FILE NAME: National Safety Council (NSC)

DATE: 1945 June

DOC#: NSC014

DOCUMENT DESCRIPTION: NSC - National Safety News - Industrial Health

Industrial Health

HIGHLIGHTS IN THE FIELDS OF INDUSTRIAL MEDICINE, HYGIENE, AND NURSING
COMPILED BY FREDERICK S. MALLETTE, INDUSTRIAL DIVISION, N.S.C.

Heat and Humidity

From the Journal of Industrial Hygiene and Toxicology. March, 1945.

This study has confirmed the observations previously made that the wet bulb temperature of the environment is the most important factor in determining the upper limits of heat and humidity in which men can work. It adds evidence indicating that the wet bulb temperature determines the severity of many of the physiologic changes induced in men working in such heat. Furthermore, whereas industrial experience has been largely limited to hot environments with high relative humidity, this study indicates that with higher air temperature (up to 120°F) and lowered humidity, the wet bulb temperature is still the major factor in determining whether man can or cannot work. The limiting wet bulb temperatures are quite stable, changing but little over a range of air temperatures from 90°F to 120°F and over relative humidities ranging from 100 to 30 per cent. Thus, simple lines may be added to psychometric charts to indicate conditions of equivalent severity for work in hot environments approaching upper tolerable limits.

The limiting nature of the wet bulb temperature makes this simple determination a useful guide for the management of men working in excessively hot surroundings. The following rules are suggested for environments in which the dry bulb temperature does not exceed 120°F. Healthy acclimatized men will work easily, efficiently and effectively, and without heat casualty when the wet bulb temperature does not exceed 91°F. When the wet bulb temperature is between 91°F and 94°F, they will work with difficulty, inefficiently and often ineffectively. In this range, mild heat casualties may occur. At wet bulb temperatures exceeding 94°F, most men are incapable of sustained effort, those continuing to work being inefficient and ineffective. In this range, a high incidence of heat casualties (often severe) may be expected.

These rules are formulated for nude men working as described in the study. Clothing probably lowers the environmental upper limit. Nevertheless, these rules may be useful to industry because the rate and continuous nature of the work described imposes a load not likely to be matched in industry and this may balance out an added clothing load. It is of interest to note that the upper limits here described compare with those found in underground work in the Kolar Gold Field Mines.

The duration of exposure to any single environment in this study was short, several days to a week. Therefore, it is not altogether permissible to predict the performance and reactions of men exposed daily for longer periods (months) to the more severe environments described. It was indicated that prolonged exposure might lead to a deterioration of performance. When men work daily in the impossible environments (wet bulb temperature above 94°F), their performance, and particularly their morale and will-to-work, appear to deteriorate with succeeding days.

No such deterioration was evidenced when men worked repeatedly in the relatively easy environments (wet bulb temperature 91°F or less). This is further reason for accepting the line of relatively easy equivalent conditions as the practical and safe upper environmental limit for acclimatized men working in hot surroundings.

Occupational Illnesses in Cotton Industries

From the Journal of Industrial Hygiene and Toxicology, February, 1945.

Allergic individuals may develop a hypersensitivity to the high concentrations of cotton dust associated with some manufacturing processes in the cotton industry. There is apparently a wide variation in the severity of asthmatic attacks that result from this exposure. In the 12 cases studied, none gave evidence of any complicating pulmonary disease, even though in one case the condition had been present for 17 years.

Physical examinations and X-rays were made on employe... had worked in excess of twen... in the card-rooms of textile mill... linter rooms of cotton seed oil... Of the 26 cases in this group, non... complaints or physical findings ... ing to their respiratory system...

Inquiries into the occupation... all individuals on whom a diag... of bronchiectasis (dilatation of... bronchi) or emphysema (dilatation... alveoli) had been made at the... Tuberculosis Sanitarium failed to... a single case employed in any of... dusty operations of the cotton in...

No evidence was found to clari... even support the existence of byss... (cotton dust lung disease) as a cli... entity arising among employe... posed to Upland cotton in a... section of that industry in Missis...

Further Studies on DDT

From Public Health Reports, May... 1945.

Amazing claims have been made... the new insecticide DDT, known... chemists as 2, 2 Bis (P-Chlorophenyl)... 1, 1, 1 Trichlorethane, but because... its indicated toxicity, pharmacol... studies by the United States Public... Health Service have been expedited... prevent careless use of the compo... It has been shown in previous... that the substance is quite toxic... its effect is cumulative, that its pri... cipal actions are on the central nervous... system and the liver, and that the... tical usefulness of the compound... bined with its toxicity merited... ough search for means of control... incipient poisoning.

The present reported results are... extension of the previous observations... designed to determine more accurately... the extent of cumulative action of the... compound and the value of the chemi... ical test of organic chlorine determina... tion in detecting early poisoning. Ex... periments were also made on the influ... ence of certain dietary deficiencies on... the chronic toxicity of DDT, on the...

(To page 36)

INDUSTRIAL HEALTH

(From page 34)

antidotal value of hypnotics in poisoning, and on the condition the vasomotor and respiratory and the central nervous system in the terminal stages of DDT poisoning.

Results indicate considerable difference in the effects produced administration of DDT. For instance the rabbit shows severe and liver damage while the cat scarcely any. Possibly the metabolism of this substance is not the same the two species which possibly counts for the difference. Low diet seems to contribute slightly general toxicity but does not materially alter the susceptibility of the the toxic action of this compound.

Studies on the action of a series hypnotics and related compounds acute DDT poisoning in rats indicate good antidotal effects from urethane and to a lesser degree from dial

Pneumoconiosis

From the Journal of the American Medical Association, March 24, 1945.

Many other conditions besides silicosis and benign pneumoconiosis may produce a similar x-ray appearance of the lungs. Among these are spreading cancer, Hodgkin's Disease, miliary tuberculosis, lipoid pneumonitis, and parasitic and fungus infections of various kinds.

Diagnosing between pneumoconiosis of any variety and any of the other conditions depends largely upon the clinical features of the case, a careful history to establish or exclude occupational exposure to dust, a thorough physical examination and appropriate laboratory study.

It is impossible for the roentgenologist to tell the difference between the nodulation resulting from the reactive fibrosis produced by free silica in the lung tissues and the shadows of pseudo-nodulation cast by the opaque substance itself in benign pneumoconiosis. Therefore, in order to differentiate between silicosis and benign pneumoconiosis one must have recourse to a much detailed occupational history and, whenever possible, firsthand knowledge of the environmental conditions surrounding the worker. Frequently an industrial hygiene survey of the plant must be made to determine the nature and concentration of the dust to which the employee is exposed.

Advanced silicosis with conglomerate nodulation is often a disabling

ease, and when silicosis is complicated by tuberculosis it is fatal. Asbestosis, when extensive, reduces pulmonary ventilation. This may embarrass the heart and induce cardiac failure.

Benign pneumoconiosis produces nothing but "shadows cast on the roentgenogram."

For these reasons it is unfair to the worker, to labor and to industry that the clinician and the roentgenologist to take their responsibilities lightly when they are called on to distinguish between silicosis or asbestosis on the one hand and benign pneumoconiosis on the other.

Physical Impairment

From "Physical Impairment and Job Performance," Journal of the American Medical Association, April 7, 14, 1945.

This report presents the results of a study made of job performance of 2,858 physically impaired male and female workers as compared with those of 5,523 able-bodied male and female workers of similar age, experience and occupational characteristics from the standpoints of accident experience, production and efficiency, sickness, absenteeisms and employment stability.

The average accident frequency rate for the physically impaired was found to be higher than the average frequency rate for the able-bodied. An excessive number of accidents in certain physical defect classes contributed heavily to the accident frequency rate of the impaired group. However, the physically impaired experienced proportionately less severe accidents than the able-bodied.

There is evidence that a psychologic element relating to some types of physical impairments plays an important role in causing significant variations of frequency rate among the several classes of physical defects found among impaired workers in this study. Although this psychologic element also exists among the able-bodied, it has greater significance among workers with certain types of physical defects from the standpoint of prevention of further impairment by accidental injuries and determining a safe method of absorption of physically impaired workers into certain types of industries without raising over-all accident and severity rate or production costs in those industries.

This psychologic element in accident proneness cannot be measured or altered either by ordinary interviews or by matching physical capacities and qualifications to physical and mental demands of jobs. It can to some extent be detected before employment by means of tests which partially