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January 30, 1976

PLAINTIFF'S EXHIBIT
UC-712

Mr. K. N. Campbell
Montello, Inc.
Box 130
Sand Springs, OK 74063

Dear Mr. Campbell:

The enclosed article may be of value to you and/or your customers. It contains some common sense answers to some questions often encountered. Please use the article as you see fit.

Best regards.

Very truly yours,

R. E. Byrne, Jr.
Area Manager
Marketing & Technology

REB:cjb
Enclosure

The Northern Miner

Asbestos and health

Some common questions answered

By J. D. CHRISTIAN
Chairman
Cassiar Asbestos Corp.*

I recently received a letter from an associate of mine that prompted me to speak to you on the very important and currently topical subject of "Asbestos and health". Let me read you his short letter — you may well have the same thoughts in mind:

Dear Mr. Christian:

I have been pondering over this question of the health hazards of asbestos and putting myself in the position of an asbestos worker or a citizen living in an asbestos-dominated community. Here are some questions that I might be prone to ask. I'm bringing these questions up as I think that the material that has been put forth both by the press and by the industry is so highly technical that the true meaning or significance of these reports is being lost on the man in the street and instead he is being fired with anxiety by the sensationalism of jargons that are over his head.

What is asbestos? What kinds are there? What are the differences between the different types of fibre? Where do these fibres come from?

It has been made to sound like a poison similar to arsenic. Why is it so dangerous? What makes it so dangerous? What is happening in the body when excessive amounts of asbestos are taken in? What is happening to me when I have asbestos particles in my lungs or in my stomach or in my digestive tract? Is it dangerous to touch? Can it do me harm just by handling the material? What is the meaning of five fibres per c.c?

We have trouble as lay people visualizing any fibre smaller than a human hair, so when I think of five fibres I think of five short pieces of hair inside a thimble. If I was to inhale 5,000,000 c.c of air per day, then I must be consuming 25,000,000 fibre particles per day.

What is the weight of 25,000,000 fibres? What percentage is being discharged by my body and what percentage is being retained? If I am unfortunately going to contract asbestosis, is there any cure for this? What is happening to me with asbestosis?

I happen to live in Toronto. What is my mortality rate living in this city as compared to Thetford or Sudbury or for that matter Regina? I would pose the same questions with respect to particles of fibre contained in volumes of water as I did above with respect to air.

Over a lifetime, what kind of weight of fibre are we actually talking about? Is it visible to the naked eye, even over a lifetime? Life is finite, but I don't want to die prematurely. What assurance can you offer me as a potential employee in your operation that I am not going to unnecessarily shorten my life?

Yours sincerely,

This is a very sincere letter from a deeply concerned person. I have replied to the best of my ability and would like to read what I said.

Dear Mr. X:

Thank you for your very thoughtful letter. You will appreciate that I am not a medical doctor, nor a scientist, and that the opinions and facts, that I can give you in reply to your questions, have been gleaned from studying published reports from the medical and scientific world. As you have expressed confusion over the use of highly technical terms and numbers, I will attempt to express myself in everyday language, even though it may be at the expense of absolute accuracy.

What is asbestos?

The term "asbestos" applies to all minerals which have one common attribute, namely, the ability to be separated from the parent rock in the form of a fibre. Chrysotile asbestos is the fibrous form of serpentine rock and represents 95% of the world's commercial fibre production. Crocidilite and amosite are the most important fibrous forms of another rock known as amphibole. These types of asbestos have slightly different chemical and physical properties than chrysotile and hence different practical uses. When we speak of "asbestos", we are, therefore, really talking about the fibrous forms of rocks which are quite common throughout the world. The commercial asbestiform amphiboles are largely found and mined in South Africa and Brazil, whereas the chrysotile variety of serpentine is more widespread and is found in most countries of the world. The fact that asbestos fibres are very strong (similar to high tensile steel), and can be broken down to extremely fine dimensions (1,000th the diameter of a human hair), makes it a very useful material for reinforcing cement, plastics and rubber, or it can be spun or woven into yarn or cloth for clutch facings, brake linings and protective clothing.

Why is it so dangerous?

First of all, let me say that it is not a poison like arsenic, as you suggested, nor is it dangerous to touch. The health hazards that, in recent years, have been found to exist are broadly associated with the inhalation of large quantities of fibre over prolonged periods of time, and I mean 15-20 years or more. During processing some of the fibres become very fine, and without proper dust control will readily float in the air. Naturally, some of these will be inhaled, but a high percentage will be rapidly removed from the respiratory tract by ciliary action.

What are the asbestos diseases?

There are now three recognized diseases:

(1) Asbestosis — This is one variety of the lung disease called "pneumoconiosis". It is a progressive fibrosis of the lung, which can make breathing difficult and can lead to other disabilities. Occurrences have been clearly related to prolonged inhalation of respirable sized fibres over a period of many years. Those cases of asbestosis which are appearing today are the result of exposure to heavy concentrations of asbestos dust prevalent many years ago, when little was known about the risks involved. It has been shown that, when the level of exposure is reduced, the incidence of asbestosis is also reduced.

(2) Bronchogenic cancer — There is now medical evidence to indicate that asbestos exposure is associated with an increased frequency of bronchogenic cancer in workers who have first developed asbestosis. At the present time, we do not know what causes the cancer, whether it is the chemistry of the asbestos, the fibrous nature of the material, or something else quite unrelated. As you are aware, there are many other known carcinogens, which include coal tar, benzidine, tobacco, vinyl chloride, x-rays and even sunshine. These, along with asbestos, are currently the subject of a great deal of research. You will also be interested to know that few, if any, asbestos-related lung cancers have been found in workers who are non-cigarette smokers and do not have asbestosis. This fact has been well documented by a number of researchers.

(3) Mesothelioma — Mesothelioma is one of those rare and newly recognized cancer diseases and is a malignant tumor of the lining membrane of the chest and abdominal cavity. By no means are all such tumors associated with asbestos, but where a relationship can be established, the exposure has largely been crocidilite (blue asbestos). Far fewer cases have been found where the exposure was limited to chrysotile fibre, which is the type mined in Canada. An investigation of the 236 known cases of mesothelioma in Canada between 1960 and 1970 showed that only nine were associated in any way with the Quebec chrysotile mining and milling industry. Seven men had been employed and two were women whose fathers worked in the industry.

The McDonald report

A group of very capable Canadian doctors and scientists have since 1966 been studying the history of 11,572 persons born between 1891 and 1920, who were or are still employed in the Quebec asbestos mining industry. They have found that the industry has a lower mortality rate for people of comparable age than the general population of Quebec. Hence, within the industry group those who had a long history

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* From Mr. Christian's address to shareholders at the 23rd annual meeting of Cassiar Asbestos Corp. in April this year. There have not been any technical developments since that date to change the context of the report. Mr. Christian has informed The Northern Miner.

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of exposure to the two highest dust classifications showed a higher death rate from respiratory cancer and pneumoconiosis than the others. The studies are continuing and the report encouragingly suggests that a 1% risk of acquiring a clinically significant disease over a working life of 50 years in an asbestos mine can be achieved by maintaining threshold levels of 2-4 million particles per cubic foot.

Possibly, I should at this point tell you about the two methods of measuring the dust. The impinger method sucks in a given amount of air and the fibre and dust particles present impinge on a treated glass slide. They are counted under a microscope and are reported as millions of particles per cubic foot of air. The newer method is the membrane filter. A measured quantity of air is pulled through a membrane filter which removes all the dust and fibre. In this method only the fibres are counted and hence it is difficult to relate the two results. This latter test is reported as the number of fibres in a cubic centimetre of air. Both are highly susceptible to human error. Your thimble is a good estimate of a cubic centimetre, but it would take 2,000 fibres placed end to end to span the width of the thimble, and the thickness of the fibres would be many times less than the human hair you envisage.

The McDonald report on the asbestos mines and mills of Quebec confirms the results of other studies in the Soviet Union and Italy which indicate that the risks are much lower in the chrysotile mining and milling industry than reported from the New York insulation workers or the British naval dockyards.

At our Cassiar mines most of the emissions to the atmosphere are now under control, or in the process of becoming so. Inside the buildings, in spite of extensive control measures, there are still some areas where the wearing of masks is required. These troublesome areas are under active study and an extensive program, designed to achieve the best possible threshold levels, is being undertaken.

The most serious obstacle in our path is the shortage of personnel. You are already aware of some of the serious effects this has had on production over the past several years. Incidentally, in 20 years of operation we have not had one reported case of any of the three asbestos-related diseases, but we must not be complacent in view of the long latent period (30-45 years) which can elapse between the first exposure and the development of mesothelioma. This, along with the Quebec studies, is the best assurance we can give any potential employee that things now appear to be under control and the risk of premature death or impairment of health is very remote indeed.

Asbestos from our Cassiar and Clinton mines is used for the greatest part in the asbestos-cement industry, followed by the asbestos textile industry, and to a much lesser degree in the manufacture of filters, compressed sheet packing, reinforced plastics, and so on. Of these, the textile industry, which until recently was exclusively a dry carding, spinning and weaving process, has had some comparatively serious dust problems.

In the early 1930s, in a particular textile factory in the United Kingdom, signs of asbestosis were found in some 80% of the workers with 20 or more years' exposure. Another survey in 1957 of the same plant showed that in workers with 20 years' exposure, after the installation of dust control, the incidence of asbestosis had dropped to 3%. The lung cancer rate in workers in the plant exposed to pre-1933 conditions was at 10 times that of the general population, whereas it is currently reported to be at the same level as the general population. This example clearly demonstrates that with experience and improved technology asbestos can be handled safely.

A hazard to the public?

You have asked about the risk of living in Toronto, as compared to Thetford or Regina. Most of the studies on the relationship of asbestos diseases to mortality rates have been carried out in the occupational field, and before absolutely denying any public health risk, scientists agree that more data must be collected over an extended period of time. However, a number of studies have already been carried out and there is to date no evidence, scientific or otherwise, to suggest that anyone in the general public has ever contacted any disease from exposure to the minute amounts of asbestos released into the community air through the use, or wearing, or weathering of finished asbestos products.

As far as water is concerned, the Conference of the International Agency for Research on Cancer, held in Lyon, France, in the fall of 1972 – which I feel should represent as qualified and authoritative an opinion as is available – provided the following information:

Question: "Is there evidence of an increased risk of cancer resulting from asbestos fibres present in water, beverages, food, or in fluids used for the administration of drugs?"

Answer: "Such evidence, as there is, does not indicate any risk."

You might well ask at this point, "If this is so, then why the great hue and cry?" In the scientific, legal and bureaucratic world, there are those [illegible] the [illegible] hazard" as "something which may *possibly* occur", even though they are unable to produce any evidence to support their contentions. No one denies that there have been – and still are – problem areas. The world today is faced with many, many problems, all of which must be viewed in their proper perspective, and "panic" reporting and "panic" legislation is not the answer. The asbestos and other industries are working hard to correct the conditions which are thought to create a health hazard. Unfortunately, final proof will not be available for 20, 30 or even 40 years. In the meantime, the best that any prudent person can do is to continue to research all aspects of the problem, to analyze the facts and trends as they become known, and to set goals and standards which will progressively reduce the element of risk and hopefully will finally eliminate it entirely.

What is the industry doing?

In addition to the continuous development of techniques and equipment to improve dust control, the Canadian asbestos mining industry, through the Institute of Occupational and Environmental Health in Montreal, the Industrial Health Foundation in Pittsburgh, and selected hospitals and universities, is sponsoring or cooperating in major epidemeological and research projects, designed to identify and eliminate asbestos-related health risks. There is still a great deal of research to be done. Active studies are also under way in other countries, such as England, South Africa, Italy and Russia. There is already strong evidence to suggest that the physical aspects (i.e., the length, diameter and stiffness) of a fibre is the real source of trouble, and not its chemical composition. If this proves to be the case, then certain other fibrous material may also become suspect, and the work currently being done on asbestos may well prove to have been a great step forward in our search for a healthier environment.

I sincerely hope that what I have said so far has answered most of your pertinent questions. Before closing, I would like to add a few comments of a general nature.

It has frequently been proposed that asbestos should be replaced by other types of materials. This can and has been done in some products, but in others such substitution has been either very expensive, much less effective, or even impossible. To forgo the many benefits of asbestos products, simply on the basis of a suspicion of possible hazards, would be irrational and unwarranted, particularly so when we are still uncertain of the health hazards that might arise from many other replacement materials.

Amongst insulation workers in the United States and the United Kingdom, particularly those who worked in the dockyards during the war years, some very serious health conditions have been found and ably researched and reported upon. It is a sad story, and the result of a lack of knowledge at the time and possibly the exigencies of the war years. Very valuable lessons have been learned which will be of great benefit in solving the problems of the present and the future.

In the matter of publicizing and reporting, there is no doubt that it is far more dramatic and eye-catching to use headlines such as "ASBESTOS KILLS" or for example to report "TWO MILLION FIBRES PER LITRE OF WATER" than to report the same thing as approximately 4/1,000ths of a millionth part of a gram. Let me put these figures to you in another way. If 5,000 people agreed to drink two quarts of water containing 4,000,000 fibres per quart, every day for 80 years, then they – the 5,000 people – would have swallowed in total one gram of asbestos, which is a cubic pile a little more than half an inch on each side.

Whenever I have the opportunity, I assure you that I will urge all those who have the responsibility for researching and reporting to the public, through whatever media it may be, to remain as factual and fair in their research as possible and to avoid the "half truths". Excellent progress is being made in Canada in improving industrial health and safety, in controlling pollution, and in protecting the environment. Regulatory bodies are being established at various governmental levels and in cooperation with industry itself to measure and control to the best of our combined technical ability those conditions likely to create a risk to the well-being of workmen and the public. The use of any of these problem areas to solicit public sympathy and support for individual political or monetary gains should be looked upon with scorn by all decent thinking people.

Thank you once again for your letter. I hope that I have put things in a little better perspective for you.

Yours sincerely,
J. D. Christian.