

**MEDICAL EXAMINATIONS REQUIRED FOR ASBESTOS WORKERS**

**HILTON C. LEWINSOHN, MP BCh., MFOM., DIH., FCCP.  
ASSISTANT CORPORATE MEDICAL DIRECTOR  
UNION CARBIDE CORPORATION,  
DANBURY, CONNECTICUT**

Presentation to be made at the informal rulemaking hearing on the Proposed Rule on Occupational Exposure to Asbestos (29CFR, Parts 1910, Federal Register (1984) 49: 14116-14145) commencing on June 19, 1984.

C3713

## ABSTRACT:

The techniques which allow persons exposed to asbestos to be kept under surveillance will be briefly reviewed.

The pre-placement evaluation procedure and its usefulness is discussed.

The periodic medical evaluation is described and an outline of the essential requirements is given. The role of radiological surveillance is briefly discussed.

The point is made that both asbestos-exposed persons and their employers place reliance upon physicians to inform them of adverse findings so that decisions regarding alternative employment and future protection can be made in a sound and equitable manner.

Medical surveillance should ideally continue for the life-time of the individual once exposure has been documented, and post-retirement or post-severance health evaluation should be considered whenever practicable.

Asbestos-related diseases can be prevented by good work practices and engineering controls. The physician is able to intervene at the interface between worker and work and hopefully alter the final outcome to the good.

C3714

persons exposed at the lowest levels of exposure achievable and most dose-response curves have been derived by extrapolating down from documented high exposure levels to theoretically derived lower limits of exposure.

I cannot accept OSHA's assessment of risk in the face of the many open-ended questions about the validity of the data upon which it is based. Commonsense dictates that if length of exposure, latency and respirable dust concentrations, not to mention fiber types which show differences in biological effects, are all factors to be considered, the current level of ignorance about most of these variables is such as to warrant proceeding with caution in the implementation of a more rigorous standard than now exists.

The evidence considered in other parts of the world should be carefully evaluated by OSHA. It would seem reasonable to accept the control limits set in Britain,<sup>(1)</sup> and recently proposed in Ontario,<sup>(2)</sup> based on thorough on-going assessment of the facts. It certainly would be unreasonable to require anything other than personal sampling to be used to obtain measurements of employee exposure and suggestions which have been made to incorporate a "Permissible Airborne Concentration" as well, should not even be entertained.<sup>(3)</sup>

I am not able to determine at what level the standard should be set because of the multitude of conflicting data and the numerous mathematical manipulations of statistical data which have been undertaken. The present standard has not been in effect for long enough to determine its effect on the incidence rates of asbestos-related conditions. All the data considered is

INTRODUCTION

My name is Hilton Lewinsohn. I am licensed as a physician in the State of Connecticut, in which State I currently reside. My professional qualifications and achievements are recorded in my curriculum vitae previously submitted.

I wish to take this opportunity to place on record my comments on the proposal to revise the OSHA Standard on occupational exposure to asbestos, with particular emphasis on the subject of medical surveillance.

At the present time, OSHA is relying heavily upon a risk assessment based upon "studies of human worker populations and includes a variety of industrial situations, processes, and fiber types." OSHA chooses to ignore many shortcomings of the studies upon which the risk assessment was based, some of which are the lack of measured exposure data, an inability to adequately define the number of exposed persons in the USA, different exposure experiences because of variations in processes and industrial uses in the populations studied, differences between data from different countries in terms of completeness and information sources and finally differences between statistical and epidemiological approaches used by the authors of the epidemiology studies considered in the assessment. As far as I am aware, no populations exist which can be accurately categorized according to exact exposure levels and fiber types to which they were exposed in the United States of America. Such evidence as does exist lacks information about

C3745

old and relates to happenings during the past 30 or 40 or even 50 years. Political pressures, not scientific considerations, have forced OSHA to propose a new standard. If a new standard is set, it should be one which is enforceable and achievable by industry. Industry has demonstrated that it can meet the present standard and in many cases, merely by doing so, has found that it can achieve even more rigid goals.<sup>(4)</sup> With this in mind, it would seem reasonable to propose a standard of 1 fiber/ml averaged over an eight hour period, effective in 1985. One year after the effective date the standard could be made more stringent at 0.5 fibers/ml TWA<sub>8</sub> hr., and within five years of the effective date, if new evidence has not emerged to support the 0.5 fibers/ml limit, the proposed 0.2 fibers/ml standard would become effective.

I should now like to consider the medical surveillance of persons exposed to asbestos. This dissertation on the medical surveillance of persons exposed to asbestos is in response to OSHA's request for comments in Section VI of the Proposal, namely: "Summary and Explanation of the Proposed Amendments and Other Issues Relevant to the Permanent Standard." Paragraph 11 (Medical Surveillance Program) on page 14126 discusses the proposed action level which will trigger the need for a medical surveillance program (a), and itemises a number of proposed policy decisions [(b) - (e)]. These proposals are discussed in this document although not necessarily in the same sequence as in the NPR.

C3747

Exposure to asbestos in various industries and occupations has been associated with three major lesions involving the intrathoracic organs. (Slide #1)

Asbestosis, first recognized at the beginning of this century, is a form of interstitial pulmonary fibrosis which has been shown to be related to the airborne asbestos levels in the workplace and to be dependent upon the duration of such exposure.

Lung cancer in heavily exposed workers in industries such as insulation, construction, ship-building and asbestos textiles manufacture, has been adequately documented and related to asbestos exposure. Asbestos exposed persons who smoke cigarettes appear to have a 50 times greater chance of dying from lung cancer than non-smoking non-asbestos exposed persons.<sup>(5)</sup>

The third condition to be associated with exposure to asbestos is diffuse malignant mesothelioma of the pleura (or peritoneum).<sup>(6)</sup> Unlike asbestosis and lung cancer, this rare tumor has been more difficult to characterize in terms of dose-response and pathologic features.

Less clear-cut associations have been described by some observers between asbestos exposure and cancers involving the gastro-intestinal tract<sup>(7,8)</sup> and cancers in other organs such as the larynx<sup>(9)</sup> or renal organs.<sup>(10)</sup> Cancer of the ovary in women has been ascribed to asbestos exposure.<sup>(11)</sup> It is suggested that the cases described were actually of peritoneal origin and due

03748

to malignant mesothelioma of the peritoneum.<sup>(12)</sup> It may be difficult to distinguish ovarian carcinoma from peritoneal mesothelioma.

Because of its increasing and widespread use in the U.S.A. in many industries during the past 50 years, lasting up until very recent times, it has been suggested that millions of people may have been exposed in various ways to different varieties of asbestos due to a general lack of understanding of the seriousness of the associated health hazards.<sup>(13)</sup>

The asbestos-related diseases are not readily amenable to therapy. Asbestosis is slowly progressive, the outlook for the person with lung cancer is very poor and diffuse malignant mesothelioma of the pleura or peritoneum is invariably fatal within a short period of time after diagnosis. The physician practicing in the industrial environment is faced with a dilemma of severe proportions when attempting to intervene or prevent undue suffering on the part of exposed individuals, but with diligence and perseverance can definitely exert a meaningful influence.

Physicians whose practice includes providing a service to industry must be actively involved with workers and management, must be completely familiar with the properties of asbestos in use, must understand the manufacturing processes in the plant and have a clear concept of the plant design and layout. The doctor who has taken the trouble to become educated in this way will be better equipped to assist in the management of the health of people at work. In addition to gaining practical experience of the workplace the physician also needs to gain a thorough working knowledge of the etiology,

pathogenesis, epidemiology and therapy of work-related diseases. The physician should acquire a working knowledge and appreciation of the theory and practice of industrial hygiene, including an understanding of sampling and monitoring procedures. (Slide #2)

The role of the physician is to insure that industry employs people who are suited to the tasks required of them and that they do not suffer injury or illness as a result of the work they are called upon to do. (Slide #3)

#### PRE-PLACEMENT MEDICAL EVALUATION OF PERSONS EXPOSED TO ASBESTOS

The pre-placement medical evaluation is designed to determine the suitability of the employee for the job and the suitability of the particular job for the individual concerned. When asbestos exposure is likely, the workplace conditions must be known before decisions can be made about a prospective employee with medical contra-indications to such employment. As the result of experience already gained in the development of medical surveillance programs, the suitability of prospective employees for the specific tasks in question may be estimated and based upon defined selection criteria.<sup>(14)</sup> Applicants should be appropriately counseled regarding their fitness or otherwise for employment in an occupation with potential asbestos exposure and if any restrictions need to be imposed on medical grounds they should be indicated to the applicant and the employer prior to placement in the job. There are certain broadly defined conditions which should contraindicate employment: a history of previous work in another industry

C3750

with a recognized dust hazard such as coal mining or stone quarrying, an existing pulmonary disability due to pneumoconiosis or from any other source, the presence of obstructive airways disease with or without emphysema, asthma, and organic heart disease. (Slide #4) Other contraindications to employment in dusty jobs including asbestos, which have been recommended are: (1) Nasal obstruction or deformity of such a degree as to make the wearing of a dust mask difficult or impossible, (2) gross physical deformity of the chest such as scoliosis or kyphosis, or as a result of thoracic surgery, (3) chronic bronchitis, bronchiectasis or emphysema, (4) gross hypertension with cardiac impairment and (5) the presence of rheumatoid arthritis. (Slide #5)

Apart from identifying people who should not be employed in dusty work, the pre-placement evaluation serves the purpose of establishing base-line data for longitudinal prospective follow-up. The data which should be incorporated in the medical records for this purpose are summarized in Tables 1 and 2.

03751