

# EIM Help – Low-Level PCB Congener Data

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## Overview

As of June 29, 2023, EIM will better handle low-level PCB congener data from certain methods. This document explains what we are doing, how to put the data into EIM, and how to get the data out in EIM Search.

## Low-Level PCB Methods

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PCB congener data analyzed by low-level methods have detection limits as low as sub-1 pg/l (picograms per liter). Consequently, blank contamination can impact the environmental sample data and should be considered during data interpretation and qualification.

EPA1668C (Chlorinated Biphenyls in Water, Soil, Sediment, Biosolids and Tissue by HRGC/HRMS) is currently the only method available for low-level PCB congeners. EPA1668C is a high-resolution gas chromatograph/high-resolution mass spectrometer method. The current method revision is April 2010. Some labs still use older revisions (EPA1668A or EPA1668B).

Equipment used for EPA1668C is being phased out, so new low-level methods are being developed using tandem mass spectrometry (GC/MS/MS). Ecology's Manchester Environmental Laboratory is developing one such method.

## Blank Data

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Laboratories evaluate different types of blanks ("clean" samples), including field, rinsate, trip, and laboratory method blanks to account for potential contamination introduced from when a sample is collected to when a sample is analyzed. EIM is currently focused only on the laboratory method blanks run with each analytical batch. Method blanks can contain PCB congener results as high as 20 pg/l, so results presented without considering them can indicate false positives in the environmental samples.

## “Censoring” Results Data

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“Censoring” results data based on detections in the associated method blank is a common and accepted way to correct for laboratory contamination. The censor factor is a standard level (usually 3, 5, or 10) that is multiplied by each individual congener detected in the method blank and then compared to the concentration of that congener in the associated environmental sample. Different censor factors serve different purposes, such as finger printing for source identification or conducting regulatory analyses.

$$\text{Method Blank Result Value} \times \text{QC Blank Censor Factor} = \text{Censor Value Threshold}$$

$$\text{Example: } 0.8 \text{ pg/L} \times 3 = 2.4 \text{ pg/L}$$

Table 1 shows an example of data censoring using different censor factors. The concentration in the environmental sample (Sample Result Value) is 5.0 pg/L and the concentration in the associated method blank (Method Blank Result Value) is 0.8 pg/L. The QC Blank Censor Factor can change whether a result value is censored (considered a non-detect) or not.

1. **Detect:** When the QC Blank Censor Factor is 3 or 5, the Sample Result Value of 5.0 pg/L is greater than the Censor Value Threshold of 2.4 and 4.0 pg/L, respectively. The Result Value (final) is considered a detected result.
2. **Non-detect:** When the QC Blank Censor Factor is 10, the Sample Result Value of 5.0 pg/L is less than the Censor Value Threshold of 8.0 pg/L. The Result Value (final) is considered a censored value (non-detect), with a “U” Result Data Qualifier added.

Table 1: Data censoring example.

Result Parameter Name	Sample Result Value (pg/L)	Method Blank Result Value (pg/L)	QC Blank Censor Factor	Censor Value Threshold (pg/L)	Result Value (final) (pg/L)	Result Data Qualifier
PCB-028	5.0	0.8	3	2.4	5.0	
PCB-028	5.0	0.8	5	4.0	5.0	
PCB-028	5.0	0.8	10	8.0	5.0	U

## New Fields for Low-Level PCB Congener Data

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EIM has four new field in the Results Template to handle low-level PCB congener data. See the [Results Template Help](#) for details. These fields are also referenced in the following sections:

- QC Blank Type (column BI)
- QC Blank Censor Factor (column BJ)
- Lab Batch ID (column BK)
- Lab GC Column ID (column BL)

## How to Submit Low-Level PCB Congener Data

### Two Ways to Submit This Data

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#### 1. Data That *Have Already Been Blank Censored*

While we prefer to receive data that have NOT been blank censored, you can submit data that have already been blank censored via data validation or another process. Importantly, you can now indicate that the data have been blank censored.

In the QC Blank Censor Factor field (Column BJ), enter the blank censor factor (1x, 3x, 5x, 8x, 10x). If you don't know the blank censor factor, enter "Factor Unknown."

You can also enter the Lab Batch ID (BK) and Lab GC Column ID (BL), but they aren't required.

Other than that, follow the [Results Template Help](#) for your dataset.

#### 2. Data That *Have NOT Been Blank Censored*

If you submit low-level PCB congener data that *have NOT been* blank censored - along with accompanying laboratory method blank data - EIM will calculate results using 1x, 3x, 5x, 8x, and 10x blank censor factors. If the Censor Value Threshold is more than the detected result value, EIM will qualify the data with a "U" Result Data Qualifier to indicate that the result is now censored (a non-detect). The data don't change otherwise. (See example in Table 1 above).

EIM Search outputs these results in a separate download file called "PCB Auto-Censored Calculations." See [How to See Blank-Censored Data in EIM Search](#), below.

**Note:** You can submit validated data in this scenario, just not validated data that have also been blank censored/corrected.

Use the Results Template for this data. **Enter your sample data, percent solids data (when applicable), and laboratory method blank data into the same Results Template.**

#### Setting the Recommended QC Blank Censor Factor for your EIM Study

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Set a Recommended QC Blank Censor Factor for your EIM study (Figure 1). This determines which auto-calculated results also get downloaded with the Discrete Results file. If you chose "3x," for example, then results calculated and qualified using the 3x QC Blank Censor Factor will be included in the Discrete Results file. These are the results you want users to use!

Figure 1: EIM Study form showing recommended QC Blank Censor Factor dropdown.

If you don't choose a Recommended QC Blank Sensor Factor for your study, EIM will default to include results calculated with the 5x QC Blank Censor Factor in the Discrete Results file. This is an accepted and common censor factor.

## Entering PCB Field Sample Data

For field sample data, follow the [Results Template Help](#). It has information on how to fill out the new fields for low-level PCB data.

## Entering Percent Solids Data in Soil, Sediment, and Tissue Datasets

For the Percent Solids "(Solids," with units %) data that accompanies soil, sediment, and tissue datasets, follow the [Results Template Help](#). Make sure you use the appropriate analysis method. Don't include the Lab Batch ID for the PCB analysis, since that's a different analysis.

## Entering PCB Method Blank Data

For method blank data, enter **ONLY** the following fields (Table 2) in the Results Template. **If the fields aren't in this table, don't fill them out for method blanks.** Follow the [Results Template Help](#) for additional info on these fields.

Table 2: EIM Results Template Fields Needed for Method Blanks.

Col	Field Name	Requirements	Valid Values and Conditions for Method Blanks
A	Study ID	Required	
D	Field Collection Type	Required	Enter "QC Blank" for method blank data.
R	Sample ID	Optional	
X	Sample Matrix	Required	Use the same Sample Matrix as field sample. Don't enter a Sample Source.
AB	Sample Preparation Method	Required if applicable	

Col	Field Name	Requirements	Valid Values and Conditions for Method Blanks
AH	Result Parameter Name	Required	
AI	Result Parameter CAS Number	Required if applicable	
AJ	Lab Analysis Date	Required	
AK	Lab Analysis Date Accuracy	Optional	
AL	Lab Analysis Time	Optional	
AM	Result Value	Required	
AN	Result Value Units	Required	
AO	Result Reporting Limit	Required if available	
AP	Result Reporting Limit Type	Required if you enter a Result Reporting Limit.	
AQ	Result Detection Limit	Required if available.	
AR	Result Detection Limit Type	Required if you enter a Result Detection Limit.	
AS	Result Data Qualifier	Required if applicable	
AT	Fraction Analyzed	Required for Samples with Sample Matrix of "Water."	
AV	Result Basis	Required for Sediment, Soil and Tissue data.	
AY	Result Method	Required	<ul style="list-style-type: none"> <li>• EPA1668C</li> <li>• EPA1668B</li> <li>• EPA1668A</li> <li>• MEL730138 v1.0</li> </ul>
AZ	Result Comment	Optional	
BA	Result Additional Comment	Optional	
BC	Result Lab Name	Required	
BD	Result Validation Level	Optional	
BI	QC Blank Type	Required	Enter "Method Blank"
BK	Lab Batch ID	Required	
BL	Lab GC Column ID	Required	

## How to Submit Other Blank-Censored Data

You can submit ANY blank-censored data to EIM, including the following:

- Non-low-level PCB congener data.
- Other types of data analyzed by low-level methods like dioxins and furans, chlorinated pesticides, PFAS, and PBDEs.

EIM currently doesn't take method blank data or make automated calculations for these data types. However, you can follow the instructions for "[Data That Have Already Been Blank Censored](#)" to include censoring information in EIM.

## How to See Blank-Censored Data in EIM Search

For data submitted after June 28, 2023, EIM will handle blank-censored data for low-level PCB congeners.

### Data That Were Blank Censored Before EIM Submittal

Data that were blank censored BEFORE EIM submittal won't have automated blank censoring calculations or method blank data. However, you'll see the blank censor factor (1x, 3x, 5x, 8x, 10x, Factor Unknown, or Uncensored) in the QC Blank Censor Factor column of the Discrete Results download file – IF the user entered it. If the submitter didn't enter this information, that column will be blank, and you won't know if the dataset was censored or not.

You also might see a Lab Batch ID and Lab GC Column ID in the dataset, but they weren't required for submittal.

### Blank Censoring Calculations Made by EIM

EIM calculates results using 1x, 3x, 5x, 8x, and 10x blank censor factors for low-level PCB congener data analyzed by EPA1668C, B, or A, and MEL730138 v1.0. Data must be submitted per the instructions above in [How to Submit Low-Level PCB Congener Data](#).

When you download the data, you'll see the following screen with additional files for low-level PCB congener data (Figure 2). The PCB Auto-Censored Calculations download file is described in the next section. The PCB Blanks file is to download the method blank data if you need to look at it or reload it.

Category	Record Count
<input checked="" type="checkbox"/> Studies	(1)
<input checked="" type="checkbox"/> Locations	(25)
<input checked="" type="checkbox"/> Well Locations	(1)
<input checked="" type="checkbox"/> Well Measuring Point	(2)
<input checked="" type="checkbox"/> Discrete Results	(1272)
<input type="checkbox"/> Bioassay Test Results Bioassay Control, Reference, and Initial Results Bioassay Reference Locations	
<input type="checkbox"/> Time-Series Results	
<input type="checkbox"/> Summarized Time-Series Results	
<input type="checkbox"/> Water Column Profile Results Summarized Water Column Profile Results	
<input checked="" type="checkbox"/> PCB Auto-censored Calculations	(1272)
<input checked="" type="checkbox"/> PCB Blanks	(318)

Figure 2: EIM Search download screen showing low-level PCB files.

EIM also includes one auto-calculated result value for each sample and congener in the Discrete Results file. EIM defaults to the value calculated using 5x the QC Blank Censor Factor unless the data submitter set a different factor in their EIM study. See section on [setting a recommended QC Blank Censor Factor for an EIM study](#).

## PCB Auto-Censored Calculations Download File

Table 3: Fields and examples in EIM Search download file, PCB Auto-Censored Calculations.

Col	EIM PCB Censor Calculation Download File Column Name	Example Row 1	Example Row 2	Example Row 3
A	Lab Batch ID	MJ_1-18	MJ_1-18	MJ_1-18
B	Lab GC Column ID	SPB-OCTYL	SPB-OCTYL	SPB-OCTYL
C	Study ID	EIMTest1	EIMTest1	EIMTest1
D	Study Recommended QC Blank Censor Factor			
E	Field Collection Start Date	8/5/2019	8/5/2019	8/5/2019
F	Sample ID	1908046-03	1908046-01	1908046-03
G	Sample Matrix	Tissue	Tissue	Tissue
H	Result Parameter Name	PCB-001	PCB-164	PCB-118
I	Result Parameter CAS Number	2051-60-7	74472-45-0	31508-00-6

Col	EIM PCB Censor Calculation Download File Column Name	Example Row 1	Example Row 2	Example Row 3
J	Result Value	0.092	0.461	2.98
K	Result Value Units	pg/g	pg/g	pg/g
L	Result Reporting Limit	0.181	0.185	0.181
M	Result Detection Limit	0.0419	0.0921	0.0932
N	Uncensored Result Data Qualifier	J	J	
O	Result Detect Status	Detect	Detect	Detect
P	Blank Sample ID			
Q	Blank Lab Analysis Date	5/25/2022	5/25/2022	5/25/2022
R	Blank Lab Analysis Date Accuracy	D	D	D
S	Blank Lab Analysis Time	13:43	13:43	13:43
T	Blank Value	0.084	0.0906	0.22
U	Blank Reporting Limit	0.184	0.184	0.184
V	Blank Reporting Limit Type	MRL	MRL	MRL
W	Blank Detection Limit	0.0506	0.0906	0.0735
X	Blank Detection Limit Type	MDL	MDL	MDL
Y	Blank Data Qualifier	J	UJ	NJ
Z	Blank Fraction Analyzed			
AA	Blank Basis	Dry	Dry	Dry
AB	Blank Comment			
AC	Blank Additional Comment			
AD	Blank Detect Status	Detect	Non-detect	Detect
AE	1xBlank	0.084	0.0906	0.22
AF	x1 Accept Or Reject	Accept	Accept	Accept
AG	x1 Result Data Qualifier	J	J	
AH	3xBlank	0.252	0.2718	0.66
AI	x3 Accept Or Reject	Reject	Accept	Accept
AJ	x3 Result Data Qualifier	UJ	J	
AK	5xBlank	0.42	0.453	1.1
AL	x5 Accept Or Reject	Reject	Accept	Accept
AM	x5 Result Data Qualifier	UJ	J	
AN	8xBlank	0.672	0.7248	1.76

Col	EIM PCB Censor Calculation Download File Column Name	Example Row 1	Example Row 2	Example Row 3
AO	x8 Accept Or Reject	Reject	Accept	Accept
AP	x8 Result Data Qualifier	UJ	J	
AQ	10xBlank	0.84	0.906	2.2
AR	x10 Accept Or Reject	Reject	Accept	Accept
AS	x10 Result Data Qualifier	UJ	J	
AT	Discrete Result ID	217013463	217013106	217013549

## Document Revision History

Revision Date	Revision No.	Summary of Changes	Reviser(s)
6/28/2023	1.0	Original draft.	CN/BE/BF