



PHASE II FACT SHEET

*National Primary Drinking Water
Regulations for 38 Inorganic and
Synthetic Organic Chemicals*

January 1991

*Office of Drinking Water
U.S. Environmental Protection Agency
Washington, D.C.*

Summary

These regulations will:

- Promulgate Maximum Contaminant Level Goals (MCLGs) and Maximum Contaminant Levels (MCLs) or treatment technique requirements for 33 contaminants; and,
- Repropose MCLGs and MCLs for aldicarb, aldicarb sulfoxide, aldicarb sulfone, pentachlorophenol, and barium.

When both rulemakings are final:

- The addition of the 38 contaminants regulated in phase II will nearly double the number of MCLs water systems must meet from 34 to 60. Phase II will establish:
 - 27 new MCLs; and,
 - 11 revised MCLs.
- The final and proposed rulemakings will establish:
 - 12 new pesticide standards for a total of 18;
 - Two new inorganic standards and delete one standard for a total of 11;
 - 10 new volatile organics standards for a total of 18;
 - Treatment technique requirements for two contaminants; and,
 - One additional standard for PCBs.

These rules also include additional provisions for:

- Analytical methods and laboratory performance requirements;
- Best Available Technologies (BATs) for compliance with the MCLs and for the purpose of issuing variances;
- Secondary standards for silver and aluminum to address aesthetic considerations;
- Mandatory health effects language to be used by systems when notifying the public of violations; and
- State reporting, recordkeeping and primacy requirements.



Implementation Dates

January 1991	Standards for 33 contaminants promulgated Standards for 5 contaminants repropoed
July 1991	Standards for 5 contaminants promulgated
July 1992	Standards for 33 contaminants effective State adoption
January 1993	Standards for 5 contaminants effective Monitoring for 38 contaminants begins

Regulatory Impact

- These regulations will reduce the exposure of three million consumers to the regulated contaminants and result in an estimated reduction of 73 cancer cases per year.
- Pesticides are expected to result in most violations, costs and benefits.
- Total costs to all public water systems will be approximately \$88 million per year.
- State implementation costs will be \$21 million initially and \$17 million in future years.
- Additional monitoring will be required for 200,000 systems.
 - 80,000 community and non-transient non-community systems must monitor for all contaminants.
 - 120,000 transient non-community systems must monitor for nitrate and nitrite.
 - Monitoring requirements will be standardized to 3/6/9 year cycles.
 - Monitoring costs will generally be less than \$10 per household per year.
 - It will cost \$24 million per year for systems to monitor.
 - Monitoring for the 30 unregulated contaminants (contaminants that will be regulated in future rulemakings) will cost systems an additional \$39 million.
- Approximately 3300 or 3% of all public water systems will be required to provide treatment or find an alternate source of water.
 - Treatment will cost \$10 to \$800 per household depending upon system size, degree of contamination, and other factors.
 - It will cost systems \$64 million to provide treatment .
 - Exemptions will be allowed for small systems based on costs.



Phase II National Primary Drinking Water Regulations

Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) ¹			Sources	Analytic Method	BAT
		Final MCLG	Final MCL	Current MCL			
Inorganics							
Asbestos	benign tumors	7 MFL ²	7 MFL ²	-	natural mineral deposits; also in Asbestos/Cement (A/C) pipe	TEM	C/F; DF DMF; CC
Barium ³	circulatory system	2	2	1	natural mineral deposits; oil/gas drilling operations; paint & other industrial uses	GFAA; ICP; DAAA	IE; LS; RO; ED
Cadmium	kidney	0.005	0.005	0.01	natural mineral deposits; metal finishing; corrosion product in plumbing	GFAA; ICP	C/F; LS; RO; IE
Chromium	liver/kidney, skin, and digestive system	0.1	0.1	0.05	natural mineral deposits; metal finishing, textile, tanning and leather industries	GFAA; ICP	C/F; LS RO; IE
Mercury	kidney, nervous system	0.002	0.002	0.002	industrial/chemical manufacturing; fungicide; natural mineral deposits	MCV; ACV	GAC; LS; C/F; RO
Nitrate	methemoglobinemia "blue-baby syndrome"	10	10	10	fertilizers, feedlots, sewage; naturally in soil, mineral deposits	MCR; AHR; ACR; ISE; IC	IE; RO; EDR
Nitrite	methemoglobinemia "blue-baby syndrome"	1	1	-	unstable, rapidly converted to nitrate; prohibited in working metal fluids	ACR; MCR; IC; SP	IE; RO
Total Nitrate/Nitrite	-----	10	10	-	-----	-----	-----
Selenium	nervous system	0.05	0.05	0.01	natural mineral deposits; by-product of copper mining/smelting	GHAA; GFAA	EDR; C/F AA; LS; RO

¹ Final MCLGs and MCLs become effective July 1992. At that time, the current MCLs cease to be effective.

² MFL = million fibers per liter, with fiber length >10 microns.

³ Levels for barium, aldicarb, aldicarb sulfone, aldicarb sulfoxide and pentachlorophenol are proposed. Final levels will be established by July 1991.

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Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) ¹			Sources	Analytic Method	BAT
		Final MCLG	Final MCL	Current MCL			
Volatile Organics							
o-Dichlorobenzene	nervous system, lung, liver, kidney	0.6	0.6	-	industrial solvent; chemical manufacturing	All VOCS: 502.1	All VOCs: GAC/PTA
cis-1,2 dichloroethylene	nervous system, liver, circulatory	0.07	0.07	-	industrial extraction solvent	502.2 503.1 524.1 524.2	
trans-1,2 dichloroethylene	nervous system, liver, circulatory	0.1	0.1	-	industrial extraction solvent		
1,2 Dichloropropane	probable cancer, liver, lungs, kidney	0	0.005	-	soil fumigant; industrial solvent		
Ethylbenzene	kidney, liver, nervous system	0.7	0.7	-	present in gasoline & insecticides; chemical manufacturing		
Monochlorobenzene	kidney, liver, nervous system	0.1	0.1	-	pesticide manufacturing; metal cleaner; industrial solvent		
Styrene	liver, nervous system	0.1	0.1	-	plastic manufacturing; resins used in water treatment equipment		
Tetrachloroethylene	probable cancer	0	0.005	-	dry cleaning/industrial solvent		
Toluene	kidney, nervous system, lung	1	1	-	chemical manufacturing; gasoline additive; indust. solvent		
Xylenes	liver, kidney, nervous system	10	10	-	paint/ink solvent; gasoline refining by-product; component of detergents		

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Phase II National Primary Drinking Water Regulations

Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) ¹			Sources	Analytic Method	BAT
		Final MCLG	Final MCL	Current MCL			
Pesticides and PCBs							
Alachlor (Lasso)	probable cancer	0	0.002	-	herbicide on corn and soybeans; under review for cancellation	505, 507 525	GAC
Aldicarb ² (Temik)	nervous system	0.001	0.003	-	insecticide on cotton, potatoes; restricted in many areas due to groundwater contam.	531.1	GAC
Aldicarb sulfone ²	nervous system	0.002	0.003	-	degraded from aldicarb by plants	531.1	GAC
Aldicarb sulfoxide ²	nervous system	0.001	0.003	-	degraded from aldicarb by plants	531.1	GAC
Atrazine (Atranex, Crisazina)	reproductive and cardiac	0.003	0.003	-	widely used herbicide on corn, and on non-crop land	505, 507 525	GAC
Carbofuran (Furadan 4F)	nervous system and reproductive	0.04	0.04	-	soil fumigant/insecticide on corn/cotton; restricted in some areas	531.1	GAC
Chlordane	probable cancer	0	0.002	-	soil insecticide for termite control, corn, potatoes; most uses cancelled in 1980	505, 508, 525	GAC
Dibromochloropropane (DBCP, Nemaflume)	probable cancer	0	0.0002	-	soil fumigant on soybeans, cotton; cancelled in 1977	504	GAC/PTA
2,4-D (Formula 40, Weedar 64)	liver, kidney, nervous system	0.07	0.07	0.1	herbicide for wheat, corn, rangelands	515.1	GAC
Ethylene Dibromide (EDB, Bromofume)	probable cancer	0	0.00005	-	gasoline additive, soil fumigant, solvent cancelled in 1984; limited uses continue	504	GAC/PTA
Heptachlor (H-34, Heptox)	probable cancer	0	0.0004	-	insecticide on corn; cancelled in 1983 for all but termite control	505, 508, 525	GAC
Heptachlor epoxide	probable cancer	0	0.0002	-	soil & water organisms convert heptachlor to the epoxide	505, 508, 525	GAC

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Contaminants	Drinking Water Health Effects	EPA Standards (mg/l) ¹			Sources	Analytic Method	BAT
		Final MCLG	Final MCL	Current MCL			
Pesticides and PCBs (cont'd)							
Lindane	nervous system, liver, kidney	0.0002	0.0002	0.004	insecticide for seed/lumber/livestock pest control; most uses restricted in 1983	505, 508, 525	GAC
Methoxychlor (DMDT, Marlate)	nervous system, liver, kidney,	0.04	0.04	0.1	insecticide on alfalfa, livestock	505, 508, 525	GAC
Polychlorinated Biphenyls (PCBs, Aroclor)	probable cancer	0	0.0005	-	electrical transformers, plasticizers; banned in 1979	505, 508 (screen), 508A	GAC
Pentachlorophenol ²	probable cancer, liver, kidney	0	0.001	-	wood preservative & herbicide; non-wood uses banned in 1987	525	GAC
Toxaphene	probable cancer	0	0.003	0.005	insecticide/herbicide for cotton, soybeans; cancelled in 1982	505	GAC
2,4,5-TP (Silvex)	nervous system, liver, kidney	0.05	0.05	0.01	herbicide on rangelands, sugarcane, golf courses; cancelled in 1983.	515.1	GAC
Treatment Techniques							
Acrylamide	probable cancer, nervous system	0	0.005% dosed at 1 mg/l		flocculents in sewage/wastewater treatment	none	limit use
Epichlorohydrin	probable cancer, liver, kidney, lungs	0	0.01% dosed at 20 mg/l		epoxy resins & coatings, flocculents used in treatment	none	limit use

Analytical Methods Key:

TEM = Transmission Electron Microscopy	ACV = Automated Cold Vapor	ISE = Ion Selective Electrode
GFAA = Graphite Furnace Atomic Absorption	GHAA = Gaseous Hydride Atomic absorption	IC = Ion Chromatography
DAAA = Direct Aspiration Atomic Absorption	MCD = Manual Cadmium Reduction	SP = Spectrophotometric
ICP = Inductively Coupled Plasma	ACR = Automated Cadmium Reduction	
MCV = Manual Cold Vapor	AHR = Automated Hydrazine Reduction	

Best Available Technology Key:

AA = Activated Alumina	GAC = Granular Activated Charcoal
C/F = Coagulation/Filtration	IE = Ion Exchange
DF = Direct Filtration	LS = Lime Softening
DMF = Diatomite Filtration	RO = Reverse Osmosis
EDR = Electrodialysis Reversal	PTA = Packed Tower Aeration
CC = Corrosion Control	

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Compliance Monitoring Requirements

Contaminant	Base Requirement		Trigger that Increases Monitoring	Waivers
	Ground water	Surface water		
5 Inorganics	1 Sample every 3 years	Annual sample	> MCL	YES Based on analytical results of 3 rounds
Asbestos	1 Sample every 9 years		>MCL	YES Based on VA ¹
Nitrate	Annual After 1 year < 50% of MCL, SWS may reduce to an annual sample	Quarterly	≥ 50% MCL	NO
Nitrite	1 Sample - If < 50% of MCL, state discretion		≥ 50% MCL	NO
18 VOCs	Quarterly for one year Annual after 1 year of no detects		≥ 0.0005 mg/l	YES Based on VA ¹
17 Pesticides and PCBs	4 Quarterly samples every 3 years After 1 round of no detects; systems >3,300 reduce to 2 samples per year every 3 years, systems ≤ 3,300 reduce to 1 sample every 3 years		Detection	YES Based on VA ¹
Unregulated - 6 IOCs - 24 SOCs	1 Sample 4 Consecutive quarterly		N.A.	YES Based on VA ¹

¹ VA = Vulnerability Assessment



For More Information

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EPA Region 1

Water Supply Branch
JFK Federal Building
Boston, MA 02203
(617) 565-3655

*Connecticut,
Massachusetts, Maine,
New Hampshire, Rhode
Island, Vermont*

EPA Region 2

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*New Jersey, New York,
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EPA Region 3

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EPA Region 10

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