

monitoring period, one divides the total fibers found by the amount of air in cubic centimeters, drawn through the filter.

Suppose one samples for three hours using a pump calibrated to pull 2 liters per minute through the filter. Suppose the laboratory counted 36,000 fibers on the filter. The total air volume is $2 \text{ l/m} \times 180 \text{ minutes}$ or 360 liters. Since there are 1000 cc per liter, this is equivalent to 360,000 cc. Dividing this number into the total fibers, one calculates an average air concentration of 0.1 fibers per cc.

Some numbers that are useful to know are these:

0.2 fibers/cc—The new OSHA 8-hour permissible exposure limit.

0.1 fibers/cc—The "action level" for asbestos exposure when medical monitoring is necessary.

0.01 fibers/cc—Recommended maximum measured concentration for re-occupancy after a removal operation. (Note that an air volume of 2000 liters or more is necessary to accurately measure this concentration).

Air monitoring for asbestos is not difficult once a general understanding of the sampling and analytical techniques is gained. There are many resources to assist you in gaining this information—including NIOSH, OSHA, EPA and your analytical laboratory. It is better to take time initially to ask questions than to be trying to explain later why data is not available or not accurate.

CARTER ON ESTIMATING



HARRY CARTER DISCUSSES ASBESTOS ABATEMENT ESTIMATING

The principles of estimating are just as vital in asbestos abatement bidding as in other construction areas. Harry Carter, president of Carter School of Estimating, 22 Sullivan Road, Hudson, NH 03051, is a former professional contract estimator and in his career has performed tens of thousands of estimates for contractors.

If you have a question on asbestos abatement bidding, write to Carter at the above address, enclosing a self-addressed stamped envelope.

Q. I have heard that there is a simple way to figure the surface area of exposed structural steel in commercial buildings. A painter friend once told me that multiplying the floor area three (3) times will give me the exact square footage of deck, joint, and beam. Do you agree with this method—and can it apply to estimating the amount of asbestos that will need to be removed?

A. I believe there is only one system to use when taking off structural steel. I measure each component and piece separately, then I apply square footage to each beam as per the usual guidelines. I then extend all footages and apply proper production rates and material requirements to complete my bid.

LETTERS TO THE EDITOR

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early as 1979 and may well have done a number of such jobs himself or through his companies before November 1980. The records of the Patent Office do not show that this material information was made known to the Patent Office. As such we are told that the Natale patent may well fall as being unenforceable against anyone.

Your attorney's consideration of these matters may provide you with a new insight into the Negative Air Pressure patent situation. If you wish more information, let us know by an

inquiry on your, or your attorney's letterhead.

R.W. Marsh
President
Control Resource Systems, Inc.

Dear Editor:

Advertising brochures from several manufacturers of asbestos abatement equipment show workers wearing Army-type web belts to support respiratory equipment, personal sampling pumps, etc.

In the many projects where we have supervised or monitored asbestos removal, we have always observed that web-type belts are extremely difficult to clean of asbestos fibers. Thus, workers must never

leave the work area with the belts or else risk contaminating the environment. To do so would negate all the elaborate precautions one must take to prevent asbestos from escaping from the work area.

A more practical type of belt is one made of a smooth material such as vinyl. This type of belt may be easily wiped clean of all asbestos and then reused. In an emergency, one can prepare a make-shift belt by folding duct tape lengthwise and tying it on the worker with a square knot. This suggestion, by the way, came from an experienced asbestos abatement contractor, and we pass it along for the benefit of others in the industry.

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