

**TABLE 7-1**

Summary of RME Cancer Risks and Hazard Indexes

*Gowanus Canal Remedial Investigation, Brooklyn, New York*

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-5</sup> and <10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-6</sup> and <10 <sup>-5</sup>	Hazard Index	Chemicals with HI>1
Recreational Adult	Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	2E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene	0.03	
		Dermal Contact	1E-04		Benzo(a)pyrene, Chromium	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Nondioxin-like PCBs	0.13	
		Total	1E-04		Benzo(a)pyrene, Chromium	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Non-dioxin-like PCBs, Arsenic	0.2	
	Surface water—Gowanus Canal, dry-weather event	Ingestion	2E-06			Arsenic	0.01	
		Dermal Contact	2E-04	Benzo(a)pyrene	Chromium	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene	0.03	
		Total	2E-04	Benzo(a)pyrene	Chromium	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Arsenic	0.04	
	Surface water—Gowanus Canal, wet-weather event	Ingestion	2E-06			Arsenic	0.01	
		Dermal Contact	1E-04		PCE, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Chromium	0.02	
		Total	1E-04		PCE, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Arsenic, Chromium	0.03	
	Ambient air at canal level, pre-aeration system operation	Inhalation	2E-07				0.006	
		Total	2E-07				0.006	
	Ambient air at canal level, after aeration system started	Ingestion	3E-07				0.007	
		Total	3E-07				0.007	
	All media		3E-04				0.2	

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Recreational Adolescent	Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	1E-05			Benzo(a)anthracene, Benzo(a)pyrene	0.03	
		Dermal Contact	8E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	0.2	
		Total	1E-04		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	0.2	
		Ingestion	9E-07				0.01	
	Surface water—Gowanus Canal, dry-weather event	Dermal Contact	1E-04		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	0.03	
		Total	1E-04		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	0.05	
		Ingestion	8E-07				0.01	
	Surface water—Gowanus Canal, wet-weather event	Dermal Contact	8E-05		Benzo(a)pyrene, Dibenz(a,h)anthracene	PCE, Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	0.02	
		Total	8E-05		Benzo(a)pyrene, Dibenz(a,h)anthracene	PCE, Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	0.04	
		Inhalation	6E-08				0.006	
	Ambient air at canal level, pre-aeration system operation	Total	6E-08				0.006	
		Ingestion	7E-08				0.007	
	Ambient air at canal level, after aeration system started	Total	7E-08				0.007	
		All media	2E-04				0.2	

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Recreational Child	Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	2E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene	Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Arsenic, Chromium	0.3	
		Dermal Contact	2E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Chromium	Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	0.2	
		Total	4E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	Benzo(k)fluoranthene, Arsenic	0.4	
	Surface water—Gowanus Canal, dry-weather event	Ingestion	6E-06			Benzo(a)pyrene, Arsenic, Chromium	0.05	
		Dermal Contact	4E-04	Benzo(a)pyrene		Benzo(a)anthracene, Indeno(1,2,3-c,d)pyrene	0.05	
		Total	4E-04	Benzo(a)pyrene	Benzo(b)fluoranthene, Chromium	Benzo(a)anthracene, Indeno(1,2,3-c,d)pyrene, Arsenic	0.1	
	Surface water—Gowanus Canal, wet-weather event	Ingestion	4E-06			Arsenic, Chromium	0.05	
		Dermal Contact	3E-04	Benzo(a)pyrene	Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	PCE, Benzo(a)anthracene, Benzo(b)fluoranthene	0.04	
		Total	3E-04	Benzo(a)pyrene	Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	PCE, Benzo(b)fluoranthene, Arsenic	0.09	
	Ambient air at canal level, pre-aeration system operation	Inhalation	6E-08				0.01	
		Total	6E-08				0.01	
	Ambient air at canal level, after aeration system started	Ingestion	7E-08				0.01	
		Total	7E-08				0.01	
	All media		8E-04				0.5	

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Industrial Worker Adult	Ambient air at street level, pre-aeration system operation	Inhalation	2E-05		Naphthalene	Benzene, Chloroform	0.3	
		Total	2E-05		Naphthalene	Benzene, Chloroform	0.3	
	Ambient air at street level, after aeration system started	Inhalation	3E-05		Naphthalene	Benzene, Chloroform	0.7	
		Total	3E-05		Naphthalene	Benzene, Chloroform	0.7	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	1E-05			Benzo(a)pyrene, Benzo(a)anthracene	0.02	
		Dermal Contact	1E-05			Benzo(a)pyrene, Chromium	0.02	
		Total	2E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Chromium	0.04	
	Canal Overflow—surface water	Ingestion	5E-07				0.01	
		Dermal Contact	3E-05			PCE, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	0.006	
		Total	3E-05			PCE, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	0.02	
	All media		8E-05				0.8	
Resident Adult	Ambient air at street level, pre-aeration system operation	Inhalation	NA				0.5	
		Total	NA				0.5	
	Ambient air at street level, after aeration system started	Inhalation	NA				1.0	
		Total	NA				1.0	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	NA				0.02	
		Dermal Contact	NA				0.03	
		Total	NA				0.06	
	Canal Overflow—surface water	Ingestion	NA				0.004	
		Contact	NA				0.002	
		Total	NA				0.006	
	All media		NA				1.1	

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Resident Child	Ambient air at street level, pre-aeration system operation	Inhalation	NA				0.5	
		Total	NA				0.5	
	Ambient air at street level, after aeration system started	Inhalation	NA				1.0	
		Total	NA				1.0	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	NA				0.2	
		Dermal Contact	NA				0.07	
		Total	NA				0.3	
	Canal Overflow—surface water	Ingestion	NA				0.02	
		Dermal Contact	NA				0.005	
		Total	NA				0.02	
	All media		NA				1.3	
Resident Child/Adult	Ambient air at street level, pre-aeration system operation	Inhalation	2E-05		Naphthalene	Benzene, Chloroform	NA	
		Total	2E-05		Naphthalene	Benzene, Chloroform	NA	
	Ambient air at street level, after aeration system started	Inhalation	4E-05		Naphthalene	Benzene, Chloroform	NA	
		Total	4E-05		Naphthalene	Benzene, Chloroform	NA	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	1E-04		Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene	Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	NA	
		Dermal Contact	7E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	NA	
		Total	2E-04	Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene	Indeno(1,2,3-c,d)pyrene, Arsenic, Chromium	NA	
		Ingestion	2E-06				NA	
	Canal Overflow—surface water	Dermal Contact	6E-05		Benzo(a)pyrene, Dibenz(a,h)anthracene	PCE, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	NA	
		Total	6E-05		Benzo(a)pyrene, Dibenz(a,h)anthracene	PCE, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	NA	
	All media		3E-04				NA	

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Angler Adult	Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	1E-04		Dioxin-Like PCB, Nondioxin-Like PCB	Arsenic	4.2	Total PCB
		Total	1E-04		Dioxin-Like PCB, Nondioxin-Like PCB	Arsenic	4.2	Total PCB
	White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	2E-05			Dioxin-Like PCB, Nondioxin-Like PCB	0.8	
		Total	2E-05			Dioxin-Like PCB, Nondioxin-Like PCB	0.8	
	Eel in Gowanus Canal (bottom feeder fish)	Ingestion	3E-04	Nondioxin-Like PCB, Dioxin-Like PCB	Dieldrin, Chromium	Arsenic	12	Total PCB
		Total	3E-04	Nondioxin-Like PCB, Dioxin-Like PCB	Dieldrin, Chromium	Arsenic	12	Total PCB
	Blue Crab in Gowanus Canal	Ingestion	2E-04		Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	Benzo(a)pyrene, Dibenzo(a,h)anthracene	3.4	Total PCB
		Total	2E-04		Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	Benzo(a)pyrene, Dibenzo(a,h)anthracene	3.4	Total PCB
	Fish Total Risk		4E-04				17	
	Crab Total Risk		2E-04				3.4	
Angler Adolescent	Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	2E-05			Dioxin-Like PCB, Nondioxin-like, Arsenic	3.4	Total PCB
		Total	2E-05			Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	3.4	Total PCB
	White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	4E-06			Dioxin-Like PCB, Nondioxin-Like PCB	0.7	
		Total	4E-06			Dioxin-Like PCB, Nondioxin-Like PCB	0.7	
	Eel in Gowanus Canal (bottom feeder fish)	Ingestion	7E-05		Dioxin-Like PCB, Nondioxin-Like PCB	Dieldrin, Chromium	9.4	Total PCB
		Total	7E-05		Dioxin-Like PCB, Nondioxin-Like PCB	Dieldrin, Chromium	9.4	Total PCB
	Blue Crab in Gowanus Canal	Ingestion	4E-05		Dioxin-Like PCB	Benzo(a)pyrene, Dibenzo(a,h)anthracene, Nondioxin-Like PCB, Arsenic	2.7	Total PCB
		Total	4E-05		Dioxin-Like PCB	Benzo(a)pyrene, Dibenzo(a,h)anthracene, Nondioxin-Like PCB, Arsenic	2.7	Total PCB
	Fish Total Risk		9E-05				13	
	Crab Total Risk		4E-05				2.7	

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Angler Child	Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	4E-05		Dioxin-Like PCB, Nondioxin-Like PCB	Arsenic	6.8	Total PCB
		Total	4E-05		Dioxin-Like PCB, Nondioxin-Like PCB	Arsenic	6.8	Total PCB
	White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	8E-06			Dioxin-Like PCB, Nondioxin-Like PCB	1.4	Total PCB
		Total	8E-06			Dioxin-Like PCB, Nondioxin-Like PCB	1.4	Total PCB
	Eel in Gowanus Canal (bottom feeder fish)	Ingestion	2E-04		Nondioxin-Like PCB, Chromium	Dieldrin, Arsenic	19	Total PCB
		Total	2E-04		Nondioxin-Like PCB, Chromium	Dieldrin, Arsenic	19	Total PCB
	Blue Crab in Gowanus Canal	Ingestion	9E-05		Dioxin-Like PCB, Nondioxin-Like PCB, Benzo(a)pyrene	Dibenz(a,h)anthracene, Arsenic	5.5	Total PCB
		Total	9E-05		Dioxin-Like PCB, Nondioxin-Like PCB, Benzo(a)pyrene	Dibenz(a,h)anthracene, Arsenic	5.5	Total PCB
	Fish Total Risk		2E-04				27	
	Crab Total Risk		9E-05				5.5	

NA—Not applicable, pathway incomplete.

Receptor Total risks and hazards for recreational receptors includes sum of exposed and near-shore sediment, maximum of dry event and wet event surface water, and maximum of air prior to aeration system operation and after aeration system started.

Receptor Total risks and hazards for residential and industrial receptors includes maximum between air prior to and after aeration system operation, and surface water, and sediment.

**TABLE 7-2**

Summary of CTE Cancer Risks and Hazard Indexes

*Gowanus Canal Remedial Investigation, Brooklyn, New York*

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-5</sup> and <10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-6</sup> and <10 <sup>-5</sup>	Hazard Index	Chemicals with HI>1
Recreational Adult	Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	6E-07				7E-03	
		Dermal Contact	7E-06			Benzo(a)pyrene	7E-02	
		Total	8E-06			Benzo(a)pyrene	7E-02	
	Surface water—Gowanus Canal, dry-weather event	Ingestion	3E-08				1E-03	
		Dermal Contact	8E-06			Benzo(a)pyrene	7E-03	
		Total	8E-06			Benzo(a)pyrene	9E-03	
	Surface water—Gowanus Canal, wet-weather event	Ingestion	3E-08				1E-03	
		Dermal Contact	5E-06			Benzo(a)pyrene	6E-03	
		Total	5E-06			Benzo(a)pyrene	7E-03	
	All media		2E-05				8E-02	
Recreational Adolescent	Surface sediment—exposed and near shore sediment in Gowanus Canal	Ingestion	2E-06			Benzo(a)pyrene	9E-03	
		Dermal Contact	3E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Chromium	8E-02	
		Total	3E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Chromium	9E-02	
	Surface water—Gowanus Canal, dry-weather event	Ingestion	6E-08				2E-03	
		Dermal Contact	3E-05		Benzo(a)pyrene	Benzo(b)fluoranthene, Chromium	8E-03	
		Total	3E-05		Benzo(a)pyrene	Benzo(b)fluoranthene, Chromium	1E-02	
	Surface water—Gowanus Canal, wet-weather event	Ingestion	5E-08				2E-03	
		Dermal Contact	2E-05			Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	6E-03	
		Total	2E-05			Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	8E-03	
	All media		5E-05				1E-01	



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Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks $>10^{-4}$	Chemicals with Cancer Risks $>10^{-5}$ and $<10^{-4}$	Chemicals with Cancer Risks $>10^{-6}$ and $<10^{-5}$	Hazard Index	Chemicals with HI $>1$
Recreational Child	Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	4E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	6E-02	
		Dermal Contact	7E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	8E-02	
		Total	1E-04		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chromium	1E-01	
	Surface water—Gowanus Canal, dry-weather event	Ingestion	5E-07				7E-03	
		Dermal Contact	1E-04		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	1E-02	
		Total	1E-04		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	2E-02	
	Surface water—Gowanus Canal, wet-weather event	Ingestion	3E-07				6E-03	
		Dermal Contact	7E-05		Benzo(a)pyrene, Dibenz(a,h)anthracene	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	1E-02	
		Total	7E-05		Benzo(a)pyrene, Dibenz(a,h)anthracene	Benzo(a)anthracene, Benzo(b)fluoranthene, Indeno(1,2,3-c,d)pyrene, Chromium	2E-02	
	All media		2E-04				2E-01	

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Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks $>10^{-4}$	Chemicals with Cancer Risks $>10^{-5}$ and $<10^{-4}$	Chemicals with Cancer Risks $>10^{-6}$ and $<10^{-5}$	Hazard Index	Chemicals with HI $>1$
Resident Adult	Ambient air at street level, pre-aeration system operation	Inhalation	NA				3E-01	
		Total	NA				3E-01	
	Ambient air at street level, after aeration system started	Inhalation	NA				7E-01	
		Total	NA				7E-01	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	NA				6E-03	
		Dermal Contact	NA				2E-02	
		Total	NA				2E-02	
	Canal overflow—surface water	Ingestion	NA				5E-04	
		Contact	NA				6E-04	
		Total	NA				1E-03	
	All media		NA				7E-01	
Resident Child	Ambient air at street level, pre-aeration system operation	Inhalation	NA				3E-01	
		Total	NA				3E-01	
	Ambient air at street level, after aeration system started	Inhalation	NA				7E-01	
		Total	NA				7E-01	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	NA				6E-02	
		Contact	NA				4E-02	
		Total	NA				9E-02	
	Canal overflow—surface water	Ingestion	NA				2E-03	
		Contact	NA				1E-03	
		Total	NA				4E-03	
	All media		NA				8E-01	

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Resident Child/Adult	Ambient air at street level, pre-aeration system operation	Inhalation	5E-06			Naphthalene	NA	
		Total	5E-06			Naphthalene	NA	
	Ambient air at street level, after aeration system started	Inhalation	1E-05			Naphthalene	NA	
		Total	1E-05			Naphthalene	NA	
	Sediment deposited in areas adjacent to Gowanus Canal associated with canal overflow	Ingestion	3E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene	NA	
		Dermal Contact	2E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene	NA	
		Total	5E-05		Benzo(a)pyrene	Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	NA	
	Canal overflow—surface water	Ingestion	2E-07				NA	
		Dermal Contact	1E-05			Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	NA	
		Total	1E-05			Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene	NA	
	All media		8E-05				NA	

**TABLE 7-2**

Summary of CTE Cancer Risks and Hazard Indexes

*Gowanus Canal Remedial Investigation, Brooklyn, New York*

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-5</sup> and <10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-6</sup> and <10 <sup>-5</sup>	Hazard Index	Chemicals with HI>1
Angler Adult	Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	1E-06				0.5	
		Total	1E-06				0.5	
	White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	1E-07				0.1	
		Total	1E-07				0.1	
	Eel in Gowanus Canal (bottom feeder fish)	Ingestion	3E-06			Dioxin-Like PCB	1.2	Total PCB
		Total	3E-06			Dioxin-Like PCB	1.2	Total PCB
	Blue Crab in Gowanus Canal	Ingestion	1E-05			Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	2.3	Total PCB
		Total	1E-05			Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	2.3	Total PCB
	Fish Total Risk		4E-06				1.7	
	Crab Total Risk		1E-05				2.3	
Angler Adolescent	Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	8E-07				0.4	
		Total	8E-07				0.4	
	White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	9E-08				0.04	
		Total	9E-08				0.04	
	Eel in Gowanus Canal (bottom feeder fish)	Ingestion	3E-06			Dioxin-Like PCB	0.9	
		Total	3E-06			Dioxin-Like PCB	0.9	
	Blue Crab in Gowanus Canal	Ingestion	1E-05			Benzo(a)pyrene, Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	0.6	
		Total	1E-05			Benzo(a)pyrene, Dioxin-Like PCB, Nondioxin-Like PCB, Arsenic	0.6	
	Fish Total Risk		4E-06				1.3	
	Crab Total Risk		1E-05				0.6	

**TABLE 7-2**

Summary of CTE Cancer Risks and Hazard Indexes

*Gowanus Canal Remedial Investigation, Brooklyn, New York*

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-5</sup> and <10 <sup>-4</sup>	Chemicals with Cancer Risks >10 <sup>-6</sup> and <10 <sup>-5</sup>	Hazard Index	Chemicals with HI>1
Angler Child	Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	2E-06				0.7	
		Total	2E-06				0.7	
	White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	2E-07				0.08	
		Total	2E-07				0.08	
	Eel in Gowanus Canal (bottom feeder fish)	Ingestion	7E-06			Dioxin-Like PCB, Nondioxin-Like PCB, Chromium	1.9	Total PCB
		Total	7E-06			Dioxin-Like PCB, Nondioxin-Like PCB, Chromium	1.9	Total PCB
	Blue Crab in Gowanus Canal	Ingestion	3E-05		Dioxin-Like PCB	Benzo(a)pyrene, Dibenz(a,h)anthracene, Nondioxin-Like PCB, Arsenic	3.6	
		Total	3E-05		Dioxin-Like PCB	Benzo(a)pyrene, Dibenz(a,h)anthracene, Nondioxin-Like PCB, Arsenic	3.6	
	Fish Total Risk		9E-06				2.7	
	Crab Total Risk		3E-05				3.6	

NA—Not applicable, pathway incomplete.

Receptor Total risks and hazards for recreational receptors includes sum of exposed and near-shore sediment, maximum of dry event and wet event surface water, and maximum of air prior to aeration system operation and after aeration system started.

Receptor Total risks and hazards for residential and industrial receptors includes maximum between air prior to and after aeration system operation, and surface water, and sediment.

**TABLE 7-4**

Summary of Total RME Cancer Risks for Recreational User and Angler

*Gowanus Canal Remedial Investigation, Brooklyn, New York*

Media	Exposure Pathway	Receptor			
		Recreational adult Cancer Risk	Recreational Adolescent Cancer Risk	Recreational Child Cancer Risk	Total Recreational Cancer Risk
Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	2E-05	1E-05	2E-04	3E-04
	Dermal	1E-04	8E-05	2E-04	4E-04
	Total	1E-04	1E-04	4E-04	7E-04
Surface water—Gowanus Canal, dry-weather event	Ingestion	2E-06	9E-07	6E-06	9E-06
	Dermal	2E-04	1E-04	4E-04	7E-04
	Total	2E-04	1E-04	4E-04	7E-04
Surface water—Gowanus Canal, wet-weather event	Ingestion	2E-06	8E-07	4E-06	7E-06
	Dermal	1E-04	8E-05	3E-04	4E-04
	Total	1E-04	8E-05	3E-04	5E-04
Ambient air at canal level, pre-aeration system operation	Inhalation	2E-07	6E-08	6E-08	4E-07
	Total	2E-07	6E-08	6E-08	4E-07
Ambient air at canal level, after aeration system started	Inhalation	3E-07	7E-08	7E-08	4E-07
	Total	3E-07	7E-08	7E-08	4E-07
All media <sup>1</sup>		3E-04	2E-04	8E-04	1E-03
		Angler adult Cancer Risk	Angler Adolescent Cancer Risk	Angler Child Cancer Risk	Total Angler Cancer Risk
Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	1E-04	2E-05	4E-05	2E-04
	Total	1E-04	2E-05	4E-05	2E-04
White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	2E-05	4E-06	8E-06	3E-05
	Total	2E-05	4E-06	8E-06	3E-05
Eel in Gowanus Canal (bottom feeder fish)	Ingestion	3E-04	7E-05	2E-04	5E-04
	Total	3E-04	7E-05	2E-04	5E-04
Blue Crab in Gowanus Canal	Ingestion	2E-04	4E-05	9E-05	3E-04
	Total	2E-04	4E-05	9E-05	3E-04
Fish Total Risk		4E-04	9E-05	2E-04	7E-04
Crab Total Risk		2E-04	4E-05	9E-05	3E-04

<sup>1</sup>Total risk includes sum of exposed and near shore sediment, maximum of dry event and wet event surface water, and maximum of air prior to aeration system operation and after aeration system started

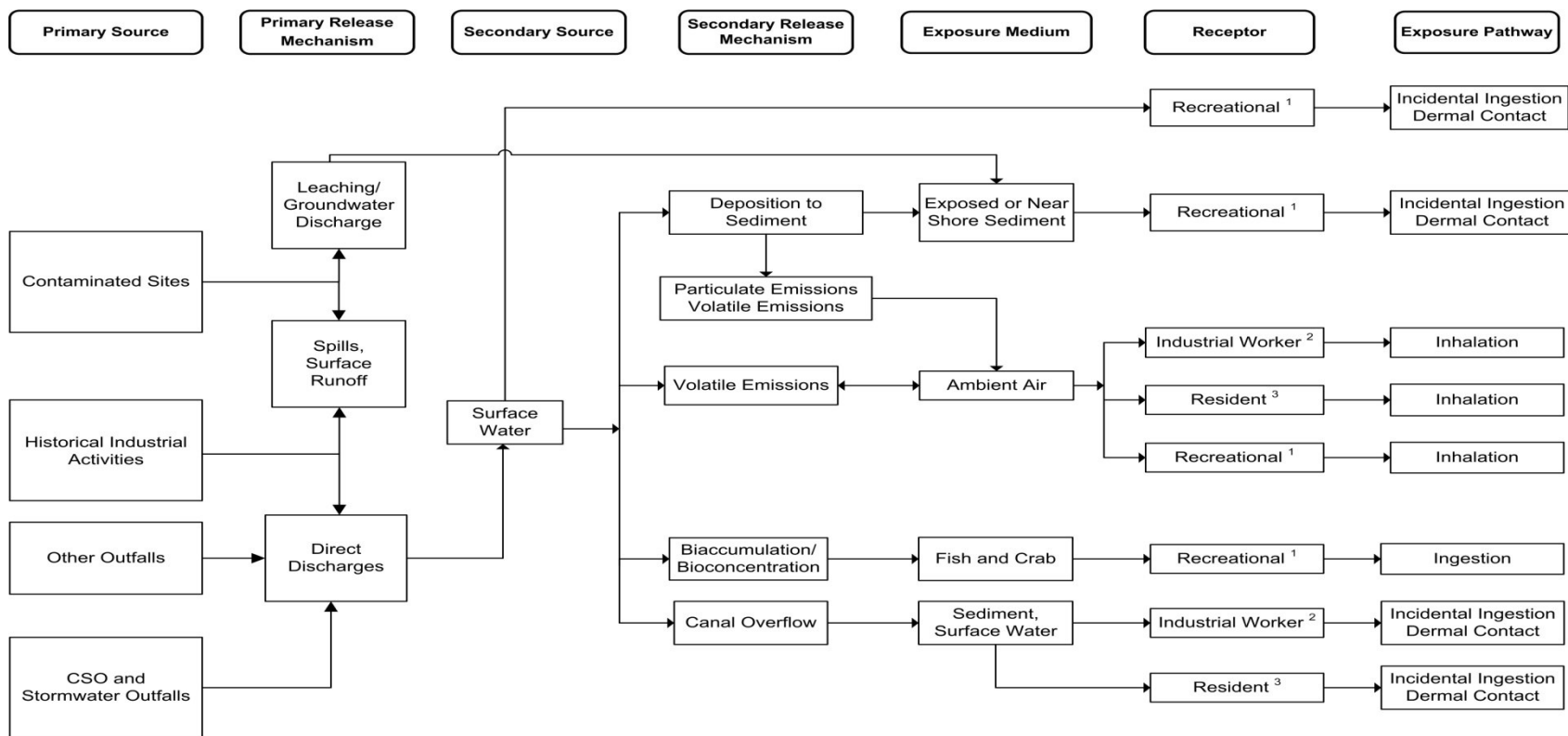
**TABLE 7-5**

Summary of Total CTE Cancer Risks for Recreational User and Angler

*Gowanus Canal Remedial Investigation, Brooklyn, New York*

Media	Exposure Pathway	Receptor			
		Recreational adult Cancer Risk	Recreational Adolescent Cancer Risk	Recreational Child Cancer Risk	Total Recreational Cancer Risk
Surface sediment—exposed and near-shore sediment in Gowanus Canal	Ingestion	6E-07	2E-06	4E-05	5E-05
	Dermal	7E-06	3E-05	7E-05	1E-04
	Total	8E-06	3E-05	1E-04	1E-04
Surface water—Gowanus Canal, dry-weather event	Ingestion	3E-08	6E-08	5E-07	6E-07
	Dermal	8E-06	3E-05	1E-04	1E-04
	Total	8E-06	3E-05	1E-04	1E-04
Surface water—Gowanus Canal, wet-weather event	Ingestion	3E-08	5E-08	3E-07	4E-07
	Dermal	5E-06	2E-05	7E-05	9E-05
	Total	5E-06	2E-05	7E-05	9E-05
All media <sup>1</sup>		2E-05	5E-05	2E-04	3E-04
		Angler adult Cancer Risk	Angler Adolescent Cancer Risk	Angler Child Cancer Risk	Total Angler Cancer Risk
Striped Bass in Gowanus Canal (top-level predator fish)	Ingestion	1E-06	8E-07	2E-06	3E-06
	Total	1E-06	8E-07	2E-06	3E-06
White Perch in Gowanus Canal (middle-level predator fish)	Ingestion	1E-07	9E-08	2E-07	4E-07
	Total	1E-07	9E-08	2E-07	4E-07
Eel in Gowanus Canal (bottom feeder fish)	Ingestion	3E-06	3E-06	7E-06	1E-05
	Total	3E-06	3E-06	7E-06	1E-05
Blue Crab in Gowanus Canal	Ingestion	1E-05	1E-05	3E-05	6E-05
	Total	1E-05	1E-05	3E-05	6E-05
Fish Total Risk		4E-06	4E-06	9E-06	2E-05
Crab Total Risk		1E-05	1E-05	3E-05	6E-05

<sup>1</sup>Total risk includes sum of exposed and near shore sediment, maximum of dry event and wet event surface water, and maximum of air prior to aeration system operation and after aeration system started



<sup>1</sup> Recreational – Adult, Adolescent (12-18 years), Child (1-6 years)

<sup>2</sup> Industrial Worker – Adult

<sup>3</sup> Resident – Adult, Child (1-6 years)

**FIGURE 2-1**

Conceptual Exposure Model for Human Health Risk Assessment

Gowanus Canal Remedial Investigation

Brooklyn, New York