AIHA Committee Activities and Reports

ASBESTOS HAZARD ASSESSMENT AND HAZARD ABATEMENT — CRITERIA EMPLOYED BY POLICY MAKERS —

Asbestos Subcommittee
Indoor Environmental Quality Committee*

Introduction

The accelerating concern over asbestos in buildings has prompted action by many building owners, managers and facility administrators. During the past year the Asbestos Subcommittee of the AIHA Indoor Environmental Quality Committee undertook a project to gather information concerning the criteria used during hazard assessment and following completion of an asbestos abatement project. A survey questionnaire was designed and sent to approximately 70 Federal and State agencies, large school districts, and several trade associations. The purpose of the survey was to provide information to assist in answering the following questions.

1. What criteria are used in visual assessment of asbestos in buildings today?
2. If air sampling is employed as part of the assessment, how is it used and what procedures are followed?
3. Upon conclusion of an asbestos abatement project, what criteria are important to determine if the work area is safe for reoccupancy by unprotected personnel?
4. If air monitoring is used after asbestos abatement, what concentration must be achieved and what procedures are employed?

Hazard Assessment

The survey participants were asked to rate, on a scale of zero to five, the importance of 17 selected criteria that may be used when conducting a hazard assessment of a building with asbestos-containing materials. The following list of criteria has been arranged in order from most important to least important, as indicated by the survey respondents. The numbers in parentheses represent the mean rating, based on the survey responses (scale of 0 - 5).

1. Material Condition (4.7)
2. Degree of Friability (4.5)
3. Return Air Plenum (4.2)
4. Air Stream Effects (4.1)
5. Material Accessibility (4.1)
6. Activity Level (4.0)
7. Exposed Surface Area (3.5)
8. Water Damage (3.4)
9. Bldg. Mgmt. Policies (3.3)
10. Building Characteristics (3.3)
11. Percentage of Asbestos (3.2)
12. Potential Building Use (3.1)
13. Material Function (3.1)
14. Population Characteristics (3.0)
15. Type of Asbestos (2.0)
16. E.P.A. Algorithm Score (1.8)
17. Non-asbestiform Components (1.2)

In a separate question, approximately 80 percent of the survey respondents indicated air sampling should be used in addition to other hazard assessment criteria. Half of these preferred phase-contrast microscopy for analyses. Transmission electron microscopy was preferred over scanning electron microscopy, when available. The survey respondents using air sampling as a criteria for hazard assessment most often chose 0.01 fiber per cubic centimeter (f/cc) as an action level initiating a response.

Post-abatement Clearance Criteria

Clearance criteria are the minimum cleanliness requirements following an asbestos abatement project which must be met before reoccupancy is permitted by unprotected personnel. Air sampling and a thorough visual inspection of the work area were determined to be the two most important clearance criteria. The results of settled dust and wipe samples were also judged to be important, according to the survey responses.

The survey respondents indicated a preference for electron microscopy (58%) when analyzing clearance air samples. Forty-two percent (42%) of the respondents preferred phase-contrast microscopy. Those who preferred electron microscopy selected transmission electron microscopy (TEM) over scanning electron microscopy (SEM) by a slight margin. The Fibrous Aerosol Monitor™ was not considered appropriate for clearance air monitoring, although it is used occasionally for daily air monitoring during the asbestos abatement project.

The airborne concentration most frequently suggested by the survey participants for a clearance criterion was 0.01 f/cc. Several respondents also indicated they require either 0.01 f/cc or the outside ambient asbestos fiber concentration (measured by TEM), whichever is greater.

Conclusions

The following conclusions were generated by the asbestos subcommittee following review of the submitted questionnaires:

1. The physical condition of the material and its likeli-

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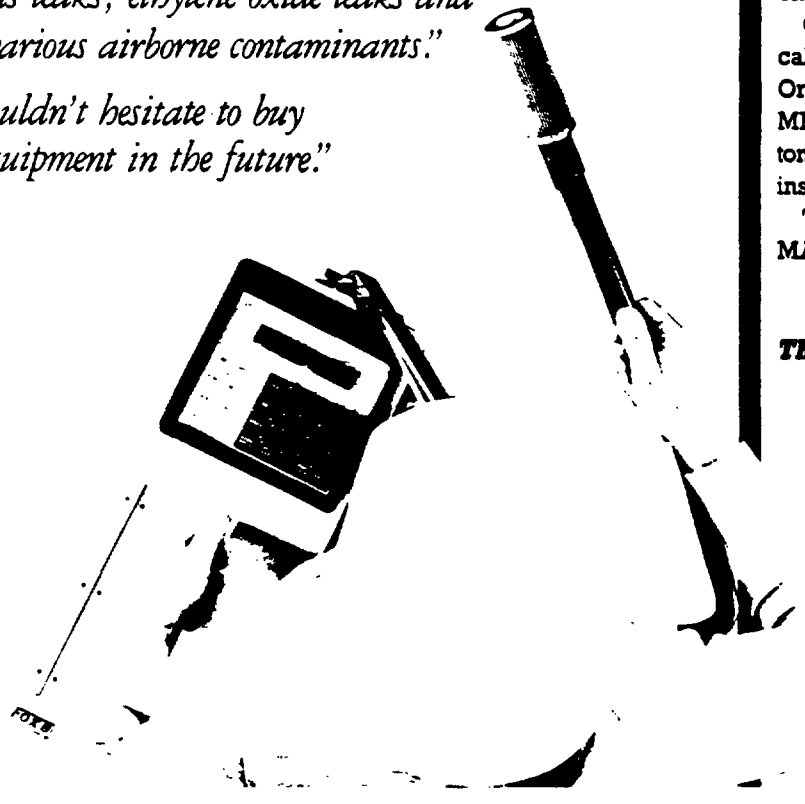

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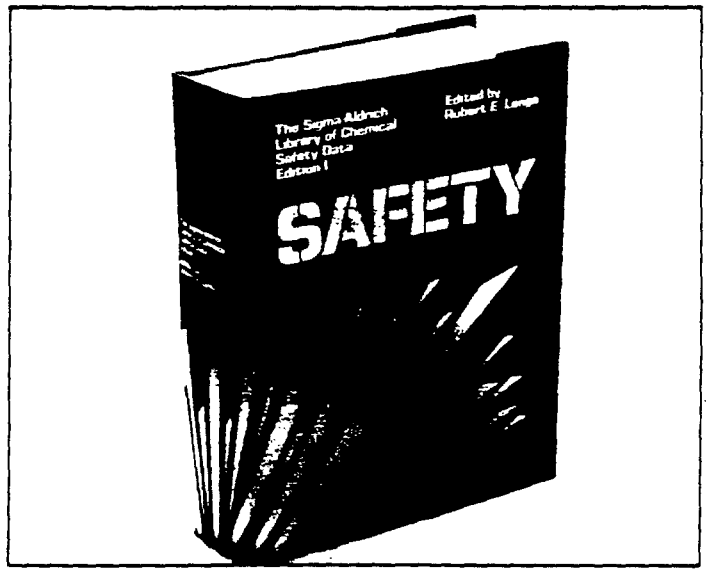

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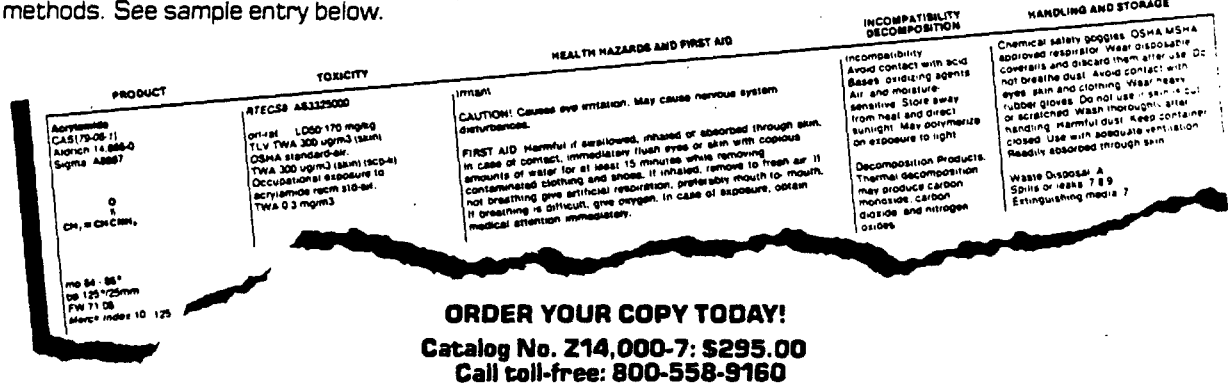

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hood for entrainment into the air were considered the two most important criteria for the assessment of potential hazard.

2. The range of responses to questions dealing with hazard evaluation indicated a strong need for a consistent hazard assessment methodology.
3. The criteria utilized in the E.P.A. algorithm is currently being employed for the assessment of hazard; however, the numerical rating system is considered invalid.
4. The general consensus of the survey respondents was that an airborne fiber concentration of 0.01 fiber/cc or greater initiates concern during hazard assessment and is the preferred criterion for post-abatement clearance.
5. Survey respondents indicated a preference for electron microscopy over light microscopy; however, cost and availability has limited its use. Phase contrast microscopy is still being widely used.
6. Survey respondents had a clear preference for reporting fiber concentrations over mass (nanogram) concentrations for asbestos.

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