

J.W. ROBERTS LIMITED

Medical Officer's Report
for Health Committee Meeting on 3rd April 1966



Ventilation of Resinating Plant

A problem exists in this area with regard to nauseating fumes, which may be potentially toxic.

Two types of resin are apparently used in the Resinating Section -

- (a) Resins 21, 19 and 11 are phenol-formaldehyde resins and are water soluble.
- (b) Resins 23, 103, 106 and 110 are cresol-formaldehyde resins which are spirit soluble.

Phenol is corrosive for skin and mucosa. It is absorbed through the skin. The acute toxic effect for oral uptake is similar to that of percutaneous absorption:

- Weakness
- Headache
- Dizziness
- ringing in the ears
- Irregular respiration
- Circulatory failure
- Coma
- Death

Oral or percutaneous uptake of 1 g. may be fatal. Chronic intoxication is seen very seldom; symptoms arising from the gastro-intestinal tract and central nervous system, damage to liver and kidney. Because of the low volatility the industrial hazard in respect of inhalation is very small, in contrast to the possibility of percutaneous absorption.

Formaldehyde, a volatile gas, is irritating to the mucosae of eyes and air passages. The following effects may occur:

- Bronchitis
- Dermatitis
- Rhinitis
- Oropharyngitis
- Conjunctivitis

The irritation proves to be a good warning signal; serious acute intoxication (pulmonary oedema, coma) rarely occurs. However, a habituation to irritating levels may be quickly established. The toxicology of aldehydes has been extensively covered by U.S. Public Health Service (1945) and Hansen (1958); the toxicity of the lower aldehydes decreases with chain length; unsaturated aldehydes are more toxic than those saturated. Urea is non-toxic; as to salamine, no adequate data are reported.

With regard to the skin, phenol and formaldehyde are both primary irritants and sensitizers. Phenol sensitization occurs less frequently than formaldehyde sensitization partly due to the volatility of the latter. Lockey (1944) gave an excellent description of the processing hazards of phenol-formaldehyde and urea-formaldehyde resins.

The Chemical Safety Data Sheets SD-4 (1946) and SD-1 (1952) give extensive information about handling precautions for phenol and formaldehyde. The MAC/TLV for phenol is given as 5 p.p.m. and for formaldehyde as 5 p.p.m. (American Conference of Governmental Industrial Hygienists 1962).

I would like to suggest that the present exhaust ventilation system on the impregnators and driers is inadequate; that monitoring of the environment should be carried out at set intervals every day, and that all cases of unusual illness or absenteeism be reported to the First Aid Room for my attention. Improvement of the efficiency of the exhaust ventilation should be given immediate attention.

Housekeeping and General Remarks

During the week ending 8th March I walked round the factory and was appalled at the shambles in low-pressure moulding. It is understandable that with conversion of the area from a production to warehouse area some disruption will occur. My primary objections were to the fact that contractors' men ignored our precautions and lunch boxes and billy cans were freely scattered about on benches where chemicals were still in use. A man who informed me that he was finishing Cooper exhaust shields (I may have forgotten the exact description of the item by now) was doing so without wearing an approved respirator, without any adequate exhaust ventilation and in the midst of the chaos now existing in the low-pressure moulding area.

In the high-pressure moulding area the dust from the band-saws was noticeable and served to illustrate the need for this equipment to be exhausted as soon as possible.

I would recommend that all machining of "Ferobestos" be confined to one area. This makes the follow-up of workers a reasonable proposition and, I assure, also simplifies the engineering problems of providing a better working environment.

The processing of blue asbestos and blue asbestos felt continues to prompt me to draw attention to the acknowledged association between this form of asbestos and an increased incidence of mesothelioma of the pleura. At an inquest in Burton last month the Coroner recorded a verdict of death due to mesothelioma of the pleura in an asbestos worker who had worked with "Ferobestos" at Ferodo Ltd. This material has at times consisted of blue asbestos impregnated material. In view of the fact that 2 cases of mesothelioma of the pleura have occurred at Ferodo in men who have been exposed to this material, I feel that the Company should seriously review its continued use of crocidolite in this manner.

"Ferrobestos" - Medical Examination and X-Rays

I am engaged at present on a "blind" reading trial of X-Rays and there remain one or two exposed operatives to examine before my conclusions can be finalised. It is my intention to circulate to the members of the Health Committee the findings in this study together with conclusions and recommendations as soon as possible. If this can be done before the next meeting on 3rd April 1968 it can be discussed then.

References:

American Conference Governmental Industrial Hygienists, Threshold Limit Values, Detroit, Michigan, 1962.
 Chemical Safety Data Sheet SD-1. Properties and Essential Information for Safe Handling and Use of Formaldehyde, Manufact. Chemists' Assoc., Washington 1952.
 Chemical Safety Data Sheet SD-4. Properties and Essential Information for Safe Handling and Use of Phenol, Manufact. Chemists' Assoc., Washington 1946.
 Hanson, V., The toxicity of some aliphatic aldehydes. J. Occupational Med., 1 (1959) 457.
 Lockey, U.D., Contact dermatitis resulting from the manufacture of synthetic resins and methods of control. J. Allergy, 15 (1944) 188.
 Public Health Service, U.S., Formaldehyde - its Toxicity and potential dangers. Natl. Inst. Health. Publ. Health Rept. 1945, Suppl. 181.