

standard [took effect]," Baker told the seminar. The most dramatic reduction was seen in melters, the workers with the heaviest exposure, from an average of 66.4 μg in 1980 to 36.8 μg in 1982, he said.

Decrease in Impairment

As blood lead levels dropped, researchers also detected a decrease in adverse neurobehavioral symptoms such as impaired verbal intelligence, faulty memory, and mood shifts, Baker continued. The first year of testing indicated a dose-response relationship that seemed to abate over the next two years, he said.

Reduced vocabulary scores, modest memory impairment, and consistent mood changes were seen among exposed workers the first year, and were more apparent among workers with heavier exposure, those having blood lead levels of 49 μg , according to the Harvard researcher.

By the second year, memory impairment and mood shifts were reduced, he stated, although a high correspondence on verbal ability scores continued to be seen among workers with the heaviest exposure.

Unfortunately, it is impossible to draw meaningful conclusions from the results because of the small size of the study cohort. Baker asserted. In 1980, 106 exposed workers and 63 non-exposed employees from a neighboring valve plant were tested. By the following year, the cohort had been cut in half by layoffs, and by the third year, only 56 workers comprised the test group. Since so many were lost to follow-up testing, there is "a great deal of bias" in the work, Baker stated.

However, Harvard hopes to support these results with larger cohort testing in the near future, the researcher added.

Meetings

FIRST MEETING OF NEW NIOSH BOARD OF COUNSELORS SET FOR MARCH 20-21

The National Institute for Occupational Safety and Health's newly appointed Board of Scientific Counselors will hold its first meeting March 20-21 in Atlanta, Ga., according to a March 2 announcement (49 FR 7875).

The board, whose membership was announced in December (Current Report, Dec. 22, 1983, p. 798), was formed to provide advice and guidance to NIOSH Director J. Donald Millar to ensure quality, timeliness, and usefulness in institute research, and proper dissemination of study results.

Included in the agenda for the initial meeting is an orientation to NIOSH's mission, goals, and budget, the notice reported. The panel will become familiar with specific research programs, and also with the NIOSH grants program, the notice added.

The session will be held from 1 p.m. to 4:30 p.m. March 20, and 9 a.m. to noon March 21, in Conference Room 207, Centers for Disease Control, 1600 Clifton Rd., N.E., Atlanta, Ga. The meeting will be open to the public, with attendance limited only by the space available.

For further information on the meeting, contact Ralph J. Touch, Assistant to the NIOSH Deputy Director, Building 1, Room 3019, CDC, Atlanta, Ga. 30333; tel. (404) 329-3773 or FTS 236-3773.

Asbestos

NAS GROUP FINDS RISK TO HUMAN HEALTH IN NON-OCCUPATIONAL EXPOSURE TO ASBESTOS

Non-occupational exposure to asbestiform fibers in air presents a risk to human health, according to a study

conducted by the National Research Council, the research arm of the National Academy of Sciences, at the request of the Environmental Protection Agency.

Although copies of the study will not be available to the general public until later in March, the study has been circulated through the Occupational Safety and Health Administration's health standards division and is under review there. The report could contain useful information, despite the fact that most of the data obtained apply to nonoccupational exposures, according to agency spokesman Doug Clark.

"Nonoccupational Health Risks of Asbestiform Fibers" considers the health risks posed by nonoccupational airborne exposures, an important issue because many people may be exposed to these materials, although at relatively low levels, according to the study.

While the extent of risk is highly uncertain, evidence for the existence of the risk includes the following:

- Large excesses of lung cancer, mesothelioma, pulmonary fibrosis, and other pleural abnormalities have been found among workers occupationally exposed to asbestos. Presumably, nonoccupational exposures would result in qualitatively similar effects.

- Both a statistically excessive number of cases of mesothelioma and an excess frequency of pleural abnormalities have been observed among household contacts of asbestos workers.

- Asbestiform fibers are distributed extensively outside the workplace, although usually in minute quantities.

- The major pathological effects associated with human exposure to airborne asbestos have been duplicated experimentally in animals.

- Increases in cell replication and other abnormalities have been seen in cultures in tracheal lining cells from humans and animals after the cells were exposed to synthetic or natural asbestiform materials.

Although estimating the extent of health risks from nonoccupational exposure to asbestiform fibers is "fraught with uncertainty," the committee made a quantitative estimate of the risk of excess lung cancer and mesothelioma that might occur in persons breathing low levels of asbestos in the air. A concentration of 0.0004 fibers/cm³ was deemed reasonable to use in such calculations because it is the approximate average level that may be encountered in indoor and outdoor air. If a person inhaled air containing asbestos at that level throughout a 73-year lifetime, the committee's best judgment is that the lifetime risk of mesothelioma would be approximately nine in a million. Epidemiological data indicate that the corresponding lifetime risk for lung cancer would be about one in a million for male smokers and less for nonsmokers or female smokers.

Risk Assessment Guides

The report cautioned that these risk estimates should be viewed as guides to the qualitative assessment of nonoccupational health risks from asbestos and asbestiform fibers, not as definitive estimates of the amount of disease to be anticipated. These estimates and other considerations lead to the following conclusions about risk, according to the report:

- Some deaths from mesothelioma and lung cancer will probably result from current and past levels of exposure to asbestos in ambient air.

- Excess deaths from other diseases, such as asbestosis, and from exposures to other asbestiform fibers are also possible but are not likely to be as numerous as those from asbestos-induced mesotheliomas or lung cancer.

► The number of annual deaths expected to result from such exposures is very uncertain, but it is virtually certain to be lower, and probably much lower, than those resulting from past, heavier occupational exposures to asbestos.

► Deaths from past occupational exposures to asbestos can reasonably be estimated to total several thousand per year in the U.S. during the next few years. Among these, more deaths from lung cancer than from mesothelioma can be expected.

► Continuous lifetime exposure to asbestos would probably result in substantially more mesotheliomas than lung cancers. Inhalation of asbestos in ambient air may result in such a lifetime exposure. The strong dependence of mesothelioma rates on time from first exposure would make children more vulnerable than adults to eventual development of this disease given the same exposure.

The report noted that some of the physical properties of asbestiform fibers appear to be important in causing adverse health effects, but the specific properties that are necessary and sufficient are not known. One clearly important characteristic is respirability. In addition, longer, thinner fibers appear to be more pathogenic than shorter, thicker fibers, but there is not a minimum size below which no effects would be expected, the study emphasized. Number, rather than mass, and durability of fibers also seem to be significant factors in pathogenicity of asbestiform fibers, the report suggested.

Recommendations Contained in Report

Further, the committee recommended the following actions:

► Systematic monitoring and characterization of asbestiform fibers with standardized methods should be undertaken in nonoccupational environments, including urban, rural, indoor, and outdoor locations where exposure may be of special concern.

► A program of systematic surveillance should be undertaken to determine the extent to which the occurrence of mesothelioma and lung cancer is associated with exposure to asbestiform fibers.

► Cessation of cigarette smoking should be encouraged in view of the multiplicative effect of smoking and asbestos exposure in increasing the risk for lung cancer.

► Steps should be taken to educate both the medical profession and the general public concerning possible exposures to asbestiform fibers and the resulting health effects.

Copies of the report will be available for purchase this month at \$22.50 each from the National Academy Press, National Research Council, 2101 Constitution Ave., N.W., Washington, D.C. 20418.

Underground Construction

FIRMS QUESTION NEED FOR TWO TEAMS, CRITICIZE BROAD APPLICATION OF RULE

The broad application of the Occupational Safety and Health Administration's proposed underground construction standard to include virtually all underground construction activities was strongly criticized by companies and trade groups commenting on the Aug. 5 proposal.

Issued Aug. 5, the proposal would replace the agency's current rule for tunnels and shafts (Current Report, Aug. 8, 1983, p. 227).

Colorado Contractors Association, Inc., asserted that OSHA's present standard should not be expanded to cover

such areas as decked over cut-and-cover operations and manholes connected to sewer systems. The contractors group claimed these types of operations do not need the "stringent requirements suggested in the proposal."

Similarly, the Associated General Contractors of America, Inc., of Charlotte, N.C., said that it is "totally illogical" to force the tougher underground standards on cut-and-cover operations and manhole construction. Boeing Aerospace Company noted that the standard as proposed by OSHA would cover minor modification of underground buildings and structures such as missile silos, "where little if any structural change is made." Forcing the "unnecessarily severe" safety requirements on these types of operations could "mandate practices that are not as safe as other methods," Boeing claimed.

The Connecticut Construction Industries Association, Inc., said the two five-member rescue teams required by OSHA would "cause exorbitant payroll cost increases," especially on round-the-clock pipe jacking operations. The Connecticut organization asserted that only one rescue squad is necessary, adding that the workers on the surface of an underground operation should be counted towards that rescue team, as well as a "manned" fire department station located "within a reasonable distance from the project." The company called for an exemption from the two rescue team requirements for small jobs.

The Colorado Contractors Association said the use of the two rescue squads is "an added and unnecessary burden on the employer." The association recommended that only one rescue team should be required "when there is no danger of any environmental or structural hazards in underground operation."

Communications, Hoisting

Boeing Construction noted that OSHA's requirement for the use of "power-assisted means of voice communication" is "too restrictive," especially in situations where there is extensive noise on the site. Boeing called for the standard to require "an effective backup means of communication to be provided," such as flashing lights, bells, gongs, or sirens, instead of telephones or radios.

The Colorado Contractors Association recommended that OSHA use the communications system set up by the Mine Safety and Health Administration, which requires that employees working alone in hazardous areas should be within hearing distance or visual distance of other workers.

In the hoisting area, Granite Construction Company claimed the "rigid requirements for guides and safeties . . . would be very restrictive, impractical and, in some cases, impossible for general application" to all shaft construction operations, due to their different sizes, configurations, intended functions, and required construction methods. Granite claimed the strict requirements are not necessary for hoisting operations that do not involve personnel. Granite recommended holding the standard in abeyance until further study is completed.

In response to OSHA's request for information on the use of catalytic converters on mobile diesel powered equipment, Engelhard Industries Division said their use, along with the use of proper ventilation techniques, would substantially improve the mine environment by "eliminating odorous and irritating hydrocarbon emissions." Engelhard, a catalyst manufacturer, dismissed concerns that exhaust from catalytic converters could raise temperatures, noting that the temperature increases only about five to 10 degrees Fahrenheit, "which is not significant in terms of average diesel exhaust temperatures."