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# SPECIAL HAZARDS SURVEY

OCCUPATIONAL DISEASE STUDY

**PREPARED FOR**

UNION CARBIDE CORPORATION
LINDE COMPANY
SPEEDWAY CITY, INDIANA
MAY 11, 1959

**BY**

J. M. ROBINSON

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**ANOTHER SERVICE FROM THE OFFICE OF**

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INDUSTRIAL MEDICINE & TOXICOLOGY DEPARTMENT

Safety Engineering Department
ÆTNA LIFE AFFILIATED COMPANIES
Hartford, Connecticut
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(C–2071)

UNION CARBIDE CORPORATION
LINDE COMPANY
SPEEDWAY CITY, INDIANA

May 11, 1959

Purpose: This visit was made to assist the plant in evaluating their occupational disease exposure.

Contact: Ætna Safety Engineering Representative R. Warner and I contacted Mr. Harold Sanz, Manager of Industrial Relations.

Procedure: Air sampling for dust was conducted using the midget impinger with distilled water as a collecting medium. Dust counts were made on a light field following the procedure as outlined by the United States Public Health Service.

Air samples for possible sulphuric mist were collected in sodium hydroxide solution and the sample returned to the laboratory for determination by chemical methods.

Ledge dust samples were collected and brought back to the laboratory for analysis of the free silica contents.

Results:

Air Sample No. 1 - Copper Room Powder Mill - Taken at breathing level in front of shield open to the mixer. - General Room Sample
3.4 million particles of dust per cubic foot of air.

Air Sample No. 2 - Copper Room Powder Mill - Taken in breathing zone of operator as he measures out fills and mixes a batch.
7.5 million particles of dust per cubic foot of air.

Air Sample No. 3 - 020 Department - taken to left of operator breaking up and feeding chunks of asbestos to picker
3.9 million particles of dust, 10 microns or less in size, per cubic foot of air.

Air Sample No. 4 - 020 Department - taken in breathing zone of operator filling bags of the asbestos from bins.
12.2 million particles of dust, 10 microns or less in size, per cubic foot of air.

Air Sample No. 5 - 020 Department - sand line filling on mixer platform. Taken in front of mixer while operator was adding asbestos and silica.
96.5 million particles of dust, 10 microns or less in size, per cubic foot of air

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Air Sample No. 6 - 020 Department - taken in operator's breathing zone as he weighed out and filled containers of silica and lime.
34.9 million particles of dust, 10 microns or less in size, per cubic foot of air.

Air Sample No. 7 - 032 Department - taken on east side of pickling line near center of acid tanks.
.24 mgs. of sulfuric acid per cubic meter of air.

Air Sample No. 8 - 032 Department - taken on west side of pickling line directly opposite point where air sample No. 7 was taken.
.29 mgs. of sulfuric acid per cubic meter of air.

Ledge Dust No. 9 - 020 Department - taken from beam above point where air sample No. 5 was taken.
Amount of free silica 12.2%

Discussion: Air samples No. 1 and 2 were taken in what is known as the Copper Room. Here metallic copper powder and Santocel are measured out, mixed and then packaged. The mixing operation is pretty well enclosed with an exhaust system to control the dust.

In order to evaluate our results here, we would like to point out that most authorities feel that copper is negligible as an industrial poison. No threshold limits have been set up for this material. The second ingredient in this mix, Santocel, is mainly silica-gel. This material also, is considered non-toxic. The dust from both materials would be considered nuisance dust. The maximum allowable concentration for such dust is 50 million particles of dust per cubic foot of air. The results of our air sample in this department are well below this limit. We feel that there is no particular occupational disease hazard here.

In order to evaluate the results of air samples Nos. 3 through 6 we would like to point out that the M.A.C. which has been adopted at the annual meeting of the American Conference of Governmental Industrial Hygienists for dust containing any amount of asbestos is 5 million particles of dust, 10 microns or less in size, per cubic foot of air. For free silica the M.A.C. is 5 million particles, 10 microns or less in size per cubic foot of air for dust containing more than 50% free silica, 20 million particles for dust containing 5 to 50%, and 50 million particles for dust below 5% free silica.

In Air Samples Nos. 4, 5 and 6 a check of this dust shows that it contains some asbestos. Air Sample No. 6 also contains about 12% free silica. Air Sample No. 7 is mostly free silica. We fed that a safe threshold limit for these air samples is 5 million particles, 10 microns or less in size, per cubic foot of air.

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Air Sample No. 3 was taken where one man breakes up the packages of asbestos and then feeds it through a picker where it is further shredded. This particular operation is provided with an exhaust which is quite effective in keeping the dust at a minimum. This asbestos is fed into a large enclosed bin which is connected to the dust collector, so that very little of the dust gets out into the air.

After chopping up several packages of asbestos, the man then fills and weighs out the asbestos into burlap sacks from the bins (Air Sample No. 4). Our count here was over the threshold limit. The man filled 3 bags in about 8 minutes, so the exposure is for short periods only. It would be desirable, though, for this man to use a respirator for this operation. We would also suggest that consideration be given to the use of cardboard or similar type containers for this particular handling of the asbestos. Whenever empty asbestos bags are handled, the small particles of asbestos, those most harmful, are retained by the burlap bags and these are disturbed and set free whenever the bag is handled. There is also the problem of filling these bags. This is done by shoveling and there is considerable spillage. An open cardboard container could eliminate most of this spillage.

Air Sample No. 5 was taken at the mixer while sand and asbestos was being added. Our results show a very high count here, even over the threshold limit of nuisance dust. Here again the duration of exposure is quite short, the operator taking only 7 minutes. This operator was not using a respirator for this although he had it about his neck and used it at the point where Air Sample No. 6 was taken. We feel that the use of the respirator here is important and should give the necessary protection for this short exposure.

Air Sample No. 6 was taken while the workman was emptying and weighing out bags of sand and lime into hoppers. Here again considerable dust is created. Fortunately, the man wears a respirator here which affords him protection for the short period it takes to perform this operation (8 minutes). We did note during the taking of this air sample that housekeeping conditions on the platform where the lime and sand are handled was none too good. There was considerable spillage of both lime and sand here and a number of broken bags. Whenever the operator moved he kicked up considerable dust. It is quite important that this platform be cleaned up and kept clean.

Air Sample No. 7 and 8 were taken along the pickling line. The M.A.C. for sulfuric mist is 1.0 mgs. per cubic meter of air. Our results are well below this limit. I feel that conditions here are satisfactory and there is no great exposure.

We also visited Department 042 Testing Room for coal converters. Oxygen is used in here and there was concern that there might at times be an excess amount in the air. The plant has recently purchased an oxygen analyser and we observed the test made using this instrument. All tests showed that the amount of oxygen in the air here was normal. This instrument is the most practical means of checking for oxygen in the air. I feel that checks should be made on a regular schedule basis with this analyser.

I feel that conditons in regard to occupational disease exposure at the plant are fairly well under control with the exception of those mentioned above. Attached is a list of suggestions and recommendations which would help to reduce the occupational disease exposure at this plant.

J.M.Robinson/md

J. M. Robinson

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RECOMMENDATIONS

1. A U. S. Bureau of Mines approved for asbestos dust respirator should be worn by the man who weighs out and fills bags of asbestos.

2. Would suggest that consideration be given to the substitution of cardboard or similar type of container for burlap bags in the handling of asbestos.

3. A.U. S. Bureau of Mines approved respirator should be worn by the man who is charging sand and asbestos in the mixers.

4. Housekeeping should be improved on the platform where sand and lime are measured out into hoppers. This platform should be cleaned up daily.

5. Would suggest that checks be made with the oxygen analyser on a regularly scheduled basis in the co&D converter room of Department 042.

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