

**Table 7-1. Summary of Contaminant Screening**

Contaminant	ATSDR Public Health Assessment COPCs <sup>1</sup>	Fish Tissue (Fillets)	Northern Basin Sediments	Southern Basin Sediments	Northern Basin Wetland	Northern Basin Wetland	Southern Basin Wetland	Southern Basin Wetland	Dredge Spoils Area	Dredge Spoils Area	Onondaga Lake Surface Water
		(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)	Soils (2.8)	All Depths (2.9)	(2.10)
<b>Metals/Inorganics</b>											
Aluminum				X	X	X	X		X	X	NA-S
Antimony	X - Surface Water, Sediment	X	X	X		X		X			NA-S
Arsenic (inorganic)	X - Sediment	X	X	X	X	X	X	X	X	X	NA-S
Barium			X	X				X			NA-S
Cadmium	X - Sediment, Fish		X	X	X		X	X		X	X
Chromium	X - Sediment	X	X	X	X	X	X	X	X	X	X
Copper	X - Sediment			X			X				
Cyanide		X		X	X		X			X	NA-S
Iron			X	X	X	X	X	X	X	X	
Lead	X - Sediment, Fish			X							
Manganese	X - Surface Water, Sediment	X	X	X	X	X	X	X	X	X	X
Methylmercury		X	X	X	X	X	X	X			X
Mercury (inorganic)	X - Sediment, Fish	X	X	X	X	X	X	X	X	X	X
Nickel	X - Sediment			X							
Selenium		X									NA-S
Thallium			X	X	X	X	X			X	NA-S
Vanadium		X		X							NA-S
Zinc	X - Sediment	X									
<b>VOCs</b>											
Benzene	X - Sediment, Fish		X	X					NA	NA	X
Bromodichloromethane									NA	NA	X
Chlorobenzene	X - Sediment			X					NA	NA	X
Chloroform									NA	NA	X
Methylene Chloride				X					NA	NA	
Toluene	X - Sediment				Not identified as a COPC in any matrix for the HHRA						
Total Xylenes (sum)				X					NA	NA	
<b>SVOCs</b>											
bis(2-ethylhexyl)phthalate	X - Sediment, Fish	X									NA-S
Dibenzofuran				X							NA-S
1,2-Dichlorobenzene											X

Table 7-1. (cont.)

Contaminant	ATSDR Public Health Assessment COPCs <sup>1</sup>	Fish Tissue (Filletts) (2.1)	Northern Basin Sediments (2.2)	Southern Basin Sediments (2.3)	Northern Basin Wetland SYW-6 (2.4)	Northern Basin Wetland SYW-10 (2.5)	Southern Basin Wetland SYW-12 (2.6)	Southern Basin Wetland SYW-19 (2.7)	Dredge Spoils Area Surface Soils (2.8)	Dredge Spoils Area Soils (2.9)	Onondaga Lake Surface Water (2.10)
		1,3-Dichlorobenzene				X				X	
1,4-Dichlorobenzene	X - Sediment, Fish			X				X			X
1,2,4-Trichlorobenzene											X
Hexachlorobenzene	X - Sediment, Fish	X	X	X				X	X	X	
<b>PAHs</b>											
Acenaphthylene	X - Sediment			X	X						NA-S
Benz(a)anthracene	X - Sediment		X	X	X	X	X	X		X	NA-S
Benzo(a)pyrene	X - Sediment		X	X	X	X	X	X	X	X	NA-S
Benzo(b)fluoranthene	X - Sediment		X	X	X	X	X	X		X	NA-S
Benzo(g,h,i)perylene	X - Sediment			X	X			X		X	NA-S
Benzo(k)fluoranthene	X - Sediment			X	X			X		X	NA-S
Chrysene	X - Sediment			X							NA-S
Dibenz(a,h)anthracene	X - Sediment		X	X	X	X	X	X		X	NA-S
Fluoranthene	X - Sediment			X							NA-S
Indeno(1,2,3-cd)pyrene	X - Sediment			X	X	X	X	X		X	NA-S
2-Methylnaphthalene	X - Sediment			X	X						NA-S
Naphthalene	X - Sediment		X	X	X					X	NA-S
Phenanthrene	X - Sediment			X	X		X	X		X	NA-S
<b>Pesticides</b>											
Aldrin		X						X	NA	NA	NA-S
delta-BHC		X							NA	NA	NA-S
Chlordanes (total)		X							NA	NA	NA-S
2,4'-DDE		X							NA	NA	NA-S
4,4-DDD		X							NA	NA	NA-S
4,4'-DDE		X							NA	NA	NA-S
4,4'-DDT	X - Fish	X							NA	NA	NA-S
Dieldrin		X		X				X	NA	NA	NA-S
Heptachlor Epoxide		X							NA	NA	NA-S
<b>PCBs</b>											
Aroclor 1016		X									NA-S
Aroclor 1221				X							NA-S

**Table 7-1. (cont.)**

Contaminant	ATSDR Public Health Assessment COPCs <sup>1</sup>	Fish Tissue (Fillets)	Northern Basin Sediments	Southern Basin Sediments	Northern Basin Wetland SYW-6	Northern Basin Wetland SYW-10	Southern Basin Wetland SYW-12	Southern Basin Wetland SYW-19	Dredge Spoils Area Surface Soils (2.8)	Dredge Spoils Area All Depths Soils (2.9)	Onondaga Lake Surface Water (2.10)
		(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)	(2.7)			
Aroclor 1242		X		X				X	X		NA-S
Aroclor 1248		X		X							NA-S
Aroclor 1254			X	X				X	X	X	NA-S
Aroclor 1260		X		X		X		X	X		NA-S
Aroclor 1254/1260		X									NA-S
Aroclor 1268			X							X	NA-S
Total PCBs (sum)	X - Sediment, Fish	X	X	X		X		X	X	X	NA-S
<b>Dioxins/Furans</b>											
Total PCDD/PCDF TEQ		X	X	X	X	X	NA	X		X	NA

**Notes:** X - Specified contaminant identified as a contaminant of potential concern (COPC). See HHRA Appendix B table referenced in parenthesis.  
 NA - This analyte or parameter group not analyzed in specified exposure area.  
 NA-S - This analyte not analyzed in shallow surface water (0-3 m). Data from deeper samples (6-12 m water depth) used to qualitatively evaluate this COPC. See HHRA Chapter 5 text.  
 ATSDR - Agency for Toxic Substances and Disease Registry  
 Contaminants not listed were not identified as COPCs in any site medium.  
<sup>1</sup> Some chemicals identified in the ATSDR Public Health Assessment were eliminated during the screening process: bis(2-ethylhexyl)phthalate, toluene, and zinc in sediment, and benzene and 1,4-dichlorobenzene in fish.

Table 7-2. Selection of Exposure Pathways – Onondaga Lake Human Health Risk Assessment

Scenario Time Frame	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis <sup>a</sup>	Rationale for Selection or Exclusion of Exposure Pathway
Current/ Future	Soil	Soil	Soil	Resident	Adult	Dermal	On-Site	None	Residential populations not evaluated in the RA due to lack of current residential use and unlikely future development for residential use.
						Ingestion	On-Site	None	No structures currently exist and none are likely to be built in the future; concentrations of VOCs are low; PSA indicates inhalation unlikely. See HHRA text (Section 4.2.5) for discussion.
						Inhalation	On-Site	None	
					Child	Dermal	On-Site	None	Residential populations not evaluated in the RA due to lack of current residential use and unlikely future development for residential use.
						Ingestion	On-Site	None	No structures currently exist and none are likely to be built in the future; concentrations of VOCs are low; PSA indicates inhalation unlikely. See HHRA text (Section 4.2.5) for discussion.
						Inhalation	On-Site	None	
	Sediment	Sediment	Sediment	Resident	Adult	Dermal	On-Site	None	Residential populations not evaluated in the RA due to lack of current residential use and unlikely future development for residential use.
						Ingestion	On-Site	None	No structures currently exist and none are likely to be built in the future; concentrations of VOCs are low; PSA indicates inhalation unlikely. See HHRA text (Section 4.2.5) for discussion.
						Inhalation	On-Site	None	
					Child	Dermal	On-Site	None	Residential populations not evaluated in the RA due to lack of current residential use and unlikely future development for residential use.
						Ingestion	On-Site	None	No structures currently exist and none are likely to be built in the future; concentrations of VOCs are low; PSA indicates inhalation unlikely. See HHRA text (Section 4.2.5) for discussion.
						Inhalation	On-Site	None	
Water	Potable water supply	Tap water	Resident	Adult	Dermal	On-Site	None	Residential populations not evaluated in the RA due to lack of current residential use and unlikely future development for residential use.	
					Ingestion	On-Site	None	Groundwater and Onondaga Lake water not used for potable water supply.	
					Inhalation	On-Site	None	No structures currently exist and none are likely to be built in the future; concentrations of VOCs are low; PSA indicates inhalation unlikely. See HHRA text (Section 4.2.5) for discussion.	
				Child	Dermal	On-Site	None	Residential populations not evaluated in the RA due to lack of current residential use and unlikely future development for residential use.	
					Ingestion	On-Site	None	Groundwater and Onondaga Lake water not used for potable water supply.	
					Inhalation	On-Site	None	No structures currently exist and none are likely to be built in the future; concentrations of VOCs are low; PSA indicates inhalation unlikely. See HHRA text (Section 4.2.5) for discussion.	
Edible fish	Fish tissue	Fish tissue <sup>b</sup>	Anglers and fish consumers	Adult	Ingestion	On-Site	Quant	Consumption of contaminants in fish identified as a potential pathway and evaluated in the RA.	
				Child	Ingestion	On-Site	Quant	Consumption of contaminants in fish identified as a potential pathway and evaluated in the RA.	
			Other (subsistence fisher)	Adult	Ingestion	On-Site	Qual	Because a possible subsistence fishing community does exist near the lake, a subsistence fish diet will be addressed qualitatively.	
				Child	Ingestion	On-Site	Qual	Because a possible subsistence fishing community does exist near the lake, a subsistence fish diet will be addressed qualitatively.	
Game (flesh)	Edible waterfowl and turtles	Edible flesh	Hunters	Adult and Child	Ingestion	On-Site	None	Although the hunting of waterfowl on Onondaga Lake is legally permitted under New York State law, the hunting season is significantly shorter than the fishing season. There is a state-wide advisory regarding consumption of waterfowl and snapping turtles. However, the absence of available data on contaminant concentrations in waterfowl and the paucity of data on ingestion rates of waterfowl precluded a quantitative analysis of this pathway. See text HHRA (Section 4.2.4) for discussion.	

Table 7-2. (cont.)

Scenario Time Frame	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis <sup>a</sup>	Rationale for Selection or Exclusion of Exposure Pathway
Current/ Future	Surface sediments	Surface and near-surface sediments on shoreline and in lake to depth of 2.0 meters	Sediments at 0- to 30-cm depths in lake and wetlands	Recreational Visitor	Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in lake and wetland (surface and near-surface) sediment by visitors and construction workers identified as a potential pathway and evaluated in the RA.
					Child	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in lake and wetland sediment (surface and near-surface) by visitors identified as a potential pathway and evaluated in the RA.
				Construction Worker (future only)	Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in lake and wetland (surface and near-surface) sediment by visitors and construction workers identified as a potential pathway and evaluated in the RA.
	Dredge-spoil soil	Surface soil	Soil at 0- to 3.5-ft depth	Recreational Visitor	Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in dredge-spoil soil by visitors identified as a potential pathway and evaluated in the RA.
					Child	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in dredge-spoil soil by visitors identified as a potential pathway and evaluated in the RA.
				Construction Worker (future only)	Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in surface and near-surface dredge-spoil soil by construction workers identified as a potential pathway and evaluated in the RA.
		Surface soil/ subsurface soil	Soil at 0- to 11.7-ft depth	Construction Worker (future only)	Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in deeper dredge-spoil soil by construction workers identified as a potential pathway and evaluated in the RA.
	Onondaga Lake – Surface Water	Surface water	Surface water in lake	Recreational Visitor	Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in lake water by visitors and construction workers identified as a potential pathway and evaluated in the RA.
					Child	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in lake water by visitors identified as a potential pathway and evaluated in the RA.
Construction Worker (future only)				Adult	Dermal Ingestion	On-Site On-Site	Quant Quant	Dermal contact with, and incidental ingestion of, contaminants in lake water by visitors and construction workers identified as a potential pathway and evaluated in the RA.	

Notes: See HHRA Appendix A for locations of samples used in evaluating potential exposures.

North lake, south lake, and the four wetlands areas are considered separately, due to differences in access and use designation. All ages are assumed to contact lake media (adults and children are evaluated). See HHRA text for age discussion.

RA = Risk Assessment.

<sup>a</sup> Quant = Quantitative risk analysis performed. Qual=Qualitative analysis performed. None = Not considered a complete pathway; not evaluated in the RA.

<sup>b</sup> Fish species collected that were considered edible and for which filets were analyzed include bluegill, smallmouth bass, carp, channel catfish, largemouth bass, northern pike, white perch, and walleye. Consistent with New York's fishing regulations, size was limited to fish of approximately legal size or larger (e.g., 12 inches for smallmouth bass and 15 inches for walleye ). Fishing regulations allow "any size" for other species, but individual fish smaller than about 6 inches were excluded, as fish that small are unlikely to be consumed by humans.



**Table 7-3. Summary of Cancer Risks and Non-Cancer Hazards**

Pathway	Non-Cancer Hazard		Cancer Risk	
	RME	CT	RME	CT
Fish Ingestion - Adult Angler	<b>18.2</b>	<b>4.48</b>	<b>7.8E-04</b>	<b>4.3E-05</b>
Fish Ingestion - Young Child	<b>28.3</b>	<b>6.97</b>	<b>2.4E-04</b>	<b>4.4E-05</b>
Fish Ingestion - Older Child	<b>19.8</b>	<b>4.86</b>	<b>3.4E-04</b>	<b>4.6E-05</b>
Sediments - Northern Basin - Adult Recreational	0.020	0.007	<b>1.3E-06</b>	1.4E-07
Sediments - Northern Basin - Young Child Recreational	0.221	0.060	<b>3.8E-06</b>	5.7E-07
Sediments - Northern Basin - Older Child Recreational	0.070	0.012	<b>3.9E-06</b>	2.5E-07
Sediments - Northern Basin - Construction Worker	0.037	0.013	1.5E-07	3.8E-08
Sediments - Southern Basin - Adult Recreational	0.039	0.007	<b>1.0E-05</b>	5.3E-07
Sediments - Southern Basin - Young Child Recreational	0.535	0.047	<b>3.2E-05</b>	<b>2.0E-06</b>
Sediments - Southern Basin - Older Child Recreational	0.253	0.012	<b>3.5E-05</b>	<b>1.0E-06</b>
Sediments - Southern Basin - Construction Worker	0.219	0.062	<b>3.7E-06</b>	8.3E-07
Sediments - Wetland SYW-6 (North) - Adult Recreational	0.042	0.015	<b>6.5E-05</b>	<b>7.1E-06</b>
Sediments - Wetland SYW-6 (North) - Older Child Recreational	0.115	0.026	<b>2.6E-04</b>	<b>1.4E-05</b>
Sediments - Wetland SYW-6 (North) - Construction Worker	0.078	0.029	<b>7.6E-06</b>	<b>1.5E-06</b>
Sediments - Wetland SYW-10 (North) - Adult Recreational	0.041	0.015	<b>5.0E-06</b>	5.4E-07
Sediments - Wetland SYW-10 (North) - Older Child Recreational	0.161	0.026	<b>1.7E-05</b>	<b>1.0E-06</b>
Sediments - Wetland SYW-10 (North) - Construction Worker	0.076	0.026	6.0E-07	1.4E-07
Sediments - Wetland SYW-12 (South) - Adult Recreational	0.023	0.004	<b>3.7E-06</b>	1.9E-07
Sediments - Wetland SYW-12 (South) - Older Child Recreational	0.122	0.007	<b>1.4E-05</b>	3.7E-07
Sediments - Wetland SYW-12 (South) - Construction Worker	0.135	0.042	<b>1.4E-06</b>	2.7E-07
Sediments - Wetland SYW-19 (South) - Adult Recreational	0.027	0.005	<b>1.4E-05</b>	7.7E-07
Sediments - Wetland SYW-19 (South) - Older Child Recreational	0.157	0.009	<b>4.9E-05</b>	<b>1.4E-06</b>
Sediments - Wetland SYW-19 (South) - Construction Worker	0.156	0.047	<b>5.4E-06</b>	<b>1.2E-06</b>
Soils - Dredge Spoils (Surface) - Adult Recreational	0.026	0.009	<b>1.8E-06</b>	1.9E-07
Soils - Dredge Spoils (Surface) - Older Child Recreational	0.075	0.016	<b>4.7E-06</b>	3.5E-07
Soils - Dredge Spoils (Surface) - Construction Worker	0.048	0.018	2.1E-07	6.0E-08
Soils - Dredge Spoils (Subsurface) - Construction Worker	0.126	0.043	<b>1.1E-06</b>	2.4E-07
Surface Water - Adult Recreational	0.020	0.007	6.1E-08	7.8E-09
Surface Water - Young Child Recreational	0.037	0.014	2.5E-08	9.9E-09
Surface Water - Older Child Recreational	0.024	0.009	3.0E-08	9.4E-09
Surface Water - Construction Worker	0.002	0.001	4.2E-10	1.1E-10

**Notes:** Hazard indices (HI) and cancer risks in **bold** exceed target levels (HI > 1, cancer risk > 10<sup>-6</sup>)

CT = central tendency

RME = reasonable maximum exposure



**Table 7-4. Summary of Cancer Risks and Non-Cancer Hazards Exceeding Target Levels**

Pathway	Non-Cancer Hazard				Cancer Risk			
	HQ > 1		Risk > 10 <sup>-4</sup>		Risk > 10 <sup>-5</sup>		Risk > 10 <sup>-6</sup>	
	RME	CT	RME	CT	RME	CT	RME	CT
Fish Ingestion - Adult Angler	X	X	X	--	X	X	X	X
Fish Ingestion - Young Child	X	X	X	--	X	X	X	X
Fish Ingestion - Older Child	X	X	X	--	X	X	X	X
Sediments - Northern Basin - Adult Recreational	--	--	--	--	--	--	X	--
Sediments - Northern Basin - Young Child Recreational	--	--	--	--	--	--	X	--
Sediments - Northern Basin - Older Child Recreational	--	--	--	--	--	--	X	--
Sediments - Northern Basin - Construction Worker	--	--	--	--	--	--	--	--
Sediments - Southern Basin - Adult Recreational	--	--	--	--	X	--	X	--
Sediments - Southern Basin - Young Child Recreational	--	--	--	--	X	--	X	X
Sediments - Southern Basin - Older Child Recreational	--	--	--	--	X	--	X	X
Sediments - Southern Basin - Construction Worker	--	--	--	--	--	--	X	--
Sediments - Wetland SYW-6 (North) - Adult Recreational	--	--	--	--	X	--	X	X
Sediments - Wetland SYW-6 (North) - Older Child Recreational	--	--	X	--	X	X	X	X
Sediments - Wetland SYW-6 (North) - Construction Worker	--	--	--	--	--	--	X	X
Sediments - Wetland SYW-10 (North) - Adult Recreational	--	--	--	--	--	--	X	--
Sediments - Wetland SYW-10 (North) - Older Child Recreational	--	--	--	--	X	--	X	X
Sediments - Wetland SYW-10 (North) - Construction Worker	--	--	--	--	--	--	--	--
Sediments - Wetland SYW-12 (South) - Adult Recreational	--	--	--	--	--	--	X	--
Sediments - Wetland SYW-12 (South) - Older Child Recreational	--	--	--	--	X	--	X	--
Sediments - Wetland SYW-12 (South) - Construction Worker	--	--	--	--	--	--	X	--
Sediments - Wetland SYW-19 (South) - Adult Recreational	--	--	--	--	X	--	X	--
Sediments - Wetland SYW-19 (South) - Older Child Recreational	--	--	--	--	X	--	X	X
Sediments - Wetland SYW-19 (South) - Construction Worker	--	--	--	--	--	--	X	X
Soils - Dredge Spoils (Surface) - Adult Recreational	--	--	--	--	--	--	X	--
Soils - Dredge Spoils (Surface) - Older Child Recreational	--	--	--	--	--	--	X	--
Soils - Dredge Spoils (Surface) - Construction Worker	--	--	--	--	--	--	--	--
Soils - Dredge Spoils (Subsurface) - Construction Worker	--	--	--	--	--	--	X	--
Surface Water - Adult Recreational	--	--	--	--	--	--	--	--
Surface Water - Young Child Recreational	--	--	--	--	--	--	--	--
Surface Water - Older Child Recreational	--	--	--	--	--	--	--	--
Surface Water - Construction Worker	--	--	--	--	--	--	--	--

**Notes:** X - Hazard indices (HI) and cancer risks exceeding specified target levels

-- - Hazard indices (HI) and cancer risks below specified target levels

CT - central tendency

RME - reasonable maximum exposure

**Table 7-5. Summary of COPCs Contributing to Cancer Risks**

Pathway	RME	
	Cancer Risk	Principal Chemicals Contributing to Risk <sup>(1)</sup>
Fish Ingestion - Adult Angler	7.80E-04	PCDD/PCDFs; PCBs (total); arsenic <sup>(2)</sup>
Fish Ingestion - Young Child	2.43E-04	PCDD/PCDFs; PCBs (total); arsenic <sup>(2)</sup>
Fish Ingestion - Older Child	3.39E-04	PCDD/PCDFs; PCBs (total); arsenic <sup>(2)</sup>
Sediments - Northern Basin - Adult Recreational	1.28E-06	Arsenic; benzo(a)pyrene; hexachlorobenzene
Sediments - Northern Basin - Young Child Recreational	3.82E-06	Arsenic; benzo(a)pyrene; hexachlorobenzene
Sediments - Northern Basin - Older Child Recreational	3.94E-06	Arsenic; benzo(a)pyrene; hexachlorobenzene
Sediments - Northern Basin - Construction Worker	1.52E-07	Arsenic; benzo(a)pyrene; hexachlorobenzene
Sediments - Southern Basin - Adult Recreational	1.00E-05	Benzo(a)pyrene; dibenz(a,h)anthracene; PCDD/PCDFs; hexachlorobenzene
Sediments - Southern Basin - Young Child Recreational	3.16E-05	Benzo(a)pyrene; dibenz(a,h)anthracene and other PAHs; PCDD/PCDFs; hexachlorobenzene; arsenic
Sediments - Southern Basin - Older Child Recreational	3.47E-05	Benzo(a)pyrene and other PAHs <sup>(3)</sup> ; PCDD/PCDFs; hexachlorobenzene; arsenic
Sediments - Southern Basin - Construction Worker	3.68E-06	Benzo(a)pyrene; PCDD/PCDFs; dibenz(a,h)anthracene
Sediments - Wetland SYW-6 (North) - Adult Recreational	6.49E-05	Benzo(a)pyrene; dibenz(a,h)anthracene, benz(a)anthracene, benzo(b) and (k)fluoranthene, indeno(1,2,3-cd)pyrene
Sediments - Wetland SYW-6 (North) - Older Child Recreational	2.60E-04	Benzo(a)pyrene; dibenz(a,h)anthracene, arsenic; benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene
Sediments - Wetland SYW-6 (North) - Construction Worker	7.61E-06	Benzo(a)pyrene; dibenz(a,h)anthracene
Sediments - Wetland SYW-10 (North) - Adult Recreational	5.02E-06	Arsenic; benzo(a)pyrene
Sediments - Wetland SYW-10 (North) - Older Child Recreational	1.65E-05	Arsenic; benzo(a)pyrene; dibenz(a,h)anthracene
Sediments - Wetland SYW-10 (North) - Construction Worker	5.97E-07	Arsenic; benzo(a)pyrene
Sediments - Wetland SYW-12 (South) - Adult Recreational	3.69E-06	Benzo(a)pyrene
Sediments - Wetland SYW-12 (South) - Older Child Recreational	1.43E-05	Benzo(a)pyrene; benz(a)anthracene
Sediments - Wetland SYW-12 (South) - Construction Worker	1.36E-06	Benzo(a)pyrene
Sediments - Wetland SYW-19 (South) - Adult Recreational	1.44E-05	Benzo(a)pyrene; PCDD/PCDFs; dibenz(a,h)anthracene
Sediments - Wetland SYW-19 (South) - Older Child Recreational	4.90E-05	Benzo(a)pyrene and other PAHs <sup>(4)</sup> ; PCDD/PCDFs; hexachlorobenzene
Sediments - Wetland SYW-19 (South) - Construction Worker	5.36E-06	Benzo(a)pyrene; PCDD/PCDFs; dibenz(a,h)anthracene
Soils - Dredge Spoils (Surface) - Adult Recreational	1.76E-06	Arsenic; benzo(a)pyrene
Soils - Dredge Spoils (Surface) - Older Child Recreational	4.66E-06	Arsenic; benzo(a)pyrene; hexachlorobenzene
Soils - Dredge Spoils (Surface) - Construction Worker	2.12E-07	Arsenic; benzo(a)pyrene; hexachlorobenzene
Soils - Dredge Spoils (Subsurface) - Construction Worker	1.10E-06	Benzo(a)pyrene; arsenic; dibenz(a,h)anthracene
Surface Water - Adult Recreational	6.13E-08	Benzene; bromodichloromethane
Surface Water - Young Child Recreational	2.49E-08	Benzene; bromodichloromethane
Surface Water - Older Child Recreational	2.99E-08	Benzene; bromodichloromethane
Surface Water - Construction Worker	4.22E-10	Benzene; bromodichloromethane

**Notes:** COPC – chemical of potential concern

RME – reasonable maximum exposure

MW – molecular weight

(1) Principal chemicals contributing to risk are those accounting for 10 percent or more of risk and for all pathways except fish ingestion contributing risk of 10<sup>-6</sup> or more.

(2) Principal chemicals for fish ingestion pathway are those accounting for a total of more than 90 percent of risk. Several SVOCs and pesticides also contributed RME risk of 10<sup>-6</sup> or more.

(3) Other PAHs not listed individually (with RME risks greater than 10<sup>-6</sup>) include dibenz(a,h)anthracene and benzo(b)fluoranthene.

(4) Other PAHs not listed individually (with RME risks greater than 10<sup>-6</sup>) include dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, benz(a)anthracene, and benzo(b)fluoranthene.

**Table 7-6. Summary of COPCs Contributing to Non-Cancer Hazards**

Pathway	RME	
	HI	Principal Chemicals Contributing to Hazard <sup>(1)</sup>
Fish Ingestion - Adult Angler	18.21	Low and high molecular weight PCBs; mercury (as methylmercury) <sup>(2)</sup>
Fish Ingestion - Young Child	28.32	Low and high molecular weight PCBs; mercury (as methylmercury) <sup>(2)</sup>
Fish Ingestion - Older Child	19.76	Low and high molecular weight PCBs; mercury (as methylmercury) <sup>(2)</sup>
Sediments - Northern Basin - Adult Recreational	0.020	Antimony; arsenic; iron; manganese
Sediments - Northern Basin - Young Child Recreational	0.221	Arsenic; antimony; iron
Sediments - Northern Basin - Older Child Recreational	0.070	Arsenic; Aroclor 1254; Aroclor 1268; cadmium
Sediments - Northern Basin - Construction Worker	0.037	Antimony; iron; arsenic; manganese
Sediments - Southern Basin - Adult Recreational	0.039	Naphthalene
Sediments - Southern Basin - Young Child Recreational	0.535	Naphthalene
Sediments - Southern Basin - Older Child Recreational	0.253	Naphthalene
Sediments - Southern Basin - Construction Worker	0.219	Naphthalene; chromium
Sediments - Wetland SYW-6 (North) - Adult Recreational	0.042	Iron; chromium; cadmium; arsenic
Sediments - Wetland SYW-6 (North) - Older Child Recreational	0.115	Cadmium; arsenic; iron; chromium
Sediments - Wetland SYW-6 (North) - Construction Worker	0.078	Iron; chromium; cadmium; arsenic
Sediments - Wetland SYW-10 (North) - Adult Recreational	0.041	Arsenic; iron; thallium; Aroclor 1260
Sediments - Wetland SYW-10 (North) - Older Child Recreational	0.161	Aroclor 1260; arsenic
Sediments - Wetland SYW-10 (North) - Construction Worker	0.076	Arsenic; iron; thallium; Aroclor 1260
Sediments - Wetland SYW-12 (South) - Adult Recreational	0.023	Cadmium; chromium; Aroclor 1254; iron
Sediments - Wetland SYW-12 (South) - Older Child Recreational	0.122	Cadmium; Aroclor 1254; Aroclor 1260
Sediments - Wetland SYW-12 (South) - Construction Worker	0.135	Cadmium; chromium; Aroclor 1254; iron
Sediments - Wetland SYW-19 (South) - Adult Recreational	0.027	Mercury; Aroclor 1254; Aroclor 1260
Sediments - Wetland SYW-19 (South) - Older Child Recreational	0.157	Aroclor 1254; Aroclor 1260; Aroclor 1242
Sediments - Wetland SYW-19 (South) - Construction Worker	0.156	Mercury; Aroclor 1254; Aroclor 1260
Soils - Dredge Spoils (Surface) - Adult Recreational	0.026	Iron; arsenic; mercury
Soils - Dredge Spoils (Surface) - Older Child Recreational	0.075	Arsenic; iron
Soils - Dredge Spoils (Surface) - Construction Worker	0.048	Iron; arsenic
Soils - Dredge Spoils (Subsurface) - Construction Worker	0.126	Mercury; Aroclor 1268; iron; arsenic
Surface Water - Adult Recreational	0.020	Cadmium; chromium; 1,3-dichlorobenzene
Surface Water - Young Child Recreational	0.037	Cadmium; chromium; 1,3-dichlorobenzene
Surface Water - Older Child Recreational	0.024	Cadmium; chromium; 1,3-dichlorobenzene
Surface Water - Construction Worker	0.002	Cadmium; chromium; 1,3-dichlorobenzene

**Notes:** COPC – chemical of potential concern

HI – hazard index

HQ – hazard quotient

RME – reasonable maximum exposure

(1) Principal COPCs are those contributing 10 percent of risk or having an individual HQ of more than 0.1 (except for RME fish ingestion).

(2) RME fish ingestion COPCs are those with HQs of more than 1.

Other COPCs with RME HQs greater than 0.1 include antimony, arsenic, cyanide, selenium, and heptachlor epoxide.