

# How to Complete the Cryptosporidium Concentration-Time (CT) Worksheet on the SWMOR-Alt

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## **General Information about the Spreadsheets**

The Surface Water Monthly Operating Report for Alternative Technologies (SWMOR-Alt) is for public water systems that produce drinking water from surface water or groundwater under the direct influence of surface water using alternate technologies. The EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2) defines the alternate technologies that can receive credit for removal or inactivation of pathogens.

As you work with the SWMOR-Alt spreadsheets, you will find many features that make it easier for you to use. The following general information will help you use the spreadsheets.

An Excel spreadsheet is also called a workbook which is made up of separate worksheets. After you open the workbook, you will find a series of tabs at the bottom of the screen. Each of these tabs identifies one of the worksheets in the workbook. When you click on one of these tabs, the tab will change from gray to white and the program will take you to the worksheet for the pages shown on the tab.

Because the SWMOR-Alt is an electronic file, we have been able to place many instructions and comments directly in the two spreadsheets. Those electronic comments will help you immediately while you are completing the form.

## **“We” and “You” in This Guide**

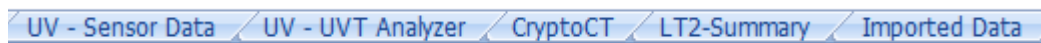
“We” as used in this guide refers to the Texas Commission on Environmental Quality—specifically, the TCEQ's Water Supply Division.

In this guide, “you” means the person who must sign the SWMOR or SWMOR2 each month. Under the rules, this person must be the certified surface water treatment plant operator who is responsible for the daily supervision of the plant.

# CRYPTO CT MONTHLY OPERATING REPORT WORKSHEETS

The SWMOR-Alt spreadsheet contains one **CryptoCT** worksheet; this sheet calculates the log inactivation credit for *Cryptosporidium* that your plant will receive for the month based on chemical disinfection. For plants in Bins 2, 3, and 4 according to the LT2, additional log removal or inactivation credit for *Cryptosporidium* must be achieved, and one acceptable method is inactivation by ozone or chlorine dioxide. If your plant has been approved by TCEQ for this type of credit, the **CryptoCT** worksheet should be a part of your SWMOR-Alt.

The SWMOR-Alt spreadsheet automatically determines if this worksheet needs to be displayed based on the information you supplied when you customized the SWMOR-Alt for your plant. If your MOR requires this sheet, it appears as a tab at the bottom of the SWMOR-Alt spreadsheet, as shown in Figure 1.1.



**Figure 1.1. Tabs at Bottom of the SWMOR Indicating the CryptoCT Sheet**

The **CryptoCT** worksheet will not be visible if you indicated in the customizing step that your plant does not have any chlorine dioxide and/or ozone disinfection among the non-conventional treatment technologies. On the other hand, if you indicated you use chlorine dioxide and/or ozone disinfection as a non-conventional treatment/program in the customizing step, the SWMOR-Alt will display the **CryptoCT** worksheet.

If your plant does use chlorine dioxide and/or ozone for *Cryptosporidium* disinfection and the appropriate **CryptoCT** worksheet tab is not visible, you will need to close the file, reopen it, and re-customize your spreadsheet. See Chapter 2 for more information about customizing the SWMOR-Alt for your particular plant.

At the top of the **CryptoCT** worksheet, there is a block of information that describes your system, plant, and reporting period as shown in Figure 1.2. The spreadsheet copies this information from the data you entered on the **P.2-Turbidity Data** worksheet, and the data cannot be re-entered or edited on **CryptoCT** worksheet. The information at the top of this worksheet includes the performance goal for *Cryptosporidium* inactivation, this log inactivation goal is included in your CT approval letter from TCEQ and is entered at the time of customization of the SWMOR-Alt for your plant.

SURFACE WATER MONTHLY OPERATING REPORT									
FOR PUBLIC WATER SYSTEMS THAT ARE USING SURFACE WATER SOURCES OR GROUND WATER SOURCES UNDER THE INFLUENCE OF SURFACE WATER (cont.)									
Cryptosporidium Inactivation, Chemical Disinfectants									
PUBLIC WATER SYSTEM NAME:					PLANT NAME OR NUMBER:				
PWS ID No.:			Plant ID No.:		Month:		Year:		
Cryptosporidium Inactivation Performance Goal					log				

**Figure 1.2. General Plant Information at the Top of the CryptoCT Worksheet**

The **Crypto CT** worksheet contains only one section, the **PERFORMANCE DATA** table, as shown in Figure 1.3. Enter the appropriate information in the “Time (hrs)” column as described below and the rest of the table will automatically be filled based on data from the **P.4&5-Disinfection Data** worksheet.

**Note**

Only use the “Time (hrs)” column to show the length of time that the plant provided less than the log inactivation goal for *Cryptosporidium*.

PERFORMANCE DATA						
CRYPTOSPORIDIUM INACTIVATION CREDIT (LOG INACTIVATION)						
Date	Disinfectant and Zone	Crypto Credit	Disinfectant and Zone	Crypto Credit	Total Credit	Time <sup>a</sup> (hrs)
1						

**Figure 1.3. Performance Data Section Heading**

## 1.1 PERFORMANCE DATA TABLE

### Disinfectant and Zone CALC

The cells in the “Disinfectant and Zone” columns are automatically copied from the information you reported in the **P.4&5-Disinfection Data** worksheet. The data cannot be re-entered or edited on the **Crypto CT** worksheet. The maximum number of disinfectants and zones for each day is ten.

If no disinfectant has been chosen (specified) for a particular disinfection zone on the **P.4&5-Disinfection Data** worksheet, the corresponding cells on this **Crypto CT** worksheet will be blank; that is, the **P.4&5-Disinfection Data** worksheet must be filled out before this sheet.

## Crypto Credit

The SWMOR-Alt worksheet automatically calculates the log credit for *Cryptosporidium* inactivation from the data in the **P.4&5-Disinfection Data** worksheet and enters it in the appropriate **Crypto Credit** cell. There is one cell for each disinfection zone. This data cannot be re-entered or edited in the **Crypto CT** worksheet.

If the disinfectant is either chlorine dioxide or ozone, log credit for *Cryptosporidium* inactivation is calculated as follows.

$$\text{Chlorine Dioxide: } 0.001506 \times (1.09116^{\text{Temperature}}) \times C_{\text{Chlorine Dioxide}} \times T_{10}$$

$$\text{Ozone: } 0.0397 \times (1.09757^{\text{Temperature}}) \times C_{\text{Ozone}} \times T_{10}$$

If the **Inactivation Ratio** for a particular disinfection zone in the **P.4&5-Disinfection Data** worksheet is empty, the worksheet leaves the cell blank.

In all other circumstances besides those described in the previous two paragraphs, the worksheet enters a 0 in this cell; that is, no inactivation of *Cryptosporidium* is credited for any other disinfectant besides chlorine dioxide or ozone.

## Total Credit

For each day, the SWMOR-Alt worksheet automatically calculates the total log inactivation credit for *Cryptosporidium* by summing all data from the **Crypto Credit** column and entering it in the appropriate **Total Credit** cell. This data cannot be re-entered or edited on Crypto CT worksheet.

If all of **Crypto Credit** cells are empty for a given day, the worksheet leaves this cell blank.

## Time (hrs)

For each day, enter the length of time that the plant provided less than the performance goal for total *Cryptosporidium* inactivation. For each ¼-hour period, the total inactivation by chemical disinfection should be determined in a separate calculation (outside of the SWMOR-Alt, based on your data at the plant). The entry in this cell is the cumulative duration of time (in ¼ hour increments) that the total inactivation fell below the performance goal. If there were two or more periods in the day when the inactivation was less than the goal, the sum of the duration times for each excursion below the goal should be entered in this cell.

Leave the cell blank if:

- the total inactivation credit achieved at the plant never fell below the inactivation performance goal at any time during the day, and
- you did not use either chlorine dioxide or ozone in at least one of the disinfection zones.