

→ Dick Millett

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J. B. SAUNBY

Mr. J. M. Butcher  
Mr. H. F. Hyre  
Mr. N. H. Ketcham

June 27, 1972

Air Sampling for Asbestos

770

COMMUNICATIONS CO.  
(1) destroy after use, by tearing

Gentlemen:

The attached memorandum contains results for samples that were taken to measure airborne asbestos in the breathing zone of an electrician while working with asbestos tape on heating coils.

Even though one result exceeded 5 fibers greater than 5 microns in length per milliliter, this operation is of such short duration that the limits established by CSHA are not exceeded. Continuous work on assembly-line scale could create excessive quantities of fibers in air. Note that the greater quantity was received while stripping the tape into strings.

The fact that asbestos fibers do become airborne even when working with the tape indicates that precautions, and even wearing of respiratory protection, should be practiced when working with the material.

Yours truly,

Fred Williams

F. Williams/ebc  
AM.

~~J. H. Miller~~  
Dick Midkiff  
✓

MEMORANDUM

To: Mr. Fred Williams  
791 - 25

June 20, 1972

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From: Industrial Hygiene

Subject: Air Sampling Results During the Use of Asbestos Tape on Heating Coils

SUMMARY

Two "Personal" air samples were collected to measure asbestos fibers during fabrication of a heating coil on a length of pipe. An additional "Personal" air sample was collected during the removal of a heating coil from a length of pipe. Both operations were performed in the electrical shop located in Building 770. Two of the air samples were below the Threshold Limit Value of 5 fibers per milliliter greater than 5 $\mu$  in length. One sample, while exceeding the TLV, did not exceed the limit of 10 fibers, greater than 5 $\mu$  in length, permitted up to a total of 15 minutes in an hour for up to 5 hours in an 8-hour day as stated in Section 1910.93a of the Occupational Safety and Health Standards.

DISCUSSION

On April 24 and 26, 1972, the Industrial Hygiene group monitored airborne asbestos fiber resulting from winding 1 inch asbestos insulating tape during the fabrication of a heating coil on a length of pipe. Due to the short periods of time involving actual work with asbestos, the time for each operation was accumulated on each filter to obtain a representative sample. The heating coil was placed between alternating layers of insulating "mud" and asbestos tape, allowing drying time for each layer of "mud." To secure the heating coil windings, a piece of 2 inch asbestos tape was separated into "strings" approximately 18 inches in length. A "Personal" air sample was collected during this procedure. This operation was carried out over an exaggerated time period to provide a more accurate air sample.

One "Personal" air sample was collected during the removal of a "used" heating coil from a length of pipe. The asbestos tape, embedded in dry insulating "mud," was forceably removed by the use of a ball peen hammer.

Chemical grade asbestos listing tape, 1 inch by 1/16 inch, and Johns-Manville No. 1091 asbestos tape, 2 inch by 1/16 inch, was used by Services Department electrician [REDACTED] as the work was performed. The airborne fibers were collected using membrane paper, type AA, 0.8 $\mu$  pore diameter, white, 37 mm in size, a 2 lpm flow rate.

The samples were delivered to the R&D Environmental Health Laboratory for analysis.

RESULTS AND CONCLUSIONS

The attached data sheet shows asbestos fibers to be present in concentrations that do not exceed the limits as set forth in Section 1910.93a of the Occupational Safety and Health Standards during the fabrication of a heating coil on a length of pipe .

The results indicate that heating coils of this nature may be fabricated without undue concern for health injuries, to those who perform the operation, from inhalation of airborne asbestos fibers when normal precautions are observed.

The cooperation of [REDACTED] in scheduling and performing the fabrication work is acknowledged and appreciated.

  
\_\_\_\_\_  
R. O. Midkiff

R.O. Midkiff/ebc  
Att.

# USE OF ASBESTOS TAPE ON HEATING COILS

## BUILDING 770 ELECTRICAL SHOP

Sampled by: R. O. Midkiff

| <u>Sampling<br/>Time<br/>(Minutes)</u> | <u>Flow Rate(Lpm)</u> | <u>Operation</u>                                                  | <u>Fiber/ml<br/>&gt;5<math>\mu</math> in length</u> |
|----------------------------------------|-----------------------|-------------------------------------------------------------------|-----------------------------------------------------|
| 9                                      | 2                     | Winding 1" asbestos tape                                          | 0.7                                                 |
| 5                                      | 2                     | Stripping 2" asbestos tape<br>into tie strings                    | 5.2                                                 |
| 13                                     | 2                     | Removal of asbestos tape<br>from used heating coil<br>with hammer | 1.5                                                 |

Electrician: 

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To: Mr. Fred Williams

From: Industrial Hygiene

Subject: Air Sampling Results During The Use of Asbestos Tape on Heating Coils

SUMMARY Two "personal" air samples were collected <sup>by</sup> during ~~the~~ fabrication of a heating coil on a length of pipe. An additional "personal" air sample was collected during the removal of a heating coil from a length of pipe. Both operations were performed in the electrical shop located in Building 770. Two of the air samples were below the Threshold Limit Value of 5 fibers per milliliter greater than 5  $\mu$  in length. One sample, while exceeding the TLV, did not exceed the limit of 10 fibers, greater than 5  $\mu$  in length, permitted up to a total of 15 minutes in an hour for up to 5 hours in an 8-hour day as stated in Section 1910.93a of the Occupational Safety and Health Standards.

DISCUSSION On April 24 and April 26, 1972, the Industrial Hygiene group monitored airborne asbestos fibers resulting from ~~the~~ <sup>the</sup> ~~the~~ 1 inch asbestos insulating tape during the fabrication of a heating coil on a length of pipe. The air sampling on both dates was accomplished using the same filter, time accumulating. The heating coil was placed between alternating layers of insulating "red" and

asbestos tape, allowing drying time for each layer of "mud". To secure the heating coil windings, a piece of 2 inch asbestos tape was separated into "strings" approximately 18 inches in length. A "personal" air sample was collected during this operation. This operation was carried out over an exaggerated time period to provide a more accurate air sample.

One "personal" air sample was collected during the removal of a "used" heating coil from a length of pipe. The asbestos tape, embedded in dry insulating "mud", was forcibly removed by the use of a ballpeen hammer.

Chemical grade Asbestos Taping tape, 1 inch by  $1/16$  inch, and Johns-Manville no. 1091 asbestos tape, 2 inch by  $1/16$  inch, was used by Service Dept. electrician [REDACTED] as the work was performed. The airborne fibers were collected using membrane paper, type FF, 0.8  $\mu$  pore diameter, white, 37 mm in size, a 2 lpm flow rate.

The samples were delivered to the R. + D. Environmental Health Laboratory for analysis.

## RESULTS AND CONCLUSIONS

The attached data sheet shows asbestos fibers to be present in concentrations that do not exceed the limits as set forth in Section 1910.93a of the Occupational Safety and Health Standards during the fabrication of a heating coil on a length of pipe.

The results indicate that heating coils of this nature

may be fabricated without undue concern for health  
injury, to those who perform the operation, from inhalation  
of airborne asbestos fibers when normal precautions are  
observed.

The cooperation of [REDACTED] in scheduling and performing<sup>ing</sup>  
of the fabrication work is acknowledged and appreciated.

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# ASBESTOS REMOVAL WORK ELECTRICAL WORK

Sampled by: R.D. Buckhoff

| Time | Flow Rate | PERM 100                                                       | Fiber/ml $\times$ Sample length |
|------|-----------|----------------------------------------------------------------|---------------------------------|
| 9    | 2         | Winding 1" asbestos tape                                       | 0.17                            |
| 5    | 2         | Stripping 2" asbestos tape<br>into tie strings                 | 5.2                             |
| 13   | 2         | Removal of asbestos tape<br>from used heating coil with hammer | 1.5                             |

Electrician: [REDACTED]