FILE NAME: PPG (PPG)

DATE: 1976 Sept

DOC#: PPG019

DOCUMENT DESCRIPTION: NIOSH Report - Health Hazard Evaluation Determination

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

HEALTH HAZARD EVALUATION DETERMINATION

REPORT NO. 75-192-330

PITTSBURGH PLATE GLASS IND.
MT. ZION, ILLINOIS
SEPTEMBER 1976

I. TOXICITY DETERMINATION

The National Institute for Occupational Safety and Health conducted a health hazard evaluation of "Roll Fabrication" operations at the Pittsburgh Plate Glass Industries plant, Mt. Zion, Illinois, on January 27 and 28, 1976. Based on the results of this environmental investigation, the following determinations are made:

(1) Exposure to airborne asbestos fibers in excess of the proposed OSHA standard (0.5 fiber/cc) was exhibited at the baghouse emptying operation. The exposures of the two workers on the "bottom" did not exceed the existing OSHA standard (2.0 fiber/cc); however, when the "topside" worker was inside the baghouse his exposure did exceed the existing standards.

(2) Exposure to airborne asbestos fibers in excess of the existing OSHA standard (2.0 fiber/cc) was measured at the "nailing" operation.

(3) The "teardown" operator was exposed to excessive levels of asbestos when using poor technique (i.e., use of a hatchet to assist hydraulic teardown unit).

(4) Exposure to asbestos fibers in excess of the proposed OSHA standard (0.5 fiber/cc) was measured during grooving. However, none of those samples exceeded the existing OSHA standard of 2.0 fiber/cc.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this Determination Report are available upon request from NIOSH, Information Resources and Dissemination Section, Division of Technical Services, 4676 Columbia Parkway, Cincinnati, Ohio 45226.

Copies have been sent to:

A. Pittsburgh Plate Glass Ind., Mt. Zion, Illinois

B. Authorized Representative of Employees

C. U.S. Department of Labor - Region V

D. NIOSH Regional Consultant for OSH - Region V

For the purposes of informing the approximately 45 "affected employees," the employer will promptly "post" the Determination Report in prominent places near where the affected employees work for a period of 30 calendar days.

III. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized

representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received such a request from an authorized representative of employees (United Glass & Ceramics Workers Local 193 (AFL-CIO-CLC)) regarding the exposure of employees to asbestos during the manufacture of mandrel mounted asbestos rollers used in the glass making process, at the Pittsburgh Plate Glass Industries plant at Mt. Zion, Illinois.

IV. HEALTH HAZARD EVALUATION

A. Plant Process - Conditions of Use

The Pittsburgh Plate Glass Industries, at this plant, is engaged in the manufacture of flat glass. Both tempered and non-tempered flat glass are made.

During glass making, the molten glass is drawn upwards between pairs of rollers - the manufacture of these rollers was the object of this Health Hazard Evaluation.

At the time of this evaluation the Roll Fabrication Room was a completely separate unit, self-contained, with its own exhaust ventilation system for collection of asbestos. The rollers are fabricated by the following method: (1) 6 to 8 asbestos discs are nailed together (via nailing machine), (2) groups of discs are hydraulically pressed on a steel mandrel, (3) the

assembled unit is then lathe turned to finished dimensions, (4) cullet (broken glass) slots are milled into the roller while mounted in the lathe, (5) completed rollers are stored in racks - outside the Roll Fabrication Room.

Four employees, per shift, work in the Roll Fabrication Room. Normally, one person removes the asbestos discs from the packing box (after vacuuming to remove loose dust) and nails groups of discs for another person to assemble onto a mandrel. One person operates the lathe and mill while the fourth person rotates between jobs and assists in moving rolls about the room.

At the time of this evaluation, mechanical exhaust ventilation was provided at: the nailing machine; press, for assembly and disassembly of rolls; the lathe and mill; as well as a seldom-used bandsaw and three floor sweeps for clean-up and box vacuuming. The entire ventilation system is exhausted into a baghouse type dust collector located outside the building proper. Usually, three persons work at emptying the collector hoppers daily. One person breaks "bridges" of material from the topside, while two persons fill bags at the bottom of the hoppers (all three workers wore approved respirators). Approximately two years ago, the separate room for roll fabrication was constructed. Prior to that time, all operations required for the fabrication of the asbestos rolls were performed in a large maintenance area.

B. Evaluation Design

During the initial plant visit by NIOSH investigators, it was determined that the maintenance workers who operate the Roll Fabrication Room were questioning the existence of a health hazard from asbestos during roll fabrication. In view of this question and the fact that several operations conducted are normally those which can produce dust, it was decided to sample for airborne asbestos fibers during this initial visit. NIOSH investigators sampled each operation performed in the Roll Fabrication Room during two successive days. An industrial hygienist from Pittsburgh Plate Glass Industries also sampled concurrently.

C. Evaluation Methods

1. Survey Sampling (January 27 and 28, 1976)

The sampling method used for the collection of asbestos fibers airborne in the workroom air was that of a type AA membrane filter in a plastic cassette, with cap removed, and air sampled at a rate of 2 liters per minute by a battery powered personal sampling pump. Comparatively long-term samples were strived for. The first day samples were approximately 1-1/2 hours per person in the afternoon, and the second day the samples varied from 2 hours to almost 4-1/2 hours per worker.

The first day sampling included the baghouse emptying operation, while the three other groups of samples were of normal fabrication operations.

2. Analytical Methods

The filter cassettes were forwarded to NIOSH, Western Area Laboratory for Occupational Safety and Health, Salt Lake City, Utah, for analysis. The phase-contrast microscopic counting method of analysis at 400-500 magnification was utilized in the analysis of the collected samples for fibrous asbestos.

D. Evaluation Criteria

Asbestos is a generic term that applies to a number of occurring hydrated mineral silicates incombustible in air and separable into filaments. Exposure to airborne asbestos dust may result in a debilitating lung disease (asbestosis), mesothelioma and lung cancer. These malignant changes (lung cancer and mesothelioma) as well as asbestosis may take 10-40 years after exposure to asbestos dust to develop. On October 9, 1975, OSHA proposed a standard to limit the permissible exposure to asbestos to 0.5 fiber/cc for an eight hour TWA and to reduce the permissible "ceiling" exposure to 5 fiber/cc for any period not exceeding 15 minutes. A revision of the NIOSH criteria Document on Asbestos is being prepared, and may recommend a lower standard than the presently proposed OSHA standard of 0.5 fiber/cc.

E. Evaluation Results and Discussion

Sampling results from this initial survey indicate two personnel over-exposures to asbestos (baghouse-top and teardown - poor technique) when the present OSHA standard of 2.0 fiber/cc is used for comparison.

However, when the proposed OSHA standard of 0.5 fiber/cc is used for comparison, all samples indicated worker over-exposure.

Poor worker technique, yielding one over-exposure, was exhibited during the "teardown" sample, the result of which was 3.92 fib/cc. During this sample the worker was seen striking the asbestos discs with a hatchet to loosen them while the hydraulic ram was pulling them from the mandrel. Proper methods dictate use of the hydraulic ram alone, which we understand is the established procedure. The other "teardown" sample using proper technique indicated 0.50 fiber/cc. The other worker over-exposure was demonstrated during the clearing of the baghouse dust collector. The worker clearing "bridges" in the top of the collector was completely inside the unit (while wearing a NIOSH approved respirator for asbestos--as were the other two workers at the bottom of the collector) and was exposed to much asbestos dust during this operation. It was stated that Pittsburgh Plate Glass Industries is working on mechanical methods of baghouse hopper emptying which will not require the breaking of "bridges."

F. Summary

Exposure to airborne asbestos dust in excess of existing standards was demonstrated at the nailing, teardown and inside-top baghouse work locations. If the proposed OSHA standard of 0.5 fiber/cc is applied, all work locations have potential over-exposure.

V. RECOMMENDATIONS

1. Continued effort should be made to reduce worker exposure to airborne asbestos fibers during the emptying of the baghouse hopper.

2. Improve ventilation pick-up of asbestos fibers produced at the nailing and grooving operations.

3. Assure that workers will utilize only the hydraulic ram teardown procedure (no assistance by striking the discs).

4. Assure that adequate maintenance is performed on the entire mechanical ventilation system, in order to maintain asbestos fiber count within an acceptable range.

5. Periodic reinstruction in proper work techniques should be undertaken, so that maximum effect can be realized from mechanical exhaust ventilation provided.

6. Medical monitoring and environmental measurement recommendations contained in the OSHA standard and proposed rule makings should be adhered to.

VI. REFERENCES

1. NIOSH Recommended Standard for Occupational Exposure to Asbestos, NIOSH, Cincinnati, Ohio (1972).
2. Federal Register 40, No. 197 (Oct. 9, 1975): Occupational Exposure to Asbestos. Notice of Proposed Rule Making.

VII. AUTHORSHIP AND ACKNOWLEDGEMENT

Report Prepared by:

Charles H. Borcherding
Regional Industrial Hygienist
Region V

Originating Office:

Jerome P. Flesch
Acting Chief
Hazard Evaluation and
Technical Assistance Branch
Cincinnati, Ohio

Acknowledgements:

Richard S. Kramkowski
Regional Consultant, OSH
Region V
Chicago, Illinois

John H. Nelson
Chemist
Western Area Laboratory for
Occupational Safety and Health
Salt Lake City, Utah

Castleman File on: PBG Doc # 7

wc = with cover letter or memo If DATE = 0, undated

DATE = 1942

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

✓ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 8

wc = with cover letter or memo If DATE = 0, undated

DATE = 1944

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

✓ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 9

wc = with cover letter or memo If DATE = 0, undated

DATE = 1945

__ article __ adv ____ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ____ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

✓ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 10

wc = with cover letter or memo If DATE = 0, undated

DATE = 1948

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

✓ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 11

wc = with cover letter or memo If DATE = 0, undated

DATE = 1949

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

__✓ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 12

wc = with cover letter or memo If DATE = 0, undated

DATE = 2019

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

__ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

✓ legal __ affidavit __ depo OR __ testimony of _____

legal ~~motion to~~ defendant's response to interrog. in Quesenberry v PPG

__ Notes of __ BC or _____

__ Other _____

Castleman File on: RPG Doc # 13

wc = with cover letter or memo If DATE = 0, undated

DATE = 1963

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

✓ unpublished ~~internal~~ external report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 14

wc = with cover letter or memo If DATE = 0, undated

DATE = 1999

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

__ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

✓ Other Exhibits to Grant deposition

Castleman File on: RPG Doc # 15

wc = with cover letter or memo If DATE = 0, undated

DATE = 1967

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

__ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 16

wc = with cover letter or memo If DATE = 0, undated

DATE = 1964-1968

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

__ unpublished internal report _✓_ membership list for NOMA committees

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of _ BC or _____

__ Other ~~NOMA~~ _____

Castleman File on: PPG Doc # 17

wc = with cover letter or memo If DATE = 0, undated

DATE = 1967

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __✓__ NSC Transactions

__ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

__ Notes of __ BC or _____

__ Other _____

Castleman File on: PPG Doc # 18

wc = with cover letter or memo If DATE = 0, undated

DATE = 2020

__ article __ adv ___ abstract __ letter to editor from:

__ peer reviewed journal __ trade journal
__ newspaper ___ magazine __ company journal

__ published __ conference __ presentation __ report

__ federal register notice __ NSC Transactions

__ unpublished internal report __ membership list

__ government __ inspection __ report __ hearing

__ book excerpt

__ letter __ memo __ notes of __ call __ meeting

__ warning labels __ patent __ sales data

__ sales literature __ recommended practices

__ meeting ___agenda ___ minutes __attendees

legal __ affidavit __ depo OR __ testimony of _____

legal motion to _____

✓ Notes of ✓ BC or unsigned & undated

__ Other _____