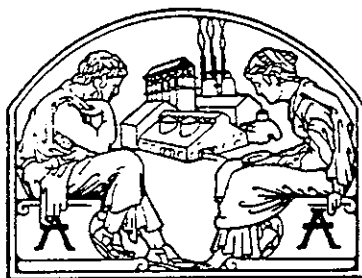


IN THE AIR, AIMS NOVEMBER 1961



HWBB-0018958

Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

NOVEMBER, 1961

(Vol. 25, No. 11)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH 13, PA.

03120960



IN RE: AIR AMES November 1999

FOUNDATION FACTS

DR. BLAINE B. WESCOTT ELECTED BOARD CHAIRMAN

AND

THEODORE F. HATCH ELECTED TREASURER

At the Board of Trustees meeting on October 26, Dr. William P. Yant resigned as Chairman of the Board, and Dr. Blaine B. Wescott, Vice President-Research, Gulf Oil Corporation, was elected to succeed him. Theodore F. Hatch, Professor of Industrial Health Engineering at the University of Pittsburgh Graduate School of Public Health, and Research Adviser to I-H-F, was elected Treasurer.

Dr. Yant, Research Consultant to the President of Mine Safety Appliances Company participated in the formation of the Foundation in 1935, and has served as a Trustee since its inception, becoming Board Chairman in 1958. He will remain as a member of the Board of Trustees and the Foundation will continue to have the benefit of his broad experience in the field of health and safety.

26th ANNUAL MEETING

The 26th Annual Meeting of I-H-F held in Mellon Institute, Pittsburgh, Pa., October 25 and 26, was attended by over 400 representatives of industrial management and the health professions. There were many excellent papers presented at the meeting and the Transactions will be published in the March 1962 issue of the Archives of Environmental Health. Members will receive copies of these Transactions.

The Minutes of the Membership Meeting held on Thursday morning, will be sent to members late in November.

NEW MEMBER

The Foundation welcomes to membership the West Virginia Pulp and Paper Company.

1962 ANNUAL MEETING DATES SET

The 27th Annual Meeting will be held in Pittsburgh, Pa., on October 24 and 25, 1962.

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NEW I-H-F CHAIRMAN



Dr. Blaine B. Wescott, Vice President of Research, Gulf Oil Corp., has been named Chairman of the Board of Trustees of Industrial Hygiene Foundation. Dr. Wescott succeeds Dr. William P. Yant, Research Consultant to the President of Mining Safety Appliances Company, who has served as Foundation Chairman since 1958.

Dr. Wescott was born in Syracuse, N. Y., in 1895, and was graduated from Syracuse University in 1917, with a B.S. degree in chemistry. He received his Ph.D. degree from the University of Pittsburgh in 1923.

Dr. Wescott joined Mellon Institute in 1922, doing metallurgical research on cast iron and wrought iron until 1927 when he became associated with the Gulf Production Fellowship at the Institute. Gulf Research & Development Co., was an outgrowth of this Fellowship. From 1930 to 1946, as Chief of the Materials and Production Chemistry Division of Gulf, Dr. Wescott directed research in the fields of equipment and methods used in drilling, producing, and transporting crude oil.

Since 1946, Dr. Wescott has been engaged in the direction and management of Gulf Research & Development Co. He was appointed Associate Director of Research in 1951, and in January, 1954, became Executive Vice President and a Director of the Company. During the same year, he was elected a Vice President and a Director of Dominion Gulf Co. and of Gulf Minerals Co. Dr. Wescott was elected Vice President of Research of Gulf Oil Corp. in June, 1955. In March, 1957, he was elected a Director of Callery Chemical Co., when Gulf became a part owner of that organization.

During his career with Gulf, Dr. Wescott has been active in American Petroleum Institute work, and was awarded the API Certificate of Appreciation for work in promoting the API Standardization Program. He also has received a Certificate of Service from the American Standards Association for work on war committees, and the Distinguished Service Award of the American Society for Metals for contributing to applications of alloy steel in the oil industry.

Dr. Wescott is author of 40 technical and general papers. He is a Director of the Pennsylvania Research Corporation and a member of the Science Advisory Committee of Duquesne University. He also is a member of the American Petroleum Institute; American Institute of Mining, Metallurgical and Petroleum Engineers; American Society of Mechanical Engineers; American Society for Metals; National Association of Corrosion Engineers; Society of Automotive Engineers; American Ordnance Association; National Association of Manufacturers; Directors of Industrial Research; The Faraday Society; The Institute of Petroleum; Pittsburgh and United States Chambers of Commerce; The Newcomen Society; the Chemists' Club; the University Club; and the Duquesne Club.

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1035 Home-Study Courses in Occupational Health.

Columbia University School of Public Health and Administrative Medicine is offering two home-study courses in the field of occupational health. As an extension of its activities in post-graduate education, the Program of Continuation Education has prepared two educational home-study courses: "Industrial Applications of Ionizing Radiation" and "Industrial Hygiene". In each of the courses, a text is provided and review questions have been prepared for each section of the texts. Home-study courses in Biostatistics and Toxicology, formerly distributed through the American Academy of Occupational Medicine, are now available from the Program of Continuation Education. Inquiries regarding these correspondence courses should be addressed to: The Program of Continuation Education—Occupational Medicine, Columbia University, School of Public Health and Administrative Medicine, 600 West 168th Street, New York 32, N. Y.

-- J. Occ. Med.

1036 Fellowships in Industrial Medicine.

Eight 1962-1963 fellowships in industrial medicine are being offered by the U. S. Atomic Energy Commission. The fellowships are open to physicians who have completed at least one year of internship and who are licensed to practice medicine in the United States. The program consists of two years of academic work followed by an optional year of field training. The deadline is January 1, 1962. Further information may be obtained from Henry A. Blair, AEC Fellowships, University of Rochester School of Medicine, Rochester 20, N. Y.

-- Science

1037 Course in Air Pollution.

The Public Health Service, through its Division of Air Pollution, will present a one-week training course, "Medical and Biological Aspects of Air Pollution", December 11-15, 1961, at Cincinnati, Ohio, for physicians and other scientific personnel engaged in or responsible for studies of health-related effects of air pollution. The course reviews air pollution fundamentals (sources, engineering, chemical methods of assessment, meteorology, and control procedures) and considers the health effects and biological damage resulting from air pollution, the experimental evidence on animals (including animal research and laboratory methodology) and experimental studies with humans, maximum permissible concentrations for substances vented into the outdoor air, and associated legal and administrative problems. Full description of the course is given in the Training Program Bulletin, which is available on request. Address applications for the course or requests for information to The Chief, Training Program, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio, or to a PHS Regional Office.

-- Am. Ind. Hyg. Assn. J.

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1038 New York State Testing Devices that Reduce Air Pollution.

New York State has started testing devices that reduce air pollution from automobile crankcases. The tests are being made by the New York State Health Department and Air Pollution Control Board. Three commercial units are being tested. The units have been installed on 20 state automobiles, which will be checked every 4,000 miles for about a year. The device, which is mounted on the crankcase breather tube, shunts a portion of the blow-by gas back to the engine intake. The units may cut blow-by entering the atmosphere by about 30%, also lower fuel consumption. Recently, California approved a crankcase emission control device.

-- Chem. Eng. News

1039 Crankcase Emission Control Device Approved.

The first certificate of approval for a crankcase emission control device has been issued by the California State Motor Vehicle Pollution Control Board. The device—the positive crankcase ventilation system made by AC Spark Plug Division of General Motors—is optional equipment on cars sold in California. When a second crankcase emission control device is approved, installation of one of them will be mandatory for all 1961 and later model cars sold in California. The device is expected to cut a car's crankcase emission by 25 to 30%. An exhaust control system (none has been approved yet) could cut emission by another 60 to 65%.

-- Chem. Eng. News

COMING EVENTS

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|------|------------|--|
| 1040 | Dec. 2-7 | American Academy of Dermatology and Syphilology, Chicago, Ill. |
| | Dec. 3-6 | American Institute of Chemical Engineers, 54th Annual Meeting, New York |
| | Dec. 4-6 | Chemical Specialties Manufacturers Association 48th Annual Meeting, New York |
| | Dec. 5-7 | Southern Surgical Association, Hot Springs, Virginia |
| | Dec. 7 | Synthetic Organic Chemical Manufacturers Assoc., Annual Meeting, New York |
| | Dec. 7-9 | New York Academy of Sciences, Conference on the Cervix, New York |
| | Dec. 8-9 | New York Heart Assoc., Symposium on the Plasma Membrane, New York |
| | Dec. 8-10 | American Psychoanalytic Association, New York |
| | Dec. 9-10 | Academy of Psychoanalysis, New York |
| | Dec. 11-13 | Pharmaceutical Manufacturers Assoc., Eastern Regional Meeting, New York |
| | Dec. 26-31 | American Assoc. for the Advancement of Science, Denver, Colorado |

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| Jan. 6 | Northwest Society for Clinical Research, Portland, Oregon |
| Jan. 18-20 | American Society of Clinical Radiology, Phoenix, Arizona |
| Jan. 19 | American Society of Facial Plastic Surgery, New York |
| Jan. 27-Feb. 1 | American Academy of Orthopaedic Surgeons, Chicago, Ill. |
| Jan. 29-Feb. 1 | American College of Surgeons, Sectional Meeting for Surgeons and Graduate Nurses, Los Angeles, Calif. |

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OCCUPATIONAL DISEASE STATISTICS

1041 Occupational Disease Statistics. (Cases reported to the respective Health Departments).

	Conn. Aug.	Ind. July-Sept.	Pa. Sept.-Oct.	Tenn. Sept.	Total
Anthraco-silicosis			3		3
Carbon tetrachloride poisoning		1			1
Dermatitis	22 *	14 *	21	7	64
Emphysema			1		1
Fumes (unidentified)			1		1
Hepatitis			1		1
Jaundice			1		1
Lead poisoning			1		1
Lumbar myocitis		1			1
Nephritis			1		1
Paint solvents	2				2
Pneumoconiosis			19		19
Pneumoconiosis (suspected)			20		20
Respiratory irritation		1	6		7
Silicosis	1	1		2	4
Silicosis (suspected)			6		6
Solvent mixture	1				1
Tetrafluoroethylene resin	1				1
Totals	27	18	81	9	135

* Causes are listed as follows:

Connecticut: Occupational dermatitis due to plants: poison ivy 1; occupational dermatitis due to oils and greases and metal cutting compounds 3; occupational dermatitis due to solvents 5; occupational dermatitis due to other chemicals: carbon dust 1, cyanides 1, fumigation chemicals 1, mercury 1, miscellaneous 2, synthetic resins or resin (plastic) compounds 2, unspecified 1; occupational dermatitis—other: friction 1, multiple agents 2, rubber 1.

Indiana: Soluble oils 9; cleansing agents 2; cutting oils 1; cause not stated 2.

LEGAL DEVELOPMENTS

1042 A Connecticut Act Concerning Use and Disposition of Insecticides, Fungicides, Herbicides, Petroleum Derivatives and Plant Growth Regulators. (Public Act No. 553, Substitute for House Bill No. 3018).

No person shall discard any insecticide, fungicide, herbicide petroleum derivative or plant growth regulator so as to cause direct injury to any domestic animal or wildlife or so as to pollute any waterway in a way harmful to any wildlife therein. In order to carry out the purposes of this act, the director of the state board of fisheries and game, the director of the Connecticut Agricultural Experiment Station, the commissioner of agriculture and natural resources, the

commissioner of health and the director of the water resources commission, or designated representatives of each, may make regulations governing the discarding of such chemicals. Any person who violates any provision of this act or any regulation established hereunder shall be fined not more than two hundred dollars or imprisoned not more than sixty days, or both.

-- Conn. Health Bull.

1043 Bill to Extend Federal Air Pollution Control.

A bill to extend the federal air pollution control program for two years has been approved by the Senate. S. 455 would extend until June 30, 1966, the air pollution control law due to expire June 30, 1964. In addition, S. 455 would give the Surgeon General authority to call hearings on air pollution problems of national interest or involving contamination in one state resulting from sources in another. Recommendations resulting from the hearings would not be binding but would focus attention on possible solutions.

-- Chem. Eng. News

1044 American Standards--In Process as of September 11, 1961.

Safety. American Standards Approved.

Safety Code for the Identification of Gas-Mask Canisters, K13.1-1961 (Revision of K13.1-1950). Sponsor: National Safety Council.

Prevention of Dust Explosions in Woodworking and Wood Flour Manufacturing Plants, Safety Code for Z12.20-1961 (Revision of Z12.5-1959 and Z12.8-1959). Sponsor: National Fire Protection Association.

In Standards Board.

Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying, Z33.1- (Revision of Z33.1-1959).
Sponsor: National Fire Protection Association.

American Standard Reaffirmed.

Safety Code for Woodworking Machinery, O1.1-1954 (R 1961).
Sponsors: Association of Casualty and Surety Companies--Accident Prevention Department; and International Association of Governmental Labor Officials.

BOOKS, PAMPHLETS AND NOTICES

- 1045 Toxicity of Industrial Metals. Ethel Browning. Butterworth, Inc., 7235 Wisconsin Ave., Washington 14, D.C. 352 pp. (1961). \$10.00.

This book presents a survey of the main features of the occurrence, preparation, physical and chemical properties, metabolism and toxicology of the principal metals encountered in modern industry. Special attention has been devoted to the metabolic features: first, from the point of view that a knowledge of their paths of absorption, excretion and distribution within the body may indicate how and where their potential toxic effects are likely to be exerted, and therefore in some measure how these effects can be prevented; secondly, with a view to the increasing importance of the possibility of the entry of some of them in radioactive form from nuclear fallout. The radioactive aspect has not been examined in detail, except where experiments with labeled metals have been carried out to elucidate their metabolic behavior. Calcium, potassium and sodium have been omitted in spite of their overwhelming

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importance in human and animal physiology, because they are of relatively slight importance from the toxicological industrial point of view. Phosphorus also, though a highly toxic industrial agent, is not included because it has been defined as a "non-metallic element". It is hoped that this book will be of value primarily to those concerned with the industrial use of metals, but that it may also be of interest to biochemists, in that it will at least, by means of the bibliography, serve to point the way to investigations described more fully than has been possible in a publication of this scope and purpose.

- 1046 American Petroleum Institute Safety Manual. API Bulletin 2016.
API Publications Dept., 1271 Avenue of the Americas, New York 20, N. Y. \$1.00.

The American Petroleum Institute has issued a new edition of the safety manual "Cleaning Tanks Used for Gasoline or Similar Low-Flash Products". It covers the use of suitable mechanical equipment and protective clothing, use of proper cleaning methods, elimination of potential ignition hazards, and provision for means of entrance and exit emergencies. Instructions apply to storage tanks for gasoline, JP-4 jet fuel, naphthas, some solvents, and special tractor fuels.

-- Chem. Eng. News

- 1047 Exhaust Contamination in Passenger Cars. A. H. Rose, Jr., R. C. Stahman and H. J. R. Stevenson. Robert A. Taft Sanitary Engineering Center, U. S. Public Health Service, Cincinnati, Ohio, Technical Report A61-2, 9 pp. (Feb. 1961).

A preliminary test program has been made to investigate some basic factors affecting the concentration of exhaust gas inducted into the passenger compartment of an automobile by the forced ventilation system. With the small number of tests run, it is not intended that the values developed be interpreted as statistically "normal", but rather as an indication of possible levels and trends. Tests were run on grouped moving vehicles and on grouped stationary vehicles to simulate heavy traffic conditions. Exhaust concentrations in the passenger compartment of vehicles under moving traffic conditions were slightly above the background curbside levels. Stationary traffic conditions with vehicles grouped at average intervals produce marked increase in exhaust concentrations with the highest recorded at 0.8% (370 ppm carbon monoxide) of the raw exhaust value. In moving vehicles, the highest value recorded was 0.04% (20 ppm carbon monoxide) above the curbside value. The location of the forced ventilator inlet was shown to exert a significant effect on the exhaust concentration in the vehicle passenger compartment. Front inlets as contrasted to cowl and side inlets consistently gave higher values. Stability and movement of the air mass circulating around the stationary vehicles was the second factor exerting a significant influence on passenger compartment concentration. No significant effect was indicated by the difference in exhaust pipe location as used in present day automobiles. A vehicle exhaust system (extended to car top level) gave essentially zero passenger compartment concentration.

-- Public Health Eng. Absts.

- 1048 Silicosis and the Other Pneumoconioses. M. Linquette and C. Voisin. Flammarion, Ed. Med. (Paris). 170 pp. (1960). French. (Flammarion, Editions Medicales, Paris, 26 Rue Racine, Paris 6, France*).

This monograph on silicosis and other pneumoconioses is assembled under 4 major subject headings. The first is devoted to general considerations including historical, and to discussions of the physiopathology and classification of the pneumoconioses. Part two deals with silicosis, discussing the etiology, pathological anatomy, experimental and pathogenetic studies, clinical and radiological symptomatology, paraclinical investigations, clinical forms, complications, silicosis and tuberculosis, diagnosis of silicosis, and treatment of silicosis. Part three deals with pneumoconioses other than silicosis, discussing other sclerogenic pneumoconioses (asbestosis and berylliosis) and nonsclerogenic pneumoconioses from a variety of causative agents, including zinc (zincosis), tin (stannosis), iron (siderosis), coal (anthracosis), and barium compounds (baritosis). Also discussed are the pneumoconioses from organic dusts,

*Address not in current List of Periodicals.

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including that from cotton lint (byssinosis), bagasse (bagassosis), cork (suberosis), and the pneumoconioses which result from the dust of one of several cereal grains. Part four deals with prevention of and compensation for pneumoconiosis. The majority of the items in the bibliography have been published within the last 10 years.

-- APCA Absts.

INDUSTRIAL MEDICAL PRACTICE

- 1049 Work Loss Due to Illness in Selected Occupations and Industries. P. E. Enterline. J. Occ. Med. 3, 405-411 (Sept. 1961).

This paper presents previously unpublished illness data compiled by the U.S. Department of Labor, Bureau of Labor Statistics, for the period July, 1959 to June, 1960. These data provide a fairly comprehensive picture of illness by occupation, industry, type of employment, and type of manufacturing in the United States. By occupation, illness rates generally are lowest in white-collar and higher-paid occupations. Females have higher illness rates than males in every occupational grouping except one: clerical and kindred workers. By type of employment, illness rates are lowest for agricultural workers. For males, they are highest among government workers and, for females, highest among private non-agricultural workers. Male government employees have higher illness rates than female government employees. Among government workers, the lowest illness rates are for those in educational services. By industry, illness rates vary considerably, with the highest male rate six times the lowest and the highest female rate nearly 5 times the lowest. Male illness rates exceed female illness rates in construction, railroads, other transportation industries, finance, business and repair, and educational services. By type of manufacturing, illness rates are more uniform than by industry, with the highest illness rates about three times the lowest. Female illness rates are generally high for all types of manufacturing and are exceeded by male rates only in primary metals. These data are generally consistent with other information available regarding illness resulting in absence from work.

-- Author's summary

- 1050 Blood Pressure, Body Weight, Serum Cholesterol, and Smoking Habits Among Executives and Non-Executives. S. Pell and C. A. D'Alonzo. J. Occ. Med. 3, 467-470 (Oct. 1961).

Recent investigations have revealed that coronary heart disease occurs less frequently in executive personnel than among other employed persons. The purpose of this study is to find some explanation for this difference by comparing executive and non-executive personnel in several characteristics associated with coronary atherosclerosis: blood pressure, body weight, serum cholesterol, and smoking habits. The subjects of this study consisted of 1,585 male salaried employees, 40 to 64 years of age. They were divided into three categories: top-level executives, lower-level executives, and non-executives. No significant differences were found among the three groups with respect to the prevalence of hypertension, overweight, and hypercholesteremia, although the mean serum cholesterol of non-executives was slightly lower than that of the executives. Smoking patterns were found to be essentially the same in the three groups, except that heavy cigarette smoking was more common among the lower-level executives and proportionately more top-level executives have discontinued regular smoking of cigarettes. It is concluded that none of the characteristics investigated in this study can account for the lower incidence of coronary heart disease found in executive personnel.

-- Authors' summary

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- 1051 Some Observations on the Selection and Supervision of Public Transport Workers. A. Bertoye, A. Houver and L. Perrin. Arch. maladies profess. 22, 141-143 (Mar. 1961). French.

The authors comment on their experience of the codified method of medical examination of transport drivers which was decreed by legislation in France in 1954. Attention is called to the shortcomings of this official method in respect of physique, vision, color vision, and lack of precision, and also to the fact that illiteracy is not a bar to the acceptance of a candidate. Stress is also laid on the view of the authors that men who have any digestive troubles should be regarded as unsuitable. Among other observations, it is stated that about 23% of examinees were found to be unfit for the work. There are also some points on the diminishing frequency of accidents as the experience of the workers increases with the years. Some figures on the incidence of lumbago and sciatica of these vehicle drivers are also given.

-- Bull. Hyg.

- 1052 The Physical and Psychophysiological Examination of Motor Drivers. R. Péchoux and J. C. Kalb. Arch. maladies profess. 22, 135-140 (Mar. 1961). French.

Road safety presents many problems and among these is the human factor which is an important one in accident causation. In this paper the authors discuss the law in France which requires that all drivers of heavy vehicles and of public transport must submit to medical examination before a license to drive is granted and also before a license which has been withdrawn is granted anew. The conditions of this medical examination have been stated by decree and are here critized. In this paper there is an account of the findings in 3,000 drivers who have been examined in Lyons since 1954. Of these, 43 were assessed as unfit to drive for a variety of physical or mental conditions which are stated. These disabilities are fully discussed with mention of the ways in which the certificates of unfitness to drive given after examination may be evaded or rendered inoperative. Emphasis is also placed on the importance of psychophysiological examination which is practiced in some centers in France, but particularly in Lyons, although it is as yet not a legal requirement.

-- Bull. Hyg.

- 1053 Medicolegal Aspects of Disaster Operations. A. F. Meyer and H. B. Mitchell. Am. Ind. Hyg. Assn. J. 22, 223-231 (Aug. 1961).

Potential medicolegal problems in disaster response operations appear insufficiently realized by many people who may be ultimately concerned. This article, written in working language and developed from actual working experience, attempts to point out problem areas and to offer simple solutions to minimize and prevent medicolegal involvement in emergency response. A background, and for clearer understanding, a classification and a categorizing of disasters are offered, as well as a discussion of ways and means of legal liability and claim, to include types of injury and damage expected. Particular stress is given the recommendations, notably the distinction and importance of accumulation of positive and negative evidence.

-- Authors' abst.

- 1054 The Effect of Women's Health by Occupations Involving Frequent Carrying of Small Weights. P. I. Bastina, et al. Gigiena i Sanit. No. 6, 33-39 (1961). Russian.

The maximal weight of a single load lifted at a time by a woman is set at 20 kg., but the law fails to specify the summary weight lifted during a whole shift. In order to obtain hygienic backgrounds for rating this total weight lifted in the course of one day by a woman, the authors examined at two brickworks, 146 women-workers permanently engaged in transporting relatively small loads during the course of a work day. These women workers presented reproduction disturbances and a high percentage of occupational diseases of the skeletal and motor systems. The authors suggest that the total weight carried per work day by women should be subject to a standard rating and recommend measures to improve working conditions prevailing at brick yards.

-- English summary.

-- Public Health Eng. Absts.

03120970

- 1055 Practical Neurosurgical Principles in the Management of Multiple Injuries. T. Kurze.
J. Occ. Med. 3, 457-462 (Oct. 1961).

Clinical shock is neither an essential nor a prominent feature of closed cerebral injury. When shock occurs in patients with head injury, an intensive search should be initiated for an extracranial cause. The clinical observations necessary to evaluate acute cerebral injury are not complex. Patients with head injuries, regardless of magnitude, can, and frequently do, develop complications in all physiologic systems and anatomical compartments. The secondary effects of cerebral injury often obscure associated injury. This imposes an extra vigilance and awareness on all members of the clinical team. The metabolic care of the neurosurgical patient is not unique, and the total needs of the patient should be considered.

-- Author's summary

- 1056 Pulmonary Function Testing in Industrial Medicine. B. M. Lewis.
Arch. Environmental Health 2, 262-266 (Sept. 1961).

Pulmonary function studies can give the industrial physician some help in detecting substances that may injure the lungs. Those substances that cause discrete foci of fibrosis or inflammation in the midst of normal alveoli show few abnormalities of pulmonary function, and thus are difficult to detect. Substances which narrow the finer air passages or cause diffuse infiltration of the alveolar walls are more readily detected, particularly by newer tests of pulmonary function. Pulmonary function tests can establish whether a complaint of dyspnea has a basis in fact and, if so, whether this functional abnormality is compatible with occupational exposure. Function tests cannot make an etiologic diagnosis, and they supplement and cannot supplant a careful history and physical examination. Lastly, some approximation of the degree of disability is possible from pulmonary function testing.

-- Author's summary

- 1057 The Effect of Smoke and Non-Smoke Gases on Cells in Cell and Organ Cultures. P. Cooper and I. P. Goldring. Surg. Forum 11, 72-73 (1960). (Surgical Forum, American College of Surgeons, 40 E. Erie St., Chicago, Ill.*).

Smoke from cigarettes, cigarette paper, or onion-skin paper was injected at each of the three levels (0.5, 1.0, or 1.5 cc), into mammalian cell cultures (strain L cells) after an initial growth period for the cell cultures of 24 hours. Additional cultures were exposed similarly to carbon monoxide, atmospheric gases, illuminating gas, and several other non-smoke gases. Daily microscopic observations were made of each culture. In addition, in the case of cigarette smoke and cigarette-paper smoke, the cells were observed by using a Rose perfusion chamber directly after injection. Smoke from cigarettes, in 5 cc. volumes, was also injected into embryonic rabbit lung organ-cultures after an initial growth period of 24 hours. Histological sections were prepared from the organ tissue after an additional 48 hours. The non-smoke gases tested failed to show any significant changes in the cultures. Changes induced by smoke from cigarette-paper or onion-skin paper were more pronounced than those produced by cigarette smoke. The effects of the smoke gases were indicated as showing irritative or "toxic" effects on the cells. This effect, over prolonged periods, may conceivably produce chronic inflammatory changes in the lung.

-- APCA Absts.

*Address not in current List of Periodicals.

SKIN DISEASES AND BURNS

MHBB-0018965

- 1058 Dermatitis Due to Synthetic Detergents. H. S. Samuel. Practitioner 186, 485 (1961).

The nature and mode of action of synthetic detergents are described. They act by altering surface tension and by wetting, deflocculation, emulsification, foaming and physical removal of dirt. Of the 1483 new cases (607 male and 831 female) attending the skin clinic of the Royal Berkshire Hospital, Reading, England, 13 cases (10 male and 3 female) were diagnosed as having dermatitis due to synthetic detergents. This incidence (0.9%) compared well with that reported from two other large skin departments. However, 9.24% of 144 patients questioned in the out-patient department of this same hospital about detergent dermatitis said they suffered from it at some time, over an unspecified period. Thus, the extent of dermatitis attributed to synthetic detergent is far greater than the estimate made from hospital records; probably, any form of skin disease of the hands or arms is likely to be attributed to the use of detergents by the public. Factors involved in the incidence of detergent dermatitis are discussed. They include: the frequency of use of detergents; the failure to rinse hands after they have been in a detergent solution; the time and frequency of immersion; and the relative humidity of the atmosphere at the time. Measures that can be taken to prevent detergent dermatitis are outlined: (1) the avoidance of too frequent and too prolonged exposure to detergent solutions; (2) the careful rinsing of hands with clear water following use of detergents; (3) the careful measurement of the amount of detergent for the required purpose to prevent the use of concentrations greater than are necessary; and (4) continued research into production of detergents which will minimize detergent dermatitis. -- Cond. from Can. Med. Assn. J. Absts.

- 1059 Geographic Variation in Incidence of Skin Cancer in the United States. H. Auerbach. Public Health Repts. 76, 345-348 (Apr. 1961).

From data available for 10 cities in the United States, a quantitative inverse relationship is shown between skin cancer incidence rates for the white population and the degree of latitude of the cities. A constant rate of increase in skin cancer incidence is observed as white populations further south in the United States are studied. The same rate of increase of skin cancer with decreasing latitude is shown for white male and female populations and for each 10-year age group from 25 through 64 years. The incidence rate is doubled for each 3°48' of latitude, or approximately 265 miles. -- Nuclear Sci. Absts.

- 1060 Human Anthrax in New York State. J. K. Miller. N. Y. State J. Med. 61, 2046 (June 15, 1961).

The distribution of agricultural anthrax in New York State is about the same as it was 50 years ago, but the incidence of bovine anthrax has been markedly reduced by vaccination. Previously, tanneries and carpet mills were the foci of industrial anthrax. Now, cases predominate in industries using goat hair imported from Pakistan, Iraq, Iran, and India. Between 1943 and 1960, there were 109 cases of anthrax in humans reported in New York State. Except for one case of fatal bacteremia in a laboratory worker and a fatal case of meningitis, all cases were of the cutaneous form of anthrax. Forty per cent of the primary cutaneous lesions occurred on the lower arm and hand; 33% were located on the face; and 16% were on the neck. All cases were diagnosed initially by stained smear, and the majority of cases were confirmed by culture or animal inoculation. Since 1945, all patients have been treated with penicillin, supplemented by sulfonamide therapy when the primary lesion was on the head or neck.

-- J. Occ. Med. Absts.

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- 1061 Eczematous Contact—Sensitivity to Gold. J. M. Fox, R. Kennedy and A. Rostenberg, Jr.
Arch. Dermatol 83, 956 (June 1961).

Eczematous contact sensitivity to gold salts is rare but is said to occur among photographers. Patients reacting to metallic gold probably dissolve a small fraction of their sweat. Histopathology is atypical in that acantholysis is present, but this may indicate a toxic rather than an allergic reaction.
-- J. Occ. Med. Absts.

- 1062 Photodermatitis Due to Tetrachlorsalicylanilide. D. S. Wilkinson.
Brit. J. Dermatol. 73, 214 (June 1961).

Tetrachlorsalicylanilide, a bacteriostatic agent, in an English toilet soap was responsible for 53 cases of photodermatitis, many of them industrial. The action spectrum was not determined. The pathogenesis was difficult to explain because patch tests with low concentrations of tetrachlorsalicylanilide were positive without provocation by ultraviolet radiation.
-- J. Occ. Med. Absts.

- 1063 Photosensitivity Due to Pitch. K. D. Crow, et al. Brit. J. Dermatol. 73, 220 (June 1961).

In an outbreak of photosensitization due to pitch, the manifestations were smarts (intense smarting and burning sensations usually associated with erythema), melanosis, and photophobia. Another factor in hyperpigmentation was retention of pitch by the skin, presumably in the pilosebaceous follicles. Comedones were observed on the ears and face and folliculitis on the thighs. Indians and Negroes were apparently not affected by photosensitization. The action spectrum for pitch, as determined by a monochromator, was in the region 340 to 430 microns. To protect against light of this wavelength, a physical sunscreen such as zinc oxide could be used, but this would be unacceptable to most factory workers. In addition to exhaust ventilation, use of a solvent-containing waterless hand cleanser followed by thorough washing with soap and water was recommended.
-- J. Occ. Med. Absts.

CHEMICAL HAZARDS

- 1064 Sample Collection Techniques for Combustion Sources—Benzopyrene Determination.
R. L. Stenborg, et al. Am. Ind. Hyg. Assn. J. 22, 271-275 (Aug. 1961).

The tests of this investigation show that benzo(a)pyrene (also called 3,4-benzopyrene) present in high temperature gas streams can be collected by filtration after cooling the gas to or near ambient temperatures. A series of water bubblers and condensate traps immersed in an ice water bath proved to be a satisfactory technique for this purpose. However, use of a high efficiency filter as the final collector is absolutely necessary since the washing process in the bubblers may remove only a small percentage of the benzo(a)pyrene. Filter temperature on the order of 300°F resulted in part of the benzo(a)pyrene being lost during sampling. Filter temperature of 95°F and below gave generally comparable results. Since the work of Commins and Lawther, (British J. Cancer 12, 351, Sept. 1958), demonstrated that benzo(a)pyrene suffers little if any loss from the filter during sampling at a filter temperature of 65°F, it is assumed that the collection efficiency of source samples at or near this temperature should be close to 100%.
-- Authors' summary

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- 1065 Ultraviolet Spectrophotometric and Fluorescence Data. J. A. Houghton and G. Lee.
Am. Ind. Hyg. Assn. J. 22, 296-301 (Aug. 1961).

Data are presented on the ultraviolet absorption and fluorescence characteristics of a number of substances of interest to industrial hygienists. These properties can be used to make simple and accurate determinations of many materials, although there are limitations because of the interferences of other substances. The order of magnitude of the absorptivity will indicate the sensitivity of determination by ultraviolet absorption. -- Authors' abst.

- 1066 Carbon Dioxide Poisoning During Silaging of Hay. A. Reisch.
Pracovni lekarstvi 12, No. 7 365-368 (1960). Hungarian.

The author describes a case of carbon dioxide poisoning during the silaging of hay, in a 21-year-old tractor driver, who crept into the ventilating shaft of the stack where cellulose fermentation took place. The author mentions several observations referred to in the world literature where carbon dioxide was recorded under less uncommon conditions. Simultaneously, the author draws attention to the danger of possible poisoning with oxides of nitrogen during silaging and the necessity to prevent such poisoning. -- Public Health Eng. Absts.

- 1067 The Toxicity of Boron Trifluoride when Inhaled by Laboratory Animals. T. R. Torkelson, S. E. Sadek and V. K. Rowe. Am. Ind. Hyg. Assn. J. 22, 263-270 (Aug. 1961).

Boron trifluoride is generally handled as a compressed gas. If allowed to escape to the atmosphere it very rapidly unites with moisture to form a white fog. Although the fog is irritating to the skin and eyes, the primary hazard is probably from inhalation. Since this fog has an acidic odor, concentrations which are injurious from single exposures are obvious to the senses, if not painful. Rats, rabbits, and guinea pigs were exposed 7 hours per day, 5 days per week for periods up to 6 months duration to atmospheres containing boron trifluoride in concentrations calculated to be 12.8, 7.7, or 3.0 ppm. Analysis showed concentrations to be about one-half of these levels. The major effect of repeated inhalation was respiratory irritation causing injury ranging from death to a slight increase in pneumonitis. On basis of the study, a value of 0.3 ppm is tentatively suggested as a threshold limit value for boron trifluoride.

- 1068 Development and Status of Experimental Work on Factor 3-Selenium. K. Schwarz.
Federation Proc. 20, Part 1, 666-673 (July 1961).

The research which eventually led to the detection of the role of selenium as an essential dietary agent began about 20 years ago. It was then discovered that rats maintained on certain vitamin E-free rations low in sulfur amino acids died from a severe necrotic degeneration of the liver. In earlier studies, supplements of two dietary constituents, namely L-cystine and vitamin E had been found to protect against the deficiency. That a further factor, other than L-cystine and vitamin E, was involved, became apparent even before tocopherol was found to be protective, but conclusive evidence for the existence of this agent was obtained only after 1949. The agent was not identical to any previously known, chemically identified dietary principle. It was discovered to be present in brewer's yeast, so-called vitamin-free casein, kidney, liver, and numerous other natural source materials. For this principle the term Factor 3 was introduced in 1950, to indicate that it constituted the third natural agent known to affect the development of dietary liver necrosis. Especially since the discovery of selenium as the integral part of the Factor 3 molecule has it become evident that the factor protects against a large variety of deficiency syndromes in numerous species. A list of deficiency symptoms responsive to Factor 3-selenium is presented in tabular form. The dose levels needed for their prevention, and also cure, are physiological, i. e., they are equal or similar to Factor 3-selenium contents found normally in various dietary ingredients, feeds, or in tissues. Most of the diseases are fatal, and some are economically important.

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- 1069 Nutritional Effects of Selenium Compounds in Chicks and Turkeys. M. S. Nesheim and M. L. Scott. Federation Proc. 20, Part I, 674-678 (July 1961).

The most marked nutritional effect of dietary selenium in chickens and turkeys is its effectiveness in preventing exudative diathesis. Very low dietary levels are required (0.05-0.1 mg./kg. of diet). Selenium is not completely effective against muscular dystrophy in chicks, and levels of selenium that partially prevent muscular dystrophy (1-5 mg./kg. of diet) are much higher than the levels effective against exudative diathesis. Selenium appears to have growth stimulating properties for chicks receiving diets containing Torula yeast adequate in vitamin E. Selenium has not been found to be growth stimulating when other types of diets are used, probably since they contain traces of the element. -- Authors' summary

- 1070 A Review of Selenium Responsive Diseases of New Zealand Livestock. W. J. Hartley and A. B. Grant. Federation Proc. 20, Part I, 679-688 (July 1961).

The investigations reported in this paper indicate that selenium-responsive diseases are widespread throughout New Zealand and that they are of considerable economic importance, particularly to the sheep industry. It is still not known whether the diseases described are associated with a deficiency of selenium in the food being consumed. In this respect, it must be remembered that different organic compounds of selenium are very different in their potency, and that inactive forms of selenium have been shown to occur in nutrients. Analytical determination of selenium in feeds does not measure their protective potency against Factor 3-selenium deficiency. It is known, however, that in at least one entity—delayed white muscle disease in lambs—the tissues contain significantly less selenium than normal. It seems possible that pasture in some areas of New Zealand may contain a dystrophogenic factor and also a factor which interferes with fertility. Further, the liberal use of gypsum might contribute to the development of selenium deficiency, because sulfate is known to inhibit selenium utilization in plants and bacteria. The authors' immediate investigations are concerned with ascertaining the minimal physiological amount of selenium required to prevent and control the diseases described. By doing this, they expect to afford optimal protection from these diseases and to warrant the Factor 3-selenium content of animal tissues to be adequate and normal.

-- Cond. from authors' conclusions

- 1071 Experimental Results with Selenium in White Muscle Disease of Lambs and Calves. J. R. Schubert, et al. Federation Proc. 20, Part I, 689-694 (July 1961).

Enzootic white muscle disease of lambs and calves has been reproduced under controlled conditions by feeding the dams during gestation on native hays from areas involved. The characteristic clinical symptom of erratic locomotion, as well as cardiac failure and the gross and histopathological lesions of skeletal and cardiac muscle degeneration and calcification have usually been observed in preweaning offspring. Supplementation of the ration of the dams during gestation through the weaning of 0.1 ppm selenium, as sodium selenite, has consistently provided essentially complete protection against the disease, while vitamin E has not. Selenium and vitamin E therapy for new born animals have been effective in obviating the grossly observable postmortem lesions, but not entirely those detectable microscopically. Limited trials indicate superiority of selenium over vitamin E therapy as measured by weight gains of the young. Incidence of the disease has not always been associated with a demonstrable forage selenium deficiency and evidence suggests that sulfur antagonism can influence the biological and availability of the trace amounts of selenium which are required.

-- Authors' summary

- 1072 Biochemical Interrelations Between Selenium and Sulfur in Plants and Microorganisms. A. Shrift. Federation Proc. 20, Part I, 695-702 (July 1961).

Selenium compounds exert powerful biological effects, and it is clear that these effects are intertwined with sulfur metabolism. From the very first step that we recognize in the metabolism of an inorganic substance by a plant or microorganism, that of its transport

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across the cell membrane, to its enzymatic conversion, selenium and sulfur are interchangeable. To this extent at least, the older ideas of selenium toxicity have been verified. But it has also become apparent that not all forms of selenium need be toxic. Not only is it possible for an organic selenium analogue to support some or all of a cell's functions if the remainder of the sulfur needs are satisfied, but it is possible for an organism to adapt and to thrive in the presence of a selenium compound that originally was inhibitory. Our ideas of the element will have to be revised, not only because of its newly discovered role in animal nutrition, but also because it is no longer as formidable an element for plants and microorganisms as we were led to believe.

-- Author's conclusions

- 1073 Determination of Traces of Selenium in Organic Matter. Combined Spectrophotometric and Isotope Dilution Method. W. J. Kelleher and M. J. Johnson. *Anal. Chem.* 33, 1429-1432 (Sept. 1961).

A method is described for the determination of a few hundredths of a part per million of selenium in organic samples. The method consists of a micromodification of a spectrophotometric method employing 3,3'-diaminobenzidine as the selenium (IV) reagent and incorporates an isotope dilution technique to compensate for the unavoidable losses that occur during the course of the analysis.

-- Authors' abst.

- 1074 Determination of Arsenic in Air and Biological Materials. L. Dubois and J. L. Monkman. *Am. Ind. Hyg. Assn. J.* 22, 292-295 (Aug. 1961).

A comparative study of three widely used methods for the determination of arsenic in air and biological materials was undertaken. The Gutzeit method, the silver diethyl dithiocarbamate method, and an iodine microtitration with electrical indication of the endpoint were studied. On the basis of this investigation it is concluded that the silver diethyl dithiocarbamate method is superior to the others when all factors are considered.

-- Authors' abst.

- 1075 A Rapid Analytical Method for the Determination of Beryllium in Air Samples. R. A. Hiser, H. M. Donaldson and C. W. Schwenzfeier. *Am. Ind. Hyg. Assn. J.* 22, 280-285 (Aug. 1961)

The need for and development of a rapid analytical method for the analysis of beryllium in air samples has been described. This method, the so-called Zenia Method, consists of the addition of p-nitrophenylazoarcinol to a prepared beryllium sample. The reading of the adsorption of the resulting color on a Klett photometer, using a No. 54 (500-575 millimicron, green) filter and comparing with a standard curve, gives a measure of the amount of beryllium in the sample. It must be remembered that this method is limited to inplant sampling where sample collection is attained with Whitman No. 41 filter paper or equivalent. Any element that forms a color in alkaline solution will interfere; however, many interfering constituents like heavy metals may be chelated with Versene "T" or complexed with cyanide. The presence of magnesium and chloride interfere with the method. Samples containing between 5 and 45 micrograms of beryllium show a standard deviation of 8.4% and a 68% confidence level for values between $\pm 8.4\%$ of true value or 95% confidence level for values falling within $\pm 16.8\%$ of the true value. Such analytical accuracy is adequate for the in-plant monitoring of a beryllium facility.

-- Authors' summary

- 1076 Cadmium Poisoning from a Refrigerator Shelf Used as an Improvised Barbecue Grill. T. D. Baker and W. G. Hafner. *Public Health Repts.* 76, 543-544 (June 1961).

A cadmium-plated refrigerator shelf which was used as a barbecue grill for the first time apparently caused cadmium poisoning in a family in Syracuse, New York. All 4 members of the family became ill shortly after eating steaks prepared on this device. The symptoms were similar to those of chemical toxicity and more specifically of cadmium poisoning. Recovery of all those affected was spontaneous and without sequelae. This experience emphasizes the ever present danger of eating food which has in any way come in contact with cadmium utensils.

-- Public Health Eng. Absts.

- 1077 Ultramicrodetermination of Mercury in Blood. M. B. Jacobs, L. J. Goldwater and H. Gilbert. Am. Ind. Hyg. Assn. J. 22, 276-279 (Aug. 1961).

A method for the determination of mercury in 0.1 ml. of blood is detailed. Sulfuric acid is added to the blood in the cold; then permanganate solution is used to oxidize the organic matter; mercury is extracted by a chloroform solution of dithizone, and after evaporation of the chloroform, the mercury is liberated by heating the dithizonate in a furnace; the amount of mercury vapor produced is measured by an ultraviolet light mercury vapor meter. The method is applicable to the estimation of mercury in the nanogram range, that is, 10^{-9} gram of mercury. The method virtually without change has been adopted for the determination of mercury in kidney biopsy material.

-- Authors' summary

- 1078 Acute Acetone Poisoning Due to a Synthetic Plaster Cast, with a Discussion of Acetone Metabolism. W. Hift and P. L. Patel. S. African Med. J. 35, 246-250 (Mar. 25, 1961).

Biochemical findings in this case of a boy aged 7 are discussed together with 8 previously recorded reports of poisoning after application of similar casts. The boy was in good health, with only a raised erythrocyte sedimentation rate left after treatment for 3 months for osteomyelitis complicated by meningitis, pericarditis and infective synovitis. His plaster of Paris spica was then replaced by a plaster substitute consisting of glass and textile bandages, set, under a ventilating fan, by means of a fluid composed chiefly of acetone. Acetone poisoning showed itself 6 hours later and recovery took 3 to 4 days. The cast was not removed and treatment was symptomatic, with no glucose or insulin. Drowsiness, restlessness, sweating, and pain over stomach and bladder were quickly followed by repeated vomiting of altered blood, intense thirst and tachycardia, deep sighing and irregular respirations, nystagmus, clumsy hand movements, and poorly reacting pupils when illuminated from one side. There was acetone in the breath. The urine contained acetone, diacetic acid, occasionally albumin and on the first day, sugar. Dehydration was not severe. Serum chlorides were low. Blood sugar and cerebrospinal fluid sugar were raised. The alkali reserve was normal, and so were serum lipids and cholesterol. Acetone sensitivity tests were negative. Diabetic coma, not surprisingly, had been diagnosed at one stage in some of the cases, and some symptoms in this disease may be due, in part at least, to endogenously formed acetone. Acetone can be absorbed through lungs or skin or both and can be metabolized to carbon dioxide, aceto-acetic acid, saccharides and possibly lipids.

-- Cond. from Bull. Hyg.

- 1079 Observations on the Effects of Powdered Polymer in the Carcinogenic Process. E. T. Oppenheimer, et al. Cancer Research 21, 132 (Jan. 1961).

Tumor formation following subcutaneous implantation of polymer films is preceded by the development of a fibrous pocket, and the tumors originate in the lining cells of these pockets. Polymer powders have been shown to be non-carcinogenic by the same implantation technique. To test the hypothesis that powder might induce tumors if placed directly into a preformed pocket, polyethylene powder and glass powder were inserted into pockets preformed around embedded glass films, both with and without the presence of the film. Insertions were made between 4 and 5 months after embedding, during the reversible stage of film-induced tumorigenesis. There was no significant change in the incidence of tumors produced by the powders on the pocket cells. A foreign-body reaction was consistently seen with the imbedded powder.

-- J. Occ. Med. Absts.

- 1080 Irritation from Residual Bromides after Methyl Bromide Fumigation. B. H. Miller, R. Navone and M. Ota. Public Health Repts. 76, 216-218 (Mar. 1961).

Investigations were conducted to determine the cause for irritation of eyes, nose, throat and skin of members of households after fumigator contractors had used methyl bromide. It was found that in cases of residual irritants, metal objects and particularly stoves with pilot lights were corroded. It was concluded that pilot lights had been on during the operation and hydrobromic acid formed which is a powerful irritant. To remove the irritant, washing with an alkali proved successful.

-- Public Health Eng. Absts.

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- 1081 Human Exposure to 1,1,1-Trichloroethane Vapor: Relationship of Expired Air and Blood Concentrations to Exposure and Toxicity. R. D. Stewart, et al. *Am. Ind. Hyg. Assn. J.* 22, 252-262 (Aug. 1961).

The probability of human exposure to the vapors of 1,1,1-trichloroethane (CH_3CCl_3) is increasing rapidly as this compound gains popularity as a solvent in cold degreasing applications. Because of its low toxicity, its use as a solvent in several other applications, e.g., agricultural chemicals, hair sprays, and dry cleaning is also being investigated. Thus, the physician, the industrial hygienist, and the toxicologist will be called upon to evaluate acute and chronic exposures to 1,1,1-trichloroethane vapor in an increasingly large segment of the population. A study of controlled human exposures to 1,1,1-trichloroethane vapor has revealed a prolonged exponential "decay curve" when the concentration in the postexposure expired air is plotted against hours after exposure. This measurement was predictable enough to allow a reasonable estimation of the magnitude of exposure. Chemical, physiological, and clinical laboratory studies were carried out and correlated with the vapor exposures. The determination of urinary urobilinogen proved to be the most sensitive test of liver stress produced by markedly excessive exposures to 1,1,1-trichloroethane. Data from this study support 500 ppm as a satisfactory threshold limit for this compound.

- 1082 The Effects of Sodium Fluosilicate on the Skin and Eyes of Rabbits. L. R. Malinak, V. J. Derbes and W. F. Lienhard. *J. Invest. Dermatol.* 36, 183-188 (Mar. 1961).

The authors report some experiments on the effect of the insecticide and fungicide sodium fluosilicate, on rabbit skin following the observation of lesions of previously traumatized skin in workers exposed to this compound. The compound had no effect on the intact skin, undamaged eye or eye damaged by a scratch of the cornea, in the rabbit. When the compound was applied to superficial scratches in the skin necrotic lesions developed provided the material was in contact with the skin for more than 2 minutes. Similar lesions were produced by injecting 0.1 ml. of a saturated solution of sodium fluosilicate intradermally or just below the skin. The lesions took 12 to 14 days to heal.

-- Bull. Hyg.

- 1083 An Epidemic of Triorthocresylphosphate Poisoning. C. M. Godfrey. *Can. Med. Assn. J.* 85, 689-691 (Sept. 16, 1961).

Approximately 10,000 members of the Moslem population of Morocco were poisoned by cooking oil contaminated by triorthocresylphosphate, with subsequent development of varying degrees of paralysis. Approximately 25% have recovered, 50% are still recovering or have been fitted with braces to aid in their rehabilitation to the level of self-employment, and 25% have spasticity or general debility to such an extent that they will be permanently incapacitated. The appearance of spasticity one year after ingestion of the oil, and sometimes after apparent recovery from flaccid paralysis is described.

-- Author's summary

INDUSTRIAL DUSTS

- 1084 Study of Q Fever in Animals and Man in Pennsylvania. R. R. Marshak, J. Melbin and M. J. Herman. *Am. J. Public Health* 51, 1189-1198 (Aug. 1961).

The problem of Q fever in the state of Pennsylvania was investigated by tracing documented human cases and carrying out serological tests on animals associated with these cases. In addition, a limited random survey of animals in the state was accomplished, a considerable number of cattle showing antibodies to the Q fever antigen. Serum was tested, utilizing both the complement fixation test and the capillary agglutination test. Whey from

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herd milk samples was tested utilizing the capillary agglutination test. Available evidence indicates that Q fever may be an important public health problem in the state of Pennsylvania. The presence of an undiagnosed acute febrile illness warrants serologic testing for Q fever antibodies. It seems likely that the appearance of human cases bears some relationship to the incidence of Q fever titers in the local cattle population. There are 37 references to the subject in the bibliography.

-- Authors' summary

- 1085 Comparative Concentration of Silica in Parent Material and in Airborne Particulate Matter. M. Sheinbaum. *Am. Ind. Hyg. Assn. J.* 22, 313-317 (Aug. 1961).

A comparison of the silica content of 30 airborne particulate samples from industrial exposures was made with the parent material occasioning these exposures. The data from this study indicate that in the 19 samples collected within 6 feet of the dust-producing operation, the free silica content in parent material and airborne dust were about the same. For samples collected at distances greater than 6 feet from the source the data are inconclusive.

-- Author's abst.

- 1086 A Comparison of Particle Size Measurements. E. J. Baier. *Am. Ind. Hyg. Assn. J.* 22, 307-312 (Aug. 1961).

The determination of particle size is essential to the evaluation of airborne dust hazards. A set of 18 slides was prepared and circulated among 30 persons of varying experience in particle size determination. They made 206 particle size determinations. Statistical evaluation of the results are presented. Industrial hygienists with very little or very much experience in the total field of industrial hygiene demonstrated the greatest variance of measurement. Those in the experienced group are primarily in the supervisory category, and their errors appear to be due to a lack of constant use of the microscope. Practice, rather than experience, seems to be the main criterion of accuracy in particle size measurement.

-- Author's abst.

- 1087 The Effect of Hemp Dust on Certain Functions of the Body. K. Milenkov, et al. *Gigiena i Sanit.* No. 4, 25-32 (1961).

A study of the effect produced by hemp dust has shown that its inhalation gives a febrile reaction of an adjustable nature. However, there is no data on hand to substantiate its allergic character. The disturbances of the lung ventilation in most of the workers were of an obturating character. As a result of changes occurring in the upper respiratory tract, the process, at a later stage, spreads to the lung tissue and causes the development of hemp byssinosis. Cardiovascular changes may occur in the presence of normal lung ventilation. In most cases, however, they developed simultaneously with the destructive processes in respiratory system. A broader experimental study of byssinosis and its morphological features is required. In order to prevent the harmful action of hemp dust, it is necessary to reduce the dust content in the air of industrial premises. This may be attained by improving the ventilation systems and humidification of the air.

-- Public Health Eng. Absts.

- 1088 Bagasse Disease of the Lungs. Early Histopathologic Changes Demonstrated by Lung Biopsy. J. K. Bradford, J. B. Blalock and C. M. Wascom. *Am. Rev. Resp. Dis.* 84, 582-585 (Oct. 1961).

A case of bagasse disease demonstrating the early histopathologic changes has been presented. This case indicates that steroid therapy is helpful in the management of early cases. Clinical evidence suggests that bagasse disease is a hypersensitivity reaction to an agent as yet unknown. Patients with the disease should not be exposed to bagasse dust. Wetting of bagasse before use will prevent development of the disease. Evidence is offered that the disease can be a potentially crippling influence in the development of industries in some agricultural areas of the world where diversification of livelihood is needed badly.

-- Authors' summary

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- 1089 Prolonged Observation on Acute Silicosis in Women. K. Rejsek.
Pracovni lekarstvi 12, 407-410 (Oct. 1960).

The author calls attention to the fact that silicosis is on the increase. In his study of selected material from two countries, he observed that in females the number of silicosis patients fluctuated, but did not increase. In this paper, the author calls attention to the fact that silicosis in females is seldom severe. This would follow that women work in less-contaminated environments. An exception is a group of 14 women who had developed an acute silicosis, verified by radiological studies, but in which the course of the disease was considerably less severe when compared with that for men. The radiological picture is also different for women than for men. In attempting to explain this, the author points to the possibility of influencing the course of silicosis as well as the quality of the reactions of the connective tissue, by female hormones. This hypothesis is supported also by some experimental work reported in the literature. The author was unable to find in the literature any study of a similar series of cases showing the differences in the development of silicosis in males and females. -- APCA Absts.

- 1090 A Contribution to the Problem of Aluminum Pneumoconiosis—Case Report. G. Reusch.
Deut. med. Wochschr. 86, 520, 525-528, 533 (Mar. 24, 1961). German.

This is a review of the present ideas on aluminum lung, in which various authorities are quoted. The diagnosis of aluminum lung is based on radiological investigation, on spirometric tests of lung function, and by demonstration of aluminum in the sputum. Aluminum can be shown by embedding the sputum in paraffin and staining with morin, a vegetable dye. Aluminum-containing portions of tissue in the sputum are shown by their light yellow color. The case described is that of a man 27 years of age who was still spitting up aluminum-containing sputum 2 years after the end of his exposure. He had been smelting aluminum for 6 years. The radiograph of the chest showed enlarged roots, increased striation of the lung fields with collections of small opacities interspersed in the lung. The results of the spirometric tests are detailed; the lung function was limited. Jaeger and Jaeger are quoted as believing that the aluminum-containing pieces of lung tissue brought up with the sputum result from a destructive process. Even after cessation of exposure, more aluminum is dissolved. Everything should be avoided which accelerates the appearance of aluminum ions. Mercury has this action and Jaeger warns against dental repair with mercury amalgam. From this viewpoint, the disease results from a chemical and not from a mechanical effect; the correct name, therefore, should be aluminum lung and not aluminum dust lung. The difference between aluminum lung and silicosis lies in the discrepancy between the severity of the disease and the short duration of exposure in the former. In younger people the progress is rapid and frequently spontaneous pneumothorax occurs. Severe aluminum lung presents an unsuitable medium for the development of tuberculosis, but lesser changes do not protect from tuberculosis. The experiment of aluminum prophylaxis in animals gave positive results but its prophylactic action in man has yet to be established. -- Cond. from Bull. Hyg.

- 1091 Retention of Aerosol Particles in the Respiratory Tract. A Review. R. I. Mitchell.
Am. Rev. Resp. Dis. 82, 627-639 (Nov. 1960).

There is considerable disagreement among the various investigators as to particle retention in the lungs. The two major causes of lack of agreement are failure to use a uniform breathing rate and the use of a mean particle size to describe a test aerosol which has a wide size distribution. Both experimental and theoretical results show a minimum retention in a 0.4-0.6 micron range. All of the data also indicated 90% or more retention of particles greater than 7 microns. In addition to particle size, the next greatest variable affecting retention is breathing rate. The theoretical calculations of Landsahl agree well with the experimental results obtained by his co-workers, except for particles in the 2 micron range. For this size, the theoretical calculations give results that are too high at both breathing rates studied. The use of radioactive sodium chloride to obtain an approximation of alveolar retention gives an excellent means of measurement for retention in the smaller branches, bronchioles, and alveoli in therapeutic applications of aerosols. To establish definitely the particle-size for maximal

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retention, the experiments should be repeated using a non-hydroscopic carrier. The results of glycerol-water aerosols indicate that the maximum occurs for particles which have an equivalent diameter of 1.5 microns. By assuming that the particles grow until they contain 85% water, the diameter for the maximum would increase only to 2.3 microns. -- APCA Absts.

- 1092 Surgical Treatment of Pulmonary Tuberculosis Associated with Anthracosis and Silicosis in Coal Miners. P. Razemon and M. Ribet. *J. Thoracic & Cardiovasc. Surg.* 41, 281 (1961). (*Journal of Thoracic and Cardiovascular Surgery*, C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Missouri*).

The authors emphasize that lung resection as a treatment of anthracotuberculosis and silicotuberculosis gives good results under certain conditions. The patients must be prepared by an intensive medical regimen which should not be pursued indefinitely. The tuberculous lesion must be well limited in order to be susceptible to a well-planned resection. The patient must be closely followed up for 2 years after the operation. Failure to cure is more frequent than in ordinary tuberculosis, but a calculated risk should be taken in these cases, keeping in mind the insufficiency of antibiotic therapy and the usually grave evolution of the disease. Very few postoperative anthracotic or silicotic extensions were observed. Postoperative cardio-respiratory insufficiency never occurred. The authors feel that surgical treatment for these conditions will be subject to improvement and changes, and they express the hope that a larger experience in this field will result in standardization of such surgical procedures.

-- Can. Med. Assn. J. Absts.

- 1093 Roentgenologic Aspects of Asbestosis. M. Hurwitz. *Am. J. Roentgenol. Radium Therapy Nuclear Med.* 85, 256-262 (Feb. 1961).

The roentgenographic features of asbestosis as seen among asbestos workers in South Africa are described and discussed. Emphasis is placed on the pleural changes, which are found more frequently than is classic diffuse pulmonary fibrosis. Pleural involvement also occurs frequently in association with lung fibrosis. A characteristic pattern of sclerotic pleurisy presenting in the form of calcific pleural plaques is described. Although this pattern may be seen in a number of pneumoconioses resulting from exposure to certain silicate dusts, its incidence in asbestosis has received scant attention in previous publications. The diffuse type of fibrosis found in asbestosis should be differentiated etiologically from pulmonary collagenosis. Less frequently, there are lung changes alone, presenting the classic pattern of simple uncomplicated diffuse pulmonary fibrosis. This may vary in degree. A well-marked nodular lung pattern presumably due to associated silica exposure is occasionally encountered in asbestos workers. The complications of asbestosis are briefly referred to, including pleural mesothelioma, which appears to be relatively common among asbestos workers in the northern Cape Province of South Africa.

-- Cond. from Am. Rev. Resp. Dis. Absts.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1094 Bone Necrosis in the Shoulder Joint in Divers. R. Tillmann. *Z. ges Hyg. u. ihre Grenzgebiete* 7, 89-98 (Feb. 1961). German. (*Zeitschrift für die gesamte Hygiene und ihre Grenzgebiete*, Clara-Zetkin-Strasse 96, Berlin, W8, Germany*)

Short references to some of the literature on bony changes in caisson workers and divers introduce this account of 2 cases of aseptic necrosis of bone in 2 divers. There is a description of the work of these men at diving depths which in one of the men was at an average

* Address not in current List of Periodicals.

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of 25 to 30 meters but sometimes as much as 55 meters. The incidents which led to attacks of the "bends" are described. Some clinical particulars are given and the appearances found on x-ray examination are to be seen in 9 photographs. The pathological changes were in the head of the humerus and consisted of necrosis of bone with evidence also of fracture and the formation of sequestra. These cases were regarded as occupational in origin and hence, subject to compensation.

-- Bull. Hyg.

- 1095 Correlation of Industrial Noise Exposures with Audiometric Findings. E. J. Schneider, et al. *Am. Ind. Hyg. Assn. J.* 22, 245-251 (Aug. 1961).

A noise exposure profile system was developed following study of noise exposures and hearing losses among Dow employees. Four categories of severity were established ranging from quiet job (profiled "A") to extremely noisy jobs (profiled "D"). The possible effects and interactions of noise exposure, age, time on the job, previous noise exposure, ear pathology, and the use of ear protection were studied. There was evidence that men working in jobs profiled "A" and "B" showed more hearing loss than was expected for normal aging. Men in jobs profiled "C" and "D" showed hearing losses greater than those expected from aging.

-- Authors' abst.

- 1096 The Effects of Ionizing Radiation on the Ear. S. Borsanyi, C. L. Blanchard and B. Thorne. *Ann. Otol. Rhinol. & Laryngol.* 70, 255 (Mar. 1961).

Radioactive treatment for head and neck cancer often may incidentally involve the cochlea. The authors studied the effect of from 4,000 to 6,000 r. of radiation in the neighborhood of the cochlea on the hearing of 10 patients. Except for a slight (and apparently not statistically significant) transient conductive threshold shift, no effects were observed.

-- J. Occ. Med. Absts.

- 1097 Prediction of Speech Hearing Loss for Older Industrial Workers. T. Farrimond. *Gerontologica* 5, 65 (1961). (*Gerontologica*, S. Karger, Arnold-Bocklin-Strasse 25, Basel, Switzerland*).

Compensation for hearing loss ideally depends on the degree to which the loss reduces the ability to perceive ordinary speech. This reduction, however, is usually not measured directly but is rather calculated from the pure-tone losses at 500, 1000, and 2000 cps, using empirical equations validated on young men using conventional phonetically balanced lists of single words. In this study, the author uses a measure of speech perception more nearly like the actual social situation, i.e., a set of everyday sentences. Pure-tone thresholds are related to the ability to understand these sentences for 70 young (40 and younger) and 110 older (older than 40) workers. It is found that a slightly better prediction of speech perception is obtained if one uses the threshold at 250 cps in addition to the ones cited or perhaps instead of 2000 cps. Although the author does not make the point specifically, the data show that there were no differences between the 2 age groups: predictions of loss of ability to understand speech, using an equation based on pure-tone thresholds, are just as valid for older workers as for younger.

-- J. Occ. Med. Absts.

- 1098 Auditory Problems in Occupational Medicine. M. Lawrence. *Arch. Environmental Health* 3, 288-296 (Sept. 1961).

Probably variations in hearing loss among a population of workers in excessive noise are due more to differences in exposure than to the susceptibility of the organ of Corti to this type of structural damage, and permanent hearing loss stemming from this is related to the ability of the ear to recover between insults. The one reliable method of detecting incipient

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hearing loss is monitoring audiometry. Periodic hearing tests are performed to detect the beginning of any noise-induced loss of sensitivity. If the beginning loss is not too great, almost all ears will recover if removed from further stimulation. Probably a healthy existence on the part of the workers will keep the inner ear in such a condition that it can recover rapidly and resist permanent hearing loss.

- 1099 The Problem of Noise in Industry. A. Glorig.
Am. J. Public Health 51, 1338-1346 (Sept. 1961).

A review of the history of the noise problem gives evidence of a gradual recognition and slowly increasing efforts to control its untoward effects. Because of the magnitude and complexity of the problem, a solution depends upon the close cooperation of many groups with widely varied interests. In general, the health aspects of the problem are restricted to the effects of noise exposure on hearing. The eventual magnitude of the noise problem will depend on: (1) how it is viewed by the total community and particularly the industrial community; (2) cooperation between employer, employee, and the medical profession; (3) legislation that is based on reasonable compromises and factual research data; and (4) continued organized research in the laboratory and particularly in the field.

-- Author's conclusions

- 1100 An Air-Ventilated Suit for Wear in Very Hot Environments. G. W. Crockford, R. F. Hesson, P. W. Humphreys and A. R. Lind. Ergonomics 4, 63-72 (Jan. 1961).

The authors describe experiments in which 15 men were exposed to an ambient temperature of 81°C (178°F) while wearing a ventilated suit assembly. The assembly comprised two special garments: (1) an undergarment made of a double layer of plastic film, the two layers being separated by a loose plastic filler; and (2) an outer garment of impermeable but pliable plastic material, with an attached cylindrical helmet made of a double layer of clear plastic with an intervening air space. The outer garment contained a 5 mm. layer of foamed plastic to act as an insulating barrier. The purpose of the undergarment was to distribute the ventilating air over a large area of skin. The volume of air supplied to the suit ranged from 283 to 707 liters per minute (10-25 cu. ft. per minute); the temperature of the air was controlled to $\pm 0.5^\circ\text{C}$ (0.9°F) between 30° and 37.8°C (86°-100°F) as it entered the assembly, and the absolute humidity of the ventilating air was 6-7 mm. Hg. At ventilating volumes of 424 liters per minute (15 cu. ft. per minute) and over the subjects were able to establish bodily thermal equilibrium in one hour irrespective of the temperature of the air supplied to the suit. When the supply was only 283 liters per minute (10 cu. ft. per minute) thermal equilibrium was never achieved. In the interest of safety, it is recommended that such a suit in use ought to be supplied with dry air at a volume of not less than 707 liters per minute (25 cu. ft. per minute) at a temperature of not more than 30°C (86°F).

-- Cond. from Bull. Hyg.

RADIOACTIVITY AND X-RADIATION

- 1101 Biological Effects of Magnetic Fields. Negative Results. J. E. Eiselein, Helen M. Boutell and M. W. Biggs. Aerospace Med. 32, 383-386 (May 1961).

Attempts to demonstrate a significant biological effect of a sustained magnetic field (8,800 to 14,400 gauss) on white Swiss mice were unsuccessful. Under the conditions of the experiments, the magnetic field did not alter the rate of growth of an Ehrlich's ascites tumor, significantly change the rate of young male animal growth, or significantly change the white blood count.

-- Nuclear Sci. Absts.

- 1102 Evidence for Radiation and Chemicals as Leukemogenic Agents. E. P. Cronkite. Arch. Environmental Health 3, 297-303 (Sept. 1961).

Both single and prolonged exposure to x-ray and gamma-rays has been demonstrated to produce an increase in the incidence of leukemia in man. After single doses of penetrating x-rays or gamma rays, reasonable estimates of the increased incidence of leukemia to be expected can be made. Comparable estimates after chronic exposure, intermittent exposure, and deposition of radioisotopes in the bone cannot be made. Many chemicals and drugs have been shown to be capable of inducing leukemia in animals. Of all the toxic agents to which man is exposed in industry, a reasonable cause and effect relationship has been established only for benzol. The absence of a positive correlation of leukemia induction with other agents does not give these other toxic agents a "clean bill of health", since all carcinogenic processes are statistical, and the unequivocal demonstration of a small effect may necessitate a sample size in excess of 10^5 . Such an exposed group is a rarity, even in huge industries. The leukemia burden from toxic influences in industry remains unknown, but its sum throughout industry could be significant. Continuous surveillance for an effect and increasing protection against all known leukemogens is essential. Any drug or chemical capable of inducing bone marrow damage must be assumed to be potentially a leukemogen. The calculated risk concept is ever present in all facets of modern society—recreation, industry, the home, and the practice of medicine. To calculate and weigh the risk demands quantitation often lacking or not evaluated because of an assumed exorbitant cost in dollars.

-- Cond. from author's summary

- 1103 Reduction of Radiation Hazards in the use of Radium and Similar Sources. I. Radiation Hazards and Nursing Staff. F. Ellis. Brit. J. Radiol. 34, 408-415 (July 1961).

The main hazard to the nursing staffs in hospitals where radiotherapy is carried out is in connection with the use of radium. The risk of leukemia or skin cancer to the individual is considered negligible as is the genetic risk. Assuming a gene mutation in each partner of a marriage, the probability that the same gene was changed is about one in 4×10^{12} . The protection and instructions to nurses working in the radium ward of the Churchill Hospital, London, is discussed. Organization and procedures carried out in the operating theater and wards are also discussed.

-- Nuclear Sci. Absts.

- 1104 Reduction of Radiation Hazards in the use of Radium and Similar Sources. II. The Construction of a Remote Handling Room for Radioactive Sources. R. E. Ellis. Brit. J. Radiol. 34, 415-420 (July 1961).

The construction of a room suitable for handling sources, solid and liquid, in such a manner as to reduce the body dose to a low level and to eliminate the high hand and finger dose completely is described. The plan of the room consists of such items as a radium safe, storage of ovids and uterine tubes, needle threading, cleaning and sterilization of lead pots, storage of applicators and carrying pots, and trolleys. Safety measures and cost of items are also mentioned.

-- Nuclear Sci. Absts.

- 1105 Reduction of Radiation Hazards in the use of Radium and Similar Sources. III. A General Study of Solid Source Handling Problems. N. G. Trott and K. W. Taylor. Brit. J. Radiol. 34, 420-428 (July 1961).

The effectiveness in controlling staff exposure from radium and other solid radioactive sources at the Royal Cancer Hospital, London, is discussed. Protective devices are mentioned and dosage received by radium technicians is shown. Exposure of parts of the body to other staff members such as theater, ward, and isotope laboratory staffs is also discussed and analyzed.

-- Nuclear Sci. Absts.

- 1106 Evaluation and Management of the Heavily Irradiated Individual. V. P. Bond, T. M. Fliedner and E. P. Cronkite. *J. Nuclear Med.* 1, 221 (Oct. 1960).

Therapeutic management of the patient exposed to ionizing radiation should be based on the clinical picture and not on physical dosimetry. Radiation exposure should not be considered an extreme emergency, since days and even weeks will pass before a need for therapy is established in the intermediate exposure ranges. The bone marrow depression seen from 9 to 35 or more days after exposure presents the most challenging therapeutic problem. The time and need for therapy are related to the rapidity of onset and the severity of depletion of peripheral blood elements. The presence or absence of nausea and vomiting and the extent of total lymphocyte decrease are the primary evaluation factors in the first few days. With severe bone marrow depression in the third or fourth week following exposure, a gratifying therapeutic response is possible by the use of functional replacement therapy, with antibiotics, transfusions of fresh blood and fresh platelets. The efficiency of bone marrow transfusions in man has not been established as yet, but such transfusions should be considered seriously when complete marrow aplasia occurs in the second week or earlier.

-- J. Occ. Med. Absts.

- 1107 Use of Natural Airborne Radioactivity to Evaluate Filters for Alpha Air Sampling. C. L. Lindeken. *Am. Ind. Hyg. Assn. J.* 22, 232-237 (Aug. 1961).

Using natural airborne radioactivity as a test aerosol, a method is described which is designed to compare the surface collection efficiency of filters used for alpha air monitoring.

-- Author's abstr.

- 1108 Nature and Control of Radioactive Wastes in Pennsylvania Waters. W. A. Lyon. *J. Am. Water Works Assn.* 65, 66-69 (Feb. 1961).

The Pennsylvania Department of Health is presently studying the nature of radioactivity in waters of the state and is attempting to control radioactivity that may be discharged into these waters. The current program includes surveillance of streams and domestic water supplies, research, and direct control of waste discharge by permit. During 1961, it is hoped to establish a 150 station stream sampling network and to determine the level of radioactivity in samples collected therefrom.

-- Public Health Eng. Absts.

ENVIRONMENTAL MEASUREMENTS

- 1109 Pressure Broadening Effects on Infrared Intensities of Hydrocarbons. A. P. Altshuller and A. F. Wartburg. *Appl. Spectroscopy* 15, 67-69 (1961).

The quantitative infrared analysis of gas mixtures resulting from combustion processes or atmospheric pollution usually is done at atmospheric pressures. The effects of the partial pressures of nonabsorbing gases on the absorption band of a particular component being analyzed may be of considerable significance. The pressure broadening effects of one atmosphere of air or of carbon dioxide on various infrared bands of hydrocarbons have been investigated. Large pressure broadening effects are shown by ethylene at 10.52 microns and acetylene at 3.1 and 13.7 microns, and small effects by 1-butene at 10.85 microns, trans-2-butene at 10.375 microns, and benzene at 9.50 microns. The variation of absorbance at several of the infrared absorption maxima of ethylene and acetylene has been investigated using varying partial pressures of air or carbon dioxide at fixed partial pressures of the two hydrocarbons.

-- APCA Absts.

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- 1110 The Interaction of Ozone with Plastic and Metallic Materials in a Dynamic Flow System. A. P. Altshuller and A. F. Wartburg. Intern. J. Air and Water Poll. 4, 70-78 (June 1961) (Formerly International Journal of Air Pollution).

The loss of ozone in the ppm range after passing through or over various plastic and metallic substances has been investigated. The materials used include Teflon, glass, stainless steel, aluminum, polyethylene and polyvinyl tubing, Mylar film, and aluminum foil. Unused Teflon passes ozone without loss. Glass tubing, after a short exposure to ozone, passes it without loss. Stainless steel tubing, aluminum tubing or foil and Mylar film must be exposed to ozone in the ppm range for several hours before 90% or more of the ozone initially present can be passed through or over these materials. More rapid conditioning to ozone can be achieved by several 5 to 15-minute exposures to about 10 ppm of ozone. Polyethylene and Nalgon tubing even after many hours of exposure to ozone will pass only 75 to 80% of the ozone initially present in the gas stream. Some types of polyvinyl tubing are unsatisfactory for use with ozone irrespective of the amount of exposure to ozone. Flow rates below 1,000 cc./min. will increase losses of ozone. Except for Teflon and glass, materials should not be used in ozone analysis under any circumstances at low flow rates until they are thoroughly conditioned. Results obtained with stainless steel, aluminum and polyethylene indicated that conditioning to ozone once obtained will persist for at least two weeks.

-- Public Health Eng. Absts.

- 1111 On the Making of a Rational Olfactometer. G. Bozza, C. Calearo and G. P. Teatini. Acta Oto-Laryngol. 52, 189-209 (Sept. 1960). (Acta Oto-Laryngologica, Karlavagan 41, Stockholm O, Sweden*).

A new olfactometer is described which possesses the following features: (1) exact and constant concentration of the odorous substances; (2) stimulation under fairly natural conditions, by means of free respiration; (3) possibility of changing the odorous stimulus during the interval between one inspiration and the following one; (4) possibility of performing mono- or bi-rhinal olfactometry, and also homo- or hetero-olfactometry by means of a face piece which separates the two nares; and (5) possibility of performing olfactory and rhinomanometry at the same time. The various pieces of equipment which make up the olfactometer are diagrammatically shown and discussed in detail. The derivation of the equations involved in arriving at the proper mixtures of air and odorous material are also given.

-- APCA Absts-

- 1112 Objective Measurement of Odor. Ionization Detection of Food Volatiles. D. A. M. McKay, D. A. Lang and M. Berdick. Anal. Chem. 33, 1369-1374 (Sept. 1961).

Ionization-type detectors have been used in the measurement of odors. Direct sampling techniques have been evolved in which the same sample of air taken into the nose for sensory evaluation can be described by a pattern of constituents similar to a conventional gas chromatogram. Results were obtained from a variety of foods, beverages, and flavoring materials and related to sensory experience. Ionization detectors are useful in such studies for their discriminating ability as well as their extremely high sensitivity.

-- Authors' abst.

- 1113 Studies on the Analysis of Hydrocarbons from Incinerator Effluents with a Combustible Gas Indicator. M. Feldstein. Am. Ind. Hyg. Assn. J. 22, 286-291 (Aug. 1961).

A combustible gas indicator with a 10 to 1 sensitivity scale has been studied in relation to the measurement of C_2 and higher hydrocarbons from incinerator effluents. Incinerator effluent samples are collected in evacuated stainless steel 34-liter tanks, and the integrated samples analyzed with the combustible gas indicator. The instrument was modified in that the drying agent was replaced with ascarite, and a small diaphragm pump was substituted for the rubber aspirator bulb. Response to carbon monoxide and hydrocarbons was differentiated by

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means of a tube of activated carbon which adsorbed hydrocarbons, but did not adsorb carbon monoxide or methane. The instrument can be used to differentiate between incinerators emitting less than 50 ppm total hydrocarbons, and those emitting higher concentrations of hydrocarbons. Precautions to be observed in the use of the instrument for the measurement of C_2 and higher hydrocarbons are discussed. -- Author's summary

- 1114 The Efficiency of Small Gas Absorbers. S. Calvert and W. Workman.
Am. Ind. Hyg. Assn. J. 22, 318-324 (Aug. 1961).

The factors affecting the efficiency of sampling for vapors by means of bubblers and absorbing solutions are discussed. A mathematical presentation of the theoretical calculations of efficiency, and formulae for practical application of calculations of efficiency are presented. -- Authors' abst.

- 1115 Spectrophotometric Determination of Olefins. A. P. Altshuller and S. F. Sleva.
Anal. Chem. 33, 1413-1420 (Sept. 1961).

Four-carbon and higher molecular weight olefins can be determined quantitatively in the gas and liquid phases by reaction with p-dimethylaminobenzaldehyde in concentrated sulfuric acid, under appropriate conditions, and measurement of the absorbance at 500 millimicrons. With gaseous olefins the absorptivities are such that 0.1 ppm or less can be determined. Interference by formaldehyde and excess aromatic hydrocarbons and phenols is appreciable, and simple methods for their removal are discussed. The method has been applied to the analysis of automobile exhaust and diluted irradiated exhaust mixtures. Liquid olefins have been studied under somewhat different reaction conditions; consequently, the positions, shapes and intensities of the absorption bands differ somewhat. Although the work on liquid olefins was not as extensive as the investigation of olefin gases, the results should have applicability in the identification and analysis of small quantities of liquid olefins. -- Authors' abst.

PREVENTIVE ENGINEERING

- 1116 The Catalytic Treatment of Nitric Acid Plant Tail Gas. H. C. Andersen, W. J. Green and D. R. Steele. Ind. Eng. Chem. 53, 199-204 (Mar. 1961).

Catalytic reduction of NO , NO_2 and O_2 contained in nitric acid plant tail gases was investigated to control an air pollution problem. With platinum or palladium as catalysts, the oxides of nitrogen and oxygen are reduced to a few parts per million at space velocities of 60,000 standard cubic feet per hour per cubic foot of catalyst using any reducing gas in slight excess over the total oxygen. Usable heat is generated in the process. When oxygen in the tail gas is greater than 2.8 to 4.2%, two catalytic stages with intercooling are used to obviate excessive temperatures on the catalyst and vessel. With a fuel deficiency, the process may yield heat with only partial removal of toxic nitrogen oxides. A selective catalytic process for nitrogen oxides removal is described in which NO and NO_2 are reduced by ammonia in slight stoichiometric excess over the oxides but far below the total oxygen equivalence. In most cases, the high cost of ammonia would favor the non-selective process where natural gas or other fuels are available at low cost. -- Public Health Eng. Absts.

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- 1117 Combination Hot Plate and Hood for Multiple Beaker Evaporations. W. B. Harris, E. E. Christofano and M. Lippmann. *Am. Ind. Hyg. Assn. J.* 22, 302-306 (Aug. 1961).

A combination hot plate and hood for beakers is described which effectively capture gases and vapors evolved during wet digestion and evaporation operations. Four-foot long modules accommodating 250, 400, and 600 ml. Griffin form beakers were constructed and installed in the space below the reagent shelf between laboratory benches placed back-to-back. The location minimizes air turbulence, permitting complete control with as little as 15 cfm of air per linear foot of hood. The beakers rest directly on resistance strip heaters with controlled heat output.

-- Authors' abst.

- 1118 Guide to Industrial Ventilation in the Chemical Industry. Problems of Controlling Air Vented from Bins, Weigh Hoppers or Similar Equipment. W. V. Andresen. *Air Eng.* 2, 37-39 (Dec. 1960). (See IHF Abst. No. 919, Sept. 1961).

Where relatively small air volumes are required or are available to control airborne contamination from process equipment and at the same time satisfactory duct velocity must be maintained to provide transport without excessive pressure drop or duct blockage, the navy hood and open tee provide solution to the problem. Duct velocities of 2,000-3,500 fpm can be maintained while exhausting as little as 0.5-1 cfm per cubic foot of equipment volume. Applications to bins, bucket elevators, flakers and filters are described and clearly illustrated. A manifold system is also portrayed.

-- Public Health Eng. Absts.

- 1119 Industrial Ventilation in the Chemical Industry. W. V. Andresen. *Air Eng.* 3, 31-33 (Jan. 1961). (See preceding Abstract and IHD Abst. No. 919, Sept. 1961).

This article is concerned with personnel exposure to gases, mists, and vapors evolved during filter press operations. Two types of filters are used, open (plate and frame) and enclosed. Plate and frame is used for batch operations. Two methods are used for draining the filtrate, open and closed delivery. In open delivery, each plate is equipped with an individual spigot; in closed delivery, the filtrate drains into a common discharge line. Operators may be exposed during press filling, washing, emptying, cleaning, and setting up. Control for presses up to 24 inches square can be realized by a booth type enclosure with a curtain for use during filtration. Control of contaminants from open delivery is by covering the trough and by mechanical exhaust ventilation. A portable hood may be used over the trough during delivery. A canopy hood may be placed over the press without interfering with its operation. Down draft ventilation in conjunction with hood enclosure has been used during cleaning and setting up. Additional ventilation may be required for the container into which the filtrate is transferred.

-- Public Health Eng. Absts.

COMMUNITY AIR HYGIENE

- 1120 The Institute of Research in Industrial Hygiene and in Air Pollution of the University of Montreal. F. J. Tourangeau and K. Kay. *Can. J. Public Health* 52, 227-231 (June 1961).

This Institute was established in May 1960 and was approved by the Quebec Ministry of Health under a federal-provincial agreement. By virtue of this agreement, funds were provided by the Department of National Health and Welfare in order to initiate the project. The plan of the Institute covers a 7- to 10-year period which is to be approached in 2 stages. The first stage provides for a 3-year period of development of industrial hygiene and air pollution research projects in the Institute itself and in existing special departments of the University. This stage would be supported with the assistance of a group of consultants attached to the Institute.

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The directorial and consultant staff would maintain contact with the projects providing public health orientation as required and would initiate, coordinate and evaluate research projects. The Institute would also aid in establishing contacts with industrial organizations and funding agencies and otherwise assist the participating university departments, some of which would be carrying research under a contractual agreement with the Institute. The program of the Institute will cover research and teaching, the latter directed toward undergraduates as well as graduates in science, medicine, nursing, engineering and chemistry to whatever extent would be appropriate. The Institute intends to organize an advisory committee composed in part of representatives of industry. This committee would assist the Institute on the policy which should be adopted in regard to external relations; it would assist the Institute in the orientation of certain procedures so as to be of greatest service and benefit to industry itself.

- 1121 The Estimation of Areas within Isopleths of Dosage Downwind of a Point Source. W. P. Elliott and P. W. Nickola. *Am. Ind. Hyg. Assn. J.* 22, 238-244 (Aug. 1961).

A method is presented for estimating the area enclosed by an isopleth of dosage downwind of a point source in the atmosphere. The method employs an empirical relationship between the area enclosed by a dosage isopleth and the value of the isopleth divided by the source strength and multiplied by the wind speed. The relationship is classified according to atmospheric stability. Comparisons are made between results obtained over short grass (O'Neill, Nebraska) and arid sagebrush vegetation (Hanford, Washington). -- Authors' abst.

- 1122 The Allergic Aspects of Air Pollution: Pulmonary Pathology. P. Gross. *Arch. Environmental Health* 3, 379-386 (Oct. 1961). Reprints available from Industrial Hygiene Foundation upon request.

Pulmonary diseases caused by hypersensitivity have been divided into three categories according to the target tissue involved. These target tissues are: (1) the respiratory passages; (2) the blood vessels, and (3) the alveolar or respiratory membrane. Air pollutants may act on the respiratory passages and on the alveolar membrane, but they have not been known to be concerned in vascular hypersensitivity reactions. Hypersensitivity reactions of the alveolar membrane as such have received little recognition or consideration in the past. The basic reaction of the alveolar membrane to a hypersensitivity mechanism is described and its relation to chronic interstitial pneumonitis is clarified. Farmer's lung and bagassosis are briefly discussed as being probable examples of hypersensitivity reactions of the alveolar membrane, whereas berylliosis, silicosis, sarcoidosis, and Hamman-Rich syndrome are listed as reasonable possibilities of such alveolar membrane hypersensitivity reaction. It is obvious that there is great need for more definitive data on the relationship of hypersensitivity reactions of the alveolar membrane to clinical and experimental disease. -- Author's summary

- 1123 Air Pollution and Chest Disease. P. V. V. Hamill. *Diseases of Chest* 39, 477-484 (May 1961).

Acute smog disasters have made it clear that air pollution can cause disease and death. The subtle effects of everyday air pollution are, however, less well known and present a formidable challenge to medical researchers. Statistical correlations based on morbidity and mortality and on laboratory studies, constitute the 2 main directions taken to determine long-term health effects. Neither approach yields results comparable to those which might be expected from long-term, well controlled, prospective epidemiologic studies from which all variables except the air breathed would be eliminated. A large-scale community health study in Nashville, Tennessee, by the Public Health Service represents the first venture in this field. Morbidity and mortality findings will be correlated with information from an elaborate air sampling network, while other environmental and cultural factors are standardized. But other studies much more elaborate than the Nashville study are needed. In the meantime, the need for refined portable pulmonary function instrumentation and for more accurate definition of the disease spectrum under question (asthma, chronic bronchitis, emphysema) are so crucial as to threaten serious delays. -- APCA Absts.

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- 1124 Air Pollution and Daily Mortality. H. H. Hechter and J. R. Goldsmith.
Am. J. Med. Sci. 241, 581-588 (May 1961).

Analysis has been made of the relationship between various environmental factors and daily cardiac and respiratory deaths in Los Angeles County from 1956 to 1958. It was found that the variables, when studied over time, exhibited a distinct seasonal pattern plus some irregular oscillations. The seasonal component from each series was isolated and removed by the techniques of harmonic analysis. A correlation analysis, adjusting for the autocorrelation remaining in the residuals, indicated that changes in the daily air pollution level, as measured by the oxidant and carbon monoxide concentration, exerted no detectable influence upon the day-to-day mortality pattern. Carbon monoxide levels were found to range from about 7 to 22 ppm and oxidant from 4 to 21 pphm. It is emphasized that these findings, which deal only with the acute terminal response of man to variations in the daily air pollution level, do not mitigate the importance of air pollution as a possible menace to the health and well-being of man.

-- APCA Absts.

- 1125 Air Pollutants and Incidence of Respiratory Disease. F. C. Dohan.
Arch. Environmental Health 3, 387-395 (Oct. 1961).

A high correlation has been found between the mean concentration of "suspended particulate sulfates" in the city air and the incidence rates (mean of 3 years) of respiratory diseases lasting more than 7 days in women working in 5 cities. This would suggest that susceptibility to, or duration of, common viral respiratory infections is increased or that virus viability is enhanced by exposure to the air pollutants measured as sulfates (or to precursors, derivatives, or synergistic combinations). The incidence rates of respiratory disease subgroups and of various nonrespiratory illnesses lend support to this view. Indirect evidence indicates that the age distribution of the populations at risk, conditions at work, and social and climatic factors do not account for the fivefold intercity variation in incidence of respiratory disease.

-- Author's summary

- 1126 The Nashville Air Pollution Study. I. Sulfur Dioxide and Bronchial Asthma. A Preliminary Report. L. D. Zeidberg, R. A. Prindle and E. Landau. Am. Rev. Resp. Dis. 84, 489-503 (Oct. 1961).

A group of 84 patients with bronchial asthma, composed of 49 adults and 35 children, reported 3,647 asthmatic attacks during 27,440 person-days of observation or an over-all attack rate of 0.133 per person-day. In adults the asthmatic attack rate varied directly with the level of sulfation in their residential environment. Attack rates on days with the highest and lowest sulfur dioxide values were significantly different. When the attack rates were shifted over one day to take account of possible delayed effects, the differences were even more significant. The influence of temperature, humidity, and barometric pressure on the asthmatic attack rate could not be demonstrated, but wind velocity showed an inverse relationship. Pulmonary function tests indicated that subjects with a one-second timed vital capacity of less than 50% of the vital capacity had significantly higher attack rates than patients with more than 75% function.

-- Authors' summary

- 1127 Woods as a Natural Barrier Against Air Pollution in Areas of Concentrated Industrialization and Urbanization. D. Weisser. Wasser Luft u. Betrieb 5, 96-98 (Mar. 1961). German.
(Wasser Luft u. Betrieb, Krausskopf-Verlag, Wiesbaden, Germany*).

Woods and parks have an exceptional position in the control of contamination of the air. The filtering effect of foliage and needles reduces dust and detoxicates the air of the industrial waste gases by causing turbulence and deviation of the airflow. The air in a wooded area is a decisive factor in the oxygen-carbon dioxide cycle which is indispensable for the welfare of man, animals, and plants. Such a wooded area feeds a continuing stream of fresh air, with a high percentage of oxygen, into the air dome pressing upon the concentrated areas of

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industrialization and urbanization. On the other hand, the woods themselves are subject to the influence of noxious emissions from industrial areas. Conifers have been found to be more susceptible to toxic emissions than are deciduous trees. Therefore, there has been a trend for some to change to the deciduous types in those trees making up such a wooded area.

-- APCA Absts.

- 1128 Photochemical Reaction Products in Air Pollution. E. F. Darley, et al.
Intern. J. Air and Water Poll. 4, 79-100 (June 1961). (Formerly International Journal of Air Pollution).

When low concentrations of simple olefins and nitrogen oxides in air are irradiated with artificial sunlight, the olefin molecule splits at the double bond. One end forms a carbonyl compound, and the other yields a variety of products. Among these is a highly oxidized, unstable organic nitrogen compound previously described as compound X or peroxyacetyl nitrite and detected in polluted atmospheres. This compound has now been purified by gas chromatographic techniques, and its chemical, physical, and physiological properties have been examined. At concentrations well below 1 ppm in air, this compound produced damage symptoms on plants, similar to those observed from oxidant air pollution but different in some respects from the phytotoxicant from ozone-olefin reactions. Peroxyacetyl nitrite is the first pure compound isolated from photochemical reaction mixtures which has been found to produce the characteristic oxidant damage symptoms. It is also a strong eye irritant at concentrations in the 1 ppm range and is, therefore, probably responsible, along with acrolein and formaldehyde, for the eye irritation in photochemical air pollution.

-- Public Health Eng. Absts.

- 1129 Collecting Unburnt Gases from Oxygen Converters. M. Allard, P. Vayssiere and G. Namy.
J. Metals 13, 421-424 (June 1961). (Journal of Metals, 345 E. 47th St., New York 17, N.Y.*).

Pilot plant tests on the recovery of refining gases without combustion during oxygen steelmaking are described. In the refining of hot metal in top blown oxygen converters, the gases, composed principally of carbon monoxide, are usually burned in the hood with air and then cooled. Before releasing these gases into the atmosphere, it is necessary to remove the finely divided iron oxide particles. An industrial installation is being built on three, 140-ton converters under construction at the Dunkirk steel plant in France, and other installations are being planned. These techniques present the advantage of lower cost, both of investment and operation for the dust collecting installation as well as the possibility of recovering a gas of caloric value.

-- Cond. from APCA Absts.

MANAGEMENT ASPECTS

- 1130 Mental Health in Industrial Practice. (2) Early Detection of Emotional Disorder. J. A. Knight and V. C. Baird. J. Occ. Med. 3, 412-416 (Sept. 1961).

The purpose of this discussion has been to highlight a few areas where emotional problems find a fertile soil for growth in both worker and management. A few of these problem areas are unique to industry, but others are of a more general nature and can be seen in any setting. Though medicine has regimens of treatment for diseases in all stages, it has taken the greatest pride in the programs which prevent illness or at least detect it in its earliest stages where treatment is not complex. The physician working in industry, through his pre-placement and periodic examinations and his ready availability to the employees at all times, is in a key position for prevention and early detection of both physical and emotional disorders.

-- Authors' conclusions

* Address not in current List of Periodicals.

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- 1131 Evaluation of Occupational Disease Reporting in California. Beth M. Berkov, et al.
J. Occ. Med. 3, 449-456 (Oct. 1961).

The findings of the evaluation study indicate that the doctor's first report of occupational disease usually contains all the information he has on the case. He does not gain much further information upon revisits by the patient, although more than two-thirds of the patients do return. Aside from the 6% of the cases later judged to be not work-connected, little additional information on the circumstances of the case was obtained on follow-up. Prior to the evaluation study, no objective measure was available as to either the accuracy or the completeness of doctor reports of occupational diseases. It can now be concluded that within the limitations of the study no large areas of inaccuracy or incompleteness were revealed. Statistics of occupational diseases in California, based on the doctor's first report of work injury, can be regarded as reasonably valid and the best available. Insofar as occupational disease cases are recognized and reported, it can also be assumed that the doctor's first reports provide worth-while clues to potential health problems in industry for use in programs of prevention and control of occupational diseases.

-- Authors' conclusions

ACCIDENTS AND PREVENTION

- 1132 Electricity—Good and Faithful Servant. C. F. Dalziel.
Natl. Safety News 84, 28, 29, 76, 78, 80, 82, 84 (Sept. 1961).

The reliability of modern electric appliances and machines may be lulling industry and the public into a false sense of security from shock hazards. Such a situation needs correction. The author summarizes the lethal effects of electric shock as follows: (1) If long continued, currents which "freeze" a person to an energized conductor may produce collapse, unconsciousness, and death. (2) Currents flowing through the chest, the head, or nerve centers controlling breathing may produce respiratory inhibition. Respiratory inhibition is dangerous because paralysis of the respiratory organs may last for a considerable period even after interruption of the current, and an approved method of artificial resuscitation must be applied promptly to prevent suffocation. (3) Ventricular fibrillation is caused by moderately small currents which product derangement of the heart action rather than physical damage to that vital organ. When fibrillation occurs, the rhythmic pumping action of the heart ceases and death usually follows in a few minutes. (4) Heart standstill may be caused by relatively high currents. (5) Relatively high currents may produce fatal damage to the central nervous system. (6) Relatively high currents may produce deep burns, and currents sufficient to materially raise body temperature produce immediate death. (7) Victims who have been revived sometimes die suddenly for no apparent reason. This is thought to be due to: aggravation of pre-existing conditions; hemorrhages affecting vital centers; or the effects of shock to the system. Delayed death may also be due to burns or other complications.

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MISCELLANEOUS

- 1133 Handling Plating Wastes by Integrated Treatment. Anon.
Wastes Eng. 32, 244, 255 (May 1961).

In a plating process, parts are immersed in a plating bath, removed with adhering liquid called dragout, rinsed, and dried. Rinse liquids have to be treated prior to disposal. In a proposed integrated system, the parts are removed from the plating bath, and, together with the dragout, immersed in a treatment wash tank. The treatment wash solution is constantly recirculated through the wash tank and a larger reservoir. The reservoir acts as: (1) a buffering tank which neutralizes the effect of shock loads; (2) a clarifier for settling out insoluble metal hydroxides and oxides; and (3) as a retention tank for the second stage of the reaction, oxidation of the cyanate to carbon dioxide and nitrogen. Chlorine gas is added to the recirculated flow by passing supernatant from the reservoir through the chlorinator ejector. Caustic is added by a metering pump to maintain a pH of 10 to 11. Chlorine feed is set to maintain a 300 to 500 ppm of available chlorine. Following treatment, plated parts are washed in a fresh water rinse. The effluent from this tank has no toxic dragout and needs no treatment. The treatment solution has to be discarded every 2 to 4 months into a lagoon.

-- Public Health Eng. Absts.

- 1134 Finding the Best Way to Treat Wastes from a Blanket Mill. A. L. Smith, J. Layell and J. C. Grey. Wastes Eng. 32, 230-233, 257 (May 1961).

A study of methods of textile wastes disposal has led to the development of a high-rate, extremely flexible plant. Four years of research work was conducted to determine the most economical and feasible method for treating textile wastes. Investigation of the simplest type of treatment to high-rate biological treatment was carried out.

-- Public Health Eng. Absts.

- 1135 From Wings to "Wastes". F. A. Sanders. Wastes Eng. 32, 180-183 (Apr. 1961).

Industrial wastes produced at principal air force bases are oil wastes, chromium and other toxic metal wastes, cyanides, acids and alkalis, organic solvents and phenol compounds, rocket propellants, and radioactive wastes. Disposal ranges from mere burying, lagooning, burning or diluting to full scale treatment processes. A description is given of the units in operation at nine air force bases for the treatment and disposal of various combinations of the industrial wastes listed above.

-- Public Health Eng. Absts.

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