

Summary of Changes to Numerical Standards in the Massachusetts Contingency Plan 310 CMR 40.0000

October 17, 2023

The following tables summarize changes to numerical standards in the Massachusetts Contingency Plan (310 CMR 40.0000) that will become effective on March 1, 2024. Values that will remain unchanged are not included here.

Prior to March 1, 2024, the revised Method 1 Groundwater and Soil Standards (Tables 1 through 4) and the revised Method 2 Soil Standards (Table 5) may be used as part of an MCP Risk Characterization pursuant to 310 CMR 40.0982(7). This provision states:

The Department may develop and publish sets of chemical-specific concentrations which, for specific types of disposal sites, will demonstrably meet the Risk Characterization requirements described at 40.0990. Such concentrations may be used at the RP's, PRP's or Other Person's option to characterize risk at a disposal site, and the use of these sets of concentrations shall be considered a Method 2 Risk Characterization.

Note that the concentrations that pose or could pose an Imminent Hazard (310 CMR 40.0321(2)) and the Method 3 Ceiling Limits for Groundwater and Soil (Table 6) are not effective until March 1, 2024.

310 CMR 40.0321(2)

...

(b) a release to the environment indicated by the measurement of concentrations of hazardous material, equal to or greater than any of the following concentrations at the ground surface or within a depth of twelve inches below the ground surface, at any location within 500 feet of a residential dwelling, school, playground, recreation area or park, unless access by children is controlled or prevented by means of bituminous pavement, concrete, fence, or other physical barrier

Hazardous Material	CAS number	Concentration (ug/g dry wt)
Arsenic (total)	7440382	40 <u>50</u>
Cadmium (total)	7440439	60 <u>1,000</u>
Mercury (total)	7439976	300 <u>400</u>

310 CMR 40.0974(2): TABLE 1 ††

MCP Method 1 GROUNDWATER STANDARDS
 APPLICABLE IN AREAS WHERE THE GROUNDWATER IS CONSIDERED TO BE ONE OR MORE OF THE
 FOLLOWING CATEGORIES PER 310 CMR 40.0932

Oil and/or Hazardous Material	CAS Number	GW-1 Standard ug/liter (ppb)	GW-2 Standard ug/liter (ppb)	GW-3 Standard ug/liter (ppb)
ACENAPHTHYLENE	208-96-8	30 40	10,000	40
ANTHRACENE	120-12-7	60 100	NA	30
BIPHENYL, 1,1-	92-52-4	0.9 2	200	50,000
CADMIUM	7440-43-9	5	NA	4 8
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	100	80 90	50,000
DIOXANE, 1,4-	123-91-1	0.3	6,000 5,000	50,000
FLUORENE	86-73-7	30 40	NA	40
PHENANTHRENE	85-01-8	40 50	NA	10,000
PHENOL	108-95-2	1,000 900	50,000	2,000
PYRENE	129-00-0	60 70	NA	20
SELENIUM	7782-49-2	50	NA	100 50
TETRACHLOROETHYLENE	127-18-4	5	50 20	30,000

310 CMR 40.0975(6)(a): TABLE 2 ††

MCP Method 1: SOIL CATEGORY S-1 STANDARDS

APPLICABLE TO SOIL WHERE THE COMBINATION OF SOIL & GROUNDWATER CATEGORIES ARE:

Oil and/or Hazardous Material	CAS Number	S-1 SOIL & GW-1 ug/g (ppm)	S-1 SOIL & GW-2 ug/g (ppm)	S-1 SOIL & GW-3 ug/g (ppm)
ACENAPHTHYLENE	208-96-8	1 2	600	10
ALDRIN	309-00-2	0.08 0.09	0.08 0.09	0.08 0.09
BENZO(a)ANTHRACENE	56-55-3	7 20	7 20	7 20
BENZO(b)FLUORANTHENE	205-99-2	7 20	7 20	7 20
BENZO(k)FLUORANTHENE	207-08-9	70 200	70 200	70 200
BERYLLIUM	7440-41-7	90 100	90 100	90 100
BIPHENYL, 1,1-	92-52-4	0.05	6	1,000 200
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	90 100	90 100	90 100
BROMODICHLOROMETHANE	75-27-4	0.1	0.1	30 40
CADMIUM	7440-43-9	70 80	70 80	70 80
CHLORDANE	12789-03-6	5 6	5 6	5 6
CHRYSENE	218-01-9	70 200	70 200	70 200
DIBENZO(a,h)ANTHRACENE	53-70-3	0.7 2	0.7 2	0.7 2
DIBROMOCHLOROMETHANE	124-48-1	0.005	0.03	20 30
DICHLOROBENZENE, 1,4- (p-DCB)	106-46-7	0.7	1	80 100
DICHLORODIPHENYL DICHLOROETHANE, P,P'- (DDD)	72-54-8	8 10	8 10	8 10
DICHLORODIPHENYL DICHLOROETHYLENE,P,P'- (DDE)	72-55-9	6 7	6 7	6 7
DICHLORODIPHENYL TRICHLOROETHANE, P,P'- (DDT)	50-29-3	6 7	6 7	6 7
DICHLOROETHANE, 1,2-	107-06-2	0.1	0.1	20 30
DICHLOROMETHANE	75-09-2	0.1	4 3	400 300
DICHLOROPHENOL, 2,4-	120-83-2	0.7	60 70	40
DICHLOROPROPANE, 1,2-	78-87-5	0.1	0.1	30 60
DIELDRIN	60-57-1	0.08 0.09	0.08 0.09	0.08 0.09
DIOXANE, 1,4-	123-91-1	0.2	6 5	20
ENDOSULFAN	115-29-7	0.5 0.6	300	1
ENDRIN	72-20-8	10 20	10 20	10 20
HEPTACHLOR EPOXIDE	1024-57-3	0.1 0.2	0.1 0.2	0.1 0.2
HEXACHLOROCYCLOHEXANE, GAMMA (gamma-HCH)	58-89-9	0.003	1 2	0.5
INDENO(1,2,3-cd)PYRENE	193-39-5	7 20	7 20	7 20
METHOXYCHLOR	72-43-5	200 300	200 300	200 300
METHYL MERCURY	22967-92-6	4 5	4 5	4 5
NICKEL	7440-02-0	600 700	600 700	600 700
PERCHLORATE	-	0.1	3 4	3 4
PHENOL	108-95-2	1 0.9	50	20
STYRENE	100-42-5	3	4	70 80

310 CMR 40.0975(6)(a): TABLE 2 ††

MCP Method 1: SOIL CATEGORY S-1 STANDARDS

APPLICABLE TO SOIL WHERE THE COMBINATION OF SOIL & GROUNDWATER CATEGORIES ARE:

Oil and/or Hazardous Material	CAS Number	S-1 SOIL & GW-1 ug/g (ppm)	S-1 SOIL & GW-2 ug/g (ppm)	S-1 SOIL & GW-3 ug/g (ppm)
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	0.1	0.1	80 90
TETRACHLOROETHYLENE	127-18-4	1	10 4	30 100
VANADIUM	7440-62-2	400 500	400 500	400 500
VINYL CHLORIDE	75-01-4	0.9 0.3	0.7 0.3	1 0.3

310 CMR 40.0975(6)(b): TABLE 3 ††

MCP Method 1: SOIL CATEGORY S-2 STANDARDS
APPLICABLE TO SOIL WHERE THE COMBINATION OF SOIL & GROUNDWATER CATEGORIES ARE:

Oil and/or Hazardous Material	CAS Number	S-2 SOIL & GW-1	S-2 SOIL & GW-2	S-2 SOIL & GW-3
		ug/g (ppm)	ug/g (ppm)	ug/g (ppm)
ACENAPHTHYLENE	208-96-8	1 2	600	10
ANTIMONY	7440-36-0	30 40	30 40	30 40
BENZO(a)ANTHRACENE	56-55-3	40 300	40 300	40 300
BENZO(a)PYRENE	50-32-8	7 30	7 30	7 30
BENZO(b)FLUORANTHENE	205-99-2	40 300	40 300	40 300
BENZO(k)FLUORANTHENE	207-08-9	400 3,000	400 3,000	400 3,000
BIPHENYL, 1,1-	92-52-4	0.05	6	3,000 1,000
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.7	0.7	8 9
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	600 700	600 700	600 700
BROMODICHLOROMETHANE	75-27-4	0.1	0.1	100 200
CADMIUM	7440-43-9	100 80	100 80	100 80
CHRYSENE	218-01-9	400 3,000	400 3,000	400 3,000
DIBENZO(a,h)ANTHRACENE	53-70-3	4 30	4 30	4 30
DICHLOROMETHANE	75-09-2	0.1	4 3	700 800
DICHLOROPHENOL, 2,4-	120-83-2	0.7	60 70	40
DICHLOROPROPANE, 1,2-	78-87-5	0.1	0.1	100 300
DICHLOROPROPENE, 1,3-	542-75-6	0.01	0.4	90 100
DIELDRIN	60-57-1	0.5 0.6	0.5 0.6	0.5 0.6
DIOXANE, 1,4-	123-91-1	0.2	6 5	90 100
ENDOSULFAN	115-29-7	0.5 0.6	500	1
ENDRIN	72-20-8	20 30	20 30	20 30
HEPTACHLOR EPOXIDE	1024-57-3	0.9 1	0.9 1	0.9 1
HEXACHLOROBENZENE	118-74-1	0.8 0.9	0.8 0.9	0.8 0.9
HEXACHLOROETHANE	67-72-1	0.7	3	200 300
INDENO(1,2,3-cd)PYRENE	193-39-5	40 300	40 300	40 300
MERCURY	7439-97-6	30 40	30 40	30 40
METHYL MERCURY	22967-92-6	8 9	8 9	8 9
PERCHLORATE	-	0.1	5 6	5 6
PHENOL	108-95-2	1 0.9	50	20
RDX	121-82-4	1	80 90	80 90
SELENIUM	7782-49-2	700 800	700 800	700 800
TETRACHLORODIBENZO-p-DIOXIN (TCDD), 2,3,7,8-(equivalents)	1746-01-6	5 6.E-05	5 6.E-05	5 6.E-05
TETRACHLOROETHYLENE	127-18-4	1	10 4	200 500
THALLIUM	7440-28-0	60 70	60 70	60 70

310 CMR 40.0975(6)(b): TABLE 3 ††

MCP Method 1: SOIL CATEGORY S-2 STANDARDS
 APPLICABLE TO SOIL WHERE THE COMBINATION OF SOIL & GROUNDWATER CATEGORIES ARE:

Oil and/or Hazardous Material	CAS Number	S-2 SOIL & GW-1 ug/g (ppm)	S-2 SOIL & GW-2 ug/g (ppm)	S-2 SOIL & GW-3 ug/g (ppm)
TRICHLOROETHYLENE	79-01-6	0.3	0.3	60 70
VANADIUM	7440-62-2	700 800	700 800	700 800
VINYL CHLORIDE	75-01-4	0.9	0.7	7 10

310 CMR 40.0975(6)(c): TABLE 4 ††

MCP Method 1: SOIL CATEGORY S-3 STANDARDS
 APPLICABLE TO SOIL WHERE THE COMBINATION OF SOIL & GROUNDWATER CATEGORIES ARE:

Oil and/or Hazardous Material	CAS Number	S-3 SOIL & GW-1 ug/g (ppm)	S-3 SOIL & GW-2 ug/g (ppm)	S-3 SOIL & GW-3 ug/g (ppm)
ACENAPHTHYLENE	208-96-8	1 2	600	10
ALDRIN	309-00-2	3 4	3 4	3 4
ANTIMONY	7440-36-0	30 40	30 40	30 40
ARSENIC	7440-38-2	50 60	50 60	50 60
BENZO(a)ANTHRACENE	56-55-3	300 2,000	300 2,000	300 2,000
BENZO(b)FLUORANTHENE	205-99-2	300 2,000	300 2,000	300 2,000
BENZO(k)FLUORANTHENE	207-08-9	3,000 5,000	3,000 5,000	3,000 5,000
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.7	0.7	80 90
CADMIUM	7440-43-9	100 80	100 80	100 80
CHRYSENE	218-01-9	3,000 5,000	3,000 5,000	3,000 5,000
DIBENZO(a,h)ANTHRACENE	53-70-3	30 200	30 200	30 200
DICHLORODIPHENYL DICHLOROETHANE, P,P'- (DDD)	72-54-8	60 70	60 70	60 70
DICHLORODIPHENYL DICHLOROETHYLENE,P,P'- (DDE)	72-55-9	60 70	60 70	60 70
DICHLORODIPHENYL TRICHLOROETHANE, P,P'- (DDT)	50-29-3	60 70	60 70	60 70
DICHLOROMETHANE	75-09-2	0.1	4 3	700 800
DICHLOROPHENOL, 2,4-	120-83-2	0.7	60 70	40
DIELDRIN	60-57-1	3 4	3 4	3 4
DINITROTOLUENE, 2,4-	121-14-2	0.7	50	80 90
DIOXANE, 1,4-	123-91-1	0.2	6 5	500
ENDOSULFAN	115-29-7	0.5 0.6	500	1
ENDRIN	72-20-8	20 30	20 30	20 30
ETHYLENE DIBROMIDE	106-93-4	0.1	0.1	40 50
HEXACHLOROBENZENE	118-74-1	0.8 0.9	0.8 0.9	0.8 0.9
HEXACHLOROETHANE	67-72-1	0.7	3	200 300
INDENO(1,2,3-cd)PYRENE	193-39-5	300 2,000	300 2,000	300 2,000
MERCURY	7439-97-6	30 40	30 40	30 40
METHYL MERCURY	22967-92-6	8 9	8 9	8 9
PENTACHLOROPHENOL	87-86-5	3	70 80	10
PERCHLORATE	-	0.1	5 6	5 6
PHENOL	108-95-2	1 0.9	50	20
SELENIUM	7782-49-2	700 800	700 800	700 800
TETRACHLORODIBENZO-p-DIOXIN (TCDD), 2,3,7,8-(equivalents)	1746-01-6	5 6.E-05	5 6.E-05	5 6.E-05
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.005	0.02	400 500
TETRACHLOROETHYLENE	127-18-4	1	10 4	1,000 800

310 CMR 40.0975(6)(c): TABLE 4 ††

MCP Method 1: SOIL CATEGORY S-3 STANDARDS
 APPLICABLE TO SOIL WHERE THE COMBINATION OF SOIL & GROUNDWATER CATEGORIES ARE:

Oil and/or Hazardous Material	CAS Number	S-3 SOIL & GW-1 ug/g (ppm)	S-3 SOIL & GW-2 ug/g (ppm)	S-3 SOIL & GW-3 ug/g (ppm)
THALLIUM	7440-28-0	80 90	80 90	80 90
TRICHLOROETHYLENE	79-01-6	0.3	0.3	60 70
VANADIUM	7440-62-2	700 800	700 800	700 800
VINYL CHLORIDE	75-01-4	0.9	0.7	60 100

310 CMR 40.0985(6): TABLE 5 ††
MCP Method 2: DIRECT CONTACT EXPOSURE-BASED SOIL CONCENTRATIONS APPLICABLE TO THE SPECIFIED SOIL CATEGORY.

Oil and/or Hazardous Material	CAS Number	Soil Category S-1 ug/g (ppm)	Soil Category S-2 ug/g (ppm)	Soil Category S-3 ug/g (ppm)
ALDRIN	309-00-2	0.08 0.09	0.5	3 4
ANTIMONY	7440-36-0	20	30 40	30 40
ARSENIC	7440-38-2	20	20	50 60
BENZO(a)ANTHRACENE	56-55-3	7 20	40 300	300 2,000
BENZO(a)PYRENE	50-32-8	2	7 30	30
BENZO(b)FLUORANTHENE	205-99-2	7 20	40 300	300 2,000
BENZO(k)FLUORANTHENE	207-08-9	70 200	400 3,000	3,000 5,000
BERYLLIUM	7440-41-7	90 100	200	200
BIPHENYL, 1,1-	92-52-4	1,000 200	3,000 1,000	5,000
BIS(2-CHLOROETHYL)ETHER	111-44-4	2	8 9	80 90
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	90 100	600 700	2,000
BROMODICHLOROMETHANE	75-27-4	30 40	100 200	500
BROMOMETHANE	74-83-9	90 100	600 700	600 700
CADMIUM	7440-43-9	70 80	100 80	100 80
CHLORDANE	12789-03-	5 6	30	60
CHLOROPHENOL, 2-	95-57-8	100	300 400	300 400
CHRYSENE	218-01-9	70 200	400 3,000	3,000 5,000
DIBENZO(a,h)ANTHRACENE	53-70-3	0.7 2	4 30	30 200
DIBROMOCHLOROMETHANE	124-48-1	20 30	100	500
DICHLOROBENZENE, 1,4- (p-DCB)	106-46-7	80 100	400	3,000
DICHLORODIPHENYL DICHLOROETHANE, P,P'- (DDD)	72-54-8	8 10	40	60 70
DICHLORODIPHENYL DICHLOROETHYLENE,P,P'- (DDE)	72-55-9	6 7	30	60 70
DICHLORODIPHENYL TRICHLOROETHANE, P,P'- (DDT)	50-29-3	6 7	30	60 70
DICHLOROETHANE, 1,2-	107-06-2	20 30	100	900 1,000
DICHLOROMETHANE	75-09-2	400 300	700 800	700 800
DICHLOROPHENOL, 2,4-	120-83-2	70 80	800 900	800 900
DICHLOROPROPANE, 1,2-	78-87-5	30 60	100 300	1,000
DICHLOROPROPENE, 1,3-	542-75-6	20	90 100	900 1,000
DIELDRIN	60-57-1	0.08 0.09	0.5 0.6	3 4
DINITROPHENOL, 2,4-	51-28-5	50	800 900	800 900
DINITROTOLUENE, 2,4-	121-14-2	2	10	80 90
DIOXANE, 1,4-	123-91-1	20	90 100	500
ENDRIN	72-20-8	10 20	20 30	20 30
ETHYLENE DIBROMIDE	106-93-4	1	5	40 50
HEPTACHLOR EPOXIDE	1024-57-3	0.1 0.2	0.9 1	1
HEXACHLOROBENZENE	118-74-1	0.7	0.8 0.9	0.8 0.9

310 CMR 40.0985(6): TABLE 5 ††
MCP Method 2: DIRECT CONTACT EXPOSURE-BASED SOIL CONCENTRATIONS APPLICABLE TO THE SPECIFIED SOIL CATEGORY.

Oil and/or Hazardous Material	CAS Number	Soil Category S-1 ug/g (ppm)	Soil Category S-2 ug/g (ppm)	Soil Category S-3 ug/g (ppm)
HEXACHLOROCYCLOHEXANE, GAMMA (gamma-HCH)	58-89-9	1 2	7 8	60 70
HEXACHLOROETHANE	67-72-1	50	200 300	200 300
INDENO(1,2,3-cd)PYRENE	193-39-5	7 20	40 300	300 2,000
MERCURY	7439-97-6	20	30 40	30 40
METHOXYCHLOR	72-43-5	200 300	400	400
METHYL MERCURY	22967-92-	4 5	8 9	8 9
NICKEL	7440-02-0	600 700	1,000	1,000
PENTACHLOROPHENOL	87-86-5	3	20	70 80
PERCHLORATE	NA	3 4	5 6	5 6
RDX	121-82-4	20	80 90	400
SELENIUM	7782-49-2	400	700 800	700 800
STYRENE	100-42-5	70 80	300	3,000
TETRACHLORODIBENZO-p-DIOXIN (TCDD), 2,3,7,8-(equivalents)	1746-01-6	2.E-05	5 6.E-05	5 6.E-05
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	80 90	400	500
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	10	50	400 500
TETRACHLOROETHYLENE	127-18-4	30 100	200 500	1000 800
THALLIUM	7440-28-0	8	60 70	80 90
TRICHLOROETHYLENE	79-01-6	30	60 70	60 70
TRICHLOROPHENOL 2,4,6-	88-06-2	20 30	400	400
VANADIUM	7440-62-2	400 500	700 800	700 800
VINYL CHLORIDE	75-01-4	1 0.3	7 10	60 100

310 CMR 40.0996(7): TABLE 6 ††

MCP Method 3: METHOD 3 CEILING LIMITS (M3CLs)
IN GROUNDWATER AND
SOIL

Oil and/or Hazardous Material	CAS Number	M3CLs IN GROUNDWATER ug/L (ppb)	M3CLs IN SOIL ug/g (ppm)
ALDRIN	309-00-2	300	30 40
ANTHRACENE	120-12-7	600 1,000	10,000
ANTIMONY	7440-36-0	80,000	300 400
ARSENIC	7440-38-2	9,000	500 600
BENZO(a)ANTHRACENE	56-55-3	10,000	3,000 10,000
BENZO(b)FLUORANTHENE	205-99-2	4,000	3,000 10,000
BIS(2-CHLOROETHYL)ETHER	111-44-4	100,000	800 900
BROMOMETHANE	74-83-9	8,000	6,000 7,000
CADMIUM	7440-43-9	50 80	1,000 800
CHLOROPHENOL, 2-	95-57-8	100,000	3,000 4,000
DIBENZO(a,h)ANTHRACENE	53-70-3	400	300 2,000
DICHLORODIPHENYL DICHLOROETHANE, P,P'- (DDD)	72-54-8	500	600 700
DICHLORODIPHENYL DICHLOROETHYLENE,P,P'- (DDE)	72-55-9	4,000	600 700
DICHLORODIPHENYL TRICHLOROETHANE, P,P'- (DDT)	50-29-3	10	600 700
DICHLOROETHANE, 1,2-	107-06-2	100,000	9,000 10,000
DICHLOROMETHANE	75-09-2	100,000	7,000 8,000
DICHLOROPHENOL, 2,4-	120-83-2	100,000	8,000 9,000
DICHLOROPROPENE, 1,3-	542-75-6	2,000	9,000 10,000
DIELDRIN	60-57-1	80	30 40
DINITROPHENOL, 2,4-	51-28-5	100,000	8,000 9,000
DINITROTOLUENE, 2,4-	121-14-2	100,000	800 900
ENDRIN	72-20-8	50	200 300
ETHYLENE DIBROMIDE	106-93-4	100,000	400 500
HEXACHLOROBENZENE	118-74-1	60,000	8 9
HEXACHLOROCYCLOHEXANE, GAMMA (gamma-HCH)	58-89-9	2,000	600 700
HEXACHLOROETHANE	67-72-1	100,000	2,000 3,000
INDENO(1,2,3-cd)PYRENE	193-39-5	1,000	3,000 10,000
MERCURY	7439-97-6	200	300 400
METHYL MERCURY	22967-92-6	200	80 90
PENTACHLOROPHENOL	87-86-5	2,000	700 800
PERCHLORATE	-	10,000	50 60
PYRENE	129-00-0	600 700	10,000
SELENIUM	7782-49-2	1,000 500	7,000 8,000
TETRACHLORODIBENZO-p-DIOXIN (TCDD), 2,3,7,8-	1746-01-6	4.E-01	5 6.E-04
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	100,000	4,000 5,000
TETRACHLOROETHYLENE	127-18-4	100,000	10,000 8,000

310 CMR 40.0996(7): TABLE 6 ††

MCP Method 3: METHOD 3 CEILING LIMITS (M3CLs)
IN GROUNDWATER AND
SOIL

Oil and/or Hazardous Material	CAS Number	M3CLs IN GROUNDWATER ug/L (ppb)	M3CLs IN SOIL ug/g (ppm)
THALLIUM	7440-28-0	30,000	800 900
TRICHLOROETHYLENE	79-01-6	50,000	600 700
VANADIUM	7440-62-2	40,000	7,000 8,000
VINYL CHLORIDE	75-01-4	100,000	600 1,000