PLAINTIFF'S EXHIBIT

UC-2424

...ION CARBIDE CORPORATION
ENGINEERING, MANUFACTURING AND TECHNOLOGY SERVICES DEPARTMENT
HEALTH, SAFETY AND ENVIRONMENTAL TECHNOLOGY
South Charleston, West Virginia

BUSINESS CONFIDENTIAL MEMORANDUM
March 23, 1987

Agenda Item 4.1
Agenda Item 4.3

RECEIVED
MAR 24 1987
CCN

TO: C. C. Neely

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FROM: T. E. Hanning

SUBJECT: Asbestos Implementation Task Group
March 17 Meeting Minutes

Clyde,

The following information is being forwarded for issue as part of the subject minutes and represents those items tagged for responsibility by the Industrial Hygiene contact on the Asbestos Implementation Task Group.

Also please find attached SH-256, Removal and Handling Asbestos-Containing Materials, which is a Standard Practice of the C&P Safety/Health Technology Manual. Section 2.6 of this standard deals with the EPA regulations for removal and handling of asbestos materials and has not been updated with respect to recent EPA asbestos proposals. The sections dealing with OSHA regulations have been updated. SH-256 has been volatile and will be revised when needed as part of my responsibility as a member of the Safety/Health Standards Team.

Identification of Asbestos-Containing Materials

A goal of the asbestos task group is to establish a program so that asbestos will not be purchased after January 1, 1989. A C&P criteria (guideline document) for the identification of asbestos-containing materials is needed as part of the overall program. A consensus of C&P Industrial Hygiene Departments will be sought as a basis for the criteria. The criteria will provide recommended techniques and when to use them, pricing, timing and accuracy of results, and other subjective information. Polarized light or scanning electron microscopy are two identification techniques that can provide fast and accurate confirmation for the presence of asbestos.

This assignment will have the following estimated schedule and cost.

Schedule: 4Q 1987.
Cost: None, cost will be part of normal Safety/Health Standards Team Work.

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Removal, Modification, and/or Disposal of Asbestos-Containing Materials

The need for a protocol to sample asbestos at the new 0.2 fibers per cubic centimeter of air exposure level was discussed. The protocol would be used to establish asbestos exposure data from the storage (binders may deteriorate and release asbestos), cutting and changing out of asbestos gaskets and packing. After discussion with Industrial Hygiene representatives, the need to develop a generic test protocol for asbestos exposure is not warranted since the OSHA Asbestos Standard clearly defines the sample taking method that must be used. The Plant Industrial Hygienist is familiar with this method and can quickly outline a technician's job duties in taking air samples during storage, cutting and changing out of asbestos gaskets and packing. Additionally, the Plant Industrial Hygienist will be able to supply other recent asbestos exposure data from the plant monitoring strategy program, if available and applicable.

This action will have the following estimated schedule and cost.

Schedule: Sample taking can proceed immediately with the support of the location Industrial Hygiene area.
Cost: None, resources are outside this task group.

Sincerely,

Terry E. Hanning
2000/3628
Unicom 8-721-5903

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REMOVAL AND HANDLING
ASBESTOS-CONTAINING INSULATION MATERIAL

1 GENERAL

1.1 This Practice provides a procedure for the safe removal and handling of asbestos-containing insulation material and compliance with OSHA regulation 29 CFR 1910.1001 and 1926.58 and EPA regulation 40 CFR 61 Subpart M. The purpose of the Practice is to ensure the safety and health of employees directly involved with performing the work and of others, either in the immediate area or downwind, who may be exposed to residual dust/fibers. Insulation material containing asbestos is no longer installed by UCC; therefore, the concern of this Practice is to control renovation and demolition operations involving the removal of old, asbestos-containing insulation; in these activities OSHA Standard 29 CFR 1926.58 is applicable. For additional details, review the OSHA Standards.

All insulation materials approved through the use of UCC Insulation Standards have been specified asbestos-free since 1970.

2 STANDARDS

2.1 Permissible Exposure Limits

2.1.1 Employee 8-hour time-weighted average exposure to airborne concentrations of asbestos fibers shall not exceed 0.2 fibers, longer than 5 micrometers, per cubic centimeter of air.

2.1.2 An action level of 0.1 fibers, longer than 5 micrometers, per cubic centimeter of air has been set which triggers the monitoring, medical, and employee information and training requirements.

2.2 Work Practices

2.2.1 Insofar as practicable, demolition, removal or handling of asbestos-containing insulation shall be performed while the material is in a sufficiently wet state to prevent emission of airborne fibers exceeding exposure limits prescribed in 2.1.1 and 2.1.2. See Section 2.7.3 for the specific EPA regulations that control work practices. Wherever feasible, the employer shall establish negative-pressure enclosures before commencing removal, demolition, and rennovation operations.

2.2.2 Caution signs shall be posted at all approaches to areas which may contain excessive concentrations of airborne asbestos fibers so that an employee may read the signs and take necessary protective steps before entering the area. The signs shall state:

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

In addition to these signs, legible signs warning of the health hazards of asbestos shall be provided and displayed at each location where airborne concentrations of asbestos fibers may exceed the exposure limits listed in Section 2.1.1. See Section 2.6.4.4 for additional requirements for posting signs. Whenever feasible, a negative pressure enclosure must be established before commencing removal, demolition or rennovation operation. Air exhausted from the enclosure must pass through a HEP filter (See 29 CFR 1926.58).

2.2.2.1 An appropriate barricade, using caution or barrier tape for example, shall be erected around the perimeter of outdoor areas as a supplementary, protective measure to discourage unauthorized entry.

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2.2.3 Insofar as practicable, removed insulation shall be wetted and placed directly into labeled plastic bags (or other suitable containers) for disposal at an approved landfill. Otherwise, place plastic sheeting beneath the job site, mist spray the removed insulation with water, amended water, or wetting agent and then place in plastic bags. When wet methods of removal/cleanup are impractical, e.g., when temperatures are below freezing, vacuuming or sweeping may serve as an effective alternate cleanup method. Sweeping compound shall be applied to the work area to prevent dust generation when sweeping. See Sections 2.7.3.7 and 2.7.4 for specific work practice requirements.

2.2.4 Label Specifications - Container caution labels shall be printed in letters of sufficient size and contrast as to be readily visible and legible. Where feasible, installed asbestos-containing products shall also contain a visible label. The label shall state:

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

Where feasible, installed asbestos containing products should be labeled in accordance with 2.2.4.

2.2.5 Regulated Areas - Employers must identify as regulated areas any locations in their workplaces where there may be occupational exposures to airborne concentrations of asbestos above the PEL. Only authorized persons, with proper respiratory protection, may enter regulated areas which must be clearly posted. Eating, drinking, and smoking are prohibited in regulated areas.

2.2.6 Housekeeping - All external surfaces in any place of employment shall be maintained free of accumulation of asbestos fibers. Special attention should be given to cleaning scaffolds used in demolition work. Clean-up of asbestos dust is prohibited with compressed air, dry-sweeping or any dry clean-up process.

2.2.7 Waste Disposal - Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated disposable clothing, that is consigned for disposal and which may produce airborne concentrations of asbestos fibers in excess of permissible exposure limits, shall be collected and disposed of in sealed leak-tight containers to an approved landfill. See Section 2.6.4 for specific disposal requirements.

2.3 Personal Protective Equipment

2.3.1 Respiratory Protection - Employees engaged in the spraying [wetting-down] of asbestos, the removal; in the demolition of pipes, structures, or equipment covered or insulated with asbestos; and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment based on the air concentration in Table 1 and selected from among those approved by the Mine Safety and Health Administration, Department of the Interior, or the National Institute of Occupational Safety and Health, Department of Health and Human Services described in 30 CFR Part 11. Compliance with exposure limits prescribed in 2.1, Permissible Exposure Limits, shall not be achieved by the use of respirators, except:

1. During the interval necessary to install or implement feasible engineering and work practice controls,

2. In work operations such as maintenance and repair activities or other activities which the employer establishes that engineering and work practice control procedures are not feasible,

3. In work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the PEL,

4. In emergencies.

Where respirators are permitted the employer shall provide a powered, air purifying respirator in lieu of any negative pressure respirator specified in Table 1 whenever:

a. An employee chooses to use this type of respirator; and
b. This respirator will provide adequate protection to the employee.

22.5.1.2

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TABLE 1

RESPIRATORY PROTECTION FOR ASBESTOS, TREMOLITE, ANTHOPHYLLITE, AND ACTINOLITE FIBERS

Airborne Concentration of Subject Materials or Combination of These Materials	Required Respirator
1. Not in excess of 2 f/cc (10 x PEL)	1. Half-mask air-purifying respirator equipped with high-efficiency filters.
2. Not in excess of 10 f/cc (50 x PEL)	1. Full facepiece air purifying respirator high-efficiency filters.
3. Not in excess of 20 f/cc (100 x PEL)	1. Any powered air-purifying respirator equipped with high efficiency filters. 2. Any supplied-air respirator operated in continuous flow mode.
4. Not in excess of 200 f/cc (1000 x PEL)	1. Full facepiece supplied air respirator operated in pressure demand mode.
5. Greater than 200 f/cc (greater than 1,000 x PEL) or unknown concentration)	1. Full facepiece supplied air respirator operated in pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus.

2.3.2 Special Clothing - The employer shall provide and require use of special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed. Contaminated clothing must be stored in closed containers such as sealed lockers. It should be changed daily.

2.3.3 Hygiene Facilities and Practices - At any fixed place of employment exposed to concentrations of asbestos fibers in excess of permissible exposure limits, the employer shall provide change rooms for employees working regularly at the place. Two separate lockers or containers shall be provided each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes. Employees exposed to asbestos during their work shift must shower before leaving the plant and must not leave wearing contaminated work clothing. Employees working in asbestos areas must have ready access to filtered air lunchrooms and must wash their face and hands prior to eating or smoking. Protective clothing must not be worn in the lunchroom.

2.3.4 Laundering - Laundering of asbestos-contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of prescribed exposure limits. Those performing laundering of asbestos-contaminated clothing must be informed of all requirements listed in Section 2.3, Personal Protective Equipment. Contaminated clothing shall be transported in sealed impermeable containers and labeled in accordance with Section 2.2.6, Label Specifications. If disposable coveralls are used, they should be placed into containers with asbestos for disposal.

22.6.1.2

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UNION CARBIDE TMS
INTER DIVISION

2.4 Industrial Hygiene Responsibility

2.4.1 Monitoring - Employee exposure monitoring shall be conducted to determine compliance status with regard to permissible exposure limits and respiratory protection requirements. Environmental/Area monitoring shall be conducted along the periphery of the restricted area to assure that fugitive emissions exceeding permissible exposure limits do not extend past the demarcated area. Samples shall be collected using 25 mm diameter mixed cellulose filters and a 50 mm extension cowl. Samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. Monitoring is required at least every 6 months for employees whose exposures to asbestos is at or above the action level. Where construction standard 1926.58 is applicable, daily monitoring is required unless employees use supplied air respirators in a positive pressure mode. Samples must be analyzed using a phase contrast microscope calibrated using a phase shift test slide and equipped with a Walton-Beckett graticule. The filter samples must be prepared using acetone-triacetin clearing solution and be counted in accordance with the "A" rules contained in the NIOSH 7400 method.

2.5 Training

2.5.1 All employees who are exposed to airborne asbestos concentrations in excess of the exposure limit listed in Section 2.1.2 with or without the use of respirators shall participate in a training program at the time of or prior to initial assignment and at least annually afterwards that includes these information topics:

1. Health affects associated with asbestos exposure.

2. Relationship between exposure to asbestos and smoking in producing lung cancer.

3. Nature of operations which could result in exposure to asbestos and necessary protective steps to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping and protective clothing.

4. Purpose, proper use, fitting instructions, and limitations of the respirators used to protect against asbestos fibers.

5. Review of all provisions contained in 29 CFR 1910.1001, Asbestos.

6. Purpose for and description of the asbestos medical surveillance program.

7. Instructions for handling spills as well as emergency and clean-up procedures.

2.5.2 Training records shall be maintained by the location and shall be readily available to all affected employees and to OSHA personnel upon their request.

2.6 Medical Surveillance

2.6.1 Medical surveillance shll be provided to all employees where exposure, without regard to the use of respirator, is at or above the action level for 30 or more days per year.

2.7 Federal EPA Regulation, 40 CFR 61, Hazardous Air Pollutants; Subpart M - National Emission Standard for Asbestos

2.7.1 Applicability - These requirements apply to the demolition of structures or renovation of equipment and piping that involves removal of insulation that contains friable asbestos materials. Friable asbestos material means any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry. Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations; on the other hand, renovation means to alter one or more facility components in any way without taking out load-supporting structural members. Planned renovation operations include scheduled and unscheduled operations in which the

22.6.1.2

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amount of friable asbestos material that will be removed or stripped within a given time period can be estimated or predicted based on operating experience. Adequately wetted means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

2.7.2 Key Notification Requirements

1. Timing - The EPA must be notified with a written notice of intention to demolish or renovate according to these timing requirements:

a. As early as possible before renovation begins if planned, but not necessarily scheduled, renovation operations are predicted to involve the stripping or removing of at least 260 linear feet on piping or 160 square feet on other facility components of friable asbestos materials within a year.

b. At least 10 days before a demolition operation that involves at least 260 linear feet on piping or 160 square feet on other facility components of friable asbestos materials.

c. At least 20 days before a demolition operation that involves less than 260 linear feet on piping or 160 square feet on other facility components of friable asbestos materials (EPA requires further advance notice for these demolitions that are shorter in duration).

d. As early as possible before a structurally unsound facility in danger of imminent collapse is demolished under an order of a state or local government agency.

2. Text of Notification Letter - A suggested notification letter for the demolition and/or renovation of facilities containing friable asbestos material per requirements of 40 CFR 61, Subpart M, Section 146 (c), is:

Form of Notification

NOTICE OF INTENT TO DEMOLISH OR RENOVATE STRUCTURES, EQUIPMENT OR PIPING INVOLVING FRIABLE ASBESTOS INSULATION

1. Name of Owner	Union Carbide Corporation
2. Address of Owner	(Location Street Address of facility being demolished or renovated).
3. Description of Facility	Various buildings, equipment and piping used in manufacture and distribution of chemicals and plastics and also age, size and prior use of these facilities.
4. Estimate of Quality of Asbestos	Approximate amount of friable asbestos material present in the facility and explanation of techniques of estimation if estimate for demolition operation is less than 160 square feet or 260 linear feet.
5. Scheduled Start and Completion Dates	
6. Method(s) of Demolition/Renovation	
7. Compliance Procedures	How EPA regulations will be followed
8. Disposal Site	Name and location of site where asbestos waste material will be deposited

Only parts 1 through 4 are necessary for demolition operations involving less than 260 linear feet or 160 square feet of friable asbestos material. The name, title, and authority of the State or local government representative who orders the demolition should be added to the notification for demolition of structurally unsound facilities. Some states, including Georgia, New York, North Carolina, and California, also require notification of demolition and/or renovation operations involving friable asbestos materials.

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2.7.3 Key Removal Requirements - For a planned demolition operation or for the total of scheduled renovation operations in which at least 260 linear feet or 160 square feet of asbestos material is removed:

1. Friable asbestos materials shall be removed before a demolition or renovation operation if the operation would likely break up or preclude access to the asbestos materials for subsequent removal unless the asbestos materials are on a facility component encased in a material such as concrete or are adequately wetted whenever exposed.

2. If a facility component is covered or coated with asbestos materials and is removed in sections or units, it shall be carefully lowered, not dropped or thrown, to the ground level and shall have any exposed asbestos materials adequately wetted while cutting or disconnecting.

3. Wetting is not required during renovations if the EPA is requested to confirm that wetting would unavoidably damage equipment. If the EPA confirms this, then a local exhaust ventilation and collection system must be used to collect asbestos particulates. The exhaust system must exhibit no visible emissions to the outside air or be designed and operated according to 40 CFR 61.154.

4. After sections or units of piping or equipment with asbestos materials have been taken out of the facility, the asbestos materials during stripping shall be adequately wetted or shall be collected by a ventilation and collection system as specified in 2.7.3.3.

5. Dust-tight chutes or containers shall be used to lower asbestos material removed or stripped more than 50 feet above ground level and not removed in units or sections.

6. All friable asbestos materials that have been removed or stripped shall remain adequately wet until collected for disposal.

7. If the ambient temperature is below 0°C, then the only wetting requirements are those specified in 2.7.3.4 and 2.7.3.6. Equipment or piping coated or covered with asbestos materials shall be removed to the maximum extent possible.

8. For demolition of a structurally unsound facility under the order of a State or local government agency, the portion of the facility that contains friable asbestos materials shall be adequately wetted during the wrecking operation. The wetting requirements specified in 2.7.3.4, 2.7.3.5, 2.7.3.6, and 2.7.3.7 shall also apply to any emergency demolitions.

2.7.4 Key Disposal Requirements

1. Visible emissions shall not occur during the collecting, transporting, or disposal of any asbestos-containing waste material unless the air-cleaning methods specified in 40 CFR Part 61.154 are used to collect asbestos fibers before they escape to the outside air.

2. The disposal method for collecting and transporting asbestos-containing waste materials shall be approved prior to use by the EPA, unless either of these two EPA-approved methods are used:

a. Form all asbestos-containing waste material into nonfriable pellets or other shapes, or

b. Adequately wet and seal while wet in leak-tight containers all asbestos-containing waste material. The waste containers shall be labeled according to Section 2.2.4.

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3. The disposal site for asbestos-containing waste material shall have no visible emissions, or the disposed material shall be covered within 24 hours with at least six inches of nonasbestos-containing material or with an effective resinous or petroleum-based dust suppression agent (waste crankcase oil is not acceptable.) Alternative methods for controlling asbestos emissions must have EPA approval before being implemented.

4. Either a natural barrier or a fence shall adequately deter (as determined by the EPA upon request and supply of appropriate information) public access to the waste disposal site. If fenced, then warning signs (20" x 14") shall be posted at all entrances and at intervals no greater than 330 feet along the perimeter of the sections of the site where asbestos-containing material is deposited. The signs shall state:

ASBESTOS WASTE DISPOSAL SITE
DO NOT CREATE DUST
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

2.6 AUDITS

2.6.1 Each location shall periodically audit this procedure to ensure understanding and compliance.

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