



Ministry of
Environment and
Climate Change Strategy

BC Environmental Monitoring System (EMS)

Electronic Data Transfer for Biological Samples

USER OVERVIEW

INSTRUCTION SUMMARY

What is EMS?	<ul style="list-style-type: none"> The Environmental Monitoring System (EMS) is the Ministry of Environment's monitoring database.
What is EDT?	<ul style="list-style-type: none"> Electronic Data Transfer (EDT) provides analytical laboratories and permit holders with a simple means to transfer analytical data electronically to the EMS system.
System Requirements	<ul style="list-style-type: none"> a computer with internet access an up-to-date web browser access to an e-mail account (i.e. through a commercial Internet Service Provider)
EDT Account Access	<ul style="list-style-type: none"> Request through your regional Ministry Contact A Business BCeID is required
File Format	<ul style="list-style-type: none"> A comma delimited ASCII data file in the required file format (see Appendix for technical specifications)
Internet URL	https://a100.gov.bc.ca/ext/emsedt/upload.do
File Transfer Procedures	<ul style="list-style-type: none"> Click on the appropriate function, QA, Upload or Dashboard perform the desired actions in the subsequent screens
QA Index Only Option	<ul style="list-style-type: none"> Users are expected to QA their file before uploading any necessary corrections to the data can be made before submitting the data to EMS NOTE: The file is NOT loaded into EMS under the QA Index Only option

1.0 EMS File Format for Biological Samples

This document describes the content and format for a new data format for files electronically transferred to EMS for Biological Samples. The record types that are submitted for biological samples are:

- Header Record
- Biological Sample
- Result
- Taxonomic Result
- QA/QC Sample
- QA/QC Result
- Trailer Record

Not all record types have to be included in a file but some dependencies exist. Sample and Result records are logically linked. Therefore, the Biological Sample Record must be followed by the Result Record(s) or the Taxonomic Result Record(s) associated with that sample. The same rule applies to QA/QC Sample and QA/QC Result records for chemical analysis performed against biological tissue, if applicable. In addition, a Header and Trailer record are added for validation. **They must always be present.** The columns for each type are defined below.

The file must be comma delimited ASCII. Text values (i.e. comment fields) should be enclosed with double-quotes. The record length will be variable with data fields in the order described below for each record type.

Note: Mandatory columns are underlined and bold.

Note: Fields are not case sensitive.

All Date/Time fields use the format YYYYMMDDHHMM (year, month, day, hour, minutes) where the time component is in 24 hour format (0000-2359). If the time component is not required, then default to zeroes.

HR - Header Record

- The header record in the file identifies the source. It identifies the e-mail address of the person who sent the file.
- There is only one header record in the file and it must be present. It must be the first physical record in the file.

Type	Field	Content
char (2)	<u>Record Type</u>	HR
char (40)	<u>E-mail Address</u>	E-mail address of user who sent the file
date (12)	<u>Date Prepared</u>	Date the file was prepared (e.g. 19980927).
char (1)	<u>QA index Only Indicator</u>	Y - if the data file should be validated for errors N - if the data file should be loaded into EMS if no errors are found
char (20)	File Name	Optional user-defined file name. This information will be included in the e-mail return message.
char (80)	Comment	Optional comment about the file contents. This information will not be stored in EMS but may be used in correspondence about the data.

BS – Biological Sample Record

- The Biological Sample record identifies sample information that is common to the Result records that follow.
- The following fields are found in the ‘BS’ record:

Type	Field	Content
char (2)	<u>Record Type</u>	BS
char (7)	Monitoring Location ID	Present if collected at an EMS Monitoring Location.
char (10)	Requisition Id	Present if sample is part of an EMS Requisition.
date (12)	<u>Collection Start Date/Time</u>	Date and time when the sample collection was started (e.g. 199809270000).
date (12)	Collection End Date/Time	Date and time when the sample collection was ended (e.g. 199809270000).
char (3)	<u>Sample State</u>	Code indicating the type of sample (e.g. FW for Fresh Water). Validated against EMS Sample State table.
char (3)	<u>Sample Descriptor</u>	Code further describing the type of sample (e.g. GE for General). Validated against EMS Sample Descriptor table.
char (6)	<u>Sample Class</u>	Code indicating the general class of the sample (e.g. REG for Regular). Validated against EMS Sample Class table.
char (6)	<u>Collection Method</u>	Code indicating the method used to collect the sample (e.g. GRB for Grab). Validated against EMS Collection Method table.
char (6)	Disinfectant Type	Code to indicate whether the sample is from a disinfected source (e.g. Chlorinated). Validated against EMS Disinfectant Type table.
number (6)	Composite Number of Items	The number of items that make up the sample if it is considered a composite.
char (3)	<u>Sampling Agency</u>	Code indicating the agency which collected the sample. Validated against EMS Client Location table’s Short Name.
char (3)	<u>Analyzing Agency</u>	Code indicating the agency which performed the analysis. Validated against EMS Client Location table’s Short Name.

char (10)	<u>Ministry Contact</u>	Ministry staff responsible for the sample. Validated against Staffs' table UserID.
char (60)	Sampler	The person who collected the sample.
date (12)	Lab Arrival Date	The date that the sample arrived at a Laboratory.
number (3)	Lab Arrival Temperature	The temperature of the sample at the time of arrival to the Lab in degrees Celsius (°C).
char (20)	Group Id	Identifier that is used to associate samples within the data file. All samples within the file having the same group ID will be associated to each other. e.g. a lab sample may be contracted out to more than one analyzing agency becoming multiple EMS samples that should be associated using the lab sample ID as the group ID.
number (6,2)	Depth Upper	Upper (shallower) depth at which the sample was taken. Expressed in meters(m) in the format 9,999.99
number (6,2)	Depth Lower	Lower (deeper) depth at which the sample was taken. Expressed in meters (m) in the format 9,999.99
char (6)	Tide Code	Code to indicate the state of the tide for marine or estuarine samples. Validated against EMS Tide tables.
char (6)	Species	Code indicating the species. Validated against EMS Species table.
char (6)	Life Stage	Code indicating the life stage of the organism. Validated against EMS Life Stage table.
char (6)	Sex	Code indicating the sex of the organism. Validated against EMS Sex table.
char (6)	Tissue Type	Code indicating the type of tissue analysed. Validated against EMS Tissue Type table.
number (6,2)	Sample Area	The area of the sample collected in the format of 9,999.99
char (6)	Sample Area Units	Code indicating the units of the sample area. Validated against EMS Measurement Units table.
number (6,2)	Sample Volume	The volume of the sample collected in the format of 9,999.99
char (6)	Sample Volume Units	Code indicating the units of the sample volume. Validated against EMS Measurement Units table.
number (5,1)	Sample Size From	The lower (smallest) size of the organisms/tissue included in the sample collected in the format of

		9,999.9
--	--	---------

number (5,1)	Sample Size To	The upper (largest) size of the organisms/tissue included in the sample collected in the format of 9,999.9.
char (6)	Sample Size Units	Code indicating the units used to measure the size. Validated against EMS Measurement Units table.
number (5,1)	Sample Weight From	The lower (smallest) weight of the organisms/tissue included in the sample collected in the format of 9,999.9.
number (5,1)	Sample Weight To	The upper (highest) weight of the organisms/tissue included in the sample collected in the format of 9,999.9.
char (6)	Sample Weight Units	Code indicating the units used to measure the sample weight. Validated against EMS Measurement Units table.
number (6,2)	Submitted Weight	The weight of the sample submitted for analysis in the format of 9,999.99.
char (6)	Submitted Weight Units	Code of the units used to measure the submitted weight. Validated against EMS Measurement Units table.
char (60)	Taxonomist Name	The name of the taxonomist who identified the organism within the sample.
char (255)	Sample Comment	Text up to 255 characters.
char (255)	Field Comment	Text up to 255 characters.
char (6)	Preservative Code	Code to indicate how the sample is preserved. Validated against EMS Preservative Type table.
char (1)	Taxonomic ID Level	Specifies the taxonomic ID level for which the sample was analysed to. Valid values are: 'Y' Dominant or 'N' Non-Dominant.

RR - Result Record

- The Result record identifies the information specific to a Biological Sample record if the result is related to Biological Tissue analysis. Many result records may be present for one sample record.
- The following fields are found in the RR record:

Type	Field	Content
char (2)	<u>Record Type</u>	RR
date (12)	Analytical Date/Time	The date the result was determined (e.g. 199809270000).
char (6)	<u>Parameter</u>	Code indicating the test for which the result is reported. Validated with EMS Parameter table.
char (6)	<u>Analytical Method</u>	Code indicating the analytical method used to determine the result. Validated with EMS Analytical Method table.
char (1)	Result Letter	A letter or symbol to describe the result. Valid values are <, >, M.
char (60)	<u>Result</u>	Must convert to numeric result. An entry of 'C' will be accepted to record analytical results which cannot be converted to numeric results (e.g. qualitative results). Results with entries = 'C' in the result field, must include result details in the comment field.
char (60)	Confidence Interval	Confidence interval for a Parameter/Analytical Method for the Laboratory that determined the result.
char (6)	<u>Measurement Unit</u>	Code indicating the units of the result reported. Validated with EMS Measurement Unit table.
char (60)	Method Detection Limit	A value to indicate the minimum detectable limit for a parameter/analytical method as specified by a Lab.
char (10)	Laboratory Batch Id	An internal Laboratory identifier used to logically group a series of samples for the purpose of performing the same analytical methodology.
char (10)	Laboratory Sample Id	An internal identifier that a Laboratory assigns to a sample.
char (6)	Preservation Code	Method used to preserve the sample (e.g. Unfilt. HN03). Validated against EMS Preservation table.

char (6)	Media Code	Media used to collect the sample (e.g. Polybottle 4L). Validated against EMS Media table.
char (225)	Result Comment	Text up to 255 characters.
char (1)	Significantly Different from Control Indicator	An indicator used to specify whether or not the result was significantly different from the control. Valid values are 'Y' – yes it is significantly different or 'N' – it is not.

TX – Taxonomic Result Record

- The Taxonomic Result record identifies the information specific to a Biological Sample record where the result type is taxonomic. Many result records may be present for one sample record.
- The following fields are found in the TX record:

Type	Field	Content
char (2)	<u>Record Type</u>	TX
date (12)	Analytical Date/Time	The date the result was determined (e.g. 199809270000).
date (12)	<u>Taxonomic ID</u>	Validated with EMS Taxonomic ID table.
char (1)	Result Letter	A letter or symbol to describe the result. Valid values are <, >, M.
char (60)	<u>Result</u>	Must convert to numeric result. An entry of 'C' will be accepted to record analytical results which cannot be converted to numeric results (e.g. qualitative results). Results with entries = 'C' in the result field, must include result details in the comment field.
char (60)	Confidence Interval	Confidence interval for a Parameter/Analytical Method for the Laboratory that determined the result.
char (6)	<u>Measurement Unit</u>	Code indicating the units of the result reported. Validated with EMS Measurement Unit table.
char (10)	Laboratory Batch Id	An internal Laboratory identifier used to logically group a series of samples for the purpose of performing the same analytical methodology.
char (10)	Laboratory Sample Id	An internal identifier that a Laboratory assigns to a sample.
char (6)	Preservation Code	Method used to preserve the sample (e.g. Unfilt. HN03). Validated against EMS Preservation table.
char (6)	Media Code	Media used to collect the sample (e.g. Polybottle 4L). Validated against EMS Media table.
char (255)	Result Comment	Text up to 255 characters.
char (6)	Life Stage	Code indicating the life stage of the organism. Validated against EMS Life Stage table.

TK – Taxonomic Key Record

- The Taxonomic Key record identifies the information specific to a Biological Sample record where the result type is taxonomic. Many keys may be present for one sample record.
- The following fields are found in the TK record:

Type	Field	Content
char (2)	<u>Record Type</u>	TK
Number (6)	Tax Key ID	The ID of the taxonomic key used to evaluate the sample. Validated against EMS Taxonomic Keys table.

QS – Quality Assurance Sample Record

- The Quality Assurance Sample record identifies QA/QC sample information that is common to the Result records that follow.
- The following fields are found in the ‘QS’ record:

Type	Field	Content
char (2)	<u>Record Type</u>	QS
date (12)	<u>Start Date/Time</u>	Date and time when the sample was started.
date (12)	<u>End Date/Time</u>	Date and time when the sample was ended.
char (3)	<u>Sample State</u>	Code indicating the type of sample (e.g. FW for Fresh Water). Validated against EMS Sample State table.
char (3)	<u>Sample Descriptor</u>	Code further describing the type of sample (e.g. GE for General). Validated against EMS Sample Descriptor table.
char (6)	<u>Sample Class</u>	Code indicating the general class of the sample (e.g. REG for Regular). Validated against EMS Sample Class table.
char (3)	<u>Analyzing Agency</u>	Code indicating the agency which performed the analysis. Validated against EMS Client Location table’s Short Name.
char (20)	Group ID	Identifier that is used to associate samples within the data file. All samples within the file having the same group ID will be associated to each other, e.g. a lab sample may be contracted out to more than one analyzing agency becoming multiple EMS samples that should be associated using the lab sample ID as the group ID.
number (4,1)	Filter Size	The size of a filter used in collecting a sample. Expressed in μm in the format of 999.9
char (255)	Sample Comment	Text up to 255 characters.

QR – Quality Assurance Result Record

- The Quality Assurance Result record identifies the information specific to the Quality Assurance Sample record. Many result records may be present for one sample record.
- The following fields are found in the ‘QR’ record:

Type	Field	Content
char (2)	<u>Record Type</u>	QR
date (12)	<u>Analytical Date/Time</u>	The date the result was determined.
date (10)	<u>Laboratory Batch ID</u>	An internal Laboratory identifier used to logically group a series of samples for the purpose of performing the same analytical methodology.
char (10)	Laboratory Sample ID	An internal identifier that a Laboratory assigns to a sample.
char (6)	<u>Parameter</u>	Code indicating the test for which the result is reported. Validated with EMS Parameter table.
char (6)	<u>Analytical Method</u>	Code indicating the analytical method used to determine the result. Validated with EMS Analytical Method table.
char (1)	Result Letter	A letter or symbol to describe the result. Valid values are <, >, M.
char (60)	<u>Result</u>	Must convert to numeric result.
char (60)	Confidence Interval	Confidence Interval for a Parameter/Analytical Method for the Laboratory that determined the result.
char (6)	<u>Measurement Unit</u>	Code indicating the units of the result reported. Validated with EMS Measurement Unit table.
char (60)	Method Detection Limit	A value to indicate the minimum detectable limit for a parameter/analytical method as specified by a lab.
char (255)	Result Comment	Text up to 255 characters.

TR - Trailer Record

- The trailer record will be used to validate that the transmission of the file has been successful by identifying that the last record has been received.

Type	Field	Content
char (2)	<u>Record Type</u>	TR