PLAINTIFF'S EXHIBIT

UC-2880

THE LABORATORY USE OF ASBESTOS

Union Carbide Corporation
Metals Division
September 23, 1976

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Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976)
ACL Doc 17740 · Page 1 of 8
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TABLE OF CONTENTS

Section	Page
INTRODUCTION	1
ASBESTOS AND HEALTH	1
EMPLOYEE BRIEFING CHECKLIST	2
RECOMMENDED WORK PRACTICES	2
REQUIREMENTS OF THE OSHA ASBESTOS REGULATIONS	3
Exposure Limits	3
Monitoring	
Initial	4
Periodic	4
Compliance Details - Allowable Levels Not Exceeded	
Medical Examinations	4
Respirators	5
Caution Labels	5
Warning Signs	6
Housekeeping	6
Waste Disposal	6
Compliance Details - Allowable Levels Exceeded	6

423595

Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976) Published by AsbestosClaims.Law
ACL Doc 17740 · Page 2 of 8 asbestosclaims.law/library/17740/2

LABORATORY USE OF ASBESTOS

INTRODUCTION

Any occupational use of asbestos is subject to compliance with the Federal Occupational Safety and Health Standard CFR-29, 1910.1001, "Standard for Exposure to Asbestos Dust". No exceptions are made for the infrequent, low-level exposure conditions that normally exist in the laboratory situation so the applicable sections must be compiled with by laboratory employees.

This manual is intended to provide the supervisor and the employee working with asbestos in the laboratory with the information needed to work safely and to meet the pertinent OSHA requirements. The present state of knowledge regarding the asbestos-health question is covered. A checklist of points of information needed for an employee working with asbestos is provided together with good work practices. Finally, certain specific actions needed to comply with the OSHA regulations are discussed. A copy of the OSHA regulations and the Union Carbide Material Safety Data Sheet for asbestos are also included.

ASBESTOS AND HEALTH

The hazards of asbestos have received a great deal of publicity over the past six years and continue to do so today. Much of this clamor is in the public press and tends to be both sensational and misleading. There is no question that asbestos, when handled without the proper precautions, can be a health hazard. Properly used it can be a safe and very valuable industrial material. This situation is true for a substantial portion of the materials used on the Niagara Falls property so that asbestos is not unique.

It is important that a person assigned to work with asbestos in the laboratory has a clear, balanced understanding of the extent and nature of

A23508

Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976) Published by AsbestosClaims.Law
ACL Doc 17740 · Page 3 of 8 asbestosclaims.law/library/17740/3

the hazard this material presents. Four relevant documents on this subject are attached. The supervisor should be aware of the main points about asbestos-related diseases. He should discuss this subject with the worker assigned to use asbestos and give him copies of these documents for his own use. Providing the documents without explanation is not adequate.

EMPLOYEE BRIEFING CHECKLIST

In addition to the asbestos and health discussion just mentioned, an employee newly assigned to work with asbestos should be informed by his supervisor about the items in the following list. This information program should be repeated approximately annually to reinforce the emphasis on safety.

1. The specific nature of the operations which could result in exposure to asbestos fibers as well as any necessary protective steps;
2. The engineering controls and work practices associated with the employee's job assignment;
3. The purpose, proper use, and limiatations of any respiratory protection equipment provided.
4. The purpose for,and a description of, the medical surveillance program.
5. A review and explanation of the portions of the Asbestos Standard that apply to the employee's job.

RECOMMENDED WORK PRACTICES

The principle hazards from asbestos arise from breathing of the asbestos dust. The primary consideration in the laboratory is to keep dust generation at the lowest practicable level and, in no event, creating exposure greater than that permitted in the current OSHA standard. The following guidelines must be followed:

A23507

Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976) Published by AsbestosClaims.Law
ACL Doc 17740 · Page 4 of 8 asbestosclaims.law/library/17740/4

1. Any incoming bags or containers of asbestos should be inspected and if damaged, should be repaired immediately.
2. Large spills should be cleaned up wet or with a suitable vacuum cleaner. Small spills can be wiped up, carefully scraped, or brushed up in a manner to avoid serious dusting. Never blow asbestos off clothing with an air hose.
3. Asbestos-containing waste should be disposed of in sealed, dust-tight bags. The appropriate warning label must be attached whenever it is required by OSHA regulations.
4. Wherever practical, weighing and transfer of asbestos should be done in the fume hoods provided. In any case, handle fiber slowly and with care to minimize dusting.
5. For clean up of large spills or in situations where substantial puff of dust are likely to be generated, wear the respirator provided.
6. Pilot plant or other operations where substantial quantities of asbestos are used must be provided with proper hoods and engineering controls to keep airborne asbestos dust levels within the limits prescribed by the OSHA regulations.

REQUIREMENTS OF THE OSHA ASBESTOS REGULATIONS (1910.1001)

The following discussion will cover the main points in the regulations as they relate to typical laboratory operations. It is intended to highlight and supplement the regulations, not replace them. A copy of the regulations is attached. Any supervisor directly responsible for laboratories where asbestos is used must be familiar with them.

Exposure Limits

A maximum asbestos exposure of 2 fibers/cc >5μ for an eight-hour time-weighted average and 10 fibers/cc >5μ ceiling are permitted. Fiber levels

Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976) Published by AsbestosClaims.Law
ACL Doc 17740 · Page 5 of 8 asbestosclaims.law/library/17740/5

must be determined by a prescribed sampling and counting procedure.

It has been our experience that normal laboratory operations do not produce ceiling concentrations in excess of 1 fiber/cc >5μ. Asbestos is also only handled dry for a moderate part of the day so time-weighted averages are generally well below 0.5 fiber/cc >5μ.

Monitoring

Initial: Every place of employment where asbestos fibers are released must be monitored in such a way as to determine whether every employee's exposure is below the prescribed limits. Both personal and environmental (area) samples are required.

Periodic: If the initial samples give results below the allowable levels and there is no reasonably foreseeable situation where they will exceed it in the future no further monitoring is required by the regulations. It is good practice, however, to monitor regularly and an annual survey should be made. If the initial samples give results above the allowable levels repeated samples at intervals not to exceed six months are required by law.

The Niagara Falls Laboratory has the equipment and trained personnel to conduct monitoring. All monitoring records should be forwarded to Mr. C. C. Masterman. They must be retained for at least 20 years.

Compliance Details - Allowable Levels Not Exceeded

If the monitoring results show that the allowable levels are not being exceeded the requirements discussed in this subsection must be satisfied.

Medical Examinations: Initial, annual, and termination medical examinations are required to be offered, at the employer's expense, to any employee in an occupation exposed to airborne concentrations of asbestos fibers. Note particularly that no minimum level of exposure is specified.

A23509

Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976) Published by AsbestosClaims.Law
ACL Doc 17740 · Page 6 of 8 asbestosclaims.law/library/17740/6

"This taken literally has universal application since there are small quantities of airborne asbestos throughout the natural environment. OSHA generally has interpreted this to mean exposure above the background level, which is in itself a difficult standard to apply." It is our practice to provide annual physical examinations for all employees who work regularly in the asbestos laboratories pilot plant or encounter asbestos regularly in our customer's plants.

The medical examination must include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$). Medical examination records must be maintained for a period of at least 20 years by OSHA regulations. It is Union Carbide's policy to maintain such records indefinitely.

Respirators: Respirators are not required where concentrations are below the allowable limits. Respirators should be available, however, for use in emergencies. It is extremely unlikely that concentrations in excess of 100 fiber/cc >5μ and/or 20 fibers/cc >5μ T.W.A. will be encountered in the laboratory so reusable or single use air-purifying respirators are acceptable. Only respirators approved by NIOSH for asbestos may be used. The single use type has the advantage that it can be discarded and does not require maintenance. The reusable type must be stored in a dust-tight container, be cleaned after each use, and be inspected and if necessary repaired periodically. For either type, the employee must be instructed in when and how to use the respirator.

Caution Labels: These are required on all materials containing asbestos except where it has been modified in such a way that under any reasonably foreseeable circumstances no airborne concentrations of asbestos in excess of the allowable limits will be released. All bagged asbestos that moves in commerce should already have a warning label. It is our practice to place a

Union Carbide trial exhibit UC-2880: Union Carbide Metals Division Manual, The Laboratory Use of Asbestos (1976) Published by AsbestosClaims.Law
ACL Doc 17740 · Page 7 of 8 asbestosclaims.law/library/17740/7

warning label on all samples sent out. Containers of asbestos stored on the property outside of the laboratories where asbestos is regularly in use should be labelled. It is not considered necessary to label every individual sample in such laboratories.

Warning Signs: Such signs are required where airborne concentrations of asbestos may be in excess of the exposure limits. Size and specific wording are prescribed by the regulations. Under normal laboratory conditions signs are not required.

Housekeeping: The regulation requires that all external surfaces shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration. This rather general requirement should be met in the laboratory by prompt, careful cleanup of any loose asbestos.

Waste Disposal: Any asbestos containing waste that under reasonably foreseeable circumstances could produce concentrations in excess of the allowable limits must be collected and disposed of in dust-tight bags or other dust-tight containers. The contains should bear the prescribed warning label.

Compliance Details - Allowable Levels Exceeded

If the monitoring results show that the allowable levels are being exceeded a program of engineering controls and work practices must be instituted immediately to reduce the exposure levels. Respirators and shift rotation may be used during the implementation period. Protective clothing and change rooms are required. It is extremely unlikely that this situation will arise in the laboratory. If it should, use of asbestos must be discontinued immediately until proper control procedures can be applied.

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ACL Doc 17740 · Page 8 of 8 asbestosclaims.law/library/17740/8