

cc: J. F. Gilbert
C. R. Antonson
J. E. Sylvanus
J. R. Cohen
W. L. Kremer

Edge Moor, Delaware
October 8, 1984

E. C. HENZE
M. J. DUNBAR
J. P. HOLBACK
B. A. CAPRA
W. J. ZERBE
A. R. PALLADINETTI
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J. F. LANE
J. J. SHEA
K. R. FARRARE
W. J. BULLEN
W. A. RAMMEL
A. W. ELLIS
L. E. DAVIS
F. R. HAMM
K. A. THOMAS
N. A. KIBLER
C. F. WOODWARD

K. H. CREASEY
J. S. DIXON
V. P. BEIRIGER
J. M. SCHULER
W. D. WHITESELL
W. A. CHADWICK
H. G. SELHEIMER
J. SWIEDER
R. D. GILLESPIE
R. O. JONES
C. T. MELVIN
E. N. BROWN
E. T. O'NEILL
W. G. KIRK
J. BOLINSKI
L. A. JEWELL
H. C. STECHER
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K. A. BERKLEY
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E. R. ROBERTS
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ASBESTOS REMOVAL PROCEDURE

Attached for your use is a copy of the latest Asbestos Removal Procedure and an outline summary of the Procedure. Please destroy any other outdated copies you may have in your files.

As you know, asbestos dust is a proven respiratory hazard. Proper handling procedures must be followed to protect employees from exposure to airborne asbestos fibers. This procedure should be reviewed with all employees with potential for asbestos exposure.

N. Liberman
N. LIBERMAN
SENIOR SUPERVISOR SAFETY AND HEALTH

NL/db

Attachment

DUP 1120117

DU 055143

PROCEDURE
CONTROL OF ASBESTOS DUST

1. PURPOSE

Prescribe methods for controlling, measuring, and eliminating exposure to asbestos dust.

2. SCOPE

Applicable with airborne dust originating from asbestos and asbestos-impregnated materials.

3. SOURCE OF EXPOSURE

- A. All thermal insulation including calcium silicate, installed prior to 1972 could contain asbestos fibers. This could be a source of high exposure during dismantling.
- B. Other asbestos-bearing materials are possible sources of exposure in varying degrees, for example, heat suits, gloves, laboratory hot pads, transite board and pipe, asbestos board, asbestos cloth, some Havgard pipe compositions and fittings, etc.
- C. There are some asbestos-bearing materials used at Edge Moor in which the fibers are contained and are not a source of airborne dust, for example, braided and molded packing, fibrous adhesive, compressed asbestos gasket material, Garlock, etc. However, these items will be cataloged and emissions supported by air samples of the work area where they are used.

4. EXPOSURE LIMITS

- A. Asbestos dust concentration limits are an 8-hour, time-weighted average (T.W.A.)** of two fibers, longer than five microns, per cubic centimeter of air* and;
- B. A ceiling concentration of 10 fibers, longer than five microns, per cubic centimeter of air*.
- C. Occupational exposure defined as: An 8-hour T.W.A. of more than 0.1 fibers, longer than five microns, per cubic centimeter of air*.

**Average concentration occurring over a period of 8 hours.

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

DUP 1120118

DU 055144

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)5. REGULATORY REQUIREMENTSA. RENOVATION

Involves removing or stripping away asbestos from pipes, ducts, boilers, tank reactors, furnaces, or structural members.

Prior notification is required if quantity removed is over 80 meters (260 lineal feet) of pipe or 15 square meters (160 square feet) of ducts and equipment.

1. Planned & Scheduled - Base quantity on each job.
2. Planned & Unscheduled - Base quantity on projection over one year.
3. Emergency - Base quantity on each job.

B. DEMOLITION

Involves removing or stripping away asbestos from pipes, ducts, boilers, tank reactors, furnaces, or structural members. If a load-supporting structural member is actually removed or wrecked, the operation is not a renovation, but a demolition.

Notification is required on all demolitions both large and small.

C. NOTIFICATION

Environmental Coordinator will make notification in writing.

Mechanical Supervisor responsible for job must provide information per Attachment A to Environmental Coordinator at least 15 days prior to starting job. Notification must be given to the State of Delaware Air Resources Section at least 10 days prior to commencing actual removal.

In case of emergencies, notification must be made as soon as possible before starting job. Ten day requirement does not apply.

6. CONTROL OF ASBESTOS DUST

- A. Exercise care when handling materials which are potential sources of asbestos dust. Local exhaust ventilation and similar controls shall be used to meet the exposure limits prescribed by Section 4, if possible. Prescribed safety equipment must be worn on all jobs where exposure to asbestos dust is possible.

DUP 1120119

DU 055145

PROCEDURE /- CONTROL OF ASBESTOS DUST (Continued)6. CONTROL OF ASBESTOS DUST (Continued)

- B. When cutting asbestos-containing material, use tools that will not make dust, e.g., shears, knives or other similar cutters. If asbestos-containing material is cut with a saw, the asbestos procedure must be followed.
- C. Respirators (Section 7) and special clothing (Section 8-A) shall be worn by employees engaged in removal or demolition of asbestos insulation or covering.
- D. Whenever material which contains asbestos is to be removed and discarded, it is to be thoroughly wetted down prior to and during removal*. Removal methods which may cause dust should not be employed. The removal area shall be roped-off and proper signs posted (Section 6-G).
- E. During cleanup of asbestos materials, no dry sweeping shall be performed nor any air blowdown used. Use a vacuum cleaner or wet down before sweeping. If a vacuum cleaner is to be used, it shall be fitted with a filter which will contain asbestos fibers at the filter exhaust to meet the exposure limits prescribed in Section 4. Approved vacuum cleaner available at Storeroom and another one is kept in the Plant Garage. The vacuum cleaner in Plant Garage may be used in the Plant if Storeroom vacuum cleaner is O/S (See Section 12).
- F. Asbestos waste shall be collected in damp or wetted condition and placed in a sealed, impermeable plastic bag. Additional bags can be obtained from the Respirator Shop. The bag shall be identified with special warning label and transported to the designated asbestos disposal box. The coveralls and gloves are to be disposed of at the end of each day in the same manner as the asbestos waste.

*Best results are achieved by removing the outer covering after the initial wetdown and rewetting the area to be worked on. Water spray cans are available through the Storeroom.

- G. The work area shall be roped-off (barricaded) and caution signs conforming to Engineering Standard S-4-T 12.1 shall be posted at all approaches. Roped-off limits shall be placed at a sufficient distance to prevent bystander exposure and permit a person to read the signs and take necessary precautions before entering the area.
- H. Chemical contaminated asbestos or asbestos-bearing materials require special considerations and should be handled by adequately trained personnel. It is the building custodian's (Operations) responsibility who may perform the work.

DUP 1120120

DU 055146

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)6. CONTROL OF ASBESTOS DUST (Continued)

- I. Polyvinyl Alcohol/Boric Acid aqueous solutions which are available at the Storeroom can be used to seal damaged or exposed insulation. Instructions for use are at the Storeroom with the material.

7. RESPIRATORY EQUIPMENT

- A. Respiratory protection shall be provided to all personnel in areas where the permissible exposure limits may be exceeded per Section 4-A.
- B. Mechanical filter-type respirators are required when the T.W.A. or ceiling concentrations are not expected to exceed 10 times the limits stated in Section 4-A. (Comfo II - Type "H" filter available at tool crib.) If Comfo II respirators are issued each cartridge must be disposed of at end of each day or job completion (whichever may occur first) and so indicated in respirator cartridge log book.
- C. Atmosphere-supplying, positive-pressure respirators are required when the 8-hour T.W.A. or 15-minute T.W.A. concentrations are expected to exceed 10 times the limit in Section 4-A or in areas where a complete wetdown is impossible, an airline mask or self-contained airpack mask is required. See Plant Respirator Program for guidelines on use and care of respiratory equipment.
- D. Each employee who may use a respirator shall be instructed in its use and in testing it for proper fit. Fit testing is performed in the Respiratory Shop. He shall test it for proper fit prior to each use.

8. HYGIENE

- A. Special clothing ("Tyvek" coveralls with hood and foot coverings) shall be provided (available at Storeroom) for employees exposed to concentrations which may exceed the limits in Section 4 and during all removal, demolition or spraying operations. Plastic gloves are also available at the Storeroom and must be worn when handling asbestos material.
- B. Food, gum, tobacco, or other material which may be placed in the mouth shall not be kept or consumed in work areas where asbestos is being handled.
- C. Annual medical examinations are required for employees who are or might be exposed to airborne concentrations of asbestos fibers greater than 0.1 fibers/cc (8-hour T.W.A.).

DUP 1120121

DU 055147

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)9. SAMPLING

- A. It may be necessary to obtain material samples or air samples for reasons such as:
- (1) Material Samples - An employee may be assigned to a job working with a material which may contain asbestos fibers. A material analysis must be made to insure that proper protection measures are instituted prior to, during, and after the job, and/or,
 - (2) Air Samples - There is reason to suspect that employees may be exposed to airborne asbestos fibers because:
 - (a) They are working with an asbestos-bearing material and a personal sample is needed to determine exposure level.
 - (b) Because of the location and/or condition of asbestos-bearing materials, employees may be exposed to airborne fibers.
- B. When the need for air samples is indicated (Section 9-A), contact Safety Supervisor, give a description of the work requested and the location. Follow this with a formal written request (Don't Say It....).
- C. Representative samples have indicated that the procedures followed by the Mechanical Department in the handling of asbestos-bearing materials have kept exposure well below the limits set by the Occupational Safety and Health Administration (O.S.H.A.). Continued sampling and air monitoring will be maintained throughout the department. The Safety and Health Group will perform the monitoring, supply the equipment necessary, and provide a written report of the sampling results to the mechanical area supervision who requested the sampling. Each major dismantlement job should be monitored for airborne concentrations. All jobs should be considered for monitoring and jobs of two hours or greater duration should be monitored for airborne concentrations. The mechanical area responsible shall request monitoring and where employees are exposed to asbestos dust, request personnel monitoring to determine the employee's exposure. Sampling must be taken in a frequency pattern to represent accurately the employees exposure over his work period. Sampling shall include area and personnel monitoring.

Personnel Monitoring:

- D. As soon as practical, but not later than five days after receipt of sampling results, the Senior Supervisor, Mechanical, or his designate shall notify in writing Attachment D any employee found to have airborne concentrations in excess of the limits found in Section 4-A of this procedure. The notification form shall be filled out in its entirety and copies distributed as indicated on the form.

DUP 1120122

DU 055148

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)10. RECORDS

- A. Medical records of persons working in asbestos airborne environment are maintained by the Edge Moor Medical Section.
- B. Environmental-Personnel Monitoring Records are maintained by the Safety & Health Group.

11. ELIMINATION OF ASBESTOS IMPREGNATED MATERIALS

- A. All mechanical personnel shall continue to seek asbestos-free substitutes for asbestos-containing materials.

12. VACUUM CLEANER

The approved vacuum cleaner to be used for asbestos removal cleanup is a NILFISK Model GS83. Vacuum cleaner is equipped as follows:

- . Remote shaking handle to allow filter shakedown without operator exposure to dusts collected.
- . High efficiency particulate air (HEPA) filters and MICROFILTERS designed for asbestos use.
- . MANOMETER to indicate buildup of dust on filter.
- . Polyliner in dust container for dust-free disposal of contents.
- . Floor nozzle or crevice nozzle.

Persons using vacuum cleaner are responsible for completely cleaning it before returning to Storeroom. Cleaning vacuum cleaner includes:

- . Shake down filter thoroughly.
- . Empty and damp clean dust container.*
- . Damp wipe all exterior surfaces.
- . If HEPA filters or microfilters need cleaning, use vacuum cleaner in garage to clean filters.

* See vacuum cleaner instruction for detail and protective clothing requirements.

DUP 1120123

DU 055149

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

13. REFERENCES

A. This procedure is based on:

- (1) Du Pont Engineering Standard S-4-T
- (2) O.S.H.A. Regulations, Section 1910:1001
- (3) National Emissions Standard for Asbestos
(40 CFR 61.20 - 61.25); and
- (4) O.S.H.A. Program Directive #300-16
- (5) Edge Moor Plant Respirator Program and
A.N.S.I. Z88.2

/ela
Revised 12/29/81

DUP 1120124

DU 055150

ASBESTOS PROCEDURE SUMMARY

I. EMPLOYEE PROTECTION

- A. Rope-off and special sign
- B. Wet down
- C. Clothing - Tyvek suits, hoods, boots and plastic gloves.
- D. Masks
 - 1. Ceiling concentration not expected to exceed 10 times limits (Section 4-A of Procedure), use Comfo II with Type "H" respirator cartridge. An Ultratwin Full Face Respirator is also available.
 - 2. Self-contained breathing apparatus must be used if exposure is expected to exceed 10 times limits (Section 4-A or Procedure).
- E. Monitoring/Sampling - If needed, contact Safety & Health Group, Extensions 118, 183, or 470.
- F. The following are not permitted:
 - 1. Dry sweeping
 - 2. Air blowing
 - 3. Power cutting of asbestos-containing material
 - 4. Retention or consumption of food, gum, tobacco, etc, in an area where asbestos material is being handled.

II. ENVIRONMENTAL PROTECTION

Prior notice of all demolitions and large renovations must be given to the State. Mechanical Department will provide necessary information to the Environmental Coordinator at least 15 days prior to start of job. The Environmental Coordinator will in turn advise the State.

DUP 1120125

DU 055151

cc: Sr. Supervisor Production
Sr. Supervisor Mechanics
Site Services Superintendent
Sr. Supervisor Safety and Health

ATTACHMENT A

DATE:

TO: ENVIRONMENTAL COORDINATOR

FROM: _____ SUPERVISOR, MECHANICAL

NOTIFICATION REQUIREMENT
POTENTIAL ASBESTOS EMISSIONS

BUILDING# _____ AREA _____

DESCRIPTION OF EQUIPMENT: (SIZE OF TANK, LENGTH AND SIZE OF PIPE, ETC.)

APPROXIMATE SIZE OF BUILDING WHERE LOCATED:

AGE OF EQUIPMENT:

EQUIPMENT USE:

WHY BEING REMOVED:

WORK TO COMMENCE:

WORK TO BE COMPLETED DATE:

BY WHOM:

TOTAL AMOUNT OF ASBESTOS TO BE REMOVED (SQUARE FEET, LINEAL FEET, ETC.)

NOTE: SEE ENGINEERING STANDARD S-4-T WHICH LISTS REQUIREMENTS FOR
PERSONNEL PROTECTION, DISMANTLEMENT, LABELING AND DISPOSAL.

DUP 1120126

DU 055152

cc: Sr. Supervisor
Plant Doctor
Supervisor Occupational Health

ATTACHMENT D

TO: _____
(Name)

(Area)

DATE: _____
W.R.#: _____
Soc.
Sec.#: _____

FROM: E. V. GREGSON

PERSONAL EXPOSURE MONITORING FOR ASBESTOS-EMPLOYEE NOTIFICATION

On _____ a personal monitoring sample on your job assignment
as a _____ indicated that you were exposed to
_____ fibers longer than five microns per cubic centimeter
of air of asbestos as an 8-hour time weighted average compared to a
permissible limit of .5 fibers longer than five microns per cubic centimeter of air.

This exposure is above/below the permissible limit.

The following corrective action is being taken:

Note: If you have any questions relative to sampling procedure,
results, exposure limits, resampling, or control measures,
I can be reached on Ext. 118.

DUP 1120127

DU 055153

cc: D. F. Gilbert/C. R. Antonson
J. E. Sylvanus

Edge Moor, Delaware
November 7, 1985

E. C. HENZE
J. P. HOLBACK
W. J. ZERBE
J. F. LANE
W. J. BULLEN
A. W. ELLIS
K. A. THOMAS
G. S. JOHNSON
K. H. CREASEY
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ASBESTOS REMOVAL PROCEDURE

Attached for your use is a copy of the latest Asbestos Removal Procedure and an outline summary of the Procedure. Please destroy any other outdated copies you may have in your files.

As you know, asbestos dust is a proven respiratory hazard. Proper handling procedures must be followed to protect employees from exposure to airborne asbestos fibers. This procedure should be reviewed with all employees with potential for asbestos exposure.

N. Liberman
N. LIBERMAN
SR. SUPERVISOR SAFETY & HEALTH

NL/db - FILE: ARP

Attachment

DUP 1120128

DU 055154

PROCEDURE
CONTROL OF ASBESTOS DUST

1. PURPOSE

Prescribe methods for controlling, measuring, and eliminating exposure to asbestos dust.

2. SCOPE

Applicable with airborne dust originating from asbestos and asbestos-impregnated materials.

3. SOURCE OF EXPOSURE

- A. All thermal insulation including calcium silicate, installed prior to 1972 could contain asbestos fibers. This could be a source of exposure during dismantling.
- B. Other asbestos-bearing materials are possible sources of exposure in varying degrees, for example, heat suits, gloves, laboratory hot pads, transite board and pipe, asbestos board, asbestos cloth, some Haveg pipe compositions and fittings, etc.
- C. There are some asbestos-bearing materials used at Edge Moor in which the fibers are contained and are not a source of airborne dust unless they are ground or cut with a saw. Braided and molded packing, fibrous adhesive, compressed asbestos gasket material and Garlock are examples.

4. EXPOSURE LIMITS

- A. Asbestos dust concentration limits are an 8-hour, time weighted average (T.W.A.)** of .5 fibers, longer than five microns, per cubic centimeter of air* and;
- B. A ceiling concentration of 10 fibers, longer than five microns, per cubic centimeter of air*.
- C. Occupational exposure defined as: An 8-hour T.W.A. of more than 0.1 fibers, longer than five microns, per cubic centimeter of air*.

*All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 x magnification (4 millimeter objective) phase contrast illumination. (NIOSH P&CAM 239).

**Average concentration occurring over a period of 8 hours.

DUP 1120129

DU 055155

5. REGULATORY REQUIREMENTS

A. RENOVATION

Involves removing or stripping away asbestos from pipes, ducts, boilers, tank reactors, furnaces, or structural members.

Prior notification is required if quantity removed is over 80 meters (260 linear feet) of pipe or 15 square meters (160 square feet) of ducts and equipment.

1. Planned and Scheduled - Base quantity on each job.
2. Planned and Unscheduled - Base quantity on projection over one year.
3. Emergency - Base quantity on each job.

B. DEMOLITION

Involves removing or stripping away asbestos from pipes, ducts, boilers, tank reactors, furnaces, or structural members. If a load-supporting structural member is actually removed or wrecked, the operation is not a renovation, but a demolition.

Notification is required on all demolitions both large and small.

C. NOTIFICATION

Environmental Coordinator will make notification in writing.

Mechanical Supervisor responsible for job must provide information per Attachment A to Environmental Coordinator at least 15 days prior to starting job. Notification must be given to the State of Delaware Air Resources Section at least 10 days prior to commencing actual removal.

In cases of emergencies, notification must be made as soon as possible before starting job. Ten day requirement does not apply.

6. CONTROL OF ASBESTOS DUST

- A. Exercise care when handling materials which are potential source of asbestos dust. Local exhaust ventilation and similar controls shall be used to meet the exposure limits prescribed by Section 4, if possible. Prescribed safety equipment must be worn on all jobs where exposure to asbestos dust is possible.

- B. When cutting asbestos-containing material, use tools that will not make dust, e.g., shears, knives or other similar cutters. If asbestos-containing material is cut with a saw, the asbestos procedure must be followed.
- C. Respirators (Section 7) and special clothing (Section 8-A) shall be worn by employees engaged in removal or demolition of asbestos insulation or covering.
- D. Whenever material which contains asbestos is to be removed and discarded, it is to be thoroughly wetted down prior to and during removal. Removal methods which may cause dust should not be employed. Best results are achieved by removing the outer covering after the initial wetdown and rewetting the area to be worked on. Water spray cans are available through the Storeroom. The removal area shall be roped-off and proper signs posted (Section 6-G).
- E. During cleanup of asbestos materials, no dry sweeping shall be performed nor any air blowdown used. Use a vacuum cleaner or wet down before sweeping. If a vacuum cleaner is to be used, it shall be fitted with a filter which will contain asbestos fibers at the filter exhaust to meet the exposure limits prescribed in Section 4. Approved vacuum cleaner available at Storeroom and another one is kept in the Plant Garage. The vacuum cleaner in Plant Garage may be used in the Plant if Storeroom vacuum cleaner is out of service. (See Section 12).
- F. Asbestos waste shall be collected in damp or wetted condition and placed in a sealed, impermeable plastic bag. Additional bags can be obtained from the Respirator Shop. The bag shall be identified with special warning label and transported to the designated asbestos disposal box. The coveralls and gloves are to be disposed of at the end of each day in the same manner as the asbestos waste.
- G. The work area shall be roped off (barricaded) and caution signs conforming to Engineering Standard S-4-T 12.1 shall be posted at all approaches. Roped off limits shall be placed at a sufficient distance to prevent bystander exposure and permit a person to read the signs and take necessary precautions before entering the area.
- H. Chemical contaminated asbestos or asbestos-bearing materials require special considerations and should be handled by adequately trained personnel. It is the building custodian's (Operations) responsibility who may perform the work.

- I. Polyvinyl Alcohol/Boric Acid aqueous solutions which are available at the Storeroom can be used to seal damaged or exposed insulation. Instructions for use are at the Storeroom with the material.

7. RESPIRATORY EQUIPMENT

- A. Respiratory protection shall be provided to all personnel in areas where the permissible exposure limits may be exceeded per Section 4-A.
- B. Mechanical filter-type respirators are required when the T.W.A. or ceiling concentrations are not expected to exceed 10 times the limits stated in Section 4-A. (Comfo II - Type "H" filter available at tool crib.) If Comfo II respirators are issued each cartridge must be disposed of at end of each day or job completion (whichever may occur first) and so indicated in respirator cartridge log book.
- C. Atmosphere supplying, positive pressure respirators are required when the 8 hour T.W.A. or 15 minute T.W.A. concentrations are expected to exceed 10 times the limit in Section 4-A or in areas where a complete wetdown is impossible, an airline mask or self-contained airpack mask is required. See Plant Respirator Program for guidelines on use and care of respiratory equipment.
- D. Each employee who may use a respirator shall be instructed in its use and in testing it for proper fit. Fit testing is performed in the Respiratory Shop. He shall test it for proper fit prior to each use.

8. HYGIENE

- A. Special clothing ("Tyvek" coveralls with hood and foot coverings) shall be provided (available at Storeroom) for employees exposed to concentrations which may exceed the limits in Section 4 and during all removal, demolition or spraying operations. Plastic gloves are also available at the Storeroom and must be worn when handling asbestos material.
- B. Food, gum, tobacco, or other material which may be placed in the mouth shall not be kept or consumed in work areas where asbestos is being handled.
- C. Annual medical examinations are required for employees who are or might be exposed to airborne concentrations of asbestos fibers greater than 0.1 fibers/cc (8-hour T.W.A.).

9. SAMPLING

- A. It may be necessary to obtain material samples or air samples for reasons such as:
 - 1. Material Samples - An employee may be assigned to a job working with a material which may contain asbestos fibers. A material analysis must be made to insure that proper protection measures are instituted prior to, during, and after the job, and/or,
 - 2. Air Samples - There is reason to suspect that employees may be exposed to airborne asbestos fibers because:
 - a. They are working with an asbestos-bearing material and a personal sample is needed to determine exposure level.
 - b. Because of the location and/or condition of asbestos-bearing materials, employees may be exposed to airborne fibers.
- B. When the need for air samples is indicated (Section 9-A), contact Safety Supervisor, give a description of the work requested and the location. Follow this with a formal written request (Don't Say It...).
- C. Representative samples have indicated that the procedures followed by the Mechanical Department in the handling of asbestos-bearing materials have kept exposure well below the limits set by the Occupational Safety and Health Administration (O.S.H.A). Continued sampling and air monitoring will be maintained throughout the department. The Safety and Health Group will perform the monitoring, supply the equipment necessary, and provide a written report of the sampling results to the Mechanical Area Supervision who requested the sampling. Each major dismantlement job should be monitored for airborne concentrations. All jobs should be considered for monitoring and jobs of two hours or greater duration should be monitored for airborne concentrations. The Mechanical Area responsible shall request monitoring and where employees are exposed to asbestos dust, request personal monitoring to determine the employee's exposure. Sampling must be taken in a frequency pattern to represent accurately the employees exposure over his work period. Sampling shall include area and personnel monitoring.

DUP 1120133

DU 055159

Personnel Monitoring:

- D. As soon as practical, but not later than five days after receipt of sampling results, the Senior Supervisor, Mechanical, or his designate shall notify person sampled in writing per Employee Notification of Industrial Hygiene Personal and Area Monitoring Results Procedure.

10. RECORDS

- A. Medical records of persons working in asbestos airborne environment are maintained by the Edge Moor Medical Section.
- B. Environmental-Personnel Monitoring Records are maintained by the Safety and Health Group.

11. ELIMINATION OF ASBESTOS IMPREGNATED MATERIALS

- A. All mechanical personnel shall continue to seek asbestos-free substitutes for asbestos-containing materials.

12. VACUUM CLEANER

The approved vacuum cleaner to be used for asbestos removal cleanup is a NILFISK Model GS83. Vacuum cleaner is equipped as follows:

- . Remote shaking handle to allow filter shakedown without operator exposure to dusts collected.
- . High efficiency particulate air (HEPA) filters and MICROFILTERS designed for asbestos use.
- . MANOMETER to indicate buildup of dust on filter.
- . Polyliner in dust container for dust-free disposal of contents.
- . Floor nozzle or crevice nozzle.

Persons using vacuum cleaner are responsible for completely cleaning it before returning to Storeroom. Cleaning vacuum cleaner includes:

- . Shake down filter thoroughly.
- . Empty and damp clean dust container. (See vacuum cleaner instruction for detail and protective clothing requirements.)
- . Damp wipe all exterior surfaces.

- . If HEPA filters or microfilters need cleaning, use vacuum cleaner in garage to clean filters.

13. REFERENCES

- A. This procedures is based on:
 - 1) Du Pont Engineering Standard S-4-T.
 - 2) O.S.H.A. Regulations, Section 1910:1001
 - 3) National Emissions Standard for Asbestos (40 CFR 61.20 - 61.25); and
 - 4) O.S.H.A. Program Directive #300-16
 - 5) Edge Moor Plant Respirator Program and A.N.S.I. Z88.2

cc: Sr. Supervisor Production
Sr. Supervisor Mechanical
Assistant Plant Manager
Sr. Supv. Safety & Health

ATTACHMENT A

DATE:

TO: ENVIRONMENTAL COORDINATOR

FROM: _____ SUPERVISOR, MECHANICAL

NOTIFICATION REQUIREMENT - POTENTIAL ASBESTOS EMISSIONS

BUILDING NUMBER: _____ AREA: _____

DESCRIPTION OF EQUIPMENT: (SIZE OF TANK, LENGTH AND SIZE OF
PIPE, ETC.)

APPROXIMATE SIZE OF BUILDING WHERE LOCATED:

AGE OF EQUIPMENT:

EQUIPMENT USE:

WHY BEING REMOVED:

WORK TO COMMENCE:

WORK TO BE COMPLETED DATE:

BY WHOM:

TOTAL AMOUNT OF ASBESTOS TO BE REMOVED (SQUARE FEET, LINEAR FEET,
ETC.)

NOTE: SEE ENGINEERING STANDARD S-4-T WHICH LISTS REQUIREMENTS
FOR PERSONNEL PROTECTION, DISMANTLEMENT, LABELING AND DISPOSAL.

ASBESTOS PROCEDURE SUMMARY

I. EMPLOYEE PROTECTION

- A. ROPE-OFF AND SPECIAL SIGN.
- B. WET DOWN.
- C. CLOTHING - TYVEK SUITS, HOODS, BOOTS AND PLASTIC GLOVES
- D. MASKS
 - 1. CEILING CONCENTRATION NOT EXPECTED TO EXCEED 10 TIMES LIMITS (SECTION 4-A OF PROCEDURE), USE COMFO II WITH TYPE "H" RESPIRATOR CARTRIDGE. AN ULTRA-TWIN FULL FACE RESPIRATOR IS ALSO AVAILABLE.
 - 2. SELF CONTAINED BREATHING APPARATUS MUST BE USED IF EXPOSURE IS EXPECTED TO EXCEED 10 TIMES LIMITS (SECTION 4-A OF PROCEDURE).
- E. MONITORING/SAMPLING - IF NEEDED, CONTACT SAFETY AND HEALTH GROUP, EXTENSIONS 118, 183 OR 470.
- F. THE FOLLOWING ARE NOT PERMITTED:
 - 1. DRY SWEEPING
 - 2. AIR BLOWING
 - 3. POWER CUTTING OF ASBESTOS-CONTAINING MATERIAL.
 - 4. RETENTION OR CONSUMPTION OF FOOD, GUM, TOBACCO, ETC., IN AN AREA WHERE ASBESTOS MATERIAL IS BEING HANDLED.

II. ENVIRONMENTAL PROTECTION

PRIOR NOTICE OF ALL DEMOLITIONS AND LARGE RENOVATIONS MUST BE GIVEN TO THE STATE. MECHANICAL DEPARTMENT WILL PROVIDE NECESSARY INFORMATION TO THE ENVIRONMENTAL COORDINATOR AT LEAST 15 DAYS PRIOR TO START OF JOB. THE ENVIRONMENTAL COORDINATOR WILL IN TURN ADVISE THE STATE.

ATTENTION

SBESTOS RELATED WORK

REQUIRES RESPIRATORY

PROTECTION

OBTAIN RESPIRATOR AT

~~TOOL CRIB~~

RESPIRATOR SHOP

DUP 1120138

DU 055164

J. E. Sylvanus
R. C. Little
J. R. Webster
W. L. Kremer
R. M. Gorsuch, III

Edge Moor, Delaware
December 28, 1981

E. C. MENZE	J. S. DIXON	G. W. TAYLOR
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J. T. CAVANAUGH	W. D. WHITESELL	G. F. SCHMIDT
R. WALDIN	W. A. CHADWICK	T. F. DAVID
W. J. ZERBE	H. G. SELHEIMER	D. G. WINNINGTON
A. R. PALLADINETTI	J. SWIEDER	F. F. WHAM
R. L. COPPOLA	R. D. GILLESPIE	S. W. WITKOWSKI
J. F. LANE	R. O. JONES	H. B. COULTER
J. J. SHEA	C. T. MELVIN	R. C. BURGE
K. R. FARRARE	E. N. BROWN	K. A. BERKLEY
W. J. BULLEN	E. T. O'NEILL	A. W. ROESKE
J. REGAN	W. G. KIRK	E. R. ROBERTS
J. A. TOPEKA	J. BOLINSKI	E. V. GREGSON
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G. R. DENNEY	M. G. BROWN	
F. R. HAMM	J. D. SHUKITT	

ASBESTOS REMOVAL PROCEDURE

Attached for your use is a copy of the latest Asbestos Removal Procedure and an outline summary of the Procedure. Please destroy any other outdated copies you may have in your files.

As you know, asbestos dust is a proven respiratory hazard. Proper handling procedures must be followed to protect employees from exposure to airborne asbestos fibers. This procedure should be reviewed with all employees with potential for asbestos exposure.

N. Liberman
N. LIBERMAN
SAFETY & HEALTH SUPERVISOR

NL/ela
Attachments

DUP 1120139

DU 055165

PROCEDURE
CONTROL OF ASBESTOS DUST

1. PURPOSE

Prescribe methods for controlling, measuring, and eliminating exposure to asbestos dust.

2. SCOPE

Applicable with airborne dust originating from asbestos and asbestos-impregnated materials.

3. SOURCE OF EXPOSURE

- A. All thermal insulation including calcium silicate, installed prior to 1972 could contain asbestos fibers. This could be a source of high exposure during dismantling.
- B. Other asbestos-bearing materials are possible sources of exposure in varying degrees, for example, heat suits, gloves, laboratory hot pads, transite board and pipe, asbestos board, asbestos cloth, some Havgard pipe compositions and fittings, etc.
- C. There are some asbestos-bearing materials used at Edge Moor in which the fibers are contained and are not a source of airborne dust, for example, braided and molded packing, fibrous adhesive, compressed asbestos gasket material, Garlock, etc. However, these items will be cataloged and emissions supported by air samples of the work area where they are used.

4. EXPOSURE LIMITS

- A. Asbestos dust concentration limits are an 8-hour, time-weighted average (T.W.A.)** of two fibers, longer than five microns, per cubic centimeter of air* and;
- B. A ceiling concentration of 10 fibers, longer than five microns, per cubic centimeter of air*.
- C. Occupational exposure defined as: An 8-hour T.W.A. of more than 0.1 fibers, longer than five microns, per cubic centimeter of air*.

**Average concentration occurring over a period of 8 hours.

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

DUP 1120140

DU 055166

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

5. REGULATORY REQUIREMENTS

A. RENOVATION

Involves removing or stripping away asbestos from pipes, ducts, boilers, tank reactors, furnaces, or structural members.

Prior notification is required if quantity removed is over 80 meters (260 lineal feet) of pipe or 15 square meters (160 square feet) of ducts and equipment.

1. Planned & Scheduled - Base quantity on each job.
2. Planned & Unscheduled - Base quantity on projection over one year.
3. Emergency - Base quantity on each job.

B. DEMOLITION

Involves removing or stripping away asbestos from pipes, ducts, boilers, tank reactors, furnaces, or structural members. If a load-supporting structural member is actually removed or wrecked, the operation is not a renovation, but a demolition.

Notification is required on all demolitions both large and small.

C. NOTIFICATION

Environmental Coordinator will make notification in writing.

Mechanical Supervisor responsible for job must provide information per Attachment A to Environmental Coordinator at least 15 days prior to starting job. Notification must be given to the State of Delaware Air Resources Section at least 10 days prior to commencing actual removal.

In case of emergencies, notification must be made as soon as possible before starting job. Ten day requirement does not apply.

6. CONTROL OF ASBESTOS DUST

- A. Exercise care when handling materials which are potential sources of asbestos dust. Local exhaust ventilation and similar controls shall be used to meet the exposure limits prescribed by Section 4, if possible. Prescribed safety equipment must be worn on all jobs where exposure to asbestos dust is possible.

DUP 1120141

DU 055167

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

6. CONTROL OF ASBESTOS DUST (Continued)

- B. When cutting asbestos-containing material, use tools that will not make dust, e.g., shears, knives or other similar cutters. If asbestos-containing material is cut with a saw, the asbestos procedure must be followed.
- C. Respirators (Section 7) and special clothing (Section 8-A) shall be worn by employees engaged in removal or demolition of asbestos insulation or covering.
- D. Whenever material which contains asbestos is to be removed and discarded, it is to be thoroughly wetted down prior to and during removal*. Removal methods which may cause dust should not be employed. The removal area shall be roped-off and proper signs posted (Section 6-G).
- E. During cleanup of asbestos materials, no dry sweeping shall be performed nor any air blowdown used. Use a vacuum cleaner or wet down before sweeping. If a vacuum cleaner is to be used, it shall be fitted with a filter which will contain asbestos fibers at the filter exhaust to meet the exposure limits prescribed in Section 4. Approved vacuum cleaner available at Storeroom and another one is kept in the Plant Garage. The vacuum cleaner in Plant Garage may be used in the Plant if Storeroom vacuum cleaner is O/S (See Section 12).
- F. Asbestos waste shall be collected in damp or wetted condition and placed in a sealed, impermeable plastic bag. Additional bags can be obtained from the Respirator Shop. The bag shall be identified with special warning label and transported to the designated asbestos disposal box. The coveralls and gloves are to be disposed of at the end of each day in the same manner as the asbestos waste.

*Best results are achieved by removing the outer covering after the initial wetdown and rewetting the area to be worked on. Water spray cans are available through the Storeroom.

- G. The work area shall be roped-off (barricaded) and caution signs conforming to Engineering Standard S-4-T 12.1 shall be posted at all approaches. Roped-off limits shall be placed at a sufficient distance to prevent bystander exposure and permit a person to read the signs and take necessary precautions before entering the area.
- H. Chemical contaminated asbestos or asbestos-bearing materials require special considerations and should be handled by adequately trained personnel. It is the building custodian's (Operations) responsibility who may perform the work.

DUP 1120142

DU 055168

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

6. CONTROL OF ASBESTOS DUST (Continued)

- I. Polyvinyl Alcohol/Boric Acid aqueous solutions which are available at the Storeroom can be used to seal damaged or exposed insulation. Instructions for use are at the Storeroom with the material.

7. RESPIRATORY EQUIPMENT

- A. Respiratory protection shall be provided to all personnel in areas where the permissible exposure limits may be exceeded per Section 4-A.
- B. Mechanical filter-type respirators are required when the T.W.A. or ceiling concentrations are not expected to exceed 10 times the limits stated in Section 4-A. (Comfo II - Type "H" filter available at tool crib.) If Comfo II respirators are issued each cartridge must be disposed of at end of each day or job completion (whichever may occur first) and so indicated in respirator cartridge log book.
- C. Atmosphere-supplying, positive-pressure respirators are required when the 8-hour T.W.A. or 15-minute T.W.A. concentrations are expected to exceed 10 times the limit in Section 4-A or in areas where a complete wetdown is impossible, an airline mask or self-contained airpack mask is required. See Plant Respirator Program for guidelines on use and care of respiratory equipment.
- D. Each employee who may use a respirator shall be instructed in its use and in testing it for proper fit. Fit testing is performed in the Respiratory Shop. He shall test it for proper fit prior to each use.

8. HYGIENE

- A. Special clothing ("Tyvek" coveralls with hood and foot coverings) shall be provided (available at Storeroom) for employees exposed to concentrations which may exceed the limits in Section 4 and during all removal, demolition or spraying operations. Plastic gloves are also available at the Storeroom and must be worn when handling asbestos material.
- B. Food, gum, tobacco, or other material which may be placed in the mouth shall not be kept or consumed in work areas where asbestos is being handled.
- C. Annual medical examinations are required for employees who are or might be exposed to airborne concentrations of asbestos fibers greater than 0.1 fibers/cc (8-hour T.W.A.).

DUP 1120143

DU 055169

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

9. SAMPLING

- A. It may be necessary to obtain material samples or air samples for reasons such as:
- (1) Material Samples - An employee may be assigned to a job working with a material which may contain asbestos fibers. A material analysis must be made to insure that proper protection measures are instituted prior to, during, and after the job, and/or,
 - (2) Air Samples - There is reason to suspect that employees may be exposed to airborne asbestos fibers because:
 - (a) They are working with an asbestos-bearing material and a personal sample is needed to determine exposure level.
 - (b) Because of the location and/or condition of asbestos-bearing materials, employees may be exposed to airborne fibers.
- B. When the need for air samples is indicated (Section 9-A), contact Safety Supervisor, give a description of the work requested and the location. Follow this with a formal written request (Don't Say It....).
- C. Representative samples have indicated that the procedures followed by the Mechanical Department in the handling of asbestos-bearing materials have kept exposure well below the limits set by the Occupational Safety and Health Administration (O.S.H.A.). Continued sampling and air monitoring will be maintained throughout the department. The Safety and Health Group will perform the monitoring, supply the equipment necessary, and provide a written report of the sampling results to the mechanical area supervision who requested the sampling. Each major dismantlement job should be monitored for airborne concentrations. All jobs should be considered for monitoring and jobs of two hours or greater duration should be monitored for airborne concentrations. The mechanical area responsible shall request monitoring and where employees are exposed to asbestos dust, request personnel monitoring to determine the employee's exposure. Sampling must be taken in a frequency pattern to represent accurately the employees exposure over his work period. Sampling shall include area and personnel monitoring.

Personnel Monitoring:

- D. As soon as practical, but not later than five days after receipt of sampling results, the Senior Supervisor, Mechanical, shall advise the employee in writing of the results of the sampling. If the employee is not in the area, the Senior Supervisor shall advise the employee's supervisor of the results of the sampling. The employee shall be advised of the results of the sampling in writing. The employee shall be advised of the results of the sampling in writing. The employee shall be advised of the results of the sampling in writing.

DUP 1120144

DU 055170

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

10. RECORDS

- A. Medical records of persons working in asbestos airborne environment are maintained by the Edge Moor Medical Section.
- B. Environmental-Personnel Monitoring Records are maintained by the Safety & Health Group.

11. ELIMINATION OF ASBESTOS IMPREGNATED MATERIALS

- A. All mechanical personnel shall continue to seek asbestos-free substitutes for asbestos-containing materials.

12. VACUUM CLEANER

The approved vacuum cleaner to be used for asbestos removal cleanup is a NILFISK Model GS83. Vacuum cleaner is equipped as follows:

- . Remote shaking handle to allow filter shakedown without operator exposure to dusts collected.
- . High efficiency particulate air (HEPA) filters and MICROFILTERS designed for asbestos use.
- . MANOMETER to indicate buildup of dust on filter.
- . Polyliner in dust container for dust-free disposal of contents.
- . Floor nozzle or crevice nozzle.

Persons using vacuum cleaner are responsible for completely cleaning it before returning to Storeroom. Cleaning vacuum cleaner includes:

- . Shake down filter thoroughly.
- . Empty and damp clean dust container.*
- . Damp wipe all exterior surfaces.
- . If HEPA filters or microfilters need cleaning, use vacuum cleaner in garage to clean filters.

* See vacuum cleaner instruction for detail and protective clothing requirements.

DUP 1120145

DU 055171

PROCEDURE - CONTROL OF ASBESTOS DUST (Continued)

13. REFERENCES

A. This procedure is based on:

- (1) Du Pont Engineering Standard S-4-T
- (2) O.S.H.A. Regulations, Section 1910:1001
- (3) National Emissions Standard for Asbestos
(40 CFR 61.20 - 61.25); and
- (4) O.S.H.A. Program Directive #300-16
- (5) Edge Moor Plant Respirator Program and
A.N.S.I. Z88.2

/ela
Revised 12/29/81

DUP 1120146

DU 055172

ASBESTOS PROCEDURE SUMMARY

I. EMPLOYEE PROTECTION

- A. Rope-off and special sign
- B. Wet down
- C. Clothing - Tyvek suits, hoods, boots and plastic gloves.
- D. Masks
 - 1. Ceiling concentration not expected to exceed 10 times limits (Section 4-A of Procedure), use Comfo II with Type "H" respirator cartridge.
 - 2. Self-contained breathing apparatus must be used if exposure is expected to exceed 10 times limits (Section 4-A of Procedure).
- E. Monitoring/Sampling - If needed, contact Safety & Health Group, Extensions 118, 183, or 348.
- F. The following are not permitted:
 - 1. Dry sweeping
 - 2. Air blowing
 - 3. Power cutting of asbestos-containing material
 - 4. Retention or consumption of food, gum, tobacco, etc, in an area where asbestos material is being handled.

II. ENVIRONMENTAL PROTECTION

Prior notice of all demolitions and large renovations must be given to the State. Mechanical Department will provide necessary information to the Environmental Coordinator at least 15 days prior to start of job. The Environmental Coordinator will in turn advise the State.

DUP 1120147

DU 055173

Employee Relations Superintendent
Safety Supervisor

ATTACHMENT A

DATE:

TO: ENVIRONMENTAL COORDINATOR

FROM: _____ SUPERVISOR, MECHANICAL

NOTIFICATION REQUIREMENT
POTENTIAL ASBESTOS EMISSIONS

BUILDING# _____ AREA _____

DESCRIPTION OF EQUIPMENT: (SIZE OF TANK, LENGTH AND SIZE OF PIPE, ETC.)

APPROXIMATE SIZE OF BUILDING WHERE LOCATED:

AGE OF EQUIPMENT:

EQUIPMENT USE:

WHY BEING REMOVED:

WORK TO COMMENCE:

WORK TO BE COMPLETED DATE:

BY WHOM:

TOTAL AMOUNT OF ASBESTOS TO BE REMOVED (SQUARE FEET, LINEAL FEET, ETC.)

NOTE: SEE ENGINEERING STANDARD S-4-T WHICH LISTS REQUIREMENTS FOR
PERSONNEL PROTECTION, DISMANTLEMENT, LABELING AND DISPOSAL.

DUP 1120148

DU 055174

Plant Doc...

ATTACHMENT B

DATE: _____

W.R.#: _____

Sec. _____
Sec.#: _____

(Name)

(Area)

: E. V. GREGSON

PERSONAL EXPOSURE MONITORING FOR ASBESTOS-EMPLOYEE NOTIFICATION

On _____ a personal monitoring sample on your job assignment
a _____ indicated that you were exposed to
_____ fibers longer than five microns per cubic centimeter
air of asbestos as an 8-hour time weighted average compared to a
missible limit of two fibers longer than five microns per cubic centi-
ter of air.

This exposure is above/below the permissible limit.

The following corrective action is being taken:

Note: If you have any questions relative to sampling procedure,
results, exposure limits, resampling, or control measures,
I can be reached on Ext. 118.

DUP 1120149

DU 055175