

Borgias, Adriane P. (ECY)

From: Dave Hope [dave@pacificrimlabs.com]
Sent: Wednesday, October 17, 2012 2:46 PM
To: Michael Neher
Cc: Era-Miller, Brandee (ECY)
Subject: RE: Riverkeeper and Lands Council suggestions on DOE Fall sampling
Attachments: Methods for Analysis of PCB 1668 comparison.ppt; P1229 PCB.doc

Hi Michael,

Let me give you an explanation from an analytical point of view, plus a little history.

In 1999, the EPA commission a lab to write a method for analyzing all 209 PCB congeners. The method is detailed and difficult for non-experienced personnel to review. As a result, there were a number of errors – typographical and otherwise – in the final method. Secondly, the method gave generic QC criteria. For example, the acceptance limits for Internal Standard recovery was 25-150% for all congeners. This was based on a best guess. In 2003, EPA conducted a study with 6-8 private and public labs. They used real world samples for water, sediment and biosolids. The labs would report the results and EPA compiled the data. Six year later they came out with a 1668 Rev B. There were no material changes to the analytical method, other than correcting typos. They did, however change the acceptance criteria for Internal Standards, Clean-up Standards and fortified samples (LCS or lab spikes). The acceptance criteria were now statistically derived from the 2003 study. It sounded good, but in reality it was a disaster. For example, the acceptance criteria for carbon-13 labeled PCB081 was 14-127%, while for ¹³C-PCB126 it was 50-106%. None of the labs liked the criteria. Less than 2 years later, Rev C was issued. In this case, they went overboard in the other direction. Acceptance criteria was now set at 5-145% - big enough that almost nothing would fail!

In summary, the only significant change between the methods is the acceptance criteria. In my opinion, Rev B is too tight and Rev C is too loose. My agreement with WDOE is to follow 1668C, however to use the acceptance criteria for 1668a. If you try to follow the acceptance criteria for 1668B, you will have more data points that are technically out of control. If I am not mistaken, WDOE permits just list 1668, and try not to specify A, B or C. That would be ideal. If they are adamant at specifying one method, go for 1668C.

Last June I was invited to give a talk at the Spokane River Forum on PCB methods of analysis. Part of that talk was on a comparison of A, B and C. Attached is a copy of that portion of my talk (not sure if it will help or hurt).

Our dioxin method is 1613B. This is the best method available.

Also attached is a document with some background on PRL, together with method summaries and detection limits for PCB and dioxins. Let me know if you have any further questions.

Cheers
Dave

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