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

KALGOORLIE, W.A.

Ref. W.13.

General Manager,  
Australian Blue Asbestos Ltd.,  
WATTEMOON GORSE

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 concentrations of 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 pamphlet illustrating Midget Dust Impinger used in measuring asbestos dust.

Yours faithfully,

Sgd. G. H. Jennings.

General Secretary.

PLAINTIFF'S  
EXHIBIT  
WV-04125

PLAINTIFF'S  
EXHIBIT

10380.0



**18-421 DUST IMPINGER, Model 1.** The subject dust impinger is a small, compact, portable instrument used for collecting dust and suspended solids. It has the following features: compact, rugged, with a simple design; easy to use; and requires little effort to operate because of the simplicity of design and construction.

The dust impinger is used to collect dust and suspended solids from the air. The dust is collected in a collection chamber at the bottom of the impinger. The impinger is operated by a hand pump which forces air through a series of baffles and into the collection chamber. The dust is collected in the collection chamber and is then removed by a small amount of water. The impinger is used for the collection of dust and suspended solids from the air.

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**18-422 DUST IMPINGER, Model 2.** The subject dust impinger is a small, compact, portable instrument used for collecting dust and suspended solids. It has the following features: compact, rugged, with a simple design; easy to use; and requires little effort to operate because of the simplicity of design and construction.

**18-423 DUST IMPINGER, Model 3.** The subject dust impinger is a small, compact, portable instrument used for collecting dust and suspended solids. It has the following features: compact, rugged, with a simple design; easy to use; and requires little effort to operate because of the simplicity of design and construction.

**18-424 DUST IMPINGER, Model 4.** The subject dust impinger is a small, compact, portable instrument used for collecting dust and suspended solids. It has the following features: compact, rugged, with a simple design; easy to use; and requires little effort to operate because of the simplicity of design and construction.

## Plankton Counting Cells

for dust counting



18-425  
we also  
18-426

**18-425 CELL, Plankton Counting.** for collecting the dust samples collected with the No. 1-1111 or 1-1112 Dust Sampler while being counted under the microscope. This cell has a glass base plate with glass walls covered in it. The base of the cell proper is 20x20 mm; the top edge of the cell is 1 mm. Cell is supplied with three very thin cover plates, which permit the use of high power short focal length lenses.

**18-426 COVER GLASS** for use with No. 18-425 Plankton Counting Cell. This cover glass is made of very thin, clear glass.

FISHER SCIENTIFIC COMPANY

ONTARIO MINERS ASSOCIATION

320 Bay Street

Toronto 7

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 handometer 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 Krasna mines in Ontario, which have concentrated heavily on dust sampling and ventilation, are currently in the range of 300 particles per cc.

193 Jan 28  
A. Seattle,  
Executive Director

CONFIDENTIAL

QUEBEC ASBESTOS MINING ASSOCIATION

Asbestos, Quebec

Attached is a report by our dust control engineer of February 5, 1968 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.

*100 / cc*

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 concentration 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 Renister 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  
Mining Dept.  
Quebec*

V.H. Kantor,  
Secretary.

COPY

DUST SAMPLING AND DUST COUNTING  
IN THE ASBESTOS INDUSTRY

1) DUST SAMPLING APPARATUS

Dust sampling is carried out with the Midget Impinger Asbestos. 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 in 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 dusts are less soluble in alcohol, there is no trouble from bacteria or mold interfering with 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) EXPLANATION 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. The alcohol is then replaced by a detergent solution and the flask is washed with detergent alcohol. When alcohol is added until the volume in the flask (with the nozzle removed) is 20, 25 or 30 cc depending on the concentration of dust in the air and the instrument by a series of washes.

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-shaped 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 5000 lumens intensity. Approximately 1000 watts are required to start and 400 watts to continue operation. This arc lamp is designed to burn burn-up.

The microprojector can be used with any standard for-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.

#### c) Microscopy

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.

#### 3) PERMISSIBLE DUST CONCENTRATION

In the Ambestos 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.

REMARKS:

The Ambestos Industry, Ambestos, and all other asbestos products are highly carcinogenic and should be handled with extreme care.

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

The Magnet Separator and all accessories are now also  
sold in Canada by the Fisher Scientific Company Ltd., 284 St. James,  
Montreal, Quebec.

More detailed information on the technique for use of  
the separator 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 Separator Method" by Carlton E. Brown and E. H. Schmidt.

February 5th, 1968.

Harriet Lockman,  
Port Central Engineer,  
Quebec Asbestos Mining Association