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CHAMBERS CONSTRUCTION

ASBESTOS DUST EXPOSURE CONTROL

(Mechanical Aspects)

November 13, 1967

The personnel and environmental sampling done at this site reveals we have reasonable control of the asbestos hazard at this time. The following conclusions and recommendations (if adopted) should establish similar satisfactory environments at any site.

1) Maintain an air sampling program. This is essential to the overall safety endeavor anyway. Respirable dust particles from nearly any source are hazardous and a nuisance.

2) Isolate machine operations in the shops from other shop facilities.

3) All possible dust from cutting and shaping functions must be collected by an effective exhaust and collector system (preferably wet collector). System should not vent off to the atmosphere collected dust particles.

4) Keep shop equipment, ledges, etc. vacuumed clean. Hand cutting should be done so the scrap and dust fall into a container wherever possible.

5) Open cartons with care. Dust is shaken loose from shipping abuse and is a source of hazardous asbestos dust quantities. The carton can be vacuumed prior to opening if deemed necessary by cutting an opening in the carton and introducing a vacuum hose.

6) Asbestos cements must be handled with great care. A system to avoid mishandling and mixing by hand is beneficial. This may be accomplished by a dispensing system or procurement of the cement in small plastic bags where water may be introduced and the cement "kneaded" with no dust exposure.

7) Smoking should be prohibited in shop and when operating tools and equipment performing dust producing work.

8) Severe conditions might dictate the need for respiratory protective devices; however, every attempt should be made to avoid this since it never adequately considers the people in adjacent areas. Furthermore, respiratory protective devices, when required, are admission of a problem. Since the law accepts even a casual exposure as hazardous, the protective devices should be avoided.

9) Exhaust and ventilation should maintain atmosphere total dust count below the Threshold Limit Values as established by the American Conference of Governmental Industrial Hygienists.

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CHAMBERS CONSTRUCTION

DEFENDANT'S EXHIBIT
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ASBESTOS DUST EXPOSURE CONTROL

November 20, 1967

The preliminary personnel monitoring survey carried out during August 1967, on Chambers Works confirmed earlier environmental surveys (Ref. 1 and 2) on Chambers Works and in the Spruance Shops which demonstrated that the total particle count, not corrected for asbestos content, does not exceed one per cent of the current Threshold Limit Value (TLV) established for asbestos dust by the American Conference of Governmental Industrial Hygienists (ACGIH-1966). The personnel monitor samples were collected in filters over four to five hour periods. Since impingers were not employed, the respirable fraction cannot be estimated but can be ignored as the total particle count is many orders of magnitude less than the established TLV.

However, these results should not serve as a basis for complacency but rather should provide a base for establishing a permanent monitoring program. Federal and State (i.e., New Jersey) legislation enacted over the past ten years has placed the burden of proof for continuous conformance with established TLV's on the employer. In view of this major shift in responsibility for ambient air quality control and the trends in compensation claim decisions, an effective Industrial Hygiene program becomes imperative. This responsibility becomes acute when pre-employment medical examinations are not available for the employees.

Standards for equipment performance and ventilation specifications should be established as soon as possible to incorporate those current practices and design features which by these surveys have demonstrated effective dust

emission control. Work procedures and protective equipment requirements also should be formalized to provide not only an internal operating standard for other departments of the Du Pont Company but also for the guidance of outside contractors employed by Du Pont under contract.

A permanent quality control program is recommended to provide not only quantitative data for internal evaluation of dust control efficiency, but also to document air quality analysis needed to demonstrate conformance with established TLV's and provide effective defense in litigation cases. Under current conditions a continuous daily monitoring program does not appear to be necessary or desirable. However, a formal program for sampling and analyzing the work atmosphere with a frequency which will include all phases of asbestos usage should be established and consistently administered for as long as a TLV for asbestos remains in force. In general, once a month should suffice for general work areas. If circumstances which involve unusual dust generation should arise, special monitoring will be required to evaluate the potential exposure severity.

Insofar as possible, personnel monitory (sampling equipment carried by a selected employee continuously during his work assignment) should be employed. Only in this manner can a truly representative sample of the atmosphere inhaled by the employee during his eight-hour work day be obtained. Such equipment is available and has been applied successfully on Chambers Works.

A further requirement for an effective monitoring program will include the employment of fully qualified (preferably certified) Industrial Hygienists to directly conduct collection of the samples and to carry out the dust counting. The documentation of field notes and analytical results and the preparation of reports also should be the responsibility of the Industrial Hygienist.

Equipment Specifications

A. Station Sampling - Portable (Ref. "Air Survey" Memorandum of October 21, 1966).

1. The "Freon-12" powered "Unico Constant Rate Uni-Jet Air Sampler" or the "Unico Automatic Uni-Jet Air Sampler" fitted with an improved standard midget impinger ("Unico 2000") in series with an 0.8 micron pore size "Millipore" filter (Cat. No. MAWG037A0) is acceptable for use in all explosion hazard areas and was used in the collection of samples reported in part one of the Chambers Works and Spruance Works surveys (Ref. 1 and 2). The sample must be collected at a uniform standard, 0.1 cubic feet per minute rate (Cfm), and at least one cubic foot of air should be sampled. These units will operate unattended for three to four hours. A dry sampler, the "Unico Model 2.8 Respirable Dust Sampler" could be used to separate the respirable from the nonrespirable fraction, but is not recognized by the Asbestos Textile Institute.

2. As an alternate the rechargeable battery powered "Unico Model 440 Mighty Mite Air Sampler" may be used. This Midget sampler was used successfully for personnel monitoring on Chambers Works (Part 3). For explosion hazard areas, the slightly larger "Telmatic" Model 150 sampling unit equipped with an intrinsically safe (Factory Mutual approval) battery circuit is recommended. Either of these units perform satisfactorily with either the "Millipore" filter alone or in series with the standard Midget impinger or the newer Microimpinger (personnel monitoring). Four to five hours of sampling at 0.1 Cfm will be delivered per single battery charge. Longer periods will be obtained at lower sampling rates with either the filter alone (0.05 Cfm) or the microimpinger (0.02 Cfm). Larger capacity batteries are available.

Equipment Specifications (Continued)

B. Personnel Monitoring

1. The "Unico Model 440 Mighty-Mite Air Sampler" for non-explosion hazard areas or the Model 150 "Telmatic" for explosion hazard limitations is the instrument of choice (see A-2). In the near future a third model (440-A-SP) equipped with total volume read-out will be available. For total dust count only the "Millipore" filter is required for sample collection. Where respirable as well as total count is required, the microimpinger is used in series with the filter. Whichever system is elected, the collection device should be located as closely as possible to the man's breathing zone without interfering with his work assignments.

2. As an alternate solution to the sampling problem in explosion hazard locations, the Model UIE-175 "Uni-Jet Air Sampler" fitted with a 6 ml orifice may be substituted for the battery operated pump. However, without additional calibration for use with the microimpinger, dust collection would be limited to filter operation. A one pound charge of "Freon-12" will activate the sampler for four to five hours and aspirate a five to six cubic foot sample.

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Medical Division

REFERENCES:

1. Thatcher, L. V. - "Interim Report - Asbestos Survey" - January 27, 1967, addressed to K. E. Keuper, Division Safety Superintendent, Construction Division - Louviers Building

2. Thatcher, L. V. "Asbestos Survey - Interim Report (Results of Spruance Construction Survey)" - April 11, 1967, addressed to K. E. Keuper (address as in 1).