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INVESTIGATION OF ASBESTOS EXPOSURE

DURING

VALVE PACKING REPLACEMENT

PERFORMED BY:

ATLANTIC ENVIRONMENTAL, INC
2 E. BLACKWELL ST.
DOVER, NJ

INVESTIGATION PERFORMED AT:

THE ASBESTOS MATERIALS EXPOSURE
CHAMBER (AMEC)
83 BASSETT HIGHWAY
DOVER, NJ

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Inves igation of Asbestos Exposure during Packing Replacement

August 28, 2000

1.0 INT ODU TION

A ste m vai e packing replacement was perf rmed at the Atlantic Environmental, Inc. AMI C (Air orne Materials Exposure Chamb r), located at 83 Bassett Highway, Dover, NJ. . Augu t 28, 2000. The evaluation inve ved monitoring for potential exposure to asbe. os fibe s during the replacement of pac ing in a 1 ½ inch steam valve.

2.0 TES PRO OCOL

2.1 Backg ound Clearance Samples

Backg ound clearance samples inside the chamber were obtained using uniform cleara ce criteria developed by Atlanti Environmental, Inc. The results of the five cleara ce air samples utilizing TEM an lysis indicate levels of less than 0.005 fibers c of asbestos fibers of 5 microns or greater in length.

2.2 Partic ants

The llowing individuals were direct y involved in this study:

- Tom Merz, Steamfitter
- Robert Sheriff, Acting as Steamfitter Assistant
- Dr. Frederick M. Toca, Observer and Coordinator of Activities (outside the chamber)
- Asbestos Specialist (to prepare chamber, coordinate sampling, and filming activities)
- Environmental Technician (to perform duties outside the chamber, as required)

2.3 Valv History

A ste m valve was received via Feder l Express from Mr. Robert Lee, General Mana er, ADI Technologies, Inc., 12 Queens Street, Honolulu, Hawaii. In a state nt from Mr Lee dated 8/23/00 the 1 ½ inch steam valve came from a Hono lu machine shop and was rated for 900 PSI at 775° Farenheit. Mr. Lee confi ied that it was from an ocean g ing vessel, but could not identify the vessel of or n. This valve was designated as valve # HON002. The valve packing from ON002 was removed as part of a study performed on August 23, 2000.

On A gust 28, 2000 this same valve was repacked with John Crane Style No. 815 ¼ inc packing.

2.4 Stea: fitter Operator

Mr. ' omas C. Merz, a journeyman p umber/pipefitter with 25 years experience. perfc med the valve packing replacem ent. During his 25 years, Mr. Merz has perfc med valve packing removals an replacements on water, hot water, steam, foam CO^2, Halon, and sprinkler syste ns.

2.5 Pack g Replacement

The pa cking replacement by Mr. Tom Merz began at approximately 11:25 a.m. Easter Daylight Time on August 28, 2000. Four pieces of John Crane Valve Packin g Material Style # 815 ¼ inch of the appropriate diameter to correctly fit the valve tem opening were measured and cut with a knife. Each piece was the length of 1 di ameter around the valve shaft. T ie packing was installed so that the ends were s aggered around the shaft. The entire replacement was completed at approximately 11:38 a.m. During the p oject Mr. Merz used his own tools, which he bro ght with him and used procedur s that he normally would utilize in his profes. ion.

3.0 Test esults

All m terial nd air samples were analyzed by Scientific Laboratories, Inc., New York. New ork. Scientific Laboratories is a certifi d laboratory.

3.1 Sampl le Analysis

3.1.1 Air samples were analyzed by PCM (Phase Contrast Microscopy) using NIOSH 7400 and TEM (Transmission Electron Microscopy) using NIOSH 7402 Analytical Methods.

3.2 Sample Results

3.2.1 Air Sample Results

- Three area samples inside the test chamber were analyzed by PCM and all samples indicated actual concentrations of less than 0.023 fibers/cc 5 microns or longer.

- One area sample inside the chamber was analyzed by TEM and indicated no asbestos fibers detected at the lower detection limit of 0.0093f/cc.

- Two personnel samplers (using battery powered sampling devices) on the steamfitter both indicated exposure levels of less than the detection limit of 0.096f/cc, during the sampling period. This translates to an 8-hour time weighted average of less than 0.0026f/cc.

- Two personnel samples, using battery powered personnel samplers attached to the assistant indicated exposure levels of less than the detection limit of 0.093 fibers/cc and 0.090 fibers/cc, respectively, during the sampling period. This translates to 8 hour time weighted average levels of less than 0.0025f/cc and 0.0024f/cc, respectively.

- The two personnel samples (1 on the steamfitter, and the other on the assistant) using high flow samplers (at 10 liters per minute) indicated levels of 0.040f/cc and 0.024 f/cc, respectively, during the sampling period. This translates to an 8-hour time-weighted average of 0.001f/cc and 0.00065f/cc, respectively.

4.0 CON LUSI)N

Air s: npling est results during replacement of asbestos containing packing into the steam /alve dicate exposure to the operator nd assistant that is significantly below the curre. OSH allowable limits. Calculating t ie exposure limits for a time-weighted avera e over n 8-hour day (based upon the high flow samplers) indicates exposure levels of app ximately 121 times lower than he current OSHA limit of 0.1f/cc.

In cor clusior this evaluation of employee exposure during the replacement of asbestos conta: ining pa: king materials indicates that the overall exposure of individuals performing packi g repla. cement in conditions and circumstances involved in this test, does not pose a sigr ficant ealth risk.

Report prepa ed by: Frederick M. Toca, Ph.D.: CIH, President — Date 8/30/00