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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

APRIL, 1967

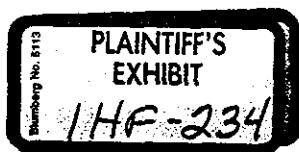
(Vol. 31, No. 4)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE •• PITTSBURGH, PA. 15213

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IN RE: ALBRI, AMIS
November 1967

INDEX: ABSTRACTS

November 1992

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Industrial Hygiene Foundation assumes no responsibility for statements in articles abstracted in this Digest or for material from other organizations which may be sent to members from time to time. The Digest's condensation of articles as well as literature not originating within the foundation, are made available to our members solely for their information, by way of keeping them posted on developments.

MHBB-0020115

INDUSTRIAL HYGIENE FEATURES

Long-range implications for occupational medicine are discussed in Abst. No. 337.

Abst. No. 339 is concerned with shear injuries of the brain.

Vital hepatitis among American missionaries abroad is investigated by Abst. No. 344.

See Abst. No. 346 for absenteeism experience in a group of employed diabetics.

Abst. No. 353 reports on garden fertilizers as a source of salmonellae.

Abst. No. 366 discusses acute cadmium fume poisoning in welders.

Abst. No. 367 describes a radiotracer method for the determination of cadmium.

Abst. No. 370 examines the effects on experimental animals on long-term inhalation exposure to mineral spirits.

Information on dimethyl sulfoxide and experimental oral carcinogenesis in the hamster pouch is given in Abst. No. 377.

Details concerning corneal damage in hydroquinone workers are presented in Abst. No. 378.

Consult Abst. No. 385 for clinical and x-ray studies on the incidence of pneumoconiosis among carbon electrode makers.

Current data on the life span of radiologists are given in Abst. No. 389.

Abst. No. 394 investigates analysis for exhaust gas hydrocarbons.

Abst. No. 398 reports on the safe handling of perchloric acid.

Fume control in the rubber industry is examined in Abst. No. 407.

Details regarding fuel oil additives for controlling air contaminant emissions are discussed in Abst. No. 413.

FOUNDATION FACTS

MEETINGS: An informal seminar on "Asbestos Bioeffects Research" was held by IHF at Mellon Institute on April 17 on the occasion of a visit by several outstanding scientists from England and France. Dr. Andre Collet of the Centre de'Etudes et Recherches des Charbonnages de France presented a summary of his recent electron microscope findings in the field of pulmonary pathology; Dr. John M. G. Davis of the University of Cambridge Department of Pathology, England spoke on Electronmicroscopy of Human Mesotheliomas and Uptake of Asbestos Dust by Lung Macrophages in Organ Culture; Dr. John Knox, Consultant for Turner Brothers Asbestos Company of England discussed British Experience with Lung Cancer Since 1930 Based on Sequential Epidemiological Studies of Asbestos Workers; and Dr. Paul Gross, Director of IHF's Research Laboratory, reported progress in the Foundation's laboratory in experimental production of Lung Cancer and Pleural Mesothelioma in Animals. Other participants were Dr. G. A. Webb, IHF Trustee and Mellon Institute's Director of Administration, and Dr. Robert T. P. deTreville, Managing Director of the Foundation.

STAFF ACTIVITIES: At the invitation of Dr. J. Sataloff, noted hearing conservationist, (see Industrial Hygiene Digest 30: 9, p. 3, Sept. 1966) Dr. deTreville attended a conference on Medical Legal Aspects of Occupational Deafness in Pennsylvania in Philadelphia, April 3, at which Senator Weiner discussed proposed Senate Bill 301. This bill appears inferior to Senate Bill 170, which failed to pass in 1963. A major weakness in Hearing Compensation is inability to properly define normality. Industry should help develop needed information, but meanwhile should carefully consider legislation presently proposed. Copies may be obtained by members through IHF. Drs. deTreville and Gross attended the American Industrial Health Conference in New York, April 12, at which Dr. Gross was honored (see page i). Dr. deTreville also attended the National Congress on Environmental Health Management Conference in New York, April 24-26.

NEW REPRINT AVAILABLE UPON REQUEST: "Lignite and the Derived Steam-Activated Carbon," Paul Gross and Carl A. Nau. Arch. Environmental Health 14, 450-460 (March 1967).

ENCLOSURE: The First Quarterly Report -- 1967 will be found attached to this issue of the Digest.

THE 32nd ANNUAL MEETING will be held October 10-11 at Chatham Center, Pittsburgh, Pa.

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INDUSTRIAL HYGIENE

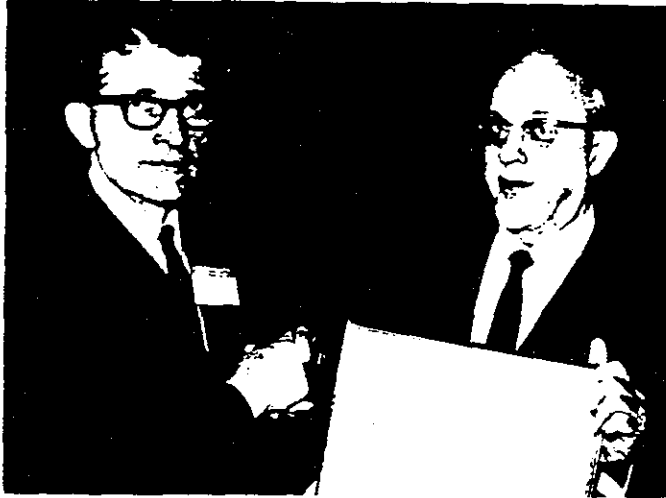
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Dr. Paul Gross,
 Director, IHF Research Laboratory
 Honored at
 American Industrial Health Conference

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Dr. Paul Gross (right) was given the Adolph G. Kammer Merit in Authorship Award at the Industrial Medical Association's 52nd Annual Meeting held in New York City, April, 1967. The presentation was made by Dr. David Minard, Chairman, Department of Occupational Health, Graduate School of Public Health, University of Pittsburgh.

The award was given to Dr. Gross for his paper "Alveolar Clearance: Its Relation to Lesions of the Respiratory Bronchiole," published in the July, 1966 issue of the American Review of Respiratory Diseases. The article was judged by the Association's Committee on Merit in Authorship to be the best publication in the field of occupational health during the period from September 1, 1965 to August 31, 1966.

Dr. Gross, who also is Adjunct Professor of Pathology of Occupational Diseases at the University of Pittsburgh's Graduate School of Public Health, attracted attention in 1964 for his successful production of emphysema in laboratory animals using an enzyme, papain, injected into the trachea. His technique is now used internationally for purposes of production of emphysema experimentally and offers an important laboratory model to help study, and, hopefully, to prevent emphysema, an important disease of our general population.

Dr. Gross' other studies include differentiating respirable substances which are harmful from those which are inert when inhaled. His studies have alerted industry to possible health hazards and allowed unnumbered thousands of employees in industry to be protected from industrial dusts, gases, vapors and mists having potential to produce lung damage.

His affiliation with IHF began in 1948. He is a member of the Industrial Medical Association and numerous other professional societies in the fields of pathology, bacteriology, chemistry and biology. He has authored 150 scientific articles and is co-author of several texts.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

316 Information Wanted.

A number of substances have been recommended to the Committee on Threshold Limits of the American Conference of Governmental Hygienists as suitable candidates for TLV listings. At the present time, however, the Committee does not have adequate data for assigning a tentative limit. Pertinent toxicological information is being sought on: boron tribromide; carbon tetrabromide; cyclohexane-tetramethanol; diethylenetriamine; dimethyl sulfoxide; dinitrosopentamethylene tetramine; methylene dianiline; nitrosyl fluoride; silanes; silicon cupride, and xylene hexafluoride. Technical data on these materials should be addressed either to Dr. Herbert Stokinger, U. S. Public Health Service, 1014 Broadway, Cincinnati, Ohio 45202; or to Repository of Anonymous Occupational Health Data, c/o Dr. R. T. P. deTreville, Industrial Hygiene Foundation, 4400 Fifth Avenue, Pittsburgh, Pa. 15213. -- Safety Maint. 133, 10 (March, 1967)

317 "Daddario Report".

The much discussed "Environmental Pollution—A Challenge to Science and Technology," the title of the just issued "Daddario Report" has considerable current appeal, especially to air pollution technologists. Almost every technical journal has given a paragraph or more to this very appealing report excellently prepared by Richard A. Carpenter, senior specialist in science and technology, Science Policy Research Division of the Library of Congress. The report's 12 conclusions are listed and recommendations in the report are given in summary form. The Daddario Report will serve a very useful purpose by pointing out: (1) that we do not now have the answers to some critical pollution questions, and (2) that the great need is for a "systems" approach to the total field of pollution control rather than a piece-meal attack upon sometimes unrelated aspects.

--J. Air Poll. Control Assn. 16, 650 (Dec. 1966)

(See Transactions of 31st Annual Meeting—talk by Wilbur A. Steger, President, CONSAD Research Corporation, "Industrial Hygiene Program Budgeting.") --RTPdT.

318 Highway Safety Guidelines Issued.

The federal government issued guidelines for state highway safety programs, including emergency medical services. The proposed guidelines are part of the highway safety agency's program to bring uniformity out of state regulations. The proposed guidelines include: Each state must re-examine drivers at least once every four years and more frequently with drivers under 25 or over 65. State health departments should employ full time persons to work on emergency care for accident victims—National uniformity on signs, signals and highway markings—Motorcycle drivers must wear helmets—Inspection of autos at least annually for all cars—Cars involved in wrecks also must be inspected before being allowed to be driven—Driver training programs available to all high school students. States will be given a 30-day period to make comments on the proposals which will be issued in final form later this year.

-- AMA News 10, 12 (March 6, 1967)

319 Medical Radiation Dosage Called Safe.

The average patient need not be concerned over the annual amount of radiation dosage to reproductive organs from medical procedures, according to a U. S. Public Health Service study. Americans received an average annual radiation dosage of 55 millirads (55/1,000 of a rad, or unit of absorbed radiation) as a result of exposure involved in medical diagnostic examinations in 1964, according to the study. Russell H. Morgan, M. D., Chief Radiologist at Johns Hopkins University and chairman of the PHS Surgeon General's National Advisory Committee on Radiation, said the figure is lower than most previous estimates.

-- AMA News 10, 6 (March 6, 1967)

320 Drug Prices.

Drug prices have not contributed significantly to recent rises in the cost of medical care, but drug prices are higher than they would be if there were more vigorous price competition at the manufacturing or drugstore level. This is one of the conclusions of a study of the price of medical care made by the Department of Health, Education, and Welfare (HEW). There was no appreciable change in the drug component of the Consumer Price Index during the six-year period ending December 1966. However, the HEW report charges that doctors often prescribe high-cost

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brand-name products when an equivalent generic-name drug is available. Unfortunately, prescribing generically does not always bring the lowest cost. Druggists, with profit based on mark-up, do not always offer the lowest priced generic drug.

-- Chem. Eng. News 45, 41 (March 13, 1967)

321 Prostate Cancer.

Zinc-69m may be used to detect human prostate cancer. At Walter Reed Hospital in Washington, D. C., the radioactive tracer (14-hour half-life) is used with a scintiscan, a device used to locate radioactivity precisely, in a procedure similar to that used to detect thyroid gland tumors using iodine-131. Differences in concentrations of Zn-69m in cancerous tissue and in normal tissue are revealed by the scan. Zinc-69m is prepared at the isotopes development center at Oak Ridge National Laboratory, operated by Union Carbide for the Atomic Energy Commission.

-- Chem. Eng. News 45, 45 (March 20, 1967)

322 Lung Disease.

The New York City Health Department reported that deaths from chronic bronchitis and emphysema have increased by 700% in the last 15 years.

-- AMA News 10, 2 (March 6, 1967)

323 Glaze in Mexico Blamed for Stomach Ailments.

Lead used in the glazing of brown earthenware dishes is causing chronic gastrointestinal ailments in Southern Mexico, the Public Health Ministry has disclosed. Ministry officials said scientists from Los Alamos, New Mexico, who tested dishes made in Tonalá, Chiapas, had found that the glaze contained enough soluble lead to affect the health of users.

-- Medical News 1, No. 11, 16 (March 13, 1967)

324 Fly Ash.

Fly ash disposal costs may threaten coal's use as a primary fuel in electrical power production, C. E. Brackett of Southern Electricity Generating Company, Birmingham, Alabama, told the First International Symposium on Fly Ash Utilization, held recently in Pittsburgh, Pa. The symposium, cosponsored by Edison Electric Institute, National Coal Association, and the Bureau of Mines, spotlighted possible commercial uses for fly ash. Already used in such projects as highways and dams, fly ash also has many possible applications in the chemical and construction industries, Mr. Brackett suggests. Unless such uses are found, disposal costs, presently 50 cents to \$2.00 per ton, could become a dominant item in coal power plant costs.

-- Chem. Eng. News 45, 53 (March 20, 1967)

325 Bricks From Fly Ash.

Bricks made from fly ash at the University of West Virginia under an Office of Coal Research contract are equal or superior in quality to conventional bricks and are lighter in weight, according to George Furnich, Jr., U. S. Office of Coal Research director. A utility using 1.5 million tons of coal annually would produce enough fly ash for 60 million bricks per year, he said. Priced at \$55 per thousand, a gross profit of \$24.48 per thousand could be anticipated, indicating a fly ash brick plant "payout" time of about 14 months. Fly ash concrete is now being produced by commercial interests for construction purposes. Fly ash, with its fine fines, reduces porosity caused by honeycombs and combines chemically with free lime to produce concrete that is more water-tight and less subject to cracking than conventional concrete, it is claimed.

-- Air Eng. 9, 12 (March, 1967)

326 U. S. Population.

The Census Bureau said the population of the United States as of January 1 was approximately 197,982,000, about 10% above the 180 million counted in the 1960 census. The Bureau said the figure includes service men overseas, and added that the population probably will reach the 200 million mark by late this year or early next year.

-- AMA News 10, 1 (March 6, 1967)

327 American Industrial Hygiene Conference (AIHC).

Sponsored by the American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists, the AIHC will meet May 1-5, 1967 in the Pick-Congress Hotel, Chicago, Illinois. In addition to the technical program, another educational and informational facet of the meeting is the presentation of commercial and scientific exhibits. These exhibits have been selected with great care to include only those of interest to industrial hygienists.

328 Gordon Conferences.

The 1967 Gordon Research Conferences to be held at five schools in New Hampshire, June 12 to September 1, and at Crystal Inn, Crystal Mountain, Washington, July 3 to August 18, will feature an informal type of meeting with scheduled speakers and discussion groups. Sessions will be held morning and evening, Monday through Friday, with afternoons free for recreation, reading, or group participation. Attendance at the conferences is by application. Requests for applications or for additional information should be addressed to Dr. W. George Parks, Director, Gordon Research Conferences, University of Rhode Island, Kingston, R. I. 02881. After June 12, until September, Dr. Parks will be at Colby Junior College, New London, N. H. 03257. The complete program of the conferences appears in Science for March 10.

-- Chem. Eng. News 45, 68 (March 13, 1967)

COMING EVENTS

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|-----|---------------|---|
| 329 | May 1 | American Society for Clinical Investigation, Atlantic City, N. J. |
| | May 1- 5 | American Industrial Hygiene Association, Annual Meeting, Chicago, Ill. |
| | May 2 | Society of Cosmetic Chemists, Semiannual Meeting, New York, N. Y. |
| | May 2- 4 | 22nd Purdue Industrial Waste Conference, Purdue University, Lafayette, Ind. |
| | May 2- 5 | New York Academy of Sciences, Conference on Biological Effects of Pesticides, New York, N. Y. |
| | May 3 | American Cancer Society, Inc. ("Current Concepts in Etiology and Diagnosis of Cancer"), Dallas, Tex. |
| | May 3- 4 | 4th Annual National Colloquium on Information Retrieval, Philadelphia, Pa. |
| | May 3- 6 | 6th Rare Earth Conference, Air Force Office of Scientific Research and ORNL, Gatlinburg, Tenn. |
| | May 6 | American College of Psychiatrists, Annual Meeting, Detroit, Mich. |
| | May 7-10 | American Oil Chemists' Society, Annual Meeting, New Orleans, La. |
| | May 7-11 | Radiation Research Society, 15th Annual Meeting, San Juan, P. R. |
| | May 14-19 | Institute of Food Technologists, 27th Annual Meeting and Industrial and Technical Exhibit, Minneapolis, Minn. |
| | May 15-16 | Air Resource Management. Three-State Conference, New York, N. Y. |
| | May 15-17 | American Petroleum Institute, API Division of Refining, Midyear Meeting, Los Angeles, Calif. |
| | May 15-17 | Symposium on Diagnosis and Treatment of Deposited Radionuclides, Richland, Wash. |
| | May 15-18 | American Association for Contamination Control, 6th Annual Technical Meeting and Exhibit, Washington, D. C. |
| | May 15-18 | Society for Applied Spectroscopy, 18th Annual Mid-America Symposium on Spectroscopy, Chicago, Ill. |
| | May 15-19 | National Fire Protection Association, Annual Meeting, Boston, Mass. |
| | May 21-24 | American Institute of Chemical Engineers, 62nd National Meeting, Salt Lake City, Utah |
| | May 21-24 | American Thoracic Society, Pittsburgh, Pa. |
| | May 25-26 | Drug Information Association, Philadelphia, Pa. |
| | May 28-June 1 | American Dermatological Association, Colorado Springs, Colo. |
| | May 28-June 1 | Special Libraries Association, 58th Annual Convention, New York, N. Y. |
| | May 29-31 | American Ophthalmological Society, Hot Springs, Va. |
| | May 29-June 2 | American Urological Association, New York, N. Y. |

LEGAL DEVELOPMENTS

330 Fluoridation Enjoined.

A trial court erred in refusing to issue an order enjoining the city from fluoridating the city's water supply, the Indiana Supreme Court has ruled in a suit brought by taxpayers. The city council had never enacted an ordinance authorizing fluoridation and regulations provide that if no particular method is specified for the program, the city council shall provide, by ordinance, for the exercise of the power. The court ruled that only the city council had the power to provide for fluoridation of the city water supply and since the council had not exercised that power, no authority existed for the fluoridation. (Miller v. City of Evansville, 219 N.E. 2d 900 (Ind.)).

-- AMA News 10, 9 (Feb. 6, 1967)

331 DDT Residues in Milk.

The Food and Drug Administration (FDA) recently proposed to abolish zero tolerance for DDT residues in milk and milk products. Under the proposed rule, the FDA would permit residues of DDT of up to 0.05 ppm in whole milk and up to 1.25 ppm on a milk-fat basis in manufactured dairy products. These maximum levels apply to DDT, its degradation products DDD and DDE, or any combination of the three. The tolerance limits are based on the recommendations of an advisory committee nominated by the National Academy of Sciences. The proposed tolerances do not alter existing rules on DDT use. FDA will receive comments on the proposal until April 14.

-- Chem. Eng. News 45, 35 (March 20, 1967)

BOOKS, PAMPHLETS, AND NOTICES

- 332 Nursing Evaluation: The Problem and the Process—The Critical Incident Technique. Grace Fivars and Doris Gosnell. AVAILABLE FROM: The MacMillan Company, 60 Fifth Avenue, New York, N.Y. 10011. 228 pp. (1966). PRICE: Not Given.

The fundamental purpose of this book is to present information about an empirical method for evaluating nursing behavior. Recent actions by national agencies in establishing standards for nursing services have lent impetus to the search for appropriate measures for evaluating nursing care. Procedures for measuring educational outcomes have been adapted from other fields, but these assess academic achievement only; they do not cover performance in clinical areas. Until recently there were no objective procedures for evaluating nursing behavior. The book is intended primarily as a text and a reference for instructors and others interested in nursing. Educators and those responsible for nursing service administration should find it a valuable resource. It should also serve as a reference for graduate students and clinical specialists who will eventually be responsible for evaluating nursing personnel.

-- Cond. from Preface

- 333 Pneumoconiosis Research Unit. South African Council for Scientific and Industrial Research. Ninth Annual Report for Year Ending March 31, 1965. AVAILABLE FROM: Pneumoconiosis Research Unit, P. O. Box 4788, Johannesburg, South Africa. Various pp. (mimeographed). PRICE: Not Given.

This Council for Scientific and Industrial Research report summarizes a general program in research performed in 1964-5 by the Pneumoconiosis Research Unit. It lists studies on pathology, mechanisms of action and prevention of pneumoconioses, particularly regarding silica and asbestos bioeffects. The report is the first of two Annual Report Sections. The second is to appear later in the year in a form suitable for publication in scientific journals and will be distributed to research institutions and certain medical journals automatically.

- 334 Official FDA Tolerances. NAC News and Pesticide Review 25:3. 23 pp. (February, 1967) AVAILABLE FROM: National Agricultural Chemicals Association, 1155 15th Street, N.W., Washington, D. C. 20005. Copies of this issue of NAC News are available as long as supplies permit at 30 cents per copy, postpaid, with a minimum order of four copies. Include remittance with order.

This issue of NAC News and Pesticide Review is the 13th annual revision of the official FDA tolerance for pesticides, listed by crop categories. Incorporated are all of the changes, additions, or deletions that have been officially announced from the time the Miller Pesticide Residue Amendment was enacted into law in 1954, up to and including December 31, 1966. Also included in this issue are lists of (1) tolerances established under the Food Additives Amendment, (2) common, chemical and/or trade names of pesticides and (3) inert ingredients which are exempt from the requirements of a tolerance. This issue provides a ready (and fairly up to date) reference for those with uses for such information without the necessity of continually referring to the Federal Register from which the list was compiled. Since the Federal Register is, however, the official means of communication for such information, the issue cannot serve in lieu of the Federal Register in cases of error.

- 335 Chemical Detection of Gaseous Pollutants. An Annotated Bibliography. W. E. Ruch, Editor. AVAILABLE FROM: Ann Arbor Science Publishers, Inc., 6400 Jackson Road, P. O. Box 1425, Ann Arbor, Mich. 48106. iv + 180 pp. (1966). PRICE: Not Given.

Recommendations for occupational environmental hazard control often depend on measurement of airborne contaminants. For practical and economic reasons, simple, reliable indicators for routine measurements are sought. Even so-called "standard" methods of analysis may require

elaborate laboratory equipment and days of waiting for results. The industrial hygienist often needs answers more quickly: if there is a definite concentration of contaminant in the air is the air "safe" or "unsafe"? Levels of contamination must be interpreted for the given situation and for the analytical technique. If a "zero" reading is obtained, either there is an absence of the contaminant or the level is below the sensitivity of the procedure, and for safety the sensitivity must be adequate to measure levels considered "safe". It is difficult to define the concentration of a contaminant which is "safe". What level of contaminant in air is "unsafe" is left, in most cases, to the interpretation of the industrial hygienist, even though there are guides for his use. Because the industrial hygienist wants to know immediately whether the air contamination level is within "safe" limits, many industrial hygiene organizations use "field detectors." The designers of field detectors and field detector kits are rapidly eliminating many of the errors of the past and are making it possible to estimate the concentration of a contaminant with remarkable accuracy. The Bureau of Standards, the U. S. Bureau of Mines and other government agencies have contributed to this development. Chemical detectors for the detection and estimation of airborne contaminants may be invaluable to the industrial hygienist. Although chemical detectors are used chiefly for gases and vapors, they also may be applied to mists and fumes. Determinations of particulate matter generally are limited to the darkening of a white surface or to some other reflective measurement. Most detectors are only semi-quantitative. Their accuracy depends largely on their preparation and on the care with which the given type of instrument is standardized. Because all detector procedures depend on personal observations by the operator, human error influences the final result. Factors which influence the sensitivity and accuracy of a detector are listed in the introduction to this Annotated Bibliography. The first section, which covers reviews and a bibliography on the general subject, contains 133 items (last of which is the paper by M. B. LaNier and H. L. Kusnetz presented at the 27th Annual Meeting of the Industrial Hygiene Foundation on "Practices in the Field Use of Detector Tubes" (Arch. Environmental Health 6, 418-21, 1963)). Section 2, which lists available detectors by chemical compound, includes 154 items. This should be a useful desk reference for all those who are called upon to perform and/or interpret results of industrial hygiene surveys of atmospheric pollutants.

--RTPdeT

INDUSTRIAL MEDICAL PRACTICE

- 336 Contaminated Areas in Operating Theaters. P. J. Froud, V. G. Alder, and W. A. Gillespie. *Lancet* 2, 961-963 (Oct. 29, 1966).

Saline-solution-moistened swabs from 21 different sites in the theater, sterilizing room, scrub room, and corridor were inoculated onto nutrient agar, incubated, and counted. Horizontal surfaces were heavily contaminated, the worst being the upper surfaces of the operating lamps. Three references are given.

-- Public Health Eng. Absts.

- 337 Long-Range Implications for Occupational Medicine. Christine Einert. *J. Occ. Med.* 8, 637-640 (Dec. 1966)

Trends in the future of employment are outlined and needs depicted, suggesting that long-range implications of management, labor, government, and the health professions, including medicine, focus on the occupational medical specialist as the keystone for understanding and maintaining the health of the work force. This physician's contribution is presently based on experience and judgment; but management, labor, and government are demanding facts, cost accounting, and other practices common to precise business methods in evaluating health benefits. Tomorrow's occupational health specialist and consultant must meet these objectives by using new techniques and the available government assistance, and by involving today's management, labor force, and many different professions in coordinated teamwork, to obtain accurate objective data on health at work. Only thus can we maintain the health and productivity of the working population. Increasingly, on this population group depends the total health of our total population. Dr. J. W. Norton, Commissioner of Health for North Carolina, has coined the word "mesiatric" medicine for care of the population of working age, as contrasted with pediatric and geriatric medicine. The author believes that the future of mesiatric medicine lies with the growing insight, persuasion, teamwork, and knowledge of the specialist in occupational medicine.

-- Author's Summary

- 338 Adrenocortical Function in Alcoholics. H. W. Margraf, et al. *J. Surg. Res.* 7, 55-62 (Feb. 1967).

Fifty alcoholic patients were studied. The experimental evidence permits a number of conclusions: Adrenal cortical function in the alcoholic patient is essentially "normal"; the significantly

decreased excretion of certain cortisol metabolites, i. e., "Porter-Silber chromogens," is noteworthy; basal plasma cortisol levels are significantly elevated in the alcoholic patient; plasma levels of corticosterone are likewise significantly higher; responsiveness of the alcoholic patients to standard ACTH stimulation was diminished; a diminished adrenocortical response to moderate operative trauma was observed in the alcoholic patients. Some of the physiological abnormalities manifested by chronic alcoholics may be related to the rate with which certain definite chemical transformations of the steroid molecules are brought about in the body rather than to deficits of concentration. Alterations in steroid metabolism and not adrenal cortical function are important accompaniments of chronic alcoholism.

-- J. Am. Med. Assn. References & Reviews

- 339 Shear Injuries of the Brain. S. J. Peerless and N. B. Rewcastle.
Can. Med. Assn. J. 96, 577-582 (March 11, 1967).

A blow to the head will impart rotational velocity to the brain and, depending on its magnitude, will produce effects ranging from concussion to profound neurological dysfunction. Resultant shear strains distort and rupture axons, blood vessels and major fiber tracts. Thirty-seven patients with head injury that was not complicated by significant hemorrhage or superficial laceration of the brain had coma or severe dementia, spastic quadriparesis, incontinence and autonomic dysfunction. The patients survived 24 hours to 243 days. Gross pathological examination revealed little, but there was microscopic evidence of axonal and small vessel injury in all; this was localized to the basal and mid-sagittal areas of the diencephalon and mesencephalon, particularly in those less severely injured. Such changes represent the basic pathology of all head injury. Data from this study suggest that concussion depends upon varying degrees of damage to the axon as well as the neuron. The current definition of concussion—immediate loss of consciousness with rapid and complete recovery of cerebral function—should not exclude the fact that a small number of neurons may have been permanently disconnected or have perished. There are 18 references.

-- Authors' abstr.

- 340 Use of Reflected Ultrasound in Detecting Pericardial Effusion. H. Feigenbaum, A. Zaky, and J. A. Waldhausen. Am. J. Cardiol. 19, 84-90 (Jan. 1967).

Reflected ultrasound offers another diagnostic aid in the evaluation of possible pericardial effusion. With its ability to detect interfaces between liquid and solid, this ultrasound technique makes it possible to demonstrate pericardial fluid both anterior and posterior to the heart. Sound waves travel poorly through air; therefore, the hyperinflated lung tissue associated with pulmonary emphysema seriously interferes with recording ultrasound echoes from the heart. Both false positive and false negative results have been obtained. Despite these problems, the clinical experience with this technique thus far has been very good.

-- J. Am. Med. Assn. References & Reviews

- 341 Metal Shifts as Early Indicators of Response From Low-Grade Pulmonary Irritation. J. R. Dixon, et al. Toxicol. & Appl. Pharmacol. 9, 225-233 (Sept. 1966).

The present work provides preliminary data on reduction of lung and liver glutathione and on the shift of copper, molybdenum, and zinc in the lungs of rats given short, low-grade exposures of ozone. Similar measurements were made in work-stressed rats, to ascertain whether metal shifts resulted from nonspecific stress as well as specific stress induced by ozone exposure. If confirmed, these findings may be early indicators of the injury process from pulmonary irritants and lead to new insight into the mechanism of edemagenesis. There are 13 references.

-- Public Health Eng. Abstrs.

- 342 Epidemiologic Aspects of Cholera El Tor. M. E. Goldman. J. Occ. Med. 8, 645-647 (Dec. 1966).

Vibrio El Tor has been overshadowing the more familiar Vibrio cholerae as a threat to a large segment of the world population. Studies involving over a half-million subjects have dramatized the severe limitations of vaccines presently available. Efforts are being made to improve the vaccine and to raise the levels of environmental sanitation. Considerable encouragement may be drawn from the observation of tangible results already achieved by the cooperative efforts of scientists of many countries. This demonstration of international cooperation in the fight against cholera is quite as inspiring in its way as the brilliant solitary efforts of John Snow over 100 years ago. There are 10 references.

-- Author's summary

- 343 An Outbreak of Infectious Hepatitis Probably Due to Contamination of Food. R. H. Hernandez, J. H. Greenberg, and R. E. Olson. *Am. J. Epidemiology* 84, 247-252 (Sept. 1966).

A total of 15 cases of infectious hepatitis were hospitalized at Fort Sam Houston from September 19 to 19, 1964. An additional 18 cases developed simultaneously in soldiers transferred to other stations. Epidemiologic evidence presented suggests that common exposure occurred in one of the mess halls of the Medical Training Center during August 10 through 17, possibly from an infected food handler.

-- Public Health Eng. Absts.

- 344 Viral Hepatitis Among American Missionaries Abroad. A Preliminary Study. A. L. Cline, J. W. Mosley, and F. G. Scovel. *J. Am. Med. Assn.* 199, 551-553 (Feb. 20, 1967).

The occurrence of icteric viral hepatitis among 558 missionaries who did not receive immune globulin prophylaxis while living abroad between 1945 and 1964 was studied retrospectively. The attack rate for all ages was 1.6% per year, indicating that viral hepatitis is a significant health problem among American missionaries. The pattern in relation to duration of residence abroad prior to onset of hepatitis suggests that in order to have reduced the incidence of icteric hepatitis, administration of immune globulin would have been required throughout the period of residence abroad. There are 6 references.

-- Authors' summary

- 345 Fatal Hepatitis Probably Due to Indomethacin. W. M. Kelsey and M. Scharyj. *J. Am. Med. Assn.* 199, 586-587 (Feb. 20, 1967)

Death, possibly due to indomethacin (Indocin), occurred in a 12-year old boy. It is important that practitioners should adhere to the manufacturer's recommendations that the drug should not be administered to pediatric age groups until the indications for usage and dosage have been established. Investigative studies on pediatric patients are currently being conducted, and until these studies are completed, indomethacin is not recommended for children.

-- Authors' summary.

- 346 Absenteeism Experience in a Group of Employed Diabetics. A. N. M. Nasr, D. L. Block, and H. J. Magnuson. *J. Occ. Med.* 8, 621-625 (Dec. 1966).

The sickness absence of 213 known diabetic employees continuously employed from January 1, 1959 to January 1, 1964, was compared with that observed in a presumably nondiabetic population matched for age, sex, race, job, and duration of employment. Among the white employees, sickness absence in the diabetics was twice that of the control population. Among the Negro employees the sickness absence of the diabetics was increased threefold. This increased absence rate resulted from more frequent absences as well as from longer absences. Absences of more than 60 days in any one year were 6 times more frequent in the diabetic. In the majority, the diabetes was of late onset, the diagnosis being established at the age of 45-50, at which time the employee had been with the company for 20-25 years. In seeking to identify the diabetic among a group of middle-aged employees, it should be recognized that testing for diabetes when the employee visits the medical department for various reasons will permit examination of an increased proportion of the population with the passing of the years. Despite this, a significant proportion of the employees will escape examination, and the diagnosis of diabetes will be missed in a large percentage of those employees who are examined. The present study does not indicate whether better medical control would reduce the absence of these diabetics, but it does indicate that under present conditions the loss experienced by the company and the employee is such as to suggest more intensive measures for the early identification of these employees and increased medical supervision to lessen the impact of their disease. Six references are given.

-- Authors' conclusions

- 347 Red Eyes in Renal Failure. G. M. Berlyne and A. B. Shaw. *Lancet* 1, 4-7 (Jan. 7, 1967).

Fifteen patients with severe renal failure had red eyes in association with a raised serum inorganic phosphate (mean 13.2 mg/100 ml) but a normal or low serum calcium (mean 8.7 mg/100 ml). The mean serum calcium by serum inorganic phosphate was 114, and was invariably greater than 70. Conjunctival biopsy disclosed metastatic calcification. Treatment with aluminum hydroxide of 4 gm to 8 gm daily resulted in improvement in the conjunctival injection, with a statistically significant fall in serum inorganic phosphate to a mean level of 7.1 mg/100 ml, and a statistically significant fall of serum Ca x P to 66.4.

-- J. Am. Med. Assn. References & Reviews

- 348 Cancer Treatment—Report of a WHO Expert Committee. *World Health Organ. Tech. Rept. Ser. No.* 322 (1966).

Cancer does not respect anatomical boundaries; therefore proper management depends on either (1) the collaborating surgeons in special fields, or (2) the general surgeon with special training

in oncology. In general, a biopsy should precede any form of therapy. Biopsy of a closed tumor may be harmful, but when correctly performed, biopsy of an open tumor is harmless. Certain cancers, such as melanoma, may be attended by some risk by excision biopsy. In the great majority of cases, the neoplasm is unicentric in origin, which allows every prospect of cure if the tumor can be removed before it has metastasized. Only time can tell whether a surgical procedure has been curative or palliative. The prolongation of life itself is not the only measure of palliation. As the surgeon's experience increases, so does his ability and skill. The most important qualities which the surgeon needs are optimism, moral courage and a refusal to be deterred by difficulties.

-- J. Occ. Med. Absts.

- 349 Smoking Habits of Younger Patients with Myocardial Infarction. H. Dörken.
Munch. med. Wochschr. 109, 187-192 (Jan. 27, 1967).

Among the patient material of three clinics in Hamburg, the autopsy material of two pathological institutes, and all deaths in Hamburg in 1956 and 1964, 205 younger men with myocardial infarction at the ages of 19 to 44 years were found. Morphological or other peculiarities are not found in coronary diseases of younger persons (131 autopsies). With two exceptions, there were only smokers who had smoked an average of 25.9 cigarette units daily; mostly they had inhaled (3 exceptions). Beginning of smoking was at the age of 19 years. Of the controls (413 healthy persons), 18.4% had never smoked. The daily consumption of the controls was 13.4 cigarette units. This very close correlation between smoking and myocardial infarction in younger men permits the conclusion that tobacco smoke is the essential etiological factor in the origin of this still enigmatical disease.

-- J. Am. Med. Assn. References & Reviews

- 350 Carcinoma of the Lung: Review of Five-Year Survivals Over a 15-Year Period. L. H. Strug, et al.
Diseases of Chest 51, 46-52 (Jan. 1967).

Review of carcinoma of the lung in a large charity general hospital over a 15-year period reveals an extremely low operability and resectability rate. This is largely due to the fact that many patients are admitted in the late stages of the disease and obviously surgical extirpation is contra-indicated for many reasons. Two hundred and sixty-three cases were submitted to thoracotomy, resection was performed in 184 cases. Of these, there were 74 five-year or more survivors. An additional case survived more than five years after having refused surgery, making a total of 75 cases. Forty-five cases are alive at the time of this study. Twenty cases survived ten or more years, four died of other causes. Location of the lesion and cell types definitely influence survival; however, lymph node involvement did not seem to alter the survival data. Vascular invasion was not studied sufficiently to warrant including it as a factor in survival.

-- J. Am. Med. Assn. References & Reviews

- 351 Cigarette Smoke and Surfactant. W. R. Webb, et al. Am. Rev. Resp. Dis. 95, 244-247 (Feb. 1967).

The application of cigarette smoke to bronchial washings results in a reduction in the effect of surfactant with an increase in tension at the lower surface area and a decrease in tension at the expanded area. Neither the best type of commercial cigarette filters nor macrobubble water traps removed enough of the smoke to prevent this alteration of surfactant. Water traps producing bubbles less than 100 microns in diameter reduced the smoke effects on surfactant, whereas millipore filters in the range of 1 micron eliminated it. This action of cigarette smoke was demonstrated to be comparable to that of ordinary house dust, suggesting that the alteration of surfactant may largely, if not solely, be attributable to the particulate matter in cigarette smoke. These changes markedly reduce the index of stability of the lung and, as applicable to the alveoli, tend toward the development of emphysema. There are 11 references. -- Authors' summary

- 352 An Immunoradioactive Agent Against Cancer. T. Ghose, et al.
Brit. Med. J. 1, 90-92 (Jan. 14, 1967).

A tumor specific antibody has been obtained but, like other such antibodies already described, it was not therapeutically effective; however, its capacity for specific localization to the surface of tumor cells has been exploited by employing it as a "homing carrier" for a conventional anti-cancer agent. Immunization of rabbits with mouse Ehrlich ascites carcinoma yielded an antiserum, which was found after appropriate absorptions to bind specifically to the tumor cells in vitro. Binding was confirmed by immunofluorescence and radioactive tracing; in the presence of complement, the antiserum was cytotoxic to tumor cells in vitro. Mice inoculated with Ehrlich ascites cells, which had been incubated with the gamma-globulin fraction of the antiserum coupled with iodine-131, did not develop tumor, and have remained healthy for several weeks. In contrast, mice inoculated with tumor alone, or with tumor incubated with non-iodinated antiserum, with or without complement, or with iodinated nonimmune globulin invariably developed ascites tumor and died within 14 days of inoculation.

-- J. Am. Med. Assn. References & Reviews

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- 353 Garden Fertilizers as a Source of Salmonellae. M. C. Timbury and W. C. Forsyth. Lancet 2, 955-956 (Oct. 29, 1966).

Salmonellae were isolated from 47 (94%) of 50 samples of bone-meal fertilizer, compared with 1 (4%) of 25 samples of dried blood, and 3 (20%) of 15 samples of hoof-and-horn meal. Ten samples of steamed bone-flour were free from contamination. An average of four serotypes was isolated from the bone-meal samples. A total of 66 serotypes were isolated, many of which have been common causes of infection in Britain. There are 10 references.

-- Public Health Eng. Absts.

- 354 Q Fever Surveillance in Ohio. C. F. Reed and P. R. Schnurrenberger. Am. J. Epidemiology 84, 234-240 (Sept. 1966).

This report describes the findings of the Ohio Q fever surveillance program conducted in four distinct phases: (1) prevalence studies on Grade A dairy herds throughout the state, (2) detailed epidemiologic studies of herds in three selected milksheds, (3) investigation of human cases, and (4) serologic surveys of veterinarians and packing plant workers. There are 10 references.

-- Public Health Eng. Absts.

- 355 Controlled Evaluations of Repository Therapy in Ragweed Hay Fever. P. S. Norman, et al. J. Allergy 39, 82-92 (Feb. 1967).

Controlled observations of repository therapy during 4 consecutive seasons of ragweed hay fever indicated no significant improvement of symptoms in 132 patients: (a) In 1960 a small group of patients showed improvement when treated for the first time; (b) In 1961 and 1962, with a larger number of newly selected previously untreated patients, the improvement noted in 1960 could not be substantiated despite larger doses and more careful methods of evaluation; (c) In 1963, patients retreated for a second and third year still failed to show any significant improvement. Lack of any convincing therapeutic effect, even after 3 consecutive years of treatment, did not encourage further investigation of any therapeutic methods which employed available emulsifiers and mineral oil.

-- J. Am. Med. Assn. References & Reviews

- 356 Epidemiology and Diagnosis of Echinococcosis in Canada. Gloria A. Webster and T. W. M. Cameron. Can. Med. Assn. J. 96, 600-607 (March 11, 1967).

Two species of Echinococcus occur in Canada: (1) E. multilocularis and (2) E. granulosus. E. multilocularis, originating in the Arctic, is spreading southwards and has reached Saskatchewan and the Dakotas. The original hosts are foxes, but dogs and cats are alternatives. The larvae occur in field mice as multilocular microcysts containing numerous protoscolices, but in man the cysts are alveolar and sterile and resemble both in histology and growth a cholangiocellular carcinoma of the liver with metastases. Signs and symptoms are chronic and poorly defined. Diagnosis is difficult. Test antigens are not yet satisfactory. E. granulosus has a sylvatic cycle, the adult tapeworms living in wolves and dogs, while the larvae occur only in Cervidae and in man. The cysts occur almost exclusively in the lungs as unilocular, macrocystic, relatively benign tumors, although abnormal complications can occur. The Casoni intradermal sensitivity test, its technique and interpretation are discussed. There are 7 references. --Authors' abst.

- 357 Laser Therapy of Melanomas. L. Goldman, V. E. Siler, and D. Blaney. Surg. Gynec. Obstet. 124, 49-56 (Jan. 1967).

The development of laser technology and techniques for the local destruction of melanoma has been the goal of preliminary experiments with laser impacts of melanoma for the past three years in nine patients; the local effect of the laser on melanoma in man, the laser or lasers to be used, the method of delivery of the laser beam, attempted measured output, and immediate and late effects of the necrosis induced were observed. Local destruction requires adequate energy density, 2,000 to 3,000 joules/sq. cm. at least, with the pulsed laser and adequate target area coverage. Results are sufficiently encouraging to warrant continued investigative studies, especially for inoperable melanomas when the lesions are accessible or can be made accessible. The need for controls in future studies to evaluate therapy is obvious. The planned research program for subsequent studies of a critical evaluation of laser surgery in melanomas includes comparison with excisional surgery with the knife, electrosurgery, cryosurgery, and plasma torch surgery.

-- J. Am. Med. Assn. References & Reviews

SKIN DISEASES AND BURNS

- 358 Quinethazone Photosensitivity Dermatitis. R. C. Miller and V. S. Beltrani. Arch. Dermatol. 93, 346 (March, 1966).

A patient with a photoallergic dermatitis due to the diuretic quinethazone (Hydromox), had previously had similar reactions to the diuretics chlorothiazide and hydrochlorothiazide. Since the three diuretics have similar chemical configurations, it was felt that the sensitivity to quinethazone represented a photocross-sensitization with the initial photosensitization having been caused by chlorothiazide.
-- J. Occ. Med. Absts.

- 359 Mycosis Fungoides: Hematologic Findings and Terminal Course. D. P. Cyr, M. C. Geokas, and G. H. Worsley. Arch. Dermatol. 94, 558 (1966).

This paper summarizes the authors' experience with 165 cases of biopsy-proved mycosis fungoides. In 34% of the 106 deceased patients there was a transition from mycosis fungoides to sarcoma: reticulum cell sarcoma in 14, lymphosarcoma in 15, and Hodgkin's disease in 7. Five of the 14 patients with reticulum cell sarcoma had terminal monocytic leukemia, and 6 of the 15 with lymphosarcoma had terminal lymphoblastic leukemia. At autopsy in 23 of the 42 patients the disease remained as mycosis fungoides throughout its course. The pleomorphic infiltrate without Sternberg-Reed cells involved the lymph nodes in 4 and the viscera in 9 of the patients at postmortem examination. No findings in the blood or marrow could be considered as pathognomonic of mycosis fungoides except perhaps an absolute lymphopenia noted in 76% of the patients. Total body surface electron beam therapy is the most effective and practical form of palliative therapy. Skin tolerance is the only limiting factor; bone marrow is not significantly affected.
-- Can. Med. Assn. J. Absts.

- 360 Relationship of Increased Oxygen Consumption to Catecholamine Excretion in Thermal Burns. T. S. Harrison, J. F. Seaton, and I. Feller. Ann. Surg. 165, 169-172 (Feb. 1967).

The coexistence of an increased metabolic rate and elevated free excretion of epinephrine and norepinephrine is described in 6 seriously burned patients. The correlation between the degree of metabolic rate increase and the corresponding increase in free catecholamine excretion is statistically significant. These findings establish that the hypermetabolism of burns, known to be unrelated to thyroid hormone secretion, is a result of increased catecholamine secretion. Oxidatively available energy stores in fat and muscle are thus made available to the burn patient.
-- J. Am. Med. Assn. References & Reviews

CHEMICAL HAZARDS

- 361 Effect of Certain Food Conservants on the Development of Malignant Processes in Mice. A. A. Dinerman and A. D. Ignatiev. Gigiena i Sanit. 31, No. 9, 38-42 (1966). Russian.

The authors studied the effect of certain food preservatives (sodium bisulfite, benzoic acid, sorbic acid, nazine) on the development of ascetic Ehrlich cancer. Mice receiving sodium bisulfite and benzoic acid presented a higher percentage of developed tumors, a shorter life span, and a larger amount of ascetic fluid than mice receiving sorbic acid and nazine as well as the control animals. The fattening caused by the preservatives had no effect on the development of the malignant processes.
-- Public Health Eng. Absts.

- 362 Electrocardiographic Changes in Workers Usually Exposed to Inhalation of Carbon Monoxide. S. Zanardi, A. Villa, and G. Monti. Med. lavoro 57, 761-770 (Dec. 1966). Italian.

Twelve workmen occupationally exposed to chronic inhalation of small quantities of carbon monoxide, inadequate to cause any toxic symptom, were electrocardiographically examined. The comparison of the previous electrocardiograms and of the ones following exposure showed in 7 cases some small temporary changes, not yet of pathological importance, mainly interesting in the repolarization phase.
--English summary

- 363 Sources and Quantities of Fluorides Evolved from the Manufacture of Fertilizer and Related Products. K. K. Huffstutler and W. E. Starnes. J. Air Poll. Control Assn. 16, 682-684 (Dec. 1966).

Fluoride emission rates from the manufacture of phosphoric acid, run-of-pile triple super-phosphate, diammonium phosphate, and granular triple super-phosphate are presented in

tabular form. In discussing the information, variations to the usual arrangements and operating practices are mentioned. Fluoride emissions from the manufacturing or producing of related phosphatic products such as defluorinated and calcined phosphate rock, normal super-phosphate, super-phosphoric acid and elemental phosphorus are also discussed. The information is based entirely upon the fertilizer and related phosphate products manufactured in Polk and Hillsborough Counties in Florida. This area produces 75% of the marketable phosphate rock in the United States. Some 40% of the rock remains in these two counties for chemical or thermal processing. The phosphate industry is required to report on fluoride emission levels found by their sampling and monitoring programs. These values are compared with those found by the Florida State Board of Health's source sampling and monitoring program. -- Authors' abstr.

- 364 Acute Pulmonary Edema with Unusual Etiology: Hydrochloric Acid and Commercial Bleach (Sodium Hypochlorite). Report of Two Cases. V. Foà and G. Locati. *Med. lavoro* 57, 655-661 (Nov. 1966). Italian.

Two cases of pulmonary edema, which occurred after exposure to hydrochloric acid vapors and to chlorine vapors from a common commercial bleach (sodium hypochlorite), are described. The cases seemed interesting, due to the fact that such severe events caused by inhalation of these chlorine compounds are rarely found in the literature (so far only one case of acute pulmonary edema resulting from the inhalation of hydrochloric acid vapors has been reported). Despite the severity of the clinical pattern, both cases had a favorable outcome and recovery was complete. The present hypotheses concerning the pathogenesis of acute pulmonary edema following inhalation of irritant gases and vapors are critically reviewed, particularly the problems concerning changes in the alveolar membrane and alterations in pulmonary hemodynamics are taken into consideration. Finally, the treatments in the two cases which have led to rapid and complete regressions of the clinical and radiological findings are discussed. -- English summary modified

- 365 Response of Rat Lung Mast Cells to Nitrogen Dioxide Inhalation. H. V. Thomas, P. K. Mueller, and R. Wright. *J. Air Poll. Control Assn.* 17, 33-35 (Jan. 1967).

Irritant gases in concentrations that occur in polluted atmospheres might play a role in the degranulation and histamine release processes of mast cells in lung tissue. To test this hypothesis, young rats weighing 140-150 g. were exposed to 1 ppm nitrogen dioxide for 2 hours. One group was killed immediately, and another group 24-27 hours after exposure. A third group was exposed to 0.5 ppm nitrogen dioxide for 4 hours and killed immediately. Animals serving as controls were placed for one hour into the exposure chamber ventilated with ambient air. Standard histological preparations were made after Carnoy's fixative and subsequent staining with toluidine blue. The mast cells of the control animals appeared relatively intact with no evidence of disorientation. The cells of the animals exposed to nitrogen dioxide and sacrificed immediately revealed rupture and loss of cytoplasmic granules with some disorientation. These changes were observed in the pleura, bronchi, and surrounding tissue with the effects more marked in the mediastinum. The mast cells of exposed animals sacrificed about 24-27 hours after discontinuing the exposure showed in some cases a combination of ruptured and intact cells with a predominance of the latter, and in other cases could not be differentiated from the controls. These findings indicate that 24 hours or more are required to reverse the acute effects of nitrogen dioxide inhalation. The toxicological implications are discussed. The release of granular substances in the lung tissue when nitrogen dioxide is inhaled signifies the onset of an acute inflammation. There are 16 references. -- Authors' abstr.

- 366 Acute Cadmium Fume Poisoning in Welders—A Fatal and a Nonfatal Case in California. H. P. Blejer, P. E. Caplan, and A. E. Alcocer. *Calif. Med.* 105, 290-295 (Oct. 1966).

Two cases of acute cadmium oxide fume inhalation poisonings—one fatal and the other nonfatal—which occurred recently in California welders are presented. This report also presents (1) a summary of an industrial hygiene evaluation of the work situation atmospheric concentrations of, and exposure to, cadmium oxide fumes of these two welders; and (2) an occupational medical evaluation of the relationship of such exposures to the death and illness of the same workers. Treatment, a short review of the medical and toxicological literature are discussed. As well, mention is made of another 10 cases of the same etiology—including three fatal ones—which have been officially or tentatively reported from other states and Canada since these two California cases were studied and reported. There are 19 references. -- Authors' summary

- 367 Radiotracer Method for Determination of Cadmium. L. E. Mattison and J. C. Wolford, II. *Anal. Chem.* 38, 1675-1676 (Nov. 1966).

A new, rapid, and sensitive method is presented for the separation and determination of cadmium. Cadmium is extracted quantitatively (99%) from dilute (0.02 M) potassium iodide/iodine-131

- solution into 5% pyridine/benzene. The amount of cadmium extracted is proportional to the I-131 radioactivity in the organic phase. There are 12 references. -- Public Health Eng. Absts.
- 368 Effect of Lead Triethyl Chloride on the Acetylcholinesterase Activity in the Brain and Blood. P. Chiesura, F. Brugnone, and P. M. Terribile. *Med. lavoro* 57, 641-646 (Nov. 1966). Italian.
- An *in vitro* control was carried out with the possibility that in lead tetraethyl (PbEt₄) poisoning an inhibition of acetylcholinesterase might take place. The behavior of enzyme activities was studied in rabbit brain and in blood of healthy individuals placed in contact with lead triethylene (PbEt₃), the active metabolite of PbEt₄ in the poisoned organism. It resulted that: (1) PbEt₃ partially inhibits the brain acetylcholinesterase activity only at concentrations higher than $1 \times 10^{-3}M$, and the inhibition is not of the competitive type but is aspecific; (2) in the blood no variations occur of red blood cell and true acetylcholinesterase activity; (3) a marked inhibition of serum aspecific cholinesterase activity occurs at concentrations of PbEt₃ not lower than $1 \times 10^{-3}M$. The conclusion is that PbEt₃ does not have a specific antiacetylcholinesterase activity, and that probably in human poisoning not even a partial and aspecific cholinesterase inhibition occurs, as in the tissues of poisoned subjects the concentrations of the toxic components are about $1 \times 10^{-3}M$, therefore much lower than those in the *in vitro* experiment.
-- English summary modified
- 369 The Erythrocyte ALA-Dehydrase Activity as a Diagnostic Test in Occupational Lead Poisoning. D. Bonsignore. *Med. lavoro* 57, 647-654 (Nov. 1966). Italian.
- Studies have been performed with the purpose of clarifying the mechanism by which lead ions interfere in the various steps in the biosynthesis of heme, and especially in the ALA-dehydrase reaction. On the basis of the results obtained, a diagnostic test could be suggested, whose principles and validity are discussed in this paper. -- English summary
- 370 Effects on Experimental Animals on Long-Term Inhalation Exposure to Mineral Spirits. D. E. Rector, et al. *Toxicol. & Appl. Pharmacol.* 9, 257-268 (Sept. 1966).
- Guinea pigs exposed continuously for 90 days to concentrations of mineral spirits (paint thinner) from 363 to 1,271 mg/cu.m. showed mortality rates ranging from 27 to 79%. Hematologic, biochemical, and pathologic studies did not reveal cause of death. A 90-day tentative guideline for submarines has been established at 40 mg/cu.m. for mineral spirits containing 15 to 20% aromatic hydrocarbons. There are 18 references.
-- Public Health Eng. Absts.
- 371 Effect of Carbon Tetrachloride on Distribution of Sulfobromophthalein in Plasma and Liver of Mice. M. Beth Maggio and James M. Fujimoto. *Toxicol. & Appl. Pharmacol.* 9, 309-318 (Sept. 1966).
- Data on the concentrations of sulfobromophthalein (BSP) and the glutathione conjugate of BSP in blood and liver of control and carbon tetrachloride-treated mice are given. The processes of uptake, storage, conjugation, and excretion of BSP were affected differentially by carbon tetrachloride. There are 16 references.
-- Public Health Eng. Absts.
- 372 Data to Substantiate the Maximum Permissible Concentration of Tetrachloroethylene (Perlen) in the Air of Industrial Premises. N. V. Dmitreva. *Gigiena i Sanit.* 31, No. 9, 31-35 (1966). Russian.
- The effect of tetrachloroethylene at concentrations of 10, 4, 2, 1, 0.1, and 0.01 mg/liter was studied in acute, repeated, and chronic tests on albino rats by means of electrophysiological and certain biochemical and histological methods of analysis. On the basis of experimental data, the author recommends the maximum permissible concentration of tetrachloroethylene in the air of industrial premises be set at 0.03 mg/liter. -- Public Health Eng. Absts.
- 373 The Ophthalmodynamography in Carbon Disulfide Occupational Poisoning. U. Maugeri, A. Cavalleri, and E. Visconti. *Med. lavoro* 57, 730-740 (Dec. 1966). Italian.
- The blood pressure of the ophthalmic artery was studied by ophthalmodynamography in 107 young workers exposed to high concentrations of carbon disulfide while engaged in the manufacture of Viscosa. Significant increases both of systolic and diastolic values were found. The practical importance of such data, compared to the humeral ones is emphasized. The authors conclude that the ophthalmodynamographic tests are important to show the first signs of cerebral involvement in carbon disulfide poisoning.
-- English summary modified

- 374 Retinal Vessels Alterations in Young Workers Exposed to Carbon Disulfide. U. Maugeri, E. Visconti, and A. Cavalleri. *Med. lavoro* 57, 741-744 + colored plate (Dec. 1966). Italian.

Ophthalmoscopic examination with colored photograph of the ocular fundus was performed in 100 young workers exposed to high concentrations of carbon disulfide (200-900 mg/cu. m.). Alterations, probably of functional type, were already detectable after a few years of exposure. Retinal arteriosclerosis was found in 25% of the workers exposed for more than 8 years.

-- English summary modified

- 375 Hematochemical Findings in Young Workers Exposed to Carbon Disulfide. IV. Thromboelastographic Studies of the Coagulation Process. E. Visconti, et al. *Med. lavoro* 57, 751-754 (Dec. 1966). Italian.

The authors studied the coagulation process by the thromboelastographic method in 98 young workers, of whom 70 were exposed to high concentrations of carbon disulfide and 28 were not exposed. The data were statistically analyzed. On the basis of the results obtained, the conclusion was reached that carbon disulfide induced: (a) A delay of the coagulation process: this phenomenon can be explained on the basis of a retarded genesis of thromboplastin, due to changes in the thromboplastin factors of plasma and probably of platelets; (b) a retardation of the process of coagulum organization; (c) no changes of the dynamic characteristics of the coagulum, related to the platelets function.

- 376 Endocrinological Findings in Young Workers Exposed to Carbon Disulfide. III. Urinary Excretion of 3 alpha, 11-Deoxy-17-Ketosteroids. A. Cavalleri, et al. *Med. lavoro* 57, 755-760 (Dec. 1966).

The urinary excretion of 3 alpha, 11-deoxy-17-ketosteroids was studied by a gas-chromatographic technique in a group of 63 young people exposed to carbon disulfide for different periods of time, and comparatively in a group of same-aged control subjects. The results indicate that there is a progressive reduction in these catabolites which bears a ratio to the time of exposure. The reduction concerns in particular androsterone, which is endowed with more androgenic properties, while variations in excretion of etiocholanolone proved non-significant. The data obtained confirm the results of the authors' previous assay of total 17-ketosteroids performed in the same people and are consistent with the possible involvement of the endocrine activity of the testis, beside the established damage of the adrenal function.

-- Authors' summary

- 377 Dimethyl Sulfoxide and Experimental Oral Carcinogenesis in the Hamster Pouch. R. P. Elzay. *Arch. Pathol.* 83, 293-297 (March, 1967).

The purpose of this study was to evaluate whether or not the penetrating property of dimethyl sulfoxide (DMSO) could augment 7, 12-dimethyl-benz(a)-anthracene (DMBA)-induced carcinogenesis. DMBA in DMSO, applied to the cheek pouch epithelium of young Syrian hamsters, did not result in a significant decrease in latent period when compared to DMBA in mineral oil. However, a significant clinical difference was noted between these groups inasmuch as DMSO animals had more, and markedly larger, tumors. Histologically, the animals receiving DMBA in DMSO had a higher incidence of epidermoid carcinoma than those animals receiving the DMBA in mineral oil. DMSO alone produced mild dyskeratosis, but did not produce carcinoma in situ or carcinoma during the time of this study. This investigation does not clarify whether DMSO favorably interacts at the initiation or promotion stage of carcinogenesis. Nevertheless, under the conditions of this study, DMSO does augment DMBA carcinogenesis in the hamster cheek pouch, as evaluated by both clinical and histological methods.

-- J. Am. Med. Assn. References & Reviews

- 378 Corneal Damage in Hydroquinone Workers. G. Naumann. *Arch. Ophthalmol.* 76, 189-194 (Aug. 1966).

Hydroquinone has been used extensively for years as an industrial reducing agent, especially in photography. Fortunately, it has not been known to cause systemic poisoning. However, both short and long ophthalmic exposures cause conjunctival and corneal acute or chronic pathologic changes. Although vision is not affected in early stages, pigmentation and degeneration of stromal layers of cornea led to irregular astigmatism and more serious impairment of vision. Even though changes may not have been detected after many years of occupational exposure, onset in some cases has been so insidious as to become evident after many years. Corneal transplants have afforded ideal tissues for histopathology. Cytopathologic alterations are presented in detail.

-- J. Occ. Med. Absts.

- 379 A Case of Severe Acute Parachloroaniline Poisoning with Intense Methemoglobinemia and Transient Electrocardiographic Changes. P. Scotti and M. Tomasini. Med. lavoro 57, 662-666 (Nov. 1966). Italian.

A case of severe acute poisoning from parachloroaniline with intense methemoglobinemia (43%) and with transient electrocardiographic changes, which occurred in a 32-year old man, who completely recovered, is presented. The electrocardiogram (ecg) pattern showed an evolution strictly parallel to that of the clinical symptoms. It was hypothesized that the pathogenesis of the ecg syndrome was related to a state of transient anoxia. This could be due both to withdrawal of an important part of circulating hemoglobin from the natural function of oxygen transport and transfer to the myocardium, and to the decreased oxygen availability, as a consequence of the left shifting of the dissociation curve of the oxyhemoglobin. -- English summary modified

INDUSTRIAL DUSTS

- 380 Isolated Silicosis of Lymph Nodes and Its Evolution. P. Pontiggia and A. DiStefano. Ann. Med. Sondalo, 13, 135-157 (1965). Italian.

Fifty-two cases of silicosis in miners, 39 to 65 years of age, coming from the same region and working in a silicotic environment between 3 and 40 years, were followed by frequent roentgenographic investigation over a period of 10 years. They were chosen from among 2000 cases of silicosis in order to study the pathogenesis of the disease that is prevalent in the lymph nodes, the change of relationship between the lymphonodal and parenchymal lesions, and the evolution of the disease during a long period of observation. The roentgenographic pictures obtained in 5 cases are given as an example. The conclusions of this clinical investigation are as follows: (1) The silicotic lesion of the hilar lymph nodes is an early step of pneumoconiosis; (2) the lymphatic drainage is the first mechanism toward elimination and defense; and (3) the relationship between the lymphonodal lesions and those of the parenchyma are very variable, mainly because of individual factors, both immunologic and pathologic. -- Am. Rev. Resp. Dis. Absts.

- 381 Contributions to the Autoimmune Pathogeny of Silicosis. I. V. Dinu and L. Roth. Rumanian Med. Rev. 20, No. 4, 26-28, (Oct.-Dec. 1966).

The demonstration of the presence of anti-lung antibodies in the serum of silicosis patients is a further argument in favor of an immunologic mechanism in the pathogeny and chronic evolution of the disease. The data in the literature which prove the pathogenicity of antibodies, make the authors believe that in silicosis too there is a similar mechanism. Further researches will demonstrate if silicosis is a disease "with autoantibodies" or "due to autoantibodies."

-- Authors' conclusions

- 382 Mediastinoscopy with Lymph Node Biopsy in Diagnosis of Silicosis. M. Lob, J. Pettavel, and D. Gardiol. Schweiz. med. Wochschr. 97, 179-181 (Feb. 11, 1967).

Three cases of pulmonary silicosis are described in which lymph node biopsy by means of mediastinoscopy showed silicotic lesions. The indications and the limits of this method in diagnosing silicosis are discussed. -- J. Am. Med. Assn. References & Reviews.

- 383 Silicosis and Malignant Lung Tumors. A. Sidari and Q. Lunetta. Ann. Med. Sondalo, 13, 5-37 (1965). Italian.

The clinical history, gross pathology, and histologic data of 3 cases of silicosis associated with primary lung tumors of different origin, are reported and elaborately illustrated as a contribution to a better understanding of the relationship between the two diseases. It appears that the silicotic lesions evolve according to the normal pattern of neoplastic diffusion, despite the fact that they present a greater resistance to tumor invasion due to their anatomic and biologic characteristics. A more evident and interesting relationship between the diseases could perhaps be found in the lymphatic system inasmuch as silicotic lesions, as a cause of change in normal drainage, could influence the metastatic diffusion of neoplasia. -- Am. Rev. Resp. Dis. Absts.

- 384 Observations on the Effect of Asbestos on Cells "In Vitro." B. Pernis, et al. *Med. lavoro* 57, 721-729 (Dec. 1966).

Experiments have been conducted on the effects of asbestos dust on different kinds of cells cultivated *in vitro*. Guinea pig peritoneal macrophages phagocytose asbestos dust very actively but in contrast to what happens after phagocytosis of silica dust, are not damaged by the mineral as assessed by morphological observation or measurement of their glycolytic activity. Mouse fibroblasts, cultivated *in vitro* in the presence of asbestos, also take up the mineral quite actively and, when viewed afterwards with the electron microscope, show the mineral particles or short fibers collected in vacuoles or lysosome-like bodies in their cytoplasm: the amount of collagen produced by fibroblasts *in vitro*, with respect to the other proteins, is higher when these cells are cultivated in the presence of asbestos. Finally, an attempt has been made to induce the formation of asbestos bodies *in vitro* by adding asbestos to KB cells cultured *in vitro* with the addition of ferrous sulfate; this attempt failed. With respect to the problem of the pathogenesis, these experiments indicate that the mechanism of the production of asbestosis is probably different from that of silicosis and that a direct effect of asbestos dust on fibroblasts should be seriously considered.

-- Authors' summary modified

- 385 Clinical and X-Ray Studies on the Incidence of Pneumoconiosis Among Carbon Electrode Makers. V. Foà, A. Grieco, and S. Zedda. *Med. lavoro* 57, 684-695 (Nov. 1966). Italian.

Clinical and radiological investigations were carried out among 308 workers employed in the manufacture of carbon electrodes for the purpose of studying the incidence of pneumoconiosis in this kind of work. The mineralogical study of the materials used and of the environmental dusts showed that the particles had a diameter of from 0.7 to 5 microns and reached a maximum of 4,608 particles/cm³ of air in the crushing and milling departments, 2,112 particles/cm³ of air in the "finishing" departments, and 208 particles/cm³ in the "furnace" department. The raw materials used, mostly anthracite and petroleum coke, had a silica content under 1% and a particle size of 0.7-5 microns. Among the workers 40-60 years old, who had been employed for 10-30 years, 21 subjects (6.7%) showed an early pneumoconiosis, or a P and M type pneumoconiosis, with different extension degrees, never confluent. An associated chronic bronchitis with or without emphysema, was found in 9 of these workers, on the basis of clinical, x-ray and function tests. The incidence of chronic bronchitis in the total population studied was 26.2%. The incidences of chronic bronchitis among the workers exposed to carbon dust inhalation with pneumoconiosis and among those without pneumoconiosis were not significantly different. On the contrary, the incidence of chronic bronchitis was higher among these subjects than in workers engaged in various works, exposed to carbon dust inhalation irregularly and for short periods. The frequent finding of chronic bronchitis, even severe, among subjects who had been working for many years in very dusty environments due to the presence of carbon dust, allows the authors to hypothesize that the long-lasting inhalation of mineral dusts in large quantities may be at least an aggravating factor in the genesis and evolution of chronic bronchitis, as it was observed among coal miners.

-- Eng. summary modified

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 386 Effect of Local Temperature on Indirect Vasodilatation in the Feet. P. Gaskell and G. M. Bray. *Can. J. Physiol. Pharm.* 45, 63-73 (Jan. 1967).

Measurement of rate of blood flow in the feet by venous occlusion plethysmography during body heating showed that vasodilatation in the feet occurred at the same time in a cool foot (18 to 23° C.) (64.4 to 73.4° F.) as in a warm (30 to 35° C.) (86 to 95° F.) but that warming of the cooler foot might be delayed for some time until the increase in flow was 0.5 ml/100 ml of foot per minute or more. In control experiments, with both feet in cold water or both in warm, the increase in blood flow during body heating started at the same time in both feet. Warming also began at the same time in both feet, but in the cool control experiments, warming often began later than did increase in flow. It is suggested that precooling of arterial blood may account for the delay in warming when the extremity is initially cool and the increase in blood flow is at first small during indirect vasodilatation in the feet.

-- J. Am. Med. Assn. References & Reviews

- 387 Seasonal Changes in the Physiological Response of Man to an Acute Cold Stress. F. Girling. *Can. J. Physiol. Pharm.* 45, 13-27 (Jan. 1967).

Eight male human subjects, resting supine and wearing swim trunks only, were exposed to an ambient temperature of 8.5° C. (47.3° F.) for one hour in the first week of each month from

February 1964 to January 1965. Skin, rectal, and air temperatures were measured with thermistor probes. Percentage of oxygen in expired air and minute ventilation were measured, and heat production was calculated by Weir's method. Electrical activity from the muscles of all four limbs was measured to determine shivering response. Control values of resting respiration and heat production were obtained under comfortably warm conditions and showed marked seasonal variation with minimum values in spring and maximum values in later summer. In the response to acute cold exposure, marked seasonal changes were found also which were superimposed on the seasonal changes in control values. The response to cold exposure indicated maximum acclimatization to cold in the spring and minimum in later summer.

-- J. Am. Med. Assn. References & Reviews

- 388 Production of Melanomas from DMBA-Induced "Blue Nevi" in Hairless Mice with Ultraviolet Light. J. H. Epstein, W. L. Epstein, and T. Nakai. *J. Natl. Cancer Inst.* 38, 19-30 (Jan. 1967).

The effects of chronic low-dose mid-ultraviolet (UVL) exposures on benign blue nevi were examined in pigmented hairless mice. The benign growths were produced by a single application of 7, 12-dimethylbenz[*a*]anthracene (DMBA). In this study, large invasive melanocytic tumors were produced by the UVL in 5 of 18 animals. Apparent seeding of regional lymph nodes with tumor cells was a consistent feature of the melanomas. No distant metastasis was noted. No similar growths occurred spontaneously or in control groups receiving DMBA or UVL alone. Histological, electron microscopic and autoradiographic studies established that the tumor was composed of functioning neoplastic melanocytic cells.

-- J. Am. Med. Assn. References & Reviews

RADIOACTIVITY AND X-RADIATION

- 389 The Basis for the Limit on Whole-Body Exposure—Experience of Radiologists. S. Warren. *Health Physics* 12, 737 (June, 1966).

Current data on the life span of radiologists for the period 1938-1965 reveals that their mean age at death has lengthened until no life shortening is apparent after 1960 when compared with U.S. white males over 25 years of age. The mean age at death of radiologists increased from 58.9 years in the 1940's to 69.5 years since 1960. This effect is attributed to the fact that radiologists' exposures have been reduced in accordance with the maximum permissible dose guides which have been progressively reduced until the present levels were reached in 1949. "The present maximum permissible dose level therefore appears well established as safe for protection against somatic effects." The incidence of death from leukemia among radiologists has decreased in recent years and currently is about five times that of U.S. males. This effect is felt to be due to exposures well in the past.

-- J. Occ. Med. Absts.

- 390 Radium Isotope Accumulation in Animal Thyroids. L. Van Middlesworth, et al. *Science* 151, 453 (Jan. 28, 1966).

During the continuous observation of cattle thyroids for iodine-131 from fallout, a small percentage of the glands were found to contain long-lived radioisotopes. These were shown to be radium-226 and thorium-228. These uranium and thorium daughters were 10 times more concentrated in thyroids from some cattle than in the teeth of the same animals. The isotopes are believed to be from natural sources. The resulting annual dosage of thyroid radiation has exceeded that from iodine-131 fallout.

-- J. Occ. Med. Absts.

- 391 The Relative Toxicities of Radium-226, Plutonium-239, and Strontium-90 for Bone Tumor Induction. G. Hems and R. H. Mole. *Brit. J. Radiol.* 39, 719-726 (Oct. 1966).

The considerations that determined the maximum permissible body burdens of Pu-239 and of Sr-90 during the past two decades have gradually changed. The most recent experimental evidence on the induction of bone tumors in the mouse and beagle suggests that the toxicity of Ra-226 for the induction of bone tumors is 60 to 200 times the toxicity of Sr-90, a larger ratio than was hitherto believed. An increase of the maximum permissible body burden of Sr-90 would be compatible with present experimental data on the toxicity of Sr-90. In the beagle, the toxicity of Pu-239 relative to Ra-226 is in reasonable agreement with their present maximum permissible body burdens. There are 12 references.

-- Public Health Eng. Absts.

- 392 Oregon Malignancy Pattern and Radioisotope Storage. J. C. Bailar, III, and J. L. Young, Jr. *Public Health Repts.* 81, 311-317 (April, 1966).

An increased mortality rate for cancer, particularly leukemia, had been reported for Oregon residents near the south bank of the Columbia river or along the Pacific Coast—an important

observation because of the increased radioactive content of the water from Hanford, Washington. However, several epidemiologic gaps were left, and the current report independently reexamined the issue. Results indicate that cancer mortality rates in both Oregon and Washington have been below the U.S. rates. Both states have excess leukemia rates, but this was true before the start of the Hanford operation. Persons living downstream from the Hanford Preserve and along the Pacific Coast of Oregon were not found to have excess risk of cancer mortality.

-- J. Occ. Med. Absts.

- 393 The Clearance of Uranium Dioxide Dust from the Lungs Following Single and Multiple Inhalation Exposures. P. E. Morrow, F. R. Gibb, and L. J. Leach. Health Physics 12, 1217-1223 (Sept. 1966).

A study of UO_2 -238 and UO_2 -235 aerosols in dogs revealed that the clearance of the lungs differs markedly after single and multiple inhalation exposures, namely approximately 180 and 340 days for the respective biological half-times. There are 27 references.

-- Public Health Eng. Absts.

ENVIRONMENTAL MEASUREMENTS

- 394 Analysis for Exhaust Gas Hydrocarbons—Nondispersive Infrared Versus Flame-Ionization. M. W. Jackson. J. Air Poll. Control Assn. 16, 697-702 (Dec. 1966).

An investigation has been made of the suitability of a nondispersive infrared analyzer and two flame-ionization analyzers for measuring the total hydrocarbon concentrations of automobile exhaust gas. The investigation consisted of measuring relative responses of various hydrocarbons, checking for possible exhaust gas interferences and finally comparing exhaust hydrocarbon concentrations indicated by the flame-ionization analyzer to those indicated by the infrared analyzer. The infrared analyzer has high relative responses for paraffins and low responses for olefins, acetylenes, and aromatics. Also, the infrared indicated hydrocarbon concentrations must be corrected for exhaust water vapor interference. When the flame-ionization analyzers are operated at conditions that result in approximately uniform response to hydrocarbons and low oxygen interference, the exhaust hydrocarbon concentrations indicated by either flame-ionization analyzer are better approximations of the total hydrocarbon concentration than those indicated by the infrared analyzer. There are 19 references.

-- Author's abst.

- 395 Chronic Effect on Animals of Certain Components of the Motor-Car Exhaust Gases. D. P. Partsef. Gigiena i Sanit. 31, No. 9, 11-15 (1966). Russian.

Analysis of motor car exhaust gases and of highway air by separate chromatographic methods revealed comparably high concentrations of pentane and hexane. Their concentration in the atmosphere attained 4 mg/cu. m. and their ratio was about 1:1. A 24-hour poisoning of albino rats for a period of 86 days showed that pentane and hexane at concentrations of 94.7, 50, and 10 (at a ratio of 1:1) had no significant effect on the animal's body, and at a concentration of 3 mg/cu. m. had no effect at all on the behavior of the animals, their weight, motor chronaxy of muscle antagonists, blood pressure and cholinesterase level. -- Public Health Eng. Absts.

- 396 Identification of Paint-Discolored Species by Electron Diffraction. J. A. Reffner, C. I. Harding, and T. R. Kelley. J. Air Poll. Control Assn. 17, 36-37 (Jan. 1967).

The discoloration of exterior paint has been shown to occur when hydrogen sulfide in the air reacts with heavy metal salts used as pigments or fungicides in the paint. Simple field tests can give an indication whether hydrogen sulfide was involved. An electron diffraction technique is described to identify the discolored compound in paint samples. Field experience in Jacksonville using this method is described. Five references are given.

-- Authors' abst.

- 397 A Method for the Determination of Organic Lead in the Presence of Inorganic Lead in the Atmosphere Around Fuel Distributors. G. Zuliani, G. Perin, and G. Rausa. Med. lavoro 57, 771-780 (Dec. 1966). Italian.

A new method is described of air sampling for the determination of lead tetraethyl and lead tetramethyl by polarographic technique. On the basis of the trials performed, such method seems to be sensitive enough, precise, reproducible and sufficiently rapid for use in widespread investigations.

-- English summary modified

PREVENTIVE ENGINEERING

- 398 Safe Handling of Perchloric Acid. F. A. Graf, Jr. Chem. Eng. Progr. 62, 109-114 (Oct. 1966).

Recommendations for construction and operation of perchloric acid facilities are made based on extensive testing during design and construction of the Thiokol Chemical Corporation's Wasatch Division pilot plant to manufacture hydrazinium dperchlorate, a high-energy oxidizer in solid rocket propellant. There are 16 references. -- Public Health Eng. Absts.

- 399 Manganese Additive Reduces Sulfur Trioxide. A. R. Belyea. Power 110, 80-81 (Nov. 1966).

A manganese-containing organometallic compound now being used in several stations of Consolidated Edison Company, as an additive in residual fuel oil that has a relatively high content of sulfur and vanadium reduces the concentration of sulfur trioxide in the flue gases by about 45% and helps to improve combustion. -- Public Health Eng. Absts.

COMMUNITY AIR HYGIENE

- 400 Some Applications of Microscopy to Air Pollution. J. S. Ferguson and Eleanor G. Sheridan. J. Air Poll. Control Assn. 16, 669-672 (Dec. 1966).

The microscope as it has been and is now applied to air pollution work is discussed. A summary of the most common particulate sampling equipment is presented and distinctions as to the area of usage (suspended or settled particulates) are made in each instance. Actual cases are discussed in which the polarizing microscope was used to determine identities and source of particulate pollutants. Particles from such sources as power plants, feed mills, and combustion sources are discussed and photomicrographs of known samples and unknown particles causing complaints are presented and compared as part of the discussion. References are given which deal with sampling equipment and microscopic analysis of various particulates. There are 22 references. -- Authors' abst.

- 401 Contribution of Burning of Agricultural Wastes to Photochemical Air Pollution. E. F. Darley, et al. J. Air Poll. Control Assn. 16, 685-690 (Dec. 1966).

Agricultural wastes from orchards, grain fields, and range lands are burned each year in California as the most practical means of ridding the land of these wastes. In order to determine the relative contribution of the burning of such material to photochemical air pollution, the effluent from 123 fires of known weights of range brush, both dry and green, barley and rice stubble, and prunings from various fruit and nut trees were monitored in a special tower which provided an open burning situation. Analyses were made for total hydrocarbon, expressed as C, by flame ionization detection, and for 24 individual hydrocarbons by gas chromatography, as well as CO and CO₂ by infrared spectroscopy. A few analyses were made for oxides of nitrogen. These data, coupled with temperature and airflow measurements, allowed calculations to be made on pounds of effluent per ton of material burned and demonstrated that the emissions from agricultural burning are much less than those from the automobile, a principal source of such emissions. There are 11 references. -- Authors' abst.

- 402 Effects of Photochemical Air Pollution on Vegetation with Relation to Air Quality Requirements. L. S. Jaffe. J. Air Poll. Control Assn. 17, 38-42 (Jan. 1967).

Typical air quality effect levels of photochemical oxidants on specific plant substrates are illustrated. These include ambient oxidant exposure data measured as "total oxidant" as well as laboratory exposures to individual pure oxidants, ozone, or PAN compounds, since these oxidants are identified in photochemical smog. New terms, "PaNs" and PAN-type" oxidant, have been proffered for purposes of clarification of the terminology. PAN-type oxidant more precisely defines the phytotoxicant complex causing silvering or bronzing of the lower leaf surfaces in lieu of the older term "oxidant." Due to the recognition of several oxidizing phytotoxicants in recent years, it is recommended that the term oxidant be reserved for use as a generic term. A tabular classification of the oxidizing phytotoxicants found in community photochemical smog and the specific syndromes produced is provided. There are 38 references. -- Author's abst.

- 403 A Tracer Study of Dispersion Over a City. F. Pooler, Jr.
J. Air Poll. Control Assn. 16, 677-681 (Dec. 1966).

The planning and conduct of series of tracer experiments carried out in St. Louis in the period between 1963 and 1965 is described. Tentative results indicate that horizontal dispersion over an urban area does not differ greatly from that observed over open country, except for a much greater initial spreading of the tracer plume. Vertical dispersion during the daytime does not appear to differ greatly from that observed over open country, and can be best expressed in terms of travel time rather than travel distance. Vertical dispersion during the evening over an urban area is much greater than that observed over open country; the limited results obtained suggest the formation of a slightly unstable layer as the air flows over the city. Six references are given.

-- Author's abst.

- 404 An Atmospheric Diffusion Model for Metropolitan Areas. M. E. Miller and G. C. Holzworth.
J. Air Poll. Control Assn. 17, 46-50 (Jan. 1967).

An urban diffusion model, which does not require the use of an electronic computer, is presented. The main simplifying assumptions are that continuous pollutant sources are uniformly distributed over the urban area and vertical diffusion occurs until the effluent from each line source reaches the top of the mixing layer, after which the effluent is uniformly distributed through the mixing layer. After the appropriate vertical diffusion coefficient is specified, the calculated concentration is a function of source strength, linear dimension of the metropolis, mixing depth, and wind speed. The calculated concentration is interpreted either as a representative maximum concentration or, through integration, as the average concentration over the metropolitan area. When a representative pollutant concentration is known, the model may be used to determine the apparent "uniform" source strength. There are 10 references.

-- Authors' abst.

- 405 Europe Seeks Solution to Pollution Problems. J. Morrison.
Oil Gas J. 64, 188-190 (Nov. 14, 1966).

Summary statements of reports completed by various groups of the Conservation of Clean Air and Water in Western Europe organization (CONCAWE) are given on stack height, emission dispersion, and pipeline work. These reports will be available in booklet form. Other groups are studying migration of oil through soil, diffusion and decomposition of hydrocarbons in soil, protection of ground water, noise arising from refining or related operations, and selection of equipment for noise abatement.

-- Public Health Eng. Absts.

- 406 Gaining Public Acceptance for California's Auto Smog Control Program. R. Kovitz.
J. Air Poll. Control Assn. 17, 26-27 (Jan. 1967).

Because of California's unique pioneer program to control vehicular emissions, many problems of public acceptance arose. It became necessary to educate the average citizen to the causes of smog, why the state program is necessary, what control systems will do, and why the motorist must be willing to pay for and maintain these systems. Without support, the future of the program was at one time endangered. But with an all-out effort to reach the public and with federal adoption of the California program, greater acceptance is being achieved. During the course of the progress of the Motor Vehicle Pollution Control Board (MVPCB), in the past 5 years, all forms of communication media were used. The MVPCB realizes that information creating public acceptance is the life-blood of the program.

-- Author's abst.

- 407 Fume Control in Rubber Processing by Direct-Flame Incineration. A. G. Sandomirsky, et al.
J. Air Poll. Control Assn. 16, 673-676 (Dec. 1966).

The application of direct-flame incineration to successfully eliminate a smoke-oil-mist and odor problem in the manufacture of rubber-base rug underlay, is presented. The investigation of various air pollution control processes leading to the development and adoption of the direct-flame incineration system, is covered. The rug-underlay curing process incorporating the direct-flame incineration system with primary heat recovery is described. Results and discussion of a source test to determine the effectiveness of direct-flame incineration in this application are included. Five references are given.

-- Authors' abst.

- 408 Costs, Efficiencies, and Unsolved Problems of Air Pollution Control Equipment. B. D. Bloomfield.
J. Air Poll. Control Assn. 17, 28-32 (Jan. 1967).

In this paper, presented before the 31st Annual Meeting of IHF, the author discusses control of contaminant sources, which may be extremely difficult to achieve technically. There remains a need for more information specific to control procedures. The cost of air

cleaning equipment installations can be exceedingly high depending upon the performance standards to be satisfied and the physical and chemical characteristics of the contaminants. Control of emissions from the foundry cupola, the steel mill, metal refining operations, coal burning utilities, and incinerators still present imposing cost and operational and performance problems—despite the technological progress made in recent years. The interrelationship of the source, the degree of control necessary, the equipment available to do the job, and the costs are discussed. There are 4 references.

- 409 Pollution Control in the Steel Industry. R. D. Hoak and H. C. Bramer.
Chem. Eng. Progr. 62, 48-52 (Oct. 1966).

This article presents a number of case histories of techniques and installations adopted to control air and water pollution in the steel industry together with a discussion of the varied problems encountered in optimizing their performance. -- Public Health Eng. Absts.

- 410 Economics of Motor Vehicle Pollution Control. W. L. Faith.
Chem. Eng. Progr. 62, 41-43 (Oct. 1966).

Based on the experience of California in implementing its motor vehicle pollution control program, actual economic data are available on exhaust devices and on crankcase blowby controls. Estimated costs of control of hydrocarbons from carburetors and fuel tanks and of nitrogen oxide emissions are also given. -- Public Health Eng. Absts.

- 411 Ozone as a Tobacco Toxicant. H. E. Heggestad.
J. Air Poll. Control Assn. 16, 691-694 (Dec. 1966).

Ozone is very toxic to tobacco, causing serious injury in greenhouses and fields. Certain varieties, differing in sensitivity, have proved useful as indicators of the presence, and to some extent the level, of air-polluting ozone. Environmental factors alter plant response to ozone and must be taken into account. What is now recognized as typical ozone injury to tobacco was first observed in Connecticut in 1951, Maryland in 1952, eastern North Carolina in 1953, and Ontario, Canada, in 1955. Cracking of rubber strips exposed daily at six locations in 1959 in the Connecticut Valley showed ozone concentrations were highest the day before a fleck outbreak, resulting in more than a million dollar loss. Measurement with a Mast ozone recorder from July to mid-October for two seasons at Beltsville, Md., six miles northeast of the District of Columbia, indicated 2.5 pphm as the average daily maximum value, 5 pphm as the level when plant injury is expected, and 10 pphm as very high and infrequent. The neutral buffered KI method indicated higher ozone values, but about 15 pphm was maximum with this method. Shading portions of leaves for three hours in midday prevented ozone injury. Increased injury in the different tobacco areas was related to increased culture of more susceptible varieties. Although various anti-ozonants applied to the leaf, or even applied to cloth shade, reduce damage, the development of resistant tobaccos has proved the better means of control. Premature senescence and related chlorosis as well as fleck were prevented by carbon-filtered air, indicating that ozone may be a more important toxicant than previously recognized. Possibly oxidants other than ozone contributed to plant injury, but, if present, they were removed by carbon-filters. Growth of an ozone-sensitive tobacco Bel-W3, as indicated by dry weight, was only half as much in ambient as in carbon-filtered air in one experiment with chambers continued for 5 weeks. Evidence of synergistic action of sulfur dioxide and ozone is reported. Subthreshold concentrations of these toxicants produced injury following exposure of tobacco to mixed gases, whereas no injury resulted from the same concentration of the individual gases. There are 32 references.

- 412 Gas Scrubbers Solve Odor Problem at Fish Meal Plant. Anon. Air Eng. 8, 39-41 (Nov. 1966).

The design and operation of gas scrubbers used by a fish meal plant to control olfactory offenders such as sulfides, mercaptans, aldehydes, and amines are described. Ejector-venturi-type, single-stage direct-contact water units were sized to handle 17,730 cfm of air.

-- Public Health Eng. Absts.

- 413 Fuel Oil Additives for Controlling Air Contaminant Emissions. E. Z. Finfer.
J. Air Poll. Control Assn. 17, 43-45 (Jan. 1967).

An addition of additives to fuel oils prior to combustion is one way of reducing combustible contaminant emissions to the outer air. Reported test results show that some additives improve, moderately, the combustive properties of fuel oils. Combustion is also improved but to a lesser degree, in boiler systems that are deficient in operation and design. Being combustible, polynuclear hydrocarbons emissions would be reduced by use of additives. Other types of additives to reduce slagging and inhibit corrosion from combustion of fuel oils are also available. The

cost of using additives is low. Improved additives are required, especially ones to better combustion in the deficient boiler systems. These can be found by research and literature surveys. Their effectiveness and nontoxicity would be confirmed by laboratory and field testing. There are 13 references. -- Author's abstr.

- 414 Rate Constant Ratios During Nitrogen Dioxide Photolysis. E. A. Schuck, E. R. Stephens, and R. R. Schrock. *J. Air Poll. Control Assn.* 16, 695-696 (Dec. 1966).

Nitrogen dioxide is the light absorber in the hydrocarbon system leading to production of photochemical air pollution. Studies of the reactions involved are based on the kinetics of nitrogen dioxide photolysis and the values of rate constants derived therefrom. The photolysis of nitrogen dioxide was investigated in the 2-20 ppm concentration range. The value of the bimolecular rate constant of the reaction between oxygen atoms and nitrogen dioxide was calculated to be 5.26×10^{10} mole⁻¹ sec.⁻¹, and the termolecular rate constant of the reaction between oxygen atoms and nitrogen dioxide in presence of a third body is 4.24×10^{10} mole⁻² sec.⁻¹. The rate constant for the reaction between oxygen atoms and nitric oxide in the presence of a third body was calculated to be 2.31×10^{10} mole⁻² sec.⁻¹. Nitrogen was used as the third body. In terms of order of magnitude these calculated rate constants are similar to previously reported values. However, in certain cases their use leads to an oxygen atom concentration which is 100% greater than previously calculated. There are 10 references. -- Authors' abstr.

MANAGEMENT ASPECTS

- 415 Motivations to Work and Organizational Performance. F. Friedlander. *J. Appl. Psychol.* 50, (2), 143-152 (1966).

In a research and development setting, the relationships between job performance and three basic types of job motivation were explored. Job performance was rated according to salary level to which the individual had ascended relative to others his age and to others who had spent the same length of time in the organization. The motivation variables were social environment, intrinsic self-actualizing work, and recognition through advancement. In the white-collar sample, which was composed largely of technical personnel, low performers were motivated primarily by the social environment of the job, and to a lesser extent, by the opportunity of gaining recognition through advancement, but few significant relationships were found between intrinsic self-actualizing motivations and job performance. In the blue-collar sample, no significant relationships were found between any of the motivational measures and job performance. With advancing age and tenure, work became more meaningful for high performers and less meaningful for low performers, although the importance of the social environment increased for both high and low performers. -- J. Occ. Med. Abstrs.

MISCELLANEOUS

- 416 Treating Parathion Wastes. C. N. Sutz. *Chem. Eng. Progr.* 62, 82-84 (Oct. 1966).

Pilot plant studies of parathion wastes combined with domestic wastes assured the city that the wastes can be treated in the municipal activated sludge treatment plant. Incineration of residues and demisting of off-gases are practical. Limestone neutralization of the acid streams followed by blending with alkaline streams before biological treatment is used to control the pH. -- Public Health Eng. Abstr.

417. Oil Pollution of Water Supplies. Task Group Report. *J. Am. Water Works Assn.* 58, 813-821 (July, 1966).

The frequency and severity of oil spill accidents, their impact on the water supply industry, and preventative and emergency measures to deal with them are discussed. There are 13 references. -- Public Health Eng. Abstrs.

- 418 A Study of the Effect of Plastic Pipes on the Water Quality. V. O. Sheftel. *Gigiena i Sanit.* 31, No. 8, 24-27 (1966). Russian.

Polyethylene pipes neither affected the organoleptic, chemical, and microbiological qualities of water nor imparted any toxic properties to the water. The effect produced by polyvinylchloride pipes differed depending on the extent of their chemical stability. Worn out polyvinylchloride pipes emitted lead, chlorides, and organic substances into the water and also stimulated the reproduction of water microorganisms. Six references are given. -- Public Health Eng. Abstrs.

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