National Outbreak Reporting System (NORS): Water Sample Laboratory Data

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1 INTRODUCTION

This training session will show you how to report water sample data from waterborne disease outbreaks. We will go in the order of: treated recreational water, untreated recreational water, drinking water, and water not intended for drinking or water of unknown intent. The fields and the process for reporting data are almost exactly the same for all four report types. Each field will be covered in detail only once. This training assumes that you have completed the Login and Main Features training, the General section training, and at least the Water-General training.

2 WATER-REC. TREATED LAB TAB

Let's start on the Water-Rec Treated Lab tab. In the treated recreational water training, we used the example of an outbreak of cryptosporidiosis associated with a hotel pool. The hotel pool was treated with chlorine.

The first question asks 'Was water from treated recreational venues tested?'. There is a similar question in each lab tab asking if water samples relevant to that type of water exposure were collected and tested. If the answer is 'Yes' and you have any data about the water samples, you'll want to continue filling out the tab. If the answer is 'No' or 'Unknown', you will be finished entering data in the tab. For this example, the radio button next to 'yes' has been selected.

Since water was tested, let's go to the Water Quality Results table. Data are entered here in columns instead of rows. We want to create a column about a swimming pool backwash sample. Let's click 'Add New Sample' at the top of the list of data values and enter the sample number as '2'. The Sample Number field can be any whole number but cannot contain any letters, punctuation or symbols.

Here, we will report the Source of Sample to be 'Pool-swimming pool' by finding the value in the list and clicking on it. More than one value can be selected if the water samples were combined before any measurements were taken. Additional Description… should be a brief description about where and how the sample was collected and any treatments applied to the sample before it went to the laboratory. Let's describe this sample as having been 'treated with sodium thiosulfate and sent on ice to the laboratory'.

Let's report a Date that the sample was collected, using March 13, 2007. The format for this field is month, day, year.

The measurement for the remaining fields should be taken at the time of sampling. Since some treatments, such as sodium thiosulfate and ice will change the results from water testing, the results should also be collected before any treatments have been applied to the sample.

We'll report here that the volume collected was 1 liter. Let's enter that the Temperature was 80 degrees Fahrenheit, the Residual or Free Disinfectant Level was 1.5 parts per million, the Combined Disinfectant Level was 3 parts per million and the pH was 7.2. Lastly, let's click 'Save'.

Next, let's look at the Microbiology or Chemical/Toxin Analysis table. This table is similar to the Clinical Specimens table that was reviewed in the Water-General training module and data are entered in essentially the same way. As with the Clinical Specimens table, the data should include both positive and negative findings, which means that if water was tested for a specific pathogen or chemical, the pathogen or chemical should be reported in its own data row, along with whether or not the test results were positive. Secondly, there should be a row for each level of testing performed.

So what's different? The main differences are in the fields you need to complete. The checkbox for Confirmed as Etiology? has been removed, since etiology is based on clinical specimens, not water samples. Tested for, Specimen Type, Specimen Subtype, Total Number of People Tested, and Total Number of People Positive fields have also been removed, since they again apply to clinical specimens, not water samples.

This table has a new checkbox field, called Test Results Positive?. Check the box each time you enter a row of data for which the results were positive. For example, if the water tested positive for *Cryptosporidium*, you would enter a row of data and check this field. If additional tests determined the species of *Cryptosporidium*, such as *Cryptosporidium parvum*, you would enter a second row of data and again check the box in Test Results Positive?. Remember that this is different than the checkbox in the Clinical Specimens table, where 'Confirmed as Etiology' is only checked off for the most detailed level of results about the etiology of the outbreak.

Other new fields in this data row are PFGE Pattern and Test Method. Let's enter a new data row to look at these fields.

Click 'Add Results' and select a Sample Number to link this row of data to a water sample in the first table. Select '*Cryptosporidium*' by scrolling through the alphabetical list or by typing the first few letters of the word. Open up the Species picklist and note that it is filtered to only display species of *Cryptosporidium*. Serotype.., and Genotype/Subtype work similarly. In the PFGE Pattern field, you can enter a representative Pulsed Field Gel Electrophoresis, or PFGE pattern, if available, for bacterial agents such as *Salmonella*.

Next, check off Test Results Positive?. Concentration is a numeric field—here, let's enter '2'. For Unit, let's select 'oocysts/L' from the dropdown menu. Test Type is the same as in the Clinical Specimens table. Let's say that the laboratory identified *Cryptosporidium* using the method 'Microscopy'. Lastly, the Test Method field refers to standard laboratory testing procedures used to isolate or detect a microbe or chemical. List values have been formatted to include the source of the method, the method number and a brief text description, You may have this information as part of the laboratory results or in an outbreak investigation report. If not, this is a field that laboratory staff may be able to assist with, and further information can also be found in the

guidance document for the form. Let's say that the laboratory reported using EPA 1623 as a test method.

Let's click 'Save'. Due to a technical error, when you only enter the Genus, not all fields that were filled out appear in the saved row. This will be fixed by the time that you begin entering your own waterborne disease outbreak reports. We won't fill in a second row here, but remember, to report the species, we would follow the same process we described above, and again check off 'Test Results Positive'. Next, let's look at the laboratory tab from an untreated recreational water report.

3 WATER-UNTREATED LAB TAB

The Water-Untreated Lab tab has only one major difference. First, let's establish a scenario by saying that the data describe a water sample collected during an outbreak of gastroenteritis, and that the outbreak was associated with a lake at a state park. We can answer 'yes' to the first question.

In the Water Quality Results table, the Sample Number will be '1'. Source of Sample, will be the category 'Lake/Reservoir/Impoundment'. For the Additional Description…, let's type in that the sample was 'collected in the swimming area closest to the campground bathrooms'. Lastly, let's enter a Date of 03/03/2007, a volume of 20 liters and a temperature of 55 degrees Fahrenheit.

This tab, as well as the remaining two laboratory tabs, has a Water Quality Indicator table that can be used to report standard measures of water quality, such as coliform levels. We want to associate these additional water results with a Sample from the Water Quality Results table, just as we did in the Microbiology or Chemical/Toxin Analysis table on the treated recreational water tab. Here, let's select '1' to correspond to the water sample in the previous table. Type refers to the water quality indicator. We can select 'fecal coliforms' and indicate that the Concentration, a counted value, was '500'. The Unit, which provides the information to interpret the concentration, is 'CFU/100 mL'. 'Click Save.'

Since this scenario is an outbreak of unknown etiology, let's say that water tests came back negative for *Salmonella* and norovirus. How would we report that? In the Microbiology or Chemical/Toxin Analysis table, we would simply add a data row for each pathogen for which the water was tested, enter as much information as we had, but leave the box for Test Results Positive? unchecked. Next, let's go to the Water-Drinking Lab tab.

4 WATER-DRINKING LAB TAB

We will not enter any data in the Water-Drinking Lab tab, since this tab contains the same sections and fields found in the recreational water lab tabs. The only new field is Turbidity, which describes the amount of suspended matter in the sample.

5 WATER-UNKNOWN LAB TAB

Lastly, observe that the Water-Unknown Lab tab for water not intended for drinking or water of unknown intent contains the same sections and fields as the Water-Drinking Lab tab.

This is the end of the training for Water Sample Laboratory Data. Please refer to the online guidance or contact NORSadmin@cdc.gov with feedback or additional questions.