Fall 11-2-2022

RMAP Interior Schools Project

Liz Stacks

PEOPLE ADVANCING SCIENCE

November 2, 2022

Elsie King, ERM
900 E Benson Blvd, Suite 480
Anchorage, AK 99508

RE: RMAP Interior Schools Project

Dear Ms. King,

This letter summarizes the results of the investigation that Pace® performed to identify the factors that contributed to the reporting error for arsenic, lead, and mercury in SDGs 10608782, 10608783, 10614864, 10614872, 10615304, and 10616707 and the actions the laboratory has taken to prevent similar error in the future.

As you are aware, the original test results reported for these analytes in these SDGs are low biased due to the use of an incorrect sample weight in the calculation (the weight of the filter was not factored into the equation) and/or because the filter was not digested. Both circumstances are unauthorized deviations from the laboratory's test method standard operating procedure (SOP) that were found during a routine internal audit of the procedure.

To determine the cause of the procedural deviations, the department manager led a root cause investigation in accordance with the PAS Corporate SOP for corrective and preventive action (ENV-SOP-CORQ-0016). Cause analysis identified four primary contributing factors: 1) the instructions to determine initial sample weight in SOP ENV-SOP-MIN4-0059 did not provide complete instructions to obtain the measurement 2) the calculations for initial weight of sample were not traceable 3) the SOPs for digestion and mercury preparation did not specify to digest the filter, and 4) analysts were not adequately trained on the SOP(s) and did not seek guidance or clarification when they did not understand the procedure.

To correct these gaps and improve the process, SOP ENV-SOP-MIN4-0059 was revised on 8/24/2022 to include stepwise instructions for the calculation of initial sample weight. A validated electronic log was created and put into use on 8/22/2022. The log is now used to record the weight measurements and to auto-calculate initial sample weight by subtracting the average filter weight of the filter lot from the difference between the weight of the cassette + sample and the empty cassette. All weight measurements are directly uploaded into the log from the balance eliminating potential error from transcription. Instructions to digest the filter were added to SOP ENV-SOP-MIN4-0059 and analysts that perform the test were trained on the updated SOPs and how to use the new preparation log on 8/18/2022.

In accordance with our SOP for corrective action, I also confirmed the new practices were implemented and followed by personnel that perform the test on 9/1/2022 and I will continue to monitor implementation over the next 90 days as part of the effectiveness review checks required by our corrective and preventive action SOP.

Pace® Analytical (PAS) is committed to providing trustworthy, reliable data and test results to our customers. We are disappointed that these procedural errors caused us to miss the mark with these SDGs and we are confident the actions taken will prevent recurrence.

Included with this letter is an EXCEL table that lists the samples affected by SDG reference. The table includes the original result that was reported side by side with the corrected test result for quick comparison. Per your request, revised reports will be issued under separate cover.

On behalf of Pace®, I apologize for the disruption this situation created for the project team. Please do not hesitate to contact me at Liz.Stacks@pacelabs.com or Jennifer Anderson at Jennifer.Anderson@pacelabs.com for further information.

Sincerely,

Liz Stacks, Quality Manager - PAS Minneapolis

CC:
Lester Dupes, Environmental Standards Inc.
Adam Haugerud, General Manager – PAS Minneapolis
Paul Junio, PAS Corporate Quality Program Manager for Minneapolis