

## **OBTAINING AN AMBIENT AIR SAMPLE USING A STAINLESS STEEL CANISTER**

### **1.0 SUMMARY**

- 1.1 An evacuated canister is exposed to ambient air via a sampling valve. The pressure differential causes air to enter the canister until the differential is zero.
- 1.2 An air sample that is collected over a short period of time (eg. 1-2 minutes) is called a grab sample. An air sample that is collected over a longer duration of time is called a composite sample and requires the use of a flow controller. The flow controller is calibrated by the laboratory for a specific amount of time.

### **2.0 EQUIPMENT**

- 2.1 Stainless Steel Canister – A spherical container constructed of stainless steel, ranging in size from 1- to 15-liters (6-liters is the most commonly used) whose interior surface has been rendered inactive to most organic compounds. Two types of stainless steel canisters are commonly used. Summa Canisters passivate the interior surfaces through a rigorous chemical cleaning and electropolishing process (Summa process). SilcoCanisters passivate the interior surfaces by bonding a thin layer of fused silica glass to the metal wall of the canister. Both types of canisters are equipped with on/off sampling valves. Prior to sampling the canisters are cleaned and evacuated to 50mTorr (approximately 30 inches of mercury).
- 2.2 Flow controller – Constructed of stainless steel, the flow controller utilizes the pressure differential between the canister and ambient air to maintain constant flow into the canister. The flow controller can be calibrated for sampling events of 30 minutes to 24 hours.
- 2.3 Pressure gauge – capable of measuring from -30 inches of mercury to 30 psig

### **3.0 SAMPLING PROCEDURE**

- 3.1 The canister is placed in a location appropriate for the investigation being performed.
- 3.2 The vacuum of the canister is measured and recorded on the canister tag prior to sampling. The vacuum should read less than 28 inches of mercury.
- 3.3 The brass end cap is removed from the sampling valve.
- 3.4 If a composite sample is being obtained, the flow controller is attached to the sampling valve of the canister.
- 3.5 For samples that require connection to a port, such as a wellhead, Tygon or Teflon tubing can be connected to the valve or flow controller utilizing the appropriate fittings and adaptors.
- 3.6 The date and time of sampling is recorded on the canister tag and the valve is turned on.
- 3.7 For grab samples, the sampling is complete in less than 2 minutes, or until the sound of the air rushing into the canister dissipates.
- 3.8 For composite samples, the sampling is complete when the calibrated flow controller time has elapsed. The end time is recorded on the canister tag.
- 3.9 Remove the flow controller and replace the protective brass end cap.
- 3.10 Record the sample information on the chain-of-custody and package the canister securely in a sturdy, undamaged cardboard box.

### **4.0 MISCELLANEOUS**

- 4.1 The flow controller is calibrated against ambient pressure. The flow controller will not function properly if the canister is pulling against a source that is not at ambient pressure.
- 4.2 For sources that are under pressure, do not pressurize the canister above 30 psig.
- 4.3 When closing sampling valves, do not over tighten.
- 4.4 Highly corrosive atmospheres will damage canisters.
- 4.5 The recommended holding time for samples collected in stainless steel canisters is thirty days.
- 4.6 If samples are to be tested for sulfur compounds Silco-type canisters should be used.