

# STANDARD OPERATING PROCEDURE APPROVAL SHEET

SOP TITLE: Polished Stainless Steel Canister and Sampling System Cleaning/Certification

DOCUMENT CONTROL NUMBER: TO14A/TO-15-cleaning

EFFECTIVE DATE: November 18, 2003

**APPROVALS:**

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**RECORD OF MINOR REVISIONS:**

DATE                      LOCATION OF REVISION                      QAU APPROVAL

**RECORD OF MAJOR REVISIONS:**

NEW	1	2	3	4	5	6
<u>11/95</u>	<u>2/96</u>	<u>4/96</u>	<u>11/03</u>	<u>          </u>	<u>          </u>	<u>          </u>

**STANDARD OPERATING PROCEDURE**  
**FOR THE CLEANING/CERTIFICATION OF POLISHED STAINLESS STEEL**  
**CANISTERS AND SAMPLING SYSTEMS**

**1.0 SCOPE AND APPLICATION**

- 1.1 The purpose of this procedure is to provide written instructions to assure that all Polished Stainless Steel passivated canisters are certified clean and free of any contaminants by DataChem Laboratories prior to sample collection for method TO-14A/TO-15 analyses.

**2.0 SAFETY PRECAUTIONS**

- 2.1 Canisters may be under pressure, employ necessary safety considerations during handling.

**3.0 SAMPLE HANDLING**

- 3.1 When not in use, all canisters shall be stored in a manner to protect them from damage and maintain sample integrity.
- 3.2 All canisters shall be stored with valves sealed.

**4.0 LIMIT OF DETECTION**

- 4.1 All analytes of interest must be detectable to 0.2 ppb to assure reliability of the cleaning procedure. Refer to the current laboratory standard operating procedure for TO-14A/TO-15 analysis.

**5.0 INTERFERENCES**

- 5.1 High humidity samples may leave residual condensate contamination in the sampling canister. A greater number of cleaning cycles along with elevated temperatures may be necessary for efficient contaminant removal.
- 5.2 Samples containing high levels of target analytes may leave residual contamination and require additional cleaning routines.

**6.0 APPARATUS AND MATERIALS**

- 6.1 Data system-486 PC with Enviroquant software or equivalent.
- 6.2 Canister cleaning apparatus.
- 6.3 Gas chromatograph/mass spectrometer system.

**7.0 REAGENTS**

- 7.1 All references to water in the method refer to Barnstead generated organic free water unless otherwise specified.

## 8.0 CALIBRATIONS

- 8.1 The analytical system used to verify the cleanliness of the canisters will be calibrated as described in the current laboratory operating procedure for TO-14A/TO-15 analysis.

## 9.0 PROCEDURE

- 9.1 Canister leak testing.
- 9.1.1 All canisters are leak tested by pressurizing to approximately 25 psig with nitrogen.
- 9.1.2 Measure the initial pressure and close the canister valve.
- 9.1.3 Measure the final pressure after 24 hours. The pressure should not vary by more than +/- 2 psig over the 24-hour period.
- 9.2 Canister cleaning and certification (Note: follow manufacturer's directions for specific instrument operation).
- 9.2.1 Clean canisters in batches of up to six. The canister cleaning apparatus can process up to six canisters at one time.
- 9.2.2 Connect the canisters to the manifold of the cleaning system. Place the band heaters around the widest part of each canister. Turn on the band heater. Open the vent shut-off valve and the canister valve to release any pressure in the canister.
- 9.2.3 Perform the cleaning routine as described in the operator's manual. Three to four cycles at temperatures from 50 to 100 °C are recommended. Certain factors may require additional cleaning cycles. The factors include the level of contamination, pressure and humidity of the last sample collected, length of storage, and current condition of the interior of the canister.
- 9.2.4 Upon completion of the cleaning routine, pressurize all canisters to 25 psig with nitrogen. Analyze the canister that contained the highest levels of analyte prior to cleaning as described in the current laboratory standard operating procedure for TO-14A/TO-15 analysis. The canister must contain less than 0.2 ppb of the target VOCs for certification.
- 9.2.5 Reattach the canister to the cleaning manifold and re-evacuate to 29" Hg. Close the canister valve, remove from the cleaning system, and cap the canister connection with a stainless steel fitting.
- 9.2.6 If canisters are not certified at the less than 0.2 ppb level, the entire batch is re-cleaned as described above.
- 9.3 Sampling system cleaning.
- 9.3.1 Following the calibration of the desired flow, flush the sampler with nitrogen for approximately 1 hour at 3 PSI.

## 10.0 QUALITY CONTROL PROVISIONS

- 10.1 Refer to the current laboratory standard operating procedure for TO-14A/TO-15 analysis for GC/MS tuning and calibration specifications.
- 10.2 Refer to the operator's manual for proper use and maintenance of the canister cleaning system.

## 11.0 REFERENCES

- 11.1 Compendium Method TO-14A, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air - Second Edition, January 1999
- 11.2 Compendium Method TO-15, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air - Second Edition, January 1999