FIELD PROCEDURE 103
Beryllium Screening

A. *Pretest Preparation*

1. Clean all glassware by soaking in acid wash for 2 hr.
2. Select a sample site (see FP 1; attach data sheet) that is as close as practicable to the point of atmospheric emission. If possible, avoid sampling stacks <1 ft in diameter.
3. Select three points that proportionately divide the diameter, or are located at 25, 50, and 75% of the diameter from the inside wall. If the 8/2 criterion in FP 1 is not met, sample four points or more that proportionately divide the diameter.
   a. For horizontal ducts, sample on a vertical line through the centroid.
   b. For rectangular ducts, sample on a line through the centroid and parallel to a side.
4. Select a sampling period or periods necessary to determine the maximum emissions that would occur in a 24-hr period.
   a. In cyclic operations, perform sufficient sample runs to determine the emissions that represent the cycle.
   b. Use ≥2 hr sampling time.

B. *Sampling*

1. Beryllium is hazardous; take care to minimize exposure.
2. Conduct one run at each sampling point. At least 3 runs comprise a test.
3. Assemble the sampling train as shown in Figure F103-1.
4. Leak check the sampling train on-site **(see FP 5a).**
5. For each run, sample isokinetically at a rate ≥0.5 cfm. Measure and record the information as shown in FDS 103.

C. *Sample Recovery*

1. Remove the filter (and backup filter, if used) and any loose particulate matter from filter holder, and place in sample container.
2. Clean the probe with acetone and a brush or long rod and cotton balls. Wash into the sample container with the filter.
3. Wash out the filter holder with acetone, and add to the same sample container.
4. Prepare a blank from the acetone used in the sample recovery. Record the total amount of acetone used in sample recovery. Blanks may be deleted if prior analysis shows negligible amounts.

D. *Quality Control*

1. Attach a dry gas meter, spirometer, rotameter (calibrated for prevailing atmospheric conditions) to the inlet of the complete sampling train.
2. Check calculated isokinetic rate against measured rate.

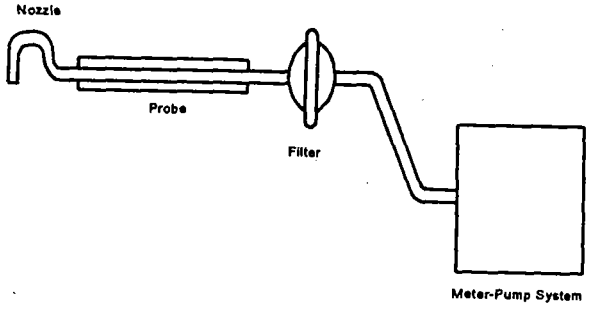

Figure F103-1. Beryllium Screening Method; SampleTrain Schematic.

FIELD DATA SHEET 103
Beryllium Screening

Client/Plant Name _____ Date _____ Job # _____

City/State _____ Test Location _____

Personnel _____ Run #/Sampling Pt _____

Start Time _____ End Time _____

Sampling Pt #					
Nozzle Diameter, D_n	(in.)				
Initial Velocity					
Δp	(in. H_2O)				
Stack Temperature, t_{si}	(°F)				
Bar Pressure, P_{bi}	(in. Hg)				
Wet-bulb Temperature, t_{wb}	(°F)				
Moisture Content, B_{ws}	(fraction)				
Isokinetic Sampling Rate *(≥0.5 cfm?)*	(cfm)				
Final Velocity					
Δp	(in. H_2O)				
Stack temperature, t_{sf}	(°F)				
Bar pressure, P_{bf}	(in. Hg)				
Isokinetic Sampling Rate *(≥0.5 cfm?)*	(cfm)				
Initial/Final Isokinetic Rates *(±20%)*					
Leak Rate *(≤1% of sampling rate?)*					
Stack Area, A_s	(ft^2)				
Sampling Time, θ	(min)				

Quality Control Check of Isokinetic Calculation and Regulation

DGM/Spirometer Volume, V_d	(cf)				
Time, θ	(min)				
Rate, V_d/θ	(cfm)				
Calculated Isokinetic Rate	(cfm)				

QA/QC Check

Completeness ____ Legibility ____ Accuracy ____ Specifications ____ Reasonableness ____

Checked by: _____ _____

Personnel (Signature/Date) Team Leader (Signature/Date)

LABORATORY PROCEDURE 103
Beryllium Screening

Note: Because this is a screening method, the analytical procedure does not contain detailed steps or specifications. Judgment is left to the reviewer as to the adequacy of the procedure based on the test report.

A. ***Reagent Preparation***

Prepare acid wash (50% HCl) solution by adding equal parts conc. HCl slowly and carefully to the water.

B. ***Analysis***

1. Prepare the samples suitable for the analytical instrument. Any currently acceptable method such as atomic absorption, spectrographic, fluorometric, chromatographic, or equivalent may be used.
2. Prepare and calibrate the analytical equipment according the procedures suggested by the manufacturer, or the procedures for the selected analytical method.
3. Analyze the samples for Be.