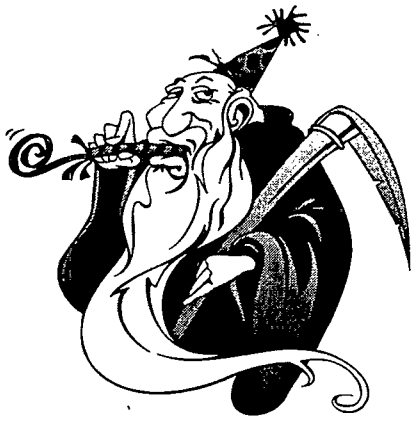


"I didn't feel this old before the ICR!"

ICR Update
Jim Walasek, Editor
Technical Support Center
January 1998

Happy New Year!

ICR Update Issue Number 8 - This information sheet, the **ICR Update**, is the eighth one to be issued by the Technical Support Center (TSC) of the Office of Ground Water and Drinking Water (OGWDW). Future issues will be distributed as needed to maintain information flow related to the ICR.

Correction/Acknowledgment - In the last ICR Update (No. 7) I failed to mention the fine presentation by the **Phoenix Water Services Department** in the **"ICR Monitoring - Full Steam Ahead"** session at the AWWA WQTC conference. Sorry. **Janet Kuefler** (EPA Region 5), talked about strategies for implementing the ICR Rule and how the utility's staff worked together to optimize sampling and analytical procedures. **Ramesh Narasimhan** discussed the usefulness of the ICR data for other programs in which the utility is involved. TSC is proud to acknowledge the cooperation of the Phoenix Water Services Department in this outreach activity. Keep up the good work!

ICR FED Delayed - When EPA announced that the data collection effort would begin in July 1997, it was expected that **ICR FED** (the ICR Federal Database System is the computer system which receives and processes the data utilities and laboratories submit to EPA) would be ready to accept utility monthly reporting diskettes as soon as they were submitted. Unfortunately, problems with the validation process have appeared which, if left uncorrected, would result in erroneously rejecting **valid** data. Therefore, the ICR implementation team believes that proceeding with uploading and validating water utility data would be counterproductive until the errors in the QC validation process are corrected.

We expect to begin uploading and validating data early this year. The impact of the delay will be that you will not receive the first few months' validation reports from the system on the original schedule. We do not, however, expect the startup delay to have an impact on making the

first 6 months of data publicly available in December 1998. Of course, the startup delay does not impact the schedule of sending monthly diskettes to EPA. Keep sending them in monthly.

EPA regrets the delay in availability of validation processing and recommends that each water system continue to carefully review data entered into the Water Utility software to verify that the reports contain the correct information. The EPA implementation team and its contractors are working very hard to fix the problems and get the validation system operational as soon as possible. Stay tuned for further developments.

Speaking of Monthly Reports... - From time-to-time we still receive ICR monthly reporting package diskettes (utility monthly sampling results and laboratory QC data) here at TSC in Cincinnati. The disks should be sent to:

USEPA (ICR4600)
ICR Data Center - Attn: Ed Cottrill
Room 1111 East Tower
401 M Street, S.W.
Washington, DC 20460

If you have already sent a diskette to TSC in Cincinnati, not to worry, it has been forwarded to the proper address.

B.2 Bug - We know that the B-2 (stealth bomber variety) has plenty of bugs, like not being able to fly undetected in heavy rain, but I'm talking about the bugs in the ICR B.2 report (Monthly Plant Parameters).

We were recently made aware of a problem in the B.2 report where the value for Sludge Production had the wrong units associated with it. For example, if the Installed Sludge Handling Capacity was entered into the Initial Sampling Plan (ISP) as 1,000,000 GPD, but the Sludge Production for the month was entered into the Monthly Sampling Plan (copied over from the ISP) as 100 DTD (dry tons per day), then the sludge production for the month would be printed out as 100 GPD. Fortunately, the units will be correct in the data transfer diskette which is uploaded to the mainframe. The problem is only in the printed B.2 report. Since we will probably not be able to fix this bug in a timely manner (i.e., before the end of the sampling phase of the ICR), one way to defeat (**squash**) the bug is to use consistent units in both the ISP and the Monthly Sampling Plan (if possible).

So what are we going to do... with all this ICR data? - As you collect all the data required in the ICR, you are probably wondering how this data will be used. Right? EPA developed a **draft ICR data analysis plan** for both microbial contaminants and DBPs. On November 20-21, 1997, EPA held a stakeholders' meeting to discuss the plan and to get feedback from the stakeholders. Three technical workgroups (**TWGs** - D/DBPs, microbial and modeling TWGs) were created to review the draft plan and ensure that all issues related to data

analysis are addressed. Along with EPA staff, there are volunteers from many different organizations, such as AWWA, utilities and others, that will participate in these TWGs. Their task is to work jointly on developing a detailed data analysis plan by **April 1998.** These TWGs are guided by a **steering committee** that will work with the TWGs to prepare for the design of a software package that will handle data analysis. As the TWGs meet in the near future, we will keep you informed of the progress of this endeavor through the **ICR Update**.

ICR Chemistry Laboratory Approval- As of the end of November, there were 383 laboratories approved to perform chemical analyses for the ICR. These consisted of 59 commercial labs, 305 utility labs, 15 state labs and four other (university or federal). As you know, approvals are issued on a method/analyte group basis. As of November 30, 1997, 4273 approvals were in effect These consisted of 466 approvals for DBP analyses, 443 approvals for surrogate analyses (TOC, UV, TOX, and Br), and 3364 approvals for water quality parameters.

In order to maintain lab approval, labs must successfully participate in ICR chemistry PE studies. Failure to pass **two consecutive** studies results in loss of approval for the failed method/analyte group. Twenty-nine laboratories were unsuccessful in both **PE 5** and **5M** (make-up) and, as a result, they **lost approval** for a total of 41 methods/analyte groups. Almost half of these cases were the result of labs failing to report PE data.

In addition to the above disapproval decisions, TSC also issued **reapprovals** to four laboratories that had lost approval during the previous PE study, and five labs requested their approval be withdrawn for 20 methods/analyte groups. Approval/disapproval letters were mailed on November 26, 1997.

Required Chemistry PE Study - The third of the six **required** chemistry PE studies (**PE 6**) is now underway. The study includes the following parameters: THMs, HAAs, HANs, HKs, CH, TOC, TOX, inorganic DBPs, and Br. The ampules were shipped on 12/15/97 to laboratories that are approved to analyze ICR samples for one or more of the study parameters.

The labs are required to have their analytical results back to EPA by **January 23, 1998.** As required in PE 4 & 5, the labs must report data using **every** method for which they are approved. If a lab no longer wants to maintain approval for a method, a brief letter to the ICR Chemistry Lab Coordinator **prior** to the conclusion of PE 6 will alleviate the embarrassment of having a failure appear on the lab's PE Study 6 report.

Several labs have requested a schedule for the future studies. We can't give you exact shipping dates, but here's an estimate: PE 7 - early April '98; PE 8 - early August '98; PE 9 - early November '98. Of course, we'll send out announcement letters to the labs approximately one month before the shipment date.

How about a peek?....at your QC data - Some laboratories have expressed concern whether their data are meeting the ICR QC requirements. In response to these concerns and the delay of data upload into the ICR Federal database (ICR FED), EPA sent out letters to ICR chemistry laboratory contacts offering special technical assistance. Through EPA's supporting contractor (SAIC), a cursory review of the laboratory's ICR QC data will be conducted. This review will help catch QC mistakes, so they can be corrected without further delay. For more details about this special technical assistance, consult your ICR laboratory contact for a copy of the December 5th letter.
(**Note:** Similar technical assistance for protozoa and virus laboratories has been underway since August 1997.)

Chem Lab Audits - EPA has begun conducting on-site laboratory audits. These audits review the lab's ICR QA plan, SOPs, and selected analytical data. Among the key items checked are that the ICR labs use the EPA supplied standards and follow the QA procedures outlined in Sections 9 - 11 of the DBP/ICR Analytical Methods Manual.

Important! Read this! -Now that I've got your attention...If you're conducting a **membrane treatment study**, this is important! Part 3 of the ICR Manual for Bench- and Pilot-Scale Treatment Studies describes the monitoring requirements for membrane studies and lists the water quality parameters that must be sampled during the study. One parameter that is not listed in this manual is **ammonia**, which is an important water quality parameter due to its impact on the chlorine demand of a water. For this reason, we strongly encourage utilities conducting membrane studies to monitor ammonia in the feed, permeate and concentrate streams from a membrane system. The ICR Treatment Study Data Collection Spreadsheets contain cells to record ammonia concentrations during membrane studies.

Conducting a RSSCT Treatment Study? Read this, too! - During a bench-scale GAC study (or RSSCT), utilities are required to collect twelve effluent samples from both the 10- and 20-minute contactors over the course of a run. Section 5.3, Part 2 of the ICR Manual for Bench- and Pilot-Scale Treatment Studies (p. 2-29) states that effluent samples should be collected after the first hour of operation and then at 5% to 8% increments of the average influent TOC. Furthermore, this section demonstrates a procedure for estimating a RSSCT sampling plan, as shown in Table 5-4. When applying this approach to estimate the sampling plan, it is important to realize that the times estimated by this approach are instantaneous sampling times, and that effluent sample collection will occur over a ***sampling period.***

The duration of this sampling period can be incorporated in the RSSCT sampling plan as follows. First, develop a RSSCT sampling plan as described in the manual. Next, estimate the duration of the sampling period by dividing the sample volume by the flow rate to the small-scale column. Define the beginning of a sampling period by subtracting one-half of the duration

of the sampling period from each of the times estimated in the sampling plan. Define the end of a sampling period by adding one-half of the duration of the sampling period to each of the times estimated in the sampling plan. For example, assume a flow rate of 0.6 L/hr, a sample volume of 2 L, and a sample plan of 1^{hr}, 9^{hr}, 18^{hr}, ... The duration of the sampling period is (2 L)/(0.6 L/hr), or 3.3 hours. The beginning and end of each sampling period are defined as follows: sampling period 1 (start: 1^{hr} ; end: 4.3^{hr}); sampling period 2 (start: 7.35^{hr} ; end 10.65^{hr}); sampling period 3 (start: 16.35^{hr} ; end: 19.65^{hr}) ... Note that the first sampling period will ***always*** begin at 1 hour. Also remember that three duplicate effluent samples must be collected from each column, and the duration of the sampling period for duplicate samples will be ***twice*** that for regular samples.

Finally, remember that this procedure is an estimate for a RSSCT sampling plan, and on-site UV_{254} or TOC measurements should be used to define the sampling plan when possible. However, even in the case where on-site TOC/UV_{254} analyses are available to define a sampling plan, the estimated sampling plan can be a useful planning tool. For example, if the estimated sampling plan shows ***overlapping*** sampling periods, that would indicate that the RSSCT needs to be redesigned to "spread-out" the sampling events.

♫All I Want for Christmas is a four-bit Gasket!♫ -

For those using a Parker M39R10A yarn wound filter for collection of protozoan samples, the use of a gasket may be critical to **avoid loss of protozoa**. It has been brought to our attention, that since the **LT-10** filter holder was redesigned a few years ago to make it easier to handle, bypass of the sample around the filter may occur due to a leak in the seal. This can be prevented by the purchase of **Parker P/N 2621-1542** polyfoam gaskets which cost just **50¢** each. These should be available from your filter supplier. It is recommended that a gasket be used at each end of the filter when it is mounted in the housing. If your supplier does not have these, please call Norm Klimek at Fluid Technology, 303/233-7400. Merry Christmas!

Virus Sampling Flow Rate Clarification -

The ICR Microbial Laboratory Manual makes several references to the flow rate for virus sampling. On page VIII-11, step 10, it states that when pressurized taps are not available, a pump capable of supplying **3 gal/min** at 30 PSI should be used. On page VIII-13, step 8-b, it refers to the thiosulfate addition (10mL/gal) for finished water at a flow rate of **3 gal/min**. Though inferred, it does not explicitly state that the flow rate for virus sampling should be **no greater than 3 gal/min**. Therefore, please consider this a "clarification" that **the flow rate for virus sampling should not exceed 3 gal/min.** If this rate is exceeded within the precision of the flowmeter being used (which should be at worst ±10%), then the sample data should be flagged by the utility with an "**R**" (for rejected), and the comment that "sampling flow rate was exceeded" should be added to the comment field.

Important Update... -

The November 1997 **ICR Update** provided a summary of the design and implementation strategy for the ICR Supplemental Surveys and ICR Lab Spiking Program. However, since the November 1997 **Update**, EPA has decided to modify

the surveys, as detailed below, by expanding the sampling universe and providing more time for method development. EPA has moved the start date to **July 1998.** For further information, contact **Heather Shank-Givens**, EPA Project Manager, at **202-260-0063**.

ICR Lab Spiking Program - The objective of the lab spiking program is to develop an aggregate recovery rate "adjustment" factor for ICR labs conducting protozoan analysis using the current ICR method. This data is an important aid in interpreting ICR protozoan data for source water and will be used to adjust estimated national protozoan concentrations when evaluating regulatory options.

The lab spiking program will be expanded to include **40 ICR plants**, and their ICR labs. Plants will be randomly stratified by the size of their ICR lab (i.e., labs conducting more ICR analyses will have more representation). On **four** separate sample dates, the plant will collect an additional 100L concurrent with the monthly ICR sample and ship it to EPA's contract lab for spiking and filtration (for a total of **160** samples per plant). The filter will then be sent to the plant's contract ICR lab for analysis with the current ICR method. Of course, EPA will pay materials, shipping, and analysis costs.

Potential plants will be contacted in **January 1998** and the spiking program will begin in **February/March 1998.** When a sufficient number of plants are available for the spiking program, EPA plans to notify remaining ICR plants to indicate that recruitment is completed.

ICR Supplemental Surveys - The supplemental surveys will consist of two surveys: a Large System Survey (LSS), for systems serving ≥100,000 people (ICR Systems) and an **expanded Medium/Small System Survey**, for systems serving <100,000 people. EPA intends to use Method 1622 for *Crypto* and *Giardia* analysis in both surveys. The Large System Survey sampling design is the same as that presented in November 1997 - one strata of the 10 largest plants and a second strata of 50 plants randomly stratified by water body type, with 12 months of biweekly monitoring for protozoa and microbial indicators.

The Medium/Small Systems Survey sampling frame will be **expanded** to include all systems serving <100,000 persons. The design will consist of approximately **100 randomly selected plants** and will monitor biweekly for protozoa and microbial indicators, and monthly for DBP precursors and WQPs for 12 months.

The **extended deadline** for starting the supplemental surveys enables EPA to expand the surveys to include smaller systems and provides **more time for validation** of the *Giardia* component of Method 1622. EPA is generating a list of potential participant plants and will be contacting them to request voluntary participation in late spring 1998. To ensure statistical precision, voluntary participation "upon request" is important. Again, EPA will pay for materials, shipping, and analysis for both surveys.

Method 1622 - What's it all about? - Method 1622, about to be round-robin tested (see article above), was developed to improve the recovery, the precision, and the detection limit for *Cryptosporidium* and *Giardia* in water samples. Validation processes have **not yet** been

completed for Method 1622, and it is likely that some of the method procedures will be modified. Therefore, it is **not** ready for routine use and **cannot be substituted for the ICR method in the ICR.**

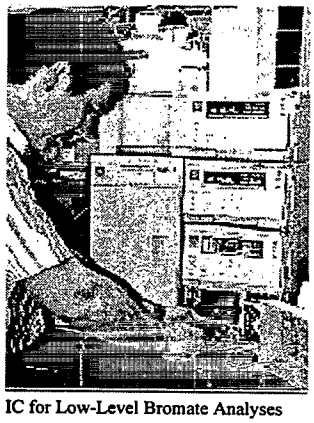
Method 1622 was developed using the most recent, but "off-the-shelf" technology available. Some of the differences in the two methods are highlighted in the table below:

Some Procedural Differences Between the ICR Method and Method 1622		
Procedure	**ICR Method**	**Method 1622**
Sample Volume	100 liters	10 liters
Filter Type	polypropylene wound fiber filter	polyether sulfone pleated capsule filter, flat plate membrane filter, or vortex flow filtration
Clean-up Step	Percoll-sucrose flotation	immunomagnetic separation
Stain	indirect fluorescent antibody	direct fluorescent antibody
Microscopic Examination	of a membrane filter	of a teflon coated well slide
Filtrate Examined	fraction; sometimes < 1 liter	up to entire 10 liters

REMEMBER: Method 1622 **cannot** be substituted for the ICR method in the ICR.

Next Month's ICR Update -

In the next issue of the ICR Update we'll look at the on-site analyses being performed at EPA's TSC lab in Cincinnati. Basically, these analyses consist of monthly **low-level bromate** (pictured) and quarterly **aldehydes** for treatment plants that use ozone or chlorine dioxide, and quarterly **cyanogen chloride** analysis for plants that use chloramines. All aldehyde and cyanogen samples must be analyzed within a two-day holding time. Bromate samples have a 28-day holding time. In November, TSC received samples from 86 water systems.



IC for Low-Level Bromate Analyses

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