Review of Air Clearance Requirements & Interpretation

Environmental Abatement Council of Ontario

eaco

Introduction

- General Overview
- Number of Samples Required
- Time Required For Sampling
- Interpretation of Forced Air to Dislodge Fibres
- Analysis & Interpretation of Clearance Samples

General

- No clearance sampling required for Type I operations
- No clearance sampling required for Type II operations
- Clearance sampling required for most Type III operations
  - Not required for buildings undergoing demolition where no other workers are present

Number of Samples

Phase Contrast Microscopy (PCM) Method

- **Small Areas < 10 m² (<107 ft²)**
  - 2.0 samples required
- **Medium Areas 10 m² (107 ft²) up to 500 m² (5382 ft²)**
  - 3.0 samples required
- **Large Areas >500 m² (>5382 ft²)**
  - 5.0 samples required
- **PCM Samples analyzed using NIOSH Method 7400**
  - **Ensure the laboratory and/or individual analysts participate in a quality assurance round robin program as outlined in NIOSH Method 7400.**
- **If the Type III work area does not meet air clearance requirements, PCM tests may be analyzed using Transmission Electron Microscopy (TEM) analysis using NIOSH Method 7402 as an option to clear the Type III work area.**

Number of Samples
TEM Method

- **Five samples to be collected outside of work area**
- **Five samples to be collected within work area**
- **TEM samples analyzed using NIOSH Method 7402**

Time Required for Sampling

- **Minimum 2400 litres of air per sample**
- **Examples:**
  - Air sampling pump calibrated at 15.0 l/min. will require a total sampling period of 2.0 hours & 40.0 minutes (160.0 minutes)
  - 160 minutes x 15.0 l/min= 2400 litres
- **Calibration of air sampling pumps (before and after sampling)**
- **Handling of equipment defined-more than previously used**
- **More time required to conduct new regulatory requirements**

Use of Forced Air Before & During Clearance Sampling

- **Creating worst case scenario after work area is dry**
- **Ensure fibres are dislodged before and during sampling**
- **Ensures fibres and particulates are suspended in the air**
- **Accepted standard:**
  - Aggressive testing described in EPA 560/5-85-024 Appendix M Section M.1.5

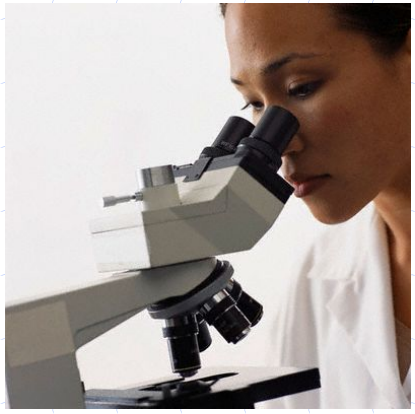
EPA 560/5-85-024 Appendix M Section M.1.5

Procedures for aggressive sampling:

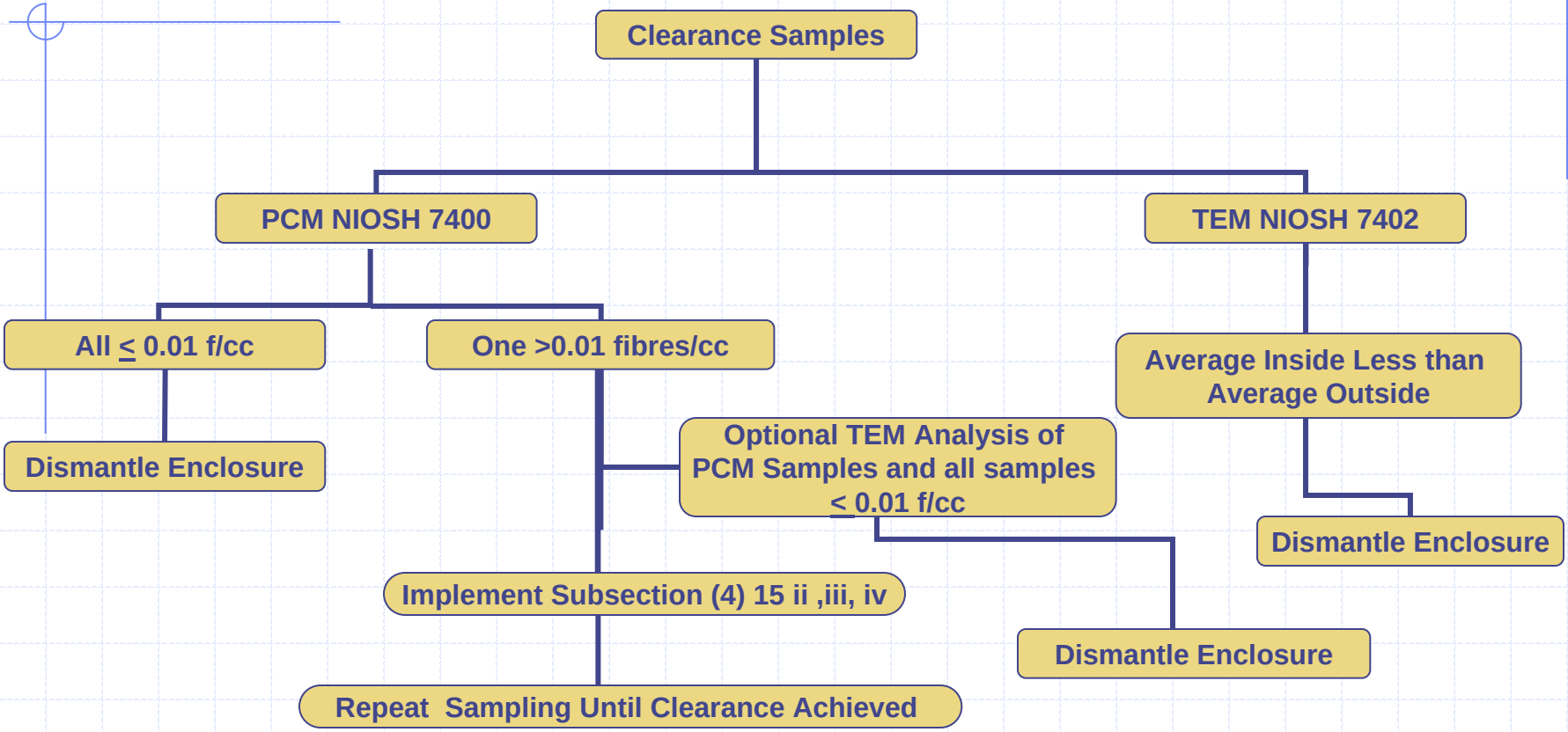
- Before starting the sampling pumps, direct the exhaust from forced air equipment (such as a 1 horsepower leaf blower) against walls, ceilings, floors, ledges and other surfaces in the room. This should take at least 5.0 minutes per 1000 ft^2.
- Place a 20.0 inch fan in the center of the room (use one fan per 10,000 cubic feet of room space). Place the fan on slow speed and point it toward the ceiling.
- Start the sampling pumps and sample for the required time.
- Turn off the sampling pumps and then the fan(s) when sampling is complete.

Sample Results Interpretation

- **PCM (Optional TEM Analysis)**
  - Airborne fibre clearance level is 0.01 fibres/cc
  - One sample above 0.01 – clearance fails
  - Optional TEM analysis – asbestos fibres below 0.01 fibres/cc. All samples must pass clearance criteria.
- **TEM Analysis**
  - Average concentration of asbestos fibres inside the work area is statistically less or not statistically different than the outside average



Analysis of Samples



Summary

- Clearance sampling required for most Type III operations
- Greater number of samples required
- Longer time to collect samples
- Forced air to dislodge fibres required
- New clearance sampling requirements does not appear to significantly increase failed work areas unless dusty operations or other construction/demolition is occurring during sampling.