

Rose Associates

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page 2

Air Sampling Analysis and Procedure

Introduction

Air sampling is defined as the process of measuring the filter content of a known volume of air entrained on a filter membrane over a specified period of time. Each sample is cross-referenced by field designation and a JLC lab internal code to ensure proper, consistent handling through a chain of custody. Sample preparation takes place within an HEPA filter clean bench to avoid any possible contamination.

Methodology

Test procedures for these samples conform to the National Institute of Occupational Safety and Health (NIOSH) standards.

Air sampling was conducted at a level approximating the breathing zone of persons anticipated to be present in the area during normal operations. Samples collected should represent the area's typical airborne fiber concentration.

All samples were collected on fully exposed 25 millimeter, 0.8 micrometer (μm) cellulose ester membrane air sampling cassettes with conductive cowl.

Analytical Procedures

A section of the filter approximating twenty-five percent of the total filter was removed and placed on a pre-cleaned microscope slide and then exposed to approximately 250 microliter (μl) of acetone vapor. A single 3.0 - 3.5 μl drop of triacetin was applied and a clean #1.5 cover slip was placed upon the filter. The prepared slide was then heated on a slide heater until clarity allowed analysis to be conducted.

Analysis was accomplished utilizing a Phase Contrast Microscope in accordance with NIOSH 7400 method, counting rule "A."

Phase Contrast Microscopy

JLC Environmental's laboratory uses an Olympus BH-PC Phase Contrast Microscope, (PCM) equipped with a Walton-Beckett Graticule. Samples were analyzed by first dissolving the filter through a chemical process (described above) and then counting the fibers with PCM at 400x magnification. Phase contrast increases the light contrast between the object and the background, thus enhancing the microscopist's ability to see fibers. Normally, 100 microscopic fields or 100 fibers are counted, whichever occurs first.

Analytical Results

The "Summary of Analytical Results" represents the results of the analysis of the samples. The PCM limit of reliable quantification is less than 0.01 fibers/cubic centimeter (f/cc) of air. If final tests do not meet these requirements, the entire work site must be re-cleaned and re-tested.