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Enthalpy Analytical, Inc.
Standard Operating Procedure

PAMS Canister Cleaning

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1.0 Scope and Application:

This document describes the procedures used to operate the canister cleaner to evacuate and purge sample collection canisters for cleaning purposes. Following these procedures correctly alone does not guarantee that the canisters have been cleaned to a specific level. Further analysis of the cleaned canisters by the appropriate gas chromatograph or gas chromatograph mass spectrometry methods are required to determine a specific level of cleanliness.

2.0 Summary of Method:

Once canisters are released from custody after their specified holding time, each canister must be cleaned by a series of pressurizations and evacuations achieved by using an automated canister cleaning manifold.

3.0 Definitions:

3.1 Canisters - 1.4L and 6L sampling canisters
3.2 Can Cleaner – Heated manifold and pump system designed to semi-automate the can cleaning procedure. Plumbed with clean, compressed air as well as humidifying chamber.
3.3 Zero Air – Compressed air with a total hydrocarbon count of less than 0.1 parts per million.
3.4 GC/FID – Gas Chromatograph equipped with a Flame Ionization Detector

4.0 Safety:

4.1 All samples in canisters that are being manually purged should be considered hazardous material. Purging the canisters manually must always be conducted under a fume hood. Gloves and safety glasses should be worn while performing this procedure.
4.2 Canisters and cleaner are hot when in operation. Care should be taken when working with the cleaner during operation and after cycle is completed. Insulating gloves should be worn when touching hot surfaces.

5.0 Equipment and Supplies:

5.1 Can Cleaner
5.2 De-ionized organic free water
5.3 Humidification chamber
5.3 Compressed air cylinder
5.4 Pump
5.5 Calibrated test gauge
5.6 Calibrated thermometer

6.0 Procedure:

6.1 After sample analysis and appropriate sample retention, each can is attached to the can cleaner manifold.

6.2 Record the batch number in the log and the canisters numbers associated with the batch
6.3 Set the canister oven temperature control on the can cleaner to 160°F.
6.4 Fill the humidification chamber no more than 2/3 full using de-ionized organic free water.
6.5 Turn on the cleaner, heater, and pump.
6.6 Open the cylinder and regulator to provide zero air to the manifold.
6.7 Open the gas line valve to allow air from the cylinder to go through the humidification chamber and fill canisters.
6.8 Adjust the timer on the manifold to maximize the number of cycles performed by the can cleaner.
6.9 Allow canisters to cycle 10 times using humidified zero air

7.0 Quality Control:

7.1 Canisters coming off of the cleaner must pass a 24 hour leak check
7.2.1 After removing canisters from the manifold, each canister is pressurized with zero air to ~30 psi (1500mmHg) and recorded on the canister leak check sheet. Canisters may be batch filled on the manifold with the measurement of one canister serving as the initial pressure of the batch.
7.2.2 After 24 hours, the pressure of each canister is measured. If the second recorded pressure is no more than 2 psi (100mmHg) less than the initial pressure measurement the canisters are considered leak free and ready for analysis to certify the cleanliness.
7.2 Unless a batch certification is acceptable, each canister is analyzed by GC/FID determine the level of cleanliness, prior to being sent to the client for sample collection. For batch certification, one canister is analyzed for each canister batch cleaned. The typical acceptance criteria for a canister certified for PAMS sampling is 0.2 ppbvC for individual components and must be less than 10 ppbvC total. If the desired cleanliness level is not achieved with the first analysis, the canister(s) must be evacuated and refilled until acceptable cleanliness is achieved.

8.0 Data Analysis and Calculations:

NA

9.0 Pollution Prevention and Waste Management:

Where applicable, follow procedures detailed in SOP ENT009, "Sample Retention/Disposition."