

40 C.F.R. § 444.12

Monitoring requirements.

(a) Both direct and indirect dischargers must monitor to establish compliance with their limitations and standards. Thus, all the permits of all direct dischargers must include requirements to monitor, according to EPA-approved test procedures, each pollutant limited in the permit, the volume of effluent discharged from each outfall, and other appropriate measurements subject to notification requirements. See 40 CFR 122.44(i). EPA's pretreatment regulations similarly require indirect dischargers to monitor to demonstrate compliance with pretreatment standards. See 40 CFR 403.12(g).

(b) Incorporation by reference:

(1) Compliance with the monitoring requirements may be accomplished using approved test procedures listed in the table to this paragraph. Most of these test procedures have previously been incorporated by reference at 40 CFR 136.3(a), Table IB. The test procedures for the regulated pollutants (arsenic, cadmium, chromium (total), copper, pH, lead, mercury, TSS, silver, titanium, and zinc) listed in the table to this paragraph are also incorporated by reference into this regulation. The full texts of the test procedures listed in this paragraph are available from the sources indicated in paragraph (b)(2) of this section. In addition to those test procedures incorporated by reference at 40 CFR 136.3(a), Table IB, you may also use EPA Method 200.8, "Determination of Trace Elements in Water and Wastes by Inductively Coupled Plasma-Mass Spectrometry," from "Methods for Determination of Metals in Environmental Samples—Supplement I," EPA-600/R-94-111, May 1994, and ASTM Method D 5673-96, "Standard Test Method for Elements in Water by Inductively Coupled Plasma—Mass Spectrometry," from 1999 Annual Book of ASTM Standards, for determination of arsenic, cadmium, chromium (total), copper, lead, silver, and zinc. The full texts of these methods are incorporated by reference into this regulation and may be obtained from the sources identified in paragraph (b)(2) of this section.

List of Approved Inorganic Test Procedures

Parameter, units and method	Reference (method number or page)				
	EPA 16	Standard Methods [18th Edition] 6	ASTM	USGS 2	Other
1. Arsenic—Total, 4 mg/L:					
Digestion 4 followed by	206.5				
AA gaseous hydride	206.3	3114B 4.d	D2972-93(B)	I-3062-85	
AA furnace	206.2	3113B	D2972-93(C)		

ICP/AES ¹⁵	5 200.7	3120 B			
Colorimetric (SDDC), or	206.4	3500–As C	D2972–93(A)	I–3060–85	
ICP/MS	7 200.8		D5673–96 ¹⁷		
2. Cadmium—Total, 4 mg/L; Digestion 4 followed by:					
AA direct aspiration ¹⁵	213.1	3111 B or C	D3557–90(A or B)	I–3135–85 or I–3136–85	974.27, 3 p. 37.
AA furnace	213.2	3113 B	D3557–90(D)		
ICP/AES ¹⁵	5 200.7	3120 B			
DCP ¹⁵			D4190–82(88)	I–1472–85	(¹⁴)
Voltametry ⁹					
Colorimetric (Dithizone), or		3500–Cd D	D3557–90(C)		
ICP/MS	7 200.8		D5673–96 ¹⁷		
3. Chromium–Total, 4 mg/L; Digestion 4 followed by:					
AA direct aspiration ¹⁵	218.1	3111 B	D1687–92(B)	I–3236–85	974.27. 3
AA chelation–extraction	218.3	3111 C			
AA furnace	218.2	3113 B	D1687–92(C)		
ICP/AES ¹⁵	5 200.7	3120 B			
DCP ¹⁵			D4190–82(88)		(¹⁴)
Colorimetric (Diphenylcarbazide), or		3500–Cr D			
ICP/MS	7 200.8		D5673–96 ¹⁷		
4. Copper—Total, 4 mg/L; Digestion 4 followed by:					

AA direct aspiration ¹⁵	220.1	3111 B or C	D1688–90(A or B)	I–3270–85 or I–3271–85	974.27 3 p. 37.8
AA furnace	220.2	3113 B	D1688–90(C)		
ICP/AES ¹⁵	5 200.7	3120 B			
DCP ¹⁵ or			D4190–82(88)		(14)
Colorimetric (Neocuproine) or (Bicinchoninate), or		3500–Cu D or E			(10)
ICP/MS	7 200.8		D5673–96 ¹⁷		
5. Hydrogen ion (pH), pH units:					
Electrometric measurement	150.1	4500–H + B	D1293–84 (90)(A or B)	I–1586–85	973.41.
Automated electrode					(11)
6. Lead—Total, 4 mg/L; Digestion 4 followed by:					
AA direct aspiration ¹⁵	239.1	3111 B or C	D3559–90(A or B)	I–3399–85	974.27. 3
AA furnace	239.2	3113 B	D3559–90(D)		
ICP/AES ¹⁵	5 200.7	3120 B			
DCP ¹⁵			D4190–82(88)		(14)
Voltametry ⁹			D3559–90(C)		
Colorimetric (Dithizone), or		3500–Pb D			
ICP/MS	7 200.8		D5673–96 ¹⁷		
7. Mercury—Total, 4 mg/L:					
Cold vapor, manual or	245.1	3112 B	D3223–91	I–3462–85	977.22. 3
Automated	245.1				
8. Residue—nonfilterable (TSS), mg/L:					

Gravimetric, 103–105–post washing of residue	160.2	2540 D		I-3765–85	
9. Silver—Total, 4 mg/L; Digestion 4 ¹² followed by:					
AA direct aspiration	272.1	3111 B or C		I-3720–85	974.27 3 p. 37.8
AA furnace	272.2	3113 B			
ICP/AES	5 200.7	3120 B			
DCP, or					(14)
ICP/MS	7 200.8		D5673–96 ¹⁷		
10. Titanium—Total, 4 mg/L; Digestion 4 followed by:					
AA direct aspiration	283.1	3111 D			
AA furnace, or	283.2				
DCP					(14)
11. Zinc—Total, 4 mg/L; Digestion 4 followed by:					
AA direct aspiration ¹⁵	289.1	3111 B or C	D1691–90(A) or B)	I-3900–85	974.27, 3 p. 37.8
AA furnace	289.2				
ICP/AES ¹⁵	5 200.7	3120 B			
DCP ¹⁵			D4190–82(88)		(14)
Colorimetric (Dithizone) or		3500–Zn E			
(Zincon), or		3500–Zn F			(13)
ICP/MS	7 200.8		D5673–96 ¹⁷		

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