

APPENDIX II
CALCULATIONS

Chester Water Authority
Reference doses and carcinogenic potency slope factors.

Contaminant	Oral RfD mg/kg/d	Inhaled RfD mg/kg/d	Oral Slope Factor kg·d/mg	Inhaled Slope Factor kg·d/mg
TETRACHLOROETHENE	1.00E-02		5.20E-02	2.03E-03
TOTAL TRIHALOMETHANES	1.00E-02		6.10E-03	8.05E-02
CARBON TETRACHLORIDE	7.00E-04	5.71E-04	1.30E-01	5.25E-02
FLUORIDE	6.00E-02			
NITRITE	1.00E-01			

Note: The toxicity criteria for chloroform were used to estimate risk from trihalomethanes

Chester Water Authority
Adult resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	2 IR
Exposure frequency	dy	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time rcarc.	d	8760 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TETRACHLOROETHENE	---	---	---	---	---
TOTAL TRIHALOMETHANES	5.60E-02	2.19E-05	1.53E-03	1.34E-07	1.53E-01
CARBON TETRACHLORIDE	---	---	---	---	---
FLUORIDE	---	---	---	---	---
NITRITE	8.80E-01	3.44E-04	2.41E-02	---	2.41E-01
TOTAL RISK FROM ALL SOURCES (1989-ED = 1 YEAR)				1.34E-07	3.95E-01
TETRACHLOROETHENE	---	---	---	---	---
TOTAL TRIHALOMETHANES	7.20E-02	2.82E-05	1.97E-03	1.72E-07	1.97E-01
CARBON TETRACHLORIDE	8.00E-04	3.13E-07	2.19E-05	4.07E-08	3.13E-02
FLUORIDE	---	---	---	---	---
NITRITE	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1990-ED = 1 YEAR)				2.13E-07	2.29E-01
TETRACHLOROETHENE	---	---	---	---	---
TOTAL TRIHALOMETHANES	7.80E-02	3.05E-05	2.14E-03	1.86E-07	2.14E-01
CARBON TETRACHLORIDE	---	---	---	---	---
FLUORIDE	9.20E-01	3.60E-04	2.52E-02	---	4.20E-01
NITRITE	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1991-ED = 1 YEAR)				1.86E-07	6.34E-01
TOTAL RISK WITHOUT FLUORIDE				1.86E-07	2.14E-01
TETRACHLOROETHENE	---	---	---	---	---
TOTAL TRIHALOMETHANES	8.30E-02	3.25E-05	2.27E-03	1.96E-07	2.27E-01
CARBON TETRACHLORIDE	---	---	---	---	---
FLUORIDE	---	---	---	---	---
NITRITE	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1992-ED = 1 YEAR)				1.96E-07	2.27E-01
TETRACHLOROETHENE	1.00E-03	3.91E-07	2.74E-05	2.04E-08	2.74E-03
TOTAL TRIHALOMETHANES	6.60E-02	2.58E-05	1.81E-03	1.58E-07	1.81E-01
CARBON TETRACHLORIDE	---	---	---	---	---
FLUORIDE	1.00E+00	3.91E-04	2.74E-02	---	4.57E-01
NITRITE	2.01E-01	7.87E-05	5.51E-03	---	5.51E-02
TOTAL RISK FROM ALL SOURCES (1993-ED = 1 YEAR)				1.78E-07	6.95E-01
TOTAL RISK WITHOUT FLUORIDE				1.78E-07	2.39E-01
TETRACHLOROETHENE	1.00E-03	9.39E-06	2.74E-05	4.88E-07	2.74E-03
TOTAL TRIHALOMETHANES	6.60E-02	6.20E-04	1.81E-03	3.78E-06	1.81E-01
CARBON TETRACHLORIDE	---	---	---	---	---
FLUORIDE	1.00E+00	9.39E-03	2.74E-02	---	4.57E-01
NITRITE	2.01E-01	1.89E-03	5.51E-03	---	5.51E-02
TOTAL RISK FROM ALL SOURCES (1993-ED = 30 YEARS)				4.27E-06	6.95E-01
TOTAL RISK WITHOUT FLUORIDE				4.27E-06	2.39E-01

Chester Water Authority
Child resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	1 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TETRACHLOROETHENE					
TOTAL TRIHALOMETHANES	5.60E-02	5.11E-05	3.58E-03	3.12E-07	3.58E-01
CARBON TETRACHLORIDE					
FLUORIDE					
NITRITE	8.80E-01	8.04E-04	5.63E-02		5.63E-01
TOTAL RISK FROM ALL SOURCES (1988-ED=1 YEAR)				3.12E-07	9.21E-01
TETRACHLOROETHENE					
TOTAL TRIHALOMETHANES	7.20E-02	6.58E-05	4.60E-03	4.01E-07	4.60E-01
CARBON TETRACHLORIDE	8.00E-04	7.31E-07	5.11E-05	9.50E-08	7.31E-02
FLUORIDE					
NITRITE					
TOTAL RISK FROM ALL SOURCES (1990-ED=1 YEAR)				4.96E-07	5.33E-01
TETRACHLOROETHENE					
TOTAL TRIHALOMETHANES	7.80E-02	7.12E-05	4.99E-03	4.35E-07	4.99E-01
CARBON TETRACHLORIDE					
FLUORIDE	9.20E-01	8.40E-04	5.88E-02		9.80E-01
NITRITE					
TOTAL RISK FROM ALL SOURCES (1991-ED=1 YEAR)				4.35E-07	1.48E+00
TOTAL RISK WITHOUT FLUORIDE				4.35E-07	4.99E-01
TETRACHLOROETHENE					
TOTAL TRIHALOMETHANES	8.30E-02	7.58E-05	5.31E-03	4.62E-07	5.31E-01
CARBON TETRACHLORIDE					
FLUORIDE					
NITRITE					
TOTAL RISK FROM ALL SOURCES (1992-ED=1 YEAR)				4.62E-07	5.31E-01
TETRACHLOROETHENE	1.00E-03	9.13E-07	6.39E-05	4.75E-08	6.39E-03
TOTAL TRIHALOMETHANES	6.60E-02	6.03E-05	4.22E-03	3.68E-07	4.22E-01
CARBON TETRACHLORIDE					
FLUORIDE	1.00E+00	9.13E-04	6.39E-02		1.07E+00
NITRITE	2.01E-01	1.84E-04	1.28E-02		1.28E-01
TOTAL RISK FROM ALL SOURCES (1993-ED=1 YEAR)				4.15E-07	1.62E+00
TOTAL RISK WITHOUT FLUORIDE				4.15E-07	5.57E-01
TETRACHLOROETHENE	1.00E-03	5.48E-06	6.39E-05	2.85E-07	6.39E-03
TOTAL TRIHALOMETHANES	6.60E-02	3.62E-04	4.22E-03	2.21E-06	4.22E-01
CARBON TETRACHLORIDE					
FLUORIDE	1.00E+00	5.48E-03	6.39E-02		1.07E+00
NITRITE	2.01E-01	1.10E-03	1.28E-02		1.28E-01
TOTAL RISK FROM ALL SOURCES (1993-ED=30 YEARS)				2.49E-08	1.62E+00
TOTAL RISK WITHOUT FLUORIDE				2.49E-08	5.57E-01

Chester Water Authority
Adult resident showering inhalation.

Concentration	mg/m ³	CA
Inhalation rate	m ³ /min	0.0138889 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT
Shower duration	min/d	12 ET

$$\text{Intake (mg/kg-day)} = \frac{\text{CA} \times \text{IR} \times \text{ET} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/m ³	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TETRACHLOROETHENE	--	--	--	--	--
TOTAL TRIHALOMETHANES	8.52E-01	2.78E-05	1.95E-03	2.24E-06	--
CARBON TETRACHLORIDE	--	--	--	--	--
FLUORIDE	NA				
NITRITE	NA				
TOTAL RISK FROM ALL SOURCES (1989-ED= 1 YEAR)				2.24E-06	--
TETRACHLOROETHENE	--	--	--	--	--
TOTAL TRIHALOMETHANES	1.10E+00	3.57E-05	2.50E-03	2.88E-06	--
CARBON TETRACHLORIDE	1.17E-02	3.81E-07	2.66E-05	2.00E-08	4.67E-02
FLUORIDE	NA				
NITRITE	NA				
TOTAL RISK FROM ALL SOURCES (1990-ED= 1 YEAR)				2.90E-06	4.67E-02
TETRACHLOROETHENE	--	--	--	--	--
TOTAL TRIHALOMETHANES	1.19E+00	3.87E-05	2.71E-03	3.12E-06	--
CARBON TETRACHLORIDE	--	--	--	--	--
FLUORIDE	NA				
NITRITE	NA				
TOTAL RISK FROM ALL SOURCES (1991-ED= 1 YEAR)				3.12E-06	--
TETRACHLOROETHENE	--	--	--	--	--
TOTAL TRIHALOMETHANES	1.26E+00	4.12E-05	2.88E-03	3.32E-06	--
CARBON TETRACHLORIDE	--	--	--	--	--
FLUORIDE	NA				
NITRITE	NA				
TOTAL RISK FROM ALL SOURCES (1992-ED= 1 YEAR)				3.32E-06	--
TETRACHLOROETHENE	1.42E-02	4.62E-07	3.24E-05	9.38E-10	--
TOTAL TRIHALOMETHANES	1.00E+00	3.28E-05	2.29E-03	2.64E-06	--
CARBON TETRACHLORIDE	--	--	--	--	--
FLUORIDE	NA				
NITRITE	NA				
TOTAL RISK FROM ALL SOURCES (1993-ED= 1 YEAR)				2.64E-06	--
TETRACHLOROETHENE	1.42E-02	1.11E-05	3.24E-05	2.25E-08	--
TOTAL TRIHALOMETHANES	1.00E+00	7.86E-04	2.29E-03	6.33E-05	--
CARBON TETRACHLORIDE	--	--	--	--	--
FLUORIDE	NA				
NITRITE	NA				
TOTAL RISK FROM ALL SOURCES (1993-ED= 30 YEARS)				6.33E-05	--

NA--Not Applicable

Chester Water Authority
Child resident drinking water dermal contact.

Concentration	mg/L	CW
Surface area	cm ²	7200 SA
Exposure frequency	dy	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT
Bath duration	hr/d	0.33 ET
Conversion Factor	l/cm ³	1.00E-03 CF
Dermal Permeability Constant (chemical specific)	cm/hr	PC

$$\text{Absorbed Dose (mg/kg-day)} = \frac{\text{CW} \times \text{SA} \times \text{PC} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient	Dermal Permeab. Coeff. cm/hr
TETRACHLOROETHENE	---	---	---	---	---	4.00E-01
TOTAL TRIHALOMETHANES	5.60E-02	1.22E-05	8.51E-04	7.41E-08	8.51E-02	1.00E-01
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
FLUORIDE	NA	---	---	---	---	---
NITRITE	NA	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1989-ED = 1 YEAR)	---	---	---	7.41E-08	8.51E-02	---
TETRACHLOROETHENE	---	---	---	---	---	4.00E-01
TOTAL TRIHALOMETHANES	7.20E-02	1.56E-05	1.09E-03	9.53E-08	1.09E-01	1.00E-01
CARBON TETRACHLORIDE	8.00E-04	3.82E-08	2.67E-06	4.96E-09	3.82E-03	2.20E-02
FLUORIDE	NA	---	---	---	---	---
NITRITE	NA	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1990-ED = 1 YEAR)	---	---	---	1.00E-07	1.13E-01	---
TETRACHLOROETHENE	---	---	---	---	---	4.00E-01
TOTAL TRIHALOMETHANES	7.80E-02	1.69E-05	1.18E-03	1.03E-07	1.18E-01	1.00E-01
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
FLUORIDE	NA	---	---	---	---	---
NITRITE	NA	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1991-ED = 1 YEAR)	---	---	---	1.03E-07	1.18E-01	---
TETRACHLOROETHENE	---	---	---	---	---	4.00E-01
TOTAL TRIHALOMETHANES	8.30E-02	1.80E-05	1.26E-03	1.10E-07	1.26E-01	1.00E-01
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
FLUORIDE	NA	---	---	---	---	---
NITRITE	NA	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1992-ED = 1 YEAR)	---	---	---	1.10E-07	1.26E-01	---
TETRACHLOROETHENE	1.00E-03	8.68E-07	6.08E-05	4.51E-08	6.08E-03	4.00E-01
TOTAL TRIHALOMETHANES	6.60E-02	1.43E-05	1.00E-03	8.74E-08	1.00E-01	1.00E-01
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
FLUORIDE	NA	---	---	---	---	---
NITRITE	NA	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1993-ED = 1 YEAR)	---	---	---	1.32E-07	1.06E-01	---
TETRACHLOROETHENE	1.00E-03	5.21E-06	6.08E-05	2.71E-07	6.08E-03	4.00E-01
TOTAL TRIHALOMETHANES	6.60E-02	8.59E-05	1.00E-03	5.24E-07	1.00E-01	1.00E-01
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
FLUORIDE	NA	---	---	---	---	---
NITRITE	NA	---	---	---	---	---
TOTAL RISK FROM ALL SOURCES (1993-ED = 30 YEARS)	---	---	---	7.95E-07	1.06E-01	---

NA-Not Applicable

Philadelphia Suburban Water Company
 Reference doses and carcinogenic potency slope factors.

Contaminant	Oral RfD mg/kg/d	Inhaled RfD mg/kg/d	Oral Slope Factor kg·d/mg	Inhaled Slope Factor kg·d/mg
TOTAL TRIHALOMETHANES	1.00E-02		6.10E-03	8.05E-02

Note: The toxicity criteria for chloroform were used to estimate risk from trihalomethanes

Philadelphia Suburban Water Company
Adult resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	2 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT

Intake (mg/kg-day) =

$$\frac{CW \times IR \times EF \times ED}{BW \times AT}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	4.75E-02	1.86E-05	1.30E-03	1.13E-07	1.30E-01
TOTAL RISK FROM ALL SOURCES (1989-ED= 1 YEAR)				1.13E-07	1.30E-01
TOTAL TRIHALOMETHANES	6.31E-02	2.47E-05	1.73E-03	1.51E-07	1.73E-01
TOTAL RISK FROM ALL SOURCES (1990-ED= 1 YEAR)				1.51E-07	1.73E-01
TOTAL TRIHALOMETHANES	4.07E-02	1.59E-05	1.12E-03	9.72E-08	1.12E-01
TOTAL RISK FROM ALL SOURCES (1991-ED= 1 YEAR)				9.72E-08	1.12E-01
TOTAL TRIHALOMETHANES	3.64E-02	1.42E-05	9.97E-04	8.69E-08	9.97E-02
TOTAL RISK FROM ALL SOURCES (1992-ED= 1 YEAR)				8.69E-08	9.97E-02
TOTAL TRIHALOMETHANES	9.80E-02	3.84E-05	2.68E-03	2.34E-07	2.68E-01
TOTAL RISK FROM ALL SOURCES (1993-ED= 1 YEAR)				2.34E-07	2.68E-01
TOTAL TRIHALOMETHANES	9.80E-02	9.21E-04	2.68E-03	5.62E-06	2.68E-01
TOTAL RISK FROM ALL SOURCES (1993-ED= 30 YEARS)				5.62E-06	2.68E-01

Philadelphia Suburban Water Company
Child resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	1 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	4.75E-02	4.34E-05	3.04E-03	2.65E-07	3.04E-01
TOTAL RISK FROM ALL SOURCES (1989-ED= 1 YEAR)				2.65E-07	3.04E-01
TOTAL TRIHALOMETHANES	6.31E-02	5.76E-05	4.03E-03	3.52E-07	4.03E-01
TOTAL RISK FROM ALL SOURCES (1990-ED= 1 YEAR)				3.52E-07	4.03E-01
TOTAL TRIHALOMETHANES	4.07E-02	3.72E-05	2.60E-03	2.27E-07	2.60E-01
TOTAL RISK FROM ALL SOURCES (1991-ED= 1 YEAR)				2.27E-07	2.60E-01
TOTAL TRIHALOMETHANES	3.64E-02	3.32E-05	2.33E-03	2.03E-07	2.33E-01
TOTAL RISK FROM ALL SOURCES (1992-ED= 1 YEAR)				2.03E-07	2.33E-01
TOTAL TRIHALOMETHANES	9.80E-02	8.95E-05	6.26E-03	5.46E-07	6.26E-01
TOTAL RISK FROM ALL SOURCES (1993-ED= 1 YEAR)				5.46E-07	6.26E-01
TOTAL TRIHALOMETHANES	9.80E-02	5.37E-04	6.26E-03	3.28E-06	6.26E-01
TOTAL RISK FROM ALL SOURCES (1993-ED= 30 YEARS)				3.28E-06	6.26E-01

Fredericks Suburban Water Company
 Adult resident showering exposure concentrations.

L-phase Lc CO2	cm/h	20
G-phase Lc H2O	cm/h	3000
Water visc. at 20C	cp	1.002
Water visc. at 45C	cp	0.566
Shower temp	K	318
Droplet diameter	mm	1
Drop time	s	2
Shower flow rate	L/min	20
Shower stall volume	m3	2.80E+00
Shower duration	min	1.20E+01
Air exchange rate	min-1	0.0188967 RANGE: .5 TO 1.5 PER HOUR

Constituent	RME Conc. mg/L	Mol. Wt. g/mol	Henry's Constant atm-cm3/mol	KD cm/h	Kg cm/h	Overall Trans. Coef. RL cm/h	Temp-adj. Trans. Coef. RL cm/h	Conc. leaving H2O Out mg/L	VOC Gen. Rate \$ mg/m3-10h	Air Conc. at Shower Exit mg/m3	Avg. Air Conc. in Shower mg/m3
TOTAL TRIHALOMETHANES 1989-ED-1 YEAR	4.75E-02	1.19E+02	2.87E-03	1.22E+01	1.17E+03	1.12E+01	1.50E+01	1.87E-02	1.28E-01	1.40E+00	7.24E-01
TOTAL TRIHALOMETHANES 1990-ED-1 YEAR	6.31E-02	1.19E+02	2.87E-03	1.22E+01	1.17E+03	1.12E+01	1.50E+01	2.48E-02	1.71E-01	1.88E+00	9.81E-01
TOTAL TRIHALOMETHANES 1991-ED-1 YEAR	4.07E-02	1.19E+02	2.87E-03	1.22E+01	1.17E+03	1.12E+01	1.50E+01	1.80E-02	1.10E-01	1.20E+00	8.20E-01
TOTAL TRIHALOMETHANES 1989-ED-1 YEAR	3.84E-02	1.19E+02	2.87E-03	1.22E+01	1.17E+03	1.12E+01	1.50E+01	1.43E-02	9.87E-02	1.07E+00	5.50E-01
TOTAL TRIHALOMETHANES 1989-ED-1 YEAR	8.80E-02	8.30E+01	8.19E-02	1.87E+01	1.80E+03	1.87E+01	2.23E+01	5.14E-02	3.56E-01	3.88E+00	1.86E+00
TOTAL TRIHALOMETHANES 1989-ED-20 YEARS	8.80E-02	1.19E+02	2.87E-03	1.22E+01	1.17E+03	1.12E+01	1.50E+01	3.80E-02	2.88E-01	2.89E+00	1.49E+00

Philadelphia Suburban Water Company
Adult resident showering inhalation.

Concentration	mg/m ³	CA
Inhalation rate	m ³ /min	0.0138889 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT
Shower duration	min/d	12 ET

Intake (mg/kg-day) =
$$\frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$$

Contaminant	RME Conc. mg/m ³	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	7.24E-01	2.36E-05	1.65E-03	1.90E-06	--
TOTAL RISK FROM ALL SOURCES (1989-ED= 1 YEAR)				1.90E-06	--
TOTAL TRIHALOMETHANES	9.61E-01	3.14E-05	2.19E-03	2.52E-06	--
TOTAL RISK FROM ALL SOURCES (1990-ED= 1 YEAR)				2.52E-06	--
TOTAL TRIHALOMETHANES	6.20E-01	2.02E-05	1.42E-03	1.63E-06	--
TOTAL RISK FROM ALL SOURCES (1991-ED= 1 YEAR)				1.63E-06	--
TOTAL TRIHALOMETHANES	5.55E-01	1.81E-05	1.27E-03	1.46E-06	--
TOTAL RISK FROM ALL SOURCES (1992-ED= 1 YEAR)				1.46E-06	--
TOTAL TRIHALOMETHANES	1.49E+00	4.87E-05	3.41E-03	3.92E-06	--
TOTAL RISK FROM ALL SOURCES (1993-ED= 1 YEAR)				3.92E-06	--
TOTAL TRIHALOMETHANES	1.49E+00	1.17E-03	3.41E-03	9.41E-05	--
TOTAL RISK FROM ALL SOURCES (1993-ED= 30 YEARS)				9.41E-05	--

Philadelphia Suburban Water Company
Child resident drinking water dermal contact

Concentration	mg/L	CW
Surface area	cm ²	7200 SA
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT
Bath duration	h/d	0.33 ET
Conversion Factor	l/cm ³	1.00E-03 CF
Dermal Permeability Constant (chemical specific)	cm/hr	PC

Absorbed Dose (mg/kg-day) =

$$\frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

Contaminant	RME Conc. mg/L	Lifetime		Lifetime Cancer Risk	Systemic Hazard Quotient	Dermal Permeab. Coeff. cm/h
		Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d			
TOTAL TRIHALOMETHANES	4.75E-02	1.03E-05	7.21E-04	6.29E-08	7.21E-02	1.00E-01
TOTAL RISK FROM ALL SOURCES (1989-ED= 1 YEAR)				6.29E-08	7.21E-02	
TOTAL TRIHALOMETHANES	6.31E-02	1.37E-05	9.58E-04	8.35E-08	9.58E-02	1.00E-01
TOTAL RISK FROM ALL SOURCES (1990-ED= 1 YEAR)				8.35E-08	9.58E-02	
TOTAL TRIHALOMETHANES	4.07E-02	8.83E-06	6.18E-04	5.39E-08	6.18E-02	1.00E-01
TOTAL RISK FROM ALL SOURCES (1991-ED= 1 YEAR)				5.39E-08	6.18E-02	
TOTAL TRIHALOMETHANES	3.64E-02	7.90E-06	5.53E-04	4.82E-08	5.53E-02	1.00E-01
TOTAL RISK FROM ALL SOURCES (1992-ED= 1 YEAR)				4.82E-08	5.53E-02	
TOTAL TRIHALOMETHANES	9.80E-02	2.13E-05	1.49E-03	1.30E-07	1.49E-01	1.00E-01
TOTAL RISK FROM ALL SOURCES (1993-ED= 1 YEAR)				1.30E-07	1.49E-01	
TOTAL TRIHALOMETHANES	9.80E-02	1.28E-04	1.49E-03	7.78E-07	1.49E-01	1.00E-01
TOTAL RISK FROM ALL SOURCES (1993-ED= 30 YEARS)				7.78E-07	1.49E-01	

Philadelphia Water Department
Reference doses and carcinogenic potency slope factors.

Contaminant	Oral RfD mg/kg/d	Inhaled RfD mg/kg/d	Oral Slope Factor kg·d/mg	Inhaled Slope Factor kg·d/mg
CARBON TETRACHLORIDE	7.00E-04	5.71E-04	1.30E-01	5.25E-02
TOTAL TRIHALOMETHANES	1.00E-02		6.10E-03	8.05E-02
FLUORIDE	6.00E-02			

Note: The toxicity criteria for chloroform were used to estimate risk from trihalomethanes

Philadelphia Water Department
Adult resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	2 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
CARBON TETRACHLORIDE	--	--	--	--	--
TOTAL TRIHALOMETHANES	6.83E-02	2.67E-05	1.87E-03	1.83E-07	1.87E-01
FLUORIDE	1.00E+00	3.91E-04	2.74E-02	--	4.57E-01
Total Risk from All Sources (1989) - ED = 1 Year				1.83E-07	6.44E-01
Total Risk without Fluoride				1.83E-07	1.87E-01
CARBON TETRACHLORIDE	5.00E-04	1.96E-07	1.37E-05	2.54E-08	1.96E-02
TOTAL TRIHALOMETHANES	7.15E-02	2.80E-05	1.96E-03	1.71E-07	1.96E-01
FLUORIDE	1.01E+00	3.95E-04	2.77E-02	--	4.61E-01
Total Risk from All Sources - 1990 (ED = 1 Year)				1.96E-07	6.77E-01
Total Risk without Fluoride				1.96E-07	2.15E-01
CARBON TETRACHLORIDE	3.00E-04	1.17E-07	8.22E-06	1.53E-08	1.17E-02
TOTAL TRIHALOMETHANES	7.61E-02	2.98E-05	2.08E-03	1.82E-07	2.08E-01
FLUORIDE	1.01E+00	3.95E-04	2.77E-02	--	4.61E-01
Total Risk from All Sources - 1991 (ED = 1 Year)				1.97E-07	6.81E-01
Total Risk without Fluoride				1.97E-07	2.20E-01
CARBON TETRACHLORIDE	--	--	--	--	--
TOTAL TRIHALOMETHANES	5.89E-02	2.31E-05	1.61E-03	1.41E-07	1.61E-01
FLUORIDE	1.00E+00	3.91E-04	2.74E-02	--	4.57E-01
Total Risk from All Sources - 1992 (ED = 1 Year)				1.41E-07	6.18E-01
Total Risk without Fluoride				1.41E-07	1.61E-01
CARBON TETRACHLORIDE	3.00E-04	1.17E-07	8.22E-06	1.53E-08	1.17E-02
TOTAL TRIHALOMETHANES	8.33E-02	3.26E-05	2.28E-03	1.99E-07	2.28E-01
FLUORIDE	9.80E-01	3.84E-04	2.68E-02	--	4.47E-01
Total Risk from All Sources - 1993 (ED = 1 Year)				2.14E-07	6.87E-01
Total Risk without Fluoride				2.14E-07	2.40E-01
CARBON TETRACHLORIDE	3.00E-04	2.82E-06	8.22E-06	3.66E-07	1.17E-02
TOTAL TRIHALOMETHANES	8.33E-02	7.82E-04	2.28E-03	4.77E-06	2.28E-01
FLUORIDE	9.80E-01	9.21E-03	2.68E-02	--	4.47E-01
Total Risk from All Sources - 1993 (ED = 30 Year)				5.14E-06	6.87E-01
Total Risk without Fluoride				5.14E-06	2.40E-01

Philadelphia Water Department
Child resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	1 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
CARBON TETRACHLORIDE	--	--	--	--	--
TOTAL TRIHALOMETHANES	6.83E-02	6.24E-05	4.37E-03	3.80E-07	4.37E-01
FLUORIDE	1.00E+00	9.13E-04	6.39E-02	--	1.07E+00
Total Risk from All Sources-- 1989 (ED=1year)				3.80E-07	1.50E+00
Total Risk without Fluoride				3.80E-07	4.37E-01
CARBON TETRACHLORIDE	5.00E-04	4.57E-07	3.20E-05	5.94E-08	4.57E-02
TOTAL TRIHALOMETHANES	7.15E-02	6.53E-05	4.57E-03	3.98E-07	4.57E-01
FLUORIDE	1.01E+00	9.22E-04	6.46E-02	--	1.08E+00
Total Risk from All Sources-- 1990 (ED = 1 Year)				4.58E-07	1.58E+00
Total Risk without Fluoride				4.58E-07	5.03E-01
CARBON TETRACHLORIDE	3.00E-04	2.74E-07	1.92E-05	3.58E-08	2.74E-02
TOTAL TRIHALOMETHANES	7.61E-02	6.95E-05	4.86E-03	4.24E-07	4.86E-01
FLUORIDE	1.01E+00	9.22E-04	6.46E-02	--	1.08E+00
Total Risk from All Sources-- 1991 (ED = 1 Year)				4.60E-07	1.59E+00
Total Risk without Fluoride				4.60E-07	5.14E-01
CARBON TETRACHLORIDE	--	--	--	--	--
TOTAL TRIHALOMETHANES	5.89E-02	5.38E-05	3.77E-03	3.28E-07	3.77E-01
FLUORIDE	1.00E+00	9.13E-04	6.39E-02	--	1.07E+00
Total Risk from All Sources-- 1992 (ED = 1 Year)				3.28E-07	1.44E+00
Total Risk without Fluoride				3.28E-07	3.77E-01
CARBON TETRACHLORIDE	3.00E-04	2.74E-07	1.92E-05	3.58E-08	2.74E-02
TOTAL TRIHALOMETHANES	8.33E-02	7.61E-05	5.33E-03	4.64E-07	5.33E-01
FLUORIDE	9.80E-01	8.95E-04	6.26E-02	--	1.04E+00
Total Risk from All Sources-- 1993 (ED = 1 Year)				5.00E-07	1.60E+00
Total Risk without Fluoride				5.00E-07	5.60E-01
CARBON TETRACHLORIDE	3.00E-04	1.64E-06	1.92E-05	2.14E-07	2.74E-02
TOTAL TRIHALOMETHANES	8.33E-02	4.58E-04	5.33E-03	2.78E-06	5.33E-01
FLUORIDE	9.80E-01	5.37E-03	6.26E-02	--	1.04E+00
Total Risk from All Sources-- 1993 (ED = 30 Year)				3.00E-06	1.60E+00
Total Risk without Fluoride				3.00E-06	5.60E-01

Philadelphia Water Department
 Actual resident showering exposure concentrations.

L-phase LC CO2	cmh	30
O-phase LC H2O	cmh	3000
Water vol. at 20C	cc	1.008
Water vol. at 40C	cc	0.988
Shower temp	K	318
Draper diameter	cm	1
Drop size	µ	2
Shower flow rate	L/min	30
Shower stall volume	m3	2.90E+00
Shower duration	min	1.20E+01
Air exchange rate	hr-1	0.0188887 (RANGE: .5 TO 1.5 PER HOUR)

Contaminant	RfE Conc. mg/L	Mol. Wt. g/mol	Henry's Constant atm-cm ³ /mol	K ₁ cm ³ /m ³	K ₂ cm ³ /m ³	Overall Trans. Coeff. K ₁ cm ³ /m ³	Trans- Coeff. K ₂ cm ³ /m ³	Cont. leaving H2O Conc. mg/l	VOC Gen. Rate g/hr-m ²	Air Conc. of Shower Est. mg/m ³	Avg. Air Conc. in Shower mg/m ³
CARBON TETRACHLORIDE	---	1.94E+02	2.41E-02	1.07E+01	1.08E+08	1.08E+01	1.48E+01	---	---	---	---
TOTAL TRIHALOMETHANES FLUORIDE 1999ED=1 year)	8.30E-02 1.00E+00 na	1.18E+02	2.81E-03	1.22E+01	1.17E+03	1.12E+01	1.30E+01	2.88E-02	1.88E-01	2.01E+02	1.04E+00
CARBON TETRACHLORIDE	5.00E-04	1.94E+02	2.41E-02	1.07E+01	1.08E+08	1.08E+01	1.48E+01	1.88E-04	1.20E-02	1.41E-02	7.20E-02
TOTAL TRIHALOMETHANES FLUORIDE 1999ED=1 year)	7.18E-02 1.01E+00 na	1.18E+02	2.81E-03	1.22E+01	1.17E+03	1.12E+01	1.30E+01	2.81E-02	1.84E-01	2.11E+00	1.05E+00
CARBON TETRACHLORIDE	3.00E-04	1.94E+02	2.41E-02	1.07E+01	1.08E+08	1.08E+01	1.48E+01	1.12E-04	7.78E-04	8.47E-02	4.28E-02
TOTAL TRIHALOMETHANES FLUORIDE 1999ED=1 year)	7.81E-02 1.01E+00 na	1.18E+02	2.81E-03	1.22E+01	1.17E+03	1.12E+01	1.30E+01	2.88E-02	2.08E-01	2.34E+00	1.18E+00
CARBON TETRACHLORIDE	---	1.94E+02	2.41E-02	1.07E+01	1.08E+08	1.08E+01	1.48E+01	---	---	---	---
TOTAL TRIHALOMETHANES FLUORIDE 1999ED=1 year)	8.88E-02 1.00E+00 na	1.18E+02	2.81E-03	1.22E+01	1.17E+03	1.12E+01	1.30E+01	2.81E-02	1.88E-01	1.72E+00	8.88E-01
CARBON TETRACHLORIDE	3.00E-04	1.94E+02	2.41E-02	1.07E+01	1.08E+08	1.08E+01	1.48E+01	1.12E-04	7.78E-04	8.47E-02	4.28E-02
TOTAL TRIHALOMETHANES FLUORIDE 1999ED=1 year)	8.22E-02 8.30E-01 na	1.18E+02	2.81E-03	1.22E+01	1.17E+03	1.12E+01	1.30E+01	3.27E-02	2.38E-01	2.48E+00	1.27E+00
CARBON TETRACHLORIDE	3.00E-04	1.94E+02	2.41E-02	1.07E+01	1.08E+08	1.08E+01	1.48E+01	1.12E-04	7.78E-04	8.47E-02	4.28E-02
TOTAL TRIHALOMETHANES FLUORIDE 1999ED=30 year)	8.22E-02 8.30E-01 na	1.18E+02	2.81E-03	1.22E+01	1.17E+03	1.12E+01	1.30E+01	3.27E-02	2.38E-01	2.48E+00	1.27E+00

na=no applicability

Philadelphia Water Department
Adult resident showering inhalation.

Concentration	mg/m ³	CA
Inhalation rate	m ³ /min	0.0138889 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT
Shower duration	min/d	12 ET

$$\text{Intake (mg/kg-day)} = \frac{\text{CA} \times \text{IR} \times \text{ET} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	FME Conc. mg/m ³	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Coefficient
CARBON TETRACHLORIDE	--	--	--	--	--
TOTAL TRIHALOMETHANES	1.04E+00	3.39E-05	2.37E-03	2.73E-06	--
FLUORIDE	na				
Total Risk from All Sources - 1989 (ED = 1 Year)				2.73E-06	--
CARBON TETRACHLORIDE	7.30E-03	2.38E-07	1.67E-05	1.24E-08	2.92E-02
TOTAL TRIHALOMETHANES	1.09E+00	3.55E-05	2.48E-03	2.86E-06	--
FLUORIDE	na				
Total Risk from All Sources - 1990 (ED = 1 Year)				2.87E-06	2.92E-02
CARBON TETRACHLORIDE	4.38E-03	1.43E-07	9.99E-06	7.42E-09	1.75E-02
TOTAL TRIHALOMETHANES	1.16E+00	3.78E-05	2.64E-03	3.04E-06	--
FLUORIDE	na				
Total Risk from All Sources - 1991 (ED = 1 Year)				3.05E-06	1.75E-02
CARBON TETRACHLORIDE	--	--	--	--	--
TOTAL TRIHALOMETHANES	8.96E-01	2.92E-05	2.05E-03	2.35E-06	--
FLUORIDE	na				
Total Risk from All Sources - 1992 (ED = 1 Year)				2.35E-06	--
CARBON TETRACHLORIDE	4.38E-03	1.43E-07	9.99E-06	7.42E-09	1.75E-02
TOTAL TRIHALOMETHANES	1.27E+00	4.13E-05	2.89E-03	3.33E-06	--
FLUORIDE	na				
Total Risk from All Sources - 1993 (ED = 1 Year)				3.34E-06	1.75E-02
CARBON TETRACHLORIDE	4.38E-03	3.43E-06	9.99E-06	1.78E-07	1.75E-02
TOTAL TRIHALOMETHANES	1.27E+00	9.92E-04	2.89E-03	7.99E-05	--
FLUORIDE	na				
Total Risk from All Sources - 1993 (ED = 30 Year)				8.00E-06	1.75E-02

na - not applicable

Philadelphia Water Department
Child resident drinking water dermal contact.

Concentration	mg/L	CW
Surface area	cm ²	7200 SA
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT
Bath duration	h/d	0.33 ET
Conversion Factor	l/cm ³	1.00E-03 CF
Dermal Permeability Constant (chemical specific)	cm/hr	PC

$$\text{Absorbed Dose (mg/kg-day)} = \frac{\text{CW} \times \text{SA} \times \text{PC} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient	Dermal Permeab. Coeff. cm/h
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
TOTAL TRIHALOMETHANES	6.83E-02	1.48E-05	1.04E-03	9.04E-08	1.04E-01	1.00E-01
FLUORIDE	1.00E+00 na					
Total Risk from All Sources - 1989 (ED = 1 Year)				9.04E-08	1.04E-01	
CARBON TETRACHLORIDE	5.00E-04	2.39E-08	1.67E-06	3.10E-09	2.39E-03	2.20E-02
TOTAL TRIHALOMETHANES	7.15E-02	1.55E-05	1.09E-03	9.46E-08	1.09E-01	1.00E-01
FLUORIDE	1.01E+00 na					
Total Risk from All Sources - 1990 (ED = 1 Year)				9.77E-08	1.11E-01	
CARBON TETRACHLORIDE	3.00E-04	1.43E-08	1.00E-06	1.86E-09	1.43E-03	2.20E-02
TOTAL TRIHALOMETHANES	7.61E-02	1.65E-05	1.16E-03	1.01E-07	1.16E-01	1.00E-01
FLUORIDE	1.01E+00 na					
Total Risk from All Sources - 1991 (ED = 1 Year)				1.03E-07	1.17E-01	
CARBON TETRACHLORIDE	---	---	---	---	---	2.20E-02
TOTAL TRIHALOMETHANES	5.89E-02	1.28E-05	8.95E-04	7.80E-08	8.95E-02	1.00E-01
FLUORIDE	1.00E+00 na					
Total Risk from All Sources - 1992 (ED = 1 Year)				7.80E-08	8.95E-02	
CARBON TETRACHLORIDE	3.00E-04	1.43E-08	1.00E-06	1.86E-09	1.43E-03	2.20E-02
TOTAL TRIHALOMETHANES	8.33E-02	1.81E-05	1.27E-03	1.10E-07	1.27E-01	1.00E-01
FLUORIDE	9.80E-01 na					
Total Risk from All Sources - 1993 (ED = 1 Year)				1.12E-07	1.26E-01	
CARBON TETRACHLORIDE	3.00E-04	8.59E-08	1.00E-06	1.12E-08	1.43E-03	2.20E-02
TOTAL TRIHALOMETHANES	8.33E-02	1.08E-04	1.27E-03	6.62E-07	1.27E-01	1.00E-01
FLUORIDE	9.80E-01 na					
Total Risk from All Sources - 1993 (ED = 30 Year)				6.73E-07	1.26E-01	

na—not applicable

Coatesville Water Authority
Reference doses and carcinogenic potency slope factors.

Contaminant	Oral RfD mg/kg/d	Inhaled RfD mg/kg/d	Oral Slope Factor kg·d/mg	Inhaled Slope Factor kg·d/mg
TOTAL TRIHALOMETHANES	1.00E-02		6.10E-03	8.05E-02

Note: The toxicity criteria for chloroform were used to estimate risk from trihalomethanes

Coatesville Water Authority
 Child resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	1 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT

Intake (mg/kg-day) =
$$\frac{CW \times IR \times EF \times ED}{BW \times AT}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	8.62E-02	4.72E-04	5.51E-03	2.88E-06	5.51E-01
Total				2.88E-06	5.51E-01

Coatesville Water Authority
 Adult resident showering inhalation.

Concentration	mg/m3	CA
Inhalation rate	m3/min	0.0138889 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT
Shower duration	min/d	12 ET

Intake (mg/kg-day) = $\frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$

Contaminant	RME Conc. mg/m3	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	1.49E+00	1.17E-03	3.41E-03	9.41E-05	--
Total				9.41E-05	--

Coatesville Water Authority
 Adult resident showering inhalation.

Concentration	mg/m3	CA
Inhalation rate	m3/min	0.0138889 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT
Shower duration	min/d	12 ET

Intake (mg/kg-day) = $\frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$

Contaminant	RME Conc. mg/m3	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	1.49E+00	1.17E-03	3.41E-03	9.41E-05	--
Total				9.41E-05	--

Coatesville Water Authority
 Child resident drinking water dermal contact

Concentration	mg/L		CW
Surface area	cm ²	7200	SA
Exposure frequency	d/y	350	EF
Exposure duration	y	8	ED
Body weight	kg	15	BW
Averaging time carc.	d	25550	AT
Averaging time ncarc.	d	2190	AT
Bath duration	h/d	0.33	ET
Conversion Factor	l/cm ³	1.00E-03	CF
Dermal Permeability Constant (chemical specific)	cm/hr		PC

Absorbed Dose (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$

Contaminant	RME Conc. mg/L	Lifetime	Chronic	Lifetime	Systemic	Dermal
		Average Daily Dose mg/kg/d	Daily Dose mg/kg/d	Cancer Risk	Hazard Quotient	Permeab. Coeff. cm/h
TOTAL TRIHALOMETHANES	8.62E-02	1.12E-04	1.31E-03	6.85E-07	1.31E-01	1.00E-01
Total				6.85E-07	1.31E-01	

Risk Estimates for Total Trihalomethanes at the MCL
 Reference doses and carcinogenic potency slope factors.

Contaminant	Oral RfD mg/kg/d	Inhaled RfD mg/kg/d	Oral Slope Factor kg·d/mg	Inhaled Slope Factor kg·d/mg
TOTAL TRIHALOMETHANES	1.00E-02		6.10E-03	8.05E-02

Note: The toxicity criteria for chloroform were used to estimate risk from trihalomethanes at the MCL of 100 ppb.

Risk Estimates for Total Trihalomethanes at the MCL
 Adult resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	2 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	1.00E-01	9.39E-04	2.74E-03	5.73E-06 5.73E-06	2.74E-01 2.74E-01

Risk Estimates for Total Trihalomethanes at the MCL
 Child resident drinking water ingestion.

Concentration	mg/L	CW
Ingestion rate	L/d	1 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT

$$\text{Intake (mg/kg-day)} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/L	Lifetime Average Daily Dose mg/kg/d	Chronic Daily Dose mg/kg/d	Lifetime Cancer Risk	Systemic Hazard Quotient
TOTAL TRIHALOMETHANES	1.00E-01	5.48E-04	6.39E-03	3.34E-06	6.39E-01
				3.34E-06	6.39E-01

Risk Estimates for Total Trihalomethanes at the MCL
 Adult resident showering exposure concentrations.

L-phase t.c. COE	cmh	30
O-phase t.c. HSC	cmh	3000
Water Ysc. @ 20C	g/l	1.000
Water Ysc. @ 45C	g/l	0.588
Shower lamp	K	318
Droplet diameter	mm	1
Drop time	s	2
Shower flow rate	L/min	20
Shower stall volume	m3	2.90E+00
Shower duration	min	1.20E+01
Air exchange rate	hr-1	0.0188887 (RANGE: .5 TO 1.5 PER HOUR)

Contaminant	RME Conc. ug/L	Vol Wt grain	Henry's Constant atm-cm ³ /mol	H cm ³	K _{ow} cm ³ /mol	Class Coeff. atm-cm ³	Temp-adj. Trans. Coeff. atm-cm ³	Conc. Inhalng HCO Coeff. ug/L	VOC Genic. Rate g/hr	Air Conc. at Shower Expt ¹ ug/m ³	Avg. Air Conc. in Shower ug/m ³
TOTAL TRIHALOMETHANES	1.00E-01	1.18E+02	2.87E-03	1.22E+01	1.17E+03	1.12E+01	1.50E+01	3.80E-02	2.71E-01	2.89E+00	1.52E+00

Risk Estimates for Total Trihalomethanes at the MCL
 Adult resident showering inhalation.

Concentration	mg/m3	CA
Inhalation rate	m3/min	0.0138889 IR
Exposure frequency	d/y	350 EF
Exposure duration	y	24 ED
Body weight	kg	70 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	8760 AT
Shower duration	min/d	12 ET

$$\text{Intake (mg/kg-day)} = \frac{\text{CA} \times \text{IR} \times \text{ET} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT}}$$

Contaminant	RME Conc. mg/m3	Lifetime	Chronic	Lifetime	Systemic
		Average Daily Dose mg/kg/d	Daily Dose mg/kg/d	Cancer Risk	Hazard Quotient
TOTAL TRIHALOMETHANES	1.52E+00	1.19E-03	3.48E-03	9.60E-05	--
				9.60E-05	--

Risk Estimates for Total Trihalomethanes at the MCL
 Child resident drinking water dermal contact

Concentration	mg/L	CW
Surface area	cm ²	7200 SA
Exposure frequency	d/y	350 EF
Exposure duration	y	6 ED
Body weight	kg	15 BW
Averaging time carc.	d	25550 AT
Averaging time ncarc.	d	2190 AT
Bath duration	h/d	0.33 ET
Conversion Factor	l/cm ³	1.00E-03 CF
Dermal Permeability Constant (chemical specific)	cm/hr	PC

Absorbed Dose (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$

Contaminant	RME	Lifetime	Chronic	Lifetime	Systemic	Dermal
	Conc.	Average	Daily	Cancer	Hazard	Permeab.
	mg/L	Daily	Daily	Risk	Quotient	Coeff.
		Dose	Dose			cm/h
	mg/L	mg/kg/d	mg/kg/d			
TOTAL TRIHALOMETHANES	1.00E-01	1.30E-04	1.52E-03	7.94E-07	1.52E-01	1.00E-01
				7.94E-07	1.52E-01	