FILE NAME: Asbestos Sacks and Bags (ASB)

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ASBESTOS
BURLAP BAG TEST

National Institute for Occupational Safety and Health
550 Main Street, Federal Office Bldg., Rm. 8409
Cincinnati, Ohio 45202

January 17, 1972

Mr. Martin C. Wukasch, P.E., Director
Division of Occupational Health and Radiation Control
Texas State Department of Health
1100 West 49th Street
Austin, Texas 78756

Dear Mr. Wukasch:

As previously mentioned in the NIOSH survey report of the Pittsburgh Corning Corporation in Tyler, Texas dated December 7, 1971, nurseries in the Tyler area purchase burlap bags, previously used for the storage of amosite asbestos, for use in their nurseries. On a recent trip to Tyler, a visit was made to the Eikner Nursery, one of the nurseries having purchased these bags. Mr. Elbert Fenton, nursery salesmen, explained that they had not purchased any bags since 1970; however, he showed us a barn where some 1500 - 2000 bags are stored. He indicated that they are used infrequently but while we were there a woman came in, picked up a bag, and shook it vigorously for 15 - 30 seconds in the performance of her work, thus creating a large dust cloud in her breathing zone. Following this, we asked for a bag to bring back to Cincinnati for a laboratory evaluation.

A recent report by J. Wagner, et al. in the British Medical Bulletin, (1971, Vol. 27, No. 1, p. 73) entitled "Epidemiology of Asbestos Cancers" refers to a few cases of mesotheliomas in women who cleaned bags previously containing asbestos.

Due to the potential for a serious health problem, the rationale for the use of burlap bags, previously used for storage of asbestos, should be evaluated in not only this nursery but in others where similar conditions might exist.

Enclosed is a laboratory report of our findings.

Sincerely yours,

Richard A. Lemen, Epidemiologist
Biometry Branch
Division of Field Studies
and Clinical Investigations

Roy Fleming, Engineer
Environmental Investigations Branch
Division of Field Studies
and Clinical Investigations

Enclosure:
NIOSH Laboratory Report

cc: Director, DFSCI
Acting Deputy Director, DFSCI
Acting Chief, Environmental Investigations Branch, DFSCI
Regional Program Director, Region VI, NIOSH

Reader's file

Fleming
Pittsburg-Corning

ASBESTOS - BURLAP BAGS

Report Prepared By:

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National Institute for Occupational Safety and Health
1014 Broadway
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ASBESTOS - BURLAP BAGS

Concern over the use of burlap bags for wrapping the bases of rose bushes has arisen because the bags were initially used as containers for amosite asbestos. To determine a possible exposure of asbestos fibers to workers who use these burlap bags, a test, simulating the handling of the bags, was conducted in an enclosed room. For a four minute sample, the average asbestos concentration of fibers greater than five microns in length in the worker's breathing zone was 490 fibers per milliliter. Samples taken within two feet of the worker at heights of 6 inches, 33 inches, and 60 inches yielded concentrations of 500, 350, and 470 fibers per milliliter, respectively.

Conditions of the test

One burlap bag was used in the test. It was taken from the middle of a stack of bags at the Eikner Nursery in Tyler, Texas, sealed in a plastic bag, and flown to Cincinnati, Ohio. The burlap bag was kept in the plastic bag until the actual test. To achieve possibly the worst exposure, the test was conducted in a small room (4' x 6' x 8') which has no ventilation, the burlap bag was turned inside out before shaking, and the bag was shaken vigorously for 60 seconds. The four minute sampling time was determined from rehersal of the procedure for wrapping a bush, however, the worker could probably wrap one bush in half that time if he worked quickly.

Procedure

The test room was vacuumed and the equipment was set up as in Figures 1 and 2. Two four minute samples were taken at locations 1 and 2 before the test. These filters were changed, and the burlap bag was placed in front of the chair still in its plastic container. Five minutes later the worker's personal pumps were turned on just as he entered the room. Wearing a respirator, the worker turned on pumps 1, 2, and 3 and then sat in the chair. He took the burlap bag out of the plastic bag and turned the burlap bag inside out. Standing, he shook the bag for 60 seconds and then sat down, spreading the burlap bag on his lap. He then went through the motions of placing a rose bush on the bag and wrapping the bag around the base of the bush. After tying the corners with a wire, the worker placed the bush on the floor and stood up to brush off his clothes. He shut off pumps 1, 2, and 3 and left the room. His personal pumps were turned off as soon as he was outside the room. During the first three minutes after the test, the filters were taken off the pumps, two filters were installed on pumps 1 and 2, and the burlap bag was sealed in the plastic bag. Two four minute samples were taken to measure airborne asbestos concentrations. The room was then opened for cleaning and removal of equipment.

Data - collected and counted on January 11, 1972

		Total	>5μ	>10μ
Before test:	floor level	0.0	0.0	0.0
	chair level	0.0	0.0	0.0
Five Minute Break				
During test:	floor level	580	500	370
	chair level	480	350	230
	standing level	730	470	150
Personal samples		640	570	410
		590	410	260
Three Minute Break				
After test:	floor level	200	130	80
	chair level	380	250	150

Equipment and supplies

Test room - a 4'-0" x 5'-10" x 7'-7" enclosure with two sealed windows and a double door

Burlap bag - approximately 3' x 2' and lined with thin plastic

Tripod - pump support

Ring stand - pump support

Metal folding chair

MSA portable pumps - Model G, part no. 456058

Millipore membrane filters - AA, 0.8μ pore size

Comfo custom respirator - Part no. 86432

Ultra filter cartridges - Type "H", part no. 81051

Observations and remarks

Before the test the room was completely free of asbestos. While the worker was shaking the burlap bag the presence of dirt and asbestos was visible through a window, settling on the worker's hair and clothes and on the floor. The filters were positioned so that debris or asbestos would not be forced directly onto them by the shaking of the burlap bag. Of the samples taken on or near the worker, the lowest concentration of fibers greater than five microns in length was 350 fibers per milliliter, many times the emergency asbestos standard as published in the Federal Register on December 7, 1971: "The 8-hour time-weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed five fibers per milliliter greater than five microns in length, as determined by the membrane filter method at 400-450X magnification (4 millimeter objective) phase contrast illumination. Concentrations above 5 fibers per milliliter but, not to exceed 10 fibers per milliliter, may be permitted up to a total of 15 minutes in an hour for up to 5 hours in an 8-hour day." Even five minutes after shaking had stopped, concentrations of airborne asbestos averaged 190 fibers per milliliter for fibers greater than five microns in length.

Since only one bag was used and only one set of samples were taken, no definite conclusions can be made concerning the safety of using the burlap bags. However, due to the extremely high concentrations measured in this test, field studies should be conducted to determine the actual concentrations of asbestos to which workers are exposed.

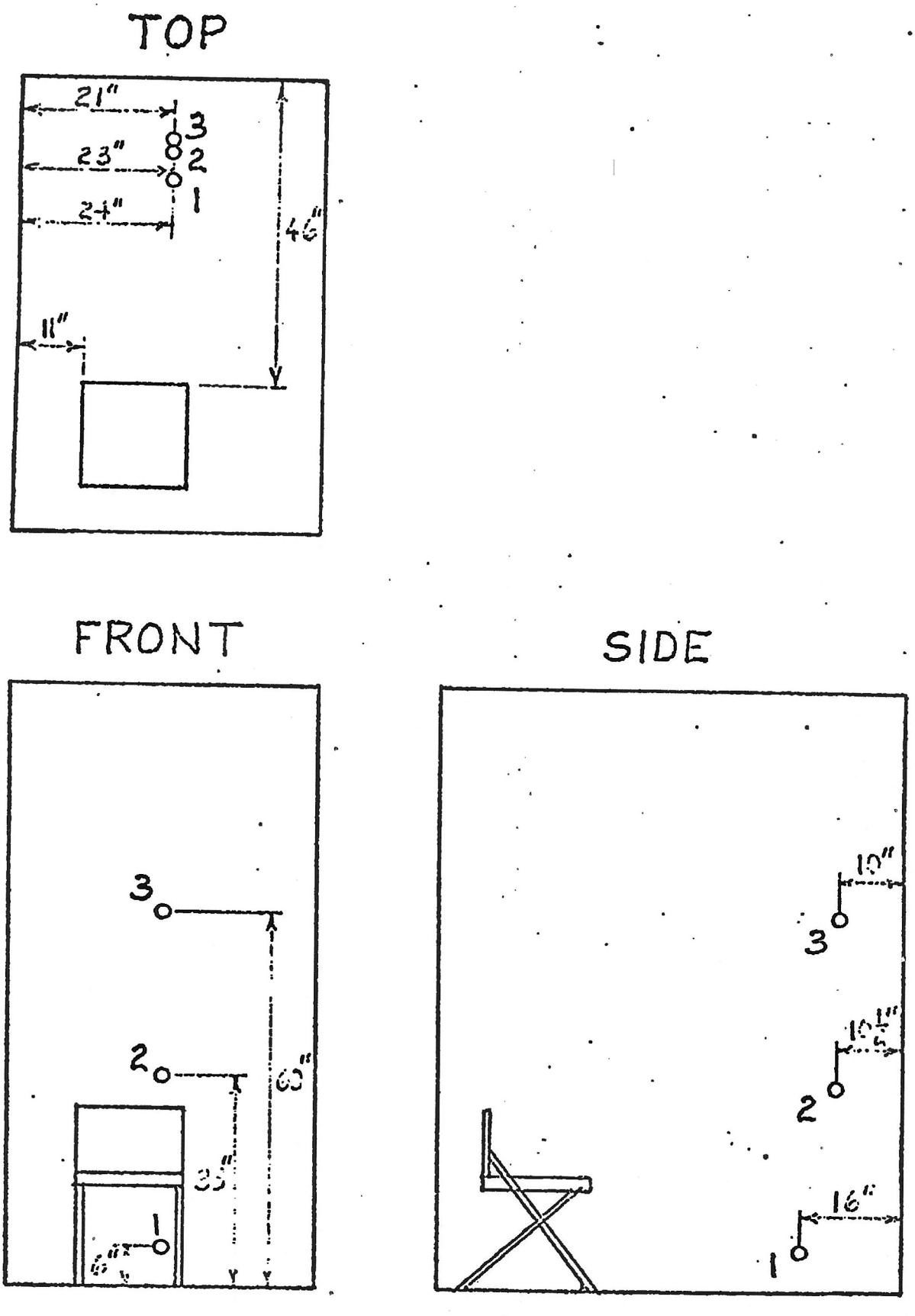


Figure 1

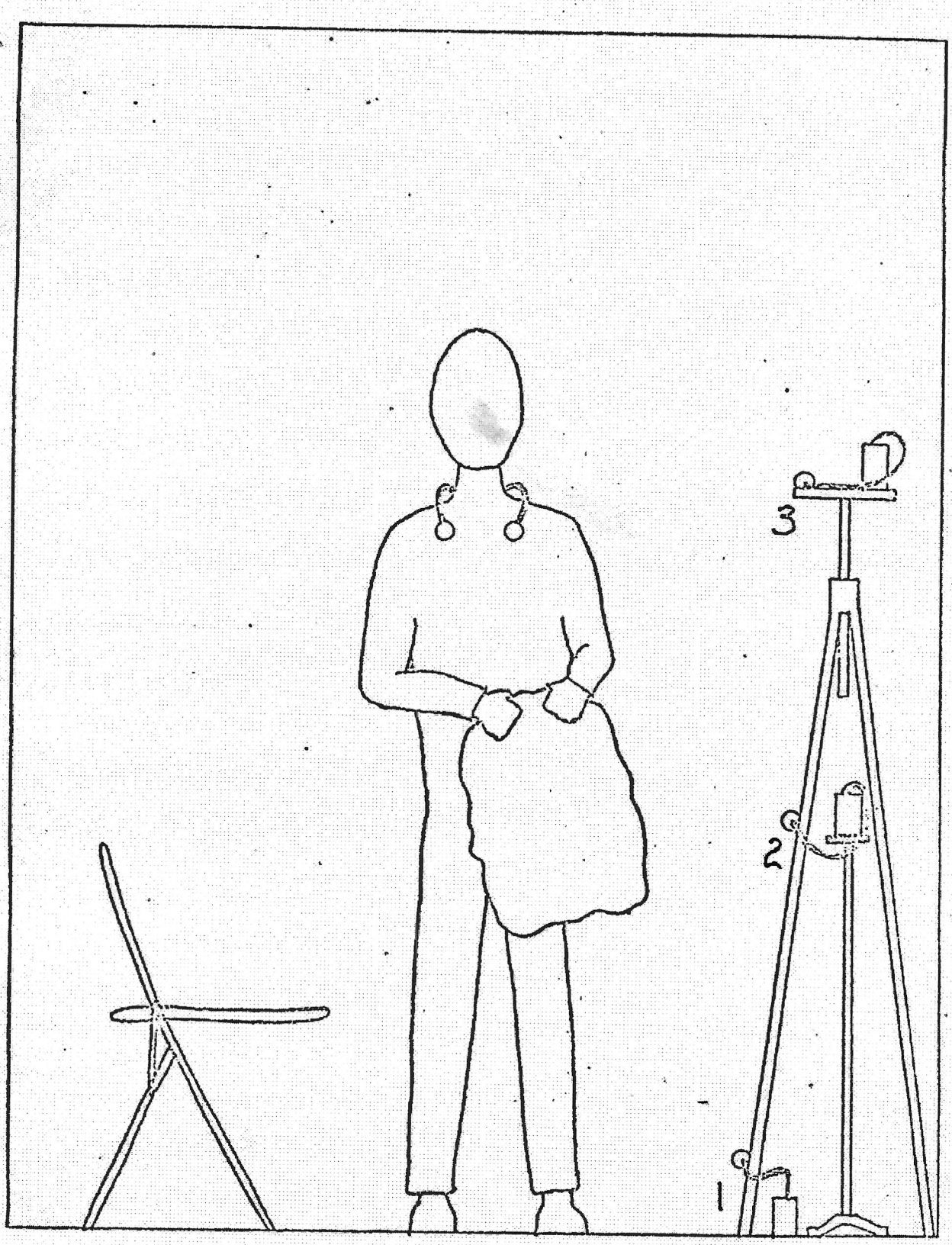


Figure 2