by Jones & Henry Laboratories

Wadsworth = Data reported by Ohio EPA, Div. of Emergency Response - analyses by Wadsworth/Alert Laboratories, Inc.

2 - WBC = whole body composite, SOFC = skin on fillet composite, SOFI = skin on fillet individual, SFFI = skin off fillet individual, SFFC = skin off fillet composite, Comp = composite.

Table 5. Pesticide contaminant levels in fish tissue, sediment and surface water collected from the Ottawa River and Tenmile Creek, Toledo, Ohio.

<b>PESTICIDES</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<b><i>Ottawa River</i></b>						
<b>10.3</b> (Adj. Golf Course)	1990	03966	Sediment	Comp	y-BHC	0.51
					Dieldrin	3.93
					Endosulfan II	0.78
					4,4'-DDD	26.10
					4,4'-DDT	3.99
					4,4'-DDE	5.42
<b>9.8</b> (E. Circle Lane)	1990	03979	White sucker	WBC	Dieldrin	3.36
<b>7.2</b> (Detroit Ave.)	1990	03946	Common carp	WBC	Dieldrin	91.12
<b>7.2</b> (Detroit Ave.)	1990	03947	Common carp	SOFC	Dieldrin	33.51
<b>7.2</b> (Detroit Ave.)	1990	03948	Goldfish	SOFC	Dieldrin	28.14
<b>7.1</b> (Detroit Ave.)	1990	03965	Sediment	Comp.	a-BHC	1.45
					b-BHC	0.76
					y-BHC	2.94
					Dieldrin	28.98
					Endrin	13.15
					Endosulfan II	8.07
					4,4'-DDD	47.09
					4,4'-DDE	24.26
<b>5.59</b> (Upst. Sibley Cr.)	1988	SS-4 (URS)	Sediment	Grab	Dieldrin	43
<b>5.2</b> (Adj. Dura Landfill)	1990	03955	Common carp	WBC	Dieldrin	63.99
<b>5.2</b> (Adj. Dura Landfill)	1990	03957	Channel catfish	SFFI	Dieldrin	44.12
<b>5.2</b> (Adj. Dura Landfill)	1990	03958	Common carp	SOFC	Dieldrin	77.80
<b>5.3</b>	1990	03956	Common carp	SOFC	Dieldrin	80.56
<i>Duplicate of sample number 03958, RM 5.2</i>						

Table 5. Continued.

<b>PESTICIDES</b>							
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration	
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)	
<b><i>Ottawa River</i></b>							
<b>5.0</b> (Adj. Dura Landfill)	1990	03964	Sediment	Comp	b-BHC	5.19	
					y-BHC	0.84	
					d-BHC	4.96	
					Aldrin	6.39	
					Dieldrin	59.51	
					Heptachlor epoxide	49.56	
					4,4'-DDD	80.69	
					4,4'-DDE	70.60	
					4,4'-DDT	16.74	
<b>11.0</b>	1990	03967	Sediment	Comp	a-BHC	3.27	
<i>Duplicate of sample number 03964, RM 5.0</i>						Heptachlor	107.24
					4,4'-DDD	77.19	
<b>5.0</b> (Adj. Dura Landfill)	1990	03961	Surface Water (oil fraction)	Grab	a-BHC	108.84	
					Aldrin	814.24	
<b>3.0</b> (Suder Ave.)	1990	03963	Sediment	Comp	a-BHC	2.20	
					b-BHC	28.66	
					y-BHC	1.17	
					d-BHC	3.78	
					Aldrin	2.26	
					Dieldrin	32.52	
					Heptachlor epoxide	27.72	
					4,4'-DDE	59.96	
					4,4'-DDD	66.07	
					4,4'-DDT	26.50	
<b>2.9</b> (Suder Ave.)	1990	03952	Largemouth bass	SOFC	Dieldrin	0.84	
<b>2.9</b> (Suder Ave.)	1990	03953	Freshwater drum	SOFI	Dieldrin	13.36	
<b>2.9</b> (Suder Ave.)	1990	03954	Common carp	WBC	Dieldrin	25.73	
<b>1.6</b> (Summit St.)	1986	V167372 (TMA)	Largemouth bass	WBC	4,4'-DDE	670	
					4,4'-DDD	210	

Table 5. Continued.

<b>PESTICIDES</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<b><i>Ottawa River</i></b>						
1.0 (Dst. Summit St.)	1990	03950	Common carp	WBC	Dieldrin	11.53
1.0 (Dst. Summit St.)	1990	03949	Largemouth bass	SOFC	b-BHC	0.79
					d-BHC	1.68
					Heptachor epoxide	9.69
					Dieldrin	2.91
					Endrin	2.09
					4,4'-DDD	18.10
					4,4'-DDE	39.22
					4,4'-DDT	3.06
					Methoxychlor	2.32
1.0 (Dst. Summit St.)	1990	03951	Pumpkinseed	SOFC	b-BHC	1.20
					d-BHC	2.04
					Aldrin	1.93
					Dieldrin	4.62
					Endrin	1.30
					4,4'-DDD	11.32
					4,4'-DDE	34.99
					4,4'-DDT	3.13
					Methoxychlor	2.06
1.0 (Dst. Summit St.)	1990	03962	Sediment	Comp	a-BHC	1.57
					b-BHC	13.56
					d-BHC	1.37
					Dieldrin	20.94
					4,4'-DDD	32.72
					4,4'-DDE	38.91
					4,4'-DDT	22.49
<b><i>Tenmile Creek</i></b>						
4.1 (Sylvania Ave.)	1990	03981	Common carp	SOFC	d-BHC	0.20
					Endosulfan I	0.93
					Endosulfan sulfate	2.10
					Aldrin	1.69
					Dieldrin	34.31
					Endrin	0.81
					4,4'-DDD	31.52
					4,4'-DDE	201.34
					4,4'-DDT	5.86
					Mirex	2.30



Table 5. Continued.

<b>PESTICIDES</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<i>Tenmile Creek</i>						
4.1 (Sylvania Ave.)	1990	03980	Common carp	WBC	a-BHC	0.69
					Aldrin	1.16
					Dieldrin	149.67
					Endrin	1.00
					Endosulfan I	1.34
					Endosulfan sulfate	3.41
					4,4'-DDD	48.08
					4,4'-DDE	187.14
					4,4'-DDT	10.36
					Mirex	1.75
4.1 (Sylvania Ave.)	1990	04039	Sediment	Comp	b-BHC	2.03
					Dieldrin	2.21
					4,4'-DDD	3.57
					4,4'-DDE	5.67
					4,4'-DDT	4.62
4.1 (Sylvania Ave.)	1986	V167391R (TMA)	Common carp	WBC	4,4'-DDE	150
					4,4'-DDD	75
1.2 (Highland Meadows Golf Course)	1990	04043	Largemouth bass	SOFI	a-BHC	0.34
					Dieldrin	17.69
					Endrin	0.33
					4,4'-DDE	79.26
					4,4'-DDD	16.06
1.2 (Highland Meadows Golf Course)	1990	04042	Common carp	SOFC	a-BHC	0.32
					Heptachlor	0.23
					Heptachlor epoxide	2.48
					Aldrin	0.69
					Dieldrin	10.18
					Endrin	0.48
					4,4'-DDE	110.86
					4,4'-DDD	14.58
					4,4'-DDT	2.14

Table 5. Continued.

<b>PESTICIDES</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<i><b>Tenmile Creek</b></i>						
1.2 (Highland Meadows Golf Course)	1990	04041	Common carp	WBC	y-BHC	0.66
					d-BHC	1.84
					Heptachlor	0.77
					Heptachlor epoxide	70.35
					Endosulfan I	3.37
					Dieldrin	52.75
					4,4'-DDD	88.35
					4,4'-DDE	314.72
					4,4'-DDT	12.32
					Methoxychlor	4.43
1.2 (Highland Meadows Golf Course)	1990	04040	Northern pike	SOFI	a-BHC	0.27
					Heptachlor epoxide	2.48
					Endosulfan I	0.69
					Dieldrin	17.11
					4,4'-DDE	46.96
					4,4'-DDD	29.41
1.2 (Highland Meadows Golf Course)	1990	04038	Sediment	Comp	4,4'-DDE	14.84
					4,4'-DDD	13.95
					4,4'-DDT	8.26
					Endosulfan sulfate	8.26

1 - Numbers are Ohio EPA lab sample numbers unless noted otherwise.

URS = Data reported in URS Dura Landfill Remediation Investigation report, 1989.

TMA = Ohio EPA data analyzed by TMA/ERG Laboratory.

Jones & Henry = Sampling site number as reported by Hull Consulting, analyses conducted by Jones & Henry Laboratories

Wadsworth = Data reported by Ohio EPA, Div. of Emergency Response - analyses by Wadsworth/Alert Laboratories, Inc.

2 - WBC = whole body composite, SOFC = skin on fillet composite, SOFI = skin on fillet individual, SFFI = skin off fillet individual, SFFC = skin off fillet composite, Comp = composite.

Table 6. Semivolatile organic compound contaminant levels in fish tissue and sediment collected from the Ottawa River and Tennile Creek, Toledo, Ohio.

<b>SEMIVOLATILE ORGANIC COMPOUNDS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<b><i>Ottawa River</i></b>						
<b>10.3</b> (Adj. Golf Course)	1990	03966	Sediment	Comp	Fluoranthene	1,600
					Pyrene	1,500
					Chrysene	1,600
					Benzo(K) fluoranthene	3,600
					Benzo(A) pyrene	4,400
					Indeno(1,2,3-CD) pyrene	4,900
					Benzo(G,H,I) perylene	5,500
<b>7.1</b> (Detroit Ave.)	1990	03965	Sediment	Comp	Phenanthrene	4,700
					Anthracene	2,800
					Fluoranthene	17,400
					Pyrene	8,200
					Benzo(A) anthracene	6,200
					Benzo(K) fluoranthene	11,400
					Benzo(A) pyrene	5,700
					Chrysene	5,200
					Indeno (1,2,3 CD) pyrene	3,700
					Benzo (G,H,I) perylene	2,900
<b>6.4</b> (Lagrange St.)	1986	V162929R2 (TMA)	Sediment	Grab	Phenanthrene	2,800
					Fluoranthene	6,900
					Acenaphthylene	140J
<b>5.59</b> (Upst. Sibley Cr.)	1988	SW-4 (URS)	Surface Water	Grab	Fluoranthene	2J
					Pyrene	3J
					Chrysene	2J
					Bis(2-ethylhexyl) phthalate	14
					Di-n-Octyl phthalate	7J
<b>5.59</b> (Upst. Sibley Cr.)	1988	SS-4 (URS)	Sediment	Grab	Phenanthrene	1,400J
					Anthracene	320J
					Fluoranthene	2,700J
					Pyrene	2,000J
					Benzo(a) anthracene	1,200J
					Chrysene	1,400J
					Benzo (b) fluoranthene	2,400J
					Benzo (k) fluoranthene	2,400J
					Benzo (a) pyrene	1,000J
					Indeno (1,2,3-cd) pyrene	630J
					Benzo (g,h,i) perylene	580J
					Bis(2-ethylhexyl) phthalate	16,000
					Di-n-Octyl phthalate	10,000

Table 6. Continued.

<b>SEMIVOLATILE ORGANIC COMPOUNDS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<b><i>Ottawa River</i></b>						
<b>5.0</b> (Adj. Dura Landfill)	1990	03964	Sediment	Comp	Phenanthrene	1,500
					Fluoranthene	2,800
					Pyrene	1,800
					Benzo(A) anthracene	1,200
					Chrysene	1,100
					Benzo(K) fluoranthene	3,400
					Benzo(A) pyrene	1,100
					Indeno(1,2,3-CD) pyrene	1,500
					Benzo(G,H,I) perylene	1,500
					Bis(2-ethylhexyl) phthalate	24,800
					Di-n-Octyl phthalate	15,000
<b>11.0</b>	1990	03967	Sediment	Comp	Phenanthrene	1,500
<i>Duplicate of sample number 03964, RM 5.0</i>						
					Fluoranthene	3,200
					Pyrene	2,200
					Benzo(A) anthracene	1,800
					Chrysene	800
					Benzo(K) fluoranthene	3,800
					Benzo(A) pyrene	1,600
					Benzo(G,H,I) perylene	1,900
					Bis(2-ethylhexyl) phthalate	28,700
					Di-n-Octyl phthalate	14,600
<b>4.9</b> (Stickney Ave.)	1986	V162930R (TMA)	Sediment	Grab	Phenanthrene	4,100
					Fluoranthene	5,400
					Pyrene	4,900
					Benzo(a) anthracene	3,200
					Chrysene	2,800
					Benzo(a) pyrene	1,800
					Indeno(1,2,3-cd) pyrene	1,700
					Benzo(g,h,i) perylene	1,800
					Acenaphthylene	100J
					Acenaphthene	330J
					Dibenzofuran	260J
					Fluorene	470J
					Dibenz(a,h) anthracene	930J
					Butyl benzylphthalate	4,300
					Di-n-octyl phthalate	3,600
<b>3.0</b> (Suder Ave.)	1990	03963	Sediment	Comp	Fluoranthene	2,000
					Pyrene	1,300
					Chrysene	1,000
					Benzo(K) fluoranthene	3,200
					Benzo(A) pyrene	1,200
					Bis(2-ethylhexyl) phthalate	54,900
					Di-n-Octyl phthalate	4,900

Table 6. Continued.

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**SEMIVOLATILE ORGANIC COMPOUNDS**

<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<b><i>Ottawa River</i></b>						
1.0 (Dst. Summit St.)	1990	03962	Sediment	Comp	Bis(2-ethylhexyl) phthalate	10,700
					Di-n-Octyl phthalate	1,100
					Benzo(K) fluoranthene	1,800
<b><i>Tennile Creek</i></b>						
4.1 (Sylvania Ave.)	1986	V167391R (TMA)	Common carp	WBC	Bis(2-ethylhexyl) phthalate	12,300J

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1 - Numbers are Ohio EPA lab sample numbers unless noted otherwise.

TMA = Ohio EPA data analyzed by TMA/ERG Laboratory.

2 - WBC = whole body composite, Comp = composite.

J = estimated concentration when the concentration detected is below the detection limit.

Table 7. Metal contaminant levels in fish tissue, sediment and surface water collected from the Ottawa River and Tenmile Creek, Toledo, Ohio.

<b>METALS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
<b>17.9</b> (Sturbridge Rd.)	1986	OEPA-4	Surface water	Grab	Cadmium-T Copper-T Lead-T Zinc-T	<0.0002-0.0007 0.003-0.007 <0.002-0.003 0.010-0.050
<b>12.2</b> (Bancroft St.)	1986	OEPA-4	Surface water	Grab	Cadmium-T Copper-T Lead-T Zinc-T	<0.0002-0.0004 0.003-0.006 0.002-0.004 0.015-0.060
<b>10.3</b> (Adj. Golf Course)	1990	S109	Sediment	Comp	Arsenic-T Cadmium-T Lead-T Barium-T	2.26 0.0949 31.0 97.4
<b>9.8</b> (E. Circle Lane)	1990	S111	Green sunfish hybrid	WBC	Cadmium-T Lead-T Selenium-T	0.0137 0.0982 0.128
<b>8.8</b> (Auburn Ave.)	1986	OEPA-5	Surface water	Grab	Cadmium-T Copper-T Lead-T Zinc-T Arsenic-T	<0.0002-0.0002 0.005-0.008 0.004-0.013 0.015-0.045 <0.002-0.002
<b>7.3</b> (Berdan Ave.)	1986	OEPA-6	Surface water	Grab	Cadmium-T Copper-T Lead-T Zinc-T Arsenic-T	<0.0002-0.0006 0.004-0.007 0.004-0.009 0.020-0.045 <0.002-0.002
<b>7.2</b> (Detroit Ave.)	1990	S93	Goldfish	SOFC	Lead-T Selenium-T	0.14 0.0721
<b>7.2</b> (Detroit Ave.)	1990	S92	Common carp	SOFI	Lead-T Selenium-T	0.15 0.13
<b>7.2</b> (Detroit Ave.)	1990	S91	Common carp	WBC	Cadmium-T Lead-T Selenium-T Barium-T	0.0191 0.809 0.241 1.94

Table 7. Continued.

<b>METALS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
<b>7.1</b> (Detroit Ave.)	1990	S108	Sediment	Comp	Arsenic-T	4.13
					Cadmium-T	0.665
					Chromium-T	15.4
					Lead-T	109
					Barium-T	96.9
<b>6.4</b> (Lagrange St.)	1986	25962	Sediment	Grab	Cadmium-T	1.77
					Chromium-T	72.2
					Copper-T	71.4
					Lead-T	195
					Nickel-T	53.4
					Zinc-T	333
					Arsenic-T	6.15
<b>6.4</b> (Lagrange St.)	1986	OEPA-6	Surface water	Grab	Arsenic-T	<0.002-0.002
					Cadmium-T	<0.0002-0.0003
					Copper-T	0.004-0.010
					Lead-T	0.007-0.019
					Zinc-T	0.030-0.060
<b>6.4</b> (Lagrange St.)	1984-89	TES	Surface water	Grab	Chromium-T	0.324
					Cadmium-T	0.0014
					Copper-T	0.0192
					Zinc-T	0.0397
					Nickel-T	0.009
					Lead-T	0.014
					Mercury-T	0.0002
<b>5.59</b> (Upst. Sibley Cr.)	1988	SW-4 (URS)	Surface water	Grab	Beryllium-T	0.0032
					Chromium-T	0.013
					Copper-T	0.035
					Lead-T	0.058
					Zinc-T	0.183
<b>5.59</b> (Upst. Sibley Cr.)	1988	SS-4 (URS)	Sediment	Grab	Barium-T	157
					Beryllium-T	0.072
					Chromium-T	43
					Lead-T	144
					Mercury-T	0.16
					Nickel-T	34
					Zinc-T	261
Cobalt-T	4.7					

Table 7. Continued.

<b>METALS</b>							
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration	
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)	
<b><i>Ottawa River</i></b>							
5.2 (Adj. Dura Landfill)	1990	S101	Common carp	SOFC	Cadmium-T	0.00586	
					Chromium-T	1.67	
					Lead-T	0.296	
5.3	1990	S102	Common carp	SOFC	Cadmium-T	0.0140	
<i>Duplicate of sample number S101, RM 5.2</i>						Lead-T	0.119
					Selenium-T	0.0582	
5.2 (Adj. Dura Landfill)	1990	S100	Common carp	WBC	Cadmium-T	0.0374	
					Lead-T	0.525	
					Selenium-T	0.169	
					Barium-T	0.843	
5.0 (Adj. Dura Landfill)	1990	S107	Sediment	Comp	Arsenic-T	4.19	
					Cadmium-T	1.94	
					Chromium-T	31.7	
					Lead-T	125	
					Barium-T	126	
11.0	1990	S110	Sediment	Comp	Arsenic-T	3.37	
<i>Duplicate of sample number S107, RM 5.0</i>						Cadmium-T	1.39
					Chromium-T	32.2	
					Lead-T	127	
					Barium-T	130	
5.0 (Adj. Dura Landfill)	1988	SW-7 (URS)	Surface water	Grab	Arsenic-T	0.003	
					Barium-T	0.110	
					Chromium-T	0.017	
					Copper-T	0.025	
					Nickel-T	0.033	
5.0 (Adj. Dura Landfill)	1984-89	TES	Surface water	Grab	Chromium-T	0.012	
					Cadmium-T	0.0014	
					Copper-T	0.079	
					Zinc-T	0.218	
					Nickel-T	0.0103	
					Lead-T	0.029	
					Mercury-T	0.0005	
4.9 (Stickney Ave.)	1986	25959	Sediment	Grab	Cadmium-T	0.522	
					Chromium-T	23.4	
					Copper-T	87.2	
					Lead-T	116	
					Nickel-T	21.2	
					Zinc-T	124	
					Arsenic-T	4.34	



Table 7. Continued.

<b>METALS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Ottawa River</i></b>						
<b>4.9</b> (Stickney Ave.)	1986	OEPA-4	Surface water	Grab	Arsenic-T Cadmium-T Copper-T Lead-T Zinc-T	<0.002-0.004 <0.0002-0.0007 0.007-0.040 0.011-0.022 0.040-0.135
<b>3.0</b> (Suder Ave.)	1990	S105	Sediment	Comp	Arsenic-T Cadmium-T Lead-T Barium-T	7.26 1.70 120 143
<b>2.9</b> (Suder Ave.)	1990	S99	Freshwater drum	SOFC	Cadmium-T Lead-T	0.00795 0.0845
<b>2.9</b> (Suder Ave.)	1990	S98	Common carp	WBC	Cadmium-T Lead-T Selenium-T Barium-T	0.0180 0.568 0.163 0.790
<b>2.9</b> (Suder Ave.)	1990	S97	Common carp	SOFC	Chromium-T Lead-T	1.14 0.164
<b>1.0</b> (Dst. Summit St.)	1990	S95	Common carp	SOFC	Lead-T Selenium-T	0.109 0.118
<b>1.0</b> (Dst. Summit St.)	1990	S94	Common carp	WBC	Cadmium-T Lead-T Selenium-T Barium-T	0.0250 0.732 0.199 1.38
<b>1.0</b> (Dst. Summit St.)	1990	S96	Largemouth bass	SOFC	Cadmium-T Lead-T	0.00847 0.0508
<b>1.0</b> (Dst. Summit St.)	1990	S106	Sediment	Comp	Arsenic-T Cadmium-T Chromium-T Lead-T Barium-T	6.87 2.13 47.8 153 175

Table 7. Continued.

<b>METALS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<i><b>Tenmile Creek</b></i>						
4.1 (Sylvania Ave.)	1990	S112	Common carp	WBC	Cadmium-T	0.0768
					Lead-T	0.279
					Selenium-T	0.234
					Barium-T	1.22
4.1 (Sylvania Ave.)	1990	S113	Common carp	SOFC	Chromium-T	1.24
					Lead-T	0.284
					Selenium-T	0.0496
4.1 (Sylvania Ave.)	1990	S119	Sediment	Comp	Arsenic-T	2.13
					Cadmium-T	0.0743
					Chromium-T	6.46
					Lead-T	8.01
					Barium-T	55.0
4.1 (Sylvania Ave.)	1986	25892	Sediment	Grab	Cadmium-T	0.118
					Chromium-T	9
					Copper-T	5
					Lead-T	9.18
					Nickel-T	5
					Zinc-T	21
4.1 (Sylvania Ave.)	1986	OEPA-4	Surface water	Grab	Cadmium-T	<.0002-0.0006
					Copper-T	0.002-0.012
					Lead-T	<0.002-0.002
					Zinc-T	<0.010-0.030
1.2 (Highland Meadows Golf Course)	1990	S121	Northern pike	SOFI	Chromium-T	1.69
					Lead-T	0.279
					Selenium-T	0.0796
1.2 (Highland Meadows Golf Course)	1990	S122	Common carp	WBC	Cadmium-T	0.0797
					Lead-T	0.150
					Selenium-T	0.244
					Barium-T	1.34
1.2 (Highland Meadows Golf Course)	1990	S123	Common carp	SOFC	Selenium-T	0.109

Table 7. Continued.

<b>METALS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppm)
<b><i>Tenmile Creek</i></b>						
1.2 (Highland Meadows Golf Course)	1990	S120	Sediment	Comp	Arsenic-T	2.43
					Cadmium-T	0.346
					Chromium-T	15.8
					Lead-T	15.5
					Barium-T	72.6
1.0 (Old Post Rd.)	1986	OEPA	Surface water	Grab	Copper-T	0.003-0.007
					Lead-T	<0.002-0.003
					Zinc-T	0.010-0.050

1 - Numbers are Ohio EPA lab sample numbers unless noted otherwise. OEPA - # signifies the number of grab water samples collected during the 1986 survey. URS = Data reported in URS Dura Landfill Remediation Investigation report, 1989. TES (Toledo Environmental Services Agency) data was reported in the Remediation Investigation report as averages calculated from biannual sampling data, April 1984 - April 1989.

2 - WBC = whole body composite, SOFC = skin on fillet composite, SOFI = skin on fillet individual, Comp = composite.

J = estimated concentration when the concentration detected is below the detection limit.

Table 8. Volatile organic compound contaminant levels in fish tissue and sediment collected from the Ottawa River and Tenmile Creek, Toledo, Ohio.

<b>VOLATILE ORGANIC COMPOUNDS</b>						
<u>Stream</u>		Lab Sample	Sample	Sample		Concentration
River Mile (Location)	Year	Number <sup>1</sup>	(Matrix)	Type <sup>2</sup>	Parameter	(ppb)
<b><i>Ottawa River</i></b>						
<b>6.4</b> (Lagrange St.)	1986	V162929R2 (TMA)	Sediment	Grab	Acetone Trichloroethene	5.3J 6.8J
<b>5.59</b> (Upst. Sibley Cr.)	1988	SW-4 (URS)	Surface Water	Grab	4-Methyl-2-pentanone	2J
<b>5.59</b> (Upst. Sibley Cr.)	1988	SS-4 (URS)	Sediment	Grab	Toluene	12
<b>4.9</b> (Stickney Ave.)	1986	V167373 (TMA)	Common carp	WBC	Carbon disulfide Tetrachloroethene Total Xylenes	30J 29J 11J
<b>1.6</b> (Summit St.)	1986	V167372 (TMA)	Largemouth bass	WBC	Benzene	3J
<b>1.6</b> (Summit St.)	1986	V167374 (TMA)	Common carp	WBC	Acetone 2-Butanone Tetrachloroethene Toluene	51J 27J 5J 16J
<b><i>Tenmile Creek</i></b>						
<b>4.1</b> (Sylvania Ave.)	1986	V167391R (TMA)	Common carp	WBC	Acetone 2-Butanone Toluene Total Xylenes	160 18J 5J 7J

1 - Numbers are TMA lab sample numbers - Ohio EPA data analyzed by TMA/ERG Laboratory, unless noted otherwise. URS = Data reported in URS Dura Landfill Remediation Investigation report, 1989.

2 - WBC = whole body composite.

J = estimated concentration when the concentration detected is below the detection limit

## REFERENCES

Dura Ave. Landfill Remediation Investigation Report. October, 1989. Prepared by URS Consultants.

Kelly, M.H. and R.L. Hite. 1984. Evaluation of Illinois stream sediment data: 1974-1980. Illinois Environmental Protection Agency, Div. of Water Pollution Control.

Ohio Water Quality Standards. 1990. Chapter 3745-1 of the Administrative Code. Ohio Environmental Protection Agency, Columbus, Ohio. Most recent revision, May 5, 1990.

## Appendix 1

### PCB, Pesticide, Semivolatile, Volatile and Heavy Metal Compounds Analyzed for Ohio EPA 1990 and 1986 Ottawa River and Tenmile Creek Fish Tissue and Sediment Samples (fish tissue metals were not analyzed in 1986)

#### 1990 & 1986 - Bold type

*1990 only - Italized type*

1986 only - Thin type

PCBs	PESTICIDES			METALS
PCB-1016	a-BHC	Aldrin	Heptachlor	Arsenic, Total
PCB-1221	b-BHC	Dieldrin	Heptachlor epoxide	Cadmium, Total
PCB-1232	y-BHC	Endrin	Methoxychlor	Chromium, Total
PCB-1242	d-BHC	<i>Endrin Aldehyde</i>	Mirex	Lead, Total
PCB-1248	Endosulfan I	Endrin ketone	Toxaphene	Selenium, Total
PCB-1254	Endosulfan II	4,4'-DDT	Chlordane	Barium, Total
PCB-1260	Endosulfan sulfate	4,4'-DDD		Zinc, Total
		4,4'-DDE		Nickel, Total
				Copper, Total

#### SEMIVOLATILE COMPOUNDS

Nitrobenzene	Acenaphthalene	Benzylbutyl phthalate
1,2-Dichlorobenzene	Benzo(K) fluoranthene	Bis(2-ethylhexyl) phthalate
1,3-Dichlorobenzene	Benzo(B) fluoranthene	Dimethyl phthalate
1,4-Dichlorobenzene	Benzo (A) anthracene	Diethyl phthalate
Hexachlorobenzene	Benzo(A) pyrene	Di-N-octyl phthalate
1,2,4-Trichlorobenzene	Benzo(G,H,I) perylene	2,6-Dinitrotoluene
2-Chlorophenol	Chrysene	2,4-Dinitrotoluene
Phenol	Dibenzo(A,H) anthracene	Hexachloroethane
4-Nitrophenol	Fluoranthene	Hexachloropentadiene
2,4-Dichlorophenol	Fluorene	Hexachlorobutadiene
2,4-Dimethylphenol	Indeno (1,2,3-CD) pyrene	N-Nitroso-N-propylamine
2,4,6-Trichlorophenol	Naphthalene	N-nitrosodiphenyl amine
2-nitrophenol	Phenanthrene	3,3'-Dichlorobenzidine
4-Chloro-3-methyl phenol	Pyrene	Isophorone
2,4-Dinitrophenol	2-Chloronaphthalene	Benzyl alcohol
2-Methyl-4,6-Dinitrophenol	2-Methylnaphthalene	Benzoic acid
Pentachlorophenol	Bis(2-chloroethyl) ether	2-Nitroaniline
2-Methylphenol	4-Chlorophenyl phenyl ether	3-Nitroaniline
4-Methylphenol	Bis(2-chloroisopropyl)ether	4-Nitroaniline
2,4,5-Trichlorophenol	4-Bromophenyl phenyl ether	4-Chloroaniline
Acenaphthene	Bis(2-chloroethoxy) methane	Dibenzofuran
Anthracene	Di-N-butyl phthalate	

#### VOLATILE COMPOUNDS

Chloromethane	Tetrachloroethene	1,2-Dichloroethane	Carbon disulfide
Methylene chloride	Vinyl chloride	1,1,1-Trichloroethane	Acetone
Chloroform	Trans-1,2-dichloroethene	1,1,2-Trichloroethane	Toluene
Bromoform	1,1-Dichloroethene	1,1,2,2-Tetrachloroethane	Vinyl acetate
Bromodichloromethane	Trichloroethene	Chloroethane	Ethylbenzene
Dibromochloromethane	cis-1,3-Dichloropropene	1,1-Dichloroethane	Benzene
Bromomethane	Trans-1,3-dichloropropene	4-Methyl-2-pentanone	2-Hexanone
Carbon tetrachloride	1,2-Dichloropropane	2-Chloroethylvinylether	Chlorobenzene
2-Butanone	Styrene	Total Xylenes	

**APPENDIX 2**

1986 and 1990 - Fish Tissue Lengths and Weights

**APPENDIX 3**

Raw Data