



Air Hygiene Foundation of America, Inc.,
4400 Fifth Avenue,
Pittsburgh, Pa.
July 13, 1939.



REFERENCES TO RECENT LITERATURE ON INDUSTRIAL DISEASES

(A) News Items

- 515 PUBLIC RELATIONS NOTE. McGraw-Hill's PUBLIC RELATIONS INDEX for May 1939 says: "Some 250 companies and trade associations, representing a total employment of over 1,000,000 workers in addition to individual health programs, give further practical expression to their concern in employee health by supporting the work of the Air Hygiene Foundation. A non-profit organization with headquarters at the Mellon Institute in Pittsburgh, the Foundation sponsors research projects there and at various university and other laboratories; while making plant surveys and special investigations frequently for member companies. It publishes a monthly digest of current industrial hygiene literature, and exchanges data with the growing number of state and federal agencies in the field. Increasing public demand on the Foundation for information relating to industrial health subjects is giving it the opportunity of filling an important public relations need."
- 516 PENNSYLVANIA AND MARYLAND OCCUPATIONAL DISEASE LEGISLATION. The following is an analysis of the occupational disease legislation recently enacted in Pennsylvania and Maryland. This material was prepared for the member companies of Air Hygiene Foundation by Theodore C. Waters of the Foundation's Legal Committee. Mr. Waters is also Chairman of the Maryland Occupational Disease Commission.

Pennsylvania Occupational Disease Law

The Pennsylvania Occupational Disease Compensation Act was passed at the 1939 session of the Pennsylvania Legislature and becomes effective October 1, 1939. It provides, among other things, the following:

1. Compensation for disability or death from twelve scheduled occupational diseases.
2. Silicosis, anthraco-silicosis, or asbestosis compensation.
 - (a) No compensation for partial disability.
 - (b) Limitation on liability for total disability in amount of \$3600.00.
 - (c) Apportionment of Compensation for disability or death occurring between October 1, 1939 and September 30, 1941 - employer pays 50% of compensation and Occupational Disease Fund remaining 50%; thereafter, during each succeeding two-year period, the employer's liability increases at the rate of 10% and the liability of the Occupational Disease Fund decreases 10%. After October 1, 1949, employer pays full compensation, with the limitation of liability to \$3600.

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3. Medical Board.

- (a) Appointed by Governor from list of nominees submitted by Deans of all legally recognized Medical Schools in Pennsylvania who nominate twenty-five physicians.
- (b) Powers of Medical Board:
 - (1) Power to issue subpoenas, requiring claimant to submit to examination.
 - (2) Power to order autopsies.
- (c) Medical Board's findings of fact as to medical questions conclusive.

Maryland Occupational Disease Law

The Maryland Occupational Disease Compensation Act was passed at the 1939 session of the Maryland Legislature and became effective June 1, 1939. It provides, among other things, the following:

- 1. Compensation for disability or death from thirty-four scheduled occupational diseases.
- 2. Silicosis or asbestosis compensation.
 - (a) No compensation for partial disability.
 - (b) Compensation for total disability or death, with limitation of compensation in the amount of \$500 if death or disability occurs during the first month the Act becomes effective, with benefits increasing at the rate of \$50.00 per month until the full benefits of the Act are reached, at which time provision is made for compensation similar to that for total disability or death from other compensable diseases or traumatic injuries.
- 3. Medical Board.
 - (a) Provides for Medical Board of three members to be appointed by Governor from list of nominees submitted by Deans of Medical Departments of University of Maryland and Johns Hopkins University and Medical and Chirurgical Faculty of Maryland.
 - (b) Appeal from Medical Board's findings is granted to State Industrial Accident Commission, which is bound by record made by the Medical Board. There is no appeal to Courts of Law on questions of fact; only on questions of law.
- 4. Prevention.
 - (a) State Department of Health and Commissioner of Health of Baltimore City are authorized to make rules and regulations for control and prevention, such rules to have the force and effect of law. Public notice and public hearing of rules proposed to be adopted must be held before rules become effective.

517 IDAHO NOW COMPENSATES FOR OCCUPATIONAL DISEASES. Anonymous. Occup. Hazards & Safety, 1, 31, (June 1939).

An amendment to the Idaho Workmen's Compensation Law, recently signed by the Governor, makes compensable disability or death arising from occupational diseases. The new law defines 11 occupational diseases which are compensable and sets forth the occupations in which the diseases must be contracted to be subject to the law. The schedule includes poisoning by lead, carbon monoxide, methanol, carbon bisulphide, hydrocarbons, benzol, chromic acid, bichromate of ammonium, potassium or sodium, ulceration due to tar or pitch, etc., dermatitis, anthrax and silicosis. Special provision relating to silicosis are included.

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- 518 BOOK REVIEW--MEDIOLEGAL PHASES OF OCCUPATIONAL DISEASES. AN OUTLINE OF THEORY AND PRACTICE. C. O. Sappington, M. D., Dr. P. H. 400 pp. Price \$2.75. Published 1939, by Industrial Health Book Co., 540 North Michigan Ave., Chicago. This book presents, in handbook form, the industrial, insurance, medical and legal inter-relations of all the elements of occupational diseases, from origins and causes to disabilities and costs. The book is particularly opportune, as industrial health, industrial hygiene, industrial medicine and occupational diseases are being stressed at the present time and involve numerous difficult problems. The author has presented the material in clear and concise language and each part consists of an introduction, chapter texts, summary and list of references. There is an excellent appendix including abstracts of state laws, scheduled diseases, abstracts of legal decisions, legislative suggestions and a digest of workmen's compensation laws by states. The volume should have an important place in the executive library of any industrial plant.

(B) Papers on Dust, Dust Diseases and General Industrial Hygiene

- 519 INDUSTRIAL MEDICAL DEPARTMENT ORGANIZATION. J. J. Prendergast. Am. J. Pub. H. 29, 641-4. (June 1939).
The author presents a brief general discussion of industrial medical department organization of large companies. Most employees, however, are in companies too small to warrant full time medical service; many are even too small to employ a part-time physician or a full time industrial nurse. Nevertheless the author considers industrial nursing in these small companies an excellent opportunity for nurses of today and devotes most of the article to a discussion of the application of industrial nurses to small industries.
- 520 THE SIGNIFICANCE OF DUST COUNTS. J. M. DallaValle. U. S. Pub. H. Reports, 54, 1095-1104 (June 23, 1939). For sale by Supt. of Documents, Washington, D. C. Price 5 cents.
Much of the confusion arising from the interpretation of dust counts may be traced to lack of appreciation regarding their actual significance. Dust counts have a threefold application: (1) they are an index of the dustiness of a plant; (2) they help to determine the effectiveness of dust-removal equipment; and (3) they can be used in conjunction with medical data to determine threshold limits. Dust counts should be classified in broad categories, as being, for example, above or below a maximum tolerance limit. Moreover, in making counts for a particular occupation, the work should be analyzed and all factors considered. In the occupation permissible concentrations may be exceeded for short periods, but a weighted average of total exposure may be, from the medico-engineering standpoint, far below tolerance exposure. Dust counts, when made correctly and accurately and applied with care, may be a good measure of the index of dustiness. In the paper a short review of points in dust sampling technic is given together with methods of averaging and weighting of dust exposures.
- 521 SOME OF THE WELFARE PROBLEMS OF THE MINING INDUSTRY AND WHAT THE BUREAU OF MINES HAS DONE ABOUT THEM. D. Harrington. U. S. Bureau of Mines Inf. Circ. 7071, 41 pp. (May 1939).
The author reviews the work of the Health and Safety Branch of the Bureau. Working conditions in mines as a whole, including high temperatures, high humidities or dust, and methods that have been used to alleviate them are described. Statistics are given to show the marked reductions in mining accidents since the Bureau was begun in 1910. Included also in the paper is a comprehensive list of Bureau publications on health and safety in the mineral industry.

References to Recent Literature - 4

- 522 A METHOD OF COUNTING SAMPLES TAKEN WITH THE IMPINGER. C. R. Williams. J. Ind. Hyg. & Toxicol., 21, 226-30 (June 1939).

A new procedure for counting Greenburg-Smith impinger dust samples is proposed. It involves the use of a new type of counting cell to replace the Sedgwick-Rafter cell now commonly used. The new cell is a Spencer "Bright Line" Haemocytometer which is made of glass with rulings cut into a metal surface applied to the glass by means of a sputter-arc. The result is that ruled lines are bright and background gray and the dust particles are darker than the gray background. The lines are ruled in squares 50 microns on a side eliminating the necessity of an eyepiece micrometer. The new procedure also includes the use of a 30X eyepiece in conjunction with the 16 mm (10X) objective now being used. This set-up gives higher magnification without increasing the resolving power and no more particles are seen than with the former arrangement. The advantages of the new procedures are: greater speed of counting, lack of glare, greater visibility of particles without introducing more particles, shorter settling time (1 min.) and elimination of eyepiece micrometer and tube length adjustment. Counting a number of the same samples by the two methods showed that the results are of the same order and are within the limits of error of the standard method.

- 523 ELIMINATION OF DUST IN A PORCELAIN PLANT. A. M. Morris. Ceramic Ind. 32, 36,42 (June 1939).

Silica dust is present in the porcelain industry in almost every stage of manufacture up to the firing and sometimes beyond. Of the raw materials, clay contains 2-3%, feldspars 10-12% and flint up to 100% free silica. It is present in the porcelain body before firing to the extent of about 19%. Since the particles are of necessity finely divided and the manual operations are extensive producers of dust, the problem resolves itself into one of preventing this dust from reaching the breathing zone of the operators. In the program of dust control described, dust counts were made to establish the degree of dustiness at various locations and each hazard found was then studied in detail to consider all possible means for eliminating dust. Thought was given to such matters as change of method, isolation of operation, use of water, and the design, when necessary, of adequate hooding and exhaust. In most cases exhaust systems proved the only solution. Dust counts were then made periodically following the improvements as a check upon resulting conditions.

- 524 SOME DATA ON DUST IN INDUSTRIAL WORK. D. Harrington. U. S. Bureau of Mines, Inf. Circ. 7072. 12 pp. (May 1939).

The hysteria with regard to silicosis and other occupational diseases seems largely to have passed, and more sober consideration is now being given this subject. Occupational disease legislation is, however, in its infancy and can be expected to grow by leaps and bounds. Regarding dust and dust control it is stated that, although the most dangerous dust admittedly is free silica, most experts are now coming to the conclusion that excessive amounts of any dust are harmful to some degree, and that employers will be making a bad mistake to let men breathe heavy dust concentrations of any material. Dust control is an employer responsibility and he should shoulder it not only to protect workers' health but also to relieve himself of heavy financial loss in compensation and court cases. When it is realized how little is actually known about the disease it seems sensible to do anything practicable to reduce the amount of dust in working places. The employer should seek the cooperation of his foremen and all employees in matters pertaining to a program of dust control.

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References to Recent Literature - 5 .

- 525 THE INSURANCE ENGINEER EVALUATES INDUSTRIAL HYGIENE PROBLEMS. Warren A. Cook. *Occup. Hazards & Safety*, 1, 15-7, (June 1939).
It is only through evaluation of the severity of the hazards and application of known control measures that occupational diseases may be effectively and economically controlled. This field of evaluation and application constitutes an important function of the insurance engineer. A great many processes involving known or unknown toxic materials have been dismissed as harmless until a proper study of them revealed a potential source of hazard. There is adequate personnel and sufficient pertinent literature available on almost all phases of industrial hygiene to help management solve its problems.
- 526 INDUSTRIAL HYGIENE SURVEY OF GRANITE MONUMENT, MEMORIAL AND BUILDING STONE INDUSTRY IN TEXAS. State Dept. of Health, Div. of Ind. Hyg., Austin. 25 pp. (1939).
A preliminary survey of the granite industry in Texas was conducted to determine the extent of the dust hazard. The granite industry is not large at the present time but because of the numerous rock deposits it is expected to increase greatly in the future. The survey consisted of inspections of 14 typical plants, dust counts at various locations within the plants and roentgenological studies on 115 of the workers. The dust counts showed a large variation for plants with and without control systems but even the average (45 million p.p.c.f.) for those with control systems was considered too high. The dust averaged 28-30% free silica. The chest roentgenograms showed 25% of the 115 men x-rayed had definite signs of silicosis and another 25% to have fibrotic changes above normal. It is concluded in the bulletin that a definite hazard exists in most of the shops.
- 527 PRELIMINARY INDUSTRIAL HYGIENE SURVEY OF COTTON GINS IN TEXAS. State Dept. of Health, Div. of Ind. Hyg., Austin, 21 pp. (1939).
Although some industrial hygiene work has been done on most of the cotton processing industries, comparatively little is known of the health hazards in cotton ginning mills. This survey consisted largely of dust counts in a number of plants. Counts were made both by the impinger method and with an electrostatic precipitator and a comparison of the two is attempted. The impinger counts are not uniform and it is concluded that the precipitator may be the better instrument for collecting these dusts in the future. It is recommended that detailed medical surveys be made to correlate the findings with engineering data, and that further bacteriological studies be made on cotton gin dusts.
- 528 SILICOSIS IN SWITZERLAND. Fritz Lang. *International Labor Review*. 31, 46-53 (January 1939). A long abstract by E. R. Hayhurst appears in *Ind. Med.*, 8, 230-1, (June 1939).
With but few minor exceptions, silicosis was little heard of in Switzerland before 1931. At that time numerous cases occurred among sandblasters and in the manufacture of scouring powders. No provision had been made for compensation of this disease but soon after these cases were presented the insurance laws were amended and made retroactive to Jan. 31, 1931. All cases have been found as due to silicon dioxide and observations of others in regard to silicates, particularly sericite, have not been confirmed although no exposure to pure sericite has occurred. About one-half the cases have not been complicated by tuberculosis, thus contradicting the view of various French authors. Of all the cases presented, about one-third have been refused for lack of positive diagnosis. Certain other aspects of the disease are discussed briefly in the article.

529. ANTHRACOSILICOSIS SIMULATING PULMONARY CARCINOMA. REPORT OF A CASE. H. H. Bradshaw and R. J. Chodoff. Am. Rev. Tuberc., 39, 817-24 (June 1939).
A case is presented which had originally been diagnosed as pulmonary carcinoma, then, following a subsequent operation, was found to be anthracosilicosis, and the authors stress the fact that accepted criteria for the recognition of pneumoconiosis need some revision. The symptoms of both diseases may be very similar. Haemoptysis is seen more often in carcinoma but the presence or absence of a single symptom cannot be the sole basis of a diagnosis. The authors give a general discussion of the problems encountered in the diagnosis of the two conditions.
- 530 THE PIGMENTATION OF LUNGS AND THE ORIGIN OF THEIR IRON PIGMENT. I. M. Peisakhovich. Rec. Trav., 35, 116-23 (1937). (Russian).
In experimental pneumoconiosis in dogs the iron pigment originates from the decomposition of erythrocytes due to a blocking of the lymphatic system and subsequent disturbances of the circulation. Hemosiderin originates endogenically, as a result of exogenous penetration of coal and silicate dusts into the lungs.
- 531 THE FLOW OF AIR AND ITS DISTRIBUTION THROUGH DUCTS. PART 5. J. R. Zwickl. Heat. & Vent. 36, 44-5 (June 1939).
In illustrating the application of the theory outlined in the preceding articles of the last few months the author presents a typical problem in design and follows through with its solution. The problem is one of pipe design on the pressure side of a fan drawing air from a heater. Next month's July issue will conclude this series by Dr. Zwickl. Reprints may be obtained by addressing the author at Worthington Pump and Machinery Corp., Carbondale Division, Harrison, N. J.
- 532 EFFECT OF GELATINE ON MUSCULAR FATIGUE. G. B. Ray, J. R. Johnson and M. M. Taylor. Modern Med. 7, 37 (May 1939).
A human male, when given adequate amounts of gelatine, is invariably able to increase the amount of work performed before muscular fatigue sets in. Final observations showed from 38% to 240% increases in those patients studied, most subjects showing about double the pre-gelatine work level. In women, however, gelatine does not effect work capacity, due to marked sexual differences in the ability to store creatine. These experiments were suggested by Boothby's work in 1934 when he found muscular fatigue could be delayed by the addition of glycine to the diet. Gelatine contains approximately 25% glycine and is easily digested.
- 533 THE ECONOMIC IMPORTANCE OF INDUSTRIAL HYGIENE. Ohio Industrial Hygiene Bulletin, 1, 1, (May 1939).
The total cost to employers for compensation, medical fees and hospital service has been estimated as 312 million dollars annually. The incidental hidden costs including the breaking-in of new employees, interference with production, etc., have been estimated at 4 to 5 times this figure in addition, and it is emphasized that this high cost warrants extensive preventive programs by industry.
- (C) Papers on Industrial Poisons, Cancer, Dermatitis, etc.
- 534 PERSONALIZED PROTECTION. E.R. Granniss. Ind. & Eng. Chem. 31, 664-72, (June 1939).
An excellent description is given of all types of protective equipment and of the particular uses and applications of each type. Those covered are: hats, helmets and hoods; goggles; respirators; gas masks; hose masks; self-contained oxygen breathing apparatus; clothing, gloves, shoes and leggings; safety belts and other special equipment. The article includes many good illustrations and makes good reading for those who have an interest in protective devices of any kind.

References to Recent Literature - 7

- 535 THE EFFECTIVENESS OF CERTAIN TYPES OF COMMERCIAL AIR FILTERS AGAINST BACTERIA. J. M. DallaValle and A. Hollaender. U. S. Public Health Reports 54, 695-8 (April 28, 1939).
The authors have tested the efficiencies of air filters against bacteria, using the bacteria-sampling apparatus (see Abstract 383 (1939)) developed recently by them. Considering the smallness of the organisms (about 2 microns for *B. subtilis*) the efficiencies found were exceptionally high. The values found for most filters under the conditions ranged from 33 to 85%, with most of them falling between 65-85%. Due to the inherent errors in the methods the efficiencies should not be considered as absolute for all types or concentrations of bacteria. The tests show, however, that most commercial air filters are able to remove many air-borne bacteria from incoming air supplies.
- 536 THE USE OF SULPHUR DIOXIDE AS A REFRIGERANT. W.D. McNally. Ind. Med., 8, 234-8, (June 1939).
The uses and chemistry of sulphur dioxide are first reviewed briefly then a summary of its toxic properties is discussed, taken both from the literature and from the author's personal experience. Sulphur dioxide causes an irritation of the respiratory tract from the formation of sulphurous acid, which causes coughing, sneezing and also a conjunctivitis. Among workmen exposed to the gas in low concentrations there is no increased incidence of respiratory disease or of cardiac disease. Workmen can become habituated to the inhalation of the gas with no permanent or chronic symptoms. The least detectable odor is at a concentration of 3 to 5 parts per million in air; least amount causing throat irritation is 8 to 12 p.p.m.; and the amount causing irritation to the eyes is 20 p.p.m. The maximum allowable concentration for prolonged exposure is 10 p.p.m. Liquid sulphur dioxide may cause serious injury to the eyes and prompt treatment with cold water is essential.
- 537 CARBON MONOXIDE POISONING IN A CHILD. B. Wollek. Orvosi Hetilap, 82, 974-5 (1938). (Hungarian).
In carbon monoxide poisoning from a red-hot charcoal furnace in a 12 year old boy, CO hemoglobin could be detected. The acute symptoms disappeared within a few hours, but after 6 days severe disorders in sight took place. The treatment consisted during the first few days of oxygen inhalations, then, after 2-3 days, transfusions of blood and injections of tonocholine B and betaxin; further proscorbin in dextrose solution were also applied. The simultaneous administration of the last two (containing vitamins B & C) had good effects, although CO hemoglobin could be detected on the 14th day and did not disappear finally until the 22nd day. The appearance of chronic symptoms is attributed to the presence of the carbon monoxide in the tissues and also to a possible deficiency in oxygen.
- 538 ANALYTICAL METHODS FOR METHYL BROMIDE. V. A. Stenger, S. A. Shrader and A. W. Beshgetoor. Ind. & Eng. Chem., Anal. Ed., 11, 121-4 (1939).
Recently methyl bromide has come into commercial use as a fumigant and since the vapors are toxic, it is important to have a simple method for the rapid detection of the gas in air. In this article the literature of the subject is reviewed and the results of 2 years experience in a particular plant are discussed. The well-known Beilstein test, which can be made quickly with the "Frigidaire Halide Detector", can serve for the approximate determination of 50-500 p.p.m. Other methods are described, including the analysis of fumigated products for methyl bromide.

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- 539 ACUTE RESPONSE OF GUINEA PIGS TO THE INHALATION OF DIMETHYL KETONE (ACETONE) VAPOR IN AIR. H. Specht, J. W. Miller and P. J. Valaer. U. S. Public Health Reports, 54, 944-54 (June 2, 1939).
Acetone is commonly used as a solvent for resins, lacquers, fats, oils, celluloid, etc. It is a volatile, inflammable, colorless liquid, boiling at 56°C. and miscible with water at all proportions. The narcotic effects from inhalations of 1, 2 and 5 per cent acetone vapor by guinea pigs were found to be progressive with continued exposure and were roughly proportional to the concentration of the vapor. In animals exposed to 1% acetone vapor for 48 hours, congestion of the spleen, congestion and edema of the lungs and distention of glomerular capsules and the straight collecting tabules of the kidneys occurred. Similar changes were noted in animals exposed to 2% vapor in 22-26 hours and 5% vapor in 3-8 hours. The pulmonary edema and lung irritation appear to be due to the direct irritation of the vapor. One per cent of acetone in air is strongly irritant to man and would not be tolerated except under exceptional conditions. Higher concentrations, however, dull the sensations to permit accumulation in blood and tissues.
- 540 TOXICITY OF ACETONE AND INFLUENCE ON RESPIRATION. L. Di Prisco. Boll. soc. ital. biol. sper. 13, 122-4, (1938). (Italian).
Inhalation of acetone by rabbits produces an immediate apnea followed by a progressive diminution in the respiratory amplitude as the toxic action increases. Tracheal inhalation or intravenous or subcutaneous administration disturbs respiratory rhythm, the effects being similar to those produced by trichlormethane.
- 541 TOXIC CONCENTRATIONS OF ACETONE METHANOL. L. Greenburg, M. R. Mayers, L. J. Goldwater & W. J. Burke. Ind. Bull., N. Y. State Dept. Labor, 18, 233-4 (May 1939).
Acetone methanol, a mixture of 3 parts acetone with 1 part methyl alcohol, is used as a solvent in the fusing of collars in a shirt factory. Nineteen workers who operated the presses and who were exposed to the fumes were examined. The physical examinations revealed no abnormalities and blood studies revealed no disturbances in hematopoiesis. The absorption of acetone was demonstrated by finding this substance in the urine of all those examined. The toxic properties of acetone and methyl alcohol are reviewed briefly: acetone, while not considered entirely harmless, is thought to be relatively harmless as used industrially; methyl alcohol exerts well-known effects on the optic nerve and there are reported in the literature examples of degenerative changes to the liver, kidneys brain, heart and other organs. The lack of pathological changes in the present tests is apparently attributable to the low concentrations of the gases that were found (acetone: 40-45 p.p.m; methyl alcohol: 20-25 p.p.m.)
- 542 SAFE OPERATION OF DEGREASING TANKS USING TRICHLORETHYLENE. W. B. Harris, C. B. Ford, F. A. Patty and T. Hatch. Am. J. Pub. Health, 29, 605-14 (June 1939).
This article contains approximately the same material as that by the same authors which appeared in Industrial Bulletin, N. Y. Dept. Labor, March 1939. An abstract of the earlier article is given in our June Abstracts, No. 470.
- 543 TOXIC AND ANESTHETIC PROPERTIES OF CERTAIN MONOCHLOROPROPENES. M. Silverman and B. E. Abress. Univ. Calif. Pub. Pharmacol., 1, 119-28 (1938).
Inhalation experiments on mice with chloro- and methylchloropropenes indicate that these compounds are all anesthetic; the action of 3-chloro compounds is more pronounced than that of 1-chloro compounds. At high concentrations (3.0 to 6.0 millimoles per liter of air) the compounds produced death to the animals in 48 hrs. following 10 minute exposures. These compounds are potentially dangerous to persons working with them in industry or in laboratories.

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- 544 DECOMPOSITION OF HALOGENATED HYDROCARBON VAPORS BY SMOKING. H. B. Elkins and L. Levine. J. Ind. Hyg. & Toxicol., 21, 221-5 (June 1939).
At high temperatures the halogenated hydrocarbons decompose to the formation of much more toxic compounds -- free halogen, hydrogen halide and carbonyl halide. It had been suggested that a sufficient quantity of these products would be formed by cigar or cigarette smoking in rooms containing these vapors to constitute a health hazard. A series of experiments was conducted in which cigars and cigarettes were burned in chlorinated hydrocarbon vapors and the smoke analyzed carefully for halide content. It was concluded that the extent of decomposition of the halogenated hydrocarbons occurring as a result of smoking in their vapors is of a low order and does not constitute a health hazard.
- 545 THE DETERMINATION OF SMALL AMOUNTS OF NITROBENZENE IN AIR. N. Strafford and D. A. Harper. J. Soc. Chem. & Ind., 58, 169-72 (May 1939). (British).
Despite the toxic nature of nitrobenzene vapor no reliable method has previously been available for its determination. A method is here described by which a measured amount of air is passed through an activated carbon-treated filter paper, which completely absorbs the nitrobenzene. This is then reduced to aniline by titanous sulphate and the aniline determined colorimetrically. The method will readily determine nitrobenzene or other nitro compounds in air from the limiting concentrations at which they become toxic (0.2 p.p.m.) up to 100 p.p.m.
- 546 SOME METHODS FOR THE DETECTION AND ESTIMATION OF POISONOUS GASES AND VAPORS IN THE AIR. A. S. Zhitkova. Translated from Russian by J. B. Ficklin. 198 pp. Price \$3.00. Published, 1939, by Service to Industry, P. O. Box 133, West Hartford, Conn.
The new manual describes methods for the detection and estimation of some 30 toxic substances in air. In nearly every case several tests for the same substance are described. They include the micromethod, macromethod, spectroscopic, gravimetric, colorimetric and nephelometric. Some of the apparatus described is not in general use in this country but the experienced worker can take this into account where deviations are necessary. The manual should be of much benefit to the industrial hygienist because of the detailed information presented on the substances discussed.
- 547 CAUTION WITH ARSINE. H. Durr. Rundschau deut. Tech., 18, 9 (1938). (German).
Hydrogen arsenide in concentrations of 0.05 mg. per liter of air is fatal within 30 minutes to one hour. This gas occurs in metal works and chemical factories. Filter paper soaked in mercuric chloride and hung in the working rooms is recommended as an indicator for arsenic.
- 548 THE EFFECT OF CHRONIC BENZENE POISONING UPON THROMBOCYTES. B. Kern. Munch. med Wochschr., 85, 1062-3 (1939). (German).
Benzene poisoning caused severe thrombocyte reduction, but showed no leucopenia or anemia. The case was characterized by a bi-lateral spastic paralysis of the arms and legs with deep somnolence. All symptoms disappeared and the condition was cured by treatment consisting of blood transfusions and a raw vegetable diet and plenty of fruit juices.
- 549 ESTIMATION OF MERCURY IN AIR. W. J. Burke, S. Moskowitz and B. H. Dolin, Ind. Bull., N. Y. State Dept. of Labor, 13, 235-6, (May 1939).
A review is given of the methods of detection of mercury vapor and mercury dust, particularly those methods in common use that are adaptable to industrial hygiene work. Vapors can be detected by condensation, by collection in the Nordlander apparatus as mercuric sulfide, or by a more recent development based on the scattering of resonance radiation of mercury by mercury vapor. For the dust a

modification of Winkler's dithizone method is described. If both dust and vapor are present it may be necessary to use both types of methods.

- 550 THE INFLUENCE OF MANGANESE ON THE GROWTH OF BONE. T. Kamimura. Journal Oriental Med. 29, 1-9, (1938). (Japanese).
Feeding of young rabbits (1 to 2 months old) with 0.5-0.6 g. manganese sulphate per kg. of body weight daily for 75 days shows that manganese retards the growth of bone, causing premature ossification of the cartilage of epiphysis, earlier disappearance of spongy trabecula of primary and secondary bone than usual and bone marrow more fatty than the control. In Kaschin-Beck's disease in northern Manchoukuo, manganese might be one of the factors as the drinking water contains a considerable amount of this element.
- 551 INDUSTRIAL CADMIUM POISONING. Ohio Industrial Bulletin, 1, 2 (May 1939).
There has been a phenomenal increase in the use of cadmium in the past few years following its application in electroplating and in alloys. The toxic effects of the metal are reviewed briefly. Most industrial poisonings occur from the inhalation of the vapor, fumes or dust through the respiratory tract, although poisoning by ingestion is possible. The metal is classed as one of the toxic dusts. Symptoms of the poisoning are: inflammation of the respiratory tract, and with large doses, pulmonary edema; with smaller doses, generalized pneumonia, emphysema, atelectasis, with thickening of the alveolar walls and permanent fibrosis; changes in the kidneys and liver usually follow. Several case histories are described, and a number of industries where exposure may occur are enumerated.
- 552 THE ACTION OF MAGNESIUM ON THE HEART. R. Agnoli and D. Bussa. Arch. sci. med., 66, 109-24 (1939). (Italian).
Magnesium salts exert in man and mammals a negative chronotropic and dromotropic action, prevalently by way of the vagus. They have a direct action on the myocardium at high dosage leading occasionally to complete heart block. Magnesium may accentuate temporarily the electrocardiographic expressions of existing myocardial lesions of toxic or vascular origin.
- 553 FLUORINE AND FLUORINE COMPOUNDS. K. Rohelm. Heffter's Handbuch d. exp. Pharmakol., 7, 1-61 (1938). (German).
The author gives a review of the chemistry of fluorine compounds, their effect on enzymes, isolated tissues, plants and insects, the occurrence of fluorine in living matter, the possibility of its physiological importance, its local effects in vertebrates and its absorption, deposition and excretion. He also discusses the acute toxicity and the acute effect of fluorine on different tissues and physiological functions and experimental and spontaneous chronic poisoning. In addition he gives a short discussion of the organic fluorine compounds, covering especially refrigerants, of the mechanism of fluorine action and of the use of fluorine compounds as therapeutic agents. The discussion of the various subjects is short and concise and the statements are supported by more than 350 references to more detailed literature.
- 554 LIBERATION OF HISTAMINE IN LUNGS BY IRRITANT SUBSTANCES. R. G. Garan. Arch. exptl. Path. Pharmakol., 188, 250-4 (1938). (German).
In isolated perfused guinea-pigs lungs the inhalation of irritant substances such as xylene, toluene or ammonia causes bronchoconstriction and the release of a histamine-like substance into the perfusion fluid.

- 555 EFFECTS OF LEAD ON THE BODY. Lancet, pp. 711-3 (March 25, 1939). (British).
A summary is given of recent work concerning lead in the body, depending upon the "dithizone" test for lead based on the reaction between lead and diphenylthiocarbazone. Lead, in small traces, is now known to be a normal constituent of the tissues. The average person intakes daily from 0.2 to 0.4 mg. of lead. Excretion usually balances intake, but some lead becomes stored in the bones as the triple phosphate. A close analogy exists between lead and calcium in the body; hence the parathyroids play a part in determining whether lead is stored harmlessly in the bones or circulates harmfully in the blood. Further studies are needed to detect the action of prolonged absorption of small amounts of lead. At the present time it is not known what to look for in the average person to establish the presence of slight damage from the absorption of small amounts of lead.
- 556 MICROANALYTIC DETECTION OF LEAD IN BODY LIQUIDS. II. G. Straube and H. Beck. Klin. Wehnschr., pp. 356-60 (1939). (German).
The authors have used their method (for brief description, see Abstract 391, 1939) on 22 persons with no lead exposure. They found in the blood 5-20 microgram % (mostly 10-20); in the urine 10-15 micrograms per 1000 cc.; and in 9 examinations of spinal column fluid, 0-14 microgram %. In some persons suffering light injury from lead they found a slight increase of the lead content. Such examinations are recommended for differentiating the indefinite neurasthenic symptoms caused by lead from similar symptoms not due to lead. Among workers with signs of lead absorption, 30-40 microgram % lead is usually found in the blood. There is some agreement between clinical symptoms and lead content, although no strict parallel exists. A critical level of 40-50 microgram % may be adopted, above which value symptoms of poisoning become more frequent. Two case histories are presented to show that symptoms may decrease as blood lead increases, and as blood lead falls to normal there is a great increase in the urine and feces. Thus examination of urine and feces is of great importance, especially for medical experts.
- 557 LEAD POISONING FROM "CANNED HEAT". L. D. Wilcox. J. Can. Med. Assoc., 40, 479-80 (May 1939).
A description is given of 6 cases of severe lead poisoning encountered among alcoholics who made a practice of drinking "canned heat", a product designed for rapid cooking in camps. The contents of the can is a pink, jelly-like substance composed of denatured alcohol with a wax base. The ingredients themselves did not originally contain lead but examination of canned products revealed that lead from the can (230 mg. lead in a 36.65 g. can) goes easily into solution and allows ingestion of from 1-4 mg. lead daily by habitual users. This amount is sufficient over a period of months to produce clinical signs of lead poisoning.
- 558 PSEUDO LEAD LINE IN JAVANESE AND MADURESE, MELANIN AND ULTRAMELANIN. H.B.G. Breyer. Beitr. z. path.Anat. u. allgem. Path., 102, 397-414 (1939). (German).
A group of Javanese ship's printers were examined because of the occurrence among them of black deposits in their gums suggestive of lead lines. Ten of the twelve examined had brown to blue-black lines which would ordinarily have been interpreted as lead lines. The urinary excretion of lead in nine of the twelve was slightly above a normal upper limit, but there were no other subjective complaints, no blood changes and no other clinical evidence of lead absorption. Following an examination of other Javanese, and also Madurese, subjects with no apparent lead exposure, the pigments of the deposits, found in nearly all those examined, was found to be composed of melanin and ultramelanin and were not lead deposits. The occurrence in the tissues of black or dark deposits of exogenous and endogenous origin in health and disease is reviewed, and the significance of these observations in relation to the differential diagnosis of plumbism is pointed out.

References to Recent Literature - 12

- 559 LIBERATION OF A HISTAMINE-LIKE SUBSTANCE AFTER INHALATION OF IRRITATING VAPORS. G. Ungar and M. Bolgert. Compt. rend. soc. biol. 129, 929-30, (1938). (German). In dogs and guinea pigs the inhalation of hydrochloric acid gas or live steam, sufficient to produce lung damage resulting in death after 1-3 hours, caused a 100% or greater increase in blood histamine. This confirms the findings of Garan (see Abstract 554).
- 560 PREVENTION OF FATAL PULMONARY LESIONS FROM INHALATION OF IRRITANT VAPORS BY ASCORBIC ACID AND BY HISTAMINASE. G. Ungar and M. Bolgert. Compt. rend. soc. biol. 129, 1107-9, (1938). (German). In experiments like those previously reported (see Abstracts 554 and 559) the hemorrhagic and edematous lesions of the lungs and the increase in blood histamine produced in guinea pigs by inhalation of hydrochloric acid gas or steam were greatly decreased or prevented by intracardiac injection of either 0.5 grams per kilogram of neutralized ascorbic acid 15 to 30 minutes before the inhalation, or 2 units of histaminase 3 minutes after the inhalation.
- 561 PROTECTIVE CLOTHING IN THE PREVENTION OF DERMATITIS. G. C. Harrold. Occup. Hazards & Safety, 1, 21-3 (June 1939). Due to the nature of certain industrial processes, it is sometimes difficult to correct a situation by means of engineering installations or substitution of less irritant substances. In such cases it becomes necessary to provide individual protection to the workmen. In this short article the author describes the important elementary principles of the application of protective clothing. Particular emphasis is placed on rubber or synthetic rubber materials and their advantages over porous cloth and leather clothing which sometimes act as absorbants for the toxic compounds and keep them in contact with the skin. Gloves are probably used more than any other type of protection and various types and modifications of them are described.
- 562 OCCUPATIONAL DERMATITIS. O. L. Levin and H. T. Behrman. Ind. Med., 8, 217-29 (June 1939). The authors quote statistics to emphasize the importance of dermatitis in the incidence of industrial diseases. They discuss the definition of occupational disease and attempt to clarify the distinction between occupational dermatitis and dermatosis, two frequently confused terms. Dermatitis is a pathological condition of the skin, without reference to the cause and dermatitis is an inflammatory condition of the skin due to a contact agent. Pathogenesis and differential diagnosis of occupational dermatitis is discussed at considerable length as are also the best adaptable types of treatment. The article is well-presented and is a good discussion of the subject.
- 563 INVESTIGATIONS ON THE POSSIBLE CARCINOGENIC EFFECT OF ANTHRACENE AND CHRYSENE AND SOME OF THEIR COMPOUNDS. I. THE EFFECT OF PAINTING ON THE SKIN OF MICE. J. A. Polla. J. Ind. Hyg. & Toxicol., 21, 219-20 (June 1939). To test the carcinogenic properties of paints containing as basic ingredients anthracene and chrysene, a series of experiments was made by painting mice with the materials. As controls certain mice were painted with 1:2:5:6-dibenzanthracene, a known and reliable carcinogenic agent. It was found that none of the mice painted with chrysene, anthracene, oil-soluble chrysene red, water-soluble chrysene blue or water-soluble anthracene green had any characteristic cancerous changes on the skin. Most of the control animals developed cancerous warts.

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- 564 SPECIFIC REFRACTIVITY AND CARCINOGENICITY OF MINERAL LUBRICATING OILS. S.J.M. Auld. J. Inst. Petroleum Tech. 24, 577-83 (1938). (British).
The Manchester Committee on Cancer in its 1934 report proposed that the textile industry distinguish between oils liable and those not liable to produce mule-spinner's cancer by a standard based on a specific refractivity-density ratio. In this paper the author brings forth the impracticality of this standard by citing as an example, mixtures of two oils, which in certain combinations would be non-carcinogenic according to the standard and in other not so different combinations would be classed as carcinogenic. It has been implied that carcinogenicity decreased with increased thoroughness in refining but he states that naphthenic oils decrease in specific refractivity with degree of refinement while paraffinic oils increase. He concludes that specific refractivity cannot be used as a reliable basis for carcinogenicity.
- 565 LUNG CANCER AMONG GENERATOR-GAS WORKERS IN STEEL MILLS. K. Kawabata. Gann (Japanese J. Cancer Research) 32, 367-88 (1938). (Japanese).
During the past 6 years, 21 cases of primary lung carcinoma were observed among the generator-gas workers at the Yawata Iron-Steel Mills. These workers have average service periods of 16 years. In no other sections of the mills has such frequent appearance of lung cancer been noticed. The workers in this particular department are exposed to the spraying of gas containing heavy dust, about 0.7% of which is a gaseous or dust-like tar. An analysis of this tar showed creosote oil 24.5%, phenols 0.31%, cresols 0.07%, naphthol 4.6%, anthracene 2.0%, pitch oil 62.7% and water 5.7%. The metastases (transformation) may appear very early in the brain, spinal cord and lymph nodes. The duration of the lung cancer is very short, about seven months.
- 566 THE TREATMENT OF COMPRESSED AIR ILLNESS UTILIZING OXYGEN. O. D. Yarbrough & A. R. Behnke. J. Ind. Hyg. & Toxicol., 21, 213-8 (June 1939).
Although recompression has become the accepted method of treatment in compressed air illness, there has been disagreement among authorities as to the manner of its application. The authors review some of the principles of the theory of recompression and describe their method of treatment. It is their practice to recompress until all symptoms are relieved and in addition to add one atmosphere to restore completely blood supply to the affected tissues. Their minimum is, however, 45 lbs. per sq. in. (100 ft.) and maximum 75 lbs. per sq. in. Following a period of 30 minutes at maximum pressure, ascent to 60 feet is made at the rate of about 25 feet per min.; at this point oxygen inhalation begins with gradual return to pressure in 1 1/2 hours. The method has brought relief to 49 out of 50 cases and had reduced recompression times by about 45%.
- 567 THE USE OF THERMOCOUPLES FOR TEMPERATURE MEASUREMENT. M. Fishenden. J. Instn. Heat. & Vent. Engrs. Lond., 7, 15-31 (March 1939). (British).
The author gives some valuable information on the use of thermocouples. Especially useful are sections dealing with errors in thermocouple readings, and with errors in the temperature obtained by thermocouple. Considerable space is given to a discussion of the errors which may arise in measuring the temperature of a gas when the gas is at a temperature different from that of the surrounding surfaces, and data are given showing the effect of diameter of thermocouple on these errors. Some of the data are applicable to ordinary thermometers, and the errors in readings of such thermometers due to radiation can be deduced from the tabulated figures.

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- 568 CHANGES IN THE CENTRAL NERVOUS SYSTEM IN RAREFIED AIR AND IN HUNGER. A. N. Dellaporte. Beitr. path. Anat. u. allgem. Path., 102, 268-86 (1939). (German). Guinea pigs were kept for 37 to 81 hours under a negative pressure of 250 mm. mercury. Some of the animals died with or without fits after having been recompressed. These showed central necroses, moderately strong fatty infiltration and slight reparatory proliferations in the liver if they survived recompression for a certain time. In the central nervous system various nuclei of hemispheres, brainstem, and cerebellum showed the severe cell change of Nissl, but these changes were found in only those animals which, after having been recompressed, continued to lose weight and eventually died spontaneously with about 36% loss in weight. The time of duration of low atmospheric pressure did not influence mortality or changes in the nervous system. Hunger produced changes in the nervous system practically identical with those found in the anoxemic animals. It is still open to discussion whether anoxemia alone is apt to produce the above mentioned histological changes.
- 569 THE PROTECTION OF EYE REGULATIONS, 1938. Statutory Rules and Orders, 1938, No. 654. Home Office, London, (1939). (British).
A special set of Regulations, going into effect on August 1, 1938, require goggles, screens or other eye protection in the following occupations: (1) dry grinding of metals; (2) turning of cast iron or non-ferrous metals when work is done dry; (3) welding or cutting of metals; and (4) in the following processes when carried out by hand tools or other portable tools: fettling of metal castings involving the removal of metal, cutting of cold rivets, chipping of boiler or ship's plates, and breaking or dressing of stone, concrete or slag.
- 570 LIMITS OF INFLAMMABILITY OF GASES AND VAPORS. H. F. Coward and G. W. Jones. U. S. Bureau Mines Bulletin No. 279, 146 pp. (1938). For sale by Supt. of Documents, Washington, D. C.
This revised edition includes a complete list of explosive substances used in industry, a list which is increasing daily in number. The bulletin deals in detail with the nature of explosions, describes experimental studies and summarizes the limits of inflammability of the materials.
- 571 CONTROL OF THE OXYGEN CONTENT OF THE ATMOSPHERE (SHIPS, TANKS, ETC.). P. Sorgdrager. Pharm. Tijdschr Nederland-Indie. 14, 365-70 (1937). (Java).
The effect of the carbon dioxide: nitrogen: oxygen ratios on the extinction of safety lamps and burning tapers is discussed. Tapers give a greater margin of safety than lamps. Even with an atmosphere supporting combustion there may be a danger from high carbon dioxide content.
- 572 THE TREATMENT OF HYDROFLUORIC ACID BURNS. A. T. Jones. J. Ind. Hyg. & Toxicol., 21, 205-12 (June 1939).
Owing to the unusually serious burns it inflicts, the dangerous nature of hydrofluoric acid has long been recognized, and it is doubtless responsible for some limitation of the use of the acid in industry. The burns are characterized by (1) intense pain which may be delayed for a few hours but which may last for several days; (2) a tough coagulated area of skin forming at the site, and (3) a progressive action of the acid with the destruction of the tissue beneath the leathery layer of skin. First aid treatment consists of washing in warm saturated sodium bicarbonate solution and application of magnesium oxide by rubbing and dressing. Following this treatment, the physician should inject into and under the coagulum formed a 10% solution of calcium gluconate followed by further magnesium oxide applications.

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