Subject Index

A
Air sampling
for volatile metals, 140(illus)
Alcohol fuel oil
polychlorophenol analysis, 6(table)
Analysis of variance (ANOVA), 21
ANOVA (See Analysis of variance)
Antimony
EPA reference values, 63(table)
hydride generation atomic-absorption spectroscopy, 62-66, 64-65(tables)
Arsenic
EPA reference values, 63(table)
hydride generation atomic-absorption spectroscopy, 62-66, 64-65(tables)
Ash (See Bottom ash; Coal ash; Fly ash)
ASTM Standards
C 192-81: 70
C 305-82: 70
D 559-76: 69

B
Beilstein flame emission test, 153
Bottom ash
extraction procedure, 112-129, 114(table)
TCLP vs extraction procedure, 115-129, 116-119, 121-127(tables)
Butyltins
liquid chromatography-graphite furnace atomic absorption spectroscopy, 133

C
Cement pastes
ASTM Standard C 191-81: 70
CERCLA (See Comprehensive Environmental Response, Compensation, and Liability Act)
Chemical speciation
organometals, 130-143, 132, 138(illus)
in solution/gases, 130-139
on surfaces, 140-143
Chlorooctadecane
in crankcase oil, 163(table)
flame photometry, 163(table)
in waste oil, 163(table)
Chromatography
gas, 136-139
liquid, 133-139
Clay
2,3,7,8-tetrachlorodibenzo-p-dioxin, analysis, 8, 9(table)
CLP (See Contract Laboratory Program)
Coal ash
extraction procedure, 112-129, 114(table)
TCLP vs extraction procedure, 115-129, 116-119, 121-127(tables)
Coal-fired power plant waste
extraction procedure, 112-129, 114(table)
TCLP vs extraction procedure, 115-129, 116-119, 121-127(table)
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
impact on other state/federal programs, 146-151
Concrete test specimens
ASTM Standard C 305-82: 70
Contaminants (See Antimony; Arsenic; Butyltins; Chlorooctadecane; Dibenzo-p-dioxins, chlorinated; Dibenzo furans, chlorinated; Halogenated solvents; Inorganic compounds; Mercury; Metals; Organometals; Pesticides; Selenium; Semivolatile organic compounds; Sodium chloride; Tetrachloroethylene; Tin; Toxicity characteristic contaminants; Trace elements; Trichlorobenzene)
Contract Laboratory Program, 15, 81-86, 146-151

D
Data quality objectives
groundwater monitoring, 103(table), 103-111, 106, 107, 108(tables)
Dibenzo-p-dioxins, chlorinated
analysis in complex matrices, 1-13
Method 8280, 3(illus)
method detection limits, 7(table)
Dibenzofurans, chlorinated
analysis in complex matrices, 1-13
Method 8280, 3(illus)
method detection limits, 7(table)

Drinking water
analytical laboratory certification, 81-86
health-based criteria, 149(table)
maximum contaminant levels, 149(table)
method detection levels, 149(table)

E

EC/EPA/AEC/Industry Cooperative Study, 67-75
EPA (See U.S. Environmental Protection Agency)
Epifluorescence microscopy, 140
Extraction procedure (EP)
EPA round-robin study, 112-129
modification of, 14
TCLP vs extraction procedure, 115-129, 116-119, 121-127(tables)

F

Flame photometry (See Photometry, flame)
Fly ash
2,3,7,8-tetrachlorodibenzo-p-dioxin, 11(table)
extraction procedure, 112-129, 114(table)
terlaboratory study, toxic contaminants, 18-61, 76-80
octachlorodibenzo-p-dioxin, 12(table)
TCLP vs extraction procedure, 115-129, 116-119, 121-127(tables)
trace element analysis, 76-80

Fuel oil
dibenzo-p-dioxins, chlorinated, analysis, 6, 7(tables)
dibenzofurans, chlorinated, analysis, 6, 7(tables)
polychlorophenol analysis, 6, 7(tables)
recycled halide content, 152-165
in waste oil, 152-165, 160-163(tables)

Halogenated solvents
in crankcase oil, 162-163(tables)
in waste oil, 152-165, 160-163(tables)

Hazardous waste
analysis (See specific wastes, e.g. Fly ash, Mining sediments)
regulations (See also Quality assurance; Quality control)
EPA compliance monitoring, 101-111
EPA organizational chart, 102

HG-AA [See Hydride generation-atomic absorption (HG-AA) spectroscopy]

Hydride generation-atomic absorption (HG-AA) spectroscopy, 62-66, 87-89

I

ICP-AES (See Inductively coupled plasma-atomic emission spectroscopy)

Inductively coupled plasma-atomic emission spectroscopy, 62-66, 76-80, 87-99

Inorganic compounds
accuracy of analysis, 107, 108(tables)
in coal-fired power plant waste, 112-129, 114, 116-119, 120-128(tables)

Interlaboratory evaluation
dibenzo-p-dioxins, chlorinated, 1-13, 7-9, 11, 12(tables)
dibenzofurans, chlorinated, 1-13, 7-9, 11, 12(tables)
inductively-coupled plasma-atomic emission spectroscopy, 76-80
TCLP vs extraction procedure, 112-129
Toxicity Characteristic Leaching Procedure, 14-61

L

Laboratory Certification Program, 81-86, 146-151
Laboratory quality control
metal/inorganic/organic analysis, 103(table)

Land waste disposal
EPA monitoring of, 101-111
organizational chart, 102

Leaching tests, 112-129
dynamic type, 69
equilibrium type, 68-69
Toxicity Characteristic Leaching Procedure, 14-61, 68-69, 112-129
contaminants/methods/regulatory levels, 16-17(table)
flowchart, 20

G

Groundwater monitoring, 101-111

H

Halide testing
in crankcase oil, 162-163(tables)
SUBJECT INDEX  171

M

MDL (See Method detection limit)

Mercury
gas chromatography-element selective detector, 136-139

Metals (See also Organometals)
bacterial transformation of, 130-131
methylation of, 132, 137-138, 138(illus)
regulatory levels, 16-17(table)
TCLP analysis, 31-33(tables), 38-40(tables), 44, 48-49(tables)

Method detection limits, 5-7
dibenzo-p-dioxins, chlorinated, 7(table)
dibenzo furans, chlorinated, 7(table)
drinking water contaminants, 149(table)

Method validation (See also Interlaboratory evaluation)

Toxicity Characteristic Leaching Procedure, 15

Microbial processes
and metal transformation, 130-131, 139
Thiobacillus ferrooxidans, 139

Microscopy, epifluorescence, 140

MID (See Multiple ion detection descriptors)

Mining sediments
organometals analysis, 136-138

Mortars
ASTM Standard C 191-81: 70

Multiple ion detection descriptors, 2, 4, 10
Multivariate statistics
and TCLP accuracy, 15, 21-27

N

National Pollutant Discharge Elimination System, 146-151

NPDES (See National Pollutant Discharge Elimination System)

Oils
alcohol
polychlorophenol analysis, 6(table)
fuel
dibenzo-p-dioxins, chlorinated, analysis, 6, 7(tables)
dibenzo furans, chlorinated, analysis, 6, 7(tables)
field screening, 152-165
halide content, 152-165
shale
liquid chromatography-graphite furnace atomic absorption spectroscopy, 134

Organometals
bacterial transformation, 130-131
as environmental pollutants, 131(table)
flame photometry defector (FPD) analysis, 136-139
waste analysis, 130-143

Oxygen bomb method, 160(table)

P

PCDDs (See Dibenzo-p-dioxins, chlorinated)

PCDFs (See Dibenzofurans, chlorinated)

Pesticides
accuracy of analysis, 106, 107(tables)
regulatory levels, 16-17(tables)
TCLP analysis, 33-35(tables), 37-38(tables), 42, 45, 50-51(tables)

Photometry, flame, 136-139, 152-165, 157(illus), 158(illus)

Polychlorinated diphenyl ethers (PCDE), 2, 4

Polychlorophenols
in industrial waste, 1-13

Pore water
liquid chromatography-graphite furnace atomic absorption spectroscopy, 134
organometals analysis, 134

Q

Quality assurance
drinking water, 81-86
groundwater monitoring, 103-111
project plan, 103

New Jersey Department of Environmental Protection, 146-151
waste analysis, 81-86
New Jersey requirements, 147
wastewater, 81-86

Quality control
metal/inorganic/organic analysis, 103(table)
reporting form, 147(table)

R

RCRA (See Resource Conservation and Recovery Act)

Regulatory levels
toxic contaminants, 16-17(table)

Resource Conservation and Recovery Act (RCRA)
laboratory certification, 81-86
Method 8280, 1-13
flow chart, 3(illus)
round-robin study, leaching methods, 112-129
TCLP vs extraction procedure, 115-129
Round-robin evaluation (See also Interlaboratory evaluation) 
leaching methods, 112-129 
TCLP vs extraction procedure, 115-129 

S
Safe Drinking Water Act, 146-151
Sandblasting grit 
liquid chromatography-graphite furnace atomic absorption spectroscopy, 133
SDWA (See Safe Drinking Water Act)
Sediment 
selenium analysis, 92-97, 96, 97(tables)
Selenium 
analysis techniques, 87-99
EPA reference values, 63(table)
hydride generation atomic-absorption spectroscopy, 62-66, 64-65(tables)
in sediment, 92-97, 96, 97(tables)
in vegetation, 92-97, 94, 95, 96, 97(tables)
in water, 91, 91-92, 92(tables)
Semivolatile organic compounds 
regulatory levels, 16-17(table)
TCLP analysis, 28-31(tables), 35-36, 40, 41, 43, 46-47(tables)
Shale oils 
liquid chromatography-graphite furnace atomic absorption spectroscopy, 134
Sludge 
2,3,7,8-tetrachlorodibenzo-p-dioxin, 6, 11(table)
dibenzo-p-dioxins, chlorinated, analysis, 6-9, 11, 12(tables)
dibenzofurans, chlorinated, analysis, 6-9, 11, 12(tables)
eXtraction procedure, 112-129, 114(table)
inductively-coupled plasma-atomic emission spectroscopy, 76-80
octachlorodibenzo-p-dioxin analysis, 12(table)
polychlorophenol analysis, 6(table)
TCLP vs extraction procedure, 115-129, 116-119, 121-127(tables)
Sodium chloride 
in crankcase oil, 163(table)
flame photometry, 163(table)
in waste oil, 163(table)
Soil 
2,3,7,8-tetrachlorodibenzo-p-dioxin analysis, 6, 11(tables)
octachlorodibenzo-p-dioxin analysis, 6, 12(tables)
polychlorophenol analysis, 6(table)
Solid waste (See Waste, solid)
Speciation (See Chemical speciation)
Spectroscopy, absorption 
Fourier-transform infrared (FTIR), 140-143
heated graphite-atomizer atomic, 88-99, 133-143
hydride generation-atomic, 62-66, 88-99
Spectroscopy, emission 
inductively coupled plasma-atomic, 62-66, 76-80, 87-99
Statistics, multivariate 
and TCLP accuracy, 15, 21-27
Still-bottom waste 
2,3,7,8-tetrachlorodibenzo-p-dioxin analysis, 7, 11(tables)
dibenzo-p-dioxins, chlorinated, analysis, 7, 11, 12(tables)
dibenzofurans, chlorinated, analysis, 7, 11, 12(tables)
toxic contaminants, 18-61, 76-80
octachlorodibenzo-p-dioxin analysis, 12(table)
trace element analysis, 76-80
Superfund, 148

T
TCLP (See Toxicity Characteristic Leaching Procedure)
Tetrachloroethane 
in crankcase oil, 162(table)
flame photometry, 162(table)
Tin 
gas chromatography-element selective detector analysis, 136-139
Toxicity characteristic contaminants 
analytical method, 16-17(table)
CAS number, 16-17(table)
regulatory levels, 16-17(table)
Toxicity Characteristic Leaching Procedure (TCLP), 14-61, 16-17(table), 68-69, 112-129
Trace elements 
inductively-coupled plasma-atomic emission spectroscopy of, 76-80
Trichlorobenzene 
in crankcase oil, 162(table)
flame photometry, 162(table)

U
U.S. Environmental Protection Agency (EPA) 
CERCLA monitoring requirements, 146-151
cooperative studies, 14–61, 67–75, 112–129
groundwater monitoring, 101–111
hazardous waste testing, 14–61, 101–111
laboratory certification, 81–86, 146–151
polychlorinated dibenzo-p-dioxins/dibenzo-p-dioxins/dibenzofurans
  Method 8280, 1–13
sludge waste testing
  Method 6010, 76–80

V
Vegetation
  selenium analysis, 92–97, 94, 95, 96, 97(tables)
VOCs (See Volatile organic compounds)
Volatile organic compounds (VOCs)
  accuracy of analysis, 106, 107(tables)
  regulatory levels, 16–17(table)
  TCLP analysis, 42–50, 52–60(tables)

W
Waste, solid
  analysis
    laboratory certification for, 81–86, 84(table)
  evaluation methods
    overview, 67–69
  freeze/thaw resistance, 74
  solidification of, 68–69
  stabilization of, 65–75
  wet/dry resistance, 69–75, 71(table)
    ASTM Standard D 559–76: 69
Waste contaminants
  analytical methods, 16–17(table)
  CAS numbers, 16–17(table)
  regulatory levels, 16–17(table)
Waste oil
  halide content
    field screening, 152–165
Wastewater
  analytical laboratory certification, 81–86
Water (See also Drinking water; Groundwater; Pore water; Wastewater)
  dibenzo-p-dioxins, chlorinated, analysis, 7(table)
  dibenzofurans, chlorinated, analysis, 7(table)
  selenium analysis, 91, 91–92, 92(tables)
Weathering, waste
  measurement of, 69–75, 71(table)
Wood-preserving industry waste, 2

Z
Zero headspace extractor (ZHE), 16