AIRBORNE FIBER COUNTS

for

Georgia Pacific Corporation
Akron, New York

February 26, 1973

Personnel Present: R. Schifferle
Georgia Pacific Corporation

D. E. Furlani
Union Carbide Corporation

B. L. Ingalls
Union Carbide Corporation

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

UNION CARBIDE CORPORATION
Mining and Metals Division
Niagara Falls, New York

PLAINTIFF'S EXHIBIT
Union Carbide 227

OBJECTIVES

Monitor airborne asbestos dust in Georgia Pacific's joint plant and during the unloading of a car of asbestos.

SAMPLE LOCATIONS

Tests were conducted January 18, 1973 at Georgia Pacific Corporation, Akron, New York.

The unloading of a car of SG-210 was monitored in the following way: 3 separate samples were taken at the storage bay area, 1 before, 1 during and 1 after placement of pallets. Two samples were taken in the car, 1 prior to and 1 during the actual unloading. The forklift operator was also monitored throughout the entire unloading process.

Samples taken in the joint plant concentrated on two areas, the packer, bagging topping compound and the man actually dumping asbestos into the mix tank.

APPARATUS & 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 Vickers Phase Contrast Microscope at 400X utilizing a Porton Reticle for sizing and field definition.

TEST RESULTS

The figures reported are expressed in fibers, greater than 5 microns in length, per cubic centimeter of air sampled.

INTERPRETATION

The OSHA Regulations have been established with a limit of 5 fibers, greater than 5 microns in length, per cubic centimeter on a time weighted average (TWA). The formula $\frac{C\ T + C\ T + C\ T}{\Sigma\ T}$ describes TWA where C=fiber count in fibers/cc and T=time. For example, if the operator in sample 1929-86-8 dumped asbestos 10 times per day at two minutes per dump and the rest of the day he was exposed as in sample 1929-86-9 his TWA would be $\frac{(10)(2)+(5.6)+(460)(1.3)}{480} = \frac{112+598}{480} = 1.5$ fibers/cc, 8-hour TWA.

SUMMARY OF FIBER COUNTS

N.B. No.	Field No.	Description	Fibers/cc
		1) CAR UNLOADING	
1929-86-1	116	Environmental (27 min.) - Stocking bay storage area for SG-210. 5-1/2 feet above floor - before car unloading	0.2
1929-86-2	56	Environmental (13 min.) - In car monitoring air immediately after door is opened and prior to unloading. 2 feet above floor just inside door	0.3
1929-86-3	103	Personal (62 min.) - Fork lift operator unloading car. Takes pallets from car and places in storage area, about 50 feet from car	6.3
1929-86-4	31	Environmental (47 min.) - Same as 1929-86-1 during placement of pallets	5.6
1929-86-5	138	Environmental (45 min.) - In center of car 8 feet above floor during unloading	10.6
1929-86-6	90	Environmental (56 min.) - Same as 1929-86-4 after completion of pallet placement	0.8
1929-86-7	52	Personal (85 min.) - Packer on bagging machine, bagging topping compound	4.0
1929-86-8	145	Personal (2 min.) - Operator dumping 2 bags Canadian 7RF9 into raw materials mixer for topping compound	5.6
1929-86-9	95	Personal (63 min.) - Operator after dump cleaning, preparing other mixes, etc.	1.3

THRESHOLD LIMIT VALUE FOR ASBESTOS FIBERS[1]

AIRBORNE ASBESTOS

1910.93a Asbestos.

(a) Definitions. For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) Permissible exposure to airborne concentrations of asbestos fibers - (1) Standard effective July 7, 1972. The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) Ceiling concentration. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centrimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(e) Method of measurement. All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 x (Magnification) (4 millimeter objective) with phase contrast illumination.

[1] Source: Federal Register, Vol. 37, No. 110 - Wednesday, June 7, 1972.

52
SAMPLE

DATE

INST.

2 l/m
FLOW RATE

BLANK

85.0 min
TOTAL TIME

TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: Packer at Bagging Machine – Bagging Topping Caps.

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

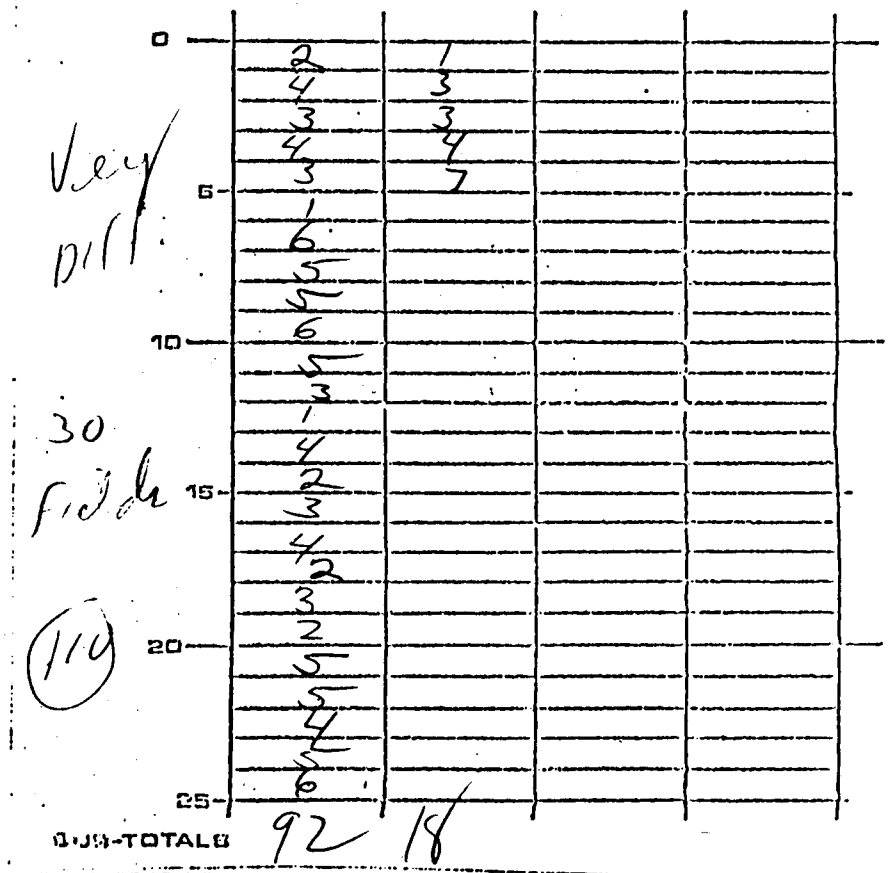
SAMPLE# _____ OPERATION _____

FLOW _____ TIME _____ VOLUME _____ DATE _____

INITIALS _____ F. AREA _____ BLK.CNT.AV. _____

AV.COUNT 3.67 CONCENTRATION 4.0

COMMENTS:



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ACL Doc 20036 · Page 5 of 13

145

SAMPLE

DATE

INST.

2 l/m

FLOW RATE

BLANK

2 m

TOTAL TIME

TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: Dumping 2 Bags

TRF4

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

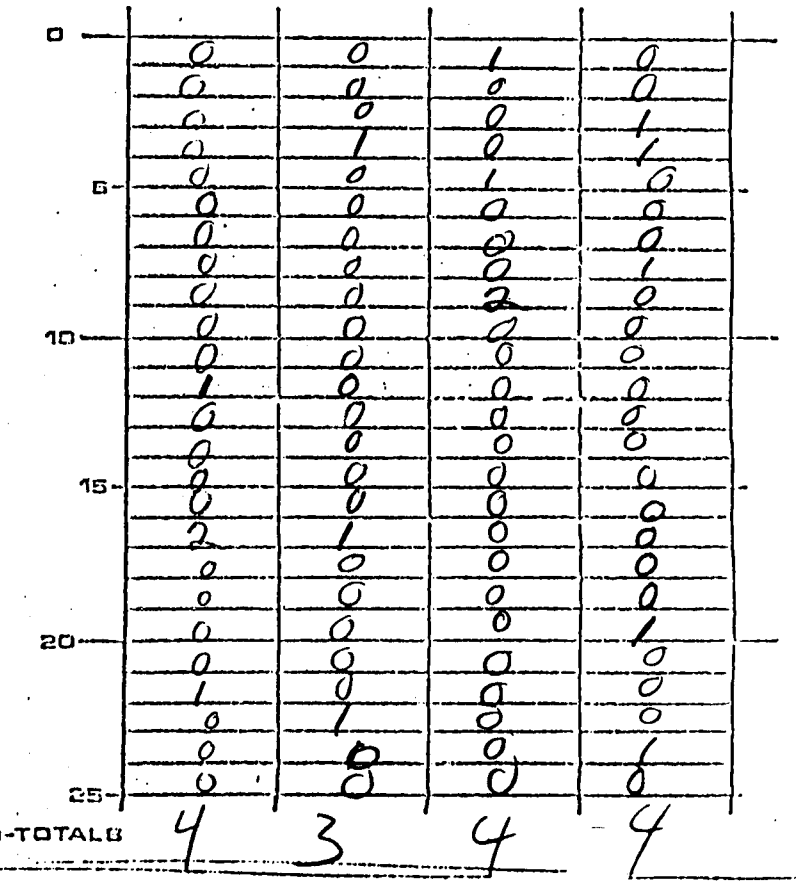
SAMPLE# OPERATION

FLOW TIME VOLUME DATE

INITIALS F. AREA BLK.CNT.AV.

AV.COUNT .12 CONCENTRATION 5.6

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#116
SAMPLE

11/8/73
DATE

~~27~~
INST.

2 ℓ/m
FLOW RATE

BLANK

27.0 min
TOTAL TIME

54.0 ℓ
TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: STORE - AREA
Before unloading

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

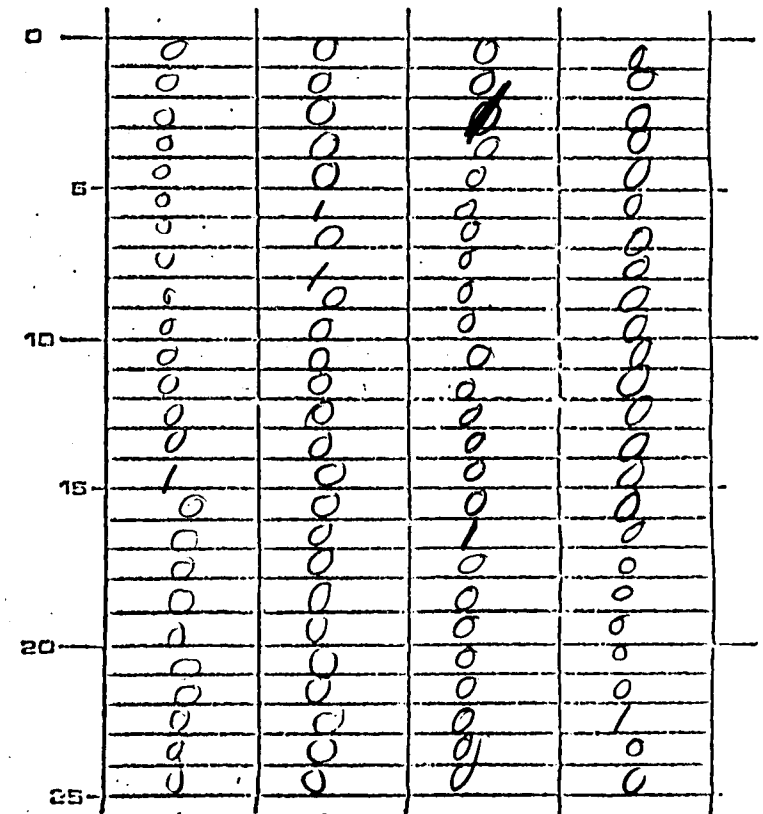
SAMPLE# _____ OPERATION _____

FLOW _____ TIME _____ VOLUME _____ DATE _____

INITIALS _____ F. AREA _____ BLK.CNT.AV. _____

AV.COUNT .06 CONCENTRATION 0.2

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ACL Doc 20036 · Page 7 of 13

95
SAMPLE

DATE

INST.

2 l/m
FLOW RATE

BLANK

63 min
TOTAL TIME

TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: Operator after Samp

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

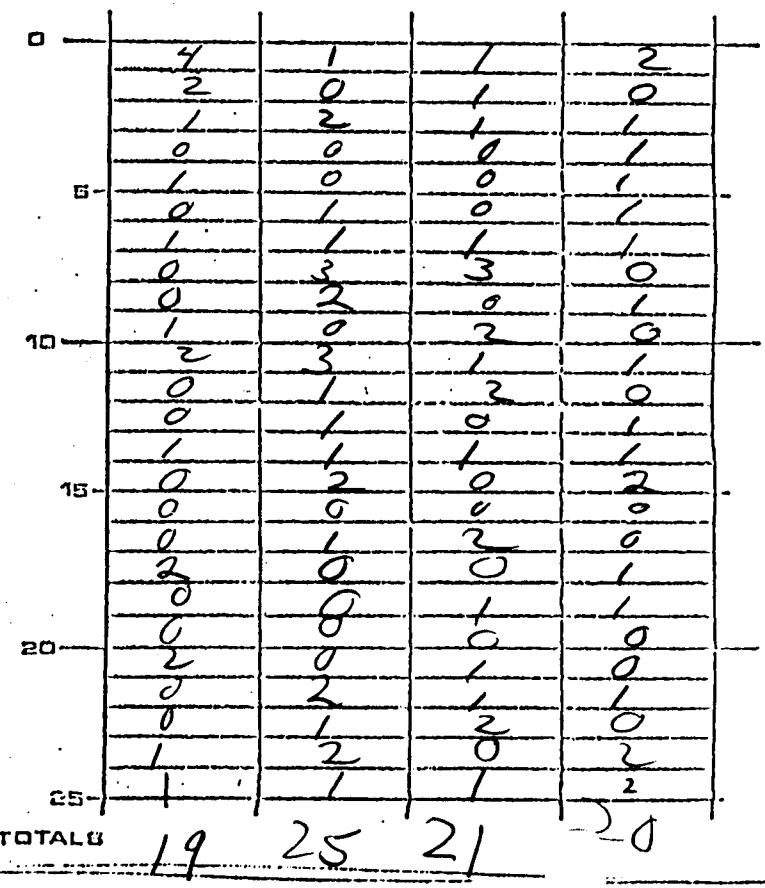
SAMPLE# _____ OPERATION _____

FLOW _____ TIME _____ VOLUME _____ DATE

INITIALS _____ F. AREA _____ BLK.CNT.AV. _____

AV.COUNT 85 CONCENTRATION 1.3

COMMENTS:



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ACL Doc 20036 · Page 8 of 13

#103
SAMPLE

DATE

INST.

2l
FLOW RATE

BLANK

62
TOTAL TIME

124
TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: fork lift Operator

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

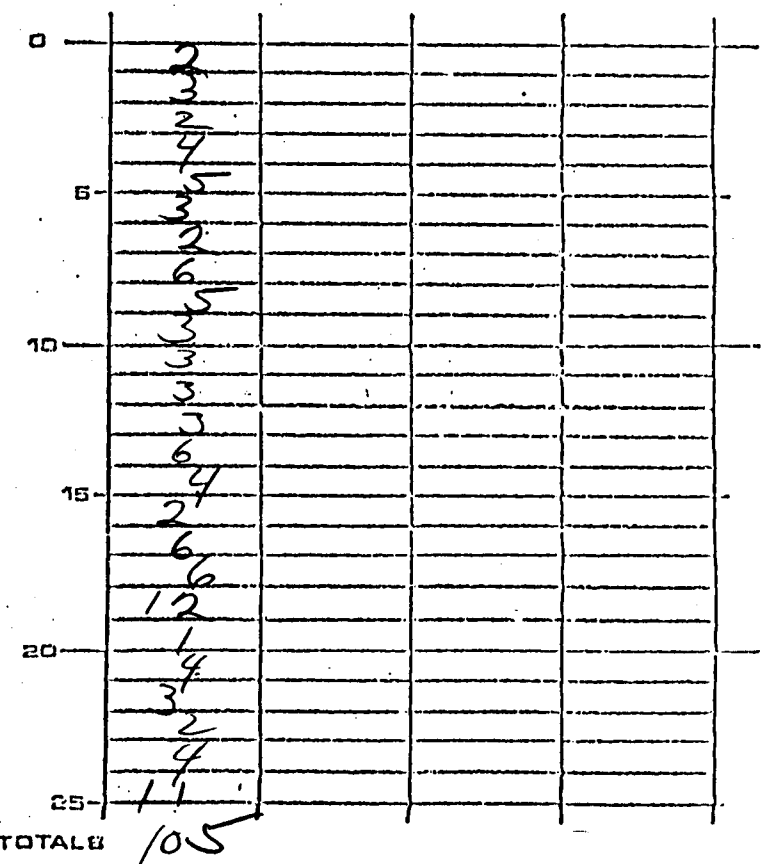
SAMPLE# _____ OPERATION _____

FLOW _____ TIME _____ VOLUME _____ DATE _____

INITIALS _____ F. AREA _____ BLK.CNT.AV. _____

AV.COUNT 4.2 CONCENTRATION 6.3

COMMENTS:



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ACL Doc 20036 : Page 9 of 13

31
SAMPLE

DATE

INST.

2l
FLOW RATE

BLANK

47
TOTAL TIME

TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: STOCKing and Pairing of unloading

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

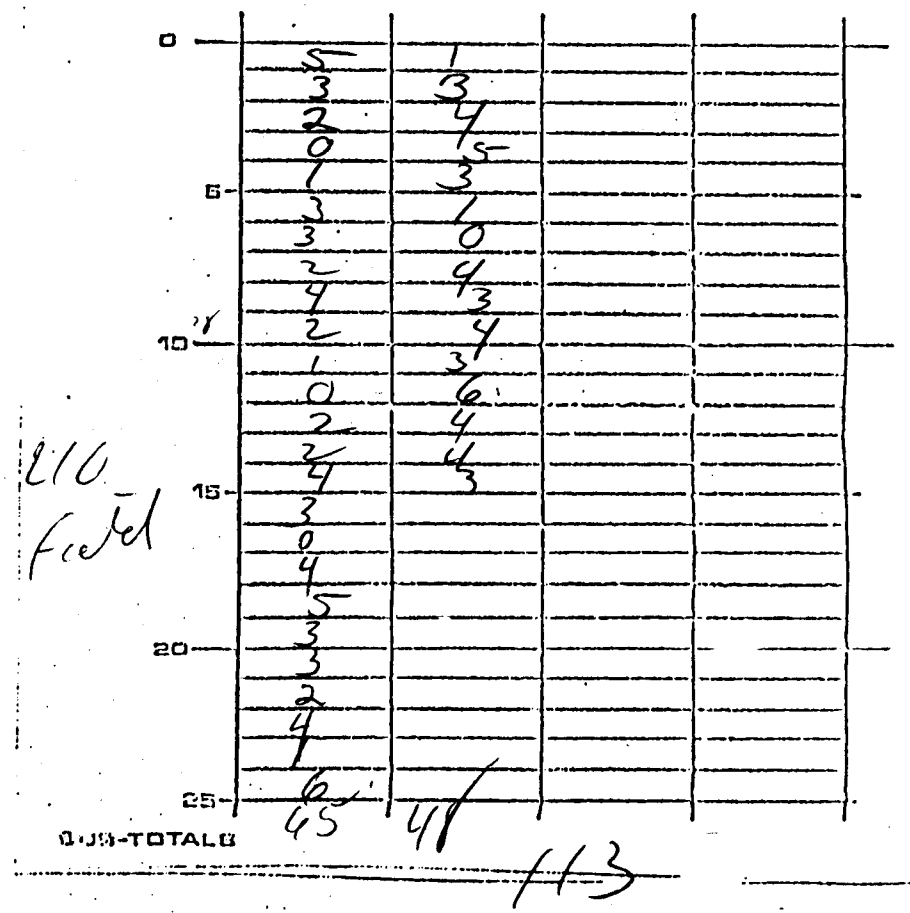
SAMPLE# OPERATION

FLOW TIME VOLUME DATE

INITIALS F. AREA BLK.CNT.AV.

AV.COUNT 2.83 CONCENTRATION 5.6

COMMENTS:



210 Field

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ACL Doc 20036 · Page 10 of 13

90
SAMPLE

DATE

INST.

2 1/4
FLOW RATE

BLANK

56.0
TOTAL TIME

TOTAL AIR VOLUME

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: The Stocking and after completion of Storage

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

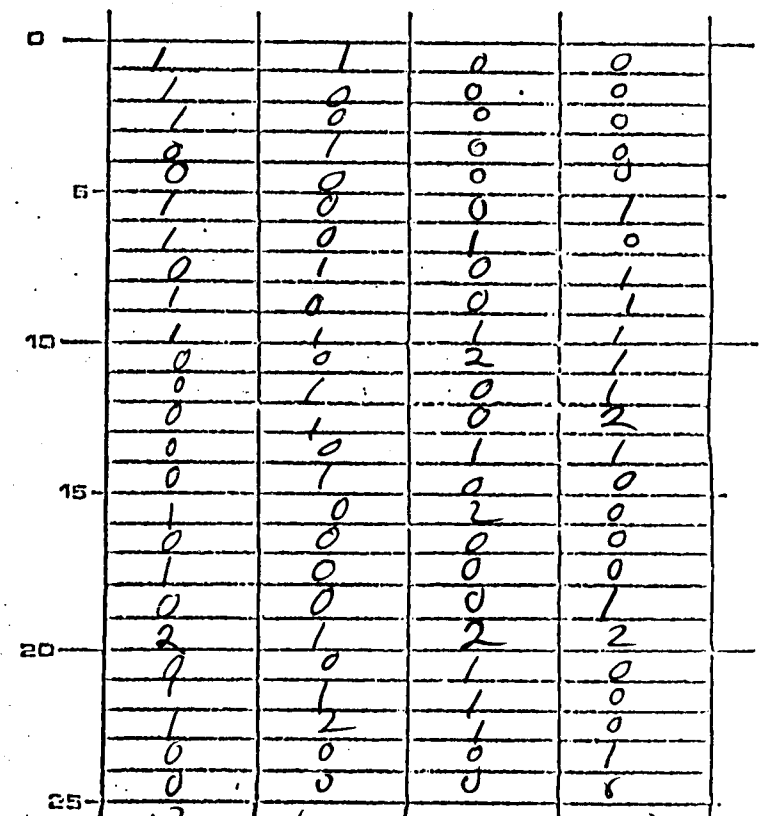
SAMPLE# _____ OPERATION _____

FLOW _____ TIME _____ VOLUME _____ DATE /

INITIALS _____ F. AREA _____ BLK.CNT.AV. _____

AV.COUNT .49 CONCENTRATION 0.8

COMMENTS:



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ACL Doc 20036 · Page 11 of 13

SAMPLE 56

DATE

INST.

FLOW RATE 2

BLANK

TOTAL TIME 13.0 min.

TOTAL AIR VOLUME 26.0 l

EMPLOYEES NAME

JOB TITLE

DESCRIPTION OF OPERATION: 100 Can Before unloading

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

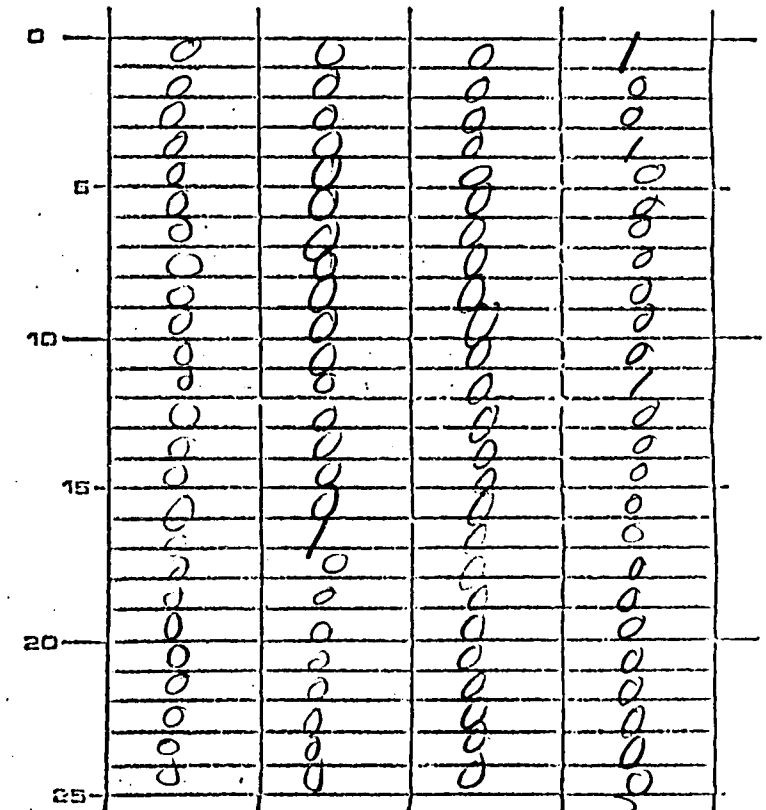
SAMPLE# OPERATION

FLOW TIME VOLUME DATE

INITIALS F. AREA .0496 BLK.CNT.AV.

AV.COUNT .04 CONCENTRATION 0.3

COMMENTS:



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ACL Doc 20036 · Page 12 of 13

138 F

SAMPLE _____ DATE _____

INST. _____ FLOW RATE 2 l/m BLANK _____

45.0

TOTAL TIME _____ TOTAL AIR VOLUME _____

EMPLOYEES NAME _____

JOB TITLE _____

DESCRIPTION OF OPERATION: in car 8 FT Above floor Driving around

DESCRIPTION OF CONTROLS:

ASBESTOS COUNT RECORD SHEET

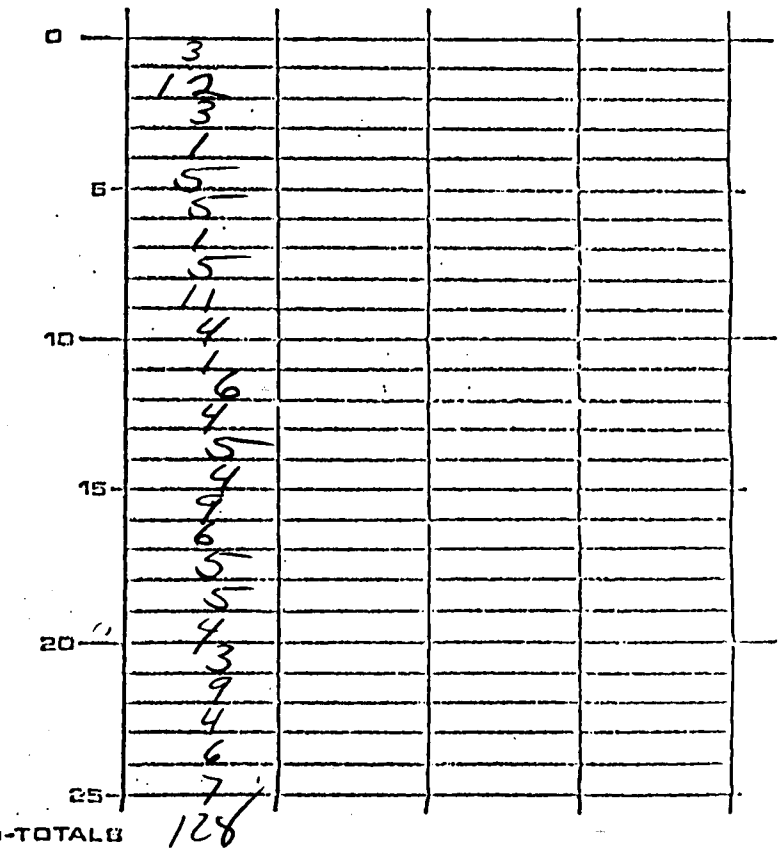
SAMPLE# _____ OPERATION _____

FLOW _____ TIME _____ VOLUME _____ DATE _____

INITIALS _____ F. AREA _____ BLK.CNT.AV. _____

AV.COUNT 5.12 CONCENTRATION 10.6

COMMENTS:



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ACL Doc 20036 · Page 13 of 13