

Office of Drinking Water
Environmental Protection Agency
August 1987

**SUBSTITUTES AND REPLACEMENTS FOR SUBSTANCES
ON THE ORIGINAL LIST OF 83**

Schedule

- o Signed by the Administrator on June 19, 1987
- o Published in the Federal Register on July 8, 1987

Substitutes

- 7 substitutes allowed
- Criteria for selection
 - Are there sufficient health effects data upon which to select an MCLG?
 - Are there potential adverse health effects from exposure to the contaminant via ingestion?
 - Does the contaminant occur in drinking water?
 - Has the contaminant been detected in significant frequencies and in a widespread manner?
 - If data are limited on the frequency and nature of contamination, is there a significant potential for drinking water contamination?
- Candidates for Removal
 - Zinc
 - Silver
 - Sodium
 - Aluminum
 - Molybdenum
 - Vanadium
 - Dibromomethane
- In addition, listed for public comment are:
 - Sulfate
 - Phthalates
 - 1,1,2-Trichloroethane
- Candidates for Addition
 - Aldicarb sulfoxide
 - Aldicarb sulfone
 - Ethylbenzene
 - Heptachlor
 - Heptachlor epoxide
 - Styrene
 - Nitrite

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VOLATILE ORGANIC COMPOUNDS (VOCs)

SCHEDULE

- o ANPRM March 4, 1982 (47 FR 9350)
- o Proposed MCLGs June 12, 1984 (49 FR 24330)
- o Final MCLGs, proposed MCLs, Monitoring Nov. 13, 1985
- o November 13, 1985 Federal Register
 - Extension of public comment period for 45 days on tetrachloroethylene MCLG.
 - NTP Report recently released
- o Public Briefing: December 19, 1985 Washington, D.C.
- o Public Hearing: January 13-14, 1986 Washington, D.C.
- o Reproposed MCLG and proposed MCL for para-dichlorobenzene: April 17, 1987
- o Public Hearing: May 4, 1987
- o Promulgation: July 8, 1987 (Signature date: June 19, 1987)

SUMMARY OF THE FINAL VOC MCLs AND MONITORING REQUIREMENTS:

<u>VOCs: Final MCLGs and MCLs (in mg/l)</u>		
	<u>Final MCLG*</u>	<u>Final MCL</u>
Trichloroethylene	zero	0.005
Carbon Tetrachloride	zero	0.005
Vinyl Chloride	zero	0.002
1,2-Dichloroethane	zero	0.005
Benzene	zero	0.005
para-Dichlorobenzene	0.075	0.075
1,1-Dichloroethylene	0.007	0.007
1,1,1-Trichloroethane	0.2	0.2

*Final MCLGs were published Nov. 13, 1985. The MCLG and MCL for p-dichlorobenzene were repropoed at zero and 0.005 mg/l on April 17, 1987; comment was requested on levels of 0.075 mg/l and 0.075 mg/l, respectively.

BAT for 1412 (MCLs):

- o Packed tower aeration (PTA) and granular activated carbon (GAC) for the eight VOCs, except vinyl chloride.
- o PTA for vinyl chloride.

BAT for 1415 (Variances):

- o Same as BAT for 1412.

Compliance Monitoring:

- o Initial Monitoring: All systems must monitor each source at least once in four years.
 - Surface waters: 4 quarterly samples
 - Ground waters: 4 quarterly samples; state can exempt systems from subsequent monitoring if no VOCs detected in first sample,
 - Composite samples of up to five sources allowed
- o Phase in by system size (start monitoring: January 1, 1988).

<u>Size</u>	<u>Complete by</u>	<u>Date</u>
> 10,000	1 year	December 31, 1988
3300-10,000	2 years	December 31, 1989
< 3300	4 years	December 31, 1991

- o Repeat monitoring: varies from quarterly to once per five years. The frequency is based on whether VOCs are detected in the first round of monitoring and whether system is vulnerable to contamination.

Analytical Methods: GC or GC/MS

- o Methods 504, 502.1, 503.1, 524.1, 524.2, 502.2

Laboratory Certification Criteria:

- o Seven VOCs: $\pm 20\%$ ≥ 0.004 mg/l
 $\pm 40\%$ < 0.004 mg/l
- o Vinyl Chloride: $\pm 40\%$ < 0.004 mg/l

Non-transient Non-community Water Systems (NTNCWS):

- o Non-community water systems which regularly serve at least 25 of the same persons over 6 months per year (i.e., NTNCWS) are required to meet all requirements in this rule.

Point-of-Entry (POE), Point-of-Use (POU), and Bottled Water:

- o POE may be used to achieve compliance with MCLs but is not BAT.
- o POU and bottled water cannot be used to meet MCLs.

Variances and Exceptions

- o As a condition of issuing a variance or exemption, states have the authority to require the water system to implement additional interim control measures. If an unreasonable risk to health exists, the state must require either installation of point-of-use devices or distribution of bottled water to each customer.

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MONITORING FOR SECTION 1445 (UNREGULATED) CONTAMINANTS

Schedule:

- o NPRM -- November 13, 1985
- o Promulgation -- July 8, 1987
(Included in the VOC package)

Summary:

- o 51 contaminants were published (See Table 1)
- o Requirements for contaminant monitoring established by availability and cost of analytical methods as follows:
 - List 1 - Required monitoring by all systems
(34 substances)
 - List 2 - Required for vulnerable systems
(2 substances)
 - List 3 - Required at state discretion
(15 substances)
- o Systems may grandfather acceptable data collected anytime after January 1, 1983 if consistent with the current rule.
- o Compositing of up to 5 samples is permitted.
- o Instead of monitoring, systems with fewer than 150 connections may send a letter to the State specifying that their system is available for sampling. However, we encourage them to actually perform the analyses along with the compliance monitoring required for the VOC MCLs.
- o Estimated cost is about \$200 per analysis for compliance and monitoring
- o EPA will produce a new list every 5 years

UNREGULATED CONTAMINANTS PUBLISHED WITH VOC RULE
Table 1

List 1 -- All systems must monitor for:

- | | |
|--------------------------------|--------------------------------|
| (1) Chloroform | (18) 1,1-Dichloroethane |
| (2) Bromodichloromethane | (19) 1,2-Dichloropropane |
| (3) Chlorodibromomethane | (20) 1,1,2,2-Tetrachloroethane |
| (4) Bromoform | (21) Ethylbenzene |
| (5) trans-1,2-Dichloroethylene | (22) 1,3-Dichloropropane |
| (6) Chlorobenzene | (23) Styrene |
| (7) m-Dichlorobenzene | (24) Chloromethane |
| (8) Dichloromethane | (25) Bromomethane |
| (9) cis-1,2-Dichloroethylene | (26) 1,2,3-Trichloropropane |
| (10) o-Dichlorobenzene | (27) 1,1,1,2-Tetrachloroethane |
| (11) Dibromomethane | (28) Chloroethane |
| (12) 1,1-Dichloropropene | (29) 1,1,2-Trichloroethane |
| (13) Tetrachloroethylene | (30) 2,2-Dichloropropane |
| (14) Toluene | (31) o-Chlorotoluene |
| (15) p-Xylene | (32) p-Chlorotoluene |
| (16) o-Xylene | (33) Bromobenzene |
| (17) m-Xylene | (34) 1,3-Dichloropropene |

List 2 -- Vulnerable systems must monitor for:

- (1) Ethylene dibromide (EDB) (1)
- (2) 1,2-Dibromo-3chloropropane (DBCP)

List 3 -- Systems must monitor at State discretion for:

- | | |
|----------------------------|------------------------------|
| (1) 1,2,4-Trimethylbenzene | (8) 1,3,5-Trimethylbenzene |
| (2) 1,2,4-Trichlorobenzene | (9) p-Isopropyltoluene |
| (3) 1,2,3-Trichlorobenzene | (10) Isopropylbenzene |
| (4) n-Propylbenzene | (11) Tert-butylbenzene |
| (5) n-Butylbenzene | (12) Sec-butylbenzene |
| (6) Naphthalene | (13) Fluorotrichloromethane |
| (7) Hexachlorobutadiene | (14) Dichlorodifluoromethane |
| | (15) Bromochloromethane |

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DRINKING WATER PRIORITY LIST (DWPL)

- Schedule
 - Published on July 8, 1987
 - Final notice will be published in December 1987
- Criteria for selection
 - Occurrence or potential occurrence in drinking water
 - Adverse health effects
 - Sufficient data available to set MCLG and MCL
- Lists from which substances were taken to compile the DWPL
 - 7 contaminants substituted out of list of 83
 - Disinfectants and disinfection by-products
 - 100 chemicals on the Superfund priority list
 - Pesticides included in the National Pesticides Survey
 - VOCs in unregulated VOC monitoring rule
 - Other contaminants found in various surveys
- Drinking Water Priority List (DWPL)

Zinc	2,4-Dinitrotoluene
Silver	1,3-Dichloropropane
Sodium	Bromobenzene
Aluminum	Chloromethane
Molybdenum	Bromomethane
Vanadium	1,2,3-Trichloropropane
Dibromomethane	1,1,1,2-Tetrachloroethane
Chlorine	Chloroethane
Hypochlorite ion	2,2-Dichloropropane
Chlorine dioxide	o-chlorotoluene
Chlorite	p-chlorotoluene
Chloramine	hexachlorobenzene
Ammonia	hexachloroethane
Trihalomethanes (chloroform, dibromochloromethane, bromo- dichloromethane, bromoform)	hexachlorobutadiene
Chlorophenols	1,1-dichloropropene
Halonitriles	2,4,5-T
Selected disinfection related chlorinated acids, alcohols, aldehydes, and ketones	Isophorone
Chloropicrin	Ethylene thiourea
	Boron
	Strontium
	<u>Cryptosporidium</u>