

AIRBORNE FIBER COUNTS

for

Georgia-Pacific Corporation
Milford, VA

June 11, 1973

Personnel Present: H. Scharf
Georgia-Pacific Corporation

Samples Collected & Analyzed By: E. J. Kleber
Union Carbide Corporation

UNION CARBIDE CORPORATION
Mining & Metals Division
[illegible] New York

OBJECTIVES

Determine the amount of airborne asbestos fiber present during a normal production day at this joint cement facility.

INTRODUCTION

Tests were conducted May 7, 1973 at Georgia-Pacific Corporation, Milford, VA.

Personal breathing zone and environmental samples were collected at or near the dry mix hopper, since this is the asbestos handling area. Both Canadian 7RF9 and "Calidria" Asbestos SG-210 were used.

APPARATUS AND PROCEDURE

Sampling and dust counting were carried out in accordance with OSHA Regulation 1910.93a, using the Bayer, Zummalde and Brown method for counting asbestos fibers by phase contrast microscopy (Bureau of Occupational Safety and Health, February 1969).

Battery powered air pumps (M.S.A. type) calibrated to 2 liters per minute were used to collect personal breathing zone and environmental samples on Millipore membrane filters of 0.8 micron porosity.

Fiber counting was performed on a Vicker's phase contrast microscope at 400X utilizing a Porton reticle.

TEST RESULTS

The table contains the results of the sample dust counting. Two figures have been reported. They are: 1) Possible asbestos fibers - any fiber which, in the judgment of the operator could possibly be asbestos. Reported as fibers/cc longer than 5 micrometers. 2) Total fiber - any material having an aspect ratio greater than 3:1. Reported as fibers/cc longer than 5 micrometers.

INTERPRETATION

The formula $\frac{(C_1)(T_1)+(C_2)(T_2)+(C_nT_n)}{T}$ describes time weighted average (TWA) where C=fiber count in fibers/cc greater than 5 micrometers in length and T=time sampled.

For example, the counts which appear in the table could be used to determine a time weighted average. Obviously it is not an 8 hour time weighted average but is valid only for the time sampled.

The time weighted average for that period would be:

$$\frac{(2.8)(4)+(1.1)(24)+(1.4)(50)}{78} = \frac{107.6}{78} = 1.4 \text{ fibers/cc TWA}$$

SUMMARY OF FIBER COUNTS

Sample #	Description	Possible Asbestos Fibers Fibers/cc > 5μ	Total Fil Fibers/cc
1	Personal (4 min.) - Operator dumping 129 pounds mica, 30 pounds, SG-210 and 78 pounds Canadian 7RF9	2.8	12.5*
2	Personal (24 min.) - Operator during normal activities, preparing batches, loading pallets and dumping	1.1	6.0*
3	Personal (50 min.) - Same as #2	1.4	8.0*
4	Environmental (91 min.) - On hood 5-1/2 feet above floor during normal plant operations	0.4	3.2*
5	Environmental (32 min.) - 3 feet from weighing area 5 feet above floor, operator weighing small batches	0.6	2.1*

*The difference between the small and large figures are almost certainly due to mica, a non-fibrous mineral, which in some cases has an aspect ratio greater than 3:1.