#75

RECOMMENDED PRACTICE

UNION CARBIDE TMS

CENTRAL ENGINEERING

PLAINTIFF'S EXHIBIT

UC-2607

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 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.

All insulation materials approved through the use of UCC Insulation Standards have been specified asbestos-free since 1976.

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 2 fibers, longer than 5 micrometers, per cubic centimeter of air.

2.1.2 No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air.

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 2.6.3 for the specific EPA regulations that control work practices.

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 conform to 20" x 14" vertical format and state:

ASBESTOS
DUST HAZARD
Breathing Asbestos Dust May Be Hazardous To Your Health
Avoid Breathing Dust
Wear Assigned Protective Equipment
Do Not Remain In Area Unless Your Work Requires It

Sign design specification details are found in 29 CFR 1910.145 (d) (4). 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.

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.

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, 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 2.6.3.7 and 2.6.4 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. The label shall state:

CAUTION
Contains Asbestos
Avoid Opening or Breaking Container
Breathing Asbestos Is Hazardous to Your Health

2.2.5 Housekeeping - All external surfaces in any place of employment shall be maintained free of accumulation of asbestos fibers, if, with their dispersion, there would be an excessive concentration. Special attention should be given to cleaning scaffolds used in demolition work.

2.2.6 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 selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute of Occupational Safety and Health, Department of Health and Human Services. Compliance with exposure limits prescribed in 2.1, Permissible Exposure Limits, shall not be achieved by the use of respirators, except:

1. During the time period necessary to install the engineering controls and to institute the work practices to prevent exposures from exceeding permissible limits.

2. In work situations in which either engineering controls or wet method work practices are not feasible to an extent to reduce the airborne concentrations of asbestos dust below limits prescribed.

3. In emergencies.

Where respirators are permitted:

1. A reusable or single use, air purifying respirator may be used to reduce exposure below permissible limits, when the ceiling or the 8-hour time-weighted average airborne concentration of asbestos fibers is reasonably expected to exceed no more than 10 times the PEL. If not monitored and verified, a type "C" continuous verified flow or pressure demand, supplied-air respirator must be used.

2. A full-facepiece or powered air purifying respirator may be used to reduce exposure below permissible limits when the ceiling or the 8-hour time-weighted average airborne concentration of asbestos fibers has been monitored and verified to exceed 10 times but not 100 times the PEL limits. If not monitored and verified, a type "C" continuous flow or pressure demand, supplied-air respirator must be used.

3. A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce exposure below permissible limits when the ceiling or the 8-hour time-weighted average airborne concentration is reasonably expected to exceed 100 times those limits.

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 should not be stored in lockers. It should be changed daily.

2.3.3 Change Rooms - 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.

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 2.2.5, Label Specifications. If disposable coveralls are used, they should be placed into containers with asbestos for disposal.

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 on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed prescribed exposure limits. All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400 - 450 x (magnification) with phase contrast illumination as specified in Volume 38 Method 38C - 29 x 4 - RLA of UCC Industrial Hygiene methods.

2.5 Training

2.5.1 All employees who are exposed to airborne asbestos concentrations in excess of the exposure limit listed in Section 2.1.1 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 Federal EPA Regulation, 40 CFR 61, Hazardous Air Pollutants; Subpart M - National Emission Standard for Asbestos

2.6.1 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 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.

2.6.2 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.

2.6.3 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 2.6.3.3.

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 2.6.3.4 and 2.6.3.6. 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 2.6.3.4, 2.6.3.5, 2.6.3.6, and 2.6.3.7 shall also apply to any emergency demolitions.

2.6.4 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.

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

2.7 AUDITS

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