



Maine Department of Environmental Protection

Instructions for Chemical Specific and Whole Effluent Toxicity (WET) Data Report Form “ToxSheetMay2020.xlsx” October 25, 2021

Introduction

ToxSheetMay2020.xlsx (**ToxSheet**) is a *Microsoft Excel*[®] workbook that is used for reporting toxics compliance data of various test results pursuant to Department rules *Surface Waters Toxics Control Program* 06-096 C.M.R. Ch. 530, effective March 21, 2012, and *Surface Water Quality Criteria for Toxic Pollutants* 06-096 C.M.R. Ch. 584, amended February 16, 2020. **ToxSheet** allows reporting of various tests and performs certain calculations that are intended to assist MEPDES Users in interpreting test results. Information entered into the form is uploaded to the **Toxscan** database, which is used for official compliance reviews conducted by the Department. This guidance document offers step-by-step instructions for entering data into **ToxSheet**.

Submittal Process

Toxicity data must be submitted in accordance with the compliance schedule specified in your MEPDES permit. Data must be entered into **ToxSheet** and submitted to the Department electronically using the **ToxSheetMay2020.xlsx** Excel workbook. You cannot handwrite the information into a paper copy for submission. Once the data is entered and the file is saved, **ToxSheet** may be submitted to the Department in one of two ways:

1. Electronically as an attachment submitted with your NetDMR reports, or
2. Electronically as an email attachment submitted to your assigned wastewater inspector.

In either case, you must include both the Excel file and a signed, scanned copy of the report.

The **ToxSheet** workbook contains four spreadsheets: **WET Fresh**, **WET Marine**, **ToxSheet**, and **Mercury**, accessed by clicking on the tabs located in the lower left-hand corner of the workbook.

10	Toxsheet Revision May 21, 2020		Lab Contact		Lab ID #	
11	ERROR WARNING! Essential facility information is missing. Please check required entries in bold above.		FRESH WATER VERSION		Receiving Water or Ambient	Effluent Concentration (ug/L or as noted)
12			Please see the footnotes on the last page.			
13	WHOLE EFFLUENT TOXICITY					
14			Effluent Limits, %		WET Result, % Do not enter % sign	Reporting Limit Check
15			Acute	Chronic		
16						Acute
17						Chronic
18						
19						
20						
21	WET CHEMISTRY					
22						
23					(8)	
24						

WET Fresh WET Marine **ToxSheet** Mercury

Tabs on bottom left of electronic form

- **WET Fresh and WET Marine** spreadsheets are used for entering Whole Effluent Toxicity (WET) results for freshwater and marine dischargers, respectively. There are structural differences between the **WET Fresh** and **WET Marine** report forms due to different statistical and dilution information required. However, the general data to be reported is similar.

Note: WET Fresh and WET Marine results must be reported in two places; both on the appropriate WET spreadsheet and on the ToxSheet spreadsheet.

- The **ToxSheet** spreadsheet is used for reporting all of the following, as required by your permit:
 - Analytical chemistry and WET chemistry data that accompanies the **WET Fresh** and **WET Marine** testing.
 - Full priority pollutant testing results, and
 - Individual chemical-specific parameters. The **ToxSheet** electronic report form must always be used for reporting chemical-specific parameters, even when they have been already reported on your NetDMR form.

Note: ToxSheet includes information on *site specific* Ambient Water Quality Criteria (AWQC) designated for certain river watersheds to which facilities have discharges. The site specific river watersheds are located under the facility name at the top of the form:

Site Specific river system

	A	B	L	M	N	O	P	Q	S	T	U	V
1		Facility Name	XYZ POTW		MEPDES #	ME0200	Facility Representative Signature					
2		St. Croix	0		Pipe #		To the best of my knowledge this information is true, accurate and complete.					
3												
4		Licensed Flow (MGD)			Flow for Day (MGD) ⁽¹⁾		Flow Avg. for Month (MGD) ⁽²⁾					
5		Acute dilution factor			Date Sample Collected		Date Sample Analyzed					
6		Chronic dilution factor										
7		Human health dilution factor										
8		Criteria type: M(arine) or F(resh)										
9						Laboratory						
10		Toxsheet Revision	May 21, 2020			Address						
11												
12		ERROR WARNING! Essential facility information is missing. Please check required entries in bold above.			FRESH WATER VERSION							
13					Please see the footnotes on the last page.		Receiving Water or Ambient	Effluent Concentration (ug/L or as noted)				

In some cases, facilities have site specific criteria for the designated uses of sustenance fishing and the ToxSheet will identify those facilities under the facility name:

Sustenance fishing site specific AWQC applies

	A	B	L	M	N	O	P	Q	S	T	U	V
1		Facility Name	XYZ POTW		MEPDES #	ME0200	Facility Representative Signature					
2		0	Sustenance Fishing		Pipe #		To the best of my knowledge this information is true, accurate and complete.					
3												
4		Licensed Flow (MGD)			Flow for Day (MGD) ⁽¹⁾		Flow Avg. for Month (MGD) ⁽²⁾					
5		Acute dilution factor			Date Sample Collected		Date Sample Analyzed					
6		Chronic dilution factor										
7		Human health dilution factor										
8		Criteria type: M(arine) or F(resh)										
9						Laboratory						
10		Toxsheet Revision	May 21, 2020			Address						
11												
12		ERROR WARNING! Essential facility information is missing. Please check required entries in bold above.			FRESH WATER VERSION							
13					Please see the footnotes on the last page.		Receiving Water or Ambient	Effluent Concentration (ug/L or as noted)				

Take heed of the warning that heading information is missing!

For more information on site specific criteria and sustenance fishing, refer to Department rule *Surface Water Quality Criteria for Toxic Pollutants* 06-096 C.M.R. Ch. 584, amended February 16, 2020.

Permits may direct the permittee to the website where the ToxSheet workbook and Instructions are located. The ToxSheet includes cells for reporting **analytical chemistry**. The list of analytical chemistry parameters can be found in *Surface Waters Toxics Control Program* 06-096 C.M.R. Ch. 530, effective March 21, 2012. Below is an excerpt of the section of ToxSheet that allows entering of analytical chemistry results:

	A	B	L	M	N	O	P	Q	S	T	U	V
31		ANALYTICAL CHEMISTRY ⁽³⁾										
32		Also do these tests on the effluent with WET. Testing on the receiving water is optional		Effluent Limits, ug/L					Reporting Limit Check	Possible Exceedance ⁽⁷⁾		
33			Reporting Limit	Acute ⁽⁶⁾	Chronic ⁽⁶⁾	Health ⁽⁶⁾				Acute	Chronic	Health
34		TOTAL RESIDUAL CHLORINE (mg/L) ⁽⁹⁾	0.05				NA					
35		AMMONIA	NA				(8)					
36	M	ALUMINIUM	NA				(8)					
37	M	ARSENIC	5				(8)					
38	M	CADMIUM	1				(8)					
39	M	CHROMIUM	10				(8)					
40	M	COPPER	3				(8)					
41	M	CYANIDE, TOTAL	5				(8)					
42		CYANIDE, AVAILABLE ^(3a)	5				(8)					
43	M	LEAD	3				(8)					
44	M	NICKEL	5				(8)					
45	M	SILVER	1				(8)					
46	M	ZINC	5				(8)					

Cyanide, Available is not part of required suite of analytical chemistry parameters, however can become a permit limit if Total Cyanide results exceed AWQC or have a reasonable potential to exceed AWQC.

As the note in the excerpt implies, available cyanide is not included in the normal suite of analytical chemistry parameters, but may become a permit limit if total cyanide results exceed AWQC or have a reasonable potential to exceed AWQC.

- The **Mercury** spreadsheet is used for reporting Low Level (or Trace Level) Mercury results. Low level mercury results should not be reported on the **ToxSheet** spreadsheet. At this time, low level mercury data is not electronically uploaded to **Toxscan** so reports may be submitted as a signed pdf via NetDMR or email or as a signed paper copy.

Sampling Date

Throughout the spreadsheets, you will be asked to enter the “Date Collected”, “Sampling Date”, and “Date Sample Collected”. When entering the sampling date for a 24-hour composite sample, enter the date when the majority of the sample was collected. **Please note** that a date range (i.e. “3/4-5/2018”) cannot be entered on any of the spreadsheets when entering the sample date.

For example, if your facility’s composite sample collection starts at 8 AM on August 1st and the composite is completed and the sample processed for analysis at 8 AM August 2nd, the sample collection date is August 1st, because 16 of the 24 hours of sample collection occurred on that day. You will not be allowed to enter 8/1-2/2018, as this will be not be accepted by the spreadsheet.

Note: It is known that some chemical specific parameters are taken as grab samples at the beginning or end of the priority pollutant or analytical chemistry compositing period. Regardless of when these grab samples were taken during the collection of chemical specific samples, include the same date as the rest of the composite sample parameters when reporting these grab sample results on the same **ToxSheet** as the composite results.

If, however, you are collecting grab samples for a single parameter or suite of chemical specific parameters not associated with a priority pollutant scan or analytical chemistry test, use the date the grab sample was taken when submitting the **ToxSheet**.

Entering ToxSheet Data

The **ToxSheet Excel**[®] workbook is write-protected and some columns are hidden in order to protect the integrity of the cell's formulas. There are text notes that offer guidance on the nature of data to be entered. Some cells have warnings to help the Users enter data in the correct format. Error messages prompt the User to correct data that is entered incorrectly.

The **ToxSheet** workbook provide Users with basic information to evaluate testing results. Users do not need to submit copies of the laboratory reports to the Department under normal conditions. However, in the event of an exceedance or some anomaly with the laboratory analysis, the Department may request to get a copy of the entire laboratory report. This situation is one to discuss with your assigned DEP inspector.

It is important to note that the data provided on the **ToxSheet** workbook represents the results of only a single sample. When evaluating the reasonable potential or the need for permit limits, the Department uses these **Toxscan** results, as well as all relevant facility results on file in accordance with Chapter 530 Department rules.

Below are step-by step instructions for entering test results for **WET, ToxSheet** and **Mercury** data. The instructions reference cell numbers as they appear on the screen.

Entering Data: Toxsheet Spreadsheet

The spreadsheets in the workbook are in standard *Excel*[®] format. Much of the sheet is write-protected and some columns are hidden. Cell references used here are as they appear on the screen besides text notes on the nature of data to be entered, there are certain cells that have warnings about the format of data being entered. In several cells, there are error messages that prompt a specific format to be used when entering data (esp. Sample collection date).

Facility Information

In rows 1, 4, 5, 6, 7 and 8 there are several cells that contain essential information about the facility and test day. These must be filled in for the spreadsheet to work.

- L1: *Facility Name* – Use the dropdown box and choose from the list to enter your facility’s name. The MEPDES# for your facility will be auto-filled in cell O1.
- O2: *Pipe #* - Indicate the discharge pipe number for the discharge being tested. This is typically in the form of “001A” and can be found on the limits page of the discharge permit.
- L4: *Licensed Flow* - Provide the facility’s design or permitted flow in MGD for the discharge point at which the test was done. This is typically found on the limits page of the permit. If more than one flow is listed, use the monthly average flow.
- P4: *Flow for Day* - The facility’s actual daily flow in MGD for the day of the testing should be entered.
- T4: *Flow Avg. for Month* - The facility’s actual monthly average flow in MGD for the month during which the test was done should be entered.
- P6: *Date Sample Collected* - The day of sampling should be entered. Use the day representing the majority of the composite sample, typically the day a sampler is set up.
Note: The date format must be mm/dd/yy or mm/dd/yyyy. Date ranges cannot be entered.
- L8: Indicate if the discharge is to fresh or marine waters with an “F” or “M” respectively. This allows the spreadsheet to select the proper water quality criteria and tests.

Dilution Factors to be entered can be found in the Fact Sheet of the most recent permit. Alternately, the Department can provide this information upon request. It should be noted that the Department updates dilution factors as new information becomes available. Dilution factors are sometimes expressed as a ratio, for example 132:1. On the spreadsheet, do not enter the “:1” and use just the numeric value, in this case 132.

- L5: *Acute dilution factor* - Is the Acute dilution factor for the discharge pipe. It is important to note that for fresh water discharges, the acute dilution will reflect if the discharge is considered to have rapid mixing or not. The terms “ $\frac{1}{4}$ Acute” or $\frac{1}{4}$ 1Q10” are often used to indicate that rapid mixing is not achieved. The Fact Sheet should have this information.
- L6: *Chronic dilution factor* - Is the Chronic dilution factor for the discharge pipe.
- L.7: *Human health dilution factor* - Is the Human Health dilution factor for the discharge pipe.

Laboratory Information

Laboratories (or facilities) should enter the following information in the appropriate cells of the spreadsheet.

- T6: *Date sample analyzed* - The date the sample was analyzed.
- P8, U8, P9: *Laboratory information* - Laboratory name, telephone, and address.
- P11: *Lab contact* - The name of a contact person at the laboratory.
- U11: *Lab ID #* - The laboratory’s ID number issued by its certifying agency.

Entering test results

The numeric results of tests should be typed into the spreadsheet. Please use a "<" symbol to indicate "non-detect" at a specified concentration, where appropriate.

- Q17 - Q20: *WET Result* - Enter WET results as appropriate. Although WET results are typically reported as percent, do not use percent sign in the entry.

Q22 - Q30: *WET Chemistry* - Enter WET Chemistry analysis results in specified units. These parameters characterize the effluent and receiving waters, but do not have specific water quality criteria and are not judged for exceedances. The WET chemistry will differ depending on reporting fresh or marine data.

Q34 – Q46: *Analytical Chemistry* - Enter Analytical Chemistry results in ug/L, or as specified.

Note: Cyanide available (amenable to chlorination) is not an analytical chemistry suite or priority pollutant parameter in Chapter 530 but may be required in certain discharge permits.

Q49 - Q164: *Priority Pollutants* - Enter priority pollutant results in these cells.

P22 - P164: *Receiving Water or Ambient* - Receiving water concentrations may be entered as required or available, usually related to WET testing.

Understanding the Results

For more in-depth technical information, refer to Department rules *Surface Waters Toxics Control Program* 06-096 C.M.R. Ch. 530, effective March 21, 2012, and *Surface Water Quality Criteria for Toxic Pollutants* 06-096 C.M.R. Ch. 584, amended February 16, 2020., and their accompanying program guidance fact sheets. Also, USEPA Technical Support Document for Water Quality-based Toxics Control, [EPA/505/2-90-001] describes much of the derivation of Toxics program rules.

WET *Effluent Limits* for individual organisms, fresh or marine, are calculated in cells M17 – M20 for acute and N17 – N20 for chronic. These values are compared to reported effluent values.

Column L – *Reporting Limits* - contains the list of Reporting Limits for the priority pollutants. These values are specified by the Department pursuant to Chapter 530.

Columns M, N and O – *Effluent Limits* - contain facility effluent limits for acute, chronic and human health, respectively. The number is determined by multiplying Chapter 584 water quality criteria by the facility's respective dilution factor. The calculation is made automatically within the spreadsheet, and pursuant to Chapter 530, a background allocation of 10% and a water quality reserve of 15% are figured into these calculations. The resulting effluent concentration is what would be used to set a mass (pounds) limit in a permit using the facility's design flow. The best use of the concentration here is to compare it to the test result with the assumption that flows are at permits limits to allow a common basis for the comparison.

Note: If "NA" appears for a given priority pollutant limit, it means no formal criteria has been established. The presence of "NA" does **not** mean the specific chemical is non-toxic, and evaluation will be done on a case-by-case basis.

In column S – *Reporting Limit Check* - if "High" occurs, the reported “less than” concentration is greater than the Reporting Limit listed in column L. Contact your laboratory for an explanation.

Columns T (acute), U (chronic), and V (health), - *Possible Exceedance* - indicate if a possible exceedance of the criteria for that test parameter is found after test results are entered. These evaluations are primarily to assist facilities in understanding their test results and possible

implications. The calculations are for a single facility's discharge and do not reflect watershed allocations for freshwater discharges. Official compliance determinations will be conducted by DEP. The spread sheet does evaluations on a mass (pounds) basis using the facility's actual flows as entered in cells P4 (flow for the day) and T4 (flow for the month). The actual discharge quantity is compared to the allowable quantity calculated using the effluent limits and the facility design flow. If the actual discharge quantity is larger and allowable, a "YES" appears. Reported concentrations below DEP's reporting limit are not considered to be exceedances. A high reporting limit will not show an exceedance since "less than" values cannot be accurately evaluated. However, the effluent may still contain pollutants at levels of concern.

Entering Data: Whole Effluent Toxicity (WET) Spreadsheets

Similar to the Toxsheet spreadsheet, the WET report forms—fresh and marine versions—are set up with write-protected cells and data entry cells with informational and warning text notes as well as the specific format error message for sample collection date.

Facility Information

- B2 Use the dropdown box to enter your facility name. The MEPDES number for your facility will autofill cell I2.
- I3 Enter pipe number that matches pipe number on the Toxsheet spreadsheet
- B5 Name of facility representative
- B8 Facility telephone number
- G8 Date sample collected. **Note:** The date format must be mm/dd/yy or mm/dd/yyyy. Date ranges cannot be entered.
- B10, E10 Enter "Yes" or "No" if the sample was chlorinated or dechlorinated
- J13 Enter WET acute (ANOEL) dilution threshold.

Note: The WET dilution factors can be found in the permit footnotes or in the permit fact sheet. The WET dilution factors are actually the inverse of the dilution factors listed on the toxsheet spreadsheet multiplied by 100. You should verify the laboratory doing the WET bioassay is using the dilution factor listed in the most current version of your facility's MEPDES permit.

- J14 Enter WET chronic (CNOEL) dilution threshold.

Laboratory Information

- J8 Enter date bioassay (i.e. WET sample testing) was started.
- B20-E(J)27 The results for the bioassay should be entered depending on species used.
- B28-E(J)28 Enter the statistical test used to arrive at the proper ANOEL or CNOEL.
- Note:** There are structural differences between the WET fresh and marine report forms regarding the statistical information and dilutions to be entered, because of the difference in the tests required. However, the general data to be reported is similar.
- J20-J22 (Marine WET only) Enter brine adjustment information.
- B33-E(G)35 Enter reference toxicant information as required for QAQC for the tests performed.

At the bottom of the report form are areas to provide comments relative to the tests, as well self-explanatory spaces to provide laboratory information and contacts.

Entering test results

B14-D15 The test results are entered in these cells. Please make sure that the percent (“%”) sign is not placed in the cell with the result as this obstructs the electronic upload process, and, in effect, changes the numeric expression being uploaded (for instance, a “100%” result gets translated as = “1”).

Note: In addition to entering the test results in cells B14-D15, these results must also be entered into the ToxSheet spreadsheet in cells Q17-20. The reason this data is entered in two places is that the WET test report forms supplies the basic data, and ToxSheet spreadsheet provides an evaluation of the WET results. That is why the WET results need to be entered both on the WET forms and in cells Q17-20 of the ToxSheet spreadsheet.

Understanding WET Test Results

Citing boilerplate waste discharge permit definitions, “Definitive WET testing is a multi-concentration testing event (a minimum of five dilutions bracketing the critical acute and chronic thresholds of XX% and XX% respectively), which provides an estimate of toxicity in terms of No Observed Effect Level, commonly referred to as NOEL or NOEC. A-NOEL is defined as the acute no observed effect level with survival as the end-point. C-NOEL is defined as the chronic no observed effect level with survival, reproduction and growth as the end points. The critical acute and chronic thresholds were derived as the mathematical inverse of the applicable acute and chronic dilution factors of XX:1 and XX:1, respectively.” In short, whole effluent toxicity is a test using live organisms representative of the receiving waters to determine the effects of your treatment facility’s effluent on the receiving waters.

The WET results are the product of timed, physical exposure of organisms to various dilutions of receiving water and wastewater effluent with the effects further analyzed using various statistical models. The viability of the organisms is measured via a control dilution using 100% laboratory derived ambient receiving water (typically a known water body near the commercial laboratory unaffected by pollutant inputs). Another control dilution tests the organisms against 100% of the receiving water where the discharge is located, but in a portion of that receiving water unaffected by pollutant discharges.

The major portion of the test measures the effects of your effluent at various dilutions within the receiving water to determine at what percentage level your effluent has a measured effect on the organisms. The observed effect level (that is, a dilution percent at which some significant number of organisms have not survived, reproduced, or increased in weight) must not drop below your acute and chronic thresholds. For instance, if your acute water flea test has an observed effect at 50% effluent and your acute threshold is 25%, then you have essentially passed the test. If the mysid shrimp test has an observed effect at 12.5% effluent and your threshold is 25%, then you have not met your threshold dilution and have incurred an exceedance of that test.

Entering Data: Mercury Spreadsheet

Mercury data provided by a metals laboratory is often referred to as “trace level” or “low level” mercury. Make sure the sampling by facility personnel or the contract lab was performed using Standard Methods 1669 (clean sampling), and that the testing by the contract lab was by Standard Methods 1631 (trace level analysis). These should be listed at the bottom of the mercury lab form.

When entering data into the Mercury spreadsheet from the contract lab report, make sure to choose the sample result and not a matrix spike or matrix spike duplicate, standard reference material result, or even some method detection limit or other reporting limit. Sometimes these numbers occur together, so make sure to choose the correct result.

C2 Use the dropdown box to find and enter your facility’s name. The MEPDES number will autofill in cell J2.

J3 Enter the discharge pipe number.

Purpose of this test

For sections C5 to C7, choose one of these options:

- “Initial limit determination” – Check this box if you are a newly licensed facility required to perform this test.
- “Compliance monitoring” – This is the most common reason for performing Mercury testing. Make sure to include the year (H6) and calendar quarter (K6) when testing is performed.
- “Supplemental test”- Check this box if you are doing a retest following a previous high result, or voluntary testing prescribed for your own program needs.

Sample Collection Information

For sections C11 through H21, the information to be provided is self-explanatory. Please be as thorough as possible.

Analytical Result for Effluent Mercury

- For “Name of Laboratory”, please make sure to enter the name of the laboratory that performed the Mercury testing. Do not enter the name of the intermediary laboratory that performed the sample collection or subcontracted the mercury testing to the low level testing lab.
- Make sure to enter the average (E27) and maximum (I27) mercury limits that are listed in your MEPDES permit. The mercury limits can be found either on your permit Special Conditions page or in the permit Fact Sheet.

Once the mercury data is entered, the **Mercury** spreadsheet is designed to provide a warning color when the results show that an exceedance has occurred. A result below the average limit will create a light gray color in the result cell (I25). A result between the monthly and maximum limits will change the cell color to yellow. A result greater than the maximum limit will change the cell color to red. This allows you to verify that the correct results have been entered, and an exceedance has not been entered inadvertently.