



MONTANA STATE BOARD OF HEALTH

Helena, Montana

DIVISION OF DISEASE CONTROL

A

REPORT ON AN INDUSTRIAL HYGIENE STUDY

OF THE

ZONOLITE COMPANY

Libby, Montana

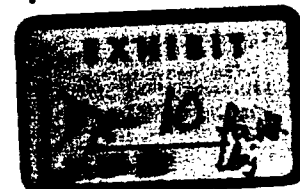
April 11, 1963

Conducted By:

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Distribution:

This report is confidential
and is not for distribution
except to the management of
the Zonolite Company.



On April 11, 1963 an Industrial Hygiene Study was made of the Zonolite Company of Libby, Montana to determine the degree of compliance of previous recommendations to control the considerable dustiness in the dry mill section of the plant. The study was made in the company of a representative of the Zonolite organization and with the assistance of Doctor Russel Hendricks, of the United States Public Health Service, Salt Lake City, Utah. The methods of collection of samples and analysis of the various components were those recommended by the United States Public Health Service and other official agencies. The additional evaluation of the asbestos content of the dust is currently being done by the United States Public Health Service, Occupational Health Division in Cincinnati, Ohio. The results of this evaluation will not appear in this report but will be reported upon as soon as the data is available.

Description of Operations

The operation of the plant was essentially that as described in previous reports and will not be repeated here except to evaluate the over-all dustiness on each floor and certain comments concerning dust producers at the locations noted. In general, there appeared to be little, if any, improvement at any point in the plant except perhaps at the voll grinder, where a significant reduction in dust contributed to this area has been accomplished. Specifically, the major dust-producing areas were as follows:

Fifth Floor - The screens were very dusty. No apparent improvement had been made although the screen backs on most of the screens in this area were in good condition.

Fourth Floor - Much dustiness continues to be apparent in this area. The screen backs were off some screens. Much dustiness on the fourth floor contributes to the upper floors.

Third Floor - The main dust producers in this area were at number three concentrator bin and the belt transfer point to the concentrator bin. Dust leaks also at number two screw conveyor and the high grade equipment in front of No. 3⁴ screen.

The Halfdeck - This area was extremely dirty, and the backs are off some of the screens.

Second Floor - The duct to the high-grade hammer mill had a hole in it, wasting exhaust capacity. No. 3⁴ screen still leaked badly, and there was no improvement in this area since last study. The tailing chute by the high-grade grizzly and near screen 3⁴ was also a considerable contributor to over-all dustiness. The feed to No. 219 belt was a bad dust producer and should be enclosed and ventilated.

First Floor - Much dust was produced at the high-grade dryer. Leaks from all pipes should be stopped and ventilation applied where dust cannot be controlled by stopping.



First Floor - The feed to belt 108 A was extremely dusty and needs ventilation and enclosure. The high-grade dryer was not operating during the last study and was not accounted for during that study but should be given considerable attention.

No. 618 elevator on the fourth floor leaked badly. There was no excuse for these leaks except for poor operation.

No. 336 elevator on the first floor also leaked dust badly. The cover simply had not been completely replaced.

The size distribution of the dust in the air as determined by the United States Public Health Service indicates an average size of about 3.44 microns. It should be noted that these small diameter particles can be deposited in the deep lung tissue and are more apt to be of physiological significance than those above 10 microns. In any case, over 60 percent of the particles were 5 microns or less, and 75 percent were less than 10 microns, all indicating a serious dust concentration, particularly in view of the quantity of asbestos known to be in the mixture.

TABLE I
Dust-in-Air

Sample No.	Location and Description	Concentration in mppcf*	Asbestos Conc. in mppcf**
1	6th Floor - Dry mill	30.6	12.3
2	5th Floor - Dry mill	65.6	27.2
3	4th Floor - Dry mill	32.4	12.9
4	3rd Floor - Dry mill	32.8	13.1
5	2nd Floor - Dry mill Halfdeck	77.8	31.2
6	2nd Floor - Dry mill	50.0	20.0
7	1st Floor - Dry mill near high-grade furnace	26.8	10.7
8	1st Floor - Dry mill near main kilns	59.8	23.9
	Maximum Allowable Concentration	20.0	5.0

* Millions of particles per cubic foot of air.

** The asbestos concentrations are calculated on the basis of 40% asbestos in the air-borne dust.

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Conclusions and Recommendations

As noted in all previous reports, considerable effort should be made, immediately, to improve the dust control procedures in the plant to reduce dustiness to an acceptable level. Any work done in the past has apparently been ineffective to the extent that more effort should be given to this feature than has been in the past. It is hoped that in the next 60 days from the date of this report that suitable ventilation will have been applied or dust control measures will have been applied such that the hazardous condition existing at this plant is eliminated.

