DRAFT

November 25, 1970

X-Ray Study
Dr. L. J. Bristol
Trudeau Institute

In mid-year 1968, Dr. L. J. Bristol, Trudeau Institute, was engaged to review X-rays of all employees (three years' service or more) at all locations which had possible dust disease exposures. Dr. Bristol completed the readings in August 1970.

The objectives of the study were to:

1. Provide a current and complete X-ray evaluation of cases of pulmonary involvement at each location.
2. Establish a uniform interpretation of X-rays which we can subsequently relate to employment, exposure and personal history data.

Jeffrey Mine and Asbestos Plant were not included in this study because the epidemiological research being conducted under Q.A.M.A. auspices by Dr. J. C. MacDonald, McGill University, involved these operations.

Dr. Bristol read 9,060 sets, consisting of the pre-employment and the two most recent X-rays, both in terms of the standard conventional interpretation and the new U.I.C.C. (International) criteria.

The data included in this report reflect the standard interpretation categories of pneumoconiosis, including Asbestosis, Silicosis and Mixed Pneumoconiosis, early, moderate and advanced (I, II, III), and bronchovascular prominence. Degrees of bronchovascular prominence are not indicators of a specific disease process since they can be

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the result of the aging process or numerous non-occupational diseases. However, in circumstances where toxic dust exposures can be assumed, they can grossly be interpreted as precursors of pneumoconiosis development.

Comparison was made to the location physician's classifications, and, in general, there was reasonable agreement. Considerable variance of X-ray interpretation is expected, however, even among expert roentgenologists. Therefore, Dr. Bristol's readings were used to provide a uniform evaluation of pulmonary involvement at all locations.

The data do not include any information regarding length or severity of exposure. Even with this substantial limitation, however, there are a number of interesting observations that can be made.

At Billerica, in operation since 1939, Amosite has been the principal asbestos fiber used. This fact and the difficulty in controlling exposure, particularly at the fiber-feeding part of the process, may well account for the high incidence (30%) of X-ray classifications of pneumoconiosis. Only recently have process changes and controls achieved acceptable fiber levels.

As a point of comparison, the Long Beach Pipe Plant has been in operation since 1928, the principal fiber has been Chrysotile (a small percentage of Crocidolite), and the incidence of pneumoconiosis is 8.4%.

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The Stockton and Denison Pipe Plants have been in operation since 1957 and 1958, respectively, and have had good to excellent dust control since their start-up. There is no indication of pneumoconiosis after approximately 12 years. Although another 6 to 8 years of similar experience will be needed to more adequately evaluate the control effectiveness, the low incidence of bronchovascular prominence (2.9% and 8.3%) is encouraging.

At Tilton, fiber exposure levels have been good to excellent since its start-up in 1948. Even though the numbers are small, 22 years of operation have produced no pneumoconiosis and but a low level of bronchovascular accentuation (5.3%).

The mineral wool and fiber glass plants show no involvement related to pneumoconiosis, with the one exception at Parkersburg. (The Parkersburg employee is a maintenance man, 61 years of age with 26 years of service. This included 5 years of Vitrolite operation in which there was a possible silica exposure. The X-ray classification was "Early Pneumoconiosis.")

The study confirms, both by the numbers of X-ray categories of pneumoconiosis and elevated levels of bronchovascular prominence, that the health problems are severe in seven plants--Sillerica, Manville, Pittsburg, Marrero, Long Beach, Nashua and Waukegan. Kelleopple and Toronto, while in the lower range of both indices, should also be regarded as critical operations.

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Considerable efforts in environmental control have been and are being initiated at all of these locations. However, there are still a number of stations at each which have not yet been controlled to acceptable levels.

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X-RAY STUDY

Trudeau Institute - Dr. L. J. Bristol

11/24/70

Plant	X-Ray Rate	Bronchovascular Prominence No.	Bronchovascular Prominence %	Pneumoconiosis No.	Pneumoconiosis %
Billerica	60	11	18.3	18	30.0
Manville	3,165	603	19.0	264	8.3
Pittsburg	199	65	32.7	21	10.5
Marrero	579	103	17.8	40	6.9
Long Beach	381	100	26.2	22	5.4
Nashua	154	36	23.4	18	11.7
Waukegan	1,376	188	13.7	112	8.1
Tilton	38	2	5.3	0	0.0
Jaliscoplo	119	18	15.1	6	5.0
Denison	216	18	8.3	0	0.0
Green Cove Springs	54	0	0.0	0	0.0
Franklin	22	0	0.0	0	0.0
Stockton	203	6	2.9	0	0.0
Alexandria	106	5	4.7	0	0.0
Richmond	219	8	3.6	0	0.0
Lompoc	478	14	2.9	8	1.7
Antonito	29	2	6.9	0	0.0
Cleburne	68	1	1.4	1*	1.4
Corona	55	1	1.8	0	0.0
Defiance	200	3	1.5	0	0.0
Parkersburg	266	0	0.0	1	0.4
Toronto	496	13	2.6	13	2.6
Laurinburg	74	1	1.3	0	0.0
Waterville	305	1	0.3	0	0.0
Totals	8,888	1,199		536	

* Asb. 1 - Transfer from Marrero.

Asb.- Silica exposure 10 yrs.
minimal - pneumoconiosis.

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