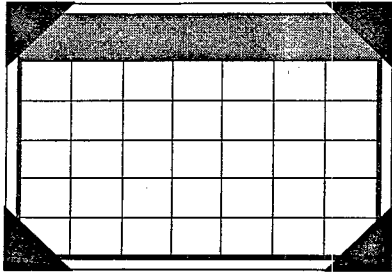


JULY 1997



“One Down, Seventeen to Go!”

### ICR Update

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# ICR Monitoring Begins!

**ICR Update Issue Number 4** - This information sheet, the **ICR Update**, is the fourth 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.

**No More Dry Runs** - That's right, ICR sampling has started in earnest! All ICR utilities should have received formal approval in late June to begin sampling in July. Sampling will continue for 18 months. Chapter 6 of the *ICR Water Utility Database System Users' Guide* covers monthly sampling. The first step in monthly sampling is to develop a Monthly Sampling Plan to provide your field operators with a list of the treatment information they will need to gather and the samples they will collect that month. A summary of the procedure for conducting monthly sampling is on page 92 of the *Users' Guide*. Remember to use the worksheets to record operational information at the time of sampling and carefully check the sample numbers on the bottle labels to ensure that the proper bottles are being filled.

**Message from EPA Sampling Coordinator** - “The USEPA has been receiving samples from plants using ozone, chlorine dioxide or chloramines for the last two weeks and I want to commend the samplers on an excellent job. Most of the samples have been received before 10:00am and have arrived cold. To ensure the samples will be cold upon arrival, be sure to freeze the ice packs **solid**. EPA includes 4 to 8 ice packs per kit. Please remember to return all the ice packs in the kit when shipping the samples to the EPA. If samples are collected in the morning then shipped late in the afternoon, check the kits to see that the ice packs are still frozen **before** you ship. I realize it is difficult to keep samples cold in the hot summer months, but I also know the samplers are doing their best to keep the samples cold. A waterproof black marker is included in each kit to record the date/time the samples are collected and the samplers initials on the label. (Using a pencil or pen usually results in a unreadable label at this end.) And finally, please remember to send the **D.1 Monthly Sample Allocation to Laboratories** report with the collected samples. If you forget to include the D.1 report in the kit, simply send it by FAX to the Sampling Coordinator at (513) 569-7191.”

**Lab Approval Nearly Complete** - With the exception of a few Water Quality Parameters (WQP) for utilities, ICR Chemistry Lab approval is now complete. As of July 15, 1997, 369 labs had been approved for chemical parameters. The list contains 62 commercial, 15 state, 289 utility, and 3 labs classified as "other." Recall that there are 20 different parameters for which approval is granted with a total of 52 different method/analyte combinations. Therefore, current approvals represent 3,903 method/analyte group approval decisions. As in the past, the list of approved labs is available from the Safe Drinking Water Hotline (800-426-4791) or browse the OGWDW Home Page on the Internet at <http://www.epa.gov/OGWDW/regs.html>.

**Virus and Protozoa Lab Approval Complete** - TSC has completed the initial virus and protozoa lab approval process. Twenty-three analysts from thirteen labs have been approved for virus analysis (4 commercial, 3 utility, 3 state/city, and 3 university labs). Fifty analysts from 30 labs have been approved for protozoa analysis (9 commercial, 16 utility, and 5 city/state labs). As always, the list of laboratories will be available through the Safe Drinking Water Hotline and also appears on the OGWDW Home Page.

**Coliform Lab Approval** - TSC has completed approval of a total of 310 laboratories to perform coliform analysis for ICR monitoring. This list includes 232 utility labs, 62 commercial labs, 7 state labs, and 9 other kinds of laboratories. The application period for approval of coliform labs is now closed. Therefore, utilities which do not have an approved laboratory in-house will be required to "contract" their samples to an ICR approved laboratory for analysis. The list of approved labs is available through the Safe Drinking Water Hotline and is also accessible on the OGWDW Home Page.

**Ongoing Chem Lab Approval Status** - Remember, since it is possible that a lab could lose its approval status sometime during the 18 month sampling period, it is still important that you check with your labs prior to each monthly sampling period to be sure that they are still approved. We are hopeful that the labs will take the initiative and notify their clients if approval is "lost," but better to be safe than sorry. The lab approval list on the Internet may also be used, but there is no guarantee that it will always be "up to the minute" accurate.

If it does become necessary to use another lab, enter that lab name and lab ID into the utility software (Laboratory Identification List window). It is then a simple matter to reassign the analyte groups to the new lab in the monthly sampling plan. Remember, EPA does not learn which lab a utility has used until the monthly data diskette is submitted (approximately 4 months after sampling).

ICR approved coliform labs must maintain state certification to remain approved for the entire 18-month ICR monitoring period.

**Ongoing PE Studies** - Ongoing performance evaluation (PE) studies for protozoa and virus laboratories consist of **two PE samples per month** per principal analyst (and per analyst for virus labs) for the duration of ICR monitoring. Ongoing PE sample shipments for protozoa labs began in May '97; ongoing PE sample shipments for virus began in July '97.

On the chemistry side, ongoing PE studies for the disinfection byproducts (DBPs) and surrogate parameters consist of **6 quarterly sets** of samples. Study 4 (designated PE 4) was the first of the six

"required" PE studies for laboratories approved to perform ICR analyses for the DBPs and surrogates (TOC, UV, Br and TOX). Samples were sent to all laboratories that had received approval or that had an application in the review process. (The study samples were mailed only to laboratories that had submitted a completed application by the February 14, 1997 deadline, because EPA is not reviewing late applications for the DBP and surrogate parameters.) Laboratories, that failed one or more of the PE samples for a method/analyte group for which they were seeking to obtain/maintain ICR approval, were sent a make-up sample (PE 4M). The majority of the labs passed their make-up samples, but as a result of the PE 4M, 22 labs lost approval for a method/analyte group for which they had been approved. The labs were notified of these results on 7/8/97 and they were instructed that approval was lost effective that day. A revised approval report has been posted on the Internet and at the Hotline reflecting these latest changes in lab approval.

**PE Study 5** - Talk about anxious, it seems as if we just finished PE 4M and already people are calling to find out when the next study will be conducted! EPA intends to ship the next round of PE samples (PE 5) during the week of September 8th. As in previous studies, EPA will send an announcement letter to the approved labs approximately one month prior to the shipment date. The labs will also have 1 month to analyze the samples and report their data back to EPA.

**Chlorine Demand Test** - Several utilities and laboratories have called for clarification on this test. The ICR Sampling Manual (pages D-3 and D-4) summarize the criteria that must be applied for the test. **These supersede the criteria published in Standard Method 2350 B.** Therefore, you do not need to do the calculations specified in 5a. of SM 2350 B. If you do not have a significant inorganic oxidant demand, it is very likely that you cannot meet both the ICR and the SM 2350 B requirements. (EPA has recently learned that there are commercially available chlorine standards which can be used for low chlorine demand dosing.)

**Errata-Tat-TOX** - The ICR Sampling Manual (EPA 814-B-96-001) incorrectly listed the concentration for the TOX dechlorination agent in Table 4-2 (page 4-13). It should have read... "Dechlor: 0.05 mg Na<sub>2</sub>SO<sub>3</sub>/mL of sample. (Use crystalline Na<sub>2</sub>SO<sub>3</sub>.) (A minimum of 0.005 mg Na<sub>2</sub>SO<sub>3</sub>/mL of sample is required in SM 5320 B.)"

On a related topic, **sample preservation for TOX**, some labs have reported receiving improperly acidified samples (see Tales from the Trenches). Please check that the correct (HNO<sub>3</sub> or H<sub>2</sub>SO<sub>4</sub>) acid is being used. Samplers may also need to predetermine the correct amount of acid necessary to lower the pH to <2 by performing a "test" on a separate sample bottle to determine the proper volume of acid needed.

**Method 551.1 Buffer Calls** - We have received several phone calls concerning the buffer used in Method 551.1. Unfortunately, the buffer does not appear to be strong enough to overcome the natural buffering capacity of all drinking waters. Here are some suggestions if you are having problems meeting the 4.8 to 5.5 pH limits:

- ◆ Make sure that the buffer is being prepared with 1% sodium phosphate, dibasic and 99% potassium phosphate monobasic, by weight.
- ◆ Use only fresh, **ACS grade** reagents.

- ◆ If you still can't meet the pH criteria after following the first 2 steps, increase the amount of buffer added to 2 grams per 60 mL of sample.

If after following these recommendations you continue to experience problems meeting the pH requirements in Method 551.1, please contact David Munch at (513) 569-7843.

**Protozoan Method Clarification** - A number of analysts have asked if the sample can be held after resuspending the pellet (Step 6, page VII-19) and prior to preparing the membranes. Percoll-sucrose is osmotically stressful to the organisms, therefore the Percoll-sucrose should be washed away as soon as possible, which is accomplished when the membranes are prepared. Therefore the membranes should be prepared immediately after the flotation purification. If a break must be inserted, do so **before** the flotation purification steps as indicated in the manual on page VII-19.

**Correction to Protozoan Sampling Requirements** - The *ICR Water Utility Database System Users' Guide* (EPA 814-B-96-004) requires the pH and temperature to be reported when entering protozoan sampling information. Although this information is not explicitly required by the method or the sampling guide, one cannot exit the sample data entry screen without providing it. Therefore, it is EPA's recommendation that the sampler take the pH and temperature when sampling for protozoa if at all possible. Normally, protozoan sampling will probably be done simultaneously with virus and/or chemistry where these parameters are required anyway. If protozoan sampling is done at another time and it is a real hardship to lug along a pH meter (a thermometer could hardly be called a hardship), then **pH paper** will do (or use a pocket pH meter, if available). If the samples have been taken and no temperature or pH has been recorded, then the pH and temperature from water quality parameters sampling can be used as a last resort.

**Foiled by Decimal Place** - The Protozoan and Enteric Virus Sampling Guide states on page 15 that "at least 26 gallons/100 liters" of water should be sampled for protozoa in raw water and then the tap should be turned off. Unfortunately, 26.4 gallons actually equals 100 liters and the method requires that you sample 100 liters. Consequently, some of you have been making a valiant effort to sample exactly 26 gallons of water and falling a little short (98.4L) of the 100 liters required. Please sample at least 26.4 gallons and no more than 31.7 gallons (120 L) in the future.

The same holds true for the finished water, 264.2 gallons equal 1000 liters. For virus, 52.8 - 79.3 gallons equal 200-300 liters and 396.3 - 476.6 gallons equal 1500 - 1800 liters. See the correspondence from Mary Ann Feige to the ICR Technical Contacts dated July 2, 1997 for more information on volumes to be sampled.

**Virus Archiving** - There are two criteria which trigger virus archiving: 1) any virus detection in finished water; and 2) virus detection in raw water at a level of 1000 MPN/100 L or greater. If either of these triggers is exceeded, both raw and finished water samples must be archived for the remainder of the 18-month monitoring period.

If archiving is "triggered," the lab should contact the utility **immediately**. It is the utility's responsibility to arrange to have the "archive triggered sample" sent directly to EPA by the laboratory. It would behoove the utility to make arrangements with their laboratory **before** sample data are expected regarding how to handle this possible situation.

**Micro Data Entry Screens** - For first time readers, this item doesn't refer to tiny computer screens, but to the entering of protozoan and virus data into the ICR Water Utility Database System. In the Utility Database System software there is a field named "Amount of Sample Assayed (L)" on the protozoa and virus data entry screens. (The respective screens are shown on pages 121 and 123 in the *Users' Guide* [EPA 814/B-96-004A]). The amount of sample assayed is the amount of the original sample volume collected that is represented by the concentrated floated sediment that is examined under the microscope, expressed in liters. The amount of sample assayed is computed as  $V \cdot F \cdot R$ , where  $V$  is the sample volume collected,  $F$  is the fraction of eluted packed pellet volume subjected to flotation, and  $R$  is the fraction of the floated sediment examined under a microscope. Your laboratory should report the **Amount of Sample Assayed** and it should be entered into this field.

**Coliform Data Reporting** - All coliform samples (source and finished) must be analyzed quantitatively in order to determine the level of organisms in each sample. You must enter your total coliform data from your water samples but have a choice of entering data from either fecal coliforms or E. coli.

If Colilert values are reported using the ICR Water Utility Database software for total coliform and E. coli, they must be quantitative numbers and reported in the software database under "Multiple Tube Fermentation Technique" (see p.122 of the *Users' Guide*) since the Colilert values are estimated using Most Probable Number (MPN) tables as are the MTF values.

Coliform data analyzed by the MF method is reported in the software database under the "Membrane Filter Technique."

**Initial Sampling Plans Approved** - Approval of Initial Sampling Plans (ISP) is complete. You should have received an "official" approval letter from EPA stating that your ISP was received and reviewed and was found to be acceptable. According to the rule [§141.141(f)(2-4)] your system must begin monitoring in the month following receipt of the approval letter, which would be **July 1997**.

As a **reminder**, the Initial Sampling Plan did not require a valid ICR Lab ID number to be entered into the software because a finalized list of approved labs was not yet available. If you were among the many that did not enter a valid ICR Lab ID into the ISP then please do so **before** generating your **first** monthly sampling plan. Neither the "revised" ISP nor the monthly sampling plan should be submitted to EPA. By the way, the Lab ID for the Cincinnati EPA lab is **ICROH031**.

**Reporting TOC Monitoring Results** - Many of you have diligently been monitoring TOC (and in some cases THM4/HAA5 or UFC-TOX) for about ten months now to determine whether or not your treatment plant will be required to conduct a treatment study. In just a few months it will be time to mail the results to EPA to determine whether you're in or out of the treatment study requirement. Here are a few tips to make the reporting process a breeze.

- ◆ The results must be submitted by October 14, 1997. Early submissions are encouraged!
- ◆ The data should be in a hard-copy format.
- ◆ Use Tables 5-1 and 5-2 in Section 5.0, Part 1 of the *ICR Manual for Bench and Pilot-Scale Treatment Studies*. Table 5-1 includes general information for your PWS and plant, and Table

- ◆ 5-2 is used to report the actual TOC, THM4/HAA5 and/or UFC-TOX data.
- ◆ Be sure to include the results for each monthly or quarterly analysis as well as the average values.
- ◆ TOC concentration below the minimum reporting level should be reported as “<0.70” in Table 5-2. For the purpose of computing an annual average, assign a value of **zero** to entries of <0.70.
- ◆ Make sure you include the name, ICR Laboratory ID Code, and laboratory official contact information for the lab which conducted your TOC analyses.

**Save a Stamp** - If you know which treatment study option you plan to pursue by October, save a stamp and send in the proper application along with your TOC results. The application forms can be found in Section 5.0, Part 1 of the Treatment Studies Manual. For example, if your annual average TOC concentration is below the threshold requiring a study, then you can submit Table 5-5 along with Tables 5-1 and 5-2 to apply to avoid the treatment study requirement! Alternatively, if you will be required to conduct a study, you can submit Table 5-11 and a Study Plan along with Tables 5-1 and 5-2.

**Still Time to Apply** - The deadline to submit **letters of intent** to conduct joint studies or to contribute funds to a cooperative research effort in lieu of conducting a study was May 14th. The purpose of requiring these letters was to provide EPA with an indication of the number of joint studies and treatment study alternatives to expect. However, these letters of intent are not binding since the common source data necessary to pursue either of these options was not available at the time the letters of intent were required. Thus, a PWS can modify its proposal or pursue another treatment study option in a formal application regardless of what was proposed in the letter of intent. Furthermore, a PWS can submit a formal application to conduct a joint study or to contribute funds to a cooperative research effort in lieu of conducting a study even if a letter of intent was not submitted by the May 14th deadline.

**Measuring TDS** - Total dissolved solids (TDS) measurements conducted during membrane treatment studies are intended to provide a quick indication of membrane performance (with respect to the rejection of inorganic parameters). The *ICR Manual for Bench- and Pilot-Scale Treatment Studies* (Part 1, Section 4.5) states that either a conductivity meter or a TDS meter can be used to measure TDS concentrations. However, if a conductivity meter is used, the conductivity reading in  $\mu\text{S}/\text{cm}$  must be converted to TDS in  $\text{mg}/\text{L}$  when reporting the results. Standard Methods (19th ed., 1995) lists method 2510 B for measuring conductivity with a probe, and the measurement of TDS with a meter follows a similar procedure. **The gravimetric method, Standard Method 2540 C, should not be used for routine monitoring of membrane system performance during ICR treatment studies.** Although method 2540 C is an accepted method for measuring TDS, it is labor intensive and is not well suited for routine monitoring of pilot- and bench-scale membrane systems.

**Tracer Study** - For surface water plants, the one-time tracer study on the clearwell to determine the T10 must be completed **before** the first set of monthly ICR results are submitted. The clearwell T10 value in following months is determined by flow-proportional interpolation of the clearwell tracer study results. The tracer study should be conducted according to the SWTR Guidance Manual. We encourage tracer studies to be performed at multiple flows, however, the results from a tracer study conducted at a single flow will be accepted.

**Filter Run Time** - The average filter run time, in hours, that must be reported with each set of monthly sampling results is averaged over the one month sampling period, and is averaged over all operating filters in the plant.

**Question of the Month** - When inputting monthly sampling data into the ICR Utility Database and average monthly flow is requested, does a utility:

- a) use the average for the previous month (e.g., June for July samples)
- b) wait till the end of the month and then use that data
- c) use the average flow for the month up to the date of sampling
- d) make up a number

TSC's interpretation is that "Average Monthly Flow" refers to the current **calendar** month. Therefore, if samples are collected on July 7th then use the monthly average from July 1st through July 31st. Answer b)

Want to try another one? When is a sample "Collection Date" not the date the sample is collected? The ICR Water Utility Database software requires that a sample collection date and time be entered. The "Collection Date" is used to determine when the sample holding time has expired. In the case of the SDS sample the beginning of the sample holding time is after the sample has been incubated and quenched. Thus, the sample "Collection Date" and time for a SDS sample is when the sample is quenched. Answer: When it's the SDS sample!

**ICR, TSC, WQTC - Alphabet Soup?** - TSC is planning to present an update on the ICR in a session at the American Water Works Association, Water Quality and Technology Conference that will be held in Denver, Colorado, November 9 - 12, 1997. The title of the session is "ICR Monitoring - Full Steam Ahead." The ICR session will include discussions of USEPA's perspective about the progress of the 18-month monitoring, laboratory approval, treatment studies and data reporting. The utility's perspective will be presented by the City of Phoenix, Water Service Department. Come and join us!

**"Tales from the Trenches"** - Even though most utilities (and labs) piloted their ICR procedures in the last few months, things still can and often do go awry in the **real world**. Here are some "Oops" items that were submitted by Andy Eaton of Montgomery Watson. Suggested "fixes" are also included.

**Protozoan** - Utilities neglect to mark whether their meters are calibrated in gallons or liters and the lab assumes volumes are out of the specified range. **Fix** - Be sure to mark units on form (and don't forget to send form back with samples).

Utility sends protozoan equipment to lab in addition to virus equipment. **Fix** - Know what gets cleaned on site and what gets returned to the lab.

**TOX** - Utility neglects to adjust pH properly (not sufficiently acidic or uses wrong acid or accidentally uses base) **Fix** - Check pH with pH paper after adjusting. Be sure to use proper acid (be sure instructions are clear).

**Sampling** - Utility doesn't sample all locations from a single plant in 3-day window (or samples micro in a different week from chemistry) **Fix** - Utility must understand the ICR requirement and arrange changed schedules with all affected labs (in-house, contract, EPA). **NOTE: Exception** to the above is for a plant sampling for Cyanogen Chloride, Aldehyde, and Low-Level Bromate. These plants have been scheduled for a specific sampling date and must collect (and ship) the samples on this day.

**Hypochlorite** - Utility thinks the hypochlorite sample is the solid hypochlorite stock chemical, not the diluted chemical feed. **Fix** - Review the ICR Sampling Manual.

**SDS** - Utility runs WQP on SDS sample before incubation, not after. **Fix** - Remember that all SDS analyses are **after** incubation.

**MISC** - Sample bottles re-labeled by utility for different test, therefore, improper preservative. **Fix** - Call lab for additional bottles, or guidance.

Sample numbers incorrect (e.g., XXX-01-97-XX rather than XXX-07-97-XX) leading to error in D.1 report and improper check digit. **Fix** - month is the calendar month, not the sampling period number.

FedEx mistakes Roswell, NM for Roswell, GA and sends sample bottles to "aliens," therefore, bottles not delivered to utility when scheduled. **Fix** - Use FedEx tracking and keep utilities informed of expected delivery dates for bottles.

**Continued Good Luck!**

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