



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 18 1989

OFFICE OF
WATER

Dear NPDES Permit Holder:

Thank you for participating in the 1989 National Discharge Monitoring Report (DMR) Quality Assurance (QA) Program, for all major permittees in the National Pollutant Discharge Elimination System (NPDES). Environmental Protection Agency's (EPA's) evaluation of the results submitted by your laboratory is enclosed. If this letter has not been directed to your laboratory, please provide a copy of the enclosed statistical evaluation to the laboratory which performed the analyses for you.

You will note that each value reported has been placed in one of four categories (acceptable, check for error, not acceptable, or unusable data). If one or more of your reported values is other than acceptable, you should check for sources of errors. The purpose of this notice is to provide you with results, and if the data are not acceptable, to allow you to take voluntary remedial actions. You will also note that, "true"/calculated values are provided only for the constituents you reported. If you desire a complete list of "true"/calculated values, please contact your State or Regional Coordinator.

A list of steps for identifying data handling and analytical problems is enclosed. Please submit your corrective actions in writing to your State or Regional Coordinator within 45 days. Your response will be considered by EPA/State in determining need for further follow-up. Where sources of errors are not readily apparent, your laboratory should make a systematic examination of all related portions of its analytical method(s). Quality Control (QC) check samples may be requested for self-evaluation purposes by mailing the enclosed form to the Environmental Monitoring and Support Laboratory.

To ensure that your results and actions can be considered by the proper office, documentation of all corrective actions and use of QC check samples should be sent to your State and/or Regional Coordinator (as specified in the following page). **Please refer to your NPDES permit number** in all correspondence. On behalf of EPA and the participating State Agencies, thank you for your cooperation and participation in this QA Program.

Sincerely yours,

A handwritten signature in black ink, appearing to read "James R. Elder", is written over a horizontal line.

James R. Elder, Director
Office of Water Enforcement & Permits

Enclosures

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* No State Coordinator, Only Regional

VAB.0001124191

PLEASE PRINT OR TYPE
EPA-360 (Cin) (Rev. 6/89, Pt.1)

QUALITY CONTROL SAMPLE REQUEST

Company _____

Laboratory _____

Street Address _____

City _____ State _____ Zip Code _____

Approval of Laboratory Director _____

Discharge Monitoring Report Quality Assurance (DMRQA) Support

Indicate sample(s) requested on the area below. The maximum quantity of two of any individual sample may be requested by entering "2" on the appropriate line.

WASTEWATER/AMBIENT WATER MONITORING

___ CYN Cyanide
___ DEM Demands
___ MIN Minerals and pH
___ NUT Nutrients
___ OGR Oil & Grease
___ P4A Phenolics (4-AAP)
___ RES Residues (Susp. Solids)
___ TMA Trace Metals - AA
___ ICP Trace Metals - ICP
___ NAL n-Alkanes
___ CHY Chlor. Hydrocarbon(612)
___ GAC GC/MS Acids (625)
___ GBN GC/MS Base/Neut. (625)
___ GPE GC/MS Pesticides (625)
___ GB3 GC/MS Analytes III

___ HAL Haloethers (611)
___ NAI Nitroarom/Isophor. (609)
___ CHP Pesticides-Chl. Hyd.(608)
___ CP2 Chlordane (608)
___ PC1 Aroclor 1016 (608)
___ PC2 Aroclor 1221 (608)
___ PC3 Aroclor 1232 (608)
___ PC4 Aroclor 1242 (608)
___ PC5 Aroclor 1248 (608)
___ PC6 Aroclor 1254 (608)
___ PC7 Aroclor 1260 (608)
___ PHE Phthalate Esters (606)
___ PNA Polynuclear Arom. (610)
___ VOA Volatiles

DATE REQUESTED: _____

DATE SHIPPED: _____

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-----Fold Here-----

Place
Stamp
Here

Quality Assurance Research Division, Room 525
Environmental Monitoring Systems Laboratory
U.S. Environmental Protection Agency
Cincinnati, OH 45268

-----Fold Here-----

QUALITY CONTROL SAMPLES FOR WATER AND WASTEWATER ANALYSES

EMSL-CINCINNATI

The QC Sample series are intended for periodic use (quarterly) as independent checks on each laboratory's own QC activities. They are not intended to replace the standards, check samples, blind samples or replicates incorporated into analytical runs as part of the laboratory's QC program. There is no certification or other formal evaluative function resulting from the use of QC samples and data return is not expected. Most samples are prepared as concentrates in water or organic solvent and sealed in glass ampuls. Instructions are provided for dilution of samples to volume with water or wastewater prior to analysis.

CYANIDE, TOTAL - in water, pH greater than 9.0 (500 ug/L)

DEMAND ANALYSES - BOD, COD, and TOC in water (1-200 mg/L)

MINERALS AND PH ANALYSES - Sodium, potassium, calcium, magnesium, pH, sulfate, chloride, fluoride, alkalinity/acidity, total hardness, total dissolved solids, and specific conductance in water (1-100 mg/L)

NUTRIENTS - Nitrate-N, ammonia-N, Kjeldahl-N, orthophosphate, and total P in water (0.5-5 mg/L)

OIL AND GREASE - analyzable by IR and gravimetrically in propanol (20 mg/L)

PHENOLS, TOTAL - (4AAP Method) total phenols in water (10-200 ug/L)

SUSPENDED SOLIDS - non-filterable, volatile and total filterable residue (0-500 mg/L)

TRACE METALS - AA I Aluminum, arsenic, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, vanadium, and zinc in 0.5% nitric acid solution (1-500 ug/L)

TRACE METALS - AA II Antimony, silver, and thallium in 0.5% nitric acid solution (10-20 ug/L)

TRACE METALS - AA III - Barium, calcium, potassium, sodium, magnesium, and molybdenum in 0.5% nitric acid solution (0.1-10 ug/L)

METALS BY ICP - Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Si, Ti, Tl, V and Zn in dilute nitric acid (0.5-10 mg/L)

n-ALKANES - dodecane, eicosane, heptadecane, hexacosane, tetradecane, tricosane in acetone (0.05-2 ug/L)

CHLORINATED HYDROCARBONS (Method 612) - Hexachloroethane, hexachlorobenzene, 1,2,4-trichlorobenzene, o-dichlorobenzene, p-dichlorobenzene, m-dichlorobenzene, hexachlorobutadiene, 2-chloronaphthalene in acetone (10-100 ug/L)

GC/MS ACIDS (Method 625) - 2-chlorophenol, 2-nitrophenol, phenol, 2,4-dimethylphenol, 2,4-dichlorophenol, 2,4,6-trichlorophenol, 4-chloro-3-methylphenol, pentachlorophenol, and 4-nitrophenol in methanol (100 ug/L)

GC/MS BASE NEUTRALS - I (Method 625) - bis-2-chloroethyl ether, 1,3-dichlorobenzene, 1,2-dichlorobenzene, nitrosodipropylamine, isophorone, bis-2-chloroethoxy methane, 1,2,4-trichlorobenzene, hexachlorobutadiene, 2-chloronaphthalene, 2,6-dinitrotoluene, 2,4-dinitrotoluene, diethyl phthalate, hexachlorobenzene, phenanthrene, dibutyl phthalate, pyrene, benzo(a)anthracene, dioctyl phthalate, benzo(k)fluoranthene in methanol (100 ug/L)

GC/MS BASE NEUTRALS - II (Method 625) - 1,4-dichlorobenzene, bis-2-chloroisopropyl ether, hexachloroethane, nitrobenzene, naphthalene, dimethyl phthalate, acenaphthene, fluorene, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether, anthracene, fluoranthene, butyl benzyl phthalate, benzo(a)pyrene, benzo(b)fluoranthene, benzo(a,h)anthracene, benzo(g,h,i)perylene, chrysene, and bis (2-ethyl-hexylphthalate) in methanol (100 ug/L)

GC/MS ANALYTES - III (Method 625) - 4-chlorobenzotrifluoride, m-chlorotoluene, 2,4-dichlorotoluene, 1,3,5-trichlorobenzene, 1,2,4,5-tetrachlorobenzene, 1,2,3,4-tetrachlorobenzene, 2,4,6-trichloroaniline, 1,2,3-trichlorobenzene, and pentachlorobenzene in acetone (100 ug/L)

GC/MS PESTICIDES - I (Method 625) - heptachlor, heptachlor epoxide, dieldrin, endrin, DDD, alpha BHC and gamma BHC in acetone (100 ug/L)

GC/MS PESTICIDES - II (Method 625) - beta-BHC, aldrin, alpha and beta Endosulfan, 4,4'-DDE and 4,4'-DDT in acetone (100 ug/L)

HALOETHERS (Method 611) - bis (2-chloroisopropyl) ether, bis (2-chloroethoxy) methane, bis (2-chloroethyl) ether, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether in acetone (10-150 ug/L)

NITROAROMATICS AND ISOPHORONE (Method 609) - isophorone, nitrobenzene, 2,4-dinitrotoluene, and 2,6-dinitrotoluene in acetone (1-150 ug/L)

CHLORINATED HYDROCARBON PESTICIDES (Method 608) WP I- aldrin, alpha-BHC, beta-BHC, dieldrin, DDT, DDE, DDD, endrin aldehyde, endosulfan I and II, heptachlor and heptachlor epoxide in acetone (2-10 ug/L)

CHLORINATED HYDROCARBON PESTICIDES-(Method 608) WP II - chlordane in acetone (50 ug/L)

POLYCHLORINATED BIPHENYLS (Method 608) - separate samples available for Aroclor 1016, 1221, 1232, 1242, 1248, 1254, and 1260 in acetone (50 ug/L) (laboratory must request specific Aroclor needed)

PHTHALATE ESTERS (Method 606) - dimethyl phthalate, diethyl phthalate, di-n-butyl phthalate, butyl benzyl phthalate, diethylhexylphthalate in acetone (10-50 ug/L)

POLYNUCLEAR AROMATICS - I (Method 610) - acenaphthene, anthracene, benzo(k)fluoranthene, chrysene, naphthalene, and pyrene in acetone (5- 100 ug/L)

POLYNUCLEAR AROMATICS - II (Method 610) - acenaphthylene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, dibenzo(a,h)anthracene, fluoranthene, and phenanthrene in acetone(10-100 ug/L)

VOLATILES-I (Methods 601, 602 and 624) - Carbon tetrachloride, chlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,2-dichloropropane, ethylbenzene, tetrachloroethene, and 1,1,2-trichloroethane in methanol (20 ug/L)

VOLATILES-II (Methods 601, 602 and 624) - Benzene, bromodichloromethane, bromoform, chloroform, dibromochloromethane, 1,2-dichlorobenzene, 1,1-dichloroethane, methylene chloride, 1,1,2,2-tetrachloroethane, toluene, 1,1,1-trichloroethane, and trichloroethene in methanol (20 ug/L)

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Quality Assurance Follow Up Checks*

CHECK YOUR METHODS

A. EPA HAS APPROVED ONLY CERTAIN METHODS FOR EFFLUENT MONITORING. NOT ALL METHODS IN "STANDARD METHODS" ARE ACCURATE AND/OR RELIABLE ENOUGH FOR NPDES MONITORING. THE LIST OF APPROVED METHODS IS CONTAINED IN THE DECEMBER 1, 1976, FEDERAL REGISTER OR 40 CFR PART 136.

B. IF YOU ARE USING AN APPROVED METHOD, CHECK TO BE SURE YOU ARE PERFORMING THE METHOD PROPERLY.

CHECK YOUR CALCULATIONS

BE SURE YOUR CALCULATIONS WERE PROPERLY DONE AND THAT YOU REPORTED THE RESULTS IN THE PROPER UNITS (I.E., MILLIGRAMS/LITER VERSUS MICROGRAMS/LITER).

CHECK YOUR STANDARD TITRATING REAGENTS

YOU SHOULD CHECK THE NORMALITY OF ALL THE TITRATING REAGENTS (PAO, THIOSULFATE, FERROUS AMMONIUM SULFATE, $K_2Cr_2O_7$, H_2SO_4 , ETC.) WHICH YOU USED IN PERFORMING THE ANALYSES.

CHECK YOUR INSTRUMENTS

ALL MECHANICAL AND ELECTRONIC DEVICES MALFUNCTION OR GET OUT OF PROPER ADJUSTMENT THROUGH USE OR MISUSE. BELOW IS A LIST OF POSSIBLE PROBLEMS WITH INSTRUMENTATION.

1. CHECK BALANCE FOR ACCURACY
2. CHECK THE SPECTROPHOTOMETER FOR LINEARITY AND WAVE LENGTH
3. CHECK pH ELECTRODES
4. CHECK AA LAMPS FOR ADEQUATE LIGHT OUTPUT
5. CHECK THE D.O. METER FOR PROBLEMS

CONSULT THE OPERATING MANUALS FOR YOUR INSTRUMENTS FOR ADDITIONAL ADVICE CONCERNING INSTRUMENT CHECKS.

CHECK YOUR STANDARDS

THE SOLUTIONS WHICH ARE USED FOR CALIBRATION OF INSTRUMENTS DEGRADE FROM LIGHT, IMPROPER STORAGE, ACCIDENTAL CONTAMINATION, OR AGE. NEW STANDARDS SHOULD BE PREPARED OR PURCHASED ROUTINELY. (FOR MOST CHEMICALS, THE STANDARDS SHOULD BE PREPARED OR REPLACED AT LEAST EVERY 6 MONTHS).

CHECK FOR DATA TRANSCRIPTION ERRORS

CHECK YOUR LABORATORY PURE WATER

LABORATORY PURE WATER CAN BE CONTAMINATED FROM IMPROPER MAINTENANCE OF THE STILL OR DEIONIZER. THE MOST COMMON CONTAMINANTS ARE ZINC, CHLORINE, AMMONIA, AND BACTERIA.

IF YOU HAVE NEW PERSONNEL, CHECK TO DETERMINE THAT THEY ARE PROPERLY TRAINED TO PERFORM THESE ANALYSES .

*SOURCE: EPA — REGION VIII.