SAMPLE SETUP GUIDE

Sampling Train — Impingers

Impingers are specially designed bubble tubes used for collecting airborne chemicals into a liquid medium. With impinger sampling, a known volume of air is bubbled through the impinger containing a specified liquid. The liquid will chemically react with or physically dissolve the chemical of interest. This Sample Setup Guide demonstrates how to set up a **Sampling Train Using Impingers**.

Required Equipment

1. An **air sampling pump** capable of sampling at the recommended flow rate with the sampling medium in line, such as:
   - SKC Universal Series
   - SKC AirChek® Series
2. An **airflow calibrator** such as:
   - SKC Medium Flow chek-mate® Calibrator with CalChek Cat. Nos. 375-0550N, 375-0550, and 375-0550S
3. The SKC **Impinger** specified in the method
4. **Impinger trap,** such as:
   - SKC Glass Midget Impinger Trap (without sorbent) Cat. No. 225-22
   - SKC Plastic In-line Trap (with sorbent) Cat. No. 225-22-01
5. **Impinger holder for area sampling**, such as:
   - SKC Single Glass Impinger Holder Cat. No. 225-20-01
   - SKC Double Glass Impinger Holder Cat. No. 225-20-02 or 225-20-03
6. **Impinger holster for personal sampling,** such as:
   - SKC Glass Impinger Holster Cat. No. 225-20
   - SKC PFA Impinger Holster Cat. No. 225-0027

Optional Equipment

1. **Trap Sorbent** Cat. No. 225-22-02

Introduction

To determine the correct flow rate for the chemical of interest, refer to the appropriate analytical method. *See the operating instructions for the pump to ensure that it is capable of sampling at the correct flow rate.*

1. Preparing the Impinger

Fill the impinger with the recommended volume of collection liquid for sampling as specified in the analytical method.

To protect the pump from splashed or spilled impinger liquid, it is important to install a liquid trap between the impinger and the pump. Approximately one inch of solid sorbent may be added to Cat. No. 225-22 trap if a volatile liquid is used in the impinger (trap Cat. No. 225-22-01 already contains sorbent). SKC trap sorbent will protect the pump from both organic and inorganic vapors.

2. Setting Up the Calibration Train — Figures 1 & 2

Allow the pump to equilibrate from one temperature extreme to another and to run for 5 minutes before calibrating. Attach the stainless steel holder to the pump *(Figure 1)* and place the impinger and trap in the holder. With flexible tubing, connect the outlet of the impinger to the inlet (top) of the trap and the outlet (side arm) of the trap to the inlet of the pump *(Figure 2)*.

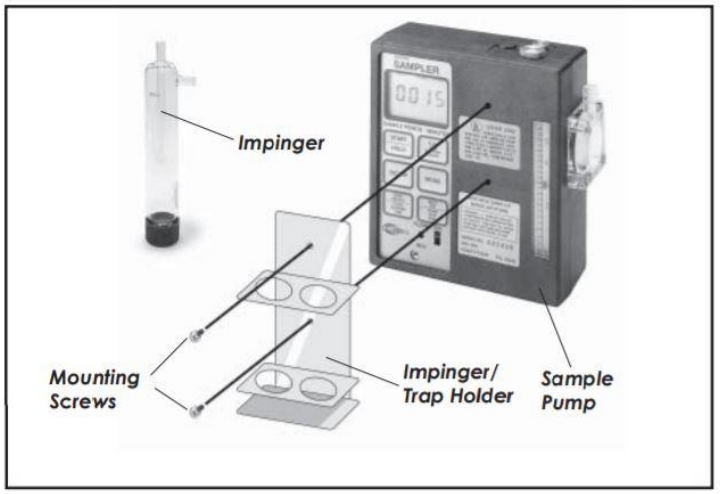

Figure 1. Attaching a glass impinger/trap holder to a sample pump

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3. Calibrating the Flow Rate — Figure 2

With flexible tubing, connect the impinger inlet to the external calibrator and calibrate to the flow rate specified in the analytical method for the chemical of interest. Typically, impinger samples are taken at 1 L/min. Refer to pump and calibrator operating instructions for calibrating the flow rate. When the flow rate has been calibrated, remove the impinger used to calibrate the flow rate. Record the pre-sample flow rate. Remove the external calibrator.

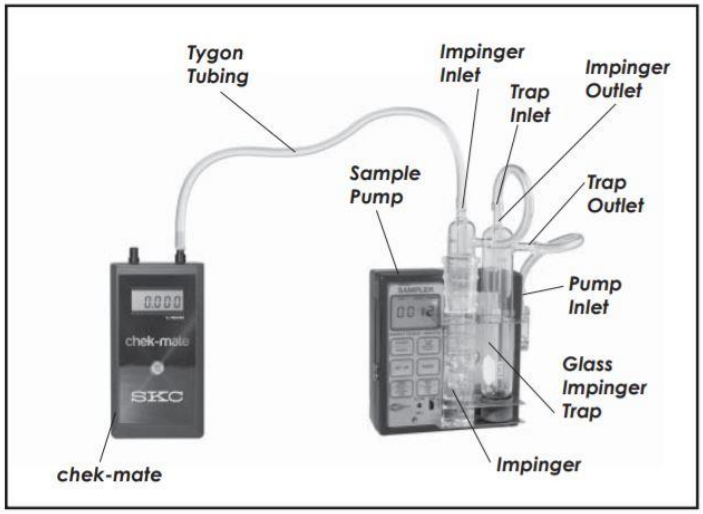

Figure 2. Glass impinger and glass trap in calibration train

4. Sampling

When ready to start sampling, prepare a new impinger with the recommended volume of collection liquid. For area sampling, place the pump with impinger and trap in the holder in the area to be sampled. For personal sampling, place the impinger in a lightweight, vinyl holster and attach it in a worker's breathing zone. Attach the pump to the worker's belt. Impinger glass and collection liquid can be a hazard when mounted on a worker; handle it carefully. Turn on the pump and note the start time and any other pertinent sampling information.

5. After Sampling

At the end of the sampling period, turn off the pump and note the ending time. Quantitatively transfer the sample solution to a glass vial. Ensure that all the solution is out of the impinger stem.

Use a calibrator and the representative impinger in line to verify that the flow has not changed by more than 5%.

Along with the sample impinger vials, submit blank samples of the impinger solution. Blank samples should be subjected to exactly the same handling as the sample except that no air is drawn through them.

Pack the samples, blanks, and all pertinent information securely for shipment to a laboratory for analysis.

6. Cleaning Impingers

Wash impingers thoroughly before reuse. Some sampling methodologies require a special preparation such as an acid wash before use.

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