A STUDY OF ZINC CONTENT OF CERTAIN WATERS AND ITS RELATION TO U. S. PUBLIC HEALTH SERVICE STANDARDS

THE United States Public Health Service has set a limit of 5 parts per million of zinc for waters used for drinking and culinary purposes. It has been found that there is an extremely wide variation in the solvent action on zinc of various waters. The degree of alkalinity, the amount of dissolved gases, oxygen and carbon dioxide, present in any given water will effect the rate of solution of zinc by said water. Zinc contamination, when existing, generally takes place within building limits. Zinc is seldom, if ever, present in water in street mains. Authentic cases of illness caused by presence of zinc in water are a matter of record. The amount of zinc constituting a toxic dose, in water, is open to discussion. It is shown that the proper chemical conditioning of water will result in preventing solution of zinc. Fairhall’s method for determination of zinc is recommended as being the most accurate method now available.—Abstract of paper presented by R. M. Palmer, Chemical Engineer, 500 Fifth Avenue, New York, N. Y., before the Public Health Engineering Section of the American Public Health Association at the 61st Annual Meeting in Washington, D. C., October 26, 1932.

INDUSTRIAL HYGIENE

Appointment of Occupational Health Council in Massachusetts—An Advisory body to be known as the Occupational Health Council has been recently established in the Massachusetts Department of Labor and Industries. The council will be concerned with the occupational health problems of the state, the study of which has recently been inaugurated with the appointment of an occupational hygienist. The members of the council include prominent representatives of public health and industrial medical services, labor unions, employers’ organizations, social and welfare organizations, and insurance companies.

The Commissioner of the Department said:

We propose to give ourselves the benefit of the best advice obtainable from individuals and institutions concerned with the health of the working population, and we believe it no less important that these interests be kept informed of the work which we are doing. I do not anticipate the need for frequent meetings of the group as a whole, but hope rather for the counsel of its members as it is needed, their criticism as it is called for, and their support as it is merited.

With all regard for the pressing necessity of extreme economy in government, I am confident that this new undertaking of the department will more than justify itself in the reduction of disease arising from inadequately protected industrial occupations in the commonwealth.—Month. Labor Rev., U. S. Bureau of Labor Stat., 35, 3:541 (Sept.), 1932.

Death of Magnus Washington Alexander—Industrial hygienists will greatly regret the death of Magnus W. Alexander, an engineer by training, organizer and noted guide of the National Industrial Conference Board, which has published many important researches in industrial medicine, some in monograph form. He had headed the board since its organization in 1916. Although born in New York, he obtained most of his schooling in Austria. Returning to America in 1893, he progressed steadily until he became engineer in charge of designing for the
General Electric Company, and, in 1918, became that company's consulting engineer on economic issues. He will be especially remembered for his comprehension of the importance of industrial safety and hygiene and his influence in promoting medical organization. Memorial articles may be found in the Sept. 20, 1932, issue of the Conference Board Bulletin (247 Park Avenue, New York). E. R. H.

The Dust Hazard in Air-Pressure Abrasive Blasting (Sandblasting) —Object of the Investigation: The investigation here reported was made for the Committee on Health Protection in Air-Pressure Abrasive Blasting of the National Safety Council, of which the senior author was chairman. It was a co-operative study in which the U. S. Public Health Service coöperated with the Council. The actual field surveys and analytical work were performed by Leonard Greenburg and J. J. Bloomfield.

The object of the investigation was to determine the actual extent of the dust hazard in air-pressure abrasive blasting as conducted under American industrial conditions, to discover what protective measures were in use and to estimate their efficiency.

Air-pressure abrasive blasting is employed in two fundamentally different ways—in sandblast rooms, where the worker must operate by hand, in the midst of the sandblast atmosphere; and by the use of barrels, tables and cabinets in which the castings are exposed to the sandblast in a closed chamber, with the worker operating outside.

When such work is conducted in closed devices employing sand as the abrasive, the air of the workroom generally contains a highly hazardous dust concentration—over 90 per cent of quartz, and an average count of over 20 million particles per cu. ft. When steel instead of sand is used, the quartz content falls to 3 per cent and the dust counts average from 8 to 15 million particles—a condition which should not cause silicosis. Studies show, however, that all four types of equipment investigated can be made safe by proper construction and maintenance.

In rooms, where the worker must operate in the actual midst of the sand blast, the dust content is, of course, enormous, averaging 155 million particles per cu. ft. with steel abrasive, and 969 million with sand abrasive.

Helmets depending on filtration are quite inadequate to protect the worker against such dust concentrations; and positive air-pressure helmets with wire mesh eye-screens are irregular and unreliable in their effect.

On the other hand, positive air-pressure helmets with glass eye-shields and an air supply of 6 cu. ft. per minute furnish complete protection to the worker under the worst conditions found in actual operation, yielding a dust content of less than 1 million particles per cu. ft. within the helmet, with 1,000.0 million or more particles per cu. ft. in the outside air and rising only to 3 million particles per cu. ft. within the helmet even when the outside air contains 4,000.0 million particles.—Leonard Greenburg and C.-E. A. Winslow, Arch. f. Gewerbeath. u. Gewerbekyg., 3, 4:577—599, 1932. E. R. H.

Physiological Factors in Mine Ventilation in 1931—The hazards connected with work under abnormal air conditions are becoming of increasing importance from a financial as well as a physiological standpoint, due to the extension of compensation laws to include diseases caused by dusts, toxic gases, and abnormal temperatures and humidities.

The United States, with the exception of California, North Dakota, Wisconsin, Massachusetts, and Connecticut, is the only English-speaking country where silicosis is not compensated.

A summary of recent literature concerning effects on workers of exposure
to dusts is taken up in alphabetical order of countries—Australia, Austria, Canada, England, Germany, Italy, The Netherlands and the United States. In England and the United States especially there was much literature on the subject of silicosis (pp. 2–35).

A summary of recent literature on effects of toxic or noxious gases is next included by leading countries, with special reference to the United States (pp. 35–51). Abnormal temperatures and humidities follow, also by countries (pp. 51–66).—R. R. Sayers, U. S. Bureau of Mines, Inf. Circular, 6645, Sept., 1932 (mimeographed). E. R. H.

Compensation for Industrial Diseases—Prague—A law for compensation of industrial diseases became effective July 1. Workmen’s compensation for accidents, however, has existed in Czechoslovakia since 1887. There are 25 diseases now on the list, and the government may add others. In addition to the usual industrial poisons (lead, phosphorus, mercury, arsenic, manganese, benzene, carbon surphide, carbon hydrogen, phosgene, carbon monoxide, hydrocyanic acid), a number of chemical substances, chiefly tar-products are enumerated that cause chronic eczemas and malignant growths of the skin. X-rays and radiums are also included. The list likewise contains cancer of the lungs, so frequently found in the mines of Joachimsthal. Infectious diseases resulting from occupations are covered, especially anthrax, glanders, and hookworm.

Other diseases covered are chronic changes in the bones and joints as the result of pneumatic drills and hammers. The most important group, however, is silicosis and siderosis. To this same group is added damage to the lungs by Thomas artificial fertilizer.

The last group comprises nystagmus and deafness as a result of working in mines. The accident insurance body has the right also to give a temporary pension to a patient who is willing to change his occupation.—J.A.M.A. (Foreign Letters), 99, 20:1705 (Nov. 12), 1932. E. R. H.

Department of Industrial Hygiene—Studies on methods of dust estimation have been continued in association with the Miners’ Phthisis Prevention Committee and the Mine Air Committee with a view of standardizing practice in the use of the dust counter (konimeter). The purpose is to secure a reasonable agreement. It is found necessary to treat the spots to be counted to remove water soluble particles and carbon in order to secure greater accuracy (in silica dust estimations). The possibilities of crucibles with filter floors of porous porcelain so that particles may be graded in terms of size-frequency is also being investigated.

In the Biochemical Department, the diet used by the mine natives has been investigated especially as regards its content in vitamin A. The livers were obtained from cases dying of pneumonia, and the amount of vitamin A was compared with that found in accident cases used as controls. The vitamin A content of the controls appeared to be quite definitely higher than that of the hospital group.—The South African Institute for Medical Research, Annual Report Year ending December 31, 1931, pp. 16–18. E. R. H.

Facts on Child Labor—Based on the 1930 Census returns, there were 667,118 child workers, 10–15 years, inclusive, or 4.7 per cent (1 in every 21) of the children of these ages in the United States. These figures included 431,790, or 9.2 per cent (1 in every 11) children, 14–15 years of age.

Of the gross number, 469,497, or 70.4 per cent, were employed in agriculture; 68,266, or 10.2 per cent, in
manufacturing and mechanical industries (textiles 20,625, clothing 8,650, building 7,380, lumber and furniture 4,790, food and allied industries 4,324, and iron and steel and other metals 3,236); trade 49,615 or 7.4 per cent; domestic and personal service 46,145 or 7 per cent; clerical occupations 16,803 or 2.5 per cent; transportation 8,717 or 1.3 per cent; extraction of minerals 1,184 or 0.2 per cent; and others 6,891 or 1 per cent. These figures include also those in public and professional service, forestry and fishing.

Eleven southern states (named) had from 5.5 to 24.9 per cent of their children, 10-15 years of age, employed as child workers. Nine southern states had the largest number of child workers, followed by Pennsylvania with 24,000, New York 20,000, Missouri 14,000, Illinois 12,000, New Jersey 11,000, and Massachusetts 10,000.

Limiting the figures to occupations other than agriculture, 1.4 per cent of all the children, 10-15 years of age, in the United States were found in such occupations.—U. S. Children’s Bureau, Washington, D. C. (Press release received November 4, 1932.) E. R. H.

Carbon Monoxide Poisoning in Garage with Doors Open—One of the members of the staff of the Maryland Department of Health collapsed in his garage while tinkering on his automobile and with the doors of the garage open while he worked. He crawled under the engine and, realizing suddenly that he was getting light-headed, crawled out, and started out to the open door, but fell before he reached it.

A boy of 17 passing saw the figure collapsed over the fender and heard the engine running. The boy pulled the victim out into the open air, instituted artificial respiration until help arrived when the victim, still unconscious, was rushed to a nearby hospital. After the use of oxygen for 45 minutes, consciousness was regained.

(This case serves to illustrate that carbon monoxide poisoning is a matter of the concentration of the gas wherever it is, enclosure or no enclosure. Numerous other instances are also in the literature where mishaps have occurred out in apparently open spaces, as on cinder dumps, along side of furnace rooms, bustle pipes around blast furnaces, etc.—Abstractor).—Maryland Dept. of Health, Press Bulletin 435, Nov. 28, 1932. E. R. H.

State Requirements for Industrial Lighting—This handbook designed for the protection of women workers contains basic considerations; the importance of good lighting from the standpoint of eye fatigue (by Janet Howell Clark), the Code of the American Standards Association for Lighting Factories, Mills and Other Working Places; a resumé of state lighting codes; and state lighting requirements other than lighting codes.

The Women’s Bureau has investigated about 1,300 establishments in 13 states during the period of more than 10 years. Of these, natural lighting was reported satisfactorily in 762, and artificial lighting in 538. As a rule, simply the judgment of the bureau’s investigators was used rather than instruments of precision.

In April, 1931, only 13 states had lighting codes, 19 states had no legal requirements, 8 states and the District of Columbia had some general requirements applying to all parts of manufacturing and mechanical establishments, and 10 only some general requirements applying to certain limited places only. It is to be noted that these 10 states were: Connecticut, Illinois, Indiana, Michigan, Minnesota, Nebraska, Rhode Island, Texas, Virginia, and West Virginia.—U. S. Women’s Bureau, Bulletin No. 94:65, 1932. E. R. H.