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JOHNS-MANVILLE RESEARCH AND ENGINEERING CENTER

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Memorandum M404-69

Date April 21, 1969

DISPOSABLE DUST MASK FIELD TEST

An on-the-job field test to determine wearer reaction to our disposable dust masks was conducted on April 8-9 at the construction site of the Dresden Nuclear Power Station which is being built for Commonwealth Edison south of Joliet, Illinois. The workers who tested the masks are members of the Asbestos Workers Union, Local 7, Chicago, and are employed by Brand Insulations, Inc., a contractor for certain insulation work at the power station. The test was arranged through the cooperation of Mr. J. McMahan, apprentice training coordinator for Local 7, and Mr. M. Corbeil, job superintendent for Brand Insulations, Inc. The test was conducted by Dr. W. Nicholson and Mr. D. Holaday of Mount Sinai. G. Reimschussel, of Johns-Manville, was present to observe the test.

The attitude of the workers and the supervisors toward the test was excellent. Most of the workers were conscientious about testing the masks, and their evaluations were frank and honest. They seem to be well informed regarding the potential health hazards of working with asbestos and other dusty materials, and are interested in the development of a suitable dust mask.

Presently, many of the men use Welshgard masks (Model 7200 - Bantam). These masks are made available to the men by the company, although it is not mandatory that they be used. The men claim that they are quite comfortable. However, since they are rated for nuisance dusts, it is doubtful that they are very effective in filtering out respirable size dusts.

A total of 108 masks were made for the test, and included three different types: Type A - masks fitted with exhalation valves, Type B - masks without valves, and Type C - placebos. The plan was to have a group of 36 men test the masks; each man was to try a different type on each of three successive days. At the end of each day the men were to complete a questionnaire in order to evaluate each type mask and compare one against the others. Actually, the number of men participating was somewhat less than 36 because of absences, etc. Also, the test period for each mask was reduced to one-half day instead of a full day. There were two reasons for shortening the test periods: first, a full work day consisted of 10 hours, therefore, each test period was 5 hours long; and second, by the middle of the first morning, when we made the rounds to obtain first-hand comments from the men, it was apparent that as much information could be obtained in a 5-hr period as in a 10-hr period.

It was learned from the first-hand comments from the men that there were two main problems or complaints regarding the design of the mask. One was the obstruction of downward vision. It is difficult or impossible for a man to see his feet when wearing the mask, and this is particularly dangerous when working on scaffolds or catwalks. The other concerned the fit of the face piece, especially across the nose. When the mask was adjusted tight enough to give a good air seal around the face, the frame tended to pinch or dig into the nose causing irritation. A few men complained that they could not

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breath through their noses when the masks were properly adjusted. Those wearing eye-glasses had a special problem - when the frame was adjusted to cross the bridge of the nose, the glasses were pushed out of the normal position. The alternative was to have the frame cross the lower part of the nose, but, besides making it more difficult to obtain a good seal, this caused even more irritation or pinching of the nose.

Some other specific comments were:

1. The top of the mask binds when the head is tilted backward. This presents a problem when doing overhead work.

2. There were some objections to the double strap arrangement, a single strap would be preferred.

3. It is difficult to talk through the mask, especially in noisy places.

4. Wearing the mask caused excessive sweating.

While there were some complaints about difficulties in breathing through the filters, by-and-large breathing restrictions did not seem to be a problem.

Detailed wearer evaluations were recorded in the questionnaires mentioned above. The completed questionnaires are presently being reveiwed and analyzed by Mr. Holaday and Dr. Nicholson, and they are planning to send us a report which will summarize their findings and conclusions.

G. P. Reimschussel

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mac

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