PLAINTIFF'S EXHIBIT
UC-1097

* UNION CARBIDE *

HEALTH & ENVIRONMENTAL AFFAIRS
SOLVENTS & COATINGS MATERIALS

P. O. BOX 471
TEXAS CITY,TX 77592

January 26, 1987

To: A. L. Welch

Copy to: J. B. Leverton
A. P. Yalcinkaya

Subject: Asbestos Exposure Monitoring

In response to the A & A Insulation-Contractors, Inc. letter dated January 14, 1987 regarding asbestos exposure monitoring it is our position that the samples taken and analyzed at Texas City, by our laboratory are accurate.

The primary contention raised by Mr. Alexander is that our results are not reflective of the airborne asbestos due to loading of the filters with non-asbestos debris. Under the new OSHA asbestos standard, 29 CFR 1926.58, Appendix A-Mandatory, the procedures for collecting and analyzing airborne asbestos under the new standard are specified. These procedures require that all particles be counted as "asbestos" if they are greater than 5 micrometers in length and have an aspect ratio in excess of 3:1. I have attached Appendix A and the relevant sections are highlighted.

The Texas City IH Laboratory is certified by the American Industrial Hygiene Association and the employees who collect and count our asbestos samples have taken the NIOSH course for sampling and evaluating airborne asbestos. We stand on our reported monitoring results and have no intention of issuing a retraction.

If A-A wishes to collect samples and send them to an outside laboratory they are certainly free to do so. This will not however free them to conduct their operations in violation of the OSHA standard. It is our recommendation that A & A direct their efforts toward reducing their fiber counts instead of attacking our exposure monitoring results.

Sincerely,

Kirk E. Martin, CIH

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(4) *Training records.* The employer shall maintain all employee training records for one 1 year beyond the last date of employment by that employer.

(5) *Availability.* (i) The employer, upon written request, shall make all records required to be maintained by this section available to the Assistant Secretary and the Director for examination and copying.

(ii) The employer, upon request, shall make any exposure records required by paragraphs (f) and (n) of this section available for examination and copying to affected employees, former employees, designated representatives, and the Assistant Secretary, in accordance with 29 CFR 1910.20(a)–(e) and (g)–(i).

(iii) The employer, upon request, shall make employee medical records required by paragraphs (m) and (n) of this section available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the Assistant Secretary, in accordance with 29 CFR 1910.20.

(6) *Transfer of records.* (i) The employer shall comply with the requirements concerning transfer of records set forth in 29 CFR 1910.20 (h).

(ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director at least 90 days prior to disposal and, upon request, transmit them to the Director.

(o) *Dates*—(1) *Effective date.* This section shall become effective [insert date 30 days from publication in the Federal Register]. The requirements of the asbestos standard issued in June 1972 (37 FR 11318), as amended, and published in 29 CFR 1910.1001 (1985) remain in effect until compliance is achieved with the parallel provisions of this standard.

(2) *Start-up dates.* (i) The requirements of paragraphs (c) through (n) of this section, including the engineering controls specified in paragraph (g)(1) of this section, shall be complied with by [insert date 210 days from publication in the Federal Register].

(p) *Appendices.* (1) Appendices A, C, D, and E to this section are incorporated as part of this section and the contents of these appendices are mandatory.

(2) Appendices B, F, G, H, and I to this section are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

Appendix A to § 1926.58—OSHA Reference Method—Mandatory

This mandatory appendix specifies the procedure for analyzing air samples for asbestos, tremolite, anthophyllite, and actinolite and specifies quality control procedures that must be implemented by laboratories performing the analysis. The sampling and analytical methods described below represent the elements of the available monitoring methods (such as the NIOSH 7400 method) which OSHA considers to be essential to achieve adequate employee exposure monitoring while allowing employers to use methods that are already established within their organizations. All employers who are required to conduct air monitoring under paragraph (f) of the standard are required to utilize analytical laboratories that use this procedure, or an equivalent method, for collecting and analyzing samples.

Sampling and Analytical Procedure

1. The sampling medium for air samples shall be mixed cellulose ester filter membranes. These shall be designated by the manufacturer as suitable for asbestos, tremolite, anthophyllite, and actinolite counting. See below for rejection of blanks.

2. The preferred collection device shall be the 25-mm diameter cassette with an open-faced 50-mm extension cowl. The 37-mm cassette may be used if necessary but only if written justification for the need to use the 37-mm filter cassette accompanies the sample results in the employee's exposure monitoring record.

3. An air flow rate between 0.5 liter/min and 2.5 liters/min shall be selected for the 25/mm cassette. If the 37-mm cassette is used, an air flow rate between 2 liter/min and 2.5 liters/min shall be selected.

4. Where possible, a sufficient air volume for each air sample shall be collected to yield between 100 and 1,300 fibers per square millimeter on the membrane filter. If a filter darkens in appearance or if loose dust is seen on the filter, a second sample shall be started.

5. Ship the samples in a rigid container with sufficient packing material to prevent dislodging the collected fibers. Packing material that has a high electrostatic charge on its surface (e.g., expanded polystyrene) cannot be used because such material can cause loss of fibers to the sides of the cassette.

6. Calibrate each personal sampling pump before and after use with a representative filter cassette installed between the pump and the calibration devices.

7. Personal samples shall be taken in the "breathing zone" of the employee (i.e., attached to or near the collar or lapel near the worker's face).

8. Fiber counts shall be made by positive phase contrast using a microscope with an 8 to 10 X eyepiece and a 40 to 45 X objective for a total magnification of approximately 400 X and a numerical aperture of 0.65 to 0.75. The microscope shall also be fitted with a green or blue filter.

9. The microscope shall be fitted with a Walton-Beckett eyepiece graticule calibrated for a field diameter of 100 micrometers (+/−2 micrometers).

10. The phase-shift detection limit of the microscope shall be about 3 degrees measured using the HSE phase shift test slide as outlined below.

a. Place the test slide on the microscope stage and center it under the phase objective.

b. Bring the blocks of grooved lines into focus.

Note.—The slide consists of seven sets of grooved lines (ca. 20 grooves to each block) in descending order of visibility from sets 1 to 7, seven being the least visible. The requirements for asbestos, tremolite, anthophyllite, and actinolite counting are that the microscope optics must resolve the grooved lines in set 3 completely, although they may appear somewhat faint, and that the grooved lines in sets 6 and 7 must be invisible. Sets 4 and 5 must be at least partially visible but may vary slightly in visibility between microscopes. A microscope that fails to meet these requirements has either too low or too high a resolution to be used for asbestos, tremolite, anthophyllite, and actinolite counting.

c. If the image deteriorates, clean and adjust the microscope optics. If the problem persists, consult the microscope manufacturer.

11. Each set of samples taken will include 10 percent blanks or a minimum of 2 blanks. The blank results shall be averaged and subtracted from the analytical results before reporting. Any samples represented by a blank having a fiber count in excess of 7 fibers/100 fields shall be rejected.

12. The samples shall be mounted by the acetone/triacetin method or a method with an equivalent index of refraction and similar clarity.

13. Observe the following counting rules.

a. Count only fibers equal to or longer than 5 micrometers. Measure the length of curved fibers along the curve.

b. Count all particles as asbestos, tremolite, anthophyllite, and actinolite that have a length-to-width ratio (aspect ratio) of 3:1 or greater.

c. Fibers lying entirely within the boundary of the Walton-Beckett graticule field shall receive a count of 1. Fibers crossing the boundary once, having one end within the circle, shall receive the count of one half (½). Do not count any fiber that crosses the graticule boundary more than once. Reject and do not count any other fibers even though they may be visible outside the graticule area.

d. Count bundles of fibers as one fiber unless individual fibers can be identified by observing both ends of an individual fiber.

e. Count enough graticule fields to yield 100 fibers. Count a minimum of 20 fields; stop counting at 100 fields regardless of fiber count.

14. Blind recounts shall be conducted at the rate of 10 percent.

Quality Control Procedures

1. Intralaboratory program. Each laboratory and/or each company with more than one microscopist counting slides shall establish a statistically designed quality assurance program involving blind recounts and

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comparisons between microscopists to monitor the variability of counting by each microscopist and between microscopists. In a company with more than one laboratory, the program shall include all laboratories, and shall also evaluate the laboratory-to-laboratory variability.

2. Interlaboratory program. Each laboratory analyzing asbestos, tremolite, anthophyllite, and actinolite samples for compliance determination shall implement an interlaboratory quality assurance program that as a minimum includes participation of at least two other independent laboratories. Each laboratory shall participate in round robin testing at least once every 6 months with at least all the other laboratories in its interlaboratory quality assurance group. Each laboratory shall submit slides typical of its own workload for use in this program. The round robin shall be designed and results analyzed using appropriate statistical methodology.

3. All individuals performing asbestos, tremolite, anthophyllite and actinolite analysis must have taken the NIOSH course for sampling and evaluating airborne asbestos, tremolite, anthophyllite, and actinolite dust or an equivalent course.

4. When the use of different microscopes contributes to differences between counters and laboratories, the effect of the different microscope shall be evaluated and the microscope shall be replaced, as necessary.

5. Current results of these quality assurance programs shall be posted in each laboratory to keep the microscopists informed.

Appendix B to § 1926.58—Detailed Procedure for Asbestos Tremolite, Anthophyllite, and Actinolite Sampling and Analysis—Non-Mandatory

This appendix contains a detailed procedure for sampling and analysis and includes those critical elements specified in Appendix A. Employers are not required to use this procedure, but they are required to use Appendix A. The purpose of Appendix B is to provide a detailed step-by-step sampling and analysis procedure that conforms to the elements specified in Appendix A. Since this procedure may also standardize the analysis and reduce variability, OSHA encourages employers to use this appendix.

Asbestos, Tremolite, Anthophyllite, and Actinolite Sampling and Analysis Method

Technique: Microscopy, Phase Contrast

Analyte: Fibers (Manual count).

Sample Preparation: Acetone/triacetin method.

Calibration: Phase-shift detection limit, about 3 degrees.

Range: 100 to 1300 fibers/mm² filter area.

Estimated Limit of Detection: 7 fibers/mm² filter area.

Sampler: Filter (0.8–1.2 um mixed cellulose ester membrane, 25-mm diameter).

Flow Rate: 0.5 l/min to 2.5 l/min (25-mm cassette); 1.0 l/min to 2.5 l/min (37-mm cassette).

Sample Volume: Adjust to obtain 100 to 1300 fibers/mm².

Shipment: Routine.

Sample Stability: Indefinite.

Blanks: 10% of samples (minimum 2).

Standard Analytical Error: 0.25.

Applicability: The working range is 0.02 f/cc (1920–L air sample) to 1.25 f/cc (400–L air sample). The method gives an index of airborne asbestos, tremolite, anthophyllite, and actinolite fibers but may be used for other materials such as fibrous glass by inserting suitable parameters into the counting rules. The method does not differentiate between asbestos, tremolite, anthophyllite, and actinolite and other fibers. Asbestos, tremolite, anthophyllite, and actinolite fibers less than ca. 0.25 um diameter will not be detected by this method.

Interferences: Any other airborne fiber may interfere since all particles meeting the counting criteria are counted. Chain-like particles may appear fibrous. High levels of nonfibrous dust particles may obscure fibers in the field of view and raise the detection limit.

Reagents

1. Acetone.

2. Triacetin (glycerol triacetate), reagent grade.

Special Precautions

Acetone is an extremely flammable liquid and precautions must be taken not to ignite it. Heating of acetone must be done in a ventilated laboratory fume hood using a flameless, spark-free heat source.

Equipment

1. Collection device: 25-mm cassette with 50-mm extension cowl with cellulose ester filter, 0.8 to 1.2 mm pore size and backup pad.

Note.—Analyze representative filters for fiber background before use and discard the filter lot if more than 5 fibers/100 fields are found.

2. Personal sampling pump: greater than or equal to 0.5 L/min: with flexible connecting tubing.

3. Microscope, phase contrast: with green or blue filter, 5 to 10X eyepiece, and 40 to 45X phase objective (total magnification ca 400X); numerical aperture = 0.65 to 0.75.

4. Slides, glass, single-frosted, pre-cleaned, 25 × 75 mm.

5. Cover slips, 25 × 25 mm, no. 1½ unless otherwise specified by microscope manufacturer.

6. Knife, #1 surgical steel, curved blade.

7. Tweezers.

8. Flask: Gutt-type, beveled neck, 250 to 500-ml (with single-holed rubber stopper and elbow-jointed glass tubing, 18 to 22 cm long).

9. Hotplate, spark-free, stirring type: heating mantle or infrared lamp and magnetic stirrer.

10. Syringe, hypodermic, with 22-gauge needle.

11. Graticule, Walton-Beckett type with 100-um diameter circular field at the specimen plane (area = 0.00785 mm²). (Type G–22).

Note.—The graticule is custom-made for each microscope.

12. HSE/NPL phase contrast test slide, Mark II.

13. Telescope, ocular phase-ring centering.

14. Stage micrometer (0.01 mm divisions).

Sampling

1. Calibrate each personal sampling pump with a representative sampler in line.

2. Fasten the sampler to the worker's lapel as close as possible to the worker's mouth. Remove the top cover from the end of the cowl extension (open face) and orient face down. Wrap the joint between the extender and the monitor's body with shrink tape to prevent air leaks.

3. Submit at least two blanks (or 10% of the total samples, whichever is greater) for each set of samples. Remove the caps from the field blank cassettes and store the caps and cassettes in a clean area (bag or box) during the sampling period. Replace the caps in the cassettes when sampling is completed.

4. Sample at 0.5 L/min or greater. Do not exceed 1 mg total dust loading on the filter. Adjust sampling flow rate, Q (L/min), and time to produce a fiber density, E (fibers/mm²), of 100 to 1300 fibers/mm² (3.85×10^4 to 5×10^5 fibers per 25-mm filter with effective collection area ($A_c = 385$ mm²)] for optimum counting precision (see step 21 below). Calculate the minimum sampling time, $t_{minimum}$ (min) at the action level (one-half of the current standard), L (f/cc) of the fibrous aerosol being sampled:

$$t_{min} = \frac{(Ac)(E)}{(Q)(L)10^3}$$

5. Remove the field monitor at the end of sampling, replace the plastic top cover and small end caps, and store the monitor.

6. Ship the samples in a rigid container with sufficient packing material to prevent jostling or damage. NOTE: Do not use polystyrene foam in the shipping container because of electrostatic forces which may cause fiber loss from the sampler filter.

Sample Preparation

Note.—The object is to produce samples with a smooth (non-grainy) background in a medium with a refractive index equal to or less than 1.46. The method below collapses the filter for easier focusing and produces permanent mounts which are useful for quality control and interlaboratory comparison. Other mounting techniques meeting the above criteria may also be used, e.g., the nonpermanent field mounting technique used in P & CAM 239.

7. Ensure that the glass slides and cover slips are free of dust and fibers.

8. Place 40 to 60 ml of acetone into a Gutt-type flask. Stopper the flask with a single-hole rubber stopper through which a glass tube extends 5 to 8 cm into the flask. The portion of the glass tube that exits the top of the stopper (5 to 10 cm) is bent downward in an elbow that makes an angle of 20 to 30 degrees with the horizontal.

9. Place the flask in a stirring hotplate or wrap in a heating mantle. Heat the acetone gradually to its boiling temperature (ca. 58°C).

Caution.—The acetone vapor must be generated in a ventilated fume hood away from all open flames and spark sources. Alternate heating methods can be used, providing no open flame or sparks are present.

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UNION CARBIDE INTERNAL CORRESPONDENCE

P. O. BOX 471, TEXAS CITY, TEXAS 77590

JBL your copy

TO: K. E. MARTIN DATE: JANUARY 21, 1987

CC: J. D. DUNCAN
K. C. WATKINS
A. P. YALCINKAYA

SUBJECT: ASBESTOS SAMPLING AT NUMBER TWO OLEFINS

Will you respond to A & A Insulation Contractors concerns about asbestos sampling, after you have received the results of their sampling program.

A. L. WELCH

W3ALW35

UCTC 07683

KIMMINS INDUSTRIAL SERVICE CORPORATION

2609 ALLEN GENOA ROAD • PASADENA, TEXAS 77502-4356
(713) 947-7200 TELEX: 332-836

January 15, 1987

Mr. A. L. Welch
c/o Union Carbide Corporation
P.O. Box 471
Texas City, TX 77592-0471

Dear Mr. Welch:

Please examine the enclosed letter from Mr. Milfred D. Alexander of A & A Insulation, and the explanation for "over exposure" of asbestos. I firmly believe what he says here has excellent merit, keeping in mind that asbestos only should be monitored, and not dust, the validity of his test should be seriously considered as asbestos removal is A & A's business and they have an excellent reputation in the industry.

As per the letter to him of January 14, 1987 and phone conversation and copy to you, I have requested he forward to you the forms you require along with the test results of the A & A monitoring.

Both Kimmins and A & A are anxious to cooperate in resolving any difficulties which may arise. If I can be of further help, please do not hesitate to contact me.

Sincerely,

Patrick R. Elliott
Safety Director

PRE/vlp

enc.

cc: Milfred Alexander, A & A
Ken Watkins, UCC
Mark DeWitt, KISC
Claude Payne, KISC

A.L. Welch

Insulate • Residual • Mechanical, Remodeling
Specializing in Asbestos Removal

JAN 1[illegible]7
JAN 15 1987

A & A
INSULATION-CONTRACTORS, INC.

14 January 1987

Kimmins Industrial Services Group, Inc.
2609 Allen Genoa Road
Pasadena, TX 77502-4356
Attn: Pat Elliott

Dear Mr. Elliott:

In reference to asbestos removal project at Union Carbide Plant located in Texas City, Texas, we have recently been informed of high fiber counts on personal air samples taken on this project. In discussing this situation with job superintendent, Kevin Alexander, he feels that the analyzing of the personal air samples is not accurate. The job site has considerable dust and debris fibers being blown around during removal and the taking of the personal air samples. He has discussed this with the on site Industrial Hygenist. She has stated that she is simply counting fibers, not just asbestos fibers.

We are definitely convinced that the high fiber counts are due to high dust fiber concentration at the job site.

We took our own personal air sample on January 8, 1987 and had it analyzed by an authorized laboratory in San Antonio, Texas. The laboratory, Professional Service Industries informed this office on January 14, 1987 that the result of this sample was .004 fibers per cc. They stated there was a substantial amount of dust and debris fibers on the filter, they however only counted the asbestos fibers as is the necessary process.

We request that Professional Service Industries or a comparable laboratory that can distinguish between asbestos fibers and dust fibers perform the future personal air sample analysis for this project.

The erroneous analyzing can be detrimental to the reputation of this organization. We request upon the receipt of future personal air samples analyzed by a qualified laboratory that a letter of retraction be issued to A & A Insulation-Contractors, Inc. denouncing the past air sample results. This letter will be given to each employee and maintained in our files.

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11104 Watt Circle • San Antonio, Texas 78233 • 512 646-8511

A & A Insualtion-Contractors, Inc.
San Antonio, TX 78233

A & A personnel have been trained in the proper way of removing asbestos to maintain a fiber count below OSHA standards. We have not on past projects experienced high personal fiber counts, and was extremely shocked at the results of the Union Carbide analysis. The process we use is in accordance to Federal, State, local, EPA, and OSHA regulations and is more than adequate to maintain proper fiber levels. We feel as soon as the samples are analyzed properly this can be substantiated.

We request <u>immediate</u> action be taken in regards to this matter.

Sincerely,

Milfred D. Alexander
President

MDA/drj

P.S. The written results of air sample taken by A & A will be forwarded to you within one week.

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