FILE NAME: Colonial Sugar Refinery (CSR)

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THE CHAMBER OF MINES OF W.A.,(INC.)

KALGOORLIE, W.A.

Ref. W.13.

General Manager,
Australian Blue Asbestos Ltd.,
WITTENOOM GORGE.

16th March,1960.

Dear Sir,

During January we were asked by Dr.McNulty of the Health Laboratory, Kalgoorlie, if we could obtain for him the recognised level of permissible dust, whether particle concentration or fibre concentration, in Canadian mines. He also asked if we would enquire if it was possible to obtain an instrument to measure concentrationsof asbestos fibres.

We have now received replies to our enquiries, and thinking you might also be interested in the information contained, I am enclosing for your records two copies of the followings-

(1) Letter from Ontario Mining Association re dust particle measurements in gold and uranium mines.

(2) Letter from Quebec Asbestos Mining Association re asbestos dust measurements.

(3) Additional data prepared by the Dust Control Engineer of the Quebec Asbestos Mining Assn.

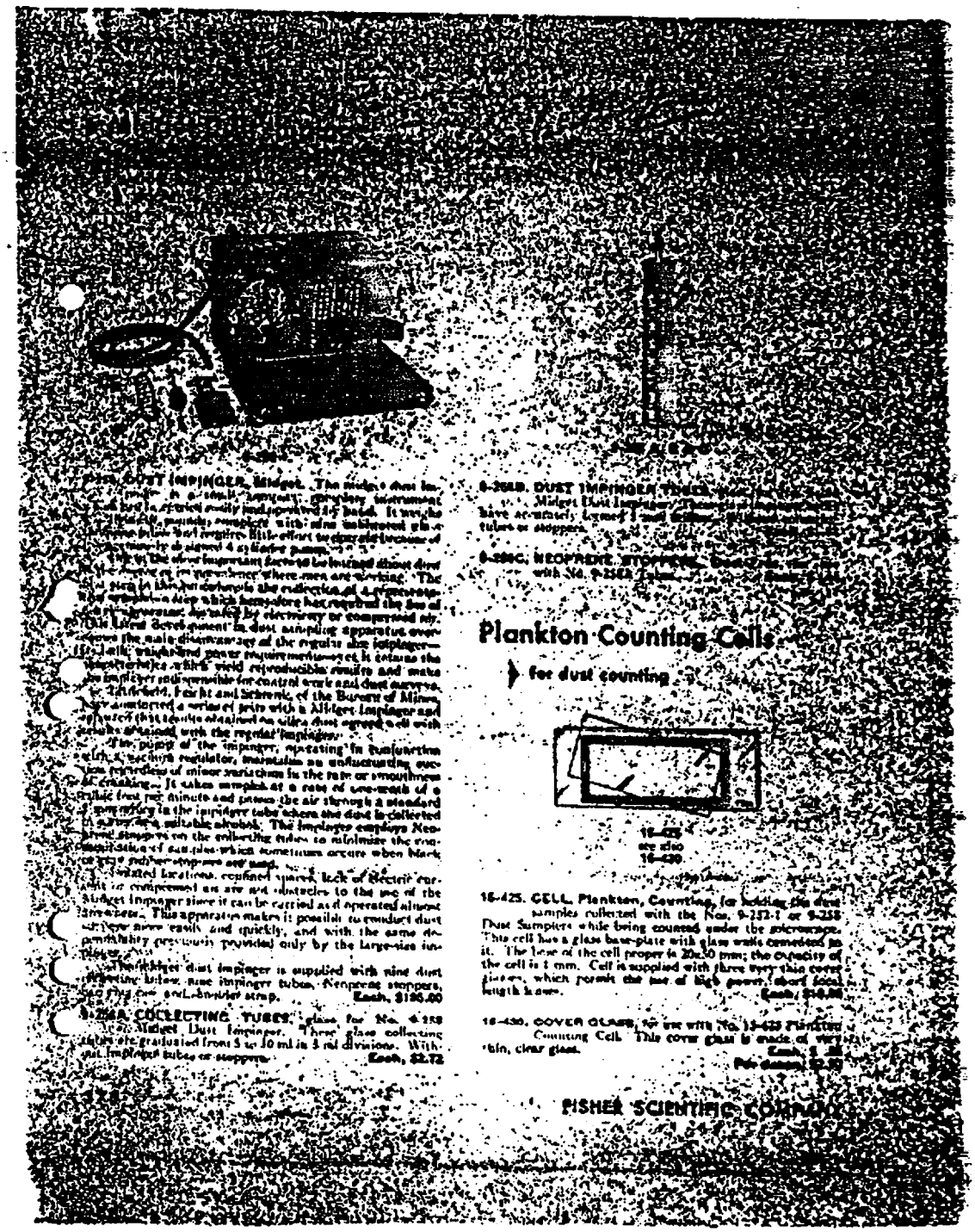
(4) Copy of pamphlett illustrating Midget Dust Impinger used in measuring asbestos dust.

Yours faithfully,

Sgd. G. H. Jennings.

General Secretary.

PLAINTIFF'S EXHIBIT 10380



9-252. DUST IMPINGER, Midget. The midget dust impinger is a small, compact, sampling instrument that has been efficiently used and approved by Bureau of Mines, Pittsburgh, Pa. It is the smallest, portable, complete with nine instrument glass tubes in case that requires little effort to operate because of its connection to a small 4 cy. suction pump.

One of the most important factors to be investigated about dust is the amount of its concentration where men are working. The first step in this investigation is the collection of a representative sample which heretofore has required the use of a pump or aspirator operated by electricity or compressed air. The latest development in dust sampling apparatus overcomes the main disadvantage of the regular size impinger—its bulk, weight and power requirements—yet retains the characteristics which yield reproducible results and makes the impinger still responsible for control work and dust surveys.

E. Tidbetter, Engineer and Chemist, of the Bureau of Mines, has constructed a series of tests with a Midget Impinger and reported that results obtained on silica dust agreed well with results obtained with the regular impinger.

The purpose of the impinger, operating in conjunction with a suction regulator, maintains an unfluctuating suction regardless of minor variations in the rate or smoothness of cranking. It takes samples at a rate of one-tenth of a cubic foot per minute and passes the air through a standard glass impinger in the impinger tube where the dust is collected in a properly suitable alcohol. The impinger employs Neoprene stoppers on the collecting tubes to eliminate the evaporation of sample which sometimes occurs when black rubber stoppers are used.

Isolated locations, confined spaces, lack of electric current or compressed air are not obstacles to the use of the Midget Impinger since it can be carried and operated almost anywhere. This apparatus makes it possible to conduct dust samples more easily and quickly, and with the same dependability previously provided only by the large-size impingers.

The Midget dust impinger is supplied with nine dust sampling tubes, nine impinger tubes, Neoprene stoppers, and one rubber strap.

Each, $136.00

9-253A. COLLECTING TUBES, glass for No. 9-252 Midget Dust Impinger. These glass collecting tubes are graduated from 5 to 10 ml in 5 ml divisions. Without impinger tubes or stoppers.

Each, $2.72

9-253B. DUST IMPINGER TUBES, [illegible] for No. 9-252 Midget Dust Impinger. These glass impinger tubes have accurately ground [illegible] tubes or stoppers.

9-253C. NEOPRENE STOPPERS, [illegible] with No. 9-252 [illegible]

Plankton Counting Cells

for dust counting

16-425
are also
16-430.

16-425. CELL, Plankton, Counting, for holding the dust samples collected with the Nos. 9-252-1 or 9-253 Dust Samplers while being counted under the microscope. This cell has a glass base-plate with glass walls cemented to it. The base of the cell proper is 20x30 mm; the capacity of the cell is 1 cmm. Cell is supplied with three very thin cover glasses, which permit the use of high power short focal length lenses.

Each, $1.65

16-430. COVER GLASS, for use with No. 16-425 Plankton Counting Cell. This cover glass is made of very thin, clear glass.

Each, $ .25
Per dozen, $2.50

FISHER SCIENTIFIC COMPANY

ONTARIO MINING ASSOCIATION

320 Bay Street

Toronto 1

In reply to your letter of January 27th, we in Ontario use the following general classification for concentrations of dust particles: (It should be noted here that when we speak of dust particles we are referring to samples taken by a konimeter and that the spots are acid-treated prior to counting.)

100	particles per cc	Excellent
up to 300	" " "	Good
300 - 600	" " "	Fair
over 1000	" " "	Poor

I may also say that the uranium mines in Ontario, which have concentrated heavily on dust sampling and ventilation, are currently in the range of 300 particles per cc.

R. Beattie,
Executive Director.

QUEBEC ASBESTOS MINING ASSOCIATION

Asbestos, Quebec

Attached is a report by our dust control engineer of February 5, 1960 and a pamphlet from Fisher Scientific describing the Midget Dust Impinger.

The Midget Impinger is used by Canadian Johns-Manville and also the Q.A.M.A. engineer in all dust measuring at this location.

The Quebec Department of Mines recognizes the maximum allowable dust concentration of pure asbestos dust to be 5 million particles per cubic foot of air for regular or continuous shift exposures. However, a higher concentration can be tolerated in ordinarily encountered asbestos dust-laden atmospheres where the percentage of asbestos in the dust is lower than 50%. The average concentrations of dust should be maintained below 10 m.p./c.f. in asbestos plants where men are working regularly. At Jeffrey Mine we keep as closely as possible to the 5 m.p./c.f. limit.

The Konimeter has not been found to be a suitable instrument in the asbestos field for several reasons, one of which is that concentrations greater than 1,500 parts per c.c. cannot be measured.

This report was sent to Mines Dept. Quebec

V.H. Baxter,
Secretary.

COPY

DUST SAMPLING AND DUST COUNTING
IN THE ASBESTOS INDUSTRY

1) DUST SAMPLING APPARATUS

Dust sampling is carried out with the Midget Impinger Apparatus. This apparatus consists of a case with a four cylinder radial pump using the crank case as a surge tank. Each stroke of a piston pushes air from the crank case, maintaining a vacuum regulating chamber which maintains a constant vacuum on the impinger (or the flask assembly), to which it is connected by a short hose. Any crank speed above about 50 R.P.M. gives a constant flow. A gauge on top of the case indicates the vacuum in inches of water. The correct vacuum is 12 inches of water. The Midget Impinger samples at a rate of 0.1 cu. ft. per minute into a flask 25 mm. in diameter and 120 mm. in length. The flask has a capacity of 30cc. The sampling is usually five (5) minutes in length for concentrations which are expected to be up to 10 millions particles per cubic foot of air, or less for very high concentrations. As the collecting medium, alcohol has been used because most inorganic dust are less soluble in alcohol, there is no trouble from bacteria or mold confusing the counting, and the impinger is more easily cleaned with alcohol. Alcohol has also been found more desirable for sampling where the air is contaminated with oil mist as in rock drilling as the oil is soluble and does not agglomerate the dust or otherwise confuse the count. Iso-Propyl Alcohol has been used with good results.

2) DETERMINATION OF COUNT

a) Technique

When the flasks, containing the dust samples are brought down to the office, they are thoroughly washed on the outside before the stoppers are removed. We then wash the inside and the outside of the impinger tube (the intake to the nozzle) using a wash bottle with dust-free alcohol. When alcohol is added until the volume in the flask (with the nozzle removed) is 20, 25 or 30 cc, depending

The microprojector is operated a [illegible] are
[illegible] the area of which is divided through the instrument by a series

of condensers and mirrors to afford a compact design and permit location of the screen at the microscope, so that the user can operate the microscope directly rather than through remote controls.

The tungsten-mercury arc lamp used as the light source contains a small quantity of mercury vapor, a cylindrical tungsten electrode about 3 mm. in diameter, a ring-shape tungsten electrode about 4 mm. in diameter and centered about 2 mm. in front of the other electrode, and a filament. This arc lamp gives about 6000 lumens intensity. Approximately 1000 watts are required to start and 400 watts to continue operation. This arc lamp is designed to burn base up.

The microprojector can be used with any standard form-stand type microscope. If the microscope is used with the microprojector, it is equipped with a 16 mm. apochromatic objective and a 30X compensating eyepiece, to obtain a magnification of 1000 diameters.

e) Microscope

Dust counting can be done under the microscope alone. In that case the microscope should have a magnification of about 100 diameters using a 10X objective and a 10X eyepiece. In the eyepiece there should be a Whipple Disc which is a glass disc upon which is marked off a square subdivided into 100 small squares, one of which is again divided into 25 smaller squares. The draw tube should be adjusted so that this large square includes an area 1 mm. x 1 mm. at the point of focus on the stage; a stage micrometer is used to get this adjustment.

5) PERMISSIBLE DUST CONCENTRATION

In the Asbestos Industry, we try to keep the total dust concentration below 10 millions particles per cubic foot of air, with a maximum fibre count, over 10 microns in length, of 1 million fibres per cubic foot of air.

[redacted]

Canada Ltd. 500 MacPherson Ave, Toronto 4, Ontario.

The Midget Impinger and all accessories are now also sold in Canada by the Fisher Scientific Company Ltd., 904 St-James, Montreal, Quebec.

More detailed informations on the techniques for use of the impinger method can be obtained in U.S. Bureau of Mines, Information Circular 7026 of June 1938. The title of this circular is "A Technique For Use of the Impinger Method" by Carlton E. Brown and H.H. Schrenk.

February 5th, 1958.

Maurice Lachance,
Asst Central Engineer,
Quebec Asbestos Mining Association