

Health Risk Limit Proposed Rules Amendments, 2021/2022

REVISOR'S ID NUMBER 4396 NARRATIVE DESCRIPTION

Overview

The following tables provide a description of the proposed changes to the Health Risk Limit (HRL) Rules for 2021/2022. The HRL Rules reflect concentrations of a contaminant in groundwater that are expected to pose little to no risk when the water is consumed for the certain time period.

This document does not represent a certified copy of the proposed rules. This document is provided only as an alternative way to access information that will be provided in the certified copy of the proposed HRL Rules. The traditional use of strikethrough and underlining to indicate changes cannot be read by screen readers and some other assistive technologies. The words "Add," "From," "Remove," "Retain," and "To" are therefore used in place of strikethrough and underlines that indicate changes. A scan of the certified copy of the proposed rules with strikethrough and underlining will be also posted when it is available from the Office of the Revisor. If you have questions about the proposed rules or require access to the proposed rules in a different format, please contact the Health Risk Assessment unit at health.risk@state.mn.us.

Abbreviations:

(Many of the terms below are further defined in the [Health-Based Water Guidance Glossary \(https://www.health.state.mn.us/communities/environment/risk/docs/rules/hrlglossary.pdf\)](https://www.health.state.mn.us/communities/environment/risk/docs/rules/hrlglossary.pdf))

ADAF = Age-Dependent Adjustment Factor

AFlifetime = Lifetime Adjustment Factor

HRL = Health Risk Limit

NA = Not Applicable

ND = Not Derived

RfD = Reference Dose

RSC = Relative Source Contribution

SF = Slope Factor

Subp - Subpart

Minnesota Rules Part 4717.7500 Table of Health Risk Limits

Subparts 11, 15, 34a, 54, 61

Subpart	CAS RN	RfD* (milligrams per kilogram per day)	Slope factor* (the inverse of milligrams per kilogram per day)	Health Risk Limit (micrograms per liter)
Current Subpart 11: 1,1-Biphenyl (Diphenyl)	92-52-4	0.05	-	300
Proposed Subpart 11: 1,1-Biphenyl (Diphenyl)	Repeal	Repeal	Repeal	Repeal
Current Subpart 15: Bromodichloromethane	75-27-4	-	0.062	6
Proposed Subpart 15: Bromodichloromethane	Repeal	Repeal	Repeal	Repeal
Current Subpart 34a: 1,4-Dichlorobenzene (para)	106-46-7	-	0.024	10
Proposed Subpart 34a: 1,4-Dichlorobenzene (para)	Repeal	Repeal	Repeal	Repeal
Current Subpart 54: Fluorene (9H-Fluorene)	86-73-7	0.04	-	300
Proposed Subpart 54: Fluorene (9H-Fluorene)	Repeal	Repeal	Repeal	Repeal
Current Subpart 61: Manganese	7439-96-5	0.005	-	100
Proposed Subpart 61: Manganese	Repeal	Repeal	Repeal	Repeal

Minnesota Rules Part 4717.7860 Health Risk Limits Table

Change to: Subp 3c. Acetone as described below, preceded by the words “Add,” “From,” “Remove,” “Retain,” or “To.”

CAS number: 67-64-1

Change Year Adopted: From 2011 To 2022

Volatility: Moderate

	Acute	Short term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: 9,000 To: 5,000	From: 8,000 To: 5,000 (2)	From: 4,000 To: 3,000	NA
RfD (mg/kg-day)	--	From: 5.0 To: 3.1	From: 3.0 To: (2)	From: 0.90 To: 0.69	--
RSC	--	0.5	From: 0.2 To: (2)	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	From: 0.289 To: 0.290	From: 0.077 To: (2)	From: 0.043 To: 0.045	--
Endpoints	--	renal (kidney) system	Remove: hematological (blood) system Retain: renal (kidney) system	Retain: hematological (blood) system Add: hepatic (liver) system, Retain: renal (kidney) system	--

Add Subp 6c. Benzo[a]pyrene

CAS number: 50-32-8

HEALTH RISK LIMITS, PROPOSED RULES

Year Adopted: 2022

Volatility: Low

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	0.5	0.5 (2)	0.5 (2)	0.1
RFD (mg/kg-day)	--	0.00031	(2)	(2)	--
RSC	--	0.5	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	1
ADAF or AF_{lifetime}	--	--	--	--	10 (ADAF _{<2}) 3 (ADAF _{2 to <16}) 1 (ADAF ₁₆₊)
Intake Rate (L/kg-day)	--	0.290	(2)	(2)	0.155 _(<2) 0.040 _(2 to <16) 0.042 ₍₁₆₊₎
Endpoints	--	developmental, nervous system	developmental, nervous system	developmental, nervous system	cancer

Add Subp. 6d Benzophenone

CAS number: 119-61-9

Year Adopted: 2022

Volatility: Low

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	900	100	100 (3)	NA
RFD (mg/kg-day)	--	0.52	0.053	(3)	--
RSC	--	0.5	0.2	(3)	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	0.074	(3)	--
Endpoints	--	developmental	hepatic (liver) system, renal (kidney) system	hepatic (liver) system, renal (kidney) system	--

Add Subp. 6e. 1H-Benzotriazole

CAS number: 95-14-7

Year Adopted: 2022

Volatility: Low

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	20	20 (2)	20 (2)	NA
RFD (mg/kg-day)	--	0.023	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	(2)	--
Endpoints	--	developmental	developmental	developmental	--

HEALTH RISK LIMITS, PROPOSED RULES

Add Subp. 6f. 1,1'-Biphenyl

CAS number: 92-52-4

Year Adopted: 2022

Volatility: Moderate

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	400	100	100 (2)	100 (2)	10
RFD (mg/kg-day)	0.58	0.18	(2)	(2)	--
RSC	0.2	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	0.008
ADAF or AF_{lifetime}	--	--	--	--	10 (ADAF _{<2}) 3 (ADAF _{2 to <16}) 1 (ADAF ₁₆₊)
Intake Rate (L/kg-day)	0.290	0.290	(2)	(2)	0.155 _{<2} 0.040 _(2 to <16) 0.042 ₍₁₆₊₎
Endpoints	renal (kidney) system	renal (kidney) system	renal (kidney) system	renal (kidney) system	cancer

Re-number Subp. 6e to Subp. 6g Bisphenol A (BPA).

Add Subp. 6h Bromodichloromethane.

CAS number: 75-27-4

Year Adopted: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	400	30	30 (2)	30	3

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
RFD (mg/kg-day)	0.073	0.039	(2)	0.0075	--
RSC	0.2	0.2	(2)	0.2	--
SF (per mg/kg-day)	--	--	--	--	0.035
ADAF or AF _{lifetime}	--	--	--	--	10 (ADAF _{<2}) 3 (ADAF _{2 to <16}) 1 (ADAF ₁₆₊)
Intake Rate (L/kg-day)	0.038	0.290	(2)	0.045	0.155 _(<2) 0.040 _(2 to <16) 0.042 ₍₁₆₊₎
Endpoints	female reproductive system (E)	immune system, spleen	immune system, spleen	hepatic (liver) system	cancer

Renumber Subp. 6d to Subp. 6i Benzyl Butyl Phthalate.

Renumber Subp. 6e to Subp. 6j Cadmium.

Renumber Subp. 6f to Subp. 6k Carbamazepine.

Renumber Subp. 6g to Subp. 6l Carbon Tetrachloride.

Add Subp. 8f 1, 4-Dichlorobenzene

CAS number: 106-46-7

Year Adopted: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	50	50 (2)	50 (2)	NA
RFD (mg/kg-day)	--	0.069	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	(2)	--
Endpoints	--	developmental, hepatic (liver) system, nervous system	developmental, hepatic (liver) system, nervous system	developmental, hepatic (liver) system, nervous system	--

Renumber Subp. 8f to Subp. 8g Dichlorodifluoromethane.

Renumber Subp. 8g to Subp. 8h 1,2-Dichloroethane.

Renumber Subp. 8h to Subp. 8i trans-1,2-Dichloroethene.

Change Subp. 8i trans-1,2-Dichloroethane as described below, preceded by the words "From" "To."

CAS number: 156-60-5

Change Year Adopted: From: 2013 To: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	ND	From: 200 To: 50	From: 40 To: 9	NA
RFD (mg/kg-day)	--	--	From: 0.091 To: 0.020	From: 0.0091 To: 0.0020	--
RSC	--	--	0.2	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
Intake Rate (L/kg-day)	--	--	From: 0.077 To: 0.074	From: 0.043 To: 0.045	--
Endpoints	--	--	immune system	immune system	--

Renumber Subp. 8i to Subp. 8j 1,1-Dichloroethylene. (Vinylidene chloride).

Change Subp. 8j 1,1-Dichloroethylene (Vinylidene chloride) as described below, preceded by the words "From" and "To."

CAS number: 75-35-4

Change Year Adopted: From: 2011 To: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	ND	200	200	NA
RFD (mg/kg-day)	--	--	From: 0.090 To: 0.069	From: 0.046 To: 0.040	--
RSC	--	--	0.2	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	--	From: 0.077 To: 0.074	From: 0.043 To: 0.045	--
Endpoints	--	--	hepatic (liver) system	hepatic (liver) system	--

Add Subp. 12 17α-Ethinylestradiol

CAS number: 57-63-6

Year Adopted: 2022

Volatility: Nonvolatile

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	0.0005	0.0002	0.0002	NA
RFD (mg/kg-day)	--	1.7 x 10 ⁻⁷	1.4 x 10 ⁻⁸	1.4 x 10 ⁻⁸	--
RSC	--	0.8	0.8	0.8	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	0.074	0.045	--
Endpoints	--	developmental (E), female reproductive system (E), male reproductive system (E)	developmental	developmental	--

Renumber: Subp. 12a to Subp. 12b Ethylbenzene

Change: Subp. 12b. Ethylbenzene as described below, preceded by the words “From” and “To.”

CAS number: 100-41-4

Change Year Adopted: From: 2011 To: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: 50 To: 40	From: 50 (2) To: 40 (2)	From: 50 (2) To: 40 (2)	NA
RFD (mg/kg-day)	--	From: 0.075 To: 0.06	(2)	(2)	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	From: 0.289 To: 0.290	(2)	(2)	--
Endpoints	--	hepatic (liver) system, renal (kidney) system	hepatic (liver) system, renal (kidney) system	hepatic (liver) system, renal (kidney) system	--

Renumber: Subp. 12b to Subp. 12c S-Ethyl-N,N-dipropylthiocarbamate (EPTC).

Renumber: Subp. 12c to Subp. 12d Ethylene Glycol

Change: Subp. 12d Ethylene Glycol as described below, preceded by the words “Add,” “From,” “Retain,” and “To.”

CAS number: 107-21-1

Change Year Adopted: From: 2011 To: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	From: 4,000 To: ND	From: 4,000 To: 2,000	2,000	2,000	NA
RFD (mg/kg-day)	From: 0.756 To: --	From: 0.76 To: 0.33	From: 0.72 To: (2)	From: 0.5 To: (2)	--
RSC	From: 0.2 To: --	0.2	0.2	0.2	--
SF (per mg/kg-day)	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	From: 0.043 To: --	From: 0.043 To: 0.038	From: 0.077 To: (2)	From: 0.043 To: (2)	--
Endpoints	From: developmental To: --	developmental	developmental, renal (kidney) system	Retain: developmental Add: male reproductive system Retain: renal (kidney) system	--

Renumber: Subp. 12d to Subp. 12e Fluoranthene

Add: Subp. 12f Fluorene (9H-Fluorene)

CAS number: 86-73-7

Year Adopted: 2022

Volatility: Moderate

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	ND	200	80	NA
RFD (mg/kg-day)	--	--	0.058	0.018	--
RSC	--	--	0.2	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
Intake Rate (L/kg-day)	--	--	0.074	0.045	--
Endpoints	--	--	hematological (blood) system, spleen	hematological (blood) system, spleen	--

Add: Subp. 12g Fomesafen

CAS number: 72178-02-0

Year Adopted: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	200	200 (2)	20	NA
RFD (mg/kg-day)	--	0.12	(2)	0.005	--
RSC	--	0.5	(2)	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	0.045	--
Endpoints	--	developmental, hepatic (liver) system, immune system	developmental, hepatic (liver) system, immune system	hepatic (liver) system	--

Add Supb. 12h Imidacloprid

CAS number: 138261-41-3

Year Adopted: 2022

HEALTH RISK LIMITS, PROPOSED RULES

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	100	2	2 (2)	2 (2)	NA
RFD (mg/kg-day)	0.15	0.0036	(2)	(2)	--
RSC	0.2	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	0.290	0.290	(2)	(2)	--
Endpoints	nervous system	immune system	immune system	immune system	--

Add: Subp. 12i Manganese

CAS number: 7439-96-5

Year Adopted: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	100	ND	ND	NA
RFD (mg/kg-day)	--	0.083	--	--	--
RSC	--	0.5	--	--	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
Intake Rate (L/kg-day)	--	0.290	--	--	--
Endpoints	--	developmental, nervous system	--	--	--

Renumber Subp. 12e to Subp. 12j Metolachlor and S-Metolachlor

Change: Subp 12j Metolachlor and S-Metolachlor as described below in the table. Changes preceded by the words "From" and "To."

CAS number: 51218-45-2; 87392-12-9

Change Year Adopted: From: 2011 To: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	From: 400 To: ND	From: 400 To: 300	300 (2)	300 From: (3) To: (2)	NA
RFD (mg/kg-day)	From: 0.24 To: --	From: 0.24 To: 0.19	From: 0.097 To: (2)	From: (3) To: (2)	--
RSC	From: 0.5 To: --	0.5	From: 0.2 To: (2)	From: (3) To: (2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	From: 0.289 To: --	From: 0.289 To: 0.290	From: 0.077 To: (2)	From: (3) To: (2)	--
Endpoints	From: developmental To: --	developmental	From: none To: developmental	From: none To: developmental	--

HEALTH RISK LIMITS, PROPOSED RULES

Renumber Subp. 12f to Subp. 12k Metolachlor ESA

Change Subp. 12k Metolachlor ESA as described below in the table. Changes preceded by the words “From” and “To.”

CAS number: 171118-09-5

Change Year Adopted: From: 2011 To: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	ND	From: 4,000 To: 7,000	From: 800 To: 1,000	NA
RFD (mg/kg-day)	--	--	From: 1.7 To: 2.7	From: 0.17 To: 0.27	--
RSC	--	--	0.2	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	--	From: 0.077 To: 0.074	From: 0.043 To: 0.045	--
Endpoints	--	--	hepatic (liver) system	hepatic (liver) system	--

Renumber Subp. 12g to Subp. 12l Metolachlor OXA

Change Subp. 12k Metolachlor OXA as described below in the table. Changes preceded by the words “From” and “To.”

CAS number: 152019-73-3

Change Year Adopted: From: 2011 To: 2022

Volatility: Nonvolatile

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: 3,000 To: 5,000	From: 3,000 To: 5,000 (2)	From: 800 To: 1,000	NA
RFD (mg/kg-day)	--	From: 1.7 To: 2.7	(2)	From: 0.17 To: 0.27	--
RSC	--	0.5	(2)	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	From: 0.289 To: 0.290	(2)	From: 0.043 To: 0.045	--
Endpoints	--	none	none	none	--

Renumber: Subp. 12h to Subp. 12m Metribuzin

Renumber: Subp. 12i to Subp. 12n Naphthalene

Add: Subp. 13a p-Nonylphenol (4-Nonylphenol)

CAS number: 84852-15-3

Year Adopted: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	100	40	20	NA
RFD (mg/kg-day)	--	0.21	0.016	0.0049	--
RSC	--	0.2	0.2	0.2	--
SF (per mg/kg-day)	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	0.074	0.045	--
Endpoints	--	developmental, female reproductive system	renal (kidney) system	renal (kidney) system	--

Add: Subp. 13b tert-Octylphenol

CAS number: 140-66-9

Year Adopted: 2022

Volatility: Low

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	100	100 (2)	100 (2)	NA
RFD (mg/kg-day)	--	0.17	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	(2)	--
Endpoints	--	developmental	developmental	developmental	--

Change Subp. 14a Perfluorobutane sulfonate (PFBS) as described below. Changes preceded by the words “Add,” “From,” “Remove,” “Retain,” and “To.”

CAS number: **Add:** 45187-15-3; **Retain:** 375-73-5

HEALTH RISK LIMITS, PROPOSED RULES

Change Year Adopted: From: 2011 To: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: ND To: 3	From: 9 To: 3 (2)	From: 7 To: 2	NA
RFD (mg/kg-day)	--	From: -- To: 0.0016	From: 0.0042 To: (2)	From: 0.0014 To: 0.00043	--
RSC	--	From: -- To: 0.5	From: 0.5 To: (2)	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	From: -- To: 0.290	From: 0.245 To: (2)	From: 0.043 To: 0.045	--
Endpoints	--	From: -- To: developmental, female reproductive system (E), thyroid (E)	Remove: hepatic (liver) system, hematological (blood) system, renal (kidney) system, Add: developmental, female reproductive system (E), thyroid (E)	Remove: hepatic (liver) system, hematological (blood) system, Add: renal (kidney) system	--

Add Subp. 14c Perfluorohexane sulfonate (PFHxS) and salts

CAS number: 108427-53-8; 355-46-4; 3871-99-6

Year Adopted: 2022

Volatility: Nonvolatile

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	NA	0.047	0.047	0.047	NA
RFD (mg/kg-day)	--	0.0000097	0.0000097	0.0000097	--
RSC	--	0.5	0.5	0.5	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	*	*	*	--
Endpoints	--	hepatic (liver) system, thyroid (E)	hepatic (liver) system, thyroid (E)	hepatic (liver) system, thyroid (E)	--

* 95th percentile water intake rates (Tables 3-1, 3-3, and 3-5 Environmental Protection Agency, Exposure Factors Handbook, 2019) or upper percentile breastmilk intake rates (Table 15-1, Environmental Protection Agency, Exposure Factors Handbook, 2011).

Change Subp. 15. Perfluorooctane sulfonate (PFOS) and salts as described below. Changes preceded by the words “Add,” “From,” and “To.”

CAS number: 45298-90-6; 1763-23-1; 29081-56-9; 70225-14-8; 2795-39-3; 29457-72-5

Change Year Adopted: From: 2009 To: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: ND To: 0.015	From: ND To: 0.015	From: 0.3 To: 0.015	NA
RFD (mg/kg-day)	--	From: -- To: 0.0000031	From: -- To: 0.0000031	From: 0.00008 To: 0.0000031	--
RSC	--	From: -- To: 0.5	--	0.2	--
SF (per mg/kg-day)	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	From: -- To: *	From: -- To: *	From: 0.049 To: *	--
Endpoints	--	From: -- To: adrenal (E), developmental, hepatic (liver) system, immune system, thyroid (E)	From: -- To: adrenal (E), developmental, hepatic (liver) system, immune system, thyroid (E)	Add: adrenal (E), Retain: developmental, hepatic (liver) system, Add: immune system, Retain: thyroid (E)	--

Add: * 95th percentile water intake rates (Tables 3-1, 3-3, and 3-5 in the Environmental Protection Agency, Exposure Factors Handbook, 2019) or upper percentile breastmilk intake rates (Table 15-1, Environmental Protection Agency, Exposure Factors Handbook, 2011),

Add Subp. 16b Quinoline

CAS number: 91-22-5

Year Adopted: 2022

Volatility: Low

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	ND	ND	4	0.03
RFD (mg/kg-day)	--	--	--	0.00079	--
RSC	--	--	--	0.2	--
SF (per mg/kg-day)	--	--	--	--	3
ADAF or AF_{lifetime}	--	--	--	--	10 (ADAF<2) 3 (ADAF2 to <16) 1 (ADAF16+)

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
Intake Rate (L/kg-day)	--	--	--	0.045	0.155 _(<2) 0.040 _(2 to <16) 0.042 ₍₁₆₊₎
Endpoints	--	--	--	hematological (blood) system, hepatic (liver) system, renal (kidney) system, respiratory system, and spleen	cancer

Change Sub. 18 Toluene as described below. Changes preceded by the words “Add,” “From,” and “To.”

CAS number: 108-88-3

Change Year Adopted: From: 2011 To: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: 200 To: 70	From: 200 (2) To: 70 (2)	From: 200 (2) To: 70 (2)	NA
RFD (mg/kg-day)	--	From: 0.22 To: 0.10	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	From: 0.289 To: 0.290	(2)	(2)	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
Endpoints	--	immune system, nervous system	immune system, nervous system	immune system, nervous system	--

Add Subp. 21b 1,2,3-Trimethylbenzene

CAS number: 526-73-8

Year Adopted: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	30	30 (2)	30 (2)	NA
RFD (mg/kg-day)	--	0.042	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	(2)	--
Endpoints	--	nervous system	nervous system	nervous system	--

Add Subp. 21c 1,2,4-Trimethylbenzene

CAS number: 95-63-6

Year Adopted: 2022

Volatility: High

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	30	30 (2)	30 (2)	NA
RFD (mg/kg-day)	--	0.042	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	(2)	--
Endpoints	--	nervous system	nervous system	nervous system	--

Change Subp. 22 1,3,5-Trimethylbenzene as described below. Changes preceded by the words "Add," "From," and "To."

CAS number: 108-67-8

Change: Year Adopted: From: 2009 To: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	From: 100 To: 30	From: 100 To: 30 (2)	From: 100 To: 30 (2)	NA
RFD (mg/kg-day)	ND --	From: 0.14 To: 0.042	(2)	(2)	--
RSC	--	0.2	(2)	(2)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--

HEALTH RISK LIMITS, PROPOSED RULES

	Acute	Short-term	Subchronic	Chronic	Cancer
Intake Rate (L/kg-day)	--	From: 0.289 To: 0.290	(2)	(2)	--
Endpoints	--	Remove: hepatic (liver) system, Add: nervous system	Remove: hepatic (liver) system, renal (kidney) system Add: nervous system	Remove: hepatic (liver) system, renal (kidney) system Add: nervous system	--

Add Subp. 22a Tris(2-butoxyethyl) phosphate (TBEP)

CAS number: 78-51-3

Year Adopted: 2022

Volatility: Nonvolatile

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	ND	30	30 (2)	30	NA
RFD (mg/kg-day)	--	0.043	(2)	0.0074	--
RSC	--	0.2	(2)	0.2	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF_{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	--	0.290	(2)	0.045	--
Endpoints	--	hepatic (liver) system	hepatic (liver) system	hepatic (liver) system	--

HEALTH RISK LIMITS, PROPOSED RULES

Renumber Subp. 22a to Subp. 22b Tris(2-chloroethyl) phosphate.

Change Subp. 23 Xylenes as described below. Changes preceded by the words “Add,” “From,” “Remove,” “Retain,” and “To.”

CAS number: 1330-20-7

Year Adopted: 2022

Volatility: High

	Acute	Short-term	Subchronic	Chronic	Cancer
HRL (µg/L)	From: 800 To: 700	300	Retain: 300 Remove: (2)	Retain: 300 Remove: (2) Add: (3)	NA
RFD (mg/kg-day)	From: 1.2 To: 1.0	From: 0.50 To: 0.38	From: (2) To: 0.12	From: (2) To: (3)	--
RSC	0.2	0.2	From: (2) To: 0.2	From: (2) To: (3)	--
SF (per mg/kg-day)	--	--	--	--	--
ADAF or AF _{lifetime}	--	--	--	--	--
Intake Rate (L/kg-day)	From: 0.289 To: 0.290	From: 0.289 To: 0.290	Remove: (2) Add: 0.074	From: (2) To: (3)	--
Endpoints	nervous system	Add: developmental, Retain: nervous system	Add: developmental, Retain: nervous system, renal (kidney) system	Add: developmental, Retain: nervous system, renal (kidney) system	--

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Minnesota Department of Health

Health Risk Assessment Unit

PO Box 64975

St. Paul, MN 55165-0975

651-201-4899

health.risk@state.mn.us

www.health.state.mn.us