Industrial Hygiene Highlights by Cralley, L. V.; Cralley, L, J.; and Clayton, G. D. Industrial Hygiene Foundation of America, Inc. Pittsburgh, Pa. 1968 381 pgs $20.00

In the Introduction of this book, Professor Theodore Hatch has clearly summarized the philosophy of the relationship between industry and health. It should be required reading for all who have any contact with environmental health be they labor, management, legal, medical, or administrative governmental personnel. Much fuzzy thinking has been expressed during recent years on the relationship between occupation and health. Attention to the principles expressed by Professor Hatch will be of benefit to all in the field.

Each chapter in the book is a monograph on recent developments and thinking about the subject under consideration. All are of interest to those people concerned with industrial health such as industrial hygienists, engineers, chemists, doctors, nurses, and governmental people in the field of occupational disease compensation.

Dr. Lewis Cralley discusses some of the refinements and changes in epidemiological methods developed in recent years. Application of these methods to industrial employee data has shown an increase in lung cancer among workers exposed to significant amounts of asbestos. The analyses indicate there may be considerable significance to the metal contaminants which are usually found in asbestos. Cigarette smoking by the asbestos-exposed worker apparently has a deleterious effect,also. Pneumoconiosis due to coal dust is receiving increased attention particularly in England. There, studies are being made to determine what type of measurement of dust concentrations in the air correlates best with human response to dust exposure. In the United States, coal miners pneumoconiosis was found in an appreciable segment of such miners who were examined in Pennsylvania. Obviously much more attention must be given to the problem.

Tantalizing peeks are also given into research work now in progress in the fields of exposure to cotton dust, lindane, mercury, silica and talc. Uranium mining and the associated exposure of the miners to radon daughters is discussed. These miners show an above-average prevalence of lung cancer. Factors possibly associated with the increase may be radon daughter exposure plus some effect from silica dust and cigarette smoking.

The interdependence of our industrial world and some of the problems created by an expanding population are discussed using travel in space as an example. Questions relating to the reconversion of bodily wastes to reusable materials during prolonged space flights are viewed from biological and chemical viewpoints. The author then suggests parts of such closed systems may be necessary if man is to preserve the earth as an habitable place in which to live.

Accurate analytical techniques provide the groundwork on which is built an understanding of the health effects of non-physiologic contaminants within the body. In this chapter the author shows the wide variety of increasingly accurate analytical techniques which are becoming available. Sample collection is discussed, and then techniques of analysis such as atomic absorption spectroscopy, election microprobe, polarography, and methods of chromatography are outlined. All industrial hygienists interested in analyses should read this chapter for a good survey of the entire analytical field.

The engineer's first problem in industrial hygiene is the collection of a sample. The newest developments in dust, vapor and gas sampling techniques are described. A good discussion of the cascade impactor is given as well as sampling by means of microcolumns of silica gel, and gas chromatography.

An enormous amount of material is being published annually

concerning ionizing radiation. Established uses of these radiations are growing and new uses are being developed. The industrial hygienist is particularly interested in external radiation dosimetry and should become acquainted with thermoluminescent detectors and glass dosimeters. Internally deposited emitters are of great biological importance but the section covering this problem should be read for a better understanding of its complexity.

Non-ionizing radiations are grouped into four divisions for purposes of discussion. These are ultraviolet energy, visible energy, infrared energy, and radio waves. Rather than confine himself to advances made in the last two years, the author of this chapter has written a monograph on the subject. It could be read with profit by any person interested in the biological sciences, physics or chemistry. The author develops the theme that in non-ionizing radiations we are dealing with energy, and this energy can produce an effect when it is absorbed by matter. The interaction with matter follows the physical laws of nature.

The chapter on noise has a good discussion of the present status of criteria, and standards for noise measurement and evaluation. The instrumentation for measuring noise has been essentially unchanged for several years. Recent advances in this field have been in the development of standards and their incorporation into the legal framework of a number of communities.

In hot environments the body maintains a balance between heat gain and heat loss by activity of the sweating mechanism and the circulatory system. The chapter on heat stress reviews means of measuring the heat load and briefly covers engineering control of the heat problem.

Ergonomics is "the application of the human biological science in conjunction with the engineering sciences to achieve the optimum mutual adjustment of man and his work." This means the industrial hygienist

should develop an awareness of all possible factors which may affect a worker. A systems analysis checklist is given and can profitably be read by anyone concerned with industrial health problems. It will be an excellent experience for the reader to extend the checklist to his own industrial problems.

It has been stated that industrial toxicology is the most important and most rapidly growing branch of toxicology. Progress is measured by more attention being given to subtle effects such as enzyme changes, hypersusceptibility, potentiation and interaction, teratogenicity, and experimental modeling. Recent advances in knowledge about a large number of toxic materials of industrial importance are given, and it is well worth an industrial hygienist's time to read the chapter on this subject.

In the chapter on Air Pollution, the U. S. Government's Air Quality Act is explained. The results of some air pollution surveillance activities conducted by the National Center for Air Pollution Control are given in tables and discussed in the text. The author then gives a very practical and sensible discussion of air quality standards.

All industrial plants send some air contamination into the atmosphere via chimneys, or tall stacks. How this material will be dispersed, -and possibly affect the neighboring community- is discussed in a chapter on meteorology.

Personal protective devices are of basic importance to the industrial hygienist and the chapter on this subject will bring to the reader all the important recent developments. Solid state oxygen generation systems and their applications are discussed in some detail. Air-purifying respirators have been improved and details of the new devices are given. Protective clothing is another device for which many changes have been suggested. Development of new heat-resistant materials has enabled the manufacturer of protective clothing to improve his product

and extend its range of usefulness. Advances in this field are described.

The concluding chapter in this book highlights new industrial processes and materials which may significantly affect health. The construction industry for instance is using epoxy asphalt as a paving material and untrained workers must be carefully supervised in proper handling methods. The use of plastic materials in construction also raises problems of unusual air contamination in case of fire. New problems in other industries such as paper coating, metal working, textiles and transportation are described; and control measures indicated.

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