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Fiber Analysis Program - Status Report

Asbestos Fiber in Beer

Several brands of beer are being examined for their asbestos fiber content. The samples were all purchased on the open market and represent a cross section of the various filtration techniques currently used by the brewing industry. The techniques can be summarized as follows:

- A. Diatomite precoat and diatomite body feed.
- B. Fibrous^{*} precoat and diatomite body feed.
- C. Fibrous pulp^{**} filters.
- D. Millipore membrane filters.

^{*}Fibrous precoats can be either diatomite-asbestos, e.g. J-M FIBER-FLO or asbestos-cellulose.

^{**}Fibrous pulp filters are pads of cellulose and asbestos usually prepared at the brewery. They are used without body feed.

At various stages in the brewing process, different filtration techniques are used. The brands of beer which are being analysed along with the filtration techniques used (letters refer to list above).

<u>Brand Name</u>	<u>Filtration Techniques</u>
Budweiser	C only
Schmidt's	A + B
Beingold Extra Dry	A + B
Barragansett	A + B
Schlitz (regular)	A + B
Schlitz Draft	A + B + D
Kaizers	A only
Old Bohemian	A only
Piels Lager	?
Piels Draft	? + D

All of these samples have been filtered, ashed, rubbed out, and examined under the electron microscope. The quantitative counting of the samples is underway and should be completed in the next few weeks. Visual examination of the electron microscope plates shows the presence of some fibers in all samples. Those samples which have been filtered through asbestos contain fiber in relatively high quantities, probably greater than the highest of the municipal water samples studied. Schlitz reg-

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ular, in particular, seems to contain a large amount of fiber. The amount, and size of the fiber, is such that it can be observed by optical microscopy.

Even those brands which have been filtered through a Millipore filter show the presence of some fiber. Our analysis technique uses a 0.8 micron Millipore, whereas, a 1.2 micron filter is commonly used to filter the bottled "draft" beers. This confirms our laboratory results which showed that a 0.8 micron filter is the largest pore size which will effectively remove all of the fiber.

The Budweiser sample was analysed prior to this more complete study. It was found to contain 2.5 micrograms of fiber per gallon. This figure is about 1000 times greater than the amount reported by the British, in the study published in Nature Magazine.

Fiber in Water Systems

All of the data concerning the fiber content of municipal water systems has been reported previously. In addition, a report has been issued covering the details of the fiber analysis method. As an adjunct to the municipal water system study, a program is now underway to determine both the precision and accuracy of the method used for quantitative fiber estimation. This study will include the effects of sample preparation and operator judgement.

The TRANSITE Pipe test loop is now operating satisfactorily. Three successive runs have been made using water with a pH of 5.7 and zero hardness. After about 400,000 gallons of water passed through the test pipe, it was necessary to terminate the runs because the sample filter was completely loaded with "debris" from the pipe. All the water entering the pipe is filtered through a 0.8 micron Millipore filter.

Microscopic analysis of the material collected on the sample filter revealed primarily asbestos fiber and silica. There was no evidence of cement gel. A more detailed quantitative analysis of these runs is now underway.

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