J&M Environmental Control Group

AIR MONITORING PROTOCOL
BACKGROUND SAMPLES

Collect background air samples before enclosure construction begins on a site. This indicates whether the area was contaminated before the contractor arrived. Collect at least 1,200 liters on a background sample.

PERSONAL SAMPLES

Collect personal samples during disturbance of asbestos-containing materials, and also during non-disturbance work to document the absence of contamination.

Monitor one person in each work space. If you have 8 workers in 3 spaces, collect samples on a worker in each enclosure. Collect samples on more than one worker if there are more than 4 workers in one enclosure, but always sample at least 25% of the workforce.

Collect split personal samples. This means more than one sample on each person per day. For example, one sample for 4 hours in the morning, and one sample for 4 hours in the afternoon. Each sample is completely separate from the previous sample, with different sample numbers and descriptions. Collect air samples on workers for the entire work shift.

Place the air sampling pump on the worker’s belt. Fasten the cassette to the worker’s collar, as close as possible to this mouth. Point the cassette downward. This is to keep debris from falling into the cassette.

Think ahead. If you are sampling industry conditions, filters will get overloaded. You may do two things to avoid sample overloading:

a. Reduce sampling time - You may take short duration samples. In this case, collect at least two (2) consecutive samples.

b. Reduce sampling volume - If sampling volume is reduced from two (2) liters per minute to one (1) liter per minute, the sample can be run twice as long before becoming overloaded.

Remember to regularly check the sample filter for overloading. If the cassette filter turns from white to tan or brown, it is overloaded. Terminate that sample, submit it for analysis and start a new sample.

Record interferences on the sample description, such as drywall dust, carpet fibers, fiberglass, dusty conditions, etc. These materials may be counted as asbestos fibers.

Accurately record the start and stop times of each sample. Personal samples shall be worn
at all times when the pump is running. If a worker leaves the work area, the pump should simply be turned off by the sampler, then turned on again upon re-entry into a contaminated area. The time that the pump is turned off shall not be counted as sample time for volume calculation.

The different categories of work being performed of each shift shall be identified. At least one personal sample shall be collected to represent each different work activity.

If a pump fails during a sample period, that sample is invalid. State on the monitoring record that the pump failed, and start a new personal sample.

Be careful not to damage sample cassettes when workers are decontaminating. It is preferable for the sampler to retrieve pumps and cassettes from workers at the decontamination chamber and carefully bring them outside. Do not drop cassettes, as this will release fibers from the filters and affect lab results.

When filling out the daily timesheet, reference each worker to the sample numbers that he worked on or was represented by. This is done by recording the appropriate sample number under employee numbers. This provides a convenient record of the specific samples that represent each employee.

**SHORT TERM EXPOSURE LIMIT (STEL) SAMPLING**

Collect at least one 30-minute personal sample during the period of most concentrated fiber release for each shift. The purpose of these samples is to identify the highest personal exposure concentrations for each shift, and to comply with OSHA’S STEL of 1 f/cc over a 30-minute period for unprotected workers.

**AIR SAMPLES**

Area samples are of secondary importance, as your main concern is collecting personal samples during abatement activity to determine airborne concentrations of asbestos. Pull no less than 240 liters of air and up to 1,800 liters for area samples.

**Work area samples:** are collected inside the enclosure to establish work area fiber concentrations.

**Clean area samples:** are collected in clean areas adjacent to enclosures to document enclosure integrity.

**HEPA exhaust samples:** are collected near the HEPA NEGATIVE AIR EXHAUST DUCT To document HEPA filter integrity.
CLEARANCE SAMPLES

An independent consultant shall be retained to collect clearance samples after completion of every abatement project. You may also decide to collect concurrent clearance samples. The minimum sample volume for clearance shall be 1,200 liters of air.

BLANK SAMPLES

Ten percent (10%) of the cassettes submitted for analysis, or two blanks, shall be turned in with each group of samples, whichever is greater. Blanks are cassettes which have not had any air drawn through them. Otherwise, Blanks are treated as any normal sample. Blanks are issued sample numbers and the cassettes are not otherwise labeled. The air volume should be recorded as zero (0) and the description shall read "Blank". Blanks are used for quality assurance by the lab.

PERSONAL SAMPLES

Personal samples shall be collected at a flow rate between 0.5 and 2.5 liters per minute. Flow rates must be established when a sample is started by placing a sample cassette in line between the pump and rotameter. Desired flow rates are set by centering the rotameter ball on a primary calibration mark with the sample pump flow adjustment. The ending flow rate is observed before each sample is terminated. Again, a rotameter is attached to the cassette. The rate of air flow indicated on the rotameter is recorded on the monitoring record. The two flow rates are then averaged for the overall flow rate. This average flow rate is multiplied by duration in minutes for sample volume in liters.

AREA SAMPLES

Sample locations should be documented as precisely as possible. Describe locations so they can be identified at a later date. Place the sample cassette at breathing level above the floor. This avoids biasing the sample with dust disturbed near the floor.

Area samples may be collected with either personal or high volume sampling pumps. Flow rates for area samples are 1 to 16 liters per minute. A high volume rotameter must be used to calibrate a high volume air pump.

The flow rate is measured at the beginning and end of sample collection with a cassette between the pump and rotameter. The two flow rates are averaged together to calculate sample volume.

Start Rotameter: 10.5 L/M - End Rotameter 9.9 L/M
(Average) Flow rate = 10.5 + 9.9 = 20.4

20.4 : 2 = 10.2 Flow rate

Volume Liters: 10.2 L/M x 67 minutes = 683.4, averaged out to 683 liters.
Air Volume (Liters): This is the volume of air in liters drawn through that sample filter.
Example:

**Sampling start & end times** - start at 7:00 a.m. and end at 11:00 a.m.

**Total minutes of the sample duration** - 240 minutes.

**Concentration (Conc):** This is the result in fibers per cubic centimeter of air (f/cc).

**TWA:** This is the 8-hour time weighted average result for personal samples, calculated from results in F/cc and sample duration.

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\text{F/cc} \times \text{sample duration}: \quad 480 = \text{TWA F/cc} \\
480 \text{ is 8 hours TWA}
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**Detection Limit:** This is limit of detection for each sample calculated by laboratory according to total minutes of sample duration.