

INTEROFFICE MEMORANDUM

AUGUST 17, 1992

FROM: T. M. DOSSEY, SUPERINTENDENT FACILITIES SUPPORT
DEER PARK MANUFACTURING COMPLEX

TO: ALL HEALTH AND SAFETY COMPLEX ORDER BOOK HOLDERS
DEER PARK MANUFACTURING COMPLEX

SUBJECT: REVISED COMPLEX ORDER S-125, ASBESTOS

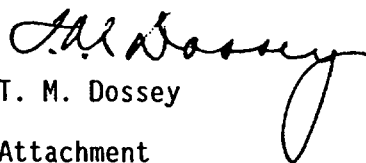
Attached is the minor revision to Health and Safety Order S-125, Asbestos. The Order has been revised to clarify requirements when working with asbestos-containing materials. Highlights of the revisions include:

1. The Order includes an expanded definitions section to clarify terms and concepts.
2. Shell employees will only do incidental asbestos work. Asbestos work which is not incidental will be done by qualified contractors.
3. Asbestos training for Shell employees includes awareness training for all employees and hands-on training for employees doing incidental work.
4. Inspection and maintenance procedures shall be developed to ensure the continued integrity of asbestos-containing materials.
5. The EPA Asbestos NESHAP regulations require government notification and an on-site trained person for demolitions and renovations.

As part of the revisions to asbestos training, new training packages are being developed at this time. A new video and leaders guide package will cover awareness training. A hands-on class will cover procedures and practices for incidental removal. These training packages are scheduled for delivery in October 1992.

To allow for completion of the training, the revised Order becomes effective November 17, 1992. Please insert the revised Order in Volume 2 of your Health and Safety Complex Order book and discard the old Order at that time.

Questions on the Order should be directed to D. L. (Lynne) Tackett, Group Leader, Health and Safety-Facilities Support, at 246-1218.


T. M. Dossey
Attachment

DPMC-01000

LAM 007517

SHELL
DEER PARK MANUFACTURING COMPLEX
COMPLEX

SUMMARY: S-125 ASBESTOS

SAFETY ORDER POINTS OF INTEREST:

1. All insulation shall be treated as asbestos-containing material (ACM), unless there is documentation the insulation is non-asbestos.
2. Examples of ACM that may be found at the Complex include: insulation purchased prior to 1973, gaskets, building materials, and brake linings.
3. Departments with ACM will establish inspection and maintenance procedures to ensure the continued integrity of the ACM.
4. Asbestos is a potential health hazard when taken into the body. Asbestos may enter the body by inhaling airborne fibers or ingesting asbestos contaminated foods or beverages.
5. Personal hygiene is very important in protection from asbestos.
6. Storage, preparation, and consumption of food or beverages where exposure to airborne asbestos is likely is not permitted.
7. Respiratory protection and protective clothing are required for all asbestos related work.
8. Annual medical surveillance exams are provided for employees with potential exposure to asbestos.
9. Periodic training and maintenance of training records are required.
10. Environmental Compliance is to be notified prior to demolition or renovation of ACM so that proper notification to the Texas Air Control Board can be made.

All employees are responsible for knowing and understanding the requirements of this Safety Order.

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ASBESTOS

SAFETY S-125
PAGE 1 OF 8
NOVEMBER 17, 1992 (R)

I. INTRODUCTION

A. Purpose and Scope

The purpose of this Order is to establish minimum requirements for managing and working with asbestos-containing materials (ACM) at the Complex. Occupational exposures to asbestos are regulated by the Occupational Safety and Health Administration (OSHA).

Asbestos demolition, renovation, and waste disposal are also regulated by the Environmental Protection Agency (EPA).

B. Use of Asbestos

Asbestos is a mineral silicate occurring naturally as a variously colored fiber. It is most frequently encountered within the Complex as insulation on equipment, piping and structures installed prior to 1973. While purchase of new asbestos-containing insulation has been discontinued, asbestos-containing insulation may be encountered in older units for many years to come. Asbestos may also be found in other materials at the Complex (see Attachment I).

C. Health Hazards of Asbestos

Asbestos is a potential health hazard when taken into the body, even in very low concentrations. Asbestos can enter the body by inhaling airborne fibers or ingesting contaminated foods or beverages. Asbestos is associated with a variety of diseases. These include:

1. Asbestosis, a non-malignant scarring of the lungs.
2. Bronchogenic carcinoma, a malignancy, or cancer, of the lungs.
3. Mesothelioma, a malignancy of the lining of the chest cavity.
4. Cancers of the stomach, colon, and rectum.

These diseases develop slowly, and usually do not become evident until many years after initial exposure. Recent scientific studies have shown that individuals who smoke and have exposure to asbestos have a significantly greater health risk than asbestos workers who do not smoke.

II. DEFINITION OF TERMS

- A. ACM - asbestos-containing material.
- B. ADEQUATELY WET - to mix or penetrate ACM with liquid to prevent the release of particulates. If visible emissions are observed coming from the ACM during handling, then it is not considered adequately wet.
- C. AUTHORIZED PERSON - any person authorized by their employer and required by work duties to be present in a restricted or regulated area.
- D. COMPETENT PERSON - one who is trained and has authority to take corrective action during asbestos work. Training shall include identification of asbestos hazards, removal procedures, practices for reducing the hazard, and contents of the OSHA asbestos standards.
- E. DEMOLITION - wrecking or taking out any load-supporting member of a facility or the intentional burning of a facility (see Attachment II).
- F. HEPA - a high efficiency particulate air filter capable of trapping and retaining at least 99.97 percent of 0.3 micrometer diameter mono-dispersed particles.
- G. INCIDENTAL ASBESTOS WORK - asbestos related work that is non-repetitive, lasts no more than one hour, and involves small amounts of ACM. To assist in determining whether a task is incidental or not, the following examples are provided:
 - 1. The repair or removal of no more than 3 linear feet of ACM on piping with a diameter of 12 inches or less.
 - 2. The repair or removal of no more than 3 square feet of ACM on other components.
 - 3. Removal of asbestos-containing gaskets, packing or similar ACM on a single piece of equipment.
 - 4. Electrical or other cable work that disturbs ACM.

5. Changing the filter in a HEPA filter asbestos vacuum.

Work disturbing hot ACM shall not be considered incidental asbestos work. Hot ACM presents additional handling concerns because it is difficult to keep the ACM adequately wet. Hot ACM may also melt disposal bags. ACM shall be considered hot if the temperature of the material is at or above 150 degrees Fahrenheit.

- H. REGULATED AREA - a work area where asbestos work is taking place and where airborne asbestos concentrations will or will likely exceed the permissible exposure limit.
- I. RENOVATION - altering a facility or facility component in any way, including the removal of ACM from a facility component. Renovation of ACM may be encountered during upgrading of insulation, or during turnaround and maintenance activity in some units.
- J. RESTRICTED AREA - a work area where asbestos work is taking place and where airborne asbestos concentrations will not exceed the permissible exposure limit.

III. GENERAL REQUIREMENTS

The following are general requirements for managing ACM:

- A. In the absence of specific knowledge to the contrary, all insulation shall be treated as ACM. Insulation can be verified as non-asbestos material by:
 - 1. A bulk sample analysis to determine the presence or absence of asbestos.
 - 2. Specific documentation that the insulation has been previously tested and proven to be non-asbestos.
- B. No one shall be exposed at or above the permissible exposure limits for asbestos. The permissible exposure limit for asbestos is 0.2 fibers per cubic centimeter (f/cc), as an 8-hour time weighted average (TWA). The short-term excursion limit is 1 f/cc, as a 30-minute TWA.

- C. Departments responsible for facilities and equipment with ACM will establish inspection and maintenance procedures to ensure the continued integrity of the ACM. These procedures shall include:
1. identification of ACM;
 2. routine inspection of ACM; and
 3. cleanup and repair of deteriorating ACM.
- D. Insulation containing asbestos shall not be purchased, nor recovered for re-use. When replacing other ACM, use non-asbestos substitutes when practical.
- E. Departments responsible for facilities and equipment with ACM shall post unit danger signs (see Attachment III) at the unit boundaries to indicate that the unit contains asbestos materials.
- F. Shell employees will only do asbestos work that is considered incidental asbestos work. All other asbestos work will be done by contractors trained to do asbestos-related work. Minimum work practices for asbestos work are identified in Attachment IV.
- G. All external ACM shall be removed prior to equipment, piping, or structures being transported from the originating department.

ACM that is installed inside equipment, piping or structures shall be removed if it could be disturbed during transportation or during planned maintenance. The ACM shall be removed prior to the equipment, piping, or structures being transported from the originating department.

Internal ACM that will not be disturbed during planned maintenance or during transportation may be left in place. Equipment, piping, or structures with internal ACM being transported from the originating department shall be accompanied by notification that the equipment contains asbestos.

All equipment, piping or structures that are to be disposed via salvage shall have all ACM removed prior to being transported from the originating department.

H. Departments planning demolition or renovation work involving ACM shall notify the Environmental Compliance Department Asbestos Contact. One month advance notification shall be made when:

1. There is any demolition work, even if there is no ACM involved (see Attachment II).
2. There is renovation involving the removal of 260 linear feet or more of ACM on piping or 160 square feet or more of ACM on other components.

A list of information required in the notification is included in Attachment V.

For emergency maintenance work involving ACM, notification must be given to the Environmental Compliance Department Asbestos Contact prior to the start of work. For emergency work during other than normal business hours, contact the Environmental Supervisor prior to the start of work.

I. Changes to the original demolition or renovation notification require a revised notice (see Attachment V). The Environmental Compliance Department Asbestos Contact shall be notified of any changes at least one week prior to the original start date.

J. All demolition and removal work requiring notification will also require the presence at the job site of a person trained in the provisions of the EPA Asbestos NESHAP regulations. A certificate of completed training shall be posted at the job site. This requirement shall be met by attaching a copy of the trained person's (generally the contractor supervisor) certification to the safe work permit posted at the job site.

If a regulated area is established, a competent person, trained in the provisions of the OSHA Construction Asbestos standard is also required at the job site.

K. All asbestos waste shall be doubled-bagged in at least 6 mil polyethylene bags. All bags used for disposal shall be labelled with the OSHA hazard label language and the identification of the waste generator (see Attachment III).

IV. TRAINING REQUIREMENTS

A. Awareness Training

Upon initial assignment to the Complex, all employees shall receive asbestos awareness training. The training shall cover the areas identified in Attachment VI.

All employees shall complete annual refresher training by reviewing this Order and passing the test in the Health & Safety Orders (HSO) System.

B. Incidental Asbestos Work Training

In addition to awareness training, employees who do incidental asbestos work shall complete the hands-on Incidental Asbestos Work Training class. This class covers specific work practices, procedures, and controls required for incidental asbestos work. Employees shall receive this training prior to starting a job task involving incidental asbestos work, unless the employee has received this training within the previous twelve months.

C. Training Records

Each department shall document employee asbestos training, including awareness and incidental training, in the Shell Training Administration and Records System (STARS).

V. MEDICAL SURVEILLANCE REQUIREMENTS

An asbestos medical surveillance program is provided for Shell employees with potential exposure to airborne asbestos. The current entrance criteria is exposure to asbestos concentrations at or above the action level of 0.1 f/cc, as an 8-hour TWA, for 30 or more days per year. Employees whose historical job tasks involved periodic installation or rip-out of ACM are also eligible for the medical surveillance program.

Annual medical examinations are provided to those employees in the surveillance program.

VI. RESPONSIBILITIES

- A. Each employee shall be responsible for:
 - 1. Following all required work practices when doing incidental asbestos work.
 - 2. Specifying asbestos hazards and work practices on work permits when asbestos will be encountered.
- B. Each department responsible for facilities with ACM is responsible for:
 - 1. Establishing inspection and maintenance procedures.
 - 2. Providing and documenting employee training.
 - 3. Notifying Environmental Compliance of demolition and renovation work.
 - 4. Posting unit danger signs.
 - 5. Removing external ACM and appropriate internal ACM from equipment before transporting.
- C. Environmental Compliance is responsible for notifying the Texas Air Control Board (TACB) of demolition and renovation work.

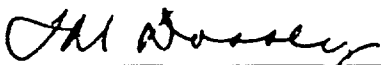
For emergency maintenance asbestos work during other than normal business hours, the Environmental Supervisor is responsible for notifying the TACB.
- D. The Health and Safety Department is responsible for:
 - 1. Providing technical support for administration of
 - a) training,
 - b) compliance with requirements,
 - c) bulk sample analyses.
 - 2. Exposure monitoring during incidental asbestos work.
- E. The Medical Department is responsible for administering medical surveillance examinations.

- F. The Environmental Operations Department is responsible for administration of asbestos waste disposal.

VII. REFERENCES

- A. 29 CFR 1926.58 Asbestos, Occupational Safety and Health Administration.
- B. 29 CFR 1910.1001 Asbestos, Occupational Safety and Health Administration.
- C. 49 CFR 61 National Emission Standard for Hazardous Air Pollutants for Asbestos, Environmental Protection Agency.
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Approved By:



Superintendent Facilities Support

ATTACHMENT I

EXAMPLES OF ASBESTOS CONTAINING MATERIALS
FOUND AT THE COMPLEX

Insulation
Fire retardant paper
Refractory
Coatings
Insulation Cements

Heater Boards
Heater Mantels
Electrical Cords

Floor Tiles
Ceiling Tiles
Roofing Materials
Wallboard
Transite

Gaskets
Seals
Darcon Cups (for pumps)
Machinery packing
Compressor rings

Brake linings
Clutch linings
Friction linings

Concrete piping
Concrete products
Fire proofing
Plastics
Welding blankets

ATTACHMENT II
DEMOLITION ACTIVITIES

Demolition is defined in the OSHA and EPA asbestos standards as the wrecking or taking out of any load-supporting structural member of a facility or the intentional burning of a facility. A facility is considered a building or structure. For further clarification, EPA defines load-supporting members as structural components such as beams and load-supporting walls. The following list is provided to assist in determining whether or not demolition notification is required when no asbestos removal is involved in the demolition:

<u>FACILITY/EQUIPMENT</u>	<u>NOTIFICATION REQUIRED</u>
Office Building	Yes
Control Room	Yes
Maintenance Shop	Yes
Other Buildings (pump house, analyzer shed, sub-station)	Yes
Cooling Water Tower	
- wall	Yes
- fan	No
Furnace/Boiler	
- wall	Yes
- tubes	No
Piping	No
Pumps/Compressors *	No
Vessels/Columns/Tanks *	No
Heat Exchangers	No
Flares	No
Stairways/Steps/Ladders/Platforms	No
Wastewater DAF/Clarifiers/Ponds/Separator Boxes	No
* includes foundations	

ATTACHMENT III

ASBESTOS HAZARD WARNING SIGNS AND LABELS

A. UNIT DANGER SIGN

DANGER
THIS UNIT CONTAINS ASBESTOS

B. WARNING SIGN

Standard OSHA Warning Sign Language:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

C. HAZARD LABEL

Standard OSHA Hazard Label Language:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

D. WASTE GENERATOR IDENTIFICATION

SHELL OIL COMPANY
HIGHWAY 225
DEER PARK, TEXAS 77536

ATTACHMENT IV

INCIDENTAL ASBESTOS REMOVAL SAFE WORK PRACTICES

The following work practices are minimum requirements when doing any asbestos work. Additional work practices, such as establishing a regulated area, a mini-enclosure, or full negative pressure enclosure, may be required when doing more than incidental asbestos work. A summary of safe work practices is provided in Table IV-A.

- A. Consider the potential for encountering asbestos when planning a job and again when preparing a work permit. Take bulk samples as needed for positive identification.
- B. Contact the area Industrial Hygienist when planning incidental tasks to arrange for exposure monitoring. Personal exposure monitoring is required to determine potential asbestos exposures.
- C. Establish an asbestos work area.
 - 1. Demarcate the area with asbestos barricade tape.
 - 2. Post hazard warning signs around the perimeter of the restricted area.
- D. Wear the following personal protective equipment, as a minimum, to enter an incidental asbestos work area:
 - 1. Respiratory protection. A half-mask, air-purifying respirator with high efficiency particulate air (HEPA) filters.
 - 2. Disposable protective clothing, including: coveralls, head covering and foot coverings. All disposable clothing must be disposed of as asbestos waste.

Disposable clothing may be worn over personal fire retardant clothing when working in incidental or restricted asbestos work areas. Personal clothing shall not be worn into asbestos regulated areas.
 - 3. Gloves and goggles.
- E. Use glove bags and polyethylene sheeting to collect ACM and prevent contamination of work surfaces and adjacent equipment and piping. Bag all removed ACM immediately.
- F. Adequately wet all ACM during removal and handling to minimize the release of asbestos fibers. Use a fine mist spray of water amended with a wetting agent, or equivalent. In places where water may not be used, such as those involving electrical systems, work practices shall be reviewed with the area Health & Safety Inspector. Available equipment for asbestos work is listed in Table IV-B.

ATTACHMENT IV
(CONTINUED)

INCIDENTAL ASBESTOS REMOVAL
SAFE WORK PRACTICES

- G. Maintain a clean work area by wet wiping and/or vacuuming with a HEPA filtered vacuum after completion of asbestos removal and at appropriate intervals to minimize the potential for generating airborne asbestos. Use polyethylene sheeting to cover exposed ACM to minimize airborne asbestos during idle work periods.
- H. Transfer all bags of asbestos waste to the labelled bins at the asbestos storage and transfer facility located next to the Complex landfill. Alternatively, labelled asbestos storage bins may be set up at the job site for large removal projects. A Waste Disposal Request, DPMC-6 form is required for all transfers to the storage and transfer facility.
- I. Do not store, prepare, eat or drink food or beverages; chew gum or tobacco; or apply cosmetics in work areas where asbestos work is taking place.
- Do not smoke in asbestos work areas. This is because medical evidence indicates a greater health hazard exists for individuals exposed to tobacco smoke and asbestos. This prohibition is applicable regardless of the level of asbestos exposure and applies to all personnel in the work area regardless of whether or not they are handling or disturbing ACM.
- J. Take reasonable cleanup precautions prior to leaving the work area, either for break or at the end of the work shift. Remove the outer layer of protective clothing at the work area and handle as asbestos waste. Wash hands and face and vacuum clothing with a HEPA filtered vacuum before leaving the work area.
- K. Because of the potential to generate increased concentrations of airborne asbestos fibers, do not do any of the following activities when doing asbestos work:
1. dry sweeping,
 2. use of compressed air systems, or other high pressure systems (unless these systems are equipped with a HEPA filter ventilation system to capture dust),
 3. use of high speed abrasive disk saws (unless the tools are equipped with appropriate engineering controls to capture dust).

TABLE IV-A
SUMMARY OF ASBESTOS WORK AREA HEALTH AND SAFETY PRECAUTIONS

<u>REQUIREMENT</u>	<u>INCIDENTAL</u>	<u>RESTRICTED AREA</u>	<u>REGULATED AREA</u>
1. Barricades	R	R	R
2. Warning Signs	R	R	R
3. Respiratory Protection	R	R	R
4. Disposable Coveralls	R	R	R
5. Head Covers	R	R	R
6. Disposable Foot Covers	R	R	R
8. Goggles	R	R	R
9. Gloves	R	R	R
10. Exposure Monitoring Data	R	R	R
11. Wet Methods	R	R	R
12. HEPA Filter Vacuum	R	R	R
13. Double Bagged & Labelled	R	R	R
14. Negative Pressure Enclosure	N	N	R
15. Adjacent Hand Wash Facilities	R	R	N
16. Use of Showers & Clean Room	N	N	R
17. TACB Notification	N	M	M
18. On-Site Trained/Competent Person	N	M	R
19. Use of Power Tools	ONLY WITH APPROPRIATE CONTROLS		

R - Required

M - May be required, depending on amount removed

N - Not required

TABLE IV-B
EQUIPMENT AVAILABLE IN MATERIALS WAREHOUSE

<u>DESCRIPTION</u>	<u>FOLIO NUMBER</u>
Asbestos Removal Kit *	9001-134088-0
Adhesive, Lock Down Spray, Can	9001-132088-0
Bag, 6 mil Labelled Asbestos Disposal (case)	9000-082000-0
Barricade Tape, Red Asbestos Warning	9001-129088-0
Brush, 2" Disposable Paint	8000-002300-0
Brush, 4" Disposable Paint	8000-003600-0
Brush, Shoe Handle Wire	9000-082800-0
Brush, Stainless Steel Toothbrush Style Wire	9001-127088-0
Coveralls with Hood & Boots, Med.	9001-140088-0
Coveralls with Hood & Boots, Lg.	9001-141088-0
Coveralls with Hood & Boots, XLg.	9001-142088-0
Coveralls with Hood & Boots, XXLg.	9001-143088-0
Encapsulant, Wrap-n-Cure, 6" x 9' Roll	9001-133088-0
Glove Bag, 44" x 60" Horizontal, One Arm Set	9001-120088-0
Glove Bag, 60" x 72" Horizontal, One Arm Set	9001-121088-0
Glove Bag, 60" x 84" Horizontal, Two Arm Set	9001-122088-0
Glove Bag, 72" x 120" Horizontal, Four Arm Set	9001-123088-0
Glove Bag, 120" x 60" Vertical	9001-124088-0
Glove Bag, 60" x 72" Vertical	9001-125088-0
Knife, Poly	9001-126088-0
Nipper, Crescent End	7800-955088-0
Saw, 18" Flexible Wire	9001-130088-0
Saw, 24" Flexible Wire	9001-131088-0

TABLE IV-B
(CONTINUED)

EQUIPMENT AVAILABLE IN MATERIALS WAREHOUSE

<u>DESCRIPTION</u>	<u>FOLIO NUMBER</u>
Scraper (Putty Knife)	7800-147688-0
Scraper, Short Handle	7800-148008-0
Screwdriver, 5/16" Flat	7800-236288-0
Scrub Pad	9001-128088-0
Sealer, 2 gallons Mastic	8000-061300-0
Sheeting, 20' x 100' Clear Polyethylene Roll	9000-037400-0
Sign: "DANGER - THIS UNIT CONTAINS ASBESTOS"	9000-084600-0
Sign: "ASBESTOS DUST HAZARD"	9000-078600-0
Sign: "DANGER - ASBESTOS HAZARD"	9000-078300-0
Snips, Wiss M-3	7800-214788-0
Sprayer, Industro Pressure	9000-047000-0
Tag: "CAUTION - CONTAINS ASBESTOS DUST"	9000-065800-0
Tape, 2" Roll Duct	9000-071200-0
Wetting Agent (Concentrate)	6000-309000-0

- * Asbestos Removal Kit contains 1 can adhesive spray, 1 roll duct tape, 5 asbestos disposal bags, 1 quart wetting agent/surfactant, 1 quart encapsulant, 2 rolls wrapping encapsulant, 2 horizontal glove bags, 1 vertical glove bags, 1 flexible saw, barricade tape, 2 asbestos hazard warning signs, 1 large and 1 extra-large pair coveralls with hood and boots, polyethylene sheeting drop cloth, 1 pressure sprayer, snips, utility knife, 2 wire brushes, spray application quart bottle, scraper, 2 scrub pads, disposable rags, paint brush, and fiber drum (kit container).

ATTACHMENT V

INFORMATION REQUIRED FOR
DEMOLITION AND RENOVATION NOTIFICATION
TO THE TEXAS AIR CONTROL BOARD

ORIGINAL NOTIFICATION:

1. A description of the facility where asbestos removal will take place.
2. The type of removal taking place (demolition or renovation).
3. The process unit or DPMC site location where the removal will take place.
4. The approximate facility size.
5. The number of floors if removal is to be done inside a building.
6. The total square footage of the building or unit where the job will be done.
7. The approximate age of the facility.
8. The approximate amount of asbestos-containing material to be removed (either in linear feet of piping or square feet).
9. The scheduled start and completion dates for the entire demolition or renovation project.
10. The scheduled start and completion dates for the asbestos removal work.
11. A description of the demolition or renovation work. An example of this would be the removal of asbestos from a heat exchanger shell to conduct maintenance on the exchanger.
12. A description of the work practices and engineering controls to be used in prevention of asbestos emissions to the environment during the asbestos work. Items to include here would be that the removal will be done using wet methods, inside a glove bag, and/or using a negative pressure enclosure.

CHANGES THAT REQUIRE A REVISED NOTIFICATION TO THE TACB:

1. An increase of 20% or more in the amount of asbestos to be removed.
2. A change in the start date of the job.
3. A change in the end date of the job

ATTACHMENT VI

ASBESTOS AWARENESS TRAINING REQUIREMENTS

Asbestos awareness training shall covering the following topics:

1. The health hazards associated with asbestos.
2. How to recognize asbestos-containing materials.
3. The relationship between smoking and asbestos exposure in producing lung cancer.
4. The types of operations that could result in exposures.
5. The specific work practices, procedures, and engineering controls required when doing asbestos related work.
6. How to adequately protect against exposures.
7. The purpose, proper use, fit, and limitations of respirators and protective clothing.
8. The purpose and requirements of the medical surveillance program.
9. The OSHA asbestos standards.
10. Health and Safety Order S-125.

SHELL
DEER PARK MANUFACTURING COMPLEX
COMPLEX

SUMMARY: ASBESTOS, SAFETY ORDER S-125

SAFETY ORDER POINTS OF INTEREST:

1. Asbestos is a potential health hazard when taken into the body. If exposed, it may enter the body through breathing, eating or drinking.
2. Asbestos may be found in insulation purchased prior to 1973, gaskets, building materials and brake linings.
3. Unless proven otherwise all insulation should be treated as asbestos.
4. Personal hygiene is very important in protection from asbestos.
5. Storage, preparation, and consumption of food and beverages where exposure to airborne asbestos is likely shall not be permitted.
6. Respiratory protection is required. Protective clothing is required except for incidental work.
7. Annual medical exams are provided for certain Shell employees.
8. Annual training is required and training records shall be maintained.
9. This order specifically details:
 - A. Health effects of asbestos.
 - B. General practices in asbestos management.
 - C. Definitions
 - D. Work practices applicable at DPMC.
 - E. Demolition and renovation of asbestos materials.
 - F. Disposal.
 - G. Medical exams and employee training.

(R) All employees who may come into contact with asbestos are responsible for knowing and understanding the details in the text of this safety order.

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ASBESTOS

SAFETY S-125
PAGE 1 OF 7
APRIL 15, 1989 (R)

I. INTRODUCTION

Asbestos is a mineral silicate occurring naturally as a variously colored fiber. It is non-combustible, non-conducting, and resistant to deterioration and chemical attack. Because of these properties, it has found widespread use in thermal insulation, asbestos floor tile, roofing and transite materials, gaskets, coatings, plastics, and brake linings. Because of its fibrous nature, it can be woven into cloth, or used to add strength to other materials.

Asbestos is a potential health hazard when taken into the body even in very low concentrations. Asbestos fibers are associated with a variety of diseases, including (1) Asbestosis - a non-malignant scarring of the lungs; (2) Bronchogenic Carcinoma - a malignancy (cancer) of the lung; (3) Mesothelioma - a malignancy of the lining of the chest cavity; and (4) cancer of the stomach, colon, and rectum. These diseases develop slowly, and usually do not become evident until many years after initial exposure. Asbestos fibers can enter the body via the breathing process or via eating/drinking. The small lightweight asbestos fibers easily become "airborne" and can contaminate the work area. Recent scientific studies have shown that individuals who smoke and have exposure to asbestos have a significantly greater health risk than asbestos workers who don't smoke.

- (R) The 8-hour time-weighted average (TWA) permissible exposure limit (PEL) for asbestos is 0.2 fibers, longer than 5 micrometers, per cubic centimeter of air (f/cc). The excursion limit for asbestos is 1.0 f/cc for any 30-minute period. No employee shall be exposed to airborne concentrations of asbestos equal to or exceeding the PEL.

Asbestos is most frequently encountered within the Complex as insulation on pipes and structures installed prior to 1973. While purchase of new insulation containing asbestos has been discontinued, asbestos insulation may be encountered in older units for many years to come.

II. GENERAL PRACTICES

- (R) 1. Asbestos-containing materials shall be handled in a wet state whenever practical. Engineering controls, such as enclosures, exhaust ventilation, or dust collection should also be used where required to maintain exposure to asbestos below the PEL. As a precaution, respirators shall be worn for all tasks which involve disturbance of materials containing friable asbestos (refer to

Respirator Safety Order for proper respirator selection). Any material containing more than 1 percent asbestos by weight, that hand pressure can crumble, pulverize, or reduce to powder when dry, is considered friable.

2. Wherever practicable, replace materials containing asbestos with non-asbestos substitutes. Insulation containing asbestos shall not be purchased, and asbestos blankets and insulating tape may not be used.
3. In the absence of specific knowledge to the contrary, treat all insulation as containing asbestos. Insulation can be verified as non-asbestos material by (a) field tests performed by the Health & Safety Department, or (b) specific knowledge that the insulation was installed after 1973, which is the date when DPMC began using only non-asbestos insulation. All units which have asbestos-containing materials installed shall post signs at the unit boundaries which state: THIS UNIT CONTAINS ASBESTOS MATERIALS.
4. Reinsulate equipment that is frequently maintained, such as control valve manifolds, pumps, etc., with non-asbestos insulation at an early opportunity. Equipment insulated with asbestos may be sent outside the Company for maintenance, providing the insulation will not be disturbed or removed for that maintenance, and providing that such equipment shall be accompanied by notification that the insulation contains asbestos. This notification shall include the standard asbestos warning label on the equipment (see Attachment I) and suitable notices accompanying the truck manifest and the purchase order. Asbestos insulated equipment that requires maintenance which will disturb the insulation shall have the asbestos thoroughly removed prior to leaving DPMC. Execution of these reinsulation programs and notification practices are the responsibility of the Shell supervisor or foreman most immediately involved in arranging for the equipment transfer.
5. Use work permits to ensure compliance with asbestos work practices for maintenance tasks. It is the joint responsibility of maintenance and operating representatives to anticipate encountering asbestos when planning a job or preparing a work permit. When asbestos will be encountered, the departmental safe work permit shall specify "asbestos work practices in effect; respirator required".
6. All insulated equipment that is to be disposed via salvage shall have insulation removed at the originating location. Insulated equipment will not be accepted at the salvage yard. However, by special arrangement with Material Control, large pieces of equipment with non-asbestos insulation may be sent to salvage.

III. DEFINITIONS

1. Regulated Area - Any work area where asbestos exposures may reasonably be expected to equal or exceed the PEL. Regulated areas shall be identified with warning signs (Attachment 1) and roped off with hazard warning tape. Access to regulated areas shall be limited to authorized personnel. All persons entering a regulated area shall wear an approved respirator and protective clothing. All persons working in areas surrounding regulated areas shall be informed as to the nature of the work to be performed and of the existence and requirements of the regulated area. Negative pressure enclosures shall be established where required to maintain asbestos concentrations below 0.1 f/cc in areas surrounding the regulated area. Exposure monitoring will be required (contact Industrial Hygiene). A competent person will be required onsite to insure all requirements are being followed.
2. Restricted Area - Any work area where asbestos-containing materials will be disturbed, such as, removing insulation or transite materials, and the work will last longer than 1 hour. Exposures to asbestos are not expected to equal or exceed the PEL. Restricted areas shall be identified with warning signs (Attachment 1) and hazard warning tape. All persons entering the restricted area shall wear an approved respirator and protective clothing.
3. Incidental Asbestos Work - Short duration work tasks (less than 1 hour) with asbestos-containing materials where asbestos exposures are not expected to exceed the PEL.
4. Competent Person - The competent person will generally be a Certified Industrial Hygienist, an industrial hygienist with training and experience in handling asbestos, or a person who has such training and experience as a result of on-the-job training and experience. Contact Industrial Hygiene regarding appropriate training courses which are available.

IV. WORK PRACTICES

The following work practices apply at DPMC:

1. Identification of Work Areas - Post warning signs (Attachment 1), which are available from the tool room, around all work areas while involved in removal or disturbance of asbestos-containing insulation, or cutting of asbestos-containing transite, except for incidental work. If airborne concentrations of asbestos can reasonably be expected to exceed the PEL, a regulated area must be established.

2. Respiratory Protection - All persons shall wear respiratory protection during any operation where airborne asbestos fibers could be generated. Approved respirators include: half and full face twin cartridge respirators equipped with HEPA filters (purple cartridges), or any supplied air respirator. Respirators are available from the green respirator cabinets. (See Respiratory Protection Safety Order). Employees who use respirators are to be trained annually, and fit tested semi-annually. Semiannual fit testing will apply only to employees who wear respirators in areas where asbestos concentrations exceed the PEL. All other employees who wear respirators will be fit tested annually.
3. Asbestos Removal - The removal of asbestos insulation should be done in a wet state to prevent or minimize the formation of airborne asbestos fibers. Portable spray cans using water or commercially available wetting agents may be used. Wetting agents (surfactants) may be added to water to allow more effective penetration and permit more thorough soaking of the asbestos-containing materials. Wetting agents are generally prepared by mixing 1-3 ounces of wetting agent to 5 gallons of water. Special work situations where water cannot be used, such as those involving electrical systems, should be reviewed with the area Health and Safety Inspector.
4. Ventilation Systems - Inspect local ventilation equipment used to control asbestos fibers at least quarterly. Inspection records are to be maintained by the principal department using such equipment.
5. Housekeeping - Clean the work area by wet sweeping and bagging of all asbestos debris, or by use of a HEPA filtered vacuuming device after completion of asbestos removal and at appropriate intervals to minimize the potential for generating airborne asbestos. In all cases, the asbestos debris must be properly handled for disposal (see section entitled "Disposal"). Precautions should be used to minimize airborne asbestos during idle work periods. For example at the end of a workday large pieces of unprotected insulation are to be moistened and loose insulation picked up. Exposed insulation that cannot be maintained in a wet state during idle periods shall be enclosed in plastic or encapsulated with commercially available encapsulants. Dry sweeping or "blowing" are not permitted.
6. Personal Activities - The storage, preparation, and consumption of food and beverages is not permitted in areas where exposure to airborne asbestos is encountered. No employee may eat, drink, smoke, chew gum or tobacco, or apply cosmetics in work areas where asbestos materials are being handled. It is the responsibility of all employees that work with asbestos materials to take reasonable cleanup precautions prior to eating, and also at the end of the work shift. As necessary, washup areas are to be provided for washing.

7. Clothing - Employee personal street clothing is to be protected from asbestos contamination. Employees assigned to regulated or restricted work areas, or tasks where airborne exposure or clothing contact with asbestos may reasonably occur shall wear disposable coveralls. Efforts must be made to assure the effectiveness of the coveralls. The use of different size disposable coveralls will minimize tearing; all snaps or buttons shall be used as is necessary to protect undergarments. Torn or ripped coveralls shall not continue to be worn. All contaminated disposable clothing must be disposed of and transported in sealed plastic bags and labeled (Attachment 1).

Coveralls are not required for maintenance or operations tasks encountering incidental asbestos work, providing generation of airborne asbestos and contamination of street clothing is prevented by procedures outlined in this section.

8. Change/Decontamination Areas - Decontamination areas shall be established for all "regulated areas". The decontamination area shall be adjacent and connected to the regulated area, and shall consist of an equipment room (contaminated change room), shower area, and clean room in series. All employees shall enter and exit the regulated area through the decontamination area. The clean room shall be equipped with a locker or appropriate storage container for each employee. The showers shall be located between the equipment room and clean room where feasible. Where the shower area is not located here, asbestos must be removed from employee's work clothing using a HEPA vacuum before proceeding to the shower area.

V. DEMOLITION AND RENOVATION OF ASBESTOS MATERIALS

Demolition and renovation of insulation and transite containing asbestos must be accomplished in accordance with OSHA and EPA regulations, and written notification to the Texas Air Control Board (TACB) is required. Demolition of insulation may be encountered when process units are retired, when interunit insulated pipelines need replacement, or when individual columns or large vessels are replaced or retired. Maintenance of insulation may be encountered during upgrading of insulation, or during major turnarounds in some units.

To prepare for planned maintenance asbestos work, the responsible Field Team Manager, Supervisor, or Project Engineer shall contact Health & Safety to determine whether the material contains asbestos. The Environmental Conservation Regulatory Affairs group shall then be advised if more than 160 square feet is involved. For demolition work, Regulatory Affairs must be notified of the approximate square feet of asbestos to be removed, regardless of amount (even if there is none). One month's advance notification to the Regulatory Affairs group is required. For emergency maintenance asbestos work, verbal notification must be given to

the TACB prior to work starting. Regulatory Affairs, or the Environmental Supervisor, is responsible for that notification.

The responsible foreman, supervisor, or project engineer shall prepare written instructions for the job. These instructions shall then be used as a basis for TACB notification, and for conducting the job. The information which should be included for notification shall include the process unit, who will be removing the asbestos (contractor name), asbestos removal start and completion dates, nature of asbestos removal, and if any special handling procedures, other than routine, will be used. Environmental monitoring will normally be performed by Industrial Hygiene personnel for jobs that require TACB notification.

In July of each year, Regulatory Affairs prepares an annual report to the TACB, estimating the quantity of asbestos that will be removed for all demolition projects and planned maintenance jobs over 160 square feet. A list of all demolition projects are included in the notification. Further notification for any of the jobs listed in the annual report is not necessary. Emergency maintenance asbestos removal work over 160 square feet, or any other asbestos jobs which arise during the year and not included in the annual report, requires notification to the TACB before the job begins.

Contractor pre-bid conferences held are to include the specific hazards of asbestos and required procedures. Also, advance notification of Purchasing - Procurement is necessary to allow sufficient time for contract preparation.

VI. DISPOSAL

Place the wetted asbestos in heavy duty plastic bags and seal them securely as soon as possible after the bags are filled and prior to moving the bags. An asbestos warning label, as shown in Attachment I, is required on each bag. The label may be pre-printed on the bag or may be on a tag attached to the bag. Bagged asbestos and transite will be disposed of onsite. A Waste Disposal Request form, DPMC-6 (Attachment II), is required for all shipments. The quantity shipped should be indicated on the form in cubic yards. It is the responsibility of the generating department to see that the asbestos is placed in the trench provided in the landfill. Contact Environmental Operations with questions concerning disposal.

Dispose of non-asbestos insulation wastes by placing them in the regular refuse bins.

VII. ANNUAL MEDICAL EXAMS AND EMPLOYEE TRAINING

Annual medical examinations are provided to Shell employees prior to engaging in activities regularly exposed to airborne concentrations (≥ 0.1 f/cc) of asbestos. The intent of this medical program is to include

employees who work with asbestos-containing materials on a regular basis (30 or more days per year) or who have had known exposure through previous assignments.

In addition, this order shall serve as a training instrument. Those employees that work regularly with asbestos materials shall be retrained annually, by reading and discussing this order and by viewing the asbestos training tape which is available from the Training Department.

Key items to be emphasized in the training are:

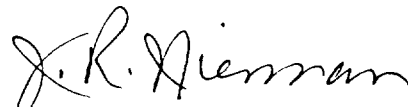
1. Methods of recognizing asbestos.
2. The health hazards associated with asbestos.
3. The increased risk for smokers.
4. Types of operations that could result in exposure.
5. Precautionary work practices, engineering controls, housekeeping procedures, hygiene facilities, protective clothing, respirators, decontamination, and waste disposal.
6. Purpose for and proper respirator use, fitting, and limitations.
7. Medical surveillance program requirements.
8. A review of the OSHA Standards.
9. The use of warning signs where exposure may apply.

The manager shall retain appropriate training records documenting the names and dates of the training for 40 years.

Attachments (3)

(R) Updating Responsibility:
Manager Health & Safety

Approved By:



Complex Superintendent

ATTACHMENT I

ASBESTOS WARNING SIGNS AND LABELS

SIGN

Standard OSHA Warning Sign - 14" x 20" - with legend per OSHA Standard:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

LABEL

Self-Adhesive Type Label, bearing legend per OSHA Standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE
HAZARD

LAM 007546

SAFETY: Safety instructions must be clearly and completely stated on the DPMC-6 form or on a separate Safe Work Permit (indicate on the waste disposal form if a safe work permit is issued).

A Work Permit Addendum should be attached to the DPMC-6 form or to the Safe Work Permit form.

INSTRUCTIONS: Before completing this form you should determine, as exactly as possible, the composition and quantity of material you have. In addition you should make arrangements within your own department or with another department to recycle or reuse the material if possible.

Please do not guess at which codes to use. If you are not sure, discuss with the environmental representative when you call for approval.

CODE NUMBERS FOR WASTE DISPOSAL

CODE	WASTE CODE NAME	CODE	DEPARTMENT NAME	CODE	DISPOSAL SITE NAME
170750	ASBESTOS	01	A	01	PRI SOLIDS LAGOON 1
170770	MISC. PLANT WASTES	02	G	02	PRI SOLIDS LAGOON 2
	(CONTAMINATED TRASH)	03	V	03	PRI SOLIDS LAGOON 3
179640	SOLID RESIN	04	CAT CRACKING	04	BIOSOLIDS DIGESTER
183050	BPA	05	PURCHASING/MATERIALS	05	OIL RECOVERY TANKS (X-301,10,11,12,13,21)
249890	BIOSOLIDS	06	BA/SR	06	DECANT TANKS (X-324,5,6,7,8)
400000	ACID SOLUTIONS	07	ENVIRONMENTAL SOUTH	07	DECANT PIT
450000	BASE SOLUTIONS	08	ENVIRONMENTAL NORTH	08	ACID NEUTRALIZER
500000	CHEMICAL SOLUTIONS	09	LABORATORY	09	MISC. PLANT WASTE COMPACTORS
550000	RECOVERED OIL	11	DISTILLING/LOFU	10	JONES LAKE
600000	OIL/WATER	14	TANKFARM	12	BELTWAY CLEAN STRG
650000	CLEAN DIRT/RUBBLE	15	THERMAL CRACK/ALKY	16	HCIN FEED TANKS
750000	RECLAIM DRUMS	16	MAINTENANCE	17	SOUTH EFFLUENT TREATER TANKS, T-1,1300,1301, T-1302,1306,1310,1317,1318,1323,13145,13146
800000	DRUMMED WASTES	17	PHENOL ACETONE	18	DRUM RECLAIM (SOUTH ET/SALVAGE YARD)
909390	API SKIM	18	BPA	19	SITE 102/103
910230	PHENOLIC TARS	19	LUBE LOGISTICS	20	USE THIS NUMBER FOR OTHER FACILITIES
910590	LAB WASTES	20	OLEFINS	21	DRUM STORAGE BLDG
913700	LIQUID RESIN	21	UTILITIES NORTH		
914680	ORG CHLORIDE WASTE	22	UTILITIES SOUTH		
915190	BPA PANDRIER BTMS	23	UTILITIES CENTRAL		
941520	CONTAM. DIRT/RUBBLE	24	RESINS DISTRIBUTION		
950430	OILY SLUDGE	25	RESINS OPERATIONS		
970210	SPENT CATALYST	27	CONSTRUCTION		
979280	BRUCINE CONTAINERS	30	SAFETY		
979430	PCB'S	31	HYDROCRACKING/SR/CR		
979840	OILY DIRT	34	AROMATICS		
		35	GAS RECOVERY		
		36	LUBE A		
		37	LUBE B		
		46	BASE CHEM & SOL		
		47	DOCKS		
		50	UTILITIES DISTRIB.		