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ICR Laboratory Quality Control (QC) Database System Users' Guide

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ICR Laboratory Quality Control (QC) Database System Users' Guide

by

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Notice

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for use with Microsoft® Windows™

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PREFACE: BEFORE YOU START

What is the Information Collection Rule (ICR) Laboratory Quality Control (QC) Database System?

The ICR Laboratory QC Database System is a Personal Computer (PC) -based Microsoft® Access™ runtime application developed to validate data supplied by large water utilities in accordance with the requirements of the ICR. It is distributed by the United States Environmental Protection Agency (EPA). The application will help you:

- Capture batch and result information for Laboratory QC Samples that will be used to validate data submitted to EPA by water utilities.

- Record and review data required to maintain your status as an approved laboratory under the ICR.

  NOTE: The ICR Laboratory QC Database System will not determine your approval status. However, the application will help you track much of the data you need to report to EPA to maintain that status.

- Report QC sample data in the format specified by EPA.

The ICR Laboratory QC Database System is part of the overall ICR Data Management System (DMS), an information system that captures treatment process, water resource, and sample data from large public water systems and validates the data using information reported independently by analytical laboratories. EPA and the drinking water industry will use the data to evaluate the quality of drinking water in the United States, identify the most effective water treatment technologies currently in use, and develop future drinking water regulations.

WARNING: You must use Release 1.0 of the ICR Laboratory QC Database System to report data to EPA. *You cannot use an Alpha or Beta Test Release.*

What is the ICR Laboratory QC Database System Users' Guide?

The ICR Laboratory QC Database System Users' Guide is provided with the ICR Laboratory QC Database System to help you use the application. The guide describes the information to be entered into the application. It also contains detailed instructions for using the application, including how to install and start the software, how and when to enter data into the system, how to output data entered into the system, and how to submit data to EPA.

Any rule language, guidance, or notifications you receive from EPA regarding the rule supersede the instructions and suggestions included in this guide.

How Does the ICR Laboratory QC Database System Fit into Your Existing Data Management Processes?

The ICR Laboratory QC Database System is not intended as a replacement for a Laboratory Information Management System (LIMS). It is not designed to track any samples other than those collected under the ICR. It is a separate information system you will use to record data on ICR samples.

In most cases, you will enter data for ICR samples by batch into the ICR Laboratory QC Database System after you have completed the analysis of the samples. The data you enter will come from your LIMS and the Sample Allocation to Laboratories Report (ICR Water Utility Database System Report D.1) you received from the client utilities.

How is the ICR Laboratory QC Database System Users' Guide Organized?

The ICR Laboratory QC Database System Users' Guide is organized according to the type of data a laboratory is likely to supply. The guide starts with general information about the application, progresses through the steps necessary to record data for chemical analyses, continues with the processes associated with reporting data for microbiological analyses, and concludes with administration functions for maintaining both types of data. Each chapter in the body of the guide consists of a distinct set of activities performed at an analytical laboratory:

- Chapter 1 introduces the ICR, the ICR DMS, and the ICR Laboratory QC Database System.
- Chapter 2 explains how to install the software on your system and describes the basic mechanical features of the application.
- Chapter 3 explains how to enter detailed information on chemical samples.
- Chapter 4 tells you how to enter detailed information associated with microbiological samples.
- Chapter 5 illustrates an alternate procedure for recording utility samples in the application.
- Chapter 6 summarizes the reports generated by the ICR Laboratory QC Database System.
- Chapter 7 shows you how to transfer data to EPA.
- Chapter 8 provides general data integrity and system administration information.

CHAPTER 1: INTRODUCTION TO THE INFORMATION COLLECTION RULE (ICR) LABORATORY QUALITY CONTROL (QC) DATABASE SYSTEM

The ICR Laboratory QC Database System

Background

The ICR, developed by EPA in cooperation with the water industry and environmental groups, requires large public water systems to monitor and report results for microbiological contaminants and disinfectant by-products (DBPs). It also requires utilities to report treatment plant design and operating data.

The purpose of the ICR is to collect information to assist EPA and the water industry in evaluating monitoring data and treatment removal efficiencies. The evaluated data will be used to:

- Identify source water parameters influencing pathogen and DBP formation.
- Determine concentrations of pathogens and DBPs in drinking water.
- Refine models for predicting DBP formation.
- Inventory treatment processes currently in use.
- Support development of regulations and guidance to limit pathogen and DBP exposure, in particular the proposed Enhanced Surface Water Treatment Rule (ESWTR) and Stage 2 of the Disinfectant and Disinfection By-Products Rule.
- Establish a central repository to support future analysis of sampling and treatment data at the federal, state, and local levels.

The ICR is designed to cover a limited time span. Large utilities, typically those serving over 100,000 people, are required to report data monthly for 18 months.

Under the ICR, all analytical laboratories, including in-house facilities, must be approved to conduct analyses required under the rule. Approvals are granted on a method-by-method basis. A laboratory that is approved to analyze samples using EPA Method 551.1 may not be approved to analyze samples using EPA Method 524.2. For instructions on obtaining approval, please contact the EPA Safe Drinking Water Hotline at (800) 426-4791.

ICR Data Management System (DMS) Concept

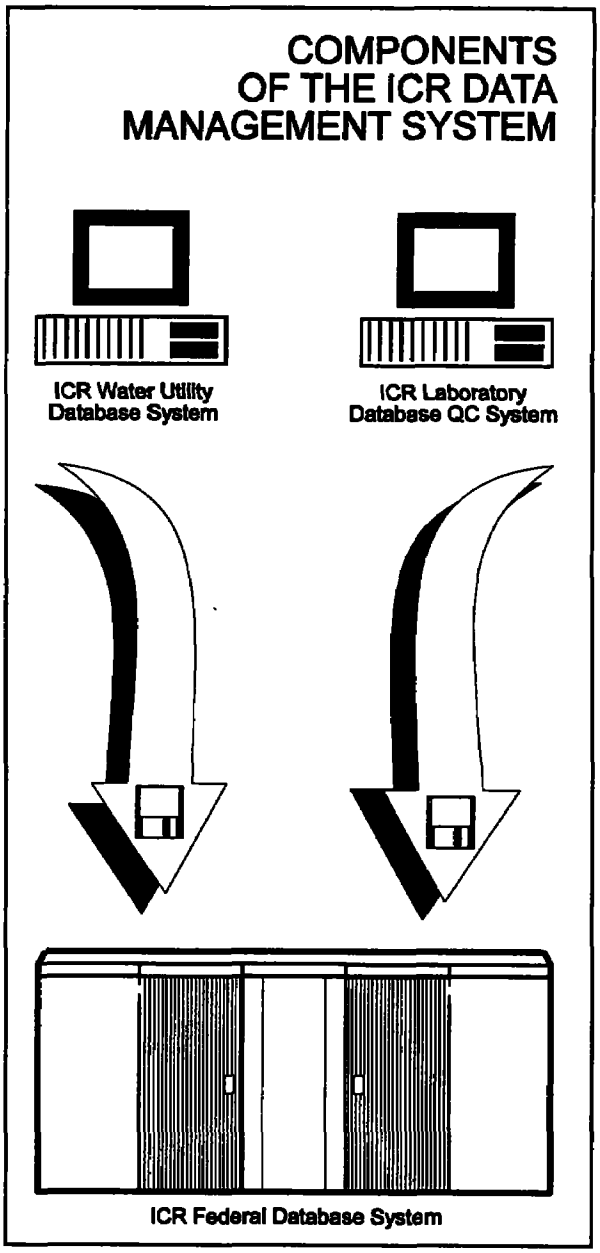
The ICR Laboratory QC Database System is one part of the ICR DMS. The ICR DMS is a combination of information systems that enables utilities and laboratories to capture and report ICR data, as well as assists EPA in analyzing the data collected under the rule. The ICR DMS has three distinct components:

- The ICR Laboratory Quality Control (QC) Database System—A Personal Computer (PC)-based application used by analytical laboratories to record QC data. The QC data will be used for validating sample batches and utility sample analytical results and to provide estimates of the precision and accuracy of the data reported by the utilities. The data will also be used to support maintenance of the laboratory's approval. Data entered into the laboratory application are reported to EPA electronically via diskette. The *ICR Laboratory QC Database System Users' Guide* applies only to this component of the ICR DMS.

- The ICR Water Utility Database System—A PC-based application used to collect treatment process, sample, and sample analytical result information from large public water utilities affected by the rule. Data entered into this system are also reported to EPA electronically via diskette.

- The ICR Federal Database System—A central information system used by EPA as a repository to support analysis of ICR data. This central component of the ICR DMS is also used to validate data provided by the utilities and laboratories and review data to ensure utilities are in compliance with the rule.

A diagram showing the relationship between the components of the ICR DMS appears below.



Goals of the ICR Laboratory QC Database System

The primary goal of the ICR Laboratory QC Database System is to provide information that will be used to validate data supplied by public water utilities subject to the requirements of the rule.

The secondary goal of the ICR Laboratory QC Database System is to provide a mechanism to help analytical laboratories record the data needed to maintain ICR approval status. The application is designed to help you collect the data required by each method, record the data efficiently, review the data before you submit it to EPA, and then transmit it to the Agency.

ICR Reporting

Once each month, you will submit Laboratory QC data to EPA for each type of batch you analyzed during the previous month. The types are:

- Chemical Batches
- Virus Batches
- Protozoan Batches

Under the ICR, a virus or protozoan batch is defined as all the samples upon which analysis was completed at one laboratory by one Principal Analyst during a single calendar week.

Chemical Batches

You will have two months after the last day of the month in which you analyzed chemical batches to send data for the month to EPA. For example, if you analyze a batch for trihalomethanes on February 27, you will send QC data on the batch to EPA by the end of April.

Virus Batches

In the case of virus batches, you will send the information no more than two months from the last day of the month in which you completed analysis of the samples in the batch. For example, if you begin the analysis on a virus batch on February 27 and complete it on March 3, you will send QC data for the batch to EPA by the end of May.

Protozoan Batches

For protozoan batches, you will send the information no more than one month from the last day of the month in which you completed analysis of the batch. For example, if you begin the analysis of a batch analyzed for *Giardia* and *Cryptosporidium* on February 27 and complete it on March 3, you must send QC data on the sample to EPA no later than April 30.

Determining the Amount of Free Hard Disk Space You Need

The ICR Laboratory QC Database System requires approximately 5 megabytes (MB) of free space. In addition, you will need approximately 2.5 kilobytes (KB) of space for each sample for which you will enter data.

For example, if you estimate that you will be analyzing about 1000 ICR Utility and Laboratory QC samples per month for the duration of the rule, you will need approximately 50 MB of free space. That is:

1000 samples x 2,500 bytes = 2,500,000 bytes
2,500,000 bytes x 18 months = 45,000,000 bytes
5,000,000 bytes + 45,000,000 bytes = 50,000,000 bytes = 50 MB

Reporting Data

The data you send to the Agency will include:

- The analysis batches completed during the month.
- The extraction and shipping batches that contained samples in the identified analysis batches
- The analytical results of any QC Samples included in one or more of the batches
- A record of the Utility Samples in the batches.

What Equipment Do You Need to Use the System?

The ICR Laboratory QC Database System was developed to run on the following computer hardware:

- An IBM-compatible PC with an 80486 or Pentium™ microprocessor.
- An attached hard disk drive with sufficient free space for the application and data. See the sidebar at the top of this page to calculate the amount of space you will need.
- One 3.5" high-density diskette drive.
- A VGA or compatible display set to a resolution of 600 x 800 pixels and small fonts.
- 16 megabytes (MB) or more Random Access Memory (RAM).

- Mouse or compatible pointing device.

- A 300 dot per inch (standard laser) or higher resolution printer to output reports generated by the application.

Though system performance will decrease markedly, the application can be run on an IBM-compatible PC with an 80386 microprocessor and 8 MB RAM.

You will also need the following software:

- MS-DOS™ Version 5.0 or later (or compatible operating system).

- Microsoft® Windows™ Version 3.1 or later.

  NOTE: The ICR Laboratory QC Database System has not been tested for compatibility with Microsoft Corporation's Windows 95™. However, no problems have been reported by users running the application under Windows 95™.

  WARNING: The ICR Laboratory QC Database System is not compatible with Microsoft Corporation's Windows NT™. Do not run the application under Windows NT™.

- The ICR Laboratory QC Database System.

The ICR Laboratory QC Database System is a Microsoft® Access™ runtime application. *You do not have to purchase a copy of Microsoft® Access™ to use the ICR Laboratory QC Database System.* Using the runtime application, you can enter data and print reports defined by EPA.

Using Data for Analysis

If you would like to analyze the data you have reported under the ICR, you can export it to a spreadsheet file using the Export command under the File menu in the runtime application.

If you own a copy of Microsoft® Access™, you may also copy the database and save it under another file name for analysis in Access.

WARNING: ***Do not perform any analyses on the original data.*** Any analyses you perform may corrupt the database and make it impossible for you to transmit data to EPA.

To export data to a Lotus® 1-2-3™ or Microsoft® Excel™ spreadsheet:

1. Select Export from the File Menu.

2. Select the application you intend to use to analyze the data (i.e., 1-2-3™ or Excel™).

3. Select the object you want to export. You can only export one object at a time. *Every table and query in the application is treated as a separate export object.*

4. Provide a name for the exported file and choose a subdirectory in which to place it.

5. Click OK.

6. Open the application you will use for analysis and open the file as usual.

Who's Going to Help if You Have Questions?

Safe Drinking Water Hotline

If you require help in understanding the Agency's ICR policies and guidelines, contact the EPA Safe Drinking Water Hotline by telephone at (800) 426-4791 or via e-mail at HOTLINE-SDWA@EPAMAIL.EPA.GOV.

EPA has developed publications and videos on ICR analytical methods to improve your understanding of the rule. You may obtain information on how to order these through the Safe Drinking Water Hotline. The publications are:

- *ICR Sampling Manual*—EPA Document Number 814-B-96-001.
- *DBP/ICR Analytical Methods Manual*—EPA Document Number 814-B-96-002.
- *ICR Microbial Laboratory Manual*—EPA Document Number 814-B-96-004.

ICR Laboratory Coordinator

The ICR Laboratory Coordinator is responsible for maintaining records of your laboratory's approval status and assisting you with questions you may have about a method used to analyze samples collected under the provisions of the rule. Contact the coordinator at:

ICR Laboratory Coordinator
USEPA TSC (MS-140)
26 W. Martin Luther King Dr.
Cincinnati, OH 45268

ICR DMS Hotline

Refer any specific questions you have about using the application to the ICR DMS Hotline. The hotline number is (703) 908-2155. You can also reach Hotline staff via e-mail at 102351.2062 @compuserve.com (102351,2062 if you are sending e-mail from a CompuServe account). Technicians on the ICR DMS Hotline can only answer questions about using the ICR Water Utility and Laboratory QC Database System software. If you have questions about an analytical method or the approval status of your laboratory, the technicians will refer you to the ICR Laboratory Coordinator.

American Water Works Association (AWWA) Services

AWWA has represented the drinking water industry in the development of the ICR. The association possesses an intimate knowledge of the industry and fully understands issues related to the ICR that directly affect utilities. AWWA has established the Assistance Team (A-Team) to provide advice to utilities subject to the requirements of the rule.

Though the A-Team is primarily geared to provide help to utilities, members of the team are also familiar with the ICR Laboratory QC Database System, and many have extensive laboratory experience.

The A-Team maintains a library of ICR information and a list of Frequently Asked Questions (FAQ) and answers questions posted on the Drinking Water Section of the CompuServe Earth Forum. For information on how to obtain a CompuServe Membership and access the Drinking Water Forum, consult the Aqualink article on page 10 of the *Journal of the American Water Works Association*, June 1994 or contact Michael J. McGuire at the address below. If you do not use CompuServe, you can e-mail questions to the A-Team, but you will not have access to the FAQ or the forum.

If you have further questions for AWWA, or require help in finding and using the Drinking Water Section of the Earth Forum, please contact:

ICR A-Team
TEL: (800) 200-0984
INTERNET: 103327.2057
@compuserve.com

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1401 New York Avenue, N.W.
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Hierarchy of References

There are three sets of references you can use to answer questions about implementing the ICR. They are, in descending order of precedence:

- The Information Collection Rule published in the Federal Register.
- EPA guidance on sampling, bench and pilot studies, and analytical methods.
- The ICR Laboratory QC Database System Users' Guide and On-Line Help.

CHAPTER 2: GETTING STARTED

Introduction

The Information Collection Rule (ICR) Laboratory Quality Control (QC) Database System is a tool for analytical laboratories to report ICR data. *You must enter data for all the ICR QC samples analyzed by your laboratory into a single copy of the application and report all your data on one set of diskettes for each type of reporting event each month.* You cannot copy parts of the database from one copy of the application to another.

If you would like to have multiple users or users at different facilities enter ICR data, you may consider the options listed below.

WARNING: These options have not been tested under operating conditions at a laboratory. If you employ any of these options, you may run a risk of corrupting your data.

WARNING: If you use options 2, 3, or 4, be very careful to keep track of the active copy of your ICR database. *You cannot copy parts of a database from one copy of the application to another.*

1. Load the application on to a laptop computer and move the computer from location to location.

2. Use a commercial bulk file transfer application (such as LapLink™), to transfer files from one machine to another.

3. Install the application and data files on a mass storage device, such as a Zip Drive™, and move the device from one machine to another. If you use a mass storage device, you must designate it as drive D, E, or F.

   If you use this option, you must copy the application and data files onto a drive specified as the C:/ drive in order to generate a data transfer diskette.

4. Install the application on multiple computers. Back up the data from one computer, and restore it to the second. Instructions for backing up and restoring are on pages 79 and 80.

   The system settings on the two machines must be identical in order for this process to work. See the On-Line Help Topic "System Information Window" for a list of system settings.

Installing the Application

The installation instructions assume you have a basic knowledge of Windows. If you need assistance, refer to the Microsoft® Windows™ users' guide that came with your copy of Windows™.

Installing the Application on a Standalone PC

1. Start Windows™.

2. Check your hard disk to ensure you have enough space to run the application. See the sidebar on page 6 to determine how much free space you need.

3. Insert the diskette labeled "ICR Laboratory QC System Disk 1" into a floppy disk drive on your PC.

4. Choose Run from the File menu in Program Manager. To do this, use your mouse to point to the word "File" at the top of the Program Manager window. Click and hold down the mouse button. A menu will appear immediately below your mouse pointer. Move the pointer until the word "Run" is highlighted. Release the mouse button. Windows will display the Run dialog box.

5. Type **a:setup** in the Run dialog box. (Type **b:setup** if your diskette is in the B:\ drive.)

6. Press Enter or choose OK on the dialog box with your mouse.

7. Follow the setup instructions that appear on the screen.

   The setup instructions will give you the option of installing the application in any directory on your computer. Use the default (C:\ICR_LAB) directory.

Installing the Application on a Local Area Network (LAN)

The ICR Laboratory QC Database System was not designed to run on a LAN. If your water utility has a LAN, install the application directly on your hard drive according to the directions above. *Do not install it on your file server.*

Recording Data for More than One Laboratory

The ICR Laboratory QC Database System was designed to capture data for only one analytical laboratory. However, you may install multiple copies of the application (one for each laboratory for which you are entering data) on one PC if you follow these guidelines:

- Create a separate subdirectory for each copy of the application according to the instructions in your Windows™ Manual. Do not use the name C:\ICR_LAB for *any* of the separate subdirectories.

- Install the application separately into each subdirectory. When you install, set the defaults so that the database files in the correct subdirectory will open when you start the application from the designated program group. Instructions for setting defaults are included in the installation prompts. You should also give each program group a new name.

For example, if you will be entering data for two laboratories, Laboratory A and Laboratory B:

1. From DOS or File Manager, create subdirectories C:\ICR_A and C:\ICR_B.

2. Begin the installation procedure. When the application prompts you to select a subdirectory, in which to install, choose C:\ICR_A.

3. When the application prompts you to select a program group, enter ICR A in the space provided.

4. Repeat Steps 2 and 3 for Laboratory B, installing in the C:\ICR_B subdirectory and an ICR B program group.

WARNING: If you do not follow these guidelines, you will corrupt the data files for one or more of your laboratories.

Installation Notes

Replacing a Previous Installation

Without Backup

WARNING: If you replace a previous installation of the application and do not have a backup of your data, *you will lose all the data you have entered into the system.*

With Backup

If you have made a backup of your data and need to reinstall the application, install the application according to the directions above, and use the Restore function described in Chapter 8, System Administration. This will overwrite the blank LAB_DATA.MDB file that was created when you reinstalled the application with your backup data. You will lose all the data you have entered into the application since you made the backup, so back up your data frequently to minimize the amount of information you have to reenter.

Back up your data regularly. The more often you back up your data, the less likely you will be to lose information. You may want to do regular, scheduled (daily or weekly) backups of the database, or you may choose to back up the data at the end of each session you spend working on the system. At a minimum, you should make a backup copy of your files each time you transmit data to EPA.

Read Me File

The Information Collection Rule Program Group includes a Read Me file for notes not contained in this Users' Guide. The Read Me file identifies changes made to the application after the Users' Guide was completed. It may address changes in the way you open or enter data into the ICR Laboratory QC Database System. Please read this file before you begin using the application. To open the file, double-click with your mouse on the icon labeled "ICR Readme."

Repairing and Compacting the Application and Database

You can enhance system performance by repairing and compacting the ICR Laboratory QC Database System periodically, particularly if you have deleted a large amount of information from the database. In addition, the application may become damaged if the application or your computer shuts down unexpectedly, requiring you to repair the application and database. To repair and compact the ICR Laboratory QC Database System:

1. Close all open applications.

2. Exit Windows™ to clear all available RAM. To exit Windows™, double-click the Close box at the top of the Program Manager window.

3. Go back into Windows™.

4. From the Program Manager, open the ICR Laboratory QC Database Program Group.

5. Double-click on the icon labeled "Repair ICR Application." The application will conduct the repair automatically. When the repair is complete, a dialog box will open in the middle of the window.

6. Click OK in the dialog box to continue. The application will then perform the compact automatically and return you to the Program Manager.

7. Double-click on the Repair ICR Data icon. The Repair ICR Data function operates just like the Repair ICR Application function.

8. When the application returns to the Program Manager, open the ICR Laboratory QC Database System.

WARNING: *If the application displays any error messages during repair, reinstall the application and restore from your latest backup, even if the application tells you the repair was successful.* In such a case, you may have lost data during the repair. The only way you can recover the data is to restore from a backup. Back up your data regularly to limit any loss of data due to database repair.

Application Basics

The ICR Laboratory QC Database System uses a Graphical User Interface (GUI). A GUI lets the user perform tasks in the application by selecting graphical images with a mouse.

The primary graphical images employed in the ICR Laboratory QC Database GUI are the cursor, windows, fields, list boxes, pick lists, scroll bars, and buttons:

- The cursor indicates where you are pointing. When the cursor looks like an arrow, you can use it to select a graphical object. When it appears as a flashing vertical line, you can use it to enter (type in) text. When the cursor changes to an hourglass, your computer is processing data. You must wait until it changes back to an arrow before you can continue.

- A window is an area on a screen in which information, objects, and actions are presented. There are several types of windows in the application. The most common are:

  - Menu Window—Use a menu to navigate to specific areas of the application.

  - Selection List Window—Use a selection list to begin the process of adding new items, changing information about existing items, or deleting existing items from the database.

  - Data Entry Window—Use a data entry window to enter specific information about an item you have selected.

  - Dialog Box—A small window that appears in the middle of your screen. The Verify Batch Number box you will see as you add a batch to the database is a type of dialog box.

  Most windows in the application fall into one of these categories, but a few combine features from different types of windows. These windows are identified and illustrated in the Users' Guide in the order in which you can expect to run across them in the application.

  At the top of each window is a title bar. The title bar indicates the name of the window and, if appropriate, tells you whether you are using the window to add or edit information in the application. In the ICR Laboratory QC System, you can only manipulate the active window. The title bar of the active window is always a different color from that of any other open windows.

  Each window in the application also features a header. The header appears in light blue and is located immediately below the title bar. The header displays basic information about your laboratory. You cannot directly change information that appears in a header. However, the header information will change as you enter or modify information about your laboratory.

  NOTE: If part of a window extends off the screen, you can move the window by placing the cursor in the header, holding down the mouse button, and dragging the window.

- A field is an area in a window into which you can enter data. In the ICR Laboratory QC Database System, a field appears as a white box. To enter data into a field, click on the field with your mouse or hit the Tab key until the cursor moves to the field.

  To minimize the complexity of entering data in formatted fields, use the Tab key to move from field to field instead of using your mouse.

  Some fields in the ICR Laboratory QC Database Application have been formatted so that you can only enter certain types of data. When you select one of these fields, a black line (and, in some cases, a decimal point) appears, indicating the number of characters you can enter into the field. If you tab to a formatted field and enter your data, the cursor will move from left to

right across the entire width of the field. If you click in the middle of a formatted field, you can only enter digits to the right of the place you clicked. Either way, when you leave the field the number you entered will move all the way over to the right. The last numeral you keyed into the field will be in the ones column (one-tenths if you are in a field containing a decimal), the next to the last in the tens column, and so on. To delete an entire number from a formatted field, select all the numerals in the number. Any digits you leave unselected will remain in the field.

- A list box consists of a set of items of the same type that have been entered into the database. A list box appears as a white box on the window, listing all the items of a specified type. To select an item in a list, highlight it by clicking once on the item with your mouse button.

- A pick list is a kind of list that provides a set of predetermined, mutually exclusive options from which you can choose. Pick lists reduce the amount of typing you have to do and ensure that only valid values are entered into the application. A pick list looks like a field attached to a small box with a down arrow. If you click on the arrow, a list of options that can be entered into the field will appear. Select one of the options by clicking on it with your mouse. Although you can change your selection, you cannot add, change, or delete options in a pick list.

- A scroll bar is used to move down a list that is too long to fit in a window. A scroll bar appears as a grey rectangle on the window. Inside the bar is a small box and at either end is a small box with an arrow on it. You can move along the scroll bar by clicking on the plain box and moving it in the direction you wish to go, clicking and holding with your mouse on either side of the plain box, or clicking and holding on either of the arrow boxes.

- A button is a small area on a window you select to perform an action. Three types of buttons appear in the ICR Laboratory QC Database System:

  - Push button—A small button containing text. When you click on a push button, an action takes place.

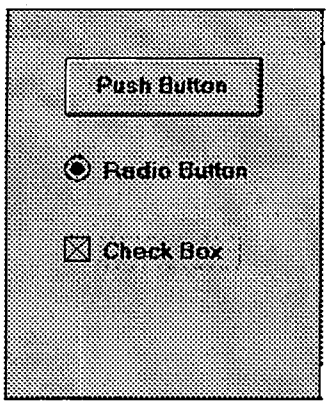
  - Radio button—A circle next to text which indicates a yes/no or on/off value. A radio button represents data that is entered into the database. For example, if you click on a radio button labeled < Detection Limit (DL) on a Protozoan result window, the file you send to EPA will indicate that the level of an analyte in a particular sample was below the detection limit. If you do not click on the button, you must enter the amount of the analyte found in the sample in order to transmit the file to EPA.

  - Check box—A small square next to text which indicates a yes/no or on/off value. Check boxes indicate that data has been entered into a specific area of the database. A checked box next to a Sample QA Comment button, for example, indicates that a comment has been recorded for the sample.

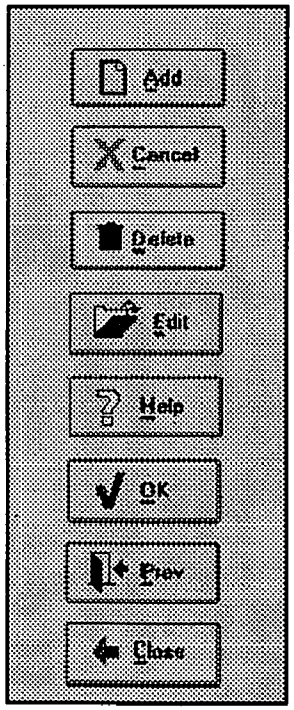
There are a number of standard push buttons you will see repeatedly in the ICR Laboratory QC Database Application:

- Add—To add an item to the database, click the Add button and follow the instructions on the new window.
- Cancel—Click Cancel to exit a window without saving any changes you have made to the information.
- Delete—To remove the item from the database, select it and click Delete.
- Edit—To retrieve an item in order to change it, select it with your mouse or the Tab key, then click the Edit button. In some cases, after you click the Edit button, you will enter additional data into the application. This is still an Edit function, because you are making changes to an existing item in the database by entering more information about that item.
- Help—You can reach the ICR Laboratory QC Database On-Line Help System at any time by clicking the Help button or pressing the F1 key. See pages 21 and 22 for more information about ICR On-Line Help.
- OK—Click to enter the data you have keyed into a window into the ICR Laboratory QC Database System.
- Previous—Click to return to the last window you opened.
- Close—Click the Close button to close the active window.

COMMON TYPES OF BUTTONS



STANDARD PUSH BUTTONS



- Calendar—To use the Calendar:

  - Select a Start or Completion date for a batch and choose the Calendar button.

  - Use the pick lists at the top of the window to choose a month and year. The month and year will default to the current month and year. If you would like to change the month or year without typing, click in the field and choose a new month or year from the list.

  - To select a date within a month, click on that date in the calendar shown in the middle of the window.

  - To enter the current date in the field, click the Today button.

  The window will close automatically once you have selected a date.

Some users prefer to use the keyboard instead of the mouse to navigate through a GUI application. The ICR Laboratory QC Database System includes keyboard commands you can use to perform simple actions. The keyboard commands are displayed as underline letters in the buttons on a window. Activate a keyboard command by holding down the ALT key and pressing the indicated letter. For example, open an on-line Help window by pressing ALT and the H keys.

Startup

Before You Begin

You will find it easier to use the ICR Laboratory QC Database System if you collect the information you need before you sit down at the computer. You will need:

- The name, address, telephone number, contact person, and Laboratory ICR Identification (ID) Number for your laboratory.

  To obtain an ICR ID Number for your laboratory, contact:

  ICR Laboratory Coordinator
  USEPA Technical Support Division
  26 W. Martin Luther King Drive
  Cincinnati, OH 45268

  NOTE: You only need this information the first time you enter data into the application.

- A list of the shipping, extraction, and analysis batches for chemical samples, and a list of the virus and protozoa batches you have created that include ICR samples.

  NOTE: Under the requirements of the ICR, only samples analyzed for Aldehydes require identification of a shipping batch.

- A list of the ICR samples (both field samples from utilities and QC samples from your laboratory) that are included in each batch.

- For samples that were analyzed in two or more analysis batches, a list of the analytes that were included in each batch.

- For each chemical batch all information about the batch that is required by the method. These may include the dates samples in the batch were shipped, extracted, and analyzed.

- For each microbial batch all information about samples in the batch that is required by the method. These include the date the samples were eluted and completed, the detection limit, the ICR ID Number of the Principal Analyst, and for virus samples, the upper and lower 95% confidence levels of controls.

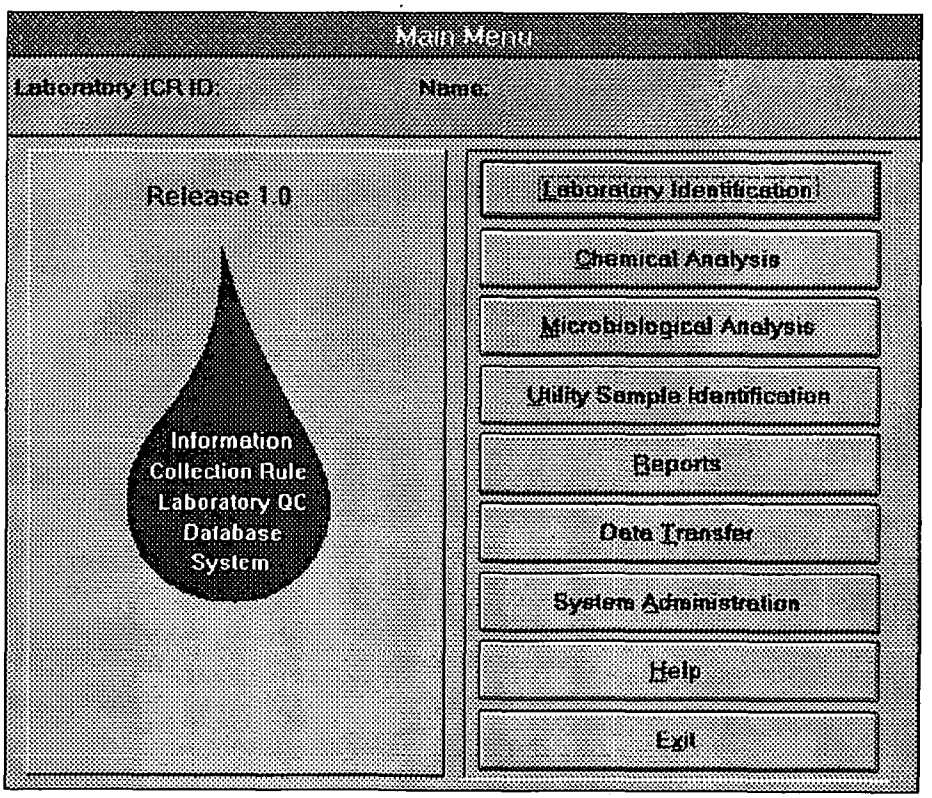
- Result information (including, in some cases, the percent recovery of the internal and surrogate standards) for each QC sample. The result information varies according to the analyte group and is described in Chapters 3 and 4.

Starting the Application

1. Double-click on the ICR Laboratory QC Database Program Group Icon.

2. Double-click on the ICR Laboratory QC Database Icon to start the application.

   If you have installed more than one copy of the application, a dialog box will open, asking you to attach your ICR data to the application. Click the Edit button, type in the name of the directory you want to associate with the selected Program Group, and choose Attach.



To continue with the example from pages 12 and 13, when you select Program Group ICR A for the first time, attach to subdirectory C:\ICR_A. When you select group ICR B, attach to C:\ICR_B.

A title screen and an ICR Introduction window welcoming you to the application will open.

3. Read the Introduction window, then click OK to go to the Main Menu. If you don't want to see the Introduction window the next time you open the application, click on the check box labeled "Don't display this form again" before clicking OK.

4. Select the Laboratory Identification button to open the Laboratory Identification window.

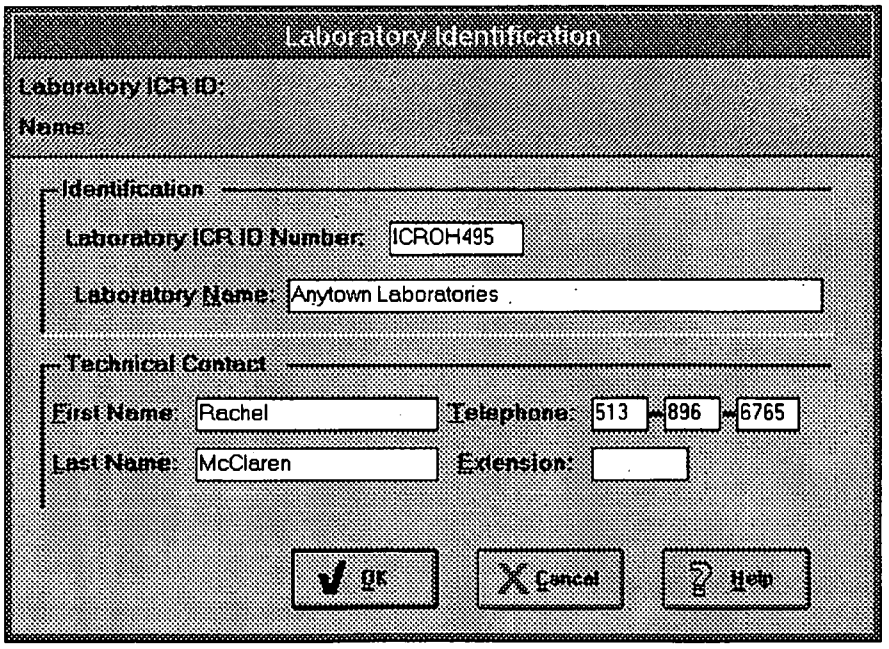
5. Enter the name of your laboratory or public water utility, the Laboratory ICR ID Number provided by EPA, and the name and telephone number of the designated ICR Technical Contact at your laboratory or utility.

   If you are entering data for an in-house laboratory at a utility, the ICR Technical Contact for the laboratory may be different from the ICR Technical Contact for the water utility.

   The field for entering the name of your laboratory is 30 characters in length. If your laboratory's name exceeds 30 characters (including spaces), please abbreviate the name.

   WARNING: Be careful to enter the correct ICR ID Number for your laboratory in the space provided. If you make a mistake and need to change the number later, you will have to reinstall the application and reenter all your data into the system.

6. Click OK to return to the Main Menu.



Help

If you need help using the application, click the Help button at the bottom of any window. Help enables you to answer questions you have about the application. There are several different kinds of help available from the Help Menu:

- Help Contents—Select to move to the contents page of the ICR Laboratory QC Database On-Line Help System. ICR Help works much like any online help system running under Microsoft Windows, allowing you to look up a definition of every field and window in the application. ICR Help also includes a series of "How Do I" topics, instructions for performing basic tasks in the ICR Laboratory QC Database System. Click on any subject shown in green in the help system to obtain more information on the subject.

- Window Navigation—Select to see how the windows in the application are related to one another. The hierarchy can help you locate a window you want to open or show you how to get back to the Main Menu.

- ICR Hotline—Retrieves the telephone number of the ICR Data Management System (DMS) Hotline. Telephone support is available from 9 AM to 5 PM Eastern Time. Call the ICR DMS Hotline at (703) 908-2155 if you have any questions about the application that are not addressed in the users' guide or ICR Help. If you have electronic mail, you may also send

Keyboard Shortcuts

You can use a number of keyboard shortcuts to help you navigate through and perform activities in the application more quickly:

- To move to the next or previous field—Press TAB or Shift+TAB.

- To save your changes and close a window—Press ENTER.

- To undo changes made to the current field or clear a row of Sample Analytical Results—Press ESC.

- To switch to another application without closing the database—Press ALT+TAB.

- To copy the contents of a field—Select the data you want to copy and press CTRL+C.

- To paste copied data into a field—Click in the field and press CTRL+V.

- To open a pick list and display the choices in it—Press F4 or ALT + DOWN ARROW.

- To turn a radio button on or off while using the Tab key—Tab to the radio button and press SPACEBAR.

your questions to the ICR DMS Hotline staff at 102351.2062 @compuserve.com (102351,2062 if you are sending e-mail from a CompuServe account).

- ICR Function Keys—Click on this button to learn what function keys work with the application. The ICR Function Keys include:

  - ICR Help (F1)

  - ICR Window Navigation (F2)

  - ICR DMS Hotline Information (F3)

  - Open List Box (F4)—If you are in a pick list field, press F4 to see all the options.

  - Assigned Batches (F6)—Indicates the Analysis Batch(es) to which a selected sample has been assigned. Choose an ICR Analyte Group from the pick list in the top, left-hand corner of the window. Then, select a sample from the list directly below. The Analysis Batch(es) to which the sample has been assigned will appear in the top right. Click on a batch to see which analytes from the sample are included in the batch.

  - Formatted Sample Identification (ID) Number (F8)—Turn formatting of Utility Sample ID Numbers displayed in the system on and off. Click the appropriate check box to turn on or off a function that places hyphens between the segments of the number.

  - Analyte List (F9)—Select an ICR Analyte Group from the top section of the Analyte List window. The bottom section of the window will list the analytes in the group.

  - ICR Methods (F10)—Select to see a list of ICR analytes, the Analyte Group(s) in which they are included and the Method(s) by which they may be analyzed under the requirements of the rule.

  - Calculator (F11)—Opens the Windows™ Calculator. For instructions on using the calculator, see your Microsoft® Windows™ Manual.

  - Function Line (F12)—Turn the list of function keys on or off. If you turn the list off, the keys will operate, but they will not appear at the bottom of your screen.

    NOTE: This feature is only available if you have set your monitor to the recommended resolution of 800 x 600 pixels or higher.

- About ICR—The application was designed and developed at the EPA Systems Development Center (SDC) by Science Applications International Corporation (SAIC) under contract to EPA's Office of Ground Water and Drinking Water (OGWDW).

CHAPTER 3: CHEMICAL ANALYSIS

Overview

If your laboratory analyzes Information Collection Rule (ICR) samples for Disinfectant By-Products (DBP) or DBP precursors, you will need to enter those samples and associated data in the ICR Laboratory Quality Control (QC) Database System. You will record:

- Sample ID Numbers for the ICR samples sent to you by the utilities.
- The batches in which the samples and their constituent analytes were shipped, extracted, and analyzed.
- Information about the batch as specified in the method. Depending upon the method, this may include the date the batch was shipped, extracted, or analyzed.
- The Laboratory QC Samples in those batches.
- Analytical results for the Laboratory QC Samples including, in some cases, the percent recovery of the internal and surrogate standards.

There are a variety of ways you can enter data into the application. The sequence of procedures shown below evolved out of suggestions made by representatives from several analytical laboratories that expect to perform analyses on ICR samples and who have tested the ICR Laboratory QC Database System. Review the instructions in this chapter and Chapter 5 to determine the order that best suits existing practices at your laboratory.

Batches

Types of Batches

There are three types of chemical batches in the ICR Laboratory Quality Control (QC) Database System:

- Shipping Batch—Applies only to Aldehyde samples. Each Aldehyde sample may be included in one Shipping Batch. Any sample you include in a Shipping Batch should also be added to an Extraction Batch and to an Analysis Batch. For a comprehensive definition of a Shipping Batch, see the United States Environmental Protection Agency's (EPA) *DBP/ICR Analytical Methods Manual* (Document Number 814-B-96-002).
- EPA's Technical Support Division, located in Cincinnati, Ohio, is the only laboratory approved to analyze Aldehyde samples under the ICR. Only the EPA laboratory will identify Shipping Batches in the ICR Labora-

tory QC Database System. Nonetheless, Aldehyde samples are used as an example in the ICR Laboratory QC Database System documentation because the processes of creating Extraction and Analysis Batches, adding Utility and Laboratory QC Samples, and entering sample analytical results are the same for Aldehyde samples as they are for other chemical analyte groups.

- Extraction Batch—Applies to samples analyzed using EPA Methods 551, 551.1, 552.1, and 552.2 and Standard Methods 6251 B and 6252 B. An Aldehyde, Chloral Hydrate (CH), Haloacetic Acid (HAA), Haloacetonitrile (HAN), Trihalomethane (THM), THM/CH, or THM/HAN/CP/HK sample analyzed by any of those methods must be included in an Extraction Batch. Any sample you include in an Extraction Batch should also be added to an Analysis Batch. For a full definition of an Extraction Batch, see the *DBP/ICR Analytical Methods Manual.*

- Analysis Batch—Applies to all chemical samples identified in the ICR Laboratory QC Database System. Because some samples may have analytes in more than one Analysis Batch, a sample may be included in more than one Analysis Batch. For example, if you run a trihalomethane (THM) sample and discover the chloroform result is sufficiently high that it requires dilution, you may dilute the sample and run it again for chloroform. When you report the results for the sample, you will associate the results for bromodichloromethane, dibromochloromethane, and bromoform with the Analysis

ICR Laboratory QC Chemical Analyte Groups

Each sample, no matter what type, must be associated with an analyte group. An ICR Analyte Group is a set of related analytes that are collected in one sample. The chemical analyte groups which require QC samples are:

- ALD—Aldehydes.
- Br—Bromide.
- CH—Chloral Hydrate.
- CNCl—Cyanogen Chloride.
- EPABrO3—Low-level bromate.
- HAA—Haloacetic Acids.
- HAN—Haloacetonitriles, Chloropicrin, Haloketones.
- IONC—Inorganic DBPs; includes bromate, chlorate, and chlorite.
- THM—Trihalomethanes.
- THM/CH—Trihalomethanes, Chloral Hydrate.
- THM/HAN—Trihalomethanes, Haloacetonitriles, Chloropicrin, Haloketones.
- TOC—Total Organic Carbon.
- TOX—Total Organic Halide.
- UV-254—Ultraviolet Absorbance at 254 nanometers (nm).

The analytes contained in groups CH, HAN, THM, THM/CH, and THM/HAN may be analyzed in more than one group. It is critical that you coordinate with your client utilities before they begin sending you ICR samples so that the analyte groups you use are consistent and conform to those listed in the ICR applications.

You can see which analytes are contained in an analyte group at any time by clicking the F9 function key.

Batch in which the sample was originally run, and the result for chloroform in the second batch. Nonetheless, all the analytes for each sample should be included in an Analysis Batch. For more on Analysis Batches, see the *DBP/ICR Analytical Methods Manual.*

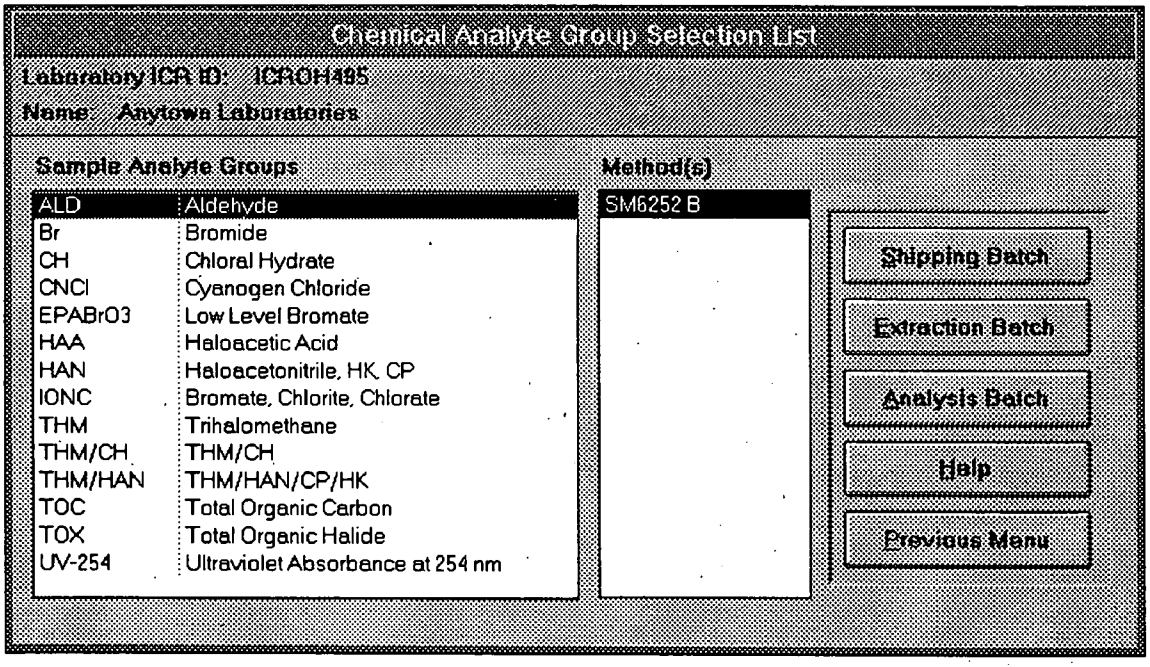
The three types of chemical batches operate independently of one another to give you the greatest possible flexibility in assigning samples to them. For example, if you assign a sample to an Extraction Batch and an Analysis Batch, only to discover you have assigned it to the wrong Extraction Batch, you can remove it from the Extraction Batch and assign it to another without having to reassign it to the same Analysis Batch.

Adding a Batch

To identify a batch:

1. From the Main Menu, select the Chemical Analysis Menu button to open the Chemical Analyte Group Selection List window.
2. Choose an analyte group from the list on the left side of the window. For an explanation of the analyte groups, see the sidebar on page 24.
3. When you select the group, a list of the analytical methods that are approved for ICR samples for the analyte group will appear in the Methods list. Choose the method by which the batch was analyzed.

   NOTE: If there is more than one approved method, the method will default to the last one you selected.
4. Select the appropriate type of batch from the buttons on the right side of the window. When you choose the button, a Batch Selection List window showing the batches of the selected type you have already identified for that analyte group will open.
5. Click the Add button to open the Add Batch window.



6. Enter the Batch Identification (ID) Number. The Batch ID Number is the unique identification number associated with the batch. The number may be up to 16 characters long.

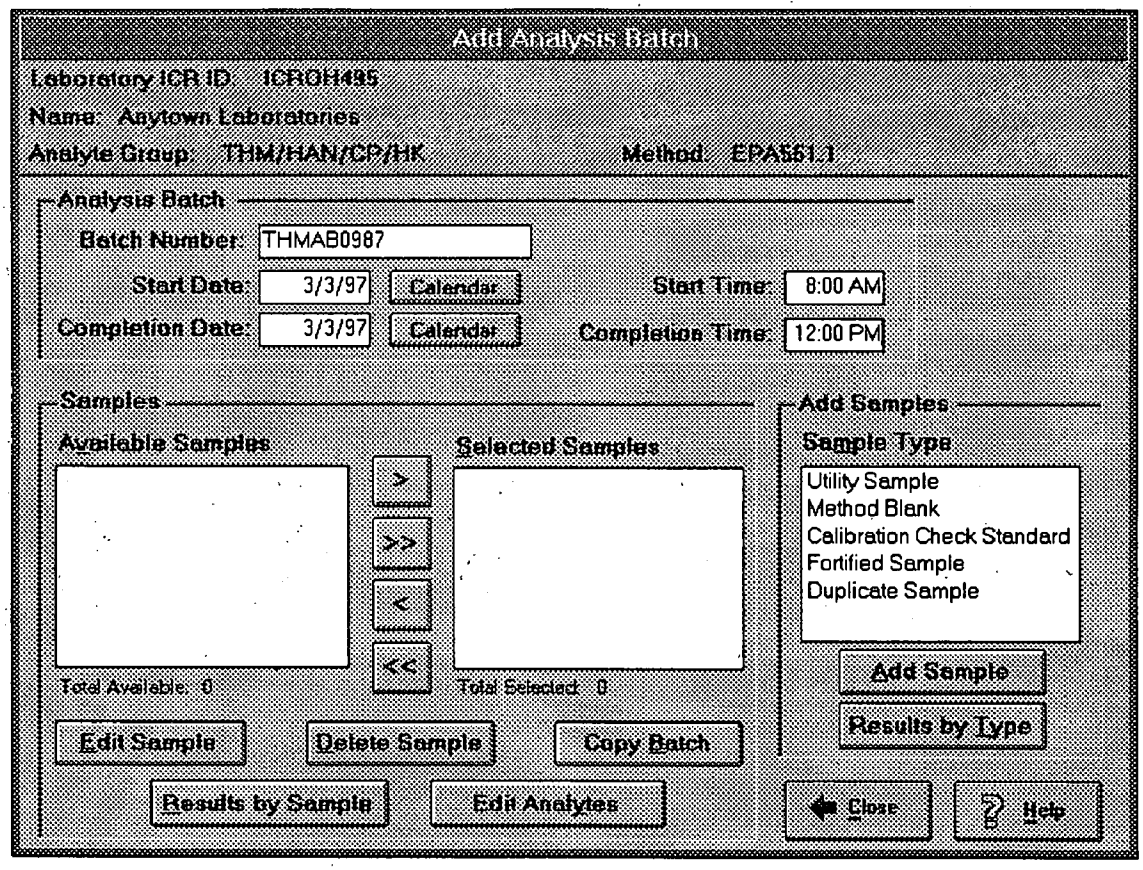
   When you move to another section of the window or exit it, a dialog box will ask you to check the number before you assign it permanently to that batch. *Once you have assigned a Batch ID Number to a batch, you cannot change it.*

   If you have entered Batch ID Number incorrectly, you must delete the batch, add a second batch with correct number, and then add the samples to the new batch.

   NOTE: A Batch ID Number is a unique number used to associate batch information to individual samples. You may use the Batch Number assigned by your Laboratory Information Management System (LIMS) or any other numbering scheme.

7. If you are adding an Extraction Batch, enter the date the extraction was completed. You may use the Calendar function to enter the date. See page 18 for instructions on using the Calendar.

8. If you are adding an Analysis Batch, enter the date and time the analysis was begun and the date and time it was completed. You may use the Calendar function to enter the Analysis Date as well.



9. Add and assign Utility Samples to the batch. For detailed instructions, see pages 29 through 31 or 67 through 70.

10. Add and assign Laboratory QC Samples as necessary to the batch according to the instructions on pages 31 through 34.

11. Return to the Batch Selection List window by clicking the Close button.

12. Select Prev to return to the Chemical Analyte Group Selection List window.

NOTE: The Add and Edit Batch windows do not feature an OK button. Data on these windows is saved as it is entered into the application.

Editing a Batch

To open a batch so that you can make changes to the Start Date, Completion Date, or the samples and analytes assigned to the batch:

1. From the Main Menu, Select the Chemical Analysis Menu button to open the Chemical Analyte Group Selection List window.

2. Choose an analyte group from the list on the left side of the window.

3. Choose the method by which the batch was analyzed.

4. Select the type of batch from the buttons on the right side of the window. The Batch Selection List window will open.

5. Highlight the batch you wish to change and click the Edit button to open the Edit Batch window.

You can perform the same activities from an Edit Batch window as you can from an Add Batch window. See pages 25 through 27 for details.

Deleting a Batch

If you delete a batch, any samples you have assigned to the batch will remain in the database. The samples will be returned to the list of available samples for batches of that type. To delete a batch from the database:

1. From the Main Menu, Select the Chemical Analysis button to open the Chemical Analyte Group Selection List window.

2. Choose an analyte group from the list on the left side of the window.

3. Choose the method by which the batch was analyzed.

4. Select the type of batch from the buttons on the right side of the window. The Batch Selection List window will open.

5. Highlight the batch you wish to remove from the database and click the Delete button. The application will display a warning box to give you an opportunity to change your mind. If you still want to delete the batch, click OK.

Samples

Types of Samples

There are seven different types of chemical samples in the ICR Laboratory QC Database System:

- Utility Samples—Samples that were taken in the field by the utility and sent to the laboratory for analysis.

- Shipping Blanks—A Shipping Blank is a sample consisting of an aliquot of laboratory reagent water or other blank matrix that is provided by the laboratory to the utility, shipped from the utility to the laboratory and stored, preserved, and analyzed using the same procedures as a Utility Sample. A Shipping Blank is used to determine if analytes or other interferences are present in the field or shipping environment. Shipping blanks apply only to Aldehyde samples.

- Method Blanks—Applies to all chemical methods approved under the ICR except Standard Method 5320B. A Method Blank may be associated with any ICR analyte group except Total Organic Halide (TOX). A Method Blank is an aliquot of reagent water that is preserved and treated exactly the same as a Utility Sample. It is used to determine if analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.

  NOTE: Add all reagents, including preservation reagents, to your Method Blank Samples.

- System Blanks—Required for Total Organic Halide Samples analyzed according to Standard Method 5320 B. A System Blank is determined through the analysis of nitrate-washed carbon. It is also used to determine if analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus.

- Calibration Check Standards—Required for all DBP methods approved under the ICR. A Calibration Check Standard may be associated with any ICR analyte group. It consists of an aqueous standard that is carried through the sample preparation procedure to the instrumental analysis. The purpose of the Calibration Check Standard is to identify the accuracy of the instrument that is used to analyze the Utility Samples. A Calibration Check Standard sample may represent a low, medium, or high level calibration standard.

  NOTE: Add all reagents, including preservation reagents, to your Calibration Check Standard Samples.

- Fortified Samples—Required for all chemical analyte groups except UV-254. A Fortified Sample consists of an aliquot of a Utility Sample to which known quantities of the analytes have been added. It is analyzed to determine whether the sample matrix contributes bias to the analytical results.

- Duplicate Samples—Required for all methods except EPA 551 and those methods in which analysis is performed in the sample bottle. A Utility Sample is split to produce a Duplicate Sample. The Duplicate Sample is used to determine the precision of replicate analyses performed by the laboratory.

  For further information on Duplicate Samples, see the *DBP/ICR Analytical Methods Manual*.

The last five types of samples are collectively referred to as Laboratory QC Samples.

Adding Utility Samples to the Database

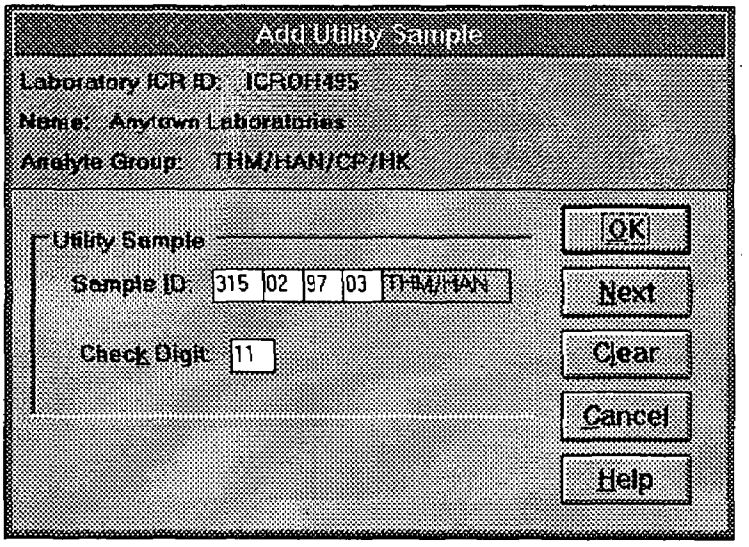
WARNING: Do not identify all the ICR samples collected by your client utilities in the ICR Laboratory QC Database System. Only add those samples that are included in batches for which you must submit QC data to EPA—that is, samples associated with the analyte groups listed in the sidebar on page 24.

The ICR Laboratory QC Database System gives you two options for adding Utility Samples to the database. The options are:

- Adding samples as you identify or edit their Shipping, Extraction, or Analysis Batches.

- Adding samples independently of batches.

The first method works well for adding small numbers of utility samples to the database, while the second incorporates special features that are geared to adding large numbers of samples from one utility to the system at one time. You may want to use the second if you add Utility Samples before you add Laboratory QC Samples, or if you are adding a large number of samples from the same utility to the database.



To add a Utility Sample via the Add or Edit Batch window:

1. Go to the appropriate Add or Edit Batch window.

2. Select Utility Sample from the Sample Type list and double-click or click the Add Sample button. An Add Utility Sample window will open.

3. Enter the ICR Utility Sample Identification (ID) Number for the sample in the Sample ID field. See the sidebar on page 30 for more information on the ICR Utility Sample ID Number.

4. Enter the Check Digit for the sample from the Monthly Sample Allocation to Laboratories Report (ICR Water Utility Database System Report D.1) you received from the utility. The Check Digit is a one- or two-character number generated by a math-

The ICR Utility Sample ID Number

Your client utility will provide you with an ICR Utility Sample ID Number for each of its ICR samples. They are printed on the Monthly Sample Allocation to Laboratories (ICR Water Utility Database System Report D.1) enclosed with the samples from the utility. The number indicates the treatment plant from which the sample was taken, the Monthly Sampling Period, the year the sample was taken, the Sample Location Number from which the sample was taken, and the analyte group for which the sample was analyzed. An example appears below.

Example:

Sample Identification Number: 315 01 97 03 THM

315	=	ICR Treatment Plant Identification Number
01	=	Month of sampling period, for example, January is 01, February is 02, etc.
97	=	Sample taken in 1997
03	=	Sample taken from Sample Location Number 3
THM	=	Sample analyzed for trihalomethane analyte group

The data entry field for an ICR Utility Sample ID is divided into five sections. As a result, you cannot select an entire Sample ID number in the data entry field. You must make changes to each section separately. For example, if you have a sample numbered 315-01-97-03-THM, but only enter 315-1-97-03 (leaving out the "0" in front of the month designation), you must reenter the Month, Year, and Sample Location Number before you add the sample to the database.

NOTE: You only need to enter the first nine digits of the Sample ID Number into the Sample ID field. The analyte group will appear automatically, based on the group you selected from the Chemical Analyte Group Selection List.

ematical formula in the ICR Water Utility Database System. The formula is based on the Utility Sample ID Number.

When you click the OK or Next button, the ICR Laboratory QC Database System will run the same formula to determine whether you have entered the Utility Sample ID Number correctly. If the formula indicates that the Check Digit does not correspond to the Utility Sample ID Number, a dialog box asking you to verify the Utility Sample ID Number will open. Check the Utility Sample ID Number, make any necessary changes, and press the button again to add the sample to the database.

5. Click the Next button to begin adding another Utility Sample without returning to the Add or Edit Batch window, or click OK to close the window and assign the new sample to the list of those included in the batch.

The second method for adding Utility Samples to the database is discussed in detail in Chapter 5, Utility Sample Identification.

Adding Laboratory QC Samples to the Database

To add a new Laboratory QC Sample:

1. Go to the appropriate Add or Edit Batch window.

2. Select the type of Laboratory QC Sample you are adding from the Sample Type list and double-click or click the Add Sample button. An Add Sample window for the type of sample you selected will open.

   NOTE: Not all types of samples appear in the list for all analyte groups. For example, you cannot add Fortified Samples to batches analyzed for UV-254.

Tips for Reading Sample ID Numbers

The ICR Laboratory QC Database System includes two special functions to make it easier for you to read the ID Numbers for a list of samples:

- Dashes—The application automatically sets dashes in between the sections of the Utility Sample Identification Numbers (see page 30 for a complete description of the number). You can turn off the dashes according to the instructions on page 22.

- Zoom Function—If you position your cursor in a list of Sample ID Numbers and click on your *right* mouse button, a window listing the samples in larger type will appear. You can view the list of samples in 8, 10, or 12 point type by pressing the buttons at the bottom of the window.

3. Complete the Add Sample window according to the following instructions:

   - Enter a Sample ID Number for the sample in the Sample ID field. For QC samples, you may use your internal sample tracking number or any other numbering scheme you choose, *as long as the number for each sample is unique.* The number may have up to 13 alphanumeric characters. The application will append the abbreviation for the analyte group to the end of the Sample ID.

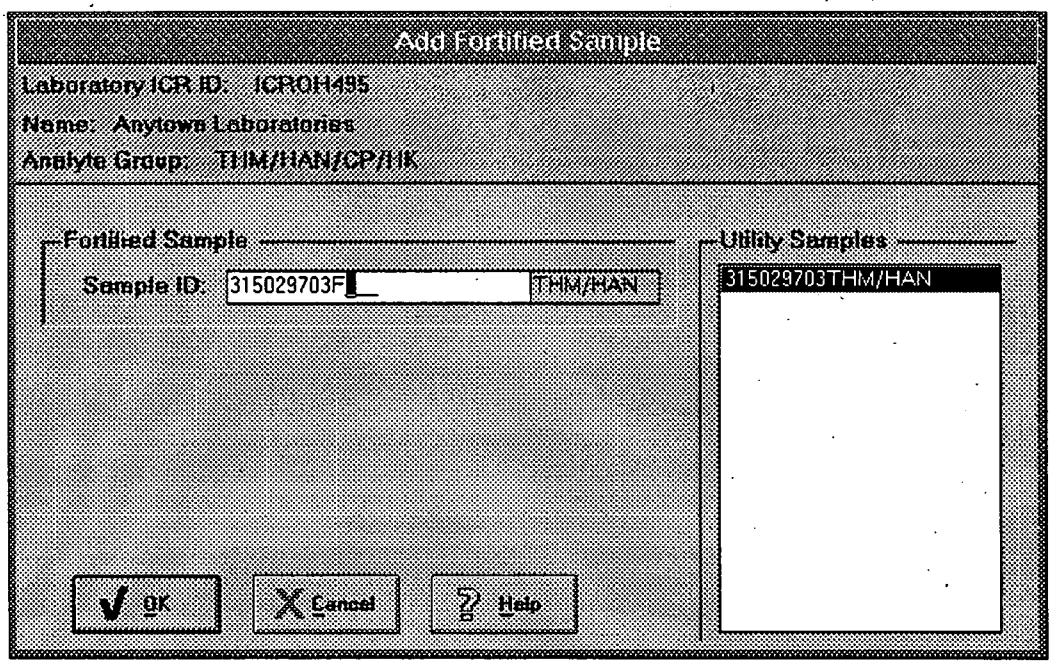
   - If you are adding a Fortified or Duplicate Sample, indicate which Utility Sample was split to produce the Laboratory QC Sample. To identify a Utility Sample, double-click on the correct sample from the list of Available Utility Samples on the right side of the window.

   - If you select a Utility Sample to split *before* you enter a Sample Identification (ID) Number for the Fortified or Duplicate sample, the Sample ID Number for the Utility Sample will automatically be copied over into the Sample ID field for the Fortified or Duplicate to make it easier for you to incorporate the Utility Sample ID in the ID for the split sample. Once the number has been copied, you may modify it according to the standards employed in your laboratory.

   - If you select a Utility Sample to split *after* you enter a Sample ID for the Fortified or Duplicate sample, the ID you entered manually will not change.

   NOTE: Both the Fortified Sample and the split Utility Sample will be assigned to the current batch.

4. Click OK to close the window and assign the new sample to the list of those included in the batch.



Assigning and Removing Samples in the Batch

Samples are assigned automatically to the batch you are working in when you create them. However, you will often assign samples you have already created to another type of batch. For example, if you create a Chloral Hydrate sample in an Extraction Batch, you must then assign it to an Analysis Batch. It is also possible for you to remove a sample from a batch in order to reassign it to another batch of the same type. To assign a sample to a batch:

1. Go to the appropriate Add or Edit Batch window.

2. From the list of Available Samples, select the Sample ID Number of the sample that was analyzed in the batch.

   The only samples in the list of Available Samples are those that meet the following criteria:

   - They are associated with the selected Analyte Group.
   - They have not yet been assigned to a batch of the selected type.
   - They were created under the selected method—or, in the case of Utility Samples added to the database via the Utility Sample Identification Window—but have not yet been associated with a method.

   To illustrate, once you have added a Haloacetic Acid (HAA) Method Blank sample analyzed by EPA Method 551.1 to an Extraction Batch, it will appear only in the Available list for HAA Analysis Batches analyzed by the same method.

   In the case of an analyte group that is included in a group that combines two or more groups (i.e., THM, CH, or HAN), any samples for the single group will appear in the list of Available Samples for the combined group. For example, if you have selected an Analysis Batch for THM/CH samples analyzed according to EPA Method 551.1, THM, CH and THM/CH samples will be included in the list of Available Samples. However, samples for combined analyte groups (i.e., THM/CH or THM/HAN) only appear in the list of Available Samples for the combined group.

3. Double-click on the Sample ID Number or select the > button to move the sample to the Batch Samples list.

To move all the available samples to the batch, select the >> button.

In order to reassign a sample, you must first remove the sample from a batch, then assign it to a second batch. To remove an identified sample from the batch:

1. Select the desired sample.

2. Choose the < button to move the sample to the list of Available Samples.

3. Assign the sample to another batch, according to the directions above.

To remove all the samples from the batch and return them to the list of available samples, select the << button.

NOTE: Removing a sample from a batch is not the same as deleting it from the database. If you remove a sample from the batch, the sample will return to the list of available samples. If you delete a sample from the database, you will have to add it again before you assign it to another batch.

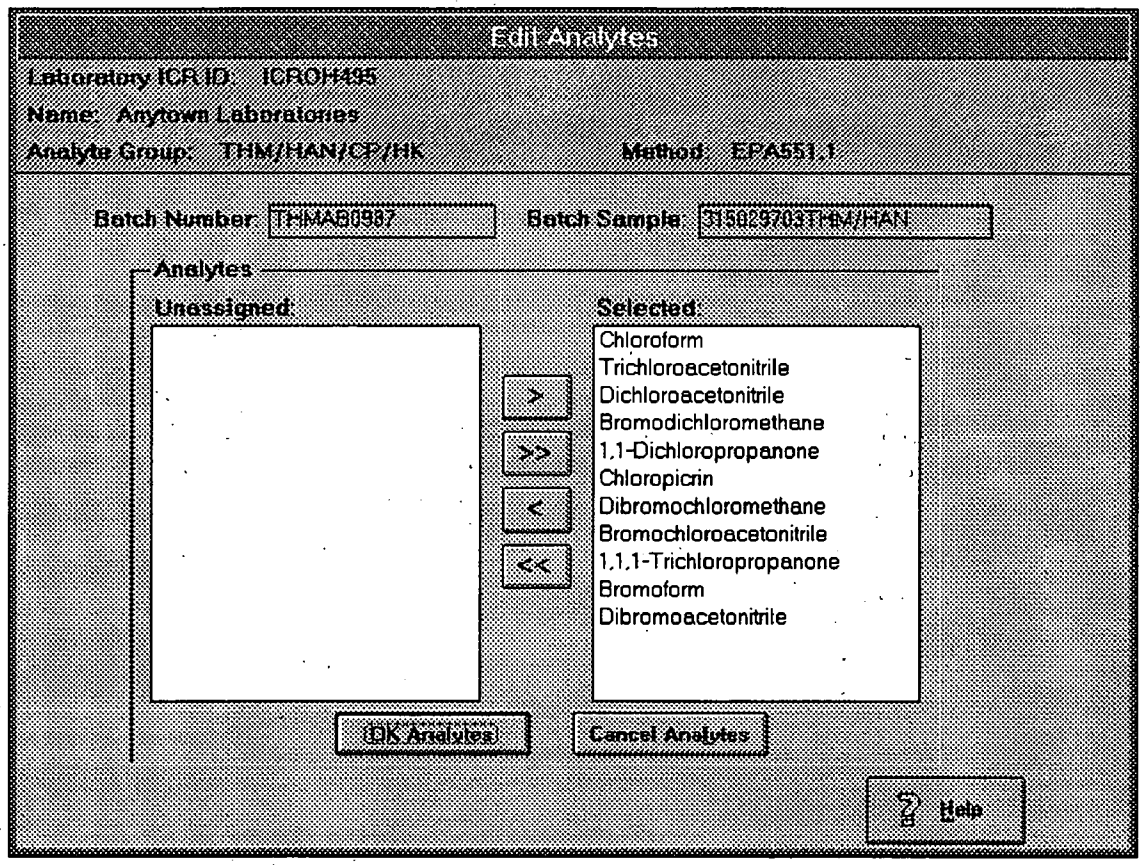
Assigning and Removing Sample Analytes in an Analysis Batch

In the case of Utility, Fortified, and Duplicate Samples, the analytes in the sample may be split across two or more batches. If the analytes for a Utility Sample were analyzed in two or more batches:

1. Add the sample to the current Analysis Batch. All the analytes in the sample will automatically be included in the batch.

2. Select the sample and click the Edit Analytes button. The Edit Analytes Window will open.

3. When you open the window, all the analytes for the selected sample that are presently included in the batch



are listed in the Selected list. Any other analytes that are not currently assigned to a batch are listed in the Unassigned list.

Move analytes from one list to another by using the arrow buttons between the two lists:

- Use the > button to move a selected analyte from the Unassigned list to the Selected list.
- Use the >> button to move all analytes to the Selected list.

4. Select OK to assign the analytes and return to the Add or Edit Analysis Batch window.

To remove individual analytes from an Analysis Batch:

1. Go back in to the Edit Analytes Window.
2. Move analytes from one list to another by using the arrow buttons between the two lists:
   - Use the < button to move a selected analyte from the Selected list to the Unassigned list.
   - Use the << button to move all analytes to the Unassigned list.
3. Select OK to assign the analytes and return to the Edit Analysis Batch window.

NOTE: You must assign all the analytes in a sample to the same analyte group and method. For example, if you analyze Bromodichloromethane, Dibromochloromethane, Bromoform, and Chloral Hydrate in a THM/CH sample by Method 551.1, you cannot analyze Chloroform as a THM sample under Method 524.2.

Copying Samples from a Shipping Batch to an Extraction Batch

The process of copying from one batch to another is a variation on assigning samples you have already identified to a batch. Copying samples permits you to assign all the samples from one Shipping Batch to an Extraction Batch in one step. To copy the samples in a Shipping Batch to an Extraction Batch:

1. From the Add or Edit Extraction Batch window, select the Copy Batch button to open the Copy Shipping Batch window.
2. Select a Shipping Batch from the list and click the OK button. All the samples in the Shipping Batch that have not yet been assigned to an Extraction Batch will be added to the current Extraction Batch.

Once you have copied all the samples to the Extraction Batch, you can remove individual samples from the batch by following the instructions on pages 33 and 34.

NOTE: You can copy samples from more than one Shipping Batch into an Extraction Batch. The samples from the two batches will be merged in ascending Sample ID Number order in the Batch Samples list.

Copying Samples from an Extraction Batch to an Analysis Batch

Again, the process of copying from one batch to another is essentially a variation on assigning samples you have already identified to a batch. Copying samples permits you to assign all the samples from an Extraction Batch to an Analysis Batch in one step. To copy samples from an Extraction Batch into an Analysis Batch:

1. From the Add or Edit Analysis Batch window, select the Copy Batch button to open the Copy Extraction Batch window.

2. Select an Extraction Batch from the list and click the OK button. All the analytes included in samples in the Extraction Batch that have not yet been assigned to an Analysis Batch will be added to the current Analysis Batch.

Once you have copied all the samples to the Analysis Batch, you can remove individual samples from the batch by following the instructions on pages 33 and 34, or remove analytes according to the directions on page 34 and 35.

NOTE: You can copy samples from more than one Extraction Batch into the Analysis Batch. The samples from the two batches will be merged in ascending Sample ID Number order in the Batch Samples list.

Editing a Sample

You can make changes to samples, regardless of whether or not they are currently assigned to a batch. If you need to modify a Sample ID Number, or make other changes to an existing sample:

1. Select the sample from the appropriate list in the Add or Edit Batch window.

2. Click the Edit Sample button.

3. Enter a revised Sample ID in the field labeled "New Sample ID." If you are editing a Fortified or Duplicate Sample, you may also choose another sample to split to produce the Fortified or Duplicate.

4. Click OK to close the window and include the revised sample in the list.

Removing QC and Utility Samples from the Database

WARNING: If you delete a sample from the database, you will automatically delete the sample from all the batches to which it has been assigned. You will have to add it again before you can assign it to a batch.

To delete an available sample or a sample in the batch:

1. Select the sample from the appropriate list.

2. Click the Delete Sample button. A dialog box will open so that you can reconsider your decision before you delete the sample.

Results

Once you have identified your Utility and Laboratory QC Samples and assigned them to batches, you are ready to begin recording analytical results. You will only enter results for Laboratory QC Samples. *You cannot report analytical results for Utility Samples. Utility Sample results will be reported to EPA by the utilities.*

There are two ways to enter analytical results in the ICR Laboratory QC Database System: by sample type, and by individual sample in a batch. You may want to use the first method if your LIMS reports sample results by type (i.e., Shipping Blank, Method Blank, System Blank, Calibration Check Standard, Fortified, and Duplicate) and the second method if your LIMS reports sample results by Analysis Batch.

Either way, you can only enter sample analytical result data for Laboratory QC Samples you have included in an Analysis Batch. If you need assistance in adding a new sample, refer to pages 31 through 34 or the On-Line Help topic "Add a Laboratory QC Sample."

Open the result windows via the Add or Edit Analysis Batch windows. See page 25 for instructions on how to navigate to an Analysis Batch window. From the Analysis Batch window:

- If you intend to enter sample analytical results by type of sample:

  1. Select a type of sample from the Sample Type list and choose the "Results by Type" button to open the Sample Selection List window.

  2. Select the sample for which you intend to enter results and double-click or choose Edit.

Optional Analytes

Some DBP analytes are listed as optional on the result data entry windows. You are not required to test utility samples for these analytes under the ICR. However, if you have tested the Utility Samples for the analytes, you must also test the QC samples for the analytes and enter the results into the application as though they were required. The optional analytes are:

- Haloacetic Acids (HAA)—Bromodichloroacetic Acid, Chlorodibromoacetic Acid, and Tribromoacetic Acid.
- Aldehydes (ALD)—Hexanal, Heptanal, Octanal, Benzaldehyde, Nonanal, and Decanal.

- If you intend to enter sample analytical results for samples by Analysis Batch, select a sample that is included in the batch and double-click or choose the Results by Sample button.

Either way, a dialog box will open, reminding you that, once you begin entering results for a sample, you must complete the results or cancel out of the window entirely. If you have assigned the analytes in the sample to two or more batches, you will need the results for all the batches before you proceed.

NOTE: You can turn the message box off by clicking the check box labeled "Don't display this form again."

Click "Close" to close the dialog box and open the appropriate Edit Sample window. Once you have moved to the Edit Sample window, the process for entering results is the same, no matter which path you took.

NOTE: The ICR Laboratory QC Database System will not let you leave a row of results until you have either completed or cancelled the data in the row. To cancel the data, press the ESC key.

Entering Analytical Results for a Shipping or Method Blank Sample

The guiding criteria for entering results for a Shipping or Method Blank are:

- Whether the quality control requirements or the sample fall within the parameters specified by the method.
- Whether the result for *each* analyte in the sample is less than one-half the Minimum Reporting Level (MRL) for that analyte. The MRL is the minimum level at which the method is able to measure the analyte at a specified level of precision and accuracy. Values representing one-half the MRL for each analyte are listed in the window to help you determine whether or not you need to enter results for the sample.

If the sample meets all quality control requirements *and* results for *all* the analytes in the sample are less than one-half the MRL for that analyte:

1. Click on the radio button labeled Blank OK in the top left-hand corner of the window.

2. Select OK to close the window.

If the sample fails to meet one or more of the quality control requirements, or the result for *any* analyte in the sample is greater than one-half the MRL:

1. If necessary, enter a Quality Assurance (QA) Code and Comment for the sample. For detailed information on Sample QA Codes and Comments, see pages 40 and 41 or the On-Line Help Topic "Determine QA Codes and Comments."

2. Enter the Percent Recovery of both the internal and surrogate standards. The % Recovery of the Internal Standard is the percent recovered of the pure compound added to the sample extract just before instrumental analysis. The % Recovery of the Surrogate Standard is the percent

recovered of the pure compound added to the sample in the laboratory just before processing. For more information, see the *DBP/ICR Analytical Methods Manual*.

3. *For each result that is greater than one-half the MRL*, enter a Result QA Code, a Result QA Comment, and a Result in the fields next to the name of the analyte. For detailed information on Result QA Codes and Comments, see pages 40 and 41 or the On-Line Help Topic "Determine QA Codes and Comments."

4. *For each result that is less than one-half the MRL*, select the <.5 MRL button to fill the Result field with a value of less than one-half the MRL. If necessary, you may enter a Result QA Code and a Result QA Comment in the fields next to the name of the analyte.

5. Select OK to close the window.

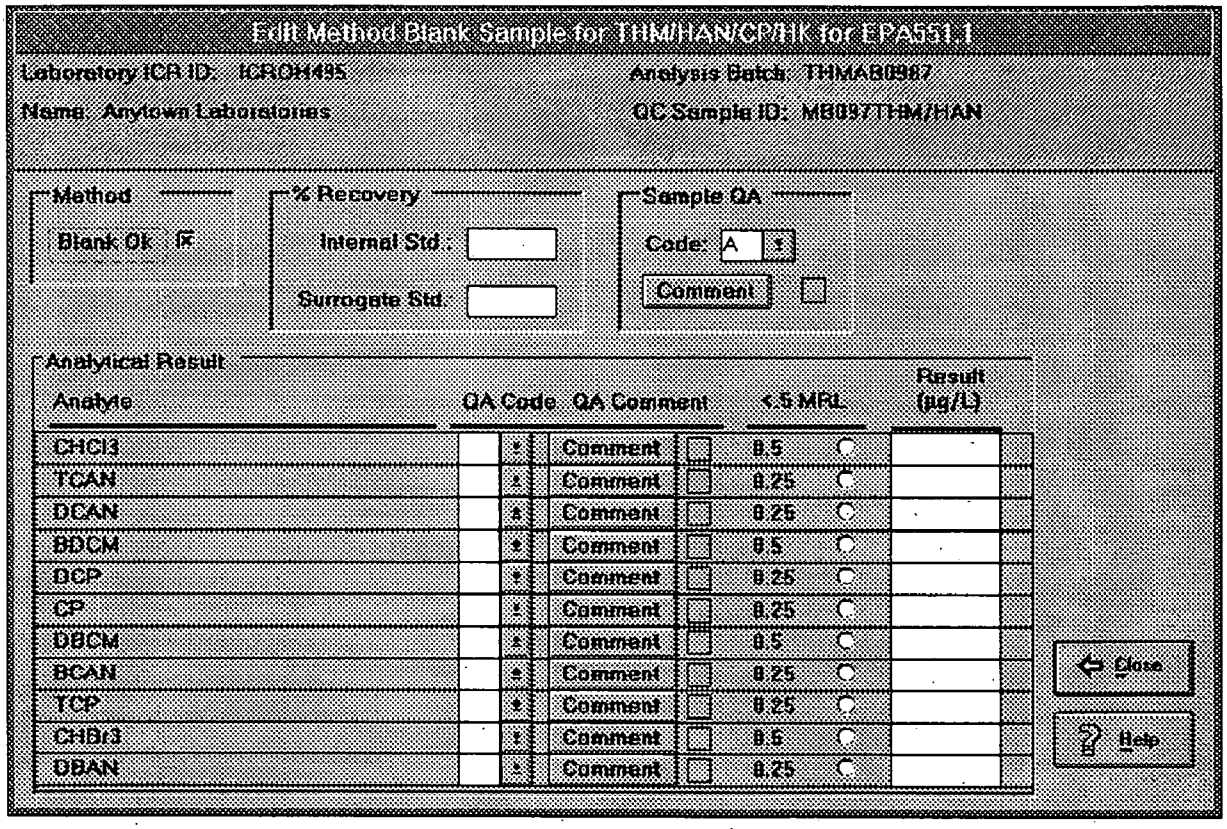
The *DBP/ICR Analytical Methods Manual* does not specify an MRL for low-level bromate, on the grounds that the EPA laboratory's capability to analyze the sample may change slightly by the time DBP monitoring begins.

To enter results for an EPABrO3 Method Blank that has a concentration measure that is less than one-half the MRL:

1. Click on the radio button labeled Blank OK in the top left-hand corner of the window.

2. Select OK to close the window.

To enter results for an EPABrO3 Method Blank that has a concentration measure that is greater than or equal to one-half the MRL:



Determining QA Codes and Comments

In the ICR Laboratory QC Database System, information is recorded both for entire samples and for individual sample analytical results. To illustrate:

- A *sample* is water that is analyzed for the analytes in one group. It is identified by a unique Sample ID Number. A sample may have many sample analytical results associated with it.

- A *sample analytical result* is the result of a test performed for an analyte upon a particular sample. A sample analytical result is always associated with one sample.

Sample information applies to the sample as a whole, defined in the ICR Laboratory QC Database System as the data related to one sample identification number. Sample analytical result information applies to an individual sample analytical result. You will determine QA Codes and Comments for both samples and sample analytical results.

Sample QA Codes and Comments

The Sample QA Code summarizes your assessment of the quality of the sample. You must record a Sample QA Code for each QC sample. The Sample QA Comment is the rationale for the QA assessment.

Sample QA Code and Comment fields appear on the right side of the result window. There are two Sample QA Codes: Acceptable (A) and Rejected (R). The default for the Sample QA Code is "A." If the QA Code for the sample is "A," you may enter a Sample QA Comment. If it is "R," you must enter a QA Comment explaining in scientific terms why the sample is not valid.

If you have entered a Sample QA Comment, the box to the right of the comment button will contain an X.

Sample Analytical Result QA Codes and Comments

The ICR requires laboratories and utilities to record data indicating the scientific validity of each sample analytical result. This data will be used by EPA to ascertain which sampling results may be used for further analysis. The ICR Laboratory QC Database System uses a series of Result QA Codes and Comments to record quality information. You are required to enter Result QA Codes and Comments for all types of QC samples. Instructions and definitions for the Result QA Codes and Comments are as follows:

The Result QA Code indicates whether the result of an analysis performed on the sample for a particular analyte is valid. There are three Result QA Codes: Acceptable (A), Rejected (R), and Not Analyzed (N). Do not designate a sample analytical result as Rejected unless you have a valid scientific reason to do so. "Not Analyzed" applies only to optional analytes. For more information on optional analytes, see the sidebar on page 37.

Determining QA Codes and Comments (Continued)

For required analytes and all aldehydes, the default for the Result QA Code is the same as the QA Code you recorded for the sample. You only need to enter a code in the field if the quality of the result differs from the quality of the sample.

For optional analytes other than aldehydes, the default for the Result QA Code is "N." You only need to change it to "A" or "R" if the analyte was run.

NOTE: The QA Code for the result cannot be better than the QA Code for the sample. For example, if the Sample QA Code is "A," the Result QA Code can be "A," "R," or "N." If the Sample QA Code is "R," the Result QA Code can only be "R" or "N."

Use the Result QA Comment to record detailed information about the QA status of a sample analytical result. The requirements for the Result QA Comment vary according to the Result QA Code assigned to the analyte. If the QA Code is "A" or "N," you may enter a Result QA Comment, but you are not required to do so. If it is "R," you must enter a Result QA Comment explaining why, in scientific terms, the sample analytical result is not valid, e.g., the response for an analyte exceeds the allowed range of the predicted response.

If you have entered a Result QA Comment, the box to the right of the comment button will contain an X.

1. Enter a Quality Assurance (QA) Code and Comment for the sample. For detailed information on Sample QA Codes and Comments, see pages 40 and 41 or the On-Line Help Topic "Determine QA Codes and Comments."

2. Enter a Result QA Code, a Result QA Comment, and a Result in the fields next to the name of the analyte. For detailed information on Result QA Codes and Comments, see pages 40 and 41 or the On-Line Help Topic "Determine QA Codes and Comments." If the result is less than one-half the MRL, enter the MRL in the field.

3. Select OK to close the window.

Entering Analytical Results for a System Blank Sample

The process for entering analytical results for a System Blank Sample is very similar to the process for entering results for a Shipping or Method Blank.

The guiding criteria for entering results for a System Blank are:

- Whether the quality control requirements or the sample fall within the parameters specified by the method.

- Whether the result for Total Organic Halide (TOX) is less than one-half the MRL. A Value representing one-half the MRL for TOX is listed in the window to help you determine whether or not you need to enter results for the sample.

If the sample meets all quality control requirements *and* the result is less than one-half the MRL:

1. Click on the radio button labeled System Blank OK in the top left-hand corner of the window.

2. Select OK to close the window.

If the result for TOX is greater than one-half the MRL:

1. If necessary, enter a QA Code and Comment for the sample. For detailed information on Sample QA Codes and Comments, see pages 40 and 41 or the On-Line Help Topic "Determine QA Codes and Comments."

2. Enter a Result QA Code, a Result QA Comment, and a Result in the fields next to the name of the analyte. For detailed information on Result QA Codes and Comments, see pages 40 and 41 or the On-Line Help Topic "Determine QA Codes and Comments."

3. Select OK to close the window.

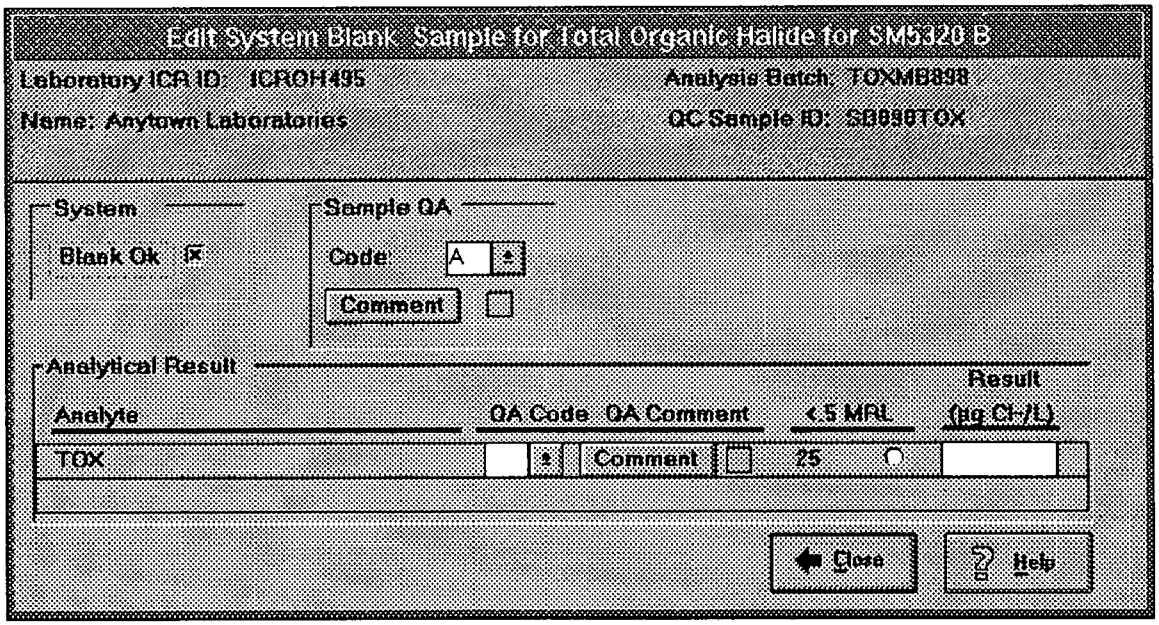
Entering Analytical Results for a Calibration Check Standard Sample

The process for entering analytical results for a Calibration Check Standard Sample is slightly different from the process for entering results for a Shipping or Method Blank.

To record results for a Calibration Check Standard:

1. If required by the method, enter the amount of the internal standard recovered from the sample, expressed as a percentage of the weight of the known quantity of the compound added to the sample in the field labeled % Recovery of Internal Standard.

2. If required by the method, enter the amount of the surrogate standard recovered from the sample, expressed as a percentage of the weight of the



known quantity of the compound added to the sample in the field labeled % Recovery of Surrogate Standard.

3. Enter a QA Code and Comment for the sample. For detailed information on Sample QA Codes and Comments, see pages 40 and 41 or the On-Line Help topic "Determine QA Codes and Comments."

4. The first time you enter results for a sample with a low, medium, or high Target Standard for an analyte group, you will have to enter all the fortified amounts manually. The next time you enter results for a sample with the same Target Standard and analyte group, the Fortified amount for each analyte will default to the amount you entered previously when you select a Target Standard. You may change the default for an analyte by entering a new fortified amount.

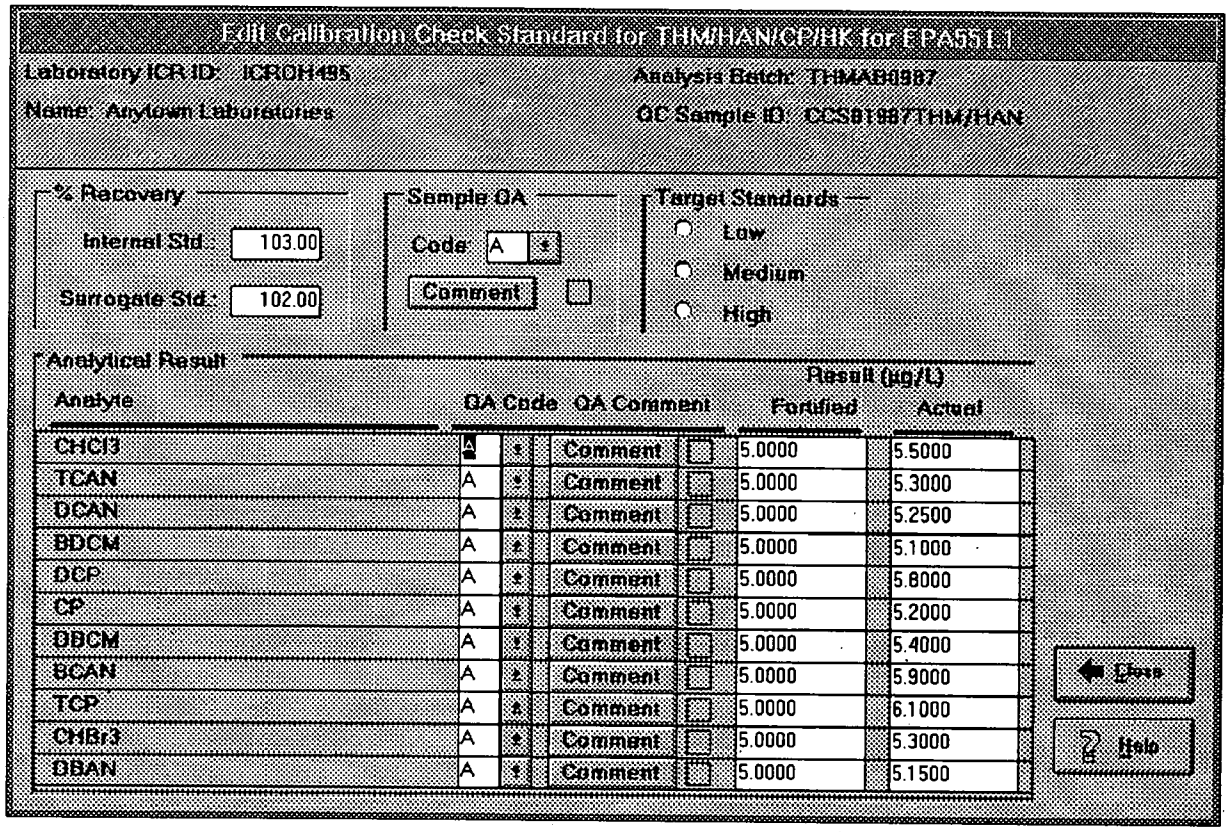
Use the radio buttons in the "Target Standards" section of the window to indicate whether the sample is a low, medium, or high level calibration standard. For a full definition of the Target Standards, see the *DBP/ICR Analytical Methods Manual*.

The Target Standards radio buttons are provided solely for your convenience. If you prefer, you may enter each result manually.

5. For each analyte, enter:

   - A Result QA code and, if necessary, a QA comment. For detailed information on Result QA Codes and Comments, see pages 40 and 41 or the On-Line Help topic "Determine QA Codes and Comments."

   - Results in both the Fortified and Actual columns.



6. When you have entered the required information for all the analytes, select OK to close the window.

Entering Analytical Results for a Fortified Sample

The process for entering results for a Fortified Sample is different from those for Shipping and Method Blanks or Calibration Check Standards.

To enter analytical results for a Fortified Sample:

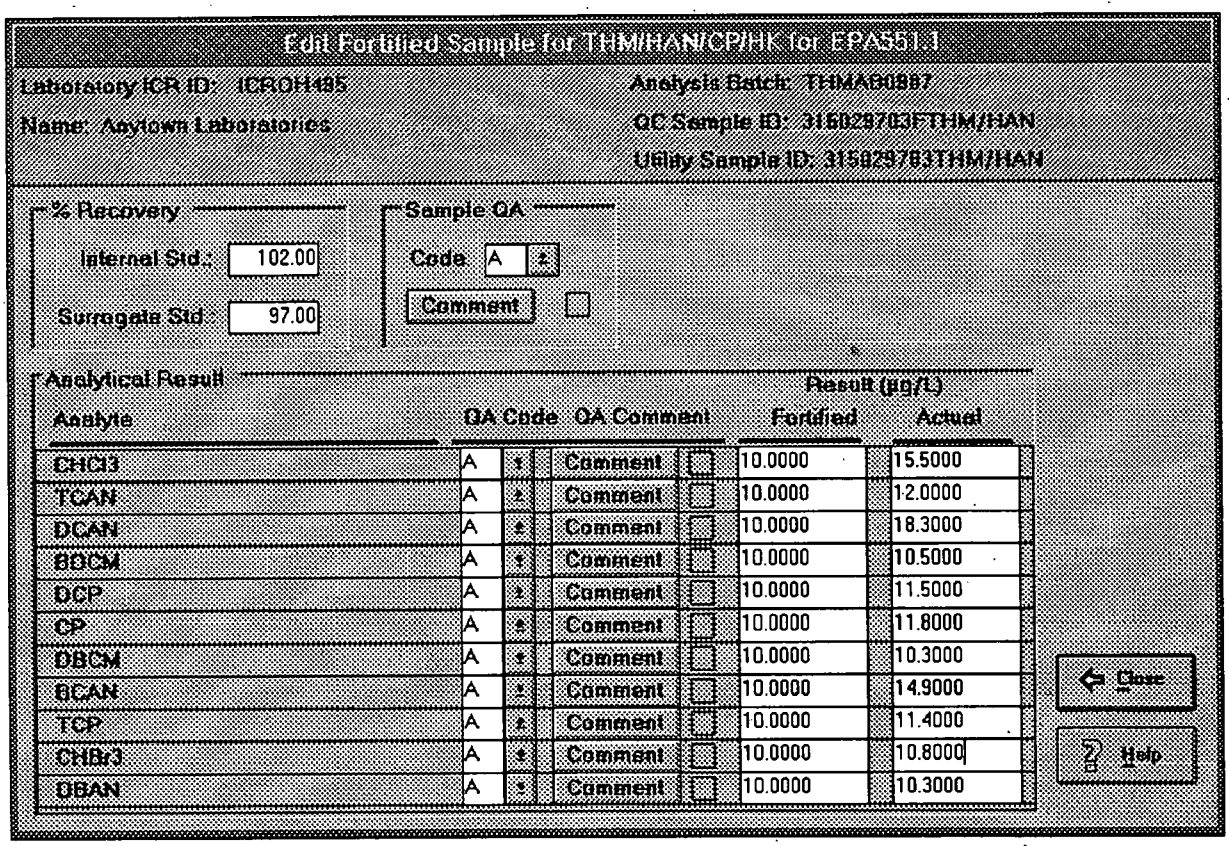
1. If required by the method, enter the amount of the internal standard recovered from the sample, expressed as a percentage of the weight of the known quantity of the compound added to the sample in the field labeled % Recovery of Internal Standard.

2. If required by the method, enter the amount of the surrogate standard recovered from the sample, expressed as a percentage of the weight of the known quantity of the compound added to the sample in the field labeled % Recovery of Surrogate Standard.

3. Enter a QA Code and Comment for the sample. For detailed information on Sample QA Codes and Comments, see pages 40 and 41 or the On-Line Help topic "Determine QA Codes and Comments."

4. For each analyte, enter:

   - A Result QA code and, if necessary, a QA comment. For detailed information on Result QA Codes and Comments, see pages 40 and



41 or the On-Line Help topic "Determine QA Codes and Comments."

- Results in both the Fortified and Actual columns.

  The Fortified result is the known amount of a method analyte that was added to fortify a Utility Sample to prepare a laboratory fortified matrix sample. For example, if 10 mg/L Total Organic Carbon was added to an aliquot of a Utility Sample to prepare a spiked sample, the Fortified Amount is 10 mg/L.

  The Actual result is obtained from analysis of the fortified matrix sample. For example, if an aliquot of a Utility Sample that was fortified with 10 ug/L chloroform yielded a measured result of 15.5 ug/L when analyzed, the Actual Result is 15.5 ug/L.

NOTE: EPA will calculate the percent recovery for the Fortified Sample.

5. When you have entered the required information for all the analytes, select OK to close the window.

Entering Analytical Results for a Duplicate Sample

The process for entering results for a Duplicate Sample is slightly different from those for any other type of sample.

1. If required by the method, enter the amount of the internal standard recovered from the sample, expressed as a percentage of the weight of the known quantity of the compound added to the sample in the field labeled % Recovery of Internal Standard.

2. If required by the method, enter the amount of the surrogate standard recovered from the sample, expressed as a percentage of the weight of the known quantity of the compound added to the sample in the field labeled % Recovery of Surrogate Standard.

3. Enter a QA Code and Comment for the sample. For detailed information on Sample QA Codes and Comments, see pages 40 and 41 or the On-Line Help topic "Determine QA Codes and Comments."

4. The MRL is the Minimum Reporting Level for the analyte. It is the minimum level at which the method is able to measure the analyte precisely and accurately. The MRL for each analyte is listed next to the radio button.

If the result for an analyte is *greater* than the MRL:

- Enter a QA code for the result.
- If appropriate, enter a QA Comment for the result.
- Enter a result in the field next to the analyte name.

For detailed information on Result QA Codes and Comments, see pages 40 and 41 or the On-Line Help topic "Determine QA Codes and Comments."

If the result for an analyte is *less* than the MRL:

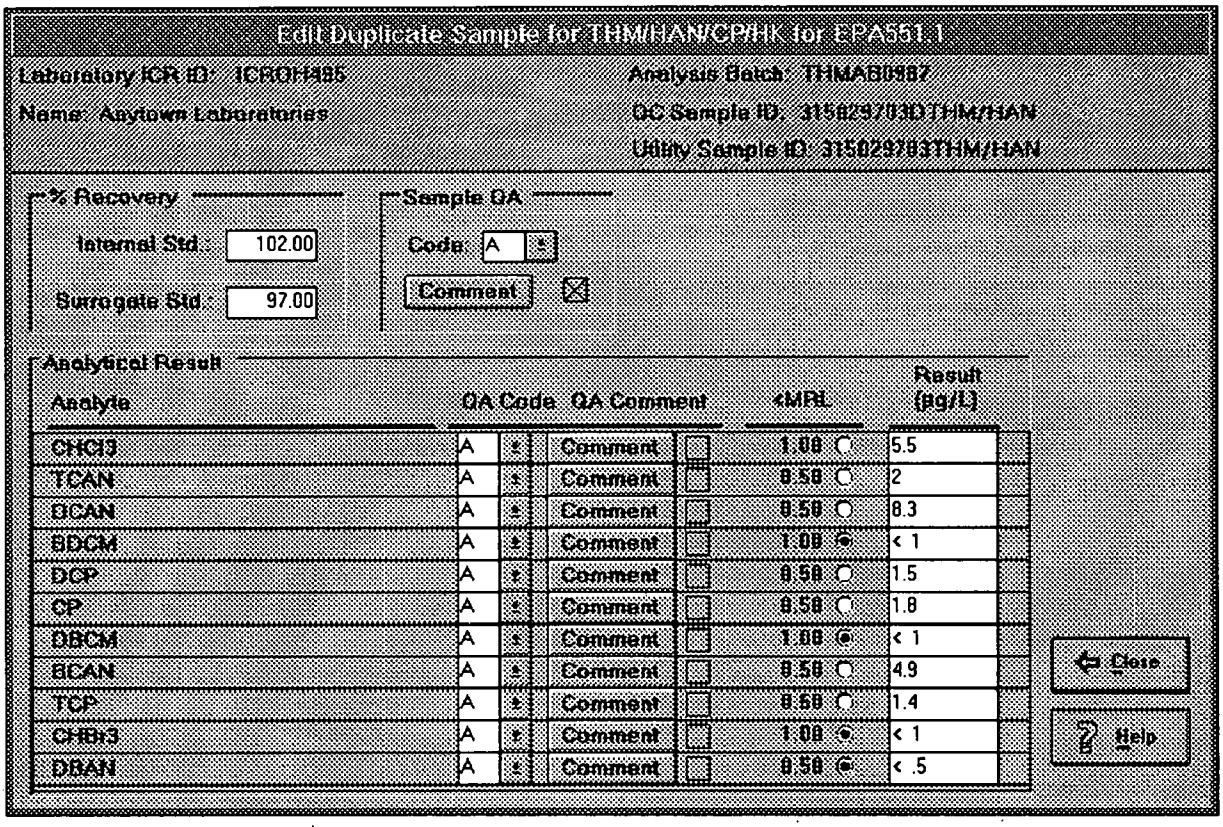
- Enter a QA code for the analyte.
- If appropriate, enter a QA Comment for the analyte.
- Click on the radio button in the < MRL Column. The application will fill the Result field with a value of less than the MRL.

5. When you have entered the required information for all the analytes, select OK to close the window.

Verifying Results

The ICR Laboratory QC Database System includes a report you can use to review your data before you send it to EPA. For instructions on generating the reports, see Chapter 6.

The reports include all the data you have entered into the ICR Laboratory QC Database System for batches, samples, and sample analytical results. They enable you to ensure that you have:



- Identified all the ICR Utility Samples and Laboratory QC Samples you analyzed during the period.
- Associated the samples and all their analytes with Shipping, Extraction, and Analysis batches, as appropriate.
- Recorded results for all Laboratory QC Samples.

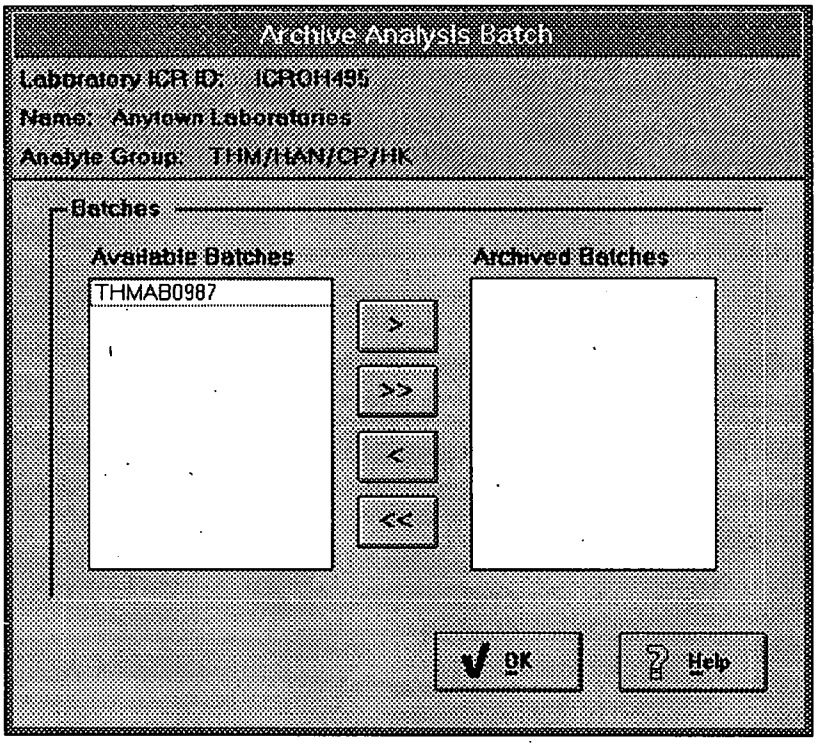
EPA strongly recommends you review your data carefully, as errors or omissions in submitted data, even ones that result from typographical errors, could cause data to be deleted during validation on the ICR Federal Database, and ultimately result in you losing status as an ICR-approved laboratory.

Archiving a Batch and Its Samples

After you have entered results for a number of samples, you may want to archive some of your Shipping, Extraction, or Analysis Batches and their component samples. Archiving makes it easier for you to find a current batch or sample by reducing the number of batches and samples that appear in various lists.

If you have identified a sample as having analytes that are included in two or more Analysis Batches, the sample will not be removed from the current list until all the batches have been archived.

If you archive a batch, you will not be able to move samples from that batch into any other batch of the same type. However, you can still move the sample in and out of other types of batches. For example, if you add an HAA sample to



an Extraction Batch and archive the batch immediately, you can still add the sample to an Analysis Batch.

You cannot enter analytical results for samples in an archived batch. You can, however, return an archived batch to the list of current batches, and then enter results for QC samples in the batch. You can return an archived batch to the list of current batches at any time.

To archive a Shipping, Extraction, or Analysis Batch:

1. Select the Chemical Analysis button from the Main Menu. A Chemical Analyte Group Selection List window will open.

2. Choose an analyte group, method (if applicable), and type of batch from the Selection List. A Batch Selection List window will open.

3. Select the Archive button to open the Archive Batch Window. Move batches in and out of the Archive by using the arrow buttons between the two lists:

   - Use the > button to move a selected batch from the Available list to the Archived list.

   - Use the >> button to move all batches to the Archived list.

   - Use the < button to move a selected batch from the Archived list to the Available list.

   - Use the << button to move all batches to the Available list.

4. Select OK to return to the Batch Selection List window.

Use the same process to return an archived batch to the list of current batches.

NOTE: The Data Transfer process transfers data from archived and current batches.

Sending Results to EPA

After you have completed and reviewed your data, generate a data transfer diskette and report according to the instructions in Chapter 7.

You will have two months after the last day of the month in which you analyzed chemical batches to send data for the month to EPA. For example, if you analyze a batch for Trihalomethanes on February 27, you will send QC data on the batch to EPA by the end of April. The data you send to the Agency will include the Analysis Batches completed during the month, the Extraction and Shipping Batches that contained samples in the identified Analysis Batches, the analytical results of any QC samples included in one or more of the batches, and a record of the utility samples in the batches.

CHAPTER 4: MICROBIOLOGICAL ANALYSIS

Overview

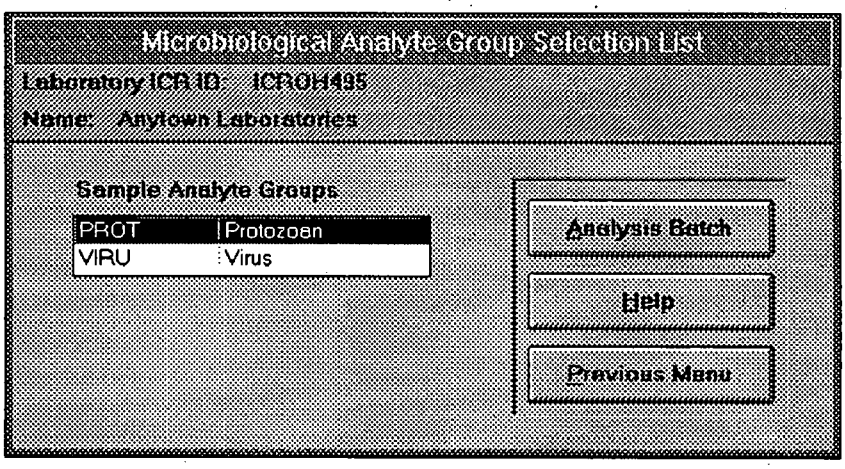
If your laboratory analyzes Information Collection Rule (ICR) samples for protozoa or environmental viruses, you will need to enter those samples and associated data in the ICR Laboratory Quality Control (QC) Database System. You will record:

- Sample ID Numbers for the ICR samples sent to you by the utilities.
- The batches in which the samples and their constituent analytes were shipped, extracted, and analyzed.
- Information about the batch. This includes the date you began analyzing the samples in the batch, the date you completed the analysis, and the Principal Analyst.
- The Laboratory QC Samples in those batches.
- Analytical results for the Laboratory QC Samples.

There are a variety of ways you can enter data into the application. The sequence of procedures shown below evolved out of suggestions made by representatives from several analytical laboratories that expect to perform analyses on ICR samples and who have tested the ICR Laboratory QC Database System. Review the instructions in this chapter and Chapter 5 to determine the order that best suits existing practices at your laboratory.

Batches

Under the ICR, a batch of protozoan samples is defined as all the samples upon which analyses were completed in a calendar week. A batch of virus samples is defined as all the samples upon which analyses were begun in a calendar week. A calendar week runs from Sunday through Saturday.



Adding a Batch

To identify a Microbiological Analysis Batch:

1. Choose the Microbiological Analysis button from the Main Menu to open the Microbiological Analyte Group Selection List window.

2. Choose an ICR Analyte Group from the list at the left of the window.

   Each sample, no matter what type, must be associated with an analyte group. An analyte group is a set of related analytes that are collected in one sample. The analyte groups that require Microbiological Laboratory QC Samples are:

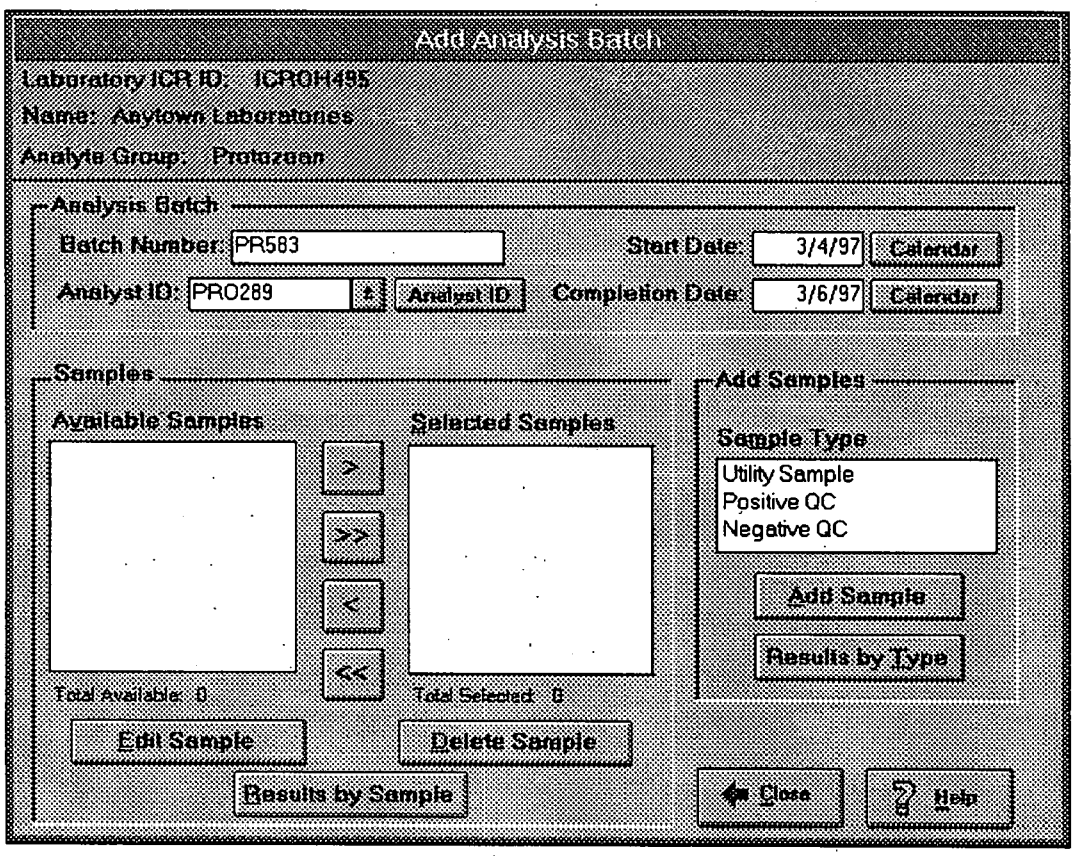
   - PROT—Protozoan; includes *Giardia* and *Cryptosporidium*
   - VIRU—Environmental Viruses

   You can see which analytes are contained in an analyte group at any time by clicking the F9 function key.

3. Select Analysis Batch from the buttons on the right side of the window to open the Analysis Batch Selection List window.

4. Click the Add button to open the Add Analysis Batch window.

5. Enter the Batch Identification (ID) Number. The Batch ID Number is the unique identification number associated with the batch. The number may be up to 16 characters long.



When you move to another section of the window or exit it, a dialog box will ask you to check the number before you assign it permanently to that batch. *Once you have assigned a Batch ID Number to a batch, you cannot change it.*

If you have entered Batch ID Number incorrectly, you must delete the batch, add a second batch with correct number, and then add the samples to the new batch.

NOTE: A Batch Identification Number is a unique number used to associate batch information to individual samples. You may use the Batch Number assigned by your Laboratory Information Management System (LIMS) or another numbering scheme.

6. Enter the ICR Identification Number of the Principal Analyst in the Analyst Identification (ID) field.

   The application will build a list of Analyst Identification Numbers as you add them to the system. The first time you add a new ID, a dialog box will open, asking if you want to add it to the list. Click Yes, verify the new Analyst ID, and select OK to add the ID to the list.

   If you need to change the ID number of an analyst already in the list, or to delete an analyst, select the Analyst ID button. The Analyst ID Window will open.

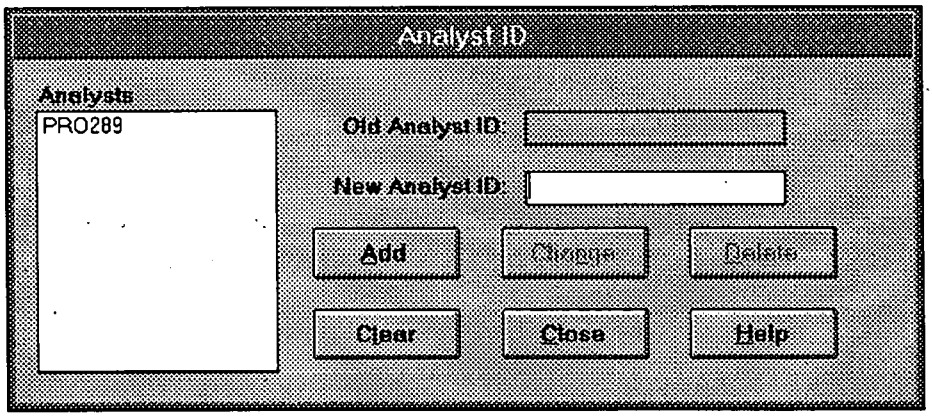
   To change an existing Analyst ID, select the incorrect Analyst ID from the list, enter the correct ID number for the analyst in the New Analyst ID field, and click the Add button.

   To delete an Analyst ID, select the ID from the list of analysts and click the Delete button.

   To clear the Old Analyst ID field at the top of the window, click the Clear button.

   To close the Analyst ID window, click the Close button.

7. Enter the Start and Completion Dates for the batch. You may enter the dates manually or use the calendar function. See the instructions on page 18 for using the Calendar.



8. Add and assign Utility Samples to the batch. For detailed instructions, see pages 53 through 55 or 67 through 70.

9. Add Positive and Negative QC samples as necessary to the batch according to the instructions on page 57 and 58.

10. Return to the Analysis Batch Selection List window by clicking the Close button.

NOTE: The Add and Edit Batch windows do not feature an OK button. Data on these windows is saved as it is entered into the application.

Editing a Batch

To open a batch so that you can make changes to the Start Date, Completion Date, or the samples and analytes assigned to the batch:

1. From the Main Menu, Select the Microbiological Analysis Menu button to open the Microbiological Analyte Group Selection List window.

2. Choose an analyte group from the list on the left side of the window.

3. Select Analysis Batch from the buttons on the right side of the window. The Batch Selection List window will open.

4. Highlight the batch you wish to change and click the Edit button to open the Edit Batch window.

You can perform the same activities from an Edit Batch window as you can from an Add Batch window. See pages 50 through 52 for details.

Deleting a Batch

If you delete a batch, any samples you have assigned to the batch will remain in the database. The samples will be returned to the list of available samples for batches of that type. To delete a batch from the database:

1. From the Main Menu, select the Microbiological Analysis button to open the Microbiological Analyte Group Selection List window.

2. Choose an analyte group from the list on the left side of the window.

3. Click on the Analysis Batch button. The Analysis Batch Selection List window will open.

4. Highlight the batch you wish to remove from the database and click the Delete button. The application will display a warning box to give you an opportunity to change your mind. If you still want to delete the batch, click OK.

Samples

Types of Samples

There are three different types of microbiological samples in the ICR Laboratory QC Database System:

- Utility Samples—Samples that were taken in the field by the utility and sent to the laboratory for analysis.
- Positive QC Samples—A sample containing a known quantity of one or more analytes that is prepared by the laboratory.
- Negative QC Samples—A sample containing no known analytes that is prepared by the laboratory.

Both Positive and Negative QC Samples are required for batches analyzed under the ICR for protozoa and viruses. In the ICR Laboratory QC Database System, they are collectively referred to as Laboratory QC Samples. For more information, see the United States Environmental Protection Agency's (EPA) *ICR Microbial Laboratory Manual* (Document Number 814-B-96-004).

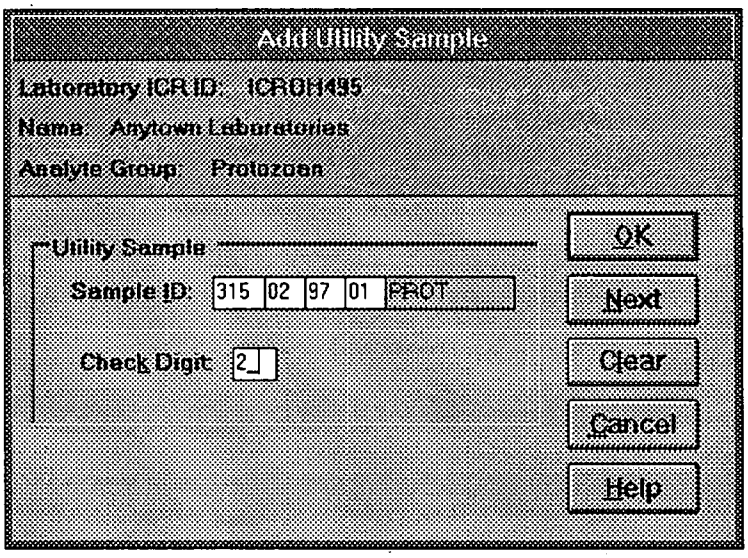
Adding Utility Samples to the Database

WARNING: Do not identify all the ICR samples collected by your client utilities in the ICR Laboratory QC Database System. Only add those samples that are included in batches for which you must submit QC data to EPA—that is, protozoan and virus samples.

The ICR Laboratory QC Database System gives you two options for adding Utility Samples to the database. The options are:

- Adding samples as you identify or edit batches.
- Adding samples independently of batches.

The first method works well for adding small numbers of utility samples to the database, while the second incorporates special features that are geared to adding large numbers of samples from one utility to the system at one time. You may want to use the second if you add Utility Samples before you add Labora-



tory QC Samples, or if you are adding a large number of samples from the same utility to the database.

To add a Utility Sample via the Add or Edit Batch window:

1. Go to the appropriate Add or Edit Batch window.
2. Select Utility Sample from the Sample Type list and double-click or click the Add Sample button. An Add Utility Sample window will open.
3. Enter the ICR Utility Sample ID Number for the sample in the Sample ID field. See the sidebar on page 54 for more information about the Utility Sample ID Number

The ICR Utility Sample ID Number

Your client utility will provide you with an ICR Utility Sample ID Number for each of its ICR samples. They are printed on the Monthly Sample Allocation to Laboratories (ICR Water Utility Database System Report D.1) enclosed with the samples from the utility. The number indicates the treatment plant from which the sample was taken, the Monthly Sampling Period, the year the sample was taken, the Sample Location Number from which the sample was taken, and the analyte group for which the sample was analyzed. An example is provided below.

Example:

Sample Identification Number: 315 01 97 03 VIRU

315	=	ICR Treatment Plant Identification Number
01	=	Month of sampling period, for example, January is 01, February is 02, etc.
97	=	Sample taken in 1997
03	=	Sample taken from Sample Location Number 3
VIRU	=	Sample analyzed for environmental viruses

The data entry field for an ICR Utility Sample ID is divided into five sections. As a result, you cannot select an entire Sample ID number in the data entry field. You must make changes to each section separately. For example, if you have a sample numbered 315-01-97-03-VIRU, but only enter 315-1-97-03 (leaving out the "0" in front of the month designation), you must reenter the Month, Year, and Sample Location Number before you add the sample to the database.

NOTE: You only need to enter the first nine digits of the Sample ID Number into the Sample ID field. The analyte group will appear automatically, based on the group you selected from the Microbiological Analyte Group Selection List.

4. Enter the Check Digit for the sample from the Monthly Sample Allocation to Laboratories Report (ICR Water Utility Database System Report D.1) you received from the utilities. The Check Digit is a one- or two-character number generated by a mathematical formula in the ICR Water Utility Database System. The formula is based on the Utility Sample ID Number.

   When you click the OK or Next button, the ICR Laboratory QC Database System will run the same formula to determine whether you have entered the Utility Sample ID Number correctly. If the formula indicates that the Check Digit does not correspond to the Utility Sample ID Number, a dialog box asking you to verify the Utility Sample ID Number will open. Check the Utility Sample ID Number, make any necessary changes, and press the button again to add the sample to the database.

5. Click the Next button to begin adding another Utility Sample without returning to the Add or Edit Batch window, or click OK to close the window and assign the new sample to the list of those included in the batch.

The second method for adding Utility Samples to the database is discussed in detail in Chapter 5, Utility Sample Identification.

Adding Laboratory QC Samples to the Database

To add a new Laboratory QC Sample:

1. Go to the appropriate Add or Edit Analysis Batch window.

2. Select the Positive QC or Negative QC from the Sample Type list and double-click or click the Add Sample button. An Add Sample window for the type of sample you selected will open.

Tips for Reading Sample ID Numbers

The ICR Laboratory QC Database System includes two special functions to make it easier for you to read the ID Numbers for a list of samples:

- Dashes—The application automatically sets dashes in between the sections of the Utility Sample Identification Numbers (see page 54 for a complete description of the number). You can turn off the dashes according to the instructions on page 22.

- Zoom Function—If you position your cursor in a list of Sample ID Numbers and click on your *right* mouse button, a window listing the samples in larger type will appear. You can view the list of samples in 8, 10, or 12 point type by pressing the buttons at the bottom of the window.

Determining Quality Assurance (QA) Codes and Comments

In the ICR Laboratory QC Database System, information is recorded both for entire samples and for individual sample analytical results. To illustrate:

- A *sample* is water that is analyzed for the analytes in one group. It is identified by a unique Sample ID Number. A sample may have many sample analytical results associated with it.

- A *sample analytical result* is the result of a test performed for an analyte upon a particular sample. A sample analytical result is always associated with one sample.

Sample information applies to the sample as a whole, defined in the ICR Laboratory QC Database System as the data related to one sample identification number. Sample analytical result information applies to an individual sample analytical result. You will determine QA Codes and Comments for both samples and sample analytical results.

Sample QA Codes and Comments

The Sample QA Code summarizes your assessment of the quality of the sample. You must record a Sample QA Code for each QC sample. The Sample QA Comment is the rationale for the QA assessment.

Sample QA Code and Comment fields appear on the right side of the result window. There are two Sample QA Codes: Acceptable (A) and Rejected (R). The default for the Sample QA Code is "A." If the QA Code for the sample is "A," you may enter a Sample QA Comment. If it is "R," you must enter a QA Comment explaining in scientific terms why the sample is not valid.

If you have entered a Sample QA Comment, the box to the right of the comment button will contain an X.

Sample Analytical Result QA Codes and Comments

The ICR requires laboratories and utilities to record data indicating the scientific validity of each sample analytical result. This data will be used by EPA to ascertain which sampling results may be used for further analysis. The ICR Laboratory QC Database System uses a series of Result QA Codes and Comments to record quality information. You are required to enter Result QA Codes and Comments for all types of QC samples. Instructions and definitions for the Result QA Codes and Comments are as follows:

The Result QA Code indicates whether the result of an analysis performed on the sample for a particular analyte is valid. There are three Result QA Codes: Acceptable (A), Rejected (R),

Determining QA Codes and Comments (Continued)

and Not Analyzed (N). Do not designate a sample analytical result as Rejected unless you have a valid scientific reason to do so.

The default for the Result QA Code is the same as the QA Code you recorded for the sample. You only need to enter a code in the field if the quality of the result differs from the quality of the sample.

NOTE: The QA Code for the result cannot be better than the QA Code assigned to the sample. For example, if the Sample QA Code is "A," the Result QA Code can be "A," "R," or "N." If the Sample QA Code is "R," the Result QA Code can only be "R" or "N."

Use the Result QA Comment to record detailed information about the QA status of a sample analytical result. The requirements for the Result QA Comment vary according to the Result QA Code assigned to the analyte. If the QA Code is "A," you may enter a Result QA Comment, but you are not required to do so. If it is "R," you must enter a Result QA Comment explaining why, in scientific terms, the sample analytical result is not valid, e.g., the response for an analyte exceeds the allowed range of the predicted response.

If you have entered a Result QA Comment, the box to the right of the comment button will contain an X.

3. Enter a Sample Identification (ID) Number for the sample in the Sample ID field. For QC Samples, you may use your internal sample tracking number or any other numbering scheme you choose *as long as the number for each sample is unique*. The number may have up to 13 alphanumeric characters. The application will append the abbreviation for the analyte group to the end of the Sample ID.

4. Click the Next button to begin adding another Utility Sample without returning to the Add or Edit Batch window, or click OK to close the window and assign the new sample to the list of those included in the batch.

Assigning and Removing Samples in the Batch

Samples are assigned automatically to the batch you are working in when you create them. However, you may remove a sample from a batch in order to reassign it to another batch of the same type. To assign a sample to a batch:

1. Go to the appropriate Add or Edit Batch window.

2. From the list of Available Samples, select the Sample ID Number of the sample that was analyzed in the batch.

3. Double-click on the Sample ID Number or select the > button to move the sample to the Batch Samples list.

To move all the available samples to the batch, select the >> button.

In order to reassign a sample, you must first remove the sample from a batch, then assign it to a second batch. To remove an identified sample from the batch:

1. Select the desired sample.
2. Choose the < button to move the sample to the list of Available Samples.
3. Assign the sample to another batch, according to the previous directions.

To remove all the samples from the batch and return them to the list of available samples, select the << button.

NOTE: Removing a sample from a batch is not the same as deleting it from the database. If you remove a sample from the batch, the sample will return to the list of available samples. If you delete a sample from the database, you will have to add it again before you assign it to another batch.

Editing a Sample

You can make changes to identified samples, regardless of whether or not they are currently assigned to a batch. If you need to modify a Sample ID Number:

1. Select the sample from the appropriate list in the Add or Edit Analysis Batch window.
2. Click the Edit Sample button.
3. Enter a revised Sample ID in the field labeled "New Sample ID."
4. Click OK to close the window and include the revised sample in the list.

Removing Samples from the Database

WARNING: If you delete a sample from the database, you will have to add it again before you can assign it to a batch.

To delete an available sample or a sample in the batch:

1. Select the sample from the appropriate list.
2. Click the Delete Sample button. A dialog box will open so that you can reconsider your decision before you delete the sample.

Results

Once you have identified your Utility and Laboratory QC Samples and assigned them to batches, you are ready to begin recording analytical results. You will only enter results for Laboratory QC Samples. *You cannot report analytical results for Utility Samples. Utility Sample results will be reported to EPA by the utilities.*

There are two ways to enter analytical results in the ICR Laboratory QC Database System: by sample type, and by individual sample in a batch. You may want to use the first method if your LIMS reports sample results by type (i.e., Positive QC and Negative QC) and the second method if your LIMS reports sample results by Analysis Batch.

Either way, you can only enter sample analytical result data for Laboratory QC Samples you have included in an Analysis Batch. If you need assistance in adding a new sample, refer to pages 55 and 57 or the On-Line Help topic "Add a Laboratory QC Sample."

You will open the result windows via the Add or Edit Analysis Batch windows. See pages 50 through 52 for instructions on how to navigate to an Analysis Batch window. From the Analysis Batch window:

- If you intend to enter sample analytical results by type of sample:

    1. Select a type of sample from the Sample Type list and choose the "Results by Type" button to open the Sample Selection List window.

    2. Select the sample for which you intend to enter results and double-click or choose Edit.

- If you intend to enter sample analytical results for samples by batch, select a sample that is included in the batch and double-click or choose the Results by Sample button.

Either way, a dialog box will open, reminding you that, once you begin entering results for a sample, you must complete the results or cancel out of the window entirely. If you have assigned the analytes in the sample to two or more batches, you will need the results for all the batches before you proceed.

NOTE: You can turn the message box off by clicking the check box labeled "Don't display this form again."

Click "Close" to close the dialog box and open the appropriate Edit Sample window. Once you have moved to the Edit Sample window, the process for entering results is the same, no matter which path you took.

Entering Analytical Results for a Positive Protozoan QC Sample

To enter results for a Positive Protozoan QC Sample:

1. Open an Edit Protozoan Sample Analytical Result window according to the previous instructions.

2. In the top section of the window:

    - Enter the date the sample was eluted in the Sample Elution Date field. You may use the Calendar function to select a date.

    - Enter the date the analysis was completed in the Sample Completion Date field. You may use the Calendar function to select a date.

    - Enter a QA Code and Comment for the Sample. For detailed information on Sample QA Codes and Comments, see tpages 56 and 57 or the On-Line Help topic "Determine QA Codes and Comments."

3. Enter a Result QA Code and Comment for *Giardia*. For detailed information on Result QA Codes and Comments, see pages 56 and 57 or the On-Line Help topic "Determine QA Codes and Comments."

4. Enter the Fortified Amount.

5. For the *Giardia* result:

   - If the result is *greater* than the Detection Limit (DL), enter the result in the field labeled Cysts/100L. The DL is smallest amount of the analyte that can be detected above the noise in a procedure and within a predetermined confidence level.

   - If the result is *less* than the DL, enter the DL in the field labeled Cysts/100L and select the < DL button for the analyte. A "less than" symbol will appear in the result field in front of the value you entered.

     The DL for an analyte varies depending upon the volume of the sample collected. Therefore, you must determine and enter the DL for each analyte.

6. Enter a Result QA Code and Comment for *Cryptosporidium*. For detailed information on Result QA Codes and Comments, see pages 56 and 57 or the On-line Help topic "Determine QA Codes and Comments."

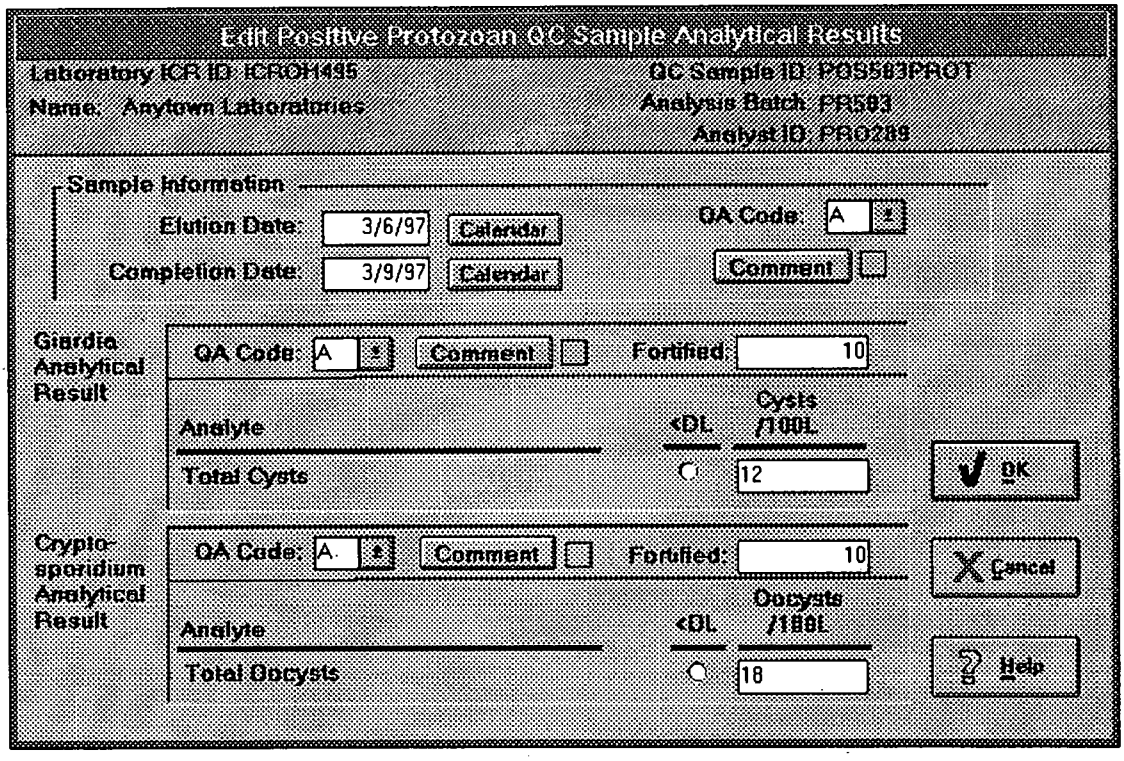
7. Enter the Fortified Amount.

8. For the *Cryptosporidium* result:

   - If the result is *greater* than the DL, enter the result in the field labeled Oocysts/100L.

   - If the result is *less* than the DL, enter the DL in the field labeled Oocysts/100L and select the < DL button for the analyte. A "less than" symbol will appear in the result field in front of the value you entered.

9. When you have entered the required information, select OK to close the window.



Enter Analytical Results for a Negative Protozoan QC Sample

To enter results for a Negative Protozoan QC Sample:

1. Open an Edit Negative Protozoan Sample Analytical Result window according to the instructions on page 59.

2. In the top section of the window:

   - Enter the date the sample was eluted in the Sample Elution Date field. You may use the Calendar function to select a date.

   - Enter the date the analysis was completed in the Sample Completion Date field. You may use the Calendar function to select a date.

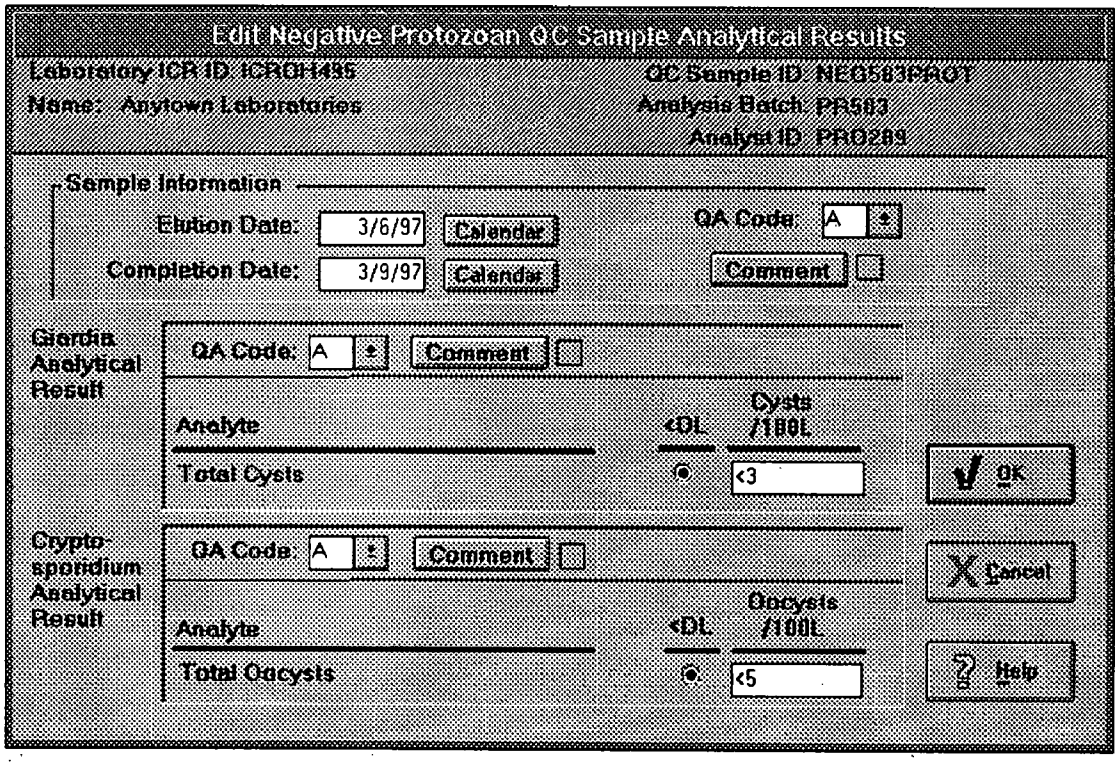
   - Enter a QA Code and Comment for the Sample. For detailed information on Sample QA Codes and Comments, see page 56 and 57 or the On-Line Help topic "Determine QA Codes and Comments."

3. Enter a Result QA Code and Comment for *Giardia*. For detailed information on Result QA Codes and Comments, see pages 56 and 57 or the On-Line Help topic "Determine QA Codes and Comments."

4. For the *Giardia* result:

   - If the result is *greater* than the DL, enter the result in the field labeled Cysts/100L.

   - If the result is *less* than the DL, enter the DL in the field labeled Cysts/100L and select the < DL button for the analyte. A "less than" symbol will appear in the result field in front of the value you entered. *Do not enter a result of zero (0).*



The DL for an analyte varies depending upon the volume of the sample collected. Therefore, you must determine and enter the DL for each analyte.

5. Enter a Result QA Code and Comment for *Cryptosporidium*. For detailed information on Result QA Codes and Comments, see pages 56 and 57 or the On-line Help topic "Determine QA Codes and Comments."

6. For the *Cryptosporidium* result:

   - If the result is *greater* than the DL, enter the result in the field labeled Oocysts/100L.

   - If the result is *less* than the DL, enter the DL in the field labeled Oocysts/100L and select the < DL button for the analyte. A "less than" symbol will appear in the result field in front of the value you entered. *Do not enter a result of zero (0).*

7. When you have entered the required information, select OK to close the window.

Enter Analytical Results for a Positive Virus QC Sample

To enter results for a Positive Virus QC Sample:

1. Open an Edit Virus Sample Analytical Result window according to the instructions on page 59.

2. In the top section of the window:

   - Enter the date the sample was eluted in the Sample Elution Date field. You may use the Calendar function to select a date.

   - Enter the date the analysis was completed in the Sample Completion Date field. You may also use the Calendar to select an Analysis Date.

   - Enter a QA Code and Comment for the Sample. For detailed information on Sample QA Codes and Comments, see pages 56 and 57 or the On-line Help topic "Determine QA Codes and Comments."

3. If the result is *greater* than the DL, enter the result in the field labeled Most Probable Number (MPN).

4. If the sample shows no Cytopathic Effect (CPE), enter a "1" and select the <DL button.

5. Enter the Upper and Lower 95% Confidence Limits for the result.

The upper 95% confidence limit is the value representing the highest likely value of the unknown parameter within 97.5 percent probability. The lower 95% confidence limit is the value representing the lowest likely value of the unknown parameter within 97.5 percent probability. The upper confidence limit is compared with the lower confidence limit to provide the 95 percent interval.

6. Enter a Result QA Code and Comment. For detailed information on Result QA Codes and Comments, see paes 56 and 57 or the On-line Help topic "Determine QA Codes and Comments."

7. Enter the Fortified Amount in the field labeled plaque-forming units (PFU).

8. When you have entered the required information, select OK to close the window.

Enter Analytical Results for a Negative Virus QC Sample

To enter results for a Negative Virus QC Sample:

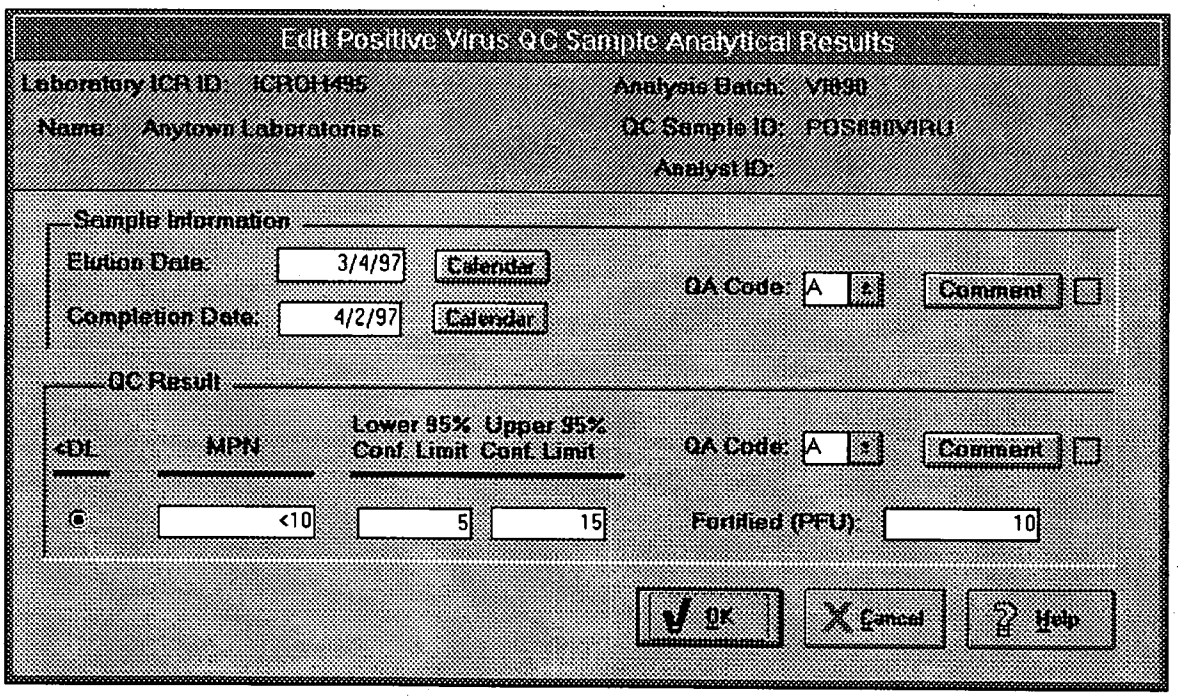
1. Open an Edit Virus Sample Analytical Result window according to the instructions on page 59.

2. In the top section of the window:

   - Enter the date the sample was eluted in the Sample Elution Date field. You may use the Calendar function to select a date.

   - Enter the date the analysis was completed in the Sample Completion Date field. You may also use the Calendar to select an Analysis Date.

   - Enter a QA Code and Comment for the Sample. For detailed information on Sample QA Codes and Comments, see pages 56 through 57 or On-line Help.



3. If the result is *greater* than the DL, enter the result in the field labeled MPN.

4. If the sample shows no CPE, enter a "1" and select the <DL button.

5. Enter a Result QA Code and Comment. For detailed information on Result QA Codes and Comments, see pages 56 and 57 or the On-line Help topic "Determine QA Codes and Comments."

6. When you have entered the required information, select OK to close the window.

Verifying Results

The ICR Laboratory QC Database System includes a report you can use to review your data before you send it to EPA. For instructions on generating the reports, see Chapter 6.

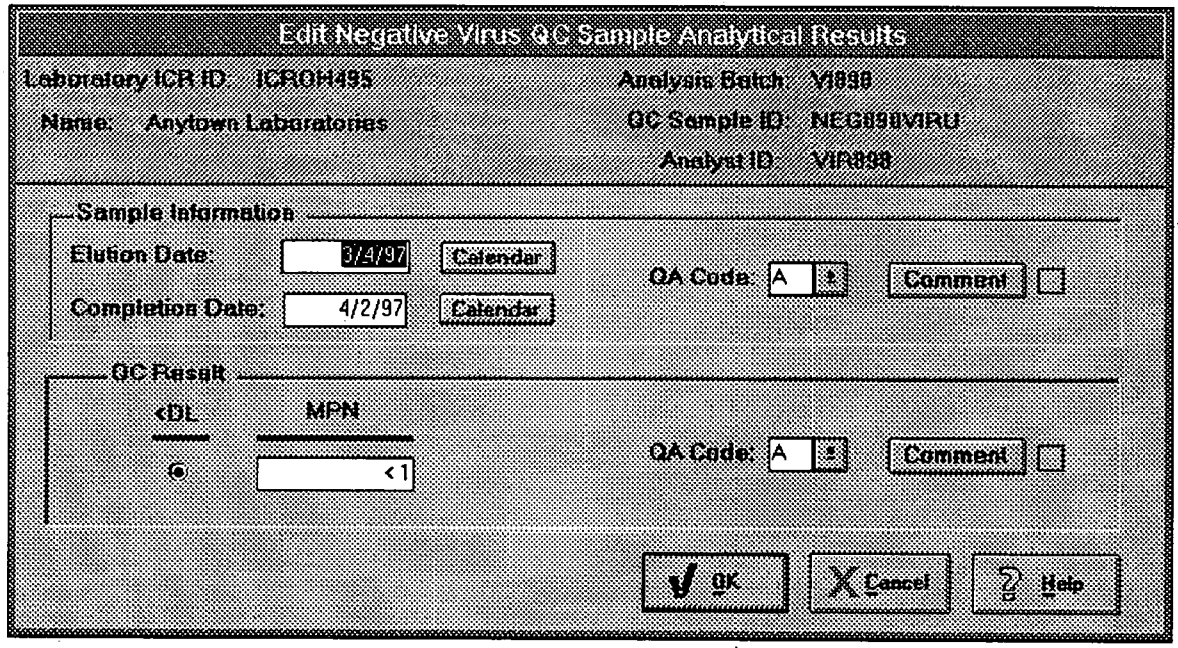
Archiving a Batch and Its Samples

After you have entered results for a number of samples, you may want to archive some of your batches and their component samples. Archiving makes it easier for you to find a current batch or sample by reducing the number of batches and samples that appear in various lists.

You cannot enter analytical results for samples in an archived batch. You can, however, return an archived batch to the list of current batches, and then enter results for QC samples in the batch. You can return an archived batch to the list of current batches at any time.

To archive a Microbiological Analysis Batch:

1. Select the Microbiological Analysis button from the Main Menu. The Microbiological Analyte Group Selection List window will open.



2. Choose an analyte group from the selection list. A Batch Selection List window will open.

3. Select the Archive button to open the Archive Batch Window. Move batches in and out of the Archive by using the arrow buttons between the two lists:

   - Use the > button to move a selected batch from the Available list to the Archived list.
   - Use the >> button to move all batches to the Archived list.
   - Use the < button to move a selected batch from the Archived list to the Available list.
   - Use the << button to move all batches to the Available list.

4. Select OK to return to the Batch Selection List window.

Use the same process to return an archived batch to the list of current batches.

NOTE: The Data Transfer process transfers data from archived and current batches

Sending Results to EPA

After you have completed and reviewed your data, generate a data transfer diskette and report according to the instructions in Chapter 7.

In the case of Virus batches, you will send the information no more than two months from the last day of the month in which you completed analysis of the samples in the batch. For example, if you begin the analysis on a virus batch on February 27 and complete it on March 3, you will send QC data for the batch to EPA by the end of May.

For protozoan batches, you will send the information no more than one month from the last day of the month in which you completed analysis of the batch. For example, if you begin the analysis of a *Giardia* and *Cryptosporidium* batch on February 27 and complete it on March 3, you must send QC data on the sample to EPA no later than April 30.

The data you send to the Agency will include the batches completed during the month, the analytical results of any QC samples included in one or more of the batches, and a record of the Utility Samples in the batches.

CHAPTER 5: UTILITY SAMPLE IDENTIFICATION

Overview

Chapters 3 and 4 include instructions for adding Utility Samples to the database via the Add and Edit Batch windows. That method works well for adding a small number of samples from a variety of utilities. You may also add samples to the database through the Utility Sample Identification window. This method incorporates special features that are geared to adding large numbers of samples from one utility to the system at one time.

If you add samples using this procedure, you can minimize the number of key-strokes you need to type into the system to record a sample. For example, if you have two samples that were taken from the same sample location at a utility, you will only have to select an analyte group and choose OK to identify the second sample.

WARNING: Do not identify all the Information Collection Rule (ICR) samples collected by your client utilities in the ICR Laboratory Quality Control (QC) Database System. Only add those samples that are included in batches for which you will submit QC data to the United States Environmental Protection Agency (EPA)—that is, samples associated with the analyte groups listed on pages 24 and 50.

Adding, Modifying, and Deleting Utility Samples

To add a Utility Sample:

1. Select the Utility Sample Identification button from the Main Menu to open the Utility Sample Identification Window.

2. Enter the Sample Identification (ID) Number printed on the utility report in the Sample ID field. A Sample ID Number is a unique number by which each sample is identified. For more information on the Utility Sample ID Number, see pages 69 and 70.

3. Select the indicated analyte group from the list. Analyte groups are described in detail on pages 24 and 50.

4. Enter the Check Digit from the utility report. A Check Digit is a one- or two-character number generated by a mathematical formula in the ICR Water Utility Database System. The formula is based on the Utility Sample ID Number.

When you click the Add button, the ICR Laboratory QC Database System will run the same formula to determine whether you have entered the Utility Sample ID Number correctly. If the formula indicates that the Check Digit does not correspond to the Utility Sample ID Number, a dialog box asking you to verify the Utility Sample ID Number will open. Check the Utility Sample ID Number, make any necessary changes, and press the Add button again to add the sample to the database.

5. Select the Add button. The new sample will appear in the list on the right side of the window. The list includes all Utility Samples you have added to the application, but are not included in an archived Analysis Batch.

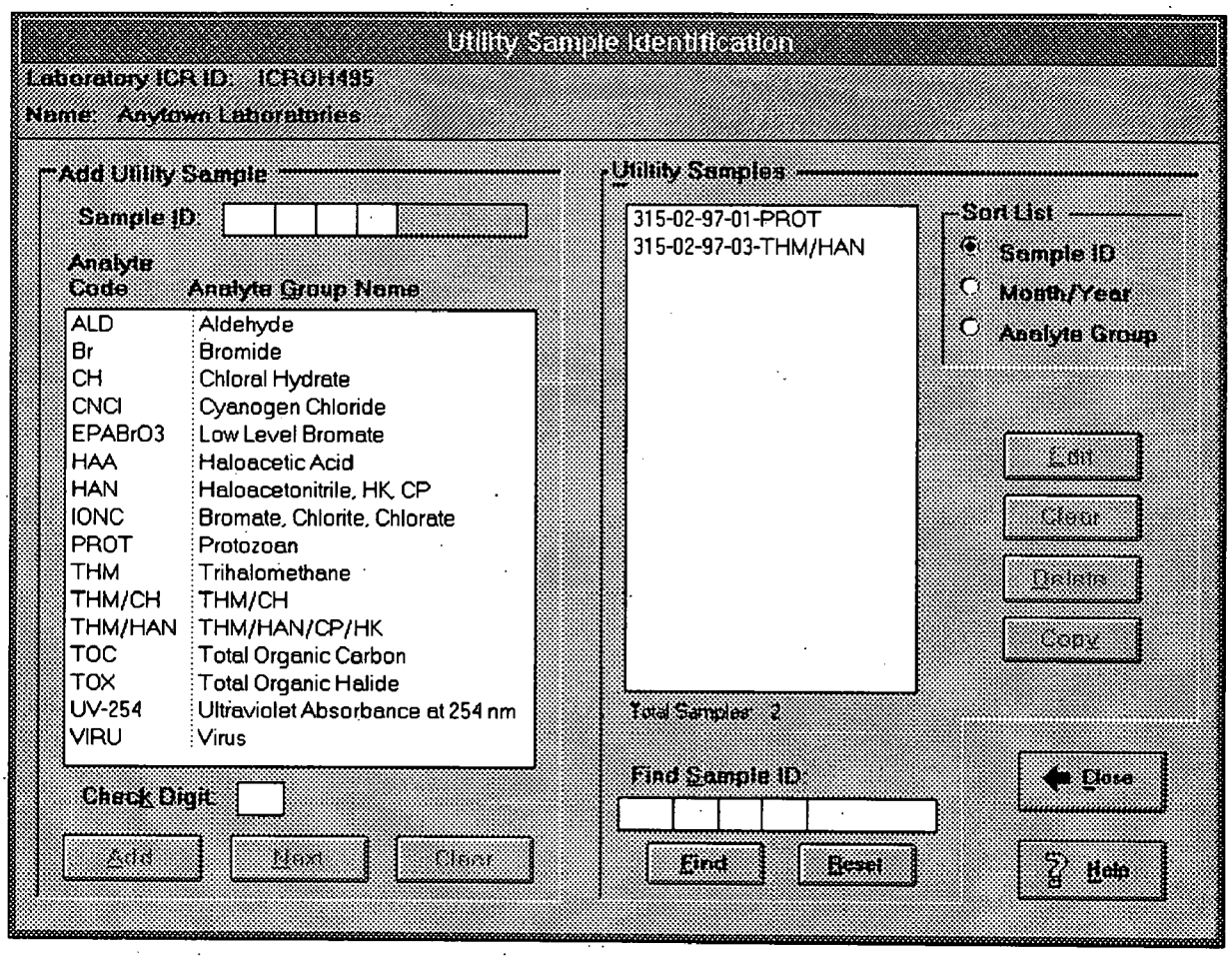
To find a Utility Sample that has already been added, you can either scroll down the list of Utility Samples, or:

1. Enter the Sample Identification Number in the Find Sample ID field.

2. Click Find. The application will highlight the appropriate sample.

3. Click the Reset button to clear the Find Sample ID field.

The Find command will only locate the first sample that meets the criteria you specified. To locate a larger number of samples with similar ID Numbers, use the Sort List Function in the top, right corner of the window. The Sort List will sort the samples by Utility Sample ID,



Month and Year, or Analyte Group. To sort the Utility Samples you have added, click on the appropriate radio button.

To modify a Utility Sample ID Number you have already entered into the database:

1. Select the sample from the list of Utility Samples.

2. Click the Edit button. The Sample ID Number you selected will move to the Sample ID field.

3. Make any necessary changes to the number, and press Add. The revised Sample ID Number will be included in the list of Utility Samples.

To delete a Utility Sample:

1. Select the sample from the list of Utility Samples.

2. Click the Delete button.

To remove a Utility Sample from the Sample ID field, choose the Clear button. The Clear button will not change any samples included in the list.

Once you have identified all your samples, select Prev to return to the Main Menu.

Utility Sample Identification Number

All the ICR samples you receive from client utilities will be numbered according to the treatment plant from which the sample was taken, the Monthly Sampling Period, the year the sample was taken, the Sample Location Number from which the sample was taken, and the analyte group for which the sample was analyzed. An example appears below.

Sample ID Number 315-01-97-03-BR

- 315 = ICR Treatment Plant Identification Number
- 01 = Month of sampling period, for example, January is 01, February is 02, etc.
- 97 = Sample taken in 1997
- 03 = Sample taken from Sample Location Number 3
- Br = Sample analyzed for Bromide analyte group

The data entry field for a Utility Sample ID is divided into five sections. The field divisions offer the following advantages:

- Once you have added the first sample for a utility into the application, you can copy the Sample ID Number into the data entry field and change only the sections of the number that are different, instead of typing the whole number.

For example, if the first sample from a utility is number 315-01-97-03-THM, and the second is 315-01-97-04-THM, enter the first Sample ID, click Add to enter the first sample, change the Sample Location Number to 04, and click Add again to enter the second sample into the database.

- You do not need to type in the 2 to 5 character analyte group. Type the nine numbers into the field, and select the appropriate analyte group.

The disadvantage to the field divisions is that you cannot select an entire Sample ID number in the data entry field. You must make changes to each section separately. For example, if you have a sample numbered 315-01-97-03-THM, but only enter 315-1-97-03-THM (leaving out the "0" in front of the month designation), you must re-enter the Month, Year, and Sample Location Number before you add the sample to the database.

Assigning Utility Samples to the Batch

If you go through the Add and Edit Batch windows to add Utility Samples, they will be assigned automatically to the batch, just as your Laboratory QC Samples are. If you add a Utility Sample via the Utility Sample Identification window, or you remove a Utility Sample from a batch, you will need to assign it to a batch using the following procedure:

1. Go to the appropriate Add or Edit Batch window.

2. From the list of Available Samples, select the Sample ID Number of the Utility Sample that was analyzed in the batch.

3. Double-click on the Sample ID Number or select the > button to move the sample to the Batch Samples list.

Tips for Reading Sample ID Numbers

The ICR Laboratory QC Database System includes two special functions to make it easier for you to read the ID Numbers for a list of samples:

- Dashes—The application automatically sets dashes in between the sections of the Utility Sample Identification Numbers (see pages 69 and 70 for a complete description of the number). You can turn off the dashes according to the instructions on page 22.

- Zoom Function—If you position your cursor in a list of Sample ID Numbers and click on your *right* mouse button, a window listing the samples in larger type will appear. You can view the list of samples in 8, 10, or 12 point type by pressing the buttons at the bottom of the window.

CHAPTER 6: REPORTS

Introduction

The Information Collection Rule (ICR) Laboratory Quality Control (QC) Database System includes predefined reports for you to use with the application. The reports enable you to:

- Verify data you have entered into the application.
- Provide a record of data you have submitted to the United States Environmental Protection Agency (EPA).

The reports are grouped according to both reporting event and function.

Chemistry Reports

Use the Chemistry Reports to verify data associated with samples analyzed for chemical contaminants and to determine if data are missing from the set of information you intend to provide EPA.

- Monthly Chemical Results by Batch—Lists data associated with each Shipping, Extraction, and Analysis batch, and associates Laboratory QC samples with the correct analysis batch. Also lists all information for each Laboratory QC Sample, including results by analyte and Result Quality Assurance (QA) Codes and Comments where applicable.
- Chemical Batch Summary—Lists the utility and Laboratory QC Samples associated with each Analysis Batch, associates samples to the correct Shipping and Extraction Batches (if applicable), indicates the analytes for which the samples were analyzed, and shows which Analysis Batch the analytes were included in.
  NOTE: The X's that appear on this report indicate which analytes for a sample were run in the batch.

Microbiological Reports

Use the Microbiological Reports to verify data associated with samples analyzed for protozoa and viruses and to determine if data are missing from the set of information you intend to provide EPA.

- Monthly Microbiological Results by Batch—Lists data associated with each Microbiological Analysis Batch and associates Laboratory QC Samples with the correct batch. Also lists all information for each QC sample, including results by analyte, and Result QA Codes and Comments where applicable.
- Microbiological Batch Summary—Lists the utility and Laboratory QC samples associated with each batch.

Data Transfer Reports

The ICR Laboratory QC Database System automatically creates a set of data transfer reports each time you generate a data diskette for EPA. Unlike the other reports in the application, which you can print at any time, you can only print the data transfer reports from the data transfer menus.

As data is extracted from your ICR system, critical data records are checked for minimal completeness to ensure basic data will be sent to EPA. If any of these data checks fails during data transfer, the transfer diskette will not be generated and a completeness report will be printed. This report lists missing information that must be added to the database before a transfer diskette can be generated. The messages on the reports provide the name of the window where the data may be entered or displayed and a brief diagnostic message. Information such as Analysis Batch Number is provided, when possible, to aid the user in locating the incomplete data record. You must enter the following data into the application before you can generate a transfer diskette:

- The name and Laboratory ICR ID number for your laboratory.
- The name and telephone number of the ICR Technical Contact for your water system.
- At least one sample for each shipping, extraction, and analysis batch you have identified.

The Data Transfer Reports are:

- Laboratory Data Transfer Summary Report—Send this report with a data transfer diskette to identify the information contained on the diskette. If the diskette is damaged or otherwise unreadable, EPA will use the report to contact you and request a second diskette.

  The data transfer report includes a checksum, or mathematical algorithm that is calculated based on the data you have supplied in the data transfer. When the diskette reaches EPA, the Agency will load the data onto the federal computer and run the same algorithm on your file.

- Laboratory QC Data Transfer History Report—Lists all the months for which your laboratory has generated data transfer diskettes for ICR data validation. Use this report to determine whether you have already produced a diskette for a particular month.

Generating Reports

You may generate reports from the Reports button on the Main Menu. To generate a report:

1. Turn on your printer.

2. Select the Reports button on the Main Menu to open the Report Selection List. The Report Selection List offers the following choices:

   - Chemical Results by Batch
   - Microbiological Results by Batch
   - Chemical Batch Summary
   - Microbiological Batch Summary

3. Choose a report from the list.

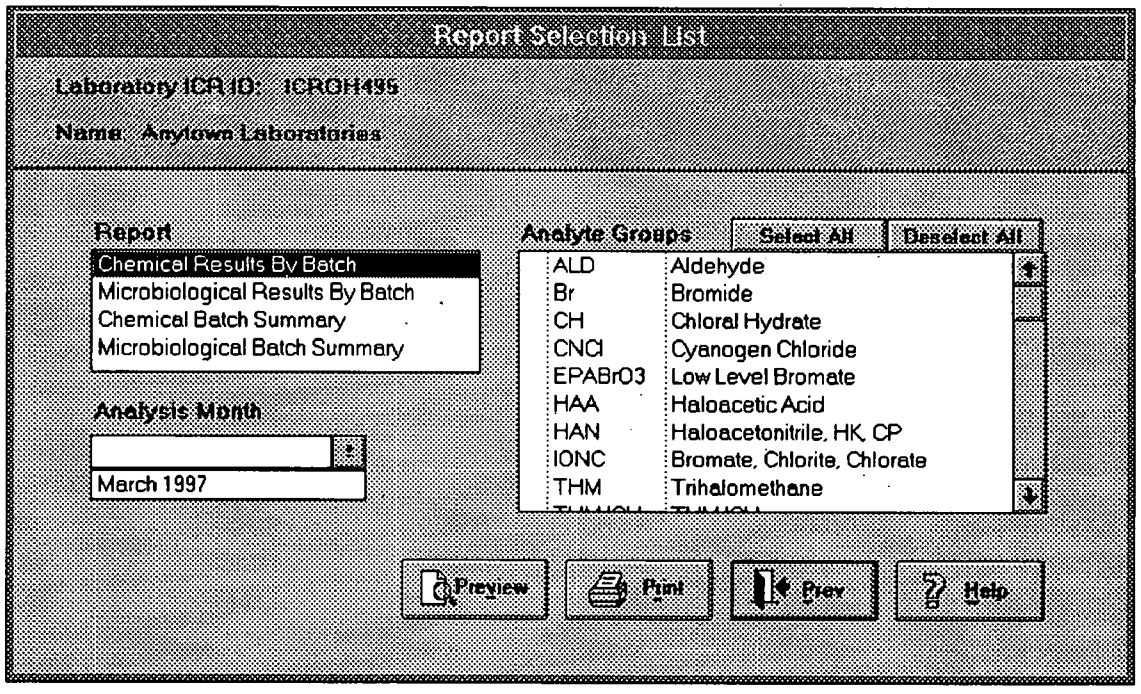
4. Select one or more analyte groups by clicking on the groups in the list on the right side of the window. When you click on a group, an "X" will appear to the left of the analyte group name. Click on the group again to deselect it. You can select or deselect all analyte groups by clicking on the buttons at the top of the list.

   NOTE: You may only preview or print the Chemical Batch Summary Report for one analyte group at a time.

5. Select the month and year for which you are sending samples to EPA in the field labeled Analysis Month. Only those months for which you have entered data will appear in the list.

   Use the Print Preview function to examine a report before you print it. To preview a report, select it from the list and click the Preview button. You may also:

   - Zoom in or out of the preview by clicking on the report.



NOTE: In a closeup view, you will not be able to see the full page of the report. To see another section of the page, click to return to the full page view, then click again on the section of the report you would like to see.

- Move from page to page in the preview by clicking on the arrows in the bottom, left hand corner of the window.

- Print a report directly from print preview by selecting the print button in the top, left hand corner of the window.

If you print directly from the Print Preview, you can use the menu selections at the top of the window to change printers or specify the page(s) of the report you would like to print. To change printers:

- Select Print Setup from the File menu.

- Click the radio button labeled "Specific Printer."

- Select the appropriate printer from the list. Only those printers to which you are attached will be displayed.

- Click OK.

To specify pages:

- Select Print from the File menu.

- Click the radio button labeled "Pages."

- Enter the appropriate page numbers in the fields labeled From and To.

- Click OK.

NOTE: You cannot make any changes to a report from the Report Preview. You must go back into the data entry windows, make the necessary changes, and regenerate the report.

The application will generate a report on all Analysis Batches that have a Completion Date that falls during the specified month, and any Shipping Batches, Extraction Batches, samples, and sample analytical results related to those Analysis Batches.

If you have not entered any Completion Dates for Analysis Batches during the month, the application will display an error message stating that there are no Analysis Batches meeting the specified criterion.

6. Print the report by selecting the Print Icon at the top of the window.

7. Select and print another report or return to the Main Menu by clicking the Prev button.

NOTE: You cannot print data transfer reports through the Report Selection List Menu. Data transfer reports are only produced when you generate a data diskette for EPA. For instructions on data transfer, see Chapter 7.

CHAPTER 7: DATA TRANSFER

Overview

Once each month, you will submit Laboratory Quality Control (QC) data to EPA for each type of batch you analyzed during a previous month. The types are:

- Chemical Batches
- Virus Batches
- Protozoan Batches

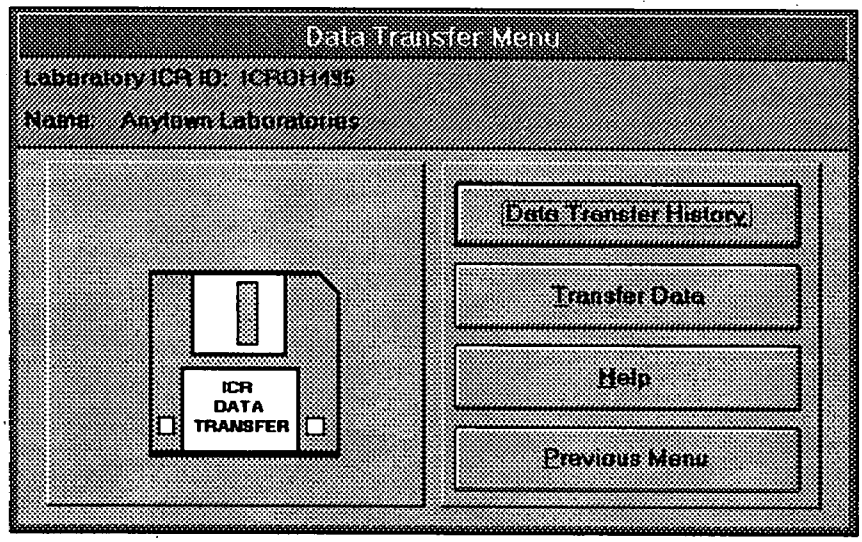
Under the Information Collection Rule (ICR), a virus or protozoan batch is defined as all the samples upon which analysis was completed at one laboratory by one Principal Analyst during a single calendar week.

You will have two months after the last day of the month in which you analyzed chemical batches to send data for the month to EPA. For example, if you analyze a batch for Trihalomethanes on February 27, you will send QC data on the batch to EPA by the end of April.

In the case of virus batches, you will send the information no more than two months from the last day of the month in which you completed analysis of the samples in the batch. For example, if you begin the analysis on a virus batch on February 27 and complete it on March 3, you will send QC data for the batch to EPA by the end of May.

For protozoan batches, you will send the information no more than one month from the last day of the month in which you completed analysis of the batch. For example, if you begin the analysis of a batch analyzed for *Giardia* and *Cryptosporidium* on February 27 and complete it on March 3, you must send QC data on the sample to EPA no later than April 30.

NOTE: If you are recording data for more than one laboratory, you will need to conduct each data transfer separately. *You cannot perform data transfers for two laboratories simultaneously.*



The data you send to the Agency will include the analysis batches completed during the indicated month, the extraction and shipping batches that contained samples in the identified analysis batches, the analytical results of any QC Samples included in one or more of the batches, and a record of the Utility Samples included in one or more of the batches, and a record of the Utility Samples in the batches.

Each time you send data to EPA, you will send the Agency a diskette containing the ICR QC data for one type of sample for the month and a summary report to help EPA verify that the data you sent the Agency are the data it received. The summary report identifies your laboratory as the sender of the information and is printed out automatically as part of the data transfer process. When the diskette reaches EPA, the Agency will load the data into the central database.

You will need the following items to complete a data transfer package for EPA:

- Several blank, formatted 3.5" diskettes. You must use 3.5" diskettes to send ICR data to EPA. *Do not use 5.25" diskettes.*

- Diskette labels (printed or typed) listing:

  - The Laboratory ICR Identification (ID) Number and name of your laboratory.

  - The date you generated the diskette.

  - The data transfer type (e.g., Chemical , Protozoa, or Virus).

  - The name and telephone number of the ICR Technical Contact for your laboratory.

- A diskette mailer addressed to:

  USEPA (ICR4600)
  ICR Data Center
  Room 1111 East Tower
  401 M Street, SW.
  Washington, DC 20460

Generating a Data Transfer Diskette and Report

To generate your diskette and report:

1. Turn on or connect to your printer.

2. Click the Data Transfer button on the Main Menu to open the Data Transfer Menu.

3. Check to make sure you have not already generated a transfer diskette for the month by clicking the Data Transfer History button. *If you need to resubmit data for a reporting event, you must contact the ICR Laboratory Coordinator before you generate the second transfer diskette.* The address for the ICR Laboratory Coordinator is:

   ICR Laboratory Coordinator
   EPA Technical Support Division
   26 W. Martin Luther King Dr.
   Cincinnati, OH 45268

3. Choose the Transfer Data button to open the Data Transfer Selection window and select the following:

   - The Data Transfer Type
   - The Transfer Period

   When you have finished choosing a type and period, click OK to open the Data Transfer Drive Selection window.

   NOTE: If you have not recorded any data for the selected transfer event, the application will automatically generate an error report.

4. Insert a blank diskette in a floppy drive, select the letter of the drive, and click OK to begin data transfer. *You cannot submit data for multiple months or multiple types of samples on a single diskette.* For example, if your laboratory analyzes both virus and protozoan samples during the month of June, 1997, you must generate two diskettes for EPA.

   The Data Transfer in Progress dialog box will open. Unless you are otherwise prompted by the application, do not click the mouse or use the keyboard while the box is open.

   A status line will appear at the bottom of the window, telling you what part of the transfer is in process. During data transfer, the application extracts the data from your database, compresses the data, copies it on to the floppy disk, and generates a printed report. The process normally takes several minutes.

   Once the data are copied, the Data Transfer in Progress dialog box will close and the Transfer Data Disk Label Information window will open.

5. Write the information shown on the Transfer Data Disk Label Information window on the diskette label to identify your diskette when you send it to EPA. This information is also listed on page 76.

6. Click OK to return to the ICR Laboratory Data Transfer Menu.

7. Send your diskette, along with the printed transfer report, to:

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

   EPA recommends you send the package by traceable means (i.e., First Class Mail Return Receipt Requested, Express Mail, Federal Express, United Parcel Service, or any similar service).

   NOTE: A laboratory representative must sign the Data Transfer Report before you send it to EPA. The ICR Technical Contact may delegate signature authority for the report to another representative of your laboratory.

EPA Activities

The data you send to EPA will be available to the general public.

When the Agency receives your data, it will:

- Post Data to the National Database—The Agency will post your data to the federal ICR database and use it to validate data supplied by your client utilities.

- Validate Utility Data—The Agency will validate the data received from public water utilities based upon your QC data. EPA will run a series of logical questions, or validation algorithms, that compare the data you supplied to EPA's quality control standards. For information on the EPA standards, contact the Safe Drinking Water Hotline at (800) 426-4791.

CHAPTER 8: SYSTEM ADMINISTRATION

Overview

Your laboratory is ultimately responsible for maintaining the integrity of its data, that is, ensuring that the information it supplies is complete, accurate, and meets all the requirements of the rule.

The System Administration segment of the application consists of tools you can use to help you maintain the integrity of your data and use the Information Collection Rule (ICR) Laboratory Quality Control (QC) Database System more effectively. The tools are:

- Back Up Data—Make a copy of your data.
- Restore Data—Insert a backup copy of your data back into the application.

The tools are shown as buttons on the System Administration Menu.

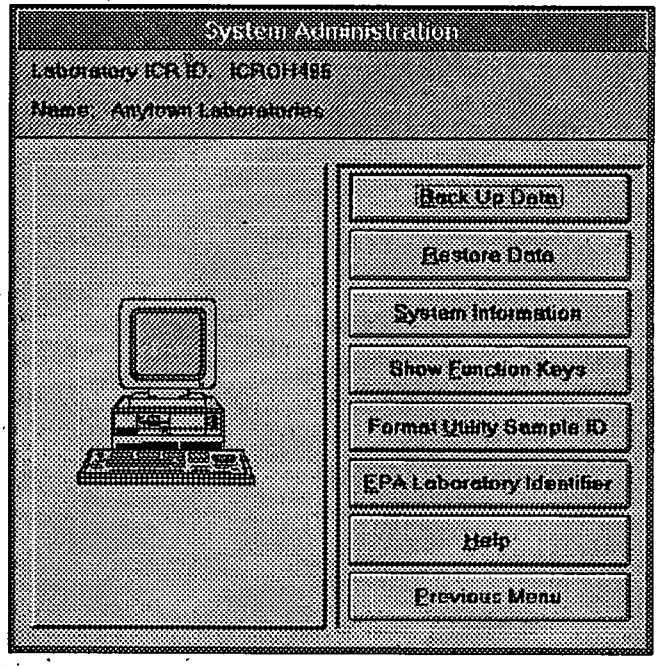
Back Up Data

You can lose data you have entered into the application if your hard disk fails or if you accidently overwrite or delete data. Back up your ICR data regularly to minimize the amount of data you can lose.

You should have several blank diskettes on hand before you begin.

To back up your ICR files:

1. Select Back Up Data from the System Administration Menu.
2. Place a diskette in your disk drive.
3. Select the letter of the disk drive (usually drive A:) in the Back Up field.
4. Click OK.



5. Follow the directions on the Back Up Data window. The application will prompt you for additional diskettes.

6. When the backup procedure is completed, a Backup window will open, showing you the name and location of the backup file.

Back up your files each time you enter data into the ICR Laboratory QC Database System. *Each time you submit data to the United States Environmental Protection Agency (EPA), make an additional backup of the files on a second diskette and store the diskette in a separate location.*

Store your backup files in a safe place away from the computer. It is best if you can store your files in another building. If this is impractical, store your files in another room in the same building, or at least across the room from the computer. By storing the backup files at a separate location, you protect yourself from loss of data due to physical damage (e.g., fire, flood, etc.) of the site where you enter the data.

Restore Data

Use the Restore Data function to bring up the database from a previous backup and replace your current data with the backup data.

WARNING: If you use the Restore Data function, you will lose any changes you have made to the database since you made your backup.

To restore your data:

1. Choose the Restore Data button from the System Administration menu.

2. The Restore Data window will open. The Backup History list at the top of the window shows only the backups you have made of your ICR database since the last time you restored the application.

3. Insert the diskette containing the appropriate backup file into the disk drive.

4. Click on the button labeled "Get File." The Select File to Be Restored window will open.

5. Identify a file by choosing the appropriate drive (usually A:\) from the Drives list and selecting the correct file from the File Name list.

6. Click OK to return to the Restore Data window.

7. Click OK again to run the restore program and follow the directions on your monitor.

   NOTE: The application will instruct you to first insert the last diskette from your set of backups. If you have only one diskette, leave that diskette in your floppy disk drive.

8. When the restore process is complete, a Restore Completed window will open. Click OK to return to the System Administration window.

   NOTE: Once you have conducted a restore, the backup files previously displayed in the Backup History list will no longer be shown.

System Information

Click the System Information button to review the parameters of your personal computer system. You may wish to change one or more of the parameters to optimize ICR Laboratory QC Database System performance.

If you are having performance problems with your personal computer (PC), set your PC to the following parameters:

- Increase your Random Access Memory (RAM) to at least 12 Megabytes (MB).
- Set virtual memory to permanent.
- Set virtual memory plus RAM to greater than 25 Mb.
- Close applications and terminate-and-stay-resident (TSR) programs you aren't using to increase available memory.
- Set the Buffers parameter in your CONFIG.SYS file to 40 or more.
- Decrease the WinCacheSize parameter for SMARTDrive (or similar setting for other disk caches) in your CONFIG.SYS file.
- If your color scheme is set to "Ocean," change it to a another color scheme.
- If you have a wallpaper (full screen background) bitmap on your windows desktop, replace it with a solid color bitmap, a pattern bitmap, or no bitmap to increase available memory.
- Use 32-bit disk access (and 32-bit file access if you are using Microsoft® Windows™ Version 3.11 or later). To set disk and file access:

  1. Open the Windows Control Panel program group.
  2. Click the 386 Enhanced icon.
  3. Select the Virtual Memory button from the 386 Enhanced window.
  4. Choose Change.
  5. Set the disk and file access.

Show Function Keys

Use this feature to turn on or off the list of Function Keys that appears when you first start the application. To turn the list on or off:

1. From the System Administration window, click on the Show Function Keys button. The Show ICR Function Keys window will open.
2. Select the appropriate Check Box.
3. Click OK to close the window.

Format Utility Sample ID

Use this feature to display or turn off the dashes that separate sections of a Utility Sample ID Number as it appears in a list. To turn the feature off or on:

1. From the System Administration window, click on the Format Utility Sample ID button. The Show Formatted Utility Sample ID window will open.

2. Select the appropriate Check Box.

3. Click OK to close the window.

EPA Laboratory Identifier

The EPA Laboratory Identifier is a unique number that identifies your analytical laboratory. EPA uses the Identifier to ensure the ICR data you submit are associated with your laboratory when the data are posted to the central database, and that no data from another laboratory are incorrectly associated with your laboratory. Each time you submit data to EPA, your EPA Laboratory Identifier must be the same.

Before you reinstall the application or change your EPA Laboratory Identifier, contact the ICR Data Management System (DMS) Hotline at (703) 908-2155. Hotline staff will provide you with the Identifier that EPA has associated with the data for your water utility.

The application creates the Identifier the first time you enter your ICR Laboratory ID into the system. The Identifier is based on the number you enter and the date and time at which you enter the ID.

If you reinstall the software without using a backup copy of your data, the application will generate a new EPA Laboratory Identifier. You must change it back to your original number in order to transmit subsequent data successfully.

Unless you reinstall the ICR Laboratory QC Database System (either on the same computer or on a different machine from the one you installed it on originally), and do *not* have a backup of your ICR data, you should have no reason to change the Identifier.

If you change your EPA Laboratory Identifier or reinstall the application without calling the Hotline, the Agency cannot tie your data to your utility and you will appear to be out of compliance with the ICR.

To change the identifier:

1. Select the EPA Laboratory Identifier button from the System Administration window.

2. Close the dialog box that describes the Identifier by clicking the OK button at the bottom of the box..

3. Enter the correct Identifier in the field on the Edit EPA Laboratory Identifier window.

4. Select the OK button to close the window.

Data Analysis

EPA has built a number of data entry safeguards into the ICR Laboratory QC Database System to help maintain the integrity of your data. These safeguards include edit checks, or limits on the values you can enter into some fields, and mandatory fields or requirements that you enter certain data before you can move to other windows.

If you analyze your data using a fully functional copy of Microsoft® Access™, you can inadvertently bypass the edit checks and mandatory fields built in to the ICR Laboratory QC Database Application. *If you bypass these safeguards and make changes to the data, you will jeopardize not only the integrity of your data, but also your status as an ICR-approved laboratory.* If you choose to analyze your ICR data using Microsoft® Access™, you should make a copy of the original data file and perform your analyses on the copy to prevent any problems.

Archiving ICR Data

You are required to maintain your ICR information for three years after EPA has uploaded the last of your data to the ICR Federal Database and you have verified that all the data on the central system are the data you transmitted to the Agency.

To prevent your data from being deleted or damaged after the close of the ICR effort and make more room on your computer's hard disk drive:

1. Make a backup of your data according to the instructions on the preceding pages.

2. Store the backup diskettes, together with the original application diskettes and this users' guide, in a safe location.

3. You may delete the ICR Laboratory QC Database System from your computer according to the instructions for deleting a program group in your Microsoft® Windows™ manual. If you need to access the data at a later time, reinstall the application according to the instructions on page 12 and restore your data from the backup diskette as discussed previously.

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*U.S. GPO 1996: 550-336