



1989 May 10

file Asbestos Sampling

PLAINTIFF'S
EXHIBIT
AL-981**RECOMMENDED MINIMUM SAMPLE VOLUMES AND SAMPLING TIMES FOR THE DETERMINATION OF VARIOUS LEVELS OF AIRBORNE FIBER CONCENTRATIONS**

The purpose of this bulletin is to provide guidelines for the sampling of airborne fibers using 25mm and 37mm filter cassettes respectively. Data from OSHA 29 CFR Parts 1910 and 1926, "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite: Final Rules; Amendment," 1988 Sept 14, was utilized to generate the attached graphs. In particular, the recommended fiber density of 80 fibers per 100 fields or 100 fibers/mm² was utilized in order to optimize the microscopic analysis. Using the attached graphs, one can determine minimum volumes and/or minimum sample durations at a flowrate of 2 Lpm and corresponding airborne fiber concentrations for both 25mm and 37mm filters respectively.

In the recent OSHA mandate (1988 Sept) an "excursion limit" for airborne asbestos fibers has been defined as 1 fiber/cc over a 30 minute period. Using the attached graph one can determine the minimum flowrate over the 30 minute period needed to satisfy an airborne concentration of 1 fiber/cc using a 25mm filter. On the 25mm filter graph, find 1 f/cc on the X-axis, then the intersect on the liters curve (Δ), then to the corresponding point on the Y-axis ($\approx$ 40 liters). Minimum flowrate at the excursion limit = 40 liters/30 minutes = 1.3 liters/minute. For a 37mm filter, the minimum flowrate would be $\approx$ 2.9 Lpm. Included below are two more examples:

Example 1: Using a 25mm filter, what is the minimum recommended sampling time at 2 Lpm needed to sample at the action limit for asbestos? Using the 25mm graph find the action level of 0.1 f/cc and locate the intersect on the minutes (O) curve. The recommended minimum sampling time at 2 Lpm is approximately 190 minutes (Y-axis). For the PEL (0.2 f/cc) it is approximately 90 minutes at 2 Lpm.

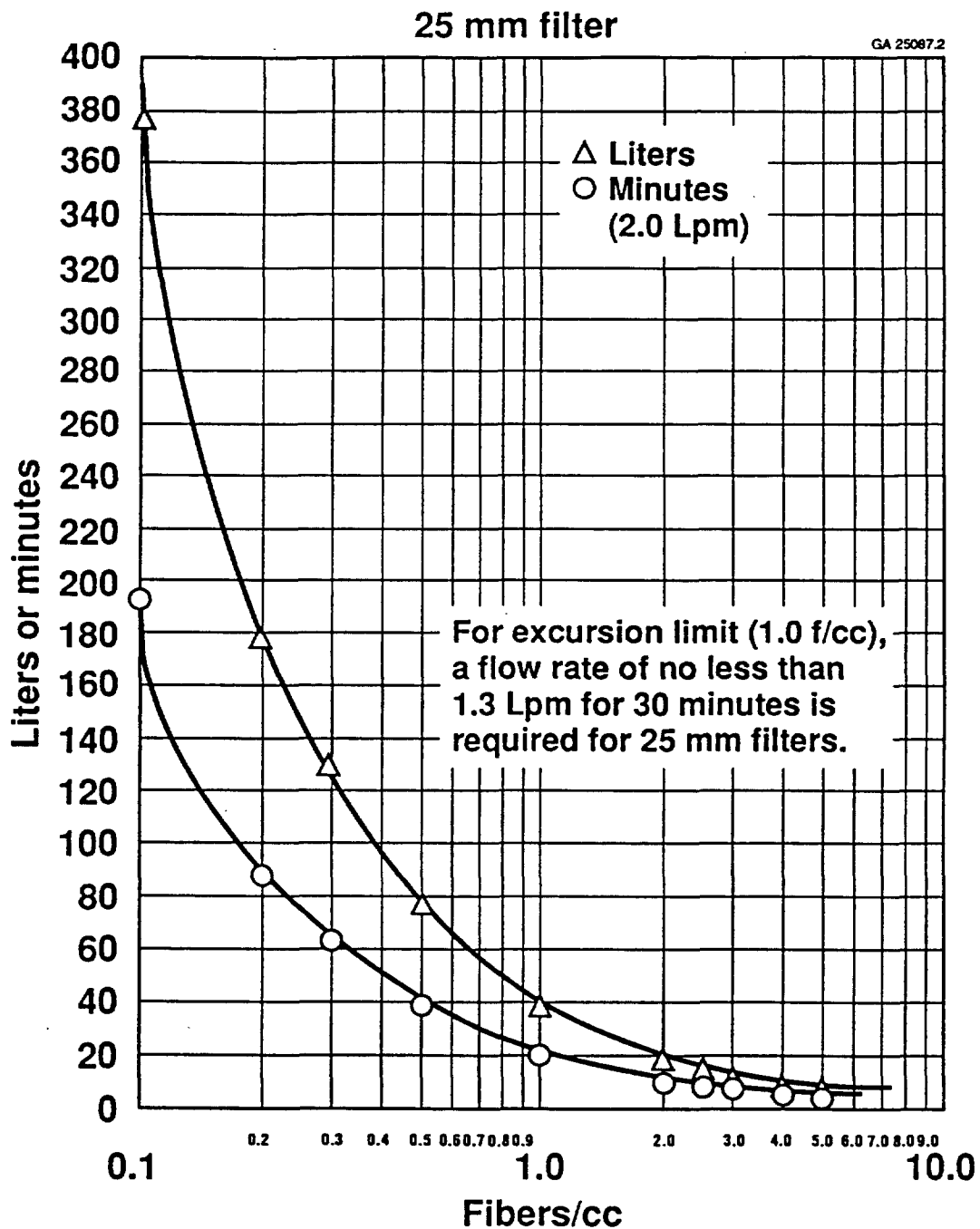
Example 2: Using a 37mm filter, what is the minimum recommended sampling time at 2 Lpm needed to sample an airborne fiber concentration of 0.3 f/cc? Using the 37mm graph, locate 0.3 f/cc and locate the intersect on the minutes (O) curve. The recommended minimum sampling time at 2 Lpm is 140 minutes (Y-axis).

Comment: It is obvious that a 37mm filter cannot be used for excursion limit sampling unless a pump capable of attaining a minimum flow rate of 2.9 Lpm is utilized.

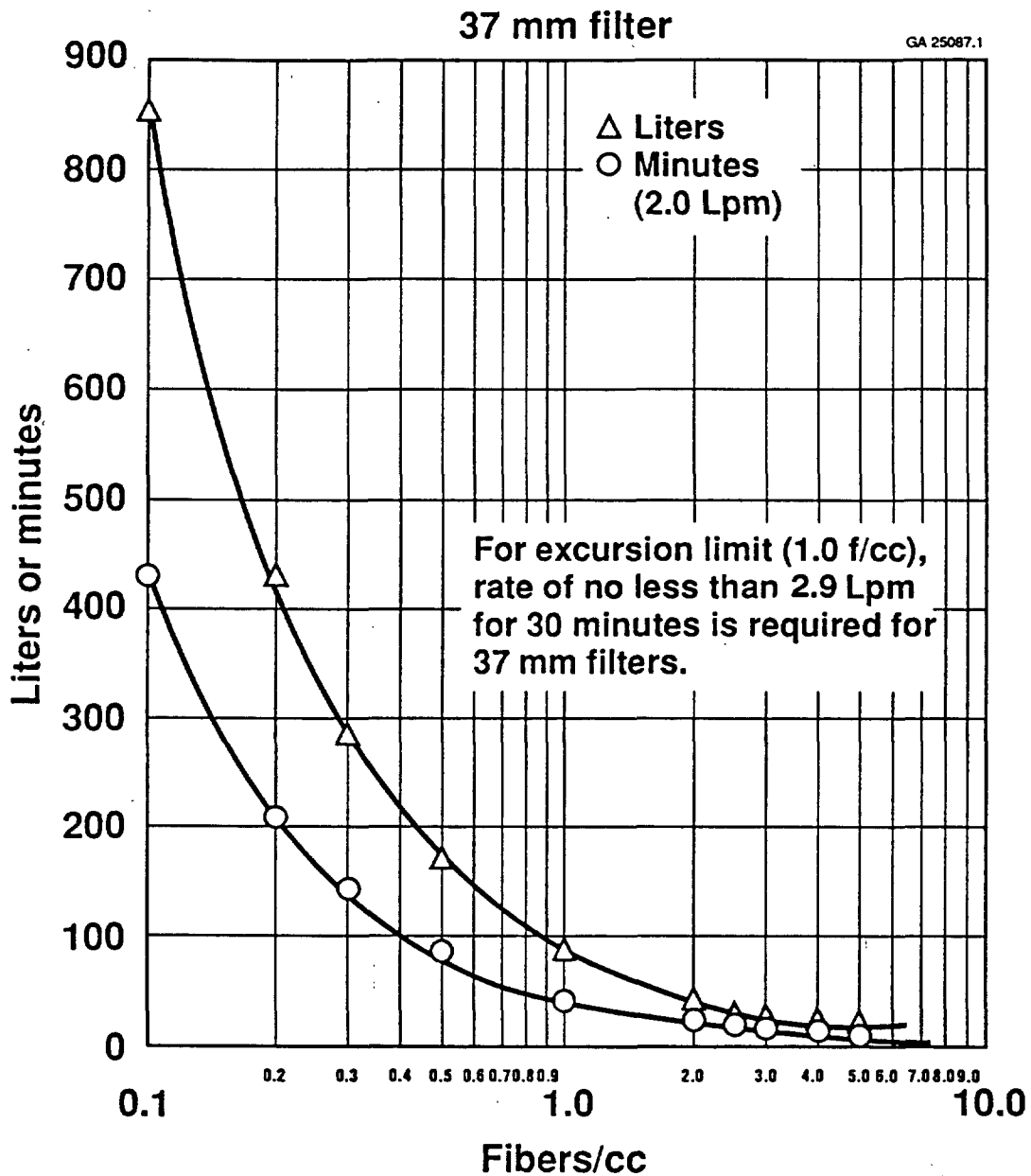
For additional information, contact the Environmental Health Laboratory.

RICHARD A. MILITO





**Minimum Sample Volumes and Sampling
Times at 2.0 Lpm Required for Various
Fiber Air Concentrations
(In Accordance with OSHA Recommended Fiber
Loading of 100 f/mm² on the Filter)**



**Minimum Sample Volumes and Sampling
Times at 2.0 Lpm Required for Various
Fiber Air Concentrations**
(In Accordance with OSHA Recommended Fiber
Loading of 100 f/mm² on the Filter)