Union Carbide
Agricultural Products Company, Inc.
Institute Plant

INDUSTRIAL HYGIENE SAMPLING RESULTS

TO: Mr. G. F. Morris

COPIES TO: Mr. P. C. Bowyer
Mr. C. W. Hill, Jr.
Mr. L. W. Youngblood

Building: 23

Institute Plant

PLAINTIFF'S EXHIBIT
UC-851

Purpose: ____ Routine __X__ Special Request
____ Regulatory Agency Inspection

Sample Date(s): November 13, 1986

Sample Location: Boilermaker Shop Department No.: 327

Process/Activity: HAVEG® Vessel Repair

Contaminant: Asbestos Fibers

Exposure Limit: OSHA 0.2f/cc (TWA_8); - (TWA_{12})
ACGIH 0.2f/cc (TWA_8); - (TWA_{12})
UCC - (TWA_8); - (TWA_{12})

Sample Type: __X__ Personal __X__ Area ____ Source
____ Surface Wipe ____ Other (See comments)

Analytical Method: Per 29 CFR 1910.1001, Appendix A

Results: ____ See Comments __X__ See Attached Table

COMMENTS: Two boilermakers were monitored for exposure to airborne asbestos fibers on the above date while making repairs to a HAVEG® vessel. The material of construction was known to contain asbestos since the vessel was fabricated prior to 1980. Repairs were made by using a hammer and chisel to chip away the HAVEG® material bonding several nozzles to the vessel body. Non-asbestos bonding material was later applied to complete the repairs.

The vessel, which was roughly 2.5 feet in diameter and 15 feet long, was positioned horizontally in the shop and had both ends open while chipping was performed. The locations of the defects required the boilermakers to lie inside the vessel at times. Dust controls such as misting and local exhaust ventilation were not used. However, the two boilermakers wore full-facepiece airline respirators and Tyvek suits with boots and hoods.

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Barrier ropes and warning signs were placed around the worksite to restrict access. An area sample was obtained at the barrier to evaluate the airborne concentration of asbestos fibers.

The eight-hour time-weighted average exposures for the boilermakers were below the permissible exposure limit and below the action level (i.e.,less than one-half the PEL). This is due to the fact that the duration of the chipping activity was relatively short. Had the chipping taken much longer, it is likely that the exposures would have been excessive, since the short term exposure concentrations ranged from 0.16 to 0.95 fibers/cc. The airborne concentration at the barrier rope was less than the action level.

Currently, no action is required except that these monitoring results must be reviewed with all affected employees (i.e., all boilermakers who may at times repair HAVEG® vessels containing asbestos). In lieu of reviewing the results, a copy of the results can be posted in the boilermaker shop where all affected employees can see it.

RECOMMENDATIONS: In order to prevent excessive exposures to asbestos fibers during HAVEG® repair, one or more of the following control methods should be used on future jobs when feasible.

1. A fine water mist should be applied continually at the point of chipping to prevent fibers from becoming airborne. A simple spray bottle can be used to do this.

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2. Local exhaust ventilation equipment including a high efficiency particulate air (HEPA) filter system should be used to remove airborne fibers from the work area and reduce or prevent exposure. An example of such equipment would be a "negative air machine", typically used during asbestos abatement projects. The versatility of such a machine would make it useful for other applications.

3. Use glove bags to enclose the work area on the vessel and thus prevent the spread of asbestos fibers. Though designed primarily to enclose a section of pipe for insulation removal they could be adapted to this type of work very easily.

If you have any questions or require any assistance in pursuing these control strategies, please call me.

Report Date: January 12, 1987

Signed: Erik G. Osby Bldg. 2 Room: 172 Phone 6105

NOTE: PERSONAL SAMPLE RESULTS MUST BE DISCUSSED WITH ALL AFFECTED EMPLOYEES

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WORKPLACE LOCATION: Boilermaker Shop

NAME(s) OF SAMPLER(s): J. L. Miller

CONTAMINANT: Asbestos Fibers

REPORT DATE: January 12, 1987

OSHA PEL: TWA_8 0.2f/cc TWA_{12} -

ACGIH TLV: TWA_8 0.2f/cc TWA_{12} -

UCC GUIDELINE: TWA_8 - TWA_{12} -

Sample Number	Sample Date	Sample Description	Sample Time (min.)	Sample Results (f/cc)
		BOILERMAKER		
W4768 - AA10436	11-13-86	C. E. Adkins	38	0.48
W4768 - AA10441	11-13-86	C. E. Adkins	10	0.95
			TWA_8 =	0.06
W4768 - AA10437	11-13-86	J. E. Higginbotham, Jr.	48	0.16
			TWA_8 =	0.016
W4768 - AA10438	11-13-86	At barrier tape ten feet from end of vessel.	52	0.085