

ANNEX A

TITLE 25. ENVIRONMENTAL PROTECTION
PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUBPART D. ENVIRONMENTAL HEALTH AND SAFETY
ARTICLE VI. GENERAL HEALTH AND SAFETY
CHAPTER 250. ADMINISTRATION OF LAND RECYCLING PROGRAM

Subchapter A. GENERAL PROVISIONS

§ 250.5. Public notice by applicant.

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(f) Documented proof of the mailing of the municipal notices and arranging for the publication of newspaper notices, required pursuant to sections 302(e), 303(h), 304(n), and 305(c) of the Act, shall be submitted at the same time the NIR, plan, or report is submitted to the Department. A copy of the letter to the municipality with a Certified Mail Receipt, PS Form No. 3800, will be accepted as proof of mailing. A copy of the published text of the newspaper notice and the publication date will be accepted as proof of arranging for publication.

§ 250.7. Fees.

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(c) The Department may waive the fee for resubmission of a plan or report if the resubmission is related to correcting minor administrative or technical deficiencies. The fee waiver is limited to the following:

(1) One time for each plan or report to correct administrative deficiencies if the corrections are made within 15 days of notice of the deficiencies by the Department.

(2) One time for each plan or report to correct technical deficiencies if the corrections are made within 60 days of notice of the deficiencies by the Department.

Subchapter C. STATEWIDE HEALTH STANDARDS

§ 250.301. Scope.

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(b) This subchapter sets forth generic Statewide health standards for regulated substances determined by the EPA to be mutagens. Tables 1- 4 contain Statewide health standards based upon the methodology for mutagens in §§ 250.306 and 250.307 (relating to ingestion numeric values; and inhalation numeric values) for the following substances classified as mutagens:

<i>Regulated Substance</i>	<i>CAS Number</i>
<u>Acrylamide</u>	<u>79-06-1</u>
Benzo[a]anthracene	56-55-3
Benzidine	92-87-5
Benzo[a]pyrene	50-32-8
Benzo[b]fluoranthene	205-99-2
Benzo[k]fluoranthene	207-08-9
<u>Chromium (VI)</u>	<u>18540-29-9</u>
Chrysene	218-01-9
Dibenzo[a,h]anthracene	53-70-3
Dibromo-3-chloropropane, 1,2-	96-12-8
<u>Dichloromethane</u>	<u>75-09-2</u>
Indeno[1,2,3-cd]pyrene	193-39-5
Methylene bis(2-chloroaniline), 4,4'-	101-14-4
Nitrosodiethylamine, N-	55-18-5
Nitrosodimethylamine, N-	62-75-9
Nitroso-N-ethylurea, N-	759-73-9
<u>Trichloroethylene (TCE)</u>	<u>79-01-6</u>
<u>Trichloropropane, 1,2,3-</u>	<u>96-18-4</u>
Vinyl chloride	75-01-4

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§ 250.304. MSCs for groundwater.

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(c) The MSCs for regulated substances contained in groundwater in aquifers used or currently planned to be used for drinking water or for agricultural purposes **[is] are** the MCLs as established by the Department or the EPA **[as established]** in § 109.202 (relating to state MCLs, MRDLs and treatment technique requirements) **[and Health Advisory Levels (HALs) set forth in Drinking Water Standards and Health Advisories, EPA Office of Water Publication No. EPA 822-R-09-011 (October, 2009)].** For **[a]** regulated substances where no MCL has been established, the MSCs **[is] are** the **[L]ifetime [HAL] Health Advisory Levels (HALs) set forth in Drinking Water Standards and Health Advisories (DWSHA), EPA Office of Water Publication No. EPA 822-S-12-001 (April 2012 or as revised) [for that compound], except for substances designated in the DWSHA with cancer descriptor (L) “Likely to be**

carcinogenic to humans” or (L/N) “Likely to be carcinogenic above a specific dose but not likely to be carcinogenic below that dose because a key event in tumor formation does not occur below that dose.” New or revised MCLs or HALs promulgated by the Department or the EPA shall become effective immediately for any demonstration of attainment completed after the date the new or revised MCLs or HALs become effective.

- (1) For [a] regulated substances where neither an MCL nor a lifetime HAL has been established and for substances designated in the DWSHA with cancer descriptor (L) or (L/N), the MSCs [is] are the lowest concentration calculated using the appropriate residential and nonresidential exposure assumptions and the equations in §§ 250.306 and 250.307 (relating to ingestion numeric values; and inhalation numeric values). [New or revised MCLs or HALs promulgated by the Department or the EPA shall become effective immediately for any demonstration of attainment completed after the date the new or revised MCLs or HALs become effective.]**
- (2) If the Lifetime HAL for a substance designated in the DWSHA with cancer descriptor (L) or (L/N) is less than the MSC calculated under 250.304(c)(1), then the Lifetime HAL shall be the MSC.**

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(g) The references referred to in subsection (f) are:

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(12) Yalkowsky, S.H. and R.M. Dannenfelser. 1992. Aquasol Database of Aqueous Solubility. Version 5. College of Pharmacy, University of Arizona - Tucson, AZ. PC Version.

(13) Estimate from Log Kow.

(14) Bennett, S.R., J.M. Bane, P.J. Benford, and R.L. Pyatt.1984. Environmental Hazards of Chemical Agent Simulants. CRDC-TR-84055, Aberdeen Proving Ground, Md.

(15) Munro, N.B. et al. 1999. The Sources, Fate, and Toxicity of Chemical Warfare Agent Degradation Products. Environ. Health Perspect. 107(12): 933-4.

(16) Monteil-Rivera, F., C. Groom, and J. Hawari. 2003. Sorption and Degradation of Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine in Soil. Environ. Sci. Technol. 37:3878-3884.

(17) Seidell, A. 1941. Solubilities of Organic Compounds. New York, NY. D. Van Nostrand Co. Inc.

§ 250.306. Ingestion numeric values.

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(b) For a regulated substance which is a carcinogen, the ingestion numeric value for that substance was calculated using the appropriate residential or nonresidential exposure assumptions from subsection (d) according to the following equations:

(1) For regulated substances not identified as a mutagen in § 250.301(b) (relating to scope):

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/year}}{CSF_o \times Abs \times EF \times IFadj \times CF}$$

(2) For regulated substances identified as a mutagen, except for vinyl chloride **and trichloroethylene**, in § 250.301(b):

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/year}}{CSF_o \times Abs \times EF \times AIFadj \times CF}$$

(3) For vinyl chloride:

$$MSC = \frac{TR}{[CSF_o \times Abs \times EF \times IFadj \times CF / (AT_c \times 365 \text{ days/year})] + (CSF_o \times Abs \times IR_c \times CF/BW_c)}$$

(4) For trichloroethylene:

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/yr}}{(CSF_{ok} \times AIFadj + CSF_{ol} \times IFadj) \times Abs \times EF \times CF}$$

(c) For a regulated substance that has both an oral reference dose and an oral cancer slope factor, the ingestion numeric value is the lower of the two numbers as calculated by the equations in subsections (a) and (b).

(d) The default exposure assumptions used to calculate the ingestion numeric values are as follows:

Term		Residential		Nonresidential (Onsite Worker)
		Systemic ¹	Carcinogens ^{2,6}	
THQ	Target Hazard Quotient	1	N/A	1
RfD _o	Oral Reference Dose (mg/kg-day)	Chemical-specific	N/A	Chemical-specific
BW	Body Weight (kg)	15	N/A	[70] 80
	Soil Groundwater	[70] 80		

AT _{nc}	Averaging Time for systemic toxicants (yr)			
	Soil	6	N/A	25
	Groundwater	30	N/A	25
Abs	Absorption (unitless) ³	1	1	1
EF	Exposure Frequency (d/yr)			
	Soil	250	250	180
	Groundwater	350	350	250
ED	Exposure Duration (yr)			
	Soil	6	N/A	25
	Groundwater	30	N/A	25
IngR	Ingestion Rate			
	Soil (mg/day)	100	N/A	50
	GW (L/day)	2	N/A	1
CF	Conversion Factor			
	Soil (kg/mg)	1 x 10 ⁻⁶	1 x 10 ⁻⁶	1 x 10 ⁻⁶
	GW (unitless)	1	1	1
TR	Target Risk	N/A	1 x 10 ⁻⁵	1 x 10 ⁻⁵
CSF _o	Oral Cancer Slope Factor (mg/kg-day) ⁻¹	N/A	Chemical-specific	Chemical-specific
AT _c	Averaging Time for carcinogens (yr)	N/A	70	70
IFadj ⁴	Ingestion Factor	N/A		
	Soil (mg-yr/kg-day)		[57.1] <u>55</u>	[17.9] <u>15.6</u>
	GW (L-yr/kg day)		[1.1] <u>1</u>	[0.4] <u>0.3</u>
AIFadj ⁵	Combined Age-Dependent Adjustment Factor and Ingestion Factor	N/A		N/A
	Soil (mg-yr/kg- day)		[245] <u>241</u>	
	GW (L-yr/kg- day)		[3.39] <u>3.23</u>	

<u>CSF_{ok}</u>	<u>TCE oral cancer slope factor for kidney cancer (mg/kg/day)⁻¹</u>		<u>9.3 x 10⁻³</u>	
<u>CSF_{ot}</u>	<u>TCE oral cancer slope factor for non-Hodgkin lymphoma and liver cancer (mg/kg/day)⁻¹</u>		<u>3.7 x 10⁻²</u>	

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§ 250.307. Inhalation numeric values.

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(b) For a regulated substance which is a carcinogen, the following apply:

- (1) For a volatile compound, the numeric value for inhalation from soil was calculated using the appropriate residential or nonresidential exposure assumptions from subsection (d) according to the following equation using TF for volatiles:

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/year} \times 24 \text{ hr/day} \times TF}{IUR \times ET \times EF \times ED \times CF}$$

- (2) For a regulated substance attached to particulates, the numeric value for inhalation from soil was calculated using the appropriate residential or nonresidential exposure assumptions from subsection (d) according to the equation in paragraph (1) using TF for particulates.

- (3) For a regulated substance identified in Section 250.301(b) (relating to scope) as a mutagen, except for vinyl chloride **and trichloroethylene**, the numeric value for inhalation from soil was calculated using the appropriate residential or nonresidential exposure assumptions from subsection (d) according to the following equation using the TF for volatiles or particulates:

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/year} \times 24 \text{ hr/day} \times TF}{IUR \times ET \times EF \times AED \times CF}$$

- (4) For vinyl chloride, the numeric value for inhalation from soil was calculated using the appropriate residential or nonresidential exposure assumptions from subsection (d) according to the following equation using the TF for volatiles or particulates:

$$MSC = \frac{TR}{\hspace{15em}}$$

$$[IUR \times ET \times EF \times ED \times CF / (AT_c \times 365 \text{ days/yr} \times 24 \text{ hr/d} \times TF)] + (IUR \times CF \times TF)$$

- (5) **For trichloroethylene, the numeric value for inhalation from soil was calculated using the appropriate residential or nonresidential exposure assumptions from subsection (d) according to the following equation using the TF for volatiles:**

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/yr} \times 24 \text{ hr/day} \times TF}{(IUR_k \times AED + IUR_l \times ED) \times ET \times EF \times CF}$$

(c) For a regulated substance which is both a systemic toxicant and a carcinogen, the inhalation numeric value is the lower of the two numbers as calculated by the equations in subsections (a) and (b).

(d) The default exposure assumptions used to calculate the inhalation numeric values for soil are as follows:

Term		Residential		Nonresidential (Onsite Worker)
		Systemic ¹	Carcinogens ²	
THQ	Target Hazard Quotient	1	N/A	1
RfCi	Inhal. Reference Concentration (mg/m ³)	Chemical-specific	N/A	Chemical-specific
AT _{nc}	Averaging Time for systemic toxicants (yr)	30	N/A	25
TF	Transport Factor (mg/kg)/(mg/m ³) Volatilization ³ Particulate ⁴	Chemical-specific 1 x 10 ¹⁰	Chemical-specific 1 x 10 ¹⁰	Chemical-specific 1 x 10 ¹⁰
ET	Exposure Time (hr/day)	24	24	8
EF	Exposure Frequency ⁵ (d/yr)	250	250	180
ED	Exposure Duration (yr)	30	[N/A] 30	25
CF	Conversion Factor	[1000 µg/mg] N/A	1000 µg/mg	1000 µg/mg
TR	Target Risk	N/A	1 x 10 ⁻⁵	1 x 10 ⁻⁵
IUR	Inhalation Unit Risk (µg/m ³) ⁻¹	N/A	Chemical-specific	Chemical-specific
AT _c	Averaging Time for carcinogens	N/A	70	70

	(yr)			
AED	Combined Age-Dependent Adjustment Factor and Exposure Duration (yr) ⁶	N/A	76	N/A
<u>IUR_k</u>	<u>TCE inhalation unit risk for kidney cancer (ug/m³)⁻¹</u>		<u>1 x 10⁻⁶</u>	
<u>IUR_l</u>	<u>TCE inhalation unit risk for both non-Hodgkin lymphoma and liver cancer (ug/m³)⁻¹</u>		<u>3 x 10⁻⁶</u>	

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(g) For a regulated substance which is a carcinogen and is a volatile compound, the numeric value for the inhalation of volatiles from groundwater shall be calculated by using the appropriate residential or nonresidential exposure assumptions from subsection (h) according to the following equations:

- (1) For regulated substances not identified as a mutagen in Section 250.301(b):

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/year}}{IUR \times ET \times EF \times ED \times TF \times CF}$$

- (2) For regulated substances identified as a mutagen, except for vinyl chloride **and trichloroethylene**, in Section 250.301(b):

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/year} \times 24 \text{ hr/day}}{IUR \times ET \times EF \times AED \times TF \times CF}$$

- (3) For vinyl chloride:

$$MSC = \frac{TR}{[(IUR \times ET \times EF \times ED \times TF \times CF) / (AT_c \times 365 \text{ days/year} \times 24 \text{ hr/day})] + (IUR \times TF \times CF)}$$

- (4) **For trichloroethylene:**

$$MSC = \frac{TR \times AT_c \times 365 \text{ days/yr} \times 24 \text{ hr/day}}{(IUR_k \times AED + IUR_l \times ED) \times ET \times EF \times TF \times CF}$$

(h) The default exposure assumptions used to calculate the inhalation numeric values for the inhalation of volatiles from groundwater are as follows:

<i>Term</i>		<i>Residential</i>		<i>Nonresidential (Onsite Worker)</i>
		<i>Systemic</i> ¹	<i>Carcinogens</i> ²	
THQ	Target Hazard Quotient	1	N/A	1
RfCi	Inhal. Reference Concentration (mg/m ³)	Chemical-specific	N/A	Chemical-specific
AT _{nc}	Averaging Time for systemic toxicants (yr)	30	N/A	25
ET	Exposure Time (hr/day)	24	24	8
EF	Exposure Frequency (d/yr)	350	350	250
ED	Exposure Duration (yr)	30	30	25
TF	Transfer Factor (L/m ³) ³	0.5	0.5	0.5
CF	Conversion Factor	N/A	1,000 µg/mg	1,000 µg/mg
TR	Target Risk	N/A	1 x 10 ⁻⁵	1 x 10 ⁻⁵
IUR	Inhalation Unit Risk (ug/m ³) ⁻¹	N/A	Chemical-specific	Chemical-specific
AT _c	Averaging Time for carcinogens (yr)	N/A	70	70
AED	Combined Age-Dependent adjustment Factor and Exposure Duration (yr) ⁴	N/A	76	N/A
<u>IUR_k</u>	<u>TCE inhalation unit risk for kidney cancer (ug/m³)⁻¹</u>		<u>1 x 10⁻⁶</u>	

<u>IUR₁</u>	<u>TCE inhalation unit risk for both non- Hodgkin lymphoma and liver cancer ug/m³-1</u>		<u>3 x 10⁻⁶</u>	

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