



Environmental Laboratory

Licensure Services

(602) 255-3454 (602) 255-1070 FAX

Technical Support Hot-Line 1-800-372-3454

[E-Mail: acharyp@azdhs.gov](mailto:acharyp@azdhs.gov)

Information Update

January 16, 1996

Update #22

1. Our office has received the following information concerning the EPA WP& WS Studies:

All PE studies, including WP035, are on indefinite hold due to the government shutdown and budget situation. Although the EPA is back at work, the contractors who handle the proficiency samples are not back. Therefore the replacement samples have not been sent out since Dec. 15, 1995 and they cannot be sent out until the EPA can bring back its contractors. When the EPA gets everything back up and running they will notify us as soon as possible what the actual due dates are for the proficiencies.

If you need replacement vials to complete WP035, hold on to the results you have completed so far. When the EPA sends out the replacement vials you need, complete the analysis and then send all of your results in together.

If you have already completed all of your analysis for the WP035 study then go ahead and send in your results.

At this point there is no way of knowing when the EPA will be able to send back final results.

2. If you have any questions regarding the Updates or if you have any technical questions that need clarification, please call Prabha Acharya, Program Manager, Technical Resources and Training, at the above numbers.

THIS MESSAGE AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST, BY CONTACTING: Wesley Press AT (602) 542-0357

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Information Update

December 30, 1996

Update # 34

1. Historically the EPA has conducted laboratory PE studies to support the various water programs administered by the States and EPA under the Clean Water Act and the Safe Drinking Water Act. Because funding for the PE programs has not remained constant the EPA believes that the continued viability of these studies may depend upon the transfer of costs to the user community.

Because the EPA lacks authority to create a dedicated fund to support PE studies through a user participation fee, the EPA has been exploring alternatives to assign some portion of the program to an organization with the ability to recover costs for a specified component of the PE studies program.

Currently the EPA is looking at several options for assuring the continuing viability of the PE studies program. All of the options involve transferring all or some component of the PE studies program to organizations other than EPA. A draft report, "Externalization of EPA's Water Laboratory Performance Evaluation Programs," prepared by the EPA describes the options considered, the advantages and disadvantages of each, the estimates of costs to the EPA or user community, and the estimates of time required to implement each option.

To obtain a copy of the document call the Water Resource Center at 260-7786 or write to the Office of Water Resource Center (RC4100), U.S. EPA, 401 M Street SW, Washington DC 20460. Or on the Internet at the following location: gopher.epa.gov.

Also, if you have any concerns or comments on how the EPA is dealing with this issue contact:

Robert H. Huggett
Assistant Administrator for Research and Development
202-260-7676
USEPA Waterside Mall W913
401 M Street, S.W.
Washington, DC 20460

Robert Perciasepe
Assistant Administrator for Water
202-260-5700
USEPA Waterside Mall E1029B

401 M Street, S.W.
Washington, DC 20460

Several laboratory organizations and individual laboratories have already expressed the following concerns:

A sole PE provider program should be maintained where EPA would maintain centralized control in setting standards and accreditation in order to assure consistency and equity.

If a multiple provider program is chosen how will consistency of the PE samples from one provider to the next be assured?

The cost to the laboratories is estimated to range from \$200/yr. to \$2000/yr for each set of proficiency samples depending on the size of the laboratory and the number and type of samples they run.

There will likely be orphan compounds and perhaps even whole programs. If the number of laboratories seeking certification for an individual compound is small, then it would not be economically feasible for the PE providers to produce samples for this compound.

What happens in case of a bad PE study? If the samples fail it will not be possible to fairly evaluate the laboratories. Who bears the cost of repeating a PE study?

Conflict of interest by the PE providers must be avoided. PE providers must be prevented from releasing true values, adjusting statistics, or providing exact duplicate samples with true values to assist their customers in passing PE Samples.

2. ADHS and ADEQ are again co-sponsoring their Environmental Sampling Workshops. The scheduled dates and agendas are as follows:

PART ONE

Core Workshop: January 15 & 16, 1997

- Data Quality Objectives
- Laboratory Terminology
- How to use your Analytical Laboratory
- Data Interpretation/ Evaluation
- Sample Plan Preparation
- Microbiology Sample Collection
- Legal Aspects/Chain of Custody

PART TWO

Surface Water/ Ground Water Sampling: February 19& 20, 1997

- Water Quality Standards and Regulations
- Biocriteria

- Aquifer Protection Permit Standards
- Ground Water collection Techniques and Field Demonstration
- Priority Pollutants
- Surface Water Collection Techniques and Field Demonstration

PART THREE

Soils Gases, Soils and Other Solids: March 19 & 20, 1997

- Soil Sampling Techniques
- VOC Soil Sampling Techniques
- Soil Gas Collection Techniques
- RCRA Regulations & Sampling Considerations
- Solid Waste Regulations-used Oil/ Biosolids
- Special Waste Regulations
- UST Sampling
- Field Demonstrations-Soils, Soil Gases & Hazardous Material

The workshops will be held at:

Arizona Historical Society
1300 N. College Avenue
Tempe, AZ 85281
(602) 929-9499

3. Due to a request, Technical Resources and Training is considering hosting a two day workshop on PCR (Polymerase Chain Reaction) sometime in the Spring of 1997. We are currently in contact with the FDA in Los Angeles to see if someone on there staff can provide this training. At this point we are considering using *Vibrio cholera*, which has the shortest incubation time, for this demonstration. Polymerase Chain Reaction is a process whereby DNA from pieces of an unknown organism are cloned and replicated millions of times within a few hours. These DNA bands are then compared with bands obtained from a known specimen to check for the presence of these organisms. This state of the art method can be used to detect the presence of bacteria and parasites and some viruses. In order to determine the feasibility of and the proper location for this workshop, we need to know how many people would be interested in attending. Please respond by fax to (602) 255-1070 if you might be interested in attending this workshop.
4. If you have any questions regarding the Updates, or if you have any technical questions that need clarification, please call Prabha Acharya, Program Manager, Technical Resources and Training, at the Laboratory Licensure numbers.

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*Office of Laboratory Licensure,
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[E-Mail: acharyp@azdhs.gov](mailto:acharyp@azdhs.gov)

Jane Dee Hull, Governor
James R. Allen, MD, MPH, Director

DATE: November 18, 1996
TO: Laboratory Director and QA Manager
FROM: Wesley B. Press, Acting Bureau Chief
SUBJECT: Information Update #33
NOTE: If any problems occur with this web site, please call 1-800-952-0374 or (602) 255-3454 extension 205, 221 or 222. Thank You.

1. Two training sessions on Practical Ethics for Environmental Laboratories will be held on December 4 & 5, 1996. Topics to be covered will include:

- o dilemma resolution techniques
- o making tough decisions
- o right vs. wrong decision making - specific instances and examples of improper or questionable actions for decisions will be discussed
- o Participants will be provided with ample time to discuss particular examples or ask questions on how to handle particular situations internally.

A. On December 4, 1996 an all day workshop for Environmental Laboratory managers, QA professional, regulators, executives, etc. will be offered. In addition to the above topics this seminar will present suggestions for management on how to deal with issues surrounding ethics and integrity and more importantly how to detect early potential environments for improper behavior and prevent them.

Sign in for this workshop will begin at 8:00 a.m. The workshop will start at 8:30 a.m. and is scheduled to last until 5:00 p.m. The registration fee is \$50.00. Course materials will be an additional \$12.50. Total cost for the seminar is \$62.50.

B. On December 5, 1996 a workshop for Environmental Laboratory bench analyst will be offered.

Sign in for this workshop will begin at 8:30 a.m. and last until 9:00 a.m. The workshop will start at 9:00 a.m. and is scheduled to last until 4:30 p.m. The registration fee is \$50.00. Course

materials will be an additional \$12.50. Total cost for the seminar is \$62.50.

Both of these workshops will be presented by John E. "Jack" Farrell, III of Analytical Excellence, Inc. (AEX), Altamonte Springs, FL. Mr. Jack Farrell is a twenty year veteran in the environmental laboratory industry. Mr. Farrell has operated small, medium and large laboratories and held positions in Operations, Sales, Quality Management and General Management. Mr. Farrell is president of AEX, an independent consulting firm specializing in technical, quality and compliance assessments and assisting laboratories and data users in matters affecting the generation of sound analytical data for compliance use.

SEMINAR LOCATION:

Both of these workshops will be held at:

Arizona Historical Society
1300 N. College Avenue
Tempe, AZ 85281
(602) 929-9499

The Arizona Historical Society is located just north of the corner of Curry Road and College Avenue on the west side of College Avenue.

REGISTRATION:

Even if you filled out the survey in the last update you must complete and send in the attached registration form for these workshops.

To Register:

- a. Complete the registration form.
- b. Make checks payable to ADHS.
- c. Mail or fax registration; mail checks to:

Cristy Finan/Training
3443 North Central, Suite 810
Phoenix, Arizona 85012-2204
Fax: (602) 255-1070
Phone: (602) 255-3454

Payment must be received prior to the workshop. There will be no on site registration.

2. If you have any questions regarding the Updates, or if you have any technical questions that need clarification, please call or send [e-mail](#) to Prabha Acharya, Program Manager, Technical Resources and Training at the Laboratory Licensure. A [table of contents](#) to all the Information Updates published is also available.

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Information Update

October 18, 1996

Update #32

1. Non-Compliance Testing:

If the sample analysis was performed for screening purposes, by a method not approved by ADHS or where unacceptable modifications were made to an approved method the words "Not For Compliance" must be stamped on the final reports. This will help to assure that the data will not be used by a regulatory agency for compliance purposes.

2. Cyanide Preservation:

Because oxidizing agents, such as chlorine, decompose most of the cyanides, water samples containing residual chlorine must be dechlorinated prior to preservation with NaOH.

EPA method 335.4 uses either ascorbic acid or sodium arsenite as dechlorinating agents.

Standard Method's SM 4500-CN B uses either sodium thiosulfate or sodium arsenite.

3. Upcoming Training Activities:

A. An all day workshop on Method 200.9 will be offered on November 7, 1996 in room 908, at 3443 North Central Avenue, Phoenix, Arizona. The workshop will cover: an overview of EPA 200.9, interferences, hardware and program setup, and quality control. There will also be a comparison of ICP and ICP/MS on cost of analysis and productivity to the lab. The workshop will be from 8:30 a.m. to 4:00 p.m. The registration fee is \$20, which covers lunch and parking validation. This workshop is sponsored by Varian corporation, the presenters will be Martha Cole and Gary Edwards.

To Register:

1. Complete the attached registration form.
2. Make checks payable to ADHS.
3. Mail or fax registration; mail checks to:

Cristy Finan/Training

3443 North Central, Suite
810
Phoenix, Arizona 85012-
2204
Fax: (602) 255-1070

B. Two training sessions on Practical Ethics for Environmental Laboratories are tentatively planned for December:

1. A one day workshop for Laboratory Managers
2. A one-half day workshop for Bench Analysts

C. A one day training on Internal Audits and Corrective Action Program is planned for January.

The plans for items B and C are tentative, and will depend on the number of laboratory personnel that express interest. Registration fees for these workshops have not been determined, but will be in the range of \$50 - \$100 per workshop. Personnel from laboratories that are not licensed by the State of Arizona may also attend. Please call Cristy Finan at (602) 255-3454 or indicate your interest on the attached registration form if you are interested in any of the above training sessions.

4. Drinking Water Round Table Discussion Excerpts.

The following are excerpts from the meeting with the Arizona Laboratory Association (ALA), Arizona Department of Environmental Quality (ADEQ), and the Arizona Department of Health Services (ADHS) held on September 24, 1996 regarding drinking water issues. The following criteria address drinking water samples only.

A. ADEQ cannot evaluate the footnotes they are receiving on their drinking water compliance forms to determine whether the data being submitted is acceptable. ADEQ needs the laboratories to use standardized footnotes for qualifying data.

ALA agreed to set up a list of standardized footnotes that would be approved by ADHS that every laboratory would begin using. A deadline has not been set to complete this task.

In unique situations, with data outside the established footnotes, the laboratory could write a letter describing the issue in depth.

B. There was a question raised as to why ADEQ requires nitrates to be reported to the nearest whole number. ADEQ's response was that there was no such requirement.

C. There was a question concerning why ADEQ could not accept the data for unregulated contaminants every three years along with the regulated contaminants.

ADEQ explained that the federal rules require specific compliance intervals for reporting the regulated and unregulated contaminants. The compliance interval for unregulated compounds is four quarters every fifth year and for regulated contaminants annually every three years.

D. ADHS can promulgate methods, through rules revision, that are not promulgated by EPA. Once the method has been approved under the State Rules, laboratories can begin using these methods.

Laboratories cannot use non-promulgated methods if they are not in the Arizona Rules. In the case of SW-846 Supplement III, ADHS has not yet chosen to include this in their rules. They may add the Supplement at some time in the future.

E. A water system must establish an annual average for Gross Alpha and Radium 228 before it is allowed to have decreased monitoring.

F. When submitting DW compliance forms to ADEQ that have results analyzed by a sub-contracting laboratory, it is required that an attached copy of a signed report by the sub-contracting laboratory be included. If the primary lab performed any of the analysis then a signed report for their portion of the work must also be included.

G. ADEQ is receiving many reports which contain references for methods that are not approved for drinking water. It is theorized that many of the incorrect methods are wastewater or haz waste methods. The laboratories need to be more careful. Effective January 1, 1997, ADEQ will reject any report that contains an incorrect method, or where the testing laboratory is not licensed. ADEQ and ADHS have now linked data bases.

H. ADEQ is still having many instances where laboratories are not meeting the required MDL. Labs need to be more careful when reporting data. The majority of the errors have been on the SOCs, VOCs, thallium, antimony and cyanide.

I. Henry Lucas of Lucas Laboratory requested permission to change the radiochem DW form to include the measured value for gross alpha. He was told by Mary Simmerer of ADEQ to submit a copy of his request and she would review it.

5. If you have any questions regarding the Updates, or if you have any technical questions that need clarification, please call Prabha Acharya, Program Manager, Technical Resources and Training, at the Laboratory Licensure numbers.

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METHOD 200.9/ ICP / ICP/MS WORKSHOP REGISTRATION FORM

November 7, 1996

Name _____

Employer _____ Title _____

Address _____ State _____ Zip _____

Phone: (_____) _____ Fax: (_____) _____

Amount enclosed _____

Make checks payable to ADHS.

Please indicate here your interest in the following workshops:

Practical Ethics for Environmental Laboratories:

A one day workshop for Laboratory Managers.

How many people from your lab would be interested in attending?

A one-half day workshop for Bench Analysts.

How many people from your lab would be interested in attending?

A one day training on Internal Audits and Corrective Action Program for laboratory supervisors, QA managers, and laboratory managers.

How many people from your lab would be interested in attending?



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Jane Dee Hull, Governor
James R. Allen, MD, MPH, Director

DATE: August 27, 1996
TO: Laboratory Director and QA Manager
FROM: Wesley B. Press, Acting Bureau Chief
SUBJECT: Information Update #31
NOTE: If any problems occur with this web site, please call 1-800-952-0374 or (602) 255-3454 extension 205, 221 or 222. Thank You.

1. A one day workshop on GC topics is scheduled for September 27, 1996, 9am - 3pm, in the 9th floor conference room at 3443 North Central Avenue, Phoenix. This workshop will be presented by J & W Scientific. Topics include:
 - a. Care and Maintenance: How to Maximize Capillary Column Life
 - b. Successful Pesticide Analysis: What You Should Know to Reduce Downtime
 - c. Optimizing Parameters Affecting Analysis of Volatile Organic Compounds by Purge and Trap
 - d. Troubleshooting: When is it the (GC) Column's Fault
 - e. Techniques, Tips, and Tricks of Troubleshooting Capillary GC Systems: Common Problems and Their Causes, Troubleshooting Tests

The registration fee is \$20, which includes lunch and parking validation. Please bring your parking stub to us for validation stamp. Seating will be limited to 35 people. To register, call Cristy Finan at (602) 255-3454. Checks should be made payable to ADHS.

2. Results of the MDL survey (distributed in Information Update #27, April 10, 1996) have been compiled. Thank you for the excellent response. Due to the length of the document, we are sending a copy by mail this week to the attention of the laboratory directors and the QA managers of the Arizona licensed labs. If you have any questions regarding the survey, feel free to call us.
 3. Technical Resources and Training, as well as all of the Arizona Department of Health Services is now on-line. Our internet address is <http://www.hs.az.us/lab/license/> We will be loading the most recent Information Update on our home page.
 4. Following is a list of EPA and Standard Methods procedures for drinking water promulgated as of July 1, 1996. For more comprehensive information and method references, please consult the USEPA "Technical Notes on Drinking Water Methods," EPA/600/R-94/173, October 1994.
-

METHODS FOR COLIFORM SAMPLING:

Organism	Promulgated/Approved Methods
Total Coliforms	9221A, B, 9222A, B, C, 9221D, 9223, Colisure Test

METHODS FOR INORGANIC CHEMICALS AND OTHER PARAMETERS:

Contaminant	Promulgated/Approved Methods
Antimony	200.8, 200.9, 3113B
Arsenic	200.7, 200.8, 200.9, 3120B, 3113B, 3114B
Asbestos	100.1, 100.2
Barium	200.7, 200.8, 3120B, 3111D, 3113B
Beryllium	200.7, 200.8, 200.9, 3120B, 3113B
Cadmium	200.7, 200.8, 200.9, 3113B
Chromium	200.7, 200.8, 200.9, 3120B, 3113B
Cyanide	335.4, 4500-CN-C, 4500-CN-G, 4500-CN-E, 4500-CN-F
Fluoride	300.0, 4110B, 4500F-B,D, 4500F-C, 4500F-E
Mercury	245.1, 245.2, 200.8, 3112B

Nickel	200.7, 200.8, 200.9, 3120B, 3111B, 3113B
Nitrate	300.0, 353.2, 4110B, 4500-NO3-F, 4500-NO3-D, 4500-NO3-E
Nitrite	300.0, 353.2, 4110-B, 4500-NO3-F, 4500-NO3-E, 4500-NO2-B
Selenium	200.8, 200.9, 3114B, 3113B
Thallium	200.8, 200.9
Lead	200.8, 200.9, 3113B
Copper	200.7, 200.8, 200.9, 3113B, 3111B, 3120B
pH	150.1, 150.2, 4500-H+-B
Conductivity	2510B
Calcium	200.7, 3500-Ca-D, 3111B, 3120B
Alkalinity	2320B
Ortho-phosphate, unfiltered, no digestion or hydrolysis	365.1, 300.0, 4500-P-F, 4500-P-E, 4110
Silica	200.7, 4500-Si-D, 4500-Si-E, 4500-Si-F, 3120B
Temperature	2550
Sodium	200.7, 3111B

METHODS FOR ORGANIC CHEMICALS

Contaminant	Promulgated/Approved Methods
Benzene	502.2, 524.2
Carbon tetrachloride	502.2, 524.2, 551
Chlorobenzene	502.2, 524.2
1,2-Dichlorobenzene	502.2, 524.2
1,4-Dichlorobenzene	502.2, 524.2
1,2-Dichloroethane	502.2, 524.2
cis-Dichloroethylene	502.2, 524.2
trans-Dichloroethylene	502.2, 524.2
Dichloromethane	502.2, 524.2
1,2-Dichloropropane	502.2, 524.2
Ethylbenzene	502.2, 524.2
Styrene	502.2, 524.2
Tetrachloroethylene	502.2, 524.2, 551
1,1,1-Trichloroethane	502.2, 524.2, 551
Trichloroethylene	502.2, 524.2, 551
Toluene	502.2, 524.2
1,2,4-Trichlorobenzene	502.2, 524.2
1,1-Dichloroethylene	502.2, 524.2
1,1,2-Trichloroethane	502.2, 524.2
Vinyl chloride	502.2, 524.2

Xylenes (total)	502.2, 524.2
2,3,7,8-TCDD (dioxin)	1613
2,4-D	515.2, 555, 515.1
2,4,5-TP (Silvex)	515.2, 555, 515.1
Alachlor	505, 507, 525.2, 508.1
Atrazine	505, 507, 525.2, 508.1
Benzo(a)pyrene	525.2, 550, 550.1
Carbofuran	531.1, 6610
Chlordane	505, 508, 525.2, 508.1
Dalapon	552.1, 515.1
Di(2-ethylhexyl)adipate	506, 525.2
Di(2-ethylhexyl)phthalate	506, 525.2
Dibromochloropropane (DBCP)	504.1, 551
Dinoseb	515.2, 555, 515.1
Diquat	549.1
Endothall	548.1
Endrin	505, 508, 525.2, 508.1
Ethylene dibromide (EDB)	504.1, 551
Glyphosate	547, 6651
Heptachlor	505, 508, 525.2, 508.1

Heptachlor Epoxide	505, 508, 525.2, 508.1
Hexachlorobenzene	505, 508, 525.2, 508.1
Hexachlorocyclopentadiene	505, 508, 525.2, 508.1
Lindane	505, 508, 525.2, 508.1
Methoxychlor	505, 508, 525.2, 508.1
Oxamyl	531.1, 6610
PCBs (as decachlorobiphenyl)	508A
(as Aroclors)	505, 508
Pentachlorophenol	515.2, 525.2, 555, 515.1
Picloram	515.2, 555, 515.1
Simazine	505, 507, 525.2, 508.1
Toxaphene	505, 508, 525.2
Total Trihalomethanes	502.2, 524.2, 551

METHODS FOR FILTRATION AND DISINFECTION

1. Microbiological, pH, and Turbidity Methods

Organism	Promulgated/Approved Methods
Total Coliforms	9221A, B, C, 9222A, B, C, 9223

Fecal Coliforms	9221E, 9222D
Heterotrophic bacteria	9215B
Turbidity	2130B, 180.1, Method 2
Temperature	2550

2. Disinfectant Residual Methods

Residual	Promulgated/Approved Methods
Free Chlorine	4500-C1 D, 4500-C1 F, 4500-C1 G, 4500-C1 H
Total Chlorine	4500-C1 D, 4500-C1 E, 4500-C1 F, 4500-C1 G, 4500-C1 I
Chlorine Dioxide	4500-C1O2 C, 4500-C1O2-D, 4500-C1O2-E
Ozone	4500-O3 B

-
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Jane Dee Hull, Governor
James R. Allen, MD, MPH, Director

DATE: July 8, 1996
TO: Laboratory Director and QA Manager
FROM: Wesley B. Press, Acting Bureau Chief
SUBJECT: Information Update #30
NOTE: If any problems occur with this web site, please call 1-800-952-0374 or (602) 255-3454 extension 205, 221 or 222. Thank You.

1. According to Natalie Murff, USEPA, Cincinnati, each facility (plant or laboratory) participating in the WP/DMRQA proficiency study must request their own samples. Natalie will send the samples and the assigned lab code to each facility. To request the samples, fax the following information to Natalie Murff at (513) 569-7115: name; shipping address; company name; telephone number; list of samples needed. The samples must be requested as soon as possible, as the final deadline for the request is July 17, 1996.
2. Information regarding approved/accepted HACH methods was received from James O'Dell, Jr., Alternate Test Procedure Coordinator, USEPA, Cincinnati. Please contact Lab Licensure for more details..
3. As per Jim Longbottom, USEPA, Cincinnati, for Methods 608 and 625, it is permissible to use: a) the Pyrex Accelerated One-Step Extractor Concentrator manufactured by Corning. Laboratories must make sure that they meet all of the Methods criteria; b) a different solvent for the calibration standards to match the solvent of the final extracts; c) a smaller sample volume to minimize matrix interferences.
4. If you have any questions regarding the Updates, or if you have any technical questions that need clarification, please call or send [e-mail](#) to Prabha Acharya, Program Manager, Technical Resources and Training at the Laboratory Licensure. A [table of contents](#) to all the Information Updates published is also available.

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E-Mail: acharyp@azdhs.gov

Information Update

June 19, 1996

Update #29

1. Adding a method to a laboratory's current license.

If a laboratory wants to add a method to their current license they need to do the following:

- a. Request that Office of Environmental Laboratory Licensure add the promulgated method to their license.
- b. Provide the Office of Environmental Laboratory Licensure with the following information:
 - i. Current MDL study accompanied by hard copies of all the raw data.
 - ii. The Initial Demonstration of Capability, including hard copies of all the raw data.
 - iii. A copy of the laboratory's Standard Operating Procedure.
 - iv. A copy of the results from the most recent appropriate WP or WS study that was performed by the requested method. If an appropriate WS or WP has not been performed, then contact the Office of Environmental Laboratory Licensure to arrange for a third party P/E sample.
- c. Laboratory Licensure will assess a fee for the new method. The laboratory will need to pay this fee before their license can be changed to include the new method.

We recommend that all of the above information be sent to the attention of the individual from Arizona's Office of Environmental Laboratory Licensure who performed the last on site audit of the laboratory.

2. The methods 525.2 and 508.1 use the technique of solid phase extraction to extract the analytes from the matrix. These methods use a vacuum to filter the sample through the solid phase disk. It is however acceptable to use positive pressure to filter the sample. The lab needs to make certain that the sample is not being driven through the filter too fast. Being able to use positive pressure enables the laboratories to take advantage of the automated systems which are becoming available.
3. For drinking water, wastewater, and solid waste water samples a laboratory can use continuous liquid-liquid extraction as a replacement for separatory funnels.
4. As per Jean Munch, Research Chemist, USEPA/NERL, Cincinnati:

When running method 525.2 for phthalates for compliance purposes the lab must run a trip blank if any of the samples are found positive for phthalates. This is necessary to show that the samples were not contaminated with phthalates from the bottle caps, the HCL used for preservation or the latex gloves worn during sampling. Diethyl hexyl phthalates are of the main concern. If the samples show the presence of phthalates and there was no trip blank with the set of samples then, subsequent resamples from this site must be accompanied by a trip blank.

If the samples are not to be analyzed for phthalates then the lab does not need to run a trip blank.

The following information was provided by the staff of Environmental Laboratory Licensure Program:

- a. The EPA Office of Solid Waste was consulted on the interpretation of Method 8270B sections 7.3.4, 7.3.5 and 7.6.2. According to the EPA, in order to use an average response factor, *all compounds* must have an %RSD of 15% for the initial calibration curve. If the %RSD is greater than 15%, then a first or higher order regression curve must be generated using the individual response factors. This curve must be used for quantitation. If the %RSD is less than 15% then either the average response factor or a first or higher order regression curve may be used. If the average RF %RSD of CCCs of the calibration curve are greater than 30%, neither the average RF nor a regression curve can be used; the calibration standards must be reinjected. This interpretation of the method will now be enforced by Laboratory Licensure.
 - b. As per clarification from EPA, the surrogate control limits in Table 8 of Method 8270B are to be used as guidelines and the laboratory may develop their own limits as long as they are reasonable and meaningful. For example, for Phenol-d₆ the surrogate spike recovery limits in water samples are 10-94 percent. If the laboratory has established their own range with a high limit of 100% , then the lab does not have to flag the data due to having exceeded the upper limit of 94% in Table 8.
 - c. It has been confirmed that section 7.6.8 of Method 8000A is not applicable to the mass spectrometry methods. The daily Calibration Check Verification (CCV) should be evaluated against criteria in the specific method. Because of the number of surrogates and internal standards required in these methods, an ending CCV is not required.
 - d. The Office of Solid Waste was also consulted about the corrective action to be taken when the ending CCV for GC and HPLC methods exceeds 15% difference. Method 8000A, section 7.6.8 does not address corrective action. It is the intent of the method that all samples be bracketed by CCVs to ensure that the instrument performed properly throughout the analysis sequence. Therefore if any CCV, continuing or ending, fails to be in control, all samples analyzed *before and after* the failed CCV should be reanalyzed. ADHS will allow the following exception to this: If the lab can demonstrate CCV specific failure (i.e. dry purge, carryover from previous sample) *and* the surrogates for the samples in the batch are in control, the samples before the failed CCV are acceptable, but the samples analyzed after the failed CCV must be repeated. Under no circumstances should data be accepted for samples that are analyzed without the CCV at the beginning of the analytical sequence being in control.
6. The Program of Environmental Laboratory Licensure is currently evaluating its current software needs. Please complete the attached survey and return to,

Attn: Roseann Pasqualone
State Laboratory Services
3443 N. Central Avenue, Suite 810

7. Technical Resources and Training will be facilitating a round table discussion on SOC and GC/MS methods. Some of our surveyors from the Environmental Licensure section as well as staff from State Laboratory will be available to answer questions and clarify problem areas via this session. There is no set agenda, it is a question and answer session. This will be held on Wednesday, **July 12, 1996, from 1:30-3:30 pm, at 3443 North Central, in the 9th floor conference room.** We request that laboratories fax questions to us prior to this date, in case we need to contact the EPA for further clarification. The areas to be covered are the approved methods, quality control, trouble shooting and maintenance of instrumentation or anything else about which you have questions. Please fax your questions to Prabha Acharya at 255-1070. This forum is NOT limited to questions sent before hand. Our training room can hold up to 35 people, so please RSVP with either Christy Finan or Amy Welch at 255-3454, if you are planning on attending.

Please note that we will not be validating any parking. Paid parking is available adjacent to the building on the street level.

8. Technical Resources and Training is considering hosting a one day workshop, where presenters from J & W Scientific would give the following four seminars.

a. Care and Maintenance: How to Maximize Capillary Column Life.

Capillary columns don't last forever; however, a number of techniques and practices will prolong their life. The cause, prevention and possible repair will be addressed for several different possible problems.

b. Successful Pesticide Analysis: What You Should Know to Reduce Downtime.

Topics covered in this presentation include injector setup and maintenance, the use of guard columns, press-fit unions, ECD maintenance and dual-column packages designed and tested specifically for routine organochlorine pesticide analysis.

c. Optimizing Parameters Affecting Analysis of Volatile Organic Compounds by Purge and Trap.

Topics include sample sparging, analyte trapping (including how to choose the right trap) and choosing a GC column that produces the best separation in the shortest run time possible. Also, there will be an opportunity to discuss maintenance for the P/T system, including detectors (PID, FID, ELCD, and MSD), and what can be done to prevent problems from occurring.

d. Troubleshooting: When is it the (GC) Column's Fault?

When a GC problem occurs, it is often difficult to determine the actual cause. We all know that it is easy to be misled and reach the wrong conclusion. Systematic strategies for troubleshooting specific chromatographic problems will be presented, along with quick and easy tests to determine whether the column is the problem source. Many column problems are not caused by irreparably damaged column but by

some other factor interfering with the chromatography. These areas also will be addressed.

The workshop would be held sometime in early to mid August . We are estimating the cost to be \$20.00 per person. Lunch and parking validation would be provided as part of the registration. In order to determine the feasibility of and the proper location for this workshop, we need to know how many people would be interested in attending. Please respond by fax to (602) 255-1070 if you might be interested in attending this workshop.

9. If you have any questions regarding the Updates or if you have any technical questions that need clarification, please call Prabha Acharya, Program Manager, Technical Resources and Training, at the above numbers.

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Information Update

June 10, 1996

Update #28

1. In an effort to clarify the issues regarding the analyses of Drinking Water compliance samples, the following information is provided by the Arizona Department of Health Services in conjunction with the Arizona Department of Environmental Quality:

For the purposes of reporting compliance data, a non-detect must be reported with a less than sign (" $<$ ") in front of the "MDL", "reporting level" or "trigger level" as appropriate, for the data to be usable for Drinking Water compliance purposes.

Maximum contaminant level (MCL) is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

Method Detection Limit (MDL) is a value determined by the procedure in 40 CFR, Part 136, Appendix B. MDLs may be used in Arizona Drinking Water Rules as either a trigger or a reporting level for certain contaminants.

Practical Quantitation Limit (PQL) represents a practical and routinely achievable detection level with a relatively good certainty that any reported value is reliable. Arizona Laboratory Licensure requires that the laboratory include a concentration equal to or less than the PQL value in the calibration curve and/or as a daily Q.C. check.

Reporting levels are values which are required to determine compliance with the Arizona Drinking Water Rules. A value at the reporting level may or may not trigger additional action by the water system. (e.g. PQLs for Pb and Cu).

Trigger level is a value at which, in accordance with the Arizona Drinking Water Rules, a water system must take additional action(s). (e.g. for nitrate 5 mg/L is the trigger level at which an additional action must be taken).

A. Inorganic Chemicals (IOCs):

Single point of entry samples;

Antimony, Arsenic, *Asbestos, Barium, Beryllium, Cadmium, Chromium, Cyanide(as free cyanide), Mercury, Nickel, Selenium, Thallium; The trigger level is set at their respective MCL.

*Asbestos may be taken as a POE, distribution, or source sample.

Nitrate: the trigger level is 5 mg/L.

Nitrite: the trigger level is 0.5 mg/L.

Fluoride: the trigger level for public notice is 2.0 mg/L. The trigger level for increased monitoring is the MCL (4.0 mg/L).

Note: For single point of entry sample results to be qualified for use under ADEQ's waiver program, the results must be reported as non-detect at a value of less than 75% of the MCL. There are no waivers for Nitrate or Nitrite monitoring.

Composite samples;

For all of the above contaminants the trigger level is set at 1/5 of the MCL.

This holds true regardless of the number of samples used in the composite (up to five sampling points allowed in a composite).

B. Lead and Copper Rule Detection Limit Reporting Requirements.

Tap Samples (Distribution);

Pb: The lab must achieve a PQL equal to 0.005 mg/L.

Cu: The lab must achieve a PQL equal to 0.050 mg/L.

For certification and reporting requirements the lab must establish an MDL which is less than the above PQL. Arizona Laboratory Licensure requires that the laboratory include a concentration equal to or less than the PQL value in the calibration curve and/or as a daily Q.C. check.

Reporting requirements:

All lead and copper levels measured between the practical quantitation levels and the laboratories' method detection levels shall be either reported as measured or they may be reported as one-half the practical quantitation level specified for lead or copper. All levels below the laboratories' method detection levels for lead and copper **shall be reported as zero**.

Samples which have undergone source compositing; (samples at the tap cannot be composited).

Pb: An MDL of 0.001 mg/L must be achieved.

Cu: The lab must achieve an MDL of 0.001 mg/L (for both GFAA or ICP) or an

MDL of 0.020 mg/L if run by atomic absorption direct aspiration.(See Appendix B, Arizona Drinking Water Rules).

Reporting requirements:

All lead levels measured between 0.001 mg/L to 0.005 mg/L and copper measured between 0.001mg/L or 0.020 mg/L as applicable, to 0.050 mg/L shall be either reported as measured or they may be reported as one-half the practical quantitation level specified for lead or copper. All levels below the method detection levels for lead and copper **shall be reported as zero.**

C. Volatile Organic Chemicals (VOCs):

Single point of entry samples;

For all VOCs the trigger level is 0.0005 mg/L.

Composite samples;

The trigger level is 0.0005 mg/L. Vinyl Chloride, which is not routinely monitored, has special monitoring requirements which do not allow for compositing.

D. Synthetic Organic Chemicals (SOCs):

Single point of entry sample;

The trigger level is 1/2 the MCL, except for four of the compounds. These four compounds are atrazine, dibromochloropropane, ethylene dibromide, and di(2-ethylhexyl)phthalate. For these four compounds the trigger level is the MCL for each compound.

Composite samples;

For all composited SOCs the trigger level is the detection limit listed in Appendix B, Detection Limit Table, of the Arizona Drinking Water Rules.

The method used by the laboratory must be capable of achieving an MDL value which is less than 1/5 of the MCL, regardless of the number of samples used in the composite (up to five samples are allowed).

For Toxaphene the listed detection limit in Appendix B is greater than 1/5 the MCL, therefore the lab must achieve an MDL which is below 1/5 the MCL and would be less than Appendix B detection limit.

For EDB the listed detection limit in Appendix B is equal to 1/5 the MCL, therefore the lab must achieve an MDL which is below 1/5 the MCL and would be less than Appendix B detection limit.

Polychlorinated biphenyls (PCBs):

(i) **508A;**

Single point of entry sample;

The trigger level is 1/2 the MCL.

Composite samples;

The trigger level is the detection limit listed in Appendix B, Detection Limit Table, of the Arizona Drinking Water Rules.

For PCBs by method 508A the listed detection limit in Appendix B is equal to 1/5 the MCL, therefore the lab must achieve an MDL which is below 1/5 the MCL and would be less than Appendix B detection limit.

(ii) Screening by method 505 or 508;

Single point of entry;

If screening for PCB's, the samples must be screened for each of the Aroclors listed in Appendix B. The lab must meet the MDLs listed in the above table for each of the Aroclors. Each of the Aroclors listed in Appendix B must be reported. Detecting any of the Aroclors above their respective MDL would require that the sample be analyzed and quantitated by method 508A.

Composite samples;

Samples which are composited cannot be screened by method 505 or 508. Composited samples must be run by method 508A.

NOTE:

The Arizona Drinking Water Rules can be found in the Arizona Administrative Code, Title 18, Chapter 4, articles 1-5 with appendices A, B and C. A copy of this (available either on disk or hard copy) can be obtained from:

Secretary of State, Publications
State Capital West Wing
1700 W. Washington Street
Room 103
Phoenix, Arizona 85007.

Their phone number is (602) 542-4086. According to their office a hard copy will cost \$8.00. This needs to be prepaid or you can stop by their office and pick up a copy.

2. If you have any questions regarding the Updates or if you have any technical questions that need clarification, please call Prabha Acharya, Program Manager, Technical Resources and Training, at the above numbers.

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Information Update

April 10, 1996

Update #27

1. Announcing a FREE workshop on "The Basics of Quantitation" sponsored by Hewlett Packard. This workshop is scheduled for Friday, April 26th, 1996 from 8:30 am - 4:00 pm. The purpose of this one-day course is to introduce the student to the data handling aspects of gas and liquid chromatography in regards to quantitative accuracy and precision. This workshop will cover:

Introduction

Good Laboratory Practices
Steps in Analytical Gas Chromatography Methodology
Accuracy and Precision, Sampling Frequency
Signal-to-Noise, Area -vs- Height
Detection/Quantitation Limits

Peak Recognition and Integration

Peak Width, Threshold, Area Reject
Criteria for Quantitation of Peaks that are not 100% resolved

Integration Events

Peak Type Codes, Time Programmable Events

Calibration

Why, How, Regression Line

Methods

Area %, Norm %, Estimated, Internal standard

This workshop will be presented by Karen Mehlin. Karen is a graduate from Northwest Missouri State University in 1976 with a degree in Chemistry and Biology. From 1976 to 1989 she worked in a variety of positions in pharmaceutical development methods which included QA/QC development procedures,

FDA audit and tracking on a wide variety of instrumentation. From 1989 to present she is employed at Hewlett Packard as a Technical Field Engineer.

Lunch will be provided. We will not be validating parking. Please call Cristy Finan at (602) 255-3454 for registration. There is limited seating. The location is 3443 N. Central, on the 9th floor Conference Room.

2. If you have any questions regarding the Updates or if you have any technical questions that need clarification, please call Prabha Acharya, Program Manager, Technical Resources and Training, at the above numbers.
3. There appears to be a big concern among the environmental laboratories regarding the low MDLs for drinking water required by the Arizona Department of Environmental Quality (ADEQ). Please fill out the attached survey before April 19 and fax it to the attention of Prabha Acharya, at (602) 255-1070. The results of this survey will be used in the discussion with the ADEQ and EPA. **TAKE THIS OPPORTUNITY TO PROVIDE YOUR INPUT TOWARDS ADDRESSING THIS PROBLEM.**

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Information Update

March 29, 1996

Update #26

ADHS would like to take this opportunity to update all of the licensed laboratories about the proceedings since our service of the Notice of Intent to Revoke the Regular License of Westech Laboratories. The following is a listing of the administrative pleadings, motions and orders filed in the case:

- 08-1-95 ADHS issued to Westech Laboratories a Notice of Intent to Revoke Regular License and Assess Civil Penalties.
- 08-9-95 Westech issued a Motion to Dismiss Notice of Intent.
- 08-18-95 ADHS's Opposition to Westech's Motion to Dismiss.
- 08-20-95 Westech's Reply in Support of Motion to Dismiss Notice of Intent.
- 08-25-95 ADHS Amended the Notice of Intent to Revoke Regular License and Assess Civil Penalties to include interview statements containing allegations by 5 former Westech employees.
- 08-31-95 Westech's Motion to Dismiss the Amended Notice and Motion for Partial Stay of Administrative Proceedings so its Fifth Amendment privilege.
- 09-5-95 Michael English's Joinder in Relief Requested by Westech Laboratories.
- 09-8-95 ADHS's opposition to Westech's Motion to Dismiss Amended Notice and Motion for Partial Stay.
- 09-11-95 Westech's reply in Support of Westech's Motion to Dismiss and Motion for Partial Stay.
- 09-11-95 Notice of Filing Hearing Transcripts.
- 09-11-95 Michael G. English's Supplemental Response Regarding Request by Westech Laboratories for Relief.

- 09-19-95 ADHS's Letter to Hearing Officer Providing Information Regarding Types of Violations ADHS was Unaware of in January, 1995 until receipt of the former employees statements.
- 09-24-95 Westech's letter to Hearing Officer Responding to ADHS's Letter Outlining the Types of Violation the Department was Unaware of in January, 1995.
- 10-20-95 ADHS's Motion for Order Compelling Westech's Production of Documents.
- 10-25-95 Order by the Hearing Officer Bifurcation the Hearing into a First and Second Phase. The First phase would deal with post January 1995 falsification issues and the Second Phase would deal with pre-January 1995 falsification issues and methods violations.
- 11-2-95 Michael G. English's Joinder in Relief Requested by Westech Laboratories Regarding Scope of Discovery.
- 11-3-95 Westech's Response to Department's Motion for Order Compelling Westech's Production of Documents and Cross Motion for a Protective Order.
- 11-9-95 ADHS's Response to Westech's Cross-Motion for Protective Order and Reply to Westech's Response to the Department's Motion to Compel Production.
- 11-13-95 Westech's Motion for Partial Summary Judgement on ADHS's Claim of Method's Violations.
- 11-17-95 Hearing Officer's Order Granting the Department's Motion to Compel Westech's Production of Document's and Granting in Part Motion for Protective Order, and Scheduling Response and Reply to Westech's Motion for Partial Summary Judgement Motion.
- 11-28-95 ADHS's Response to Westech's Motion for Partial Summary Judgement on ADHS's Claim of Methods Violations.
- 12-6-95 Westech's Reply in Support of Motion for Partial Summary Judgement on ADHS's Claim of Methods Violations.
- 12-18-95 ADHS's Supplemental Response to Westech's Motion for Partial Summary Judgement on ADHS's Claim of Methods Violations.
- 12-21-95 Westech's Supplemental Reply in Support of Westech's Motion for Partial Summary Judgement on ADHS's Claims of Methods Violations.
- 1-16-96 ADHS's Proposed Form of Ruling
- 1-22-96 Westech's Objections to ADHS's Proposed Form of Ruling.
- 1-22-96 Westech's Proposed Finding of Fact, Conclusions of Law and Order.
- 1-24-96 ADHS's Response to Westech's Proposed Form of Order, Objections To Findings of Fact, and Conclusions of Law and Order.
- 1-30-96 Westech's Second Request for Documents from ADHS.

- 2-1-96 Westech's Motion for Partial Summary Judgement Re: Electronic Recordkeeping.
- 2-21-96 Order Setting Prehearing Conference (Schedule of Responses and Replies to Westech's Partial Summary Motion Re: Electronic Recordkeeping and ADHS's Cross-Motion for Partial Summary Judgement, and scheduling of ADHS's Memorandum Regarding Method 502.2 (Revision 1.0).
- 2-21-96 ADHS's Response in Opposition to Westech's Motion for Partial Summary Judgement Re: Electronic Recordkeeping and the Department's Cross-Motion for Partial Summary Judgement.
- 2-28-96 ADHS's Motion for Partial Summary Judgement on Westech's Failure to Use Approved Methods.
- 2-28-96 ADHS's Motion for a Ruling on the Sufficiency of its Notice to Allege Violations of Version 1.0 of Method 502.2.
- 2-29-96 Westech's Combined Reply in Support of Motion for Partial Summary Judgement RE: Electronic Recordkeeping and Response to ADHS's Cross-Motion.
- 3-8-96 Westech's Combined Response to ADHS's Motion for Summary Judgement on Westech's Failure to Use Approved Methods and Cross-Motion for Summary Judgement RE: Enforceability of Version 1.0 of Method 502.2.
- 3-8-96 Westech's Response to ADHS's Motion for Ruling on the Sufficiency of ADHS's Notice to alleged Violations of Version 1.0 of Method 502.2.
- 3-12-96 ADHS's Reply In Support of the Department's Cross-Motion Re: Record Keeping.
- 3-15-96 ADHS's Reply in Support of its Motion for a Ruling on the Sufficiency of its Notice to Allege Violations of Version 1.0 of Method 502.2.
- 3-15-96 ADHS's Combined Response to Westech's Motion for Partial Summary Judgement Re: Enforceability of Version 1.0 of Method 502.2 and ADHS's Reply in Support of its Motion for Partial Summary Judgement on Westech's Failure to Use Approved Methods.
- 3-15-96 ADHS's Notice of Filing Original Affidavit.
- 3-20-96 Westech's Reply in Support of Westech's Cross-Motion for Partial Summary Judgement Re: Enforceability of Version 1.0 of Method 502.2.
- 3-25-96 Westech Motion for Partial Summary Judgement on ADHS's Claims of Additional Methods Violations.

To date the hearing Officer has not provided a written ruling or order concerning the Department's Enforceability of Version 2.0 or 1.0 of Method 502.2. Furthermore, a ruling or order by the hearing officer is only a recommendation to the director of ADHS. The Department will continue to enforce version 2.0 of Method 502.2 until the Director of ADHS has made a final ruling on this matter.

If anybody wishes to review the documents mentioned in the previous listing, please feel free to come into our Office on 3443 N. Central Ave, Suite 810 to see the public file.

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[E-Mail: acharyp@azdhs.gov](mailto:acharyp@azdhs.gov)

Jane Dee Hull, Governor
James R. Allen, MD, MPH, Director

DATE: March 21, 1996
TO: Laboratory Director and QA Manager
FROM: Wesley B. Press, Acting Bureau Chief
SUBJECT: Information Update #25
NOTE: If any problems occur with this web site, please call 1-800-952-0374 or (602) 255-3454 extension 205, 221 or 222. Thank You.

1. The last information update #24, contained the following question and answer. We felt that the answer needed further clarification.

QUESTION: What are the detection levels required by the State for phase II & V SOC compounds?

ANSWER: For an individual point of entry sample the lab must be able to see 50% of the MCL (except for four of the compounds). These four compounds are atrazine, dibromochloropropane, ethylene dibromide, and di(2-ethylhexyl)phthalate. For these four compounds, the Lab must be able to quantitate down to the MCL for each compound.

For composite samples the state regulations refer back to the federal regulations. The federal regulations require that the detection limit of the method used for analyses be less than one-fifth of the MCL.

Further clarification:

For a single point of entry sample, the trigger level for increased monitoring by a water system is any concentration greater than or equal to 50% of the MCL except for the four compounds listed above which have trigger levels at any concentration greater than the MCL. Therefore the laboratories must be able to quantitate down to these trigger levels.

Compositing of a maximum of five samples are allowed and it must be done in a licensed laboratory. For compositing samples for regulated SOCs, the following 2 criteria must be met;

- a. The detection limit of the method used for the analysis is less than one-fifth of the MCL.

- b. If a composite sample is analyzed for SOCs, the lab must be able to quantitate down to the MDL for the composite sample {refer to 40 CFR, Part 141.24, paragraph (h)(18) and the Arizona Department of Environmental Quality Drinking Water Rules, R18-4-219, Appendix B, for the required detection limits}. This is due to the fact that for composite samples the trigger level for increased monitoring is any concentration greater than or equal to the MDL.
2. Our Office received a Memorandum from William R. Diamond, Director, Drinking Water Standards Division, Office of Ground Water Drinking Water, USEPA, concerning the approval of the Quanti-Tray Test for total coliforms and E. Coli under the Total Coliform Rule and the Surface Water Treatment Rule. A copy of the memo is attached.
3. "Extraction of Appendix IX BNAs, Pesticides & PCBs by Accelerated One-Step TM Liquid-Liquid Extractor/Concentrator with Analysis by GC/MS & GC\ECD" is an acceptable alternate technique to EPA Method 3520, Continuous Liquid-Liquid Extraction. As per the letter from Barry Lesnik, Chemist, Methods Section, RCRA Organic Methods Program Manager, to James E. Carl, Project Supervisor, Product Development, Corning Inc, this modified extraction apparatus reduces the solvent volume and shortens extraction time without adversely affecting the performance of Method 3520. The extraction method can be obtained from Dave Black at Corning Inc., 1-(800) 222-7740.
4. HACH Method 10014 DPD is approved for determining ultra low level Residual chlorine in waste waters for NPDES permit.
5. Following are some of the additional questions discussed at the Round Table Discussion on Inorganic and Microbiology methods (2/9/96).

QUESTION: Total / Fecal Coliform by Membrane Filtration:

Blanks are required by the method, but what corrective action should be taken if the blank has a few colonies and there are no colonies in the samples?

ANSWER:

- a. If the colonies on the blank membrane filter are non-coliform, investigate to avoid in the future, and report the no growth water sample as negative for coliform.
- b. If the colonies on the blank membrane filter are coliform and/or fecal coliform, take corrective action by investigating cause and alert data user by stating findings on final report. Suggest resampling.

QUESTION: How common is it to have typical colonies (metallic green sheen) that do not confirm?

ANSWER: From a discussion with Don Reese, Section Manager, Environmental Microbiology, State Laboratory Services, Arizona Department of Health Services, typical metallic sheen colonies are rare in drinking water but are more common in ambient water (streams, lakes and bathing beaches).

QUESTION: Can transfer sticks be sterilized in the autoclave? We don't have an oven.

ANSWER: No, transfer sticks cannot be sterilized in the autoclave. Buy sterile sticks or use metal loops which must be flamed prior to and after culture transfers. If sterilization is a problem, sterile disposable inoculating loops can be ordered from various vendors. Our office does not endorse any particular product, but the following are examples of these products. VWR Scientific: Difco disposable inoculating loop, catalog# DF1906-95 and DF1906-96; disposable inoculating loop, (loop/needle combination), catalog# 50806-300 or 50806-344. HACH Company: disposable inoculating loop, catalog# 22454-25.

QUESTION: If a Colilert sample is negative but turbid must it be reported as turbid and be resampled?

ANSWER: No, as per Dale Ohnmeiss, Environmental Program Supervisor, Arizona Department of Environmental Quality.

QUESTION: Why can't we pipet samples "line-to-line" for microbiological testing?

ANSWER: If, for example, 0.1 mL samples need to be pipetted from a 1 mL pipet which is properly marked in 0.1 mL increments, line to line pipetting is permitted.

QUESTION: HPC : Can a result be reported as < 1CFU/ml? If so, when?

ANSWER: Yes, HPC results can be reported as < 1CFU/mL, when:

- a. no colonies are found on either of the duplicate sample plates, or
- b. 1 CFU is found on only one of the plates and 1 mL of the sample was plated.

QUESTION: What are the laboratory requirements for reporting micro results to ADEQ?

ANSWER: The laboratories are no longer required by ADEQ to report the Maximum Contaminant Level (MCL) violations in the drinking water samples within 72 hours. The owners of the utilities are primarily responsible for reporting the MCL violations to ADEQ within 48 hours after the receipt of the analytical reports. One exception being nitrate, which must be reported within 24 hours. The laboratories are ultimately responsible for the test results and they may continue to report all the test results to ADEQ, if the client so desires.

QUESTION: Does each vessel in the Colilert test have to be checked for color using the color comparator after 24 hr. of incubation? It is quite obvious when a yellow color is produced by coliforms.

ANSWER: If the yellow color is obvious, the comparator check is not necessary. All the presumed negative samples must be checked with the comparator to confirm the negative result. The color comparator must be used after 24 hr. of sample incubation to confirm the absence of slight color variation. Important: the color comparator solution must be stored in a clear plastic container. If a slight color variation is detected, but the comparison with the comparator is not definitive, then the sample must be incubated for an additional 4 hrs at 350 C.

QUESTION: We don't have a 600 C incubator and are using our 350 C incubator to incubate spore strips/ampules used in validating our autoclave efficiency. Is this OK? It gives good

results.

ANSWER: No, this is not acceptable. Spore strips or suspensions must be incubated at the manufacturer's recommended temperature, usually 600 C.

QUESTION: What is the difference between Dissolved, Suspended, Total and Total Recoverable Metals?

ANSWER:

Dissolved Metals: Those elements which will pass through a 0.45 um membrane filter.

Suspended Metals: Those elements which are retained by a 0.45 um membrane filter.

Total Metals: The concentration determined on an unfiltered sample following vigorous digestion or, the sum of the dissolved plus suspended concentrations.

Total Recoverable Metals: The concentration determined on an unfiltered sample following treatment with hot, dilute mineral acid.

The current Federal regulations still classify metals contamination using three categories: total, dissolved and suspended metals.

The following information was provided to us by Ted Martin, Research Chemist, USEPA/NERL, Cincinnati, Ohio, and it describes the reasons why a change in sample preparation and definitions has occurred in drinking water and has been proposed for wastewater.

CHANGE IN EPA SAMPLE PREPARATION FOR METALS DETERMINATIONS - PROPOSED FOR NPDES

In the original "total metal" digestion (paragraph 4.1.3 on page METALS-6) given in Methods for Chemical Analysis of Water and Wastes, nitric acid was added to the sample and refluxed until the digestion was complete, indicated by a light color digestate. The determined analyte concentration following this digestion was reported as "total metal". This term was used because the sample was not filtered prior to digestion and the determined concentration reflected the combined metal concentration of the sample - the "dissolved metal" concentration + the "suspended metal" concentration. However, to report the concentration as "total metal" was in some cases a misnomer because the digestate was not clear, indicating that the "total sample" was not completely solubilized and available for analysis.

In Methods for the Determination of Metals in Environmental Samples - Supplement I, the digestion of unfiltered aqueous samples has been altered. In the revised procedure (Method 200.2) a specific amount of acid (HNO₃ + HCl) is added to the sample and refluxed for 30 minutes following evaporation. The determined analyte concentration following digestion is now defined as "total recoverable". EPA has adopted this term because it is a more appropriate definition of the analyte concentration available for analysis following acid solubilization. This revised procedure is a single uniform digestion which can be used prior to analysis by direct aspiration flame atomic absorption, and is included in the EPA methodology for the stabilized temperature graphite furnace (EPA Method 200.9 revision 2.2), for ICP-AES (EPA Method 200.7 revision 4.4), and for ICP-MS (EPA Method 200.8 revision 5.3).

Using NBS 1645 and other reference samples EPA has found the revised digestion procedure in Supplement I comparable to the previously accepted "total metals" procedure. EPA believes

the revised procedure is sufficiently vigorous to render analytes available for NPDES compliance monitoring requiring a total metal measurement (dissolved + suspended) where the sample is not filtered and digested prior to analysis.

QUESTION: What procedure do I use to digest samples for metals in wastewater for NPDES permits? How do I report the final results?

ANSWER: Digest the samples using the methods referenced in the 40CFR, part 136.3, Table IB: For samples analyzed by ICP, use one of the digestion procedures found in the Method 200.7 published in the 40 CFR, Part 136, appendix C; For the samples analyzed by other procedures listed in the above table, use one of the digestion procedures found in the metals section of "Methods for Chemical Analysis of Water and Wastes, 1979 and 1983."

The final concentrations determined by any of the above procedures are reported as "total."

QUESTION: What are the appropriate digestion procedures for methods 200.7, 200.8, 200.9 in drinking water? Is it okay to report the result as a "total" metal?

ANSWER: Use the digestion procedures that are included with the above methods. The results may be reported as "total" metal.

QUESTION: Can there be a combined digestion procedure for the SW-846 methods, i.e. 6010A and 7000 series?

ANSWER: The EPA is currently looking into establishing a single digestion procedure that could be used for the SW-846 methods.

QUESTION: Can SM 3113B be used for thallium analysis on wastewater? Can 200.9 be used? If not what will happen when 279.2 is withdrawn?

ANSWER: Method 279.2 is scheduled to be withdrawn as of July 1, 1996 for drinking water analysis. As it stands now, 200.9 will be the only method approved for drinking water as of July 1, 1996.

You will still be able to use 279.2 for thallium analysis on wastewater samples for NPDES permits. SM 3113B is not approved for thallium analysis. 200.9 cannot be used for waste water, it is only proposed.

QUESTION: Method 200.7 does not specify a calibration range. Can methods 200.7 and 6010A be combined in one instrument run using the same calibration?

ANSWER: Yes. When running either method the analyst must determine the linear range for each analyte on the instrument. The sample results cannot be reported if they exceed 90% of top end of the linear range. Be aware that the major sample constituents (ex. Ca) may exceed the linear range and will need to be diluted.

QUESTION: My multitask ICP run (sequential) for 200.7 has poor Ag recovery, possible cause & solution?

ANSWER: You need sufficiently high concentrations of chloride in order to stabilize the Ag. Because of this, method 200.7 in 40 CFR, Part 136, recommends that samples for the determination of silver be digested. Digestion procedure given in section 9.4 in 200.7 is the preferred sample preparation technique. Be careful during the digestion, not to reduce the volume below 15 mls as this may cause the silver to precipitate out. Samples digested by this procedure should be able to hold up to 2 mg/L of silver. Also, during the analysis be sure to use a rinse acid that has the same acid concentration as the samples and standards.

6. Our first Round Table Discussion was quite successful in addressing questions and concerns in the Inorganic and Microbiology areas. We are scheduling our second Round Table Discussion on Organic GC Volatile methods. A couple of our surveyors from the Environmental Laboratory Licensure Section and staff from the State Laboratory will be present to answer/clarify questions that you may have about any of the methods and related questions. This will be held **Friday, April 2, 1996 from 1:30 - 3:30 pm at 3443 North Central, 9th floor conference room.**

The areas to be covered are the approved methods, quality control, trouble shooting, maintenance of instrumentation and any other relevant questions. We request that you fax your questions to us prior to this date, in case we need to call the EPA for further clarification. Please fax your questions to Prabha Acharya at 255-1070. You are welcome to bring your questions with you if you cannot fax them ahead of time. Our training room can hold up to 35 people so please RSVP with Cristy Finan at 255-3454 to ensure availability of space.

Please note that we will not be validating any parking. Paid parking is available adjacent to the building on the street level.

7. If you have any questions regarding the Updates, or if you have any technical questions that need clarification, please call or send [e-mail](#) to Prabha Acharya, Program Manager, Technical Resources and Training at the Laboratory Licensure. A [table of contents](#) to all the Information Updates published is also available.

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Information Update

March 5, 1996

Update #24

1. EPA method 200.8 for trace metals by ICP/MS in wastewater **cannot** be used for NPDES permit testing unless special permission has been given by the EPA.
2. David Clift, Chemist at the State Laboratory has been working on improving extraction efficiency for Method 515.1. Following are his recommendations for achieving more consistent spike recoveries for this method:
 - A. Bake out the NaCl and Na₂SO₄ at least 4 hours at 450EC to remove any contaminants that may cause problems.
 - B. Check the pH at designated steps using a narrow range paper and be consistent on the final pH value.
 - C. Average recovery for PCP in the WS30 study was 72% (average reported value was 9.97, true value was 13.8). However, mean recovery according to method 515.1, Table 2, page 249 is 130%.

Suggestions from EPA on low PCP recoveries:

- A. Clean the injection port.
2. Try lowering the pH to approximately 1 (during the ethyl ether extraction), this might force more of the PCP (and Dinoseb) into the ethyl ether phase.
3. The Technical Resources and Training Section at the Office of Laboratory Licensure recently held a Round Table Discussion on Inorganic and Microbiology methods. Following are some of the questions discussed at the meeting.

Q. Colilert: *The instructions state that 5% of positives should be verified. What does this mean?*

A. The recommendation is that 5% of all Mug positives or turbid MUG negatives should be verified. Labs, if they choose to initiate this QC, should establish their own criteria to

achieve the 5% frequency. It may vary depending on the number of positive samples the lab runs. It could be every 20th positive sample. You can use a known contaminated or a QC sample for the verification if you don't have enough regular positive samples.

Q. *What are the most common Lab deficiencies cited by surveyors?*

A.

1. QA not reviewed by lab director.
2. SOPs not in place.
3. Not responding to the missed parameters in WP/WS.
4. Labs using methods not certified by Arizona Laboratory Licensure.
5. Using inappropriate methods.

Q. *Why do we have to do QC each time we make media? Why can't we just QC the powder media?*

A. There are many variables in addition to the media powder quality which affect the quality of the final product (i.e., reagent water quality, autoclave conditions, preparer error, etc.) To detect these it is necessary to do QC each time a batch of media is prepared. (Even if the same person uses the same technique repeatedly on the same day.)

Q. *What are the steps necessary for a lab to switch from one coliform technique to another?*

A. Let Lab Licensure know by letter that you are adding and/or dropping a technique. List each technique specifically.

Recommendation only:

It is good laboratory practice to conduct a side by side study when changing methods to ensure laboratory personnel perform the new technique properly, etc.

Q. *Is it OK to use Chlorox to disinfect samples and then dump it down the drain?*

A. Yes. Be sure that the concentration of the Chlorox is sufficient for disinfection.

Q. *Why is a monthly plate count on DI water necessary if the water is not used for Micro testing?*

A. A monthly plate count must be conducted if applicable to the testing being performed, for example BOD.

Q. *Some laboratories utilize MDLs for reporting purposes, others utilize PQLs or Minimum Reporting Levels. What is the position of ADHS on reporting criteria? Should there be consistency?*

A. The lab may use whichever meets the needs of their individual clients. If your client is uncertain, check with the regulatory agency involved. It is recommended that the reporting criteria is specified in the contract between the lab and the client. Also be certain to make it clear on the final report which one is being used. The PQL is generally accepted as having more analytical significance.

Q. *Licensure requires to write SOP for every method. Can we combine Standard Methods and EPA method as one SOP?*

A. Yes. You will have to write separate QC sections for the different methods.

Q. *Can we combine samples from different methods into one analytical run?*

A. Yes. If you follow the most stringent QC requirements of all the methods combined.

Q. *BOD: a) Will an alternate method be available in the near future?*

b) The method states the blank should be 0.2 or less. What corrective action should be taken if it is not at 0.2?

A. No one at the round table discussion was aware of any alternate methods that will become available in the near future.

If the blank is over 0.2 then you must report out the blank values. It was suggested that the most common cause of high blank values is the reagent water itself. Also, if you are using a water purification system make sure all the lines and supply tanks are clean.

Q. *Turbidity Test: I never have NTU's outside 1-40. For calibration do I need to calibrate my instrument all the way up to 800 NTU and below 1 NTU?*

A. No. If you know the range of your samples then, calibrate for that range.

A comment was made that it was necessary to make sure that you use turbidity free water for your dilutions. A further suggestion was made that you blank out your turbidity meter with your dilution water.

Q. *When are control charts required? If the lab has specified limits or is following the method QC requirements, why do control charts?*

A. Lab Licensure currently would like to see the labs plotting control charts for at least one of the QC parameters. This would typically be either the CCV or check standard.

The control charts are not only required to see if the control sample is within a certain acceptable range but also to track possible trends in the analysis. This can aid the analyst in detecting possible analytical bias or other analytical method problems.

Q. *How can I quickly cancel the memory interference on GFAA for Mo? Is it my tubes or a chemical effect?*

A. Generally speaking you need to make sure the burnout at the end of the run is hot enough to prevent any carry over. It is possible that your graphite tubes are becoming corroded during the analysis which would allow for memory effects. This corrosion can be caused by not replacing the tubes often enough or the wrong acid or too much acid being used in the sample digestion. It is possible that the particular lot of tubes you are using may not be good.

For further assistance with this problem contact: Mr. Isaac Robert at the Arizona State Lab, phone (602) 542-6113.

Q. *Has Arizona adopted regulations concerning the Phase II and V compounds?*

A. Yes. The State adopted these regulations on April 28, 1995. Since the State has added these compounds to their regulations they are no longer referred to in the regulations as Phase II and Phase V compounds.

Q. *Where can a listing of the above compounds be found?*

A. They can be found in the Arizona Administrative Code, Title 18 Chapter 4, articles I-V with appendices A,B and C. A copy of this (available either on disk or hard copy) can be obtained from:

Secretary of State, Publications
State Capital West Wing
1700 W. Washington Street Room 103
Phoenix, Arizona 85007.

Their phone number is (602) 542-4086. According to their office a hard copy will cost \$7.00. This needs to be prepaid or you can stop by their office and pick up a copy.

Q. *What are the detection levels required by the State for phase II & V SOC compounds?*

A. For an individual point of entry sample the lab must be able to see 50% of the MCL (except for four of the compounds). These four compounds are atrazine, dibromochloropropane, ethylene dibromide, and di(2-ethylhexyl)phthalate. For these four compounds, the Lab must be able to quantitate down to the MCL for each compound.

For composite samples the state regulations refer back to the federal regulations. The federal regulations require that the detection limit of the method used for analyses be less than one-fifth of the MCL.

Q. *What are laboratory requirements for reporting microbiology results to ADEQ?*

A. The drinking water rules hold the owner of the water system responsible for reporting results to ADEQ. However, a laboratory can if desired by the owner of a

water system report the results directly to ADEQ. ADEQ does recommend that a lab report results directly to ADEQ if the results show a potential problem with compliance. This is so that resolution of the problem can occur quickly and with minimal risk to the public.

Please Note: The rest of the questions from the Round Table Discussion will be addressed in future Information Updates. Also, due to the heavy workload of the surveyors, it will not be possible to hold the Round Table discussions on a monthly basis as planned. We will try to schedule these sessions every other month.

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Information Update

January 30, 1996

Update #23

1. Notice received from Robert L. Graves, Chief, National Water Quality Assurance Programs Branch, Ecological Exposure Research Division:

"Due to the government shutdown, the schedule for WP035 has been revised as follows:

February 26, 1996 Deadline for receipt of data from participants at NERL - Cincinnati.

April 8, 1996 Individual laboratory reports mailed to the USEPA study coordinators and some State coordinators.

Please notify the laboratories for which you are responsible."

2. Technical Notes on DW Methods, October 1994- Section IV, Mandatory Method Modifications, Page 30, describes an important safety warning when using sample digestion procedures that are described in SM 3114B (R12). Determination of arsenic and selenium by gaseous hydride atomic absorption requires digestion of the sample prior to analysis. SM 3114B describes two digestion procedures. One procedure, referred to as the "total recoverable" preparation, uses perchloric acid in the final stage of digestion. This **Perchloric acid digestion procedure is not required by EPA, and should be avoided**, because of potential danger when using perchloric acid, and because a special fume hood is required. When using method 3114B, the digestion procedure described in paragraph 4.d, *preparation of samples and standards for total arsenic and selenium*, specifies that sulfuric acid and potassium persulfate should be utilized. This warning is not applicable to the ASTM gaseous hydride methods for arsenic and selenium, because the methods do not allow the use of perchloric acid digestion.
3. The Technical Resources and Training Office will be facilitating a round table discussion on Inorganic and Microbiology methods. Some of our surveyors from the Environmental Licensure section as well as staff from State Laboratory will be available to answer questions and clarify problem areas via this session. There is no set agenda, it is a question and answer session. This will be held on Friday, February 9, 1996, from 1:30 - 3:30 pm, at 3443 North Central, in the 9th floor conference room. We request that laboratories fax questions to us prior to this date, in case we need to contact the EPA for further clarification. The areas to be covered are the approved methods, quality control, trouble shooting and maintenance of instrumentation or anything else about which you have questions. Please fax your questions to Prabha Acharya at 255-1070. This forum is NOT ONLY limited to questions sent before hand. Our training room can hold up to 35 people, so please RSVP with Charmaine D'Souza at 255-3454, if you are planning on attending.

4. **REMINDER:** The **FREE** seminar on "Laboratory Waste Disposal" is scheduled for February 7, 1996 at 3443 North Central, 9th floor conference room, from 9:00 am - 11:30 am. This seminar will comprise of, an overview of the RCRA regulations governing laboratory waste, laboratory waste streams and examples, laboratory waste disposal, laboratory packing and documentation. This will be presented by Linda Johnson, Dan Casiraro and Von Wilkin of the Salt River Project laboratory. We still have a few spaces available, if you are interested in attending, please contact Charmaine D'Souza at 255-3454.
5. Please note that we will not be validating any parking. There is a parking fee to park in our building lot.
6. For 600 series EPA Methods which require separatory funnel extraction, it is permissible to substitute it with liquid-liquid continuous extraction.
7. Following is a "training needs assessment" for an Inorganic Chemistry workshop. Please fill out this form and fax it to us, so we can design a workshop that will meet your needs:

Dear Laboratorian:

The Arizona State Laboratory Services is planning a comprehensive workshop in "**Inorganic Chemistry**". This workshop will be held in the summer of 1996. We are requesting input from the laboratories on the topics of interest and areas of concern that can be addressed through this training program.

Please respond to the following questions:

- A. List the specific **Inorganic Chemistry** methods that you would like covered at this workshop. What precise area of this method is of interest to you, e.g., quality control, standard operating procedure, matrix effects, etc.
- B. Which instruments would you like us to include. Please specify, e.g., set up, maintenance, trouble shooting, etc.
- C. List any other relevant topics of interest. Please be as detailed as possible about this topic.
- D. Check the box that best describes your need:

Training type for the above:

IN-DEPTH
GENERAL

Length of Training:

½ day
One day
Two days

- E. Would you be interested in a one day workshop on the ICP? This would cover hardware, maintenance, trouble shooting, tips and techniques.

YES NO

Please fax or mail your responses to :
Charmaine D'Souza at (602) 255-1070 or mail to:
Office of Laboratory Licensure, Certification & Training
3443 North Central Avenue, Suite 810
Phoenix, AZ 85012

The deadline for receipt of this questionnaire is February 29, 1996. **Please note:** All responses **after the deadline** will not be considered due to the lead time necessary for the preparation of this workshop.

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