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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

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IN BRIEF: ABSTRACTS
November 1992

INDUSTRIAL HYGIENE FEATURES

Abst. No. 709 presents normal drinking in recovered alcohol addicts.

Abst. No. 714 discusses long survival following myocardial infarction.

Abst. No. 715 reports on primary myocardial disease.

Emotional stress and coronary heart disease in physicians, dentists, and lawyers is the subject of Abst. No. 716.

Consult Abst. No. 717 for information on carcinoma of the lung, a review of 509 cases.

Burns from exposure to anhydrous hydrofluoric acid are discussed in Abst. No. 725.

Data on maximum allowable concentrations of mixtures are presented in Abst. No. 728.

Information regarding corrosive gastritis from formaldehyde ingestion is given in Abst. No. 737.

Experimental observations on the resolution of chronic interstitial pneumonitis are described in Abst. No. 743.

An account of pulmonary disease of ferroalloy workers is given in Abst. No. 748.

Bagassosis: a true pneumoconiosis is the title of Abst. No. 750.

Abst. No. 762 investigates the human tolerance to magnetic fields.

Ventilation design for fallout and blast shelters is discussed in Abst. No. 765.

For information on the basic theory of gas indicator tube calibration see Abst. No. 770.

The storage of vapors and gases in plastic bags is studied in Abst. No. 782.

Air pollution and health are discussed in Abst. No. 786.

FOUNDATION FACTS

27th ANNUAL MEETING — OCTOBER 24-25, 1962

Chemical-Toxicological Conference - all day - Wednesday, October 24, will include:

Toxicity of Petroleum Product Additives Allan E. Dooley
Texaco, Inc.

The Aspiration Hazard and Toxicity of Hydrocarbons and Hydrocarbon Mixtures Dr. H. W. Gerarde
Esso Research and Engineering Co.

Toxicity Problems Associated with the Use of Beryllium in Propellants Dr. M. L. Keplinger
Hercules Powder Co.

Aging and Auditory Thresholds in Men and Women Dr. John F. Corso
Pennsylvania State University

Simple Blood Tests for Detecting Susceptibility to Toxic Substances John T. Mountain
Occ. Health Research & Training Facility, USPHS

Controlled Human Exposures to O-Chlorobenzylidene Malononitrile Charles L. Punte
US Army Chemical Research and Development Labs.

Medical Conference - afternoon - Wednesday, October 24, will include:

Cardiac Rehabilitation and Job Evaluation Dr. E. A. Irvin
Ford Motor Company

Lipid Transport and Atherosclerosis—A Progress Report Dr. John W. Vester
Veterans Administration Hospital, Pittsburgh

Useful Abilities of the Cardiac Patient in Industry (Speaker to be announced)

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AIR ABSTRACTS

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

691 Meeting of Association of Teachers of Preventive Medicine.

The 19th Annual Meeting of the Association of Teachers of Preventive Medicine will be held in Miami Beach, Florida, October 14, 1962. The title of the meeting will be "Research Contributions from Departments of Preventive Medicine." The Program Chairman is Harry A. Feldman, M.D., Professor and Chairman of the Department of Preventive Medicine at the College of Medicine, State University of New York Upstate Medical Center, Syracuse, New York.

-- Arch. Environmental Health

692 Auto Exhaust Dangers Cited.

The U.S. Public Health Service, in a 506-page report to Congress, said there is new evidence that air pollution from automobile exhaust is unhealthy and urged preventive steps. The agency noted that the number of autos operating in this country is expected to rise from the present 79 million to 113 million by 1977. The USPHS Division of Air Pollution summarized research findings linking exhaust products and smog to rising rates of lung cancer, emphysema, heart and circulatory diseases, allergies and other ailments. Present automotive pollution levels in the atmosphere of cities "are borderline with respect to causing immediate effects and changes in pulmonary function." If these levels are raised even slightly, according to the report, there could be immediate effects on health. Research investigations were reported involving animals exposed to air pollutants, indicating more greatly increased disease incidence in experimental animals than among those exposed to fresh air. -- Cond. from J. Am. Med. Assn.

693 More Proof of Pollution Effects.

Polluted air most likely increases the death rate in pneumonia and influenza cases according to a report at an air pollution medical research conference at the University of Southern California. One group of mice breathed ozone and nitrogen dioxide, two common smog ingredients. A second group breathed pure air. Both groups then inhaled pneumonia bacteria. Those subjected to the smog had a mortality rate double that of the other group. Future research will attempt to pinpoint specific harmful pollutants and to determine the pathological effects of long exposure to low smog concentrations.

-- Cond. from Am. Soc. Civil Eng., Sanitary Eng. Div. News

694 Food Laws.

Federal food laws are covered in an 18-page booklet issued by the Manufacturing Chemists' Association, 1825 Connecticut Avenue, N.W., Washington 9, D.C. The Food Additives Manual consists of Part One, Federal Laws Under Which Control is Exercised over Foods Entering into Interstate Commerce; Part Two, The Federal Food, Drug, and Cosmetic Act; and Part Three, Amendments to the Federal Food, Drug, and Cosmetic Act. Copies are available at 75 cents each from the Manufacturing Chemists' Association. -- Chem. Eng. News

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OCCUPATIONAL DISEASE STATISTICS

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

	Conn. May	Ind. Apr.-June	Pa. June-July	Tenn. May-June	Total
Asbestosis	1				1
Asthma			1		1
Bronchitis-matrix		1			1
Dermatitis	29*	5*	27	13	74
Epoxy resin poisoning		1			1
Fumes (unidentified)			1		1
Hepatitis			4		4
Inflammation of lung			1		1
Irritation of eyes & nose			1		1
Lead poisoning		51	1	2	54
Methemoglobinemia cyanonitrobenzene				1	1
Monoethanolamine tetrafluoroethylene poisoning	1				1
Phosgene poisoning	2				2
Plastic (heat decomposition products) poisoning	1				1
Pulmonary emphysema				1	1
Respiratory irritation histamine powder				1	1
Respiratory irritation wood dust				1	1
Silicosis	1	2			3
Silicosis (suspected)			3		3
Temporary blindness			1		1
Trichloroethylene poisoning	1				1
Tuberculosis			3		3
Total	36	60	43	19	158

* Causes are listed as follows:

Connecticut: Occupational dermatitis due to oils and greases (and metal cutting compounds) 12; occupational dermatitis due to solvents 2; occupational dermatitis due to other chemicals: acids 1, alkalies 1, chromium compounds 1, cyanides 1, dust-type not specified 1, diethylene diamine 1, glues 1, mercaptans 1, miscellaneous 1, synthetic resins or resin (plastic) compounds 2; occupational dermatitis—other: cement (chromium compounds) 1, miscellaneous 1, multiple causes 2.

Indiana: Fiberglass 2; detergents 1; cause not stated 2.

COMING EVENTS

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- 696 Sept. 1-4 College of American Pathologists, Chicago, Ill.
 Sept. 4-6 Symposium on Organometallic Compounds, Chemical Institute of Canada, Vancouver, B.C.
 Sept. 4-7 National Advanced-Technology Management Conference, University of Washington and Engineering Groups, Seattle, Wash.
 Sept. 5-7 11th Canadian High Polymer Forum, National Research Council and Chemical Institute of Canada, Assumption University, Windsor, Ontario, Canada

- Sept. 5-7 National Agricultural Chemicals Association, 29th Annual Meeting, Spring Lake, N. J.
- Sept. 6-8 Pacific Slope Biochemical Conference, University of Washington, Seattle, Wash.
- Sept. 8-16 5th International Food Congress and Exhibition, New York, N. Y.
- Sept. 9-14 American Chemical Society, 142nd National Meeting, Atlantic City, N. J.
- Sept. 10-12 Canadian Agricultural Chemicals Association, 10th Annual Meeting and Conference, Banff, Alberta, Canada
- Sept. 10-14 International Atomic Energy Agency, Inelastic Scattering of Neutrons in Solids and Liquids, Chalk River, Ontario, Canada
- Sept. 13-15 Drug, Chemical & Allied Trades Association, 72nd Annual Meeting, Pocono Manor, Pa.
- Sept. 14-15 American College of Surgeons, Ohio Chapter, Youngstown, Ohio
- Sept. 16-20 2nd Annual Conference on Pharmaceutical Analysis. University of Wisconsin School of Pharmacy and Extension Services in Pharmacy, King's Gateway, Land O'Lakes, Wisconsin
- Sept. 16-20 Electrochemical Society, Boston, Mass.
- Sept. 17-20 American Hospital Association, Chicago, Ill.
- Sept. 19-21 National Industrial Conference Board, New York, N. Y.
- Sept. 24-27 American Psychiatric Association, Bal Harbour, Florida
- Sept. 26-28 American Society for Testing Materials, General Meeting on Gas Chromatography, East Lansing, Mich.
- Sept. 26-28 16th Tobacco Chemists Research Conference, Richmond, Va.

LEGAL DEVELOPMENTS

- 697 The California Control Program for Motor Vehicle Created Air Pollution.
Diana Clarkson and J. T. Middleton. J. Air Poll. Control Assn. 12, 22-28 (Jan. 1962).

California, in 1960, enacted legislation establishing the Motor Vehicle Pollution Control Board and transferred responsibility for control of moving sources of pollution from local agencies to the state. An objective is to achieve "the air quality which existed in Los Angeles in 1940 under the conditions expected to prevail in that area in 1970." Implications of this objective in regard to standards for motor vehicle emissions are discussed. An analysis of motor vehicle usage is given as a basis for standards adopted. The significance of the certification of two or more devices, the certification date, and the schedule for installation of the devices is presented. The initial regulations may fail to cover a small but significant number of motor vehicles, i. e., those outside the 2,000 to 5,500 pound class. The importance of the development of devices for as close to 100% of the motor vehicles as possible is emphasized.

-- Public Health Eng. Absts.

- 698 Time Extension on Labeling Requirements for Household Chemical Aids.

The Food and Drug Administration announced a further 6 month's extension, to February 1, 1963, of the type, size, and placement requirements for labeling household chemical aids under regulations of the Federal Hazardous Substances Labeling law. The agency said that its own investigations and information, together with that submitted by the affected industries, indicates that more time is necessary for full compliance with these requirements. Many hazardous substances in containers intended or suitable for household use, now in the channels of commerce, approach full compliance, said FDA. -- J. Am. Med. Assn.

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699 FDA Seizes Meat Seasoning.

Two seizures of a meat seasoning on charges that it contains food additives not cleared as safe were announced by the Food and Drug Administration. Seized were 155 pounds of "Hyglo Seasoning No. 555-2," distributed by the First Spice Mixing Company, Inc., Long Island, New York, at dealers in St. Paul, Minnesota, and New Britain, Connecticut. FDA said the product, although labeled as a seasoning, would actually function as a preservative and a color fixative, especially for ground meat. The Agency said that the average consumer uses the color of ground meat as an index of its freshness and that use of this product would be deceptive, preventing ready detection of aging or spoiling meat. -- J. Am. Med. Assn.

BOOKS, PAMPHLETS AND NOTICES

- 700 Survey of Work in Compressed Air During the Construction of the Auckland Harbour Bridge. Special Report No. 6. Issued by Medical Statistics Branch Department of Health, Wellington. Compiled by R. J. Rose. Government Printer, R. E. Owen, Wellington, New Zealand. 108 pp. (April 1962). 6s 6d. OBTAINABLE FROM: Government Publications Bookshop, corner of Lambton Quay and Bunny Street (Private Bag), Wellington, New Zealand.

A survey has been carried out to establish the incidence of decompression sickness on a caisson sinking contract involving the construction of 6 piers supporting a bridge across Auckland Harbor. In all, 10,026 compressions of company employees were carried out, and 262 bends followed. The overall rate covering all types of worker, both shift and non-shift, was 2.6 per hundred compressions. The bends incidence tended to increase with the rise in working pressures. Almost one-third of the total bends in shift workers occurred at the highest pressures over 45 psi with a bends rate of 4.6%. The greatest risk of bends being incurred attached to the afternoon and early evening shifts. The bends rate declined during the night shifts. Serious symptoms indicative of cerebral or cardio-respiratory involvement such as coma, chokes, vertigo, vomiting or paralysis, appeared in 17% of the cases treated on the site. Two out of three bends were relieved in one recompression. No relationship was demonstrated between the site of the bends and the ease with which relief was obtained. Three out of four bends required a return to full working pressure or an even higher pressure before relief was obtained. On the other hand a somewhat surprising number of bends were relieved at low pressures when working pressures had been high. Two cases of permanent disability have been reported and are described. Both these men had very short working histories, one man having worked one shift only at 20 lb. pressure. -- Cond. from author's summary

- 701 Occupational Disease in California. 1960. State of California Department of Public Health, Bureau of Occupational Health. 36 pp. (Date not given). COPIES ARE AVAILABLE FREE TO INTERESTED PERSONS AS LONG AS THE SUPPLY LASTS FROM: California Department of Public Health, Bureau of Occupational Health, 2151 Berkeley Way, Berkeley 4, Calif.

This review summarizes 18,642 doctor's reports of occupational disease from among the nearly 5 million employees covered under the California workmen's compensation law in 1960. Most occupational disease reports fall into the traditional categories of skin conditions, respiratory conditions and systemic poisonings. Hazards most frequently implicated in these diseases are poison oak, food products and agricultural chemicals. Half the 793 systemic poisonings in 1960 were attributed to agricultural chemicals, primarily the organic phosphate pesticides. Although relatively few reports were received in 1960 concerning such classical agents as lead (58 reports), carbon monoxide (53 reports), carbon tetrachloride (37 reports), and mercury (10 reports), these reports are of significance because the principles of environmental control for all occupational disease caused by these agents have been well understood for a long time and they indicate a need for education and enforcement. Among all industry groups, agriculture had the highest rate with 10.0 occupational disease reports per 1,000

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workers; followed by construction, 6.2; and manufacturing, 5.1. Within the manufacturing division, the rate fluctuated from 1.4 reports per 1,000 workers in printing, publishing and allied industries to 16.6 reports per 1,000 workers in rubber and miscellaneous plastic products. Manufacturing is the only industry division for which employment estimates by sex are available. The occupational disease rate for women in manufacturing is somewhat higher than for men. In California, 28,000 men and 15,000 women of working age (15-64) die annually, but in 1960, only a very small number of deaths (240) were finally classified as due to occupational disease.

-- Author's summary

- 702 Pesticide Handbook. 14th Edition. D. H. Frear. 303 pp. (Date not given). OBTAINABLE FROM: College Science Publishers, P.O. Box 798, State College, Penna. PRICES: Clothbound \$3.50; Paperbound \$2.50.

This latest and completely revised edition of the Pesticide Handbook lists the names, active ingredients, and manufacturers of 9,444 insecticides, fungicides, herbicides, rodenticides, soil conditioners, and equipment. Information is also present on legal tolerances, compatibilities, hazards, antidotes, and uses for old and new pesticides.

-- Anal. Chem.

- 703 Toluol. N. J. State Department of Health, Bureau of Adult and Occupational Health. Occupational Health Bull. 6, No. 3, 6 pp. (Date not given). OBTAINABLE FROM: N. J. State Department of Health, Bureau of Adult and Occupational Health, Trenton 25, N. J. Price not given.

Toluol is regarded as a toxic chemical, and detrimental health effects can occur from inhalation of excessive quantities of the vapor, prolonged skin contact with the liquid, and liquid contamination of the eyes. Moreover, the industrial grade and 90/120 toluol contain significant quantities (up to 25%) of benzene, which is much more toxic. This may result in as much as 50% benzene in the vapor concentration. In experiments, animals were exposed to varying concentrations of pure toluene vapor for periods over 7 weeks. No changes in the blood picture or in general health were found. Findings with animals must be used for human beings with reserve, but they seem to indicate the value of substituting toluol for benzene as a solvent, subject to the reservations regarding impurities and the inherent toxicity of toluol. Man absorbs approximately 84% of the toluol inhaled, 16% being excreted by the lungs during the desaturation period. The amount retained by the organism is almost entirely converted to benzoic acid (80-100%) and in most cases eliminated within 24 hours. The largest part of the benzoic acid derived from toluol is excreted as hippuric acid; only 10-20% is in association with glycuronic acid. It does not raise the amount of phenols or cresols in excretions as benzene does. If more than 2 grams benzoic acid is excreted in the urine within 24 hours, exposure to toluol is evident. A table presents the systemic effects of toluol.

- 704 Health Statistics from the U.S. National Health Survey. Series B-No. 31. Duration of Limitation of Activity Due to Chronic Conditions. United States, July 1959-June 1960. U. S. Department of Health, Education, and Welfare, Public Health Service. PHS Publication No. 584-B31. 36 pp. (Jan. 1962). OBTAINABLE FROM: Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. PRICE: 30 cents.

Approximately 13.6 million persons in the United States, exclusive of those in institutions, have chronic activity limitations affecting their major activity, i. e., the ability to work, keep house, or go to school. This estimate, based on data collected in household interviews conducted during July 1959-June 1960 by the U. S. National Health Survey, National Center for Health Statistics, includes persons who are unable to carry on the customary major activity of persons of their age and sex group, or have some degree of limitation in amount or kind of major activity. About 42%, or 5.7 million of these persons, have had their present degree of limitation for 5 years or more while approximately 5 million, 37%, have been limited from 1 to 4 years, and 2 million, 16%, have had their present limitation for less than a year. For the remaining 5%, information about the duration of limitation was not available. Of those persons whose status immediately prior to limitation was reported, 55% were working at the time of becoming disabled to their present degree and 45% were not working. The latter percentage includes children, housewives, persons who were retired prior to the time the limitation began, and persons who had never been able to work.

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INDUSTRIAL MEDICAL PRACTICE

- 705 Canada's Program of Prepaid Hospital Care—The Historical Stream. M. G. Taylor. Hospitals 35, 42 (1961). (Hospitals, Editor, American Hospital Association Publishers, 840 N. Lake Shore Drive, Chicago, Ill. 4).

Since the beginning of 1961, every resident of Canada has been entitled to necessary hospital care in the hospital of his choice at the standard ward level, without charge, for as long as it may be required. On April 12, 1957, the four-party House of Commons unanimously passed the Hospital Insurance and Diagnostic Services Act, starting the nationwide government sponsored hospital plan on its way. The plan, a grant-in-aid program providing national funds to assist provincially administered plans, is based on universality. It is provided that the program be universally available and the intent is clear that all should be covered. There is no "means test." The program rejects the subsidy-to-voluntary-plans approach. In some provinces the Blue Cross Plan became the core of the new agency. In others, Blue Cross continues to provide for the cost of semi-private or private accommodations. The program emphasizes the autonomy of hospitals. The voluntary hospital system has been greatly strengthened by the virtual removal of deficits. There was unquestioned reluctance on the part of Blue Cross administrators and hospital leaders to see their projects taken over by the government. However, they have helped mold the plans, fought for comprehensive service benefits, argued for higher payments to support higher standards and meet increased cost. Any dissatisfaction has been heavily counterweighed by the knowledge that government action was merely extending to all what they had struggled to bring to many; it was a tribute to their ideals and an extension of their goals.

-- J. Occ. Med. Absts.

- 706 The Changing Nature of Industrial Health Problems. D. M. Ross. Ind. Med. & Surg. 31, 257-259 (June 1962).

The number of new chemicals being developed for use in industry and in the home is increasing so rapidly that their hazard to man cannot be adequately defined by present toxicologic research methods. It will be necessary to develop new screening methods and new short cuts to toxicological research to avoid flooding the country with chemicals of unevaluated toxicity. The unmistakable trend is to be concerned with lesser and lesser degrees of hazard. In many cases the limit of detection of overt changes has already been reached and work has begun on the development of biochemical, immunological, and neurophysiological techniques that will detect earlier changes in body physiology. An increasing number of agents is being identified as producing long range, chronic, carcinogenic, or genetic effects. Increased emphasis must be placed on the study of these materials lest inclusion of false positives in this group place an unwarranted financial burden on the users and the omission of false negatives subject our industrial population to unsuspected risk. Accidents involving the increasingly important human factor will not be prevented by the conventional engineering approach. Greater emphasis must be placed on a new field of specialization called "human factors engineering" to develop the principles and laws governing the man-machine complex. Psychologists, anthropologists, physiologists, epidemiologists, and biostatisticians must team up with the safety engineer and occupational health physician and bring their talents to bear on those new safety problems which our burgeoning automated society is imposing on us.

-- Cond. from author's summary

- 707 The Industrial Physician and the Adaptation of Medicine to an Industrialized Society. The Sappington Memorial Lecture. J. H. Sterner. J. Occ. Med. 4, 295-300 (June 1962).

The author discusses the subject under the following headings: Evolution of Occupational Medicine, Role of Government, Management and Union Influences, Physician Contribution, Present Status, The Future (Needs in Small Plants), Training, Physician Attributes, Scope of

* Address not in current List of Periodicals.

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Industrial Medicine, Relation to Industry and Medicine, and The Physician as Supervisor and Administrator. The author concludes that it is obvious that no one industrial physician can be knowledgeable in, nor extend his efforts to all of these activities. Yet, in the broad composite experimental adaptation we recognize as occupational medicine, each of these areas and more are being examined and explored as actual or potential activities to which the industrial physician can make a unique contribution. How well he responds, how wisely and how imaginatively he continues to adapt medical service to the rapidly fluctuant needs of an industrializing society, will determine to a major extent whether he will occupy a subservient or a leadership role. Either the physician, and particularly the industrial physician, will recognize the vacuum of need created by these changing forces and move to provide an effective solution, or his position will be relegated to that of a supplier of an important but limited service, with diminishing responsibility for its direction and destiny.

- 708 The Role of the Occupational Health Nurse in Safety Programs. Mary Louise Brown. Ind. Med. & Surg. 31, 254-255 (June 1962).

Occupational health nursing is the application of nursing and public health procedures to conserve, promote, and restore the health of individuals and groups through their places of employment. Working with physicians, engineers, and allied personnel, the nurse is in a strategic position to help provide occupational health and safety services. Many factors influence the scope of her activities. The most influential are her own interest and knowledge, and the responsibility that others on the health and safety team expect her to carry. An active role in the safety program makes the role of the occupational health nurse a dynamic and challenging one.

- 709 Normal Drinking in Recovered Alcohol Addicts. D. L. Davies. Quart. J. Studies Alc. 23, 94 (Mar. 1962). (Quarterly Journal of Studies on Alcohol, Journal of Studies on Alcohol, Inc., Box 2162, Yale Station, New Haven, Connecticut*).

The present study deals with 7 men who were treated for alcohol addiction, and who were able to drink normally for periods of 7 to 11 years after discharge from the hospital. None of them had been drunk in that time, and all were socially better adjusted than they had been during the year before admission to the hospital. The 7 men had been treated by general measures, including disulfiram, discussions, and social help during a hospital stay of 2 to 5 months. One of them still takes disulfiram occasionally. Four of these patients had followed the advice to give up their pre-treatment occupations which had exposed them to many invitations and opportunities to drink. It is suggested that the generally accepted view that no alcohol addict can ever again drink normally should be modified, although all patients should be advised to aim at total abstinence.

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

- 710 Psychiatric Illness in Hospitalized Clergy: Alcoholism. A. J. Vander Veldt and R. J. McAllister. Quart. J. Studies Alc. 23, 124 (Mar. 1962). (Quarterly Journal of Studies on Alcohol, Journal of Studies on Alcohol, Inc., Box 2162, Yale Station, New Haven, Connecticut*).

Data from the case histories of 32 Catholic clergymen who were patients in a psychiatric hospital as a result of alcoholism are presented. The data show similar characteristics. The priests started their problem drinking between the ages of 28 and 32, within 3 years following their ordination. They were about 40 to 45 years old and had been involved in problem drinking on an average of 12 1/2 years. Many of them had been under psychiatric care before. The mother was the dominant figure in the home of the patients, and they were attached to her, although they identified with the weaker, frequently alcoholic father. Often they were the oldest child or the only boy in the family. They were likely to have some serious emotional problems during their seminary career. They resented being in the hospital and regarded it as a form of punishment. They remained in the hospital 6 months or less and were considered dubiously improved at the time of discharge. They were advised to continue psychiatric treatment, but the acceptance of this advice was doubtful. A passive-aggressive personality disorder was frequently found underlying the alcohol problem, or it was a sociopathic disorder. The illness is of long duration, the treatment is difficult, and the prognosis is poor.

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

* Address not in current List of Periodicals.

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- 711 Comprehensive Care of the Acute Alcoholic in a Municipal Hospital. J. F. Chambers, et al. Can. Med. Assn. J. 86, 1112-1116 (June 16, 1962).

The management of alcoholism in a general hospital setting is described. A total approach is emphasized, stressing the importance of milieu, group effort and well-oriented personnel. Medical management of the withdrawal syndromes and rehabilitative techniques are concurrently introduced at the time of admission. The withdrawal state is treated with parenteral and oral tranquilizers for control of symptoms, chloral hydrate for supplemental bedtime sedation, B vitamins parenterally, and oral hydration; diphenylhydantoin (Dilantin) and phenobarbital are used prophylactically and antispasmodics are introduced when indicated. Convulsions can be at least partially prevented. A clinic specifically oriented toward the treatment of the alcoholic, Alcoholics Anonymous, and special rehabilitative techniques based on a group approach are the most effective modalities of long-term management. It should be stressed that for effective results, whether of the acute or chronic phases, treatment must be individualized. There are 12 references to the subject in the bibliography. -- Authors' summary

- 712 Production of Unilateral Reversible Cataracts in the Hamster. F. T. Fraunfelder and R. P. Burns. Proc. Soc. Exptl. Biol. Med. 110, 72-74 (May 1962).

Several highly effective methods for production of unilateral reversible cataracts in hamsters are described. With each method, the eyelids must remain open to expose the cornea, and the lens opacity which develops will clear even if the eyelids remain open, but will clear more rapidly if the lids are closed. No cataract develops if the eyelids are kept closed or protected by an airtight seal. The mechanisms involved are being investigated.

-- Authors' summary

- 713 Glaucoma Detection in Memphis, Tennessee. H. Packer, et al. Am. J. Public Health 52, 450 (Mar. 1962).

Over a period of 2 years, 14,365 persons were tested in a glaucoma detection program. Persons with ocular tensions above 25 mm. Hg. or a difference between 2 eyes of more than 6 mm. Hg., as revealed by tonometry performed by a specially trained nurse, were referred to an ophthalmology clinic for retesting by the medical staff and further evaluation. Previously unrecognized and undetected glaucoma was discovered in 334 persons. Prevalence was higher among older persons, non-whites, those with advanced hypertensive cardiovascular disease and arteriosclerosis, and manual workers. Possible explanation for these differences are presented.

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

- 714 Long Survival Following Myocardial Infarction: Report on 255 Patients Living Ten Years or Longer After the First Attack. L. H. Sigler. Am. J. Cardiol. 9, 547 (Apr. 1962). (American Journal of Cardiology, 466 Lexington Avenue, New York 17, N. Y. *).

The author made an analysis of 255 patients who had lived 10 years or longer after acute myocardial infarction. The male/female ratio was 7.8:1. The onset of acute infarction was without antecedent angina pectoris in 81% of the patients and the usual age at onset of the first attack was between 50 and 69 years. About 68% of the men and 90% of the women still alive had already lived 10 to 14 years and more than 4% even 20 years or longer after their first attack. Of the 19 patients with more than one infarction, 2 died during the second attack. The rest were either still living or had died long after the second or third infarction. A large percentage of patients had surpassed the average life expectancy. More women than men had reached an older age, probably due to the older age of onset in women. Anterior wall infarction occurred in 56% of the patients and posterior wall infarction in 36%. The location of infarction had no prognostic significance. At 2 to 6 months after the attack 161 (71%) of the 226 men of this series returned to their regular work, 54 (24%) to modified work, and 11 (5%) were obliged to give up their work after the first attack; 9 in this last group were manual workers. The author believes that return to work after recovery from myocardial infarction does not affect but may improve the outcome. He considers the prognosis to be better than it was hitherto

* Address not in current List of Periodicals.

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thought to be. The most important factors which determine longevity after a myocardial infarction are the hereditary constitutional state of the patient and environmental conditions.

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

- 715 Primary Myocardial Disease. N. O. Fowler, M. Gueron and D. T. Rowlands. Diseases of Chest 41, 593-602 (June 1962).

This paper describes 23 patients who had congestive heart failure without clinical or pathologic evidence of the primary cause. Twenty of these patients were necropsied; three had myocardial biopsy. The ages of these patients were from 18 months to 68 years at death. Nineteen were males and 4 were females. Eight had heart failure for 5 years or more; 8 were alcoholic; 3 had nutritional cirrhosis. Transient mitral or tricuspid systolic murmurs, and apical diastolic gallop rhythms were common. Atrial fibrillation was present in 8. Right heart catheterization in 5 patients showed evidence of decreased cardiac output and biventricular failure. All had left ventricular enlargement at necropsy. Mural thrombi were present in 12; 4 had systemic emboli; 5 had pulmonary emboli. There was no evidence of coronary disease, myocarditis, or subendocardial fibroelastosis. Idiopathic myocardial disease is of clinical importance because it may simulate coronary artery disease, hypertensive heart disease, pericardial effusion, or rheumatic heart disease. The cause is unknown. Only one patient in this group had a family history of similar heart disease.

-- Authors' summary

- 716 Emotional Stress and Coronary Heart Disease in American Physicians, Dentists, and Lawyers. H. I. Russek. Am. J. Med. Sci. 243, 716 (June 1962).

Further scrutiny is given the hypothesis that stress is an important trigger variable in the etiology of coronary heart disease in populations subsisting on a "high fat" diet. Questionnaires were sent to 10,000 physicians, dentists, and attorneys engaged in general practice or in selected occupational specialties. Comparisons were made between groups showing varying degrees of occupational stress. In each professional area, a striking tendency was observed for prevalence rates of reported coronary heart disease to increase with advance in occupational stress. General practitioners in each field showed coronary heart disease prevalence rates 2 to 3 times those of the specialists selected for survey. No consistent relationship was found for prevalence rates of reported hypertension and occupational stress. The findings of these surveys suggest that emotional stress is an accelerating factor in atherogenesis, when diet is relatively high in animal fat.

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

- 717 Carcinoma of the Lung: Review of 509 Cases. M. S. Sabour, et al. Diseases of Chest 41, 530 (May 1962).

The authors reviewed 509 patients with cancer of the lung from Ain-Shams University Hospital, Cairo, and Springfield Hospital, Grimsby. Cancer of the lung was 9 times more prevalent in men than in women, and cigarette smoking appeared to be related to the occurrence of the squamous-cell carcinoma. Mass radiography detected 8.2%. The condition was most prevalent in the upper lobes and only rarely seen in the anterior segments of the lung. Needle biopsy of the lung was the most successful method of confirming the diagnosis in suspected cases. When first assessed, two-thirds of the patients were inoperable, and resection was successful in only 22% of the patients. The survival rate of the resected group over a 5-year period was 19%. Radical radiation therapy proved helpful in the initial control of undifferentiated-cell tumors. Palliative radiation therapy had no value in prolonging life, but was much more effective in the relief of symptoms than nitrogen mustard or triethylene melamine.

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

- 718 Alterations in Growth of Strain L Cells Exposed to Smoke Gases. P. Cooper, M. Klein and Irene P. Goldring. Proc. Soc. Exptl. Biol. Med. 110, 11-13 (May 1962).

Under the conditions of this study it appears that there is a "toxic" effect of smoke gases on strain L cells in culture. This results both in morphological changes in the cells and in alterations in growth curves as indicated by the reduction of cell populations. The smoke

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from the combustion of either cigarette paper or onion skin paper appears to be more "toxic" than that from the combustion of a cigarette or cigarette tobacco alone. The effect of cigarette or other smoke gases may result in part at least, from the particulate matter present in smoke gases.

-- Authors' summary

719 Acute Pulmonary Histoplasmosis in Laboratory Workers: Report of 2 Cases.

N. A. Vanselow, W. N. Davey and F. C. Bocobo.

J. Lab. Clin. Med. 59, 236-243 (Feb. 1962).

The clinical courses of 2 cases of acute pulmonary histoplasmosis occurring in laboratory workers are described. These persons were engaged in successful attempts at the isolation of *Histoplasma capsulatum* from soil samples collected from a highly endemic area of the disease. The risk of acquiring histoplasmosis by laboratory personnel is discussed and measures for the institution of adequate protection for such workers are outlined.

-- Public Health Eng. Absts.

720 Helminths of Animals Transmissible to Man. T. W. M. Cameron.

Am. J. Med. Sci. 243, 354-381 (Mar. 1962).

The significance of the helminths as a health problem is brought out in a historical survey which shows both the diseases produced and the prevalence of these diseases. The author indicates that most helminths have a high degree of specificity for a single species of host animal and are problems only to that host. Some, however, can be transmitted by other animals. Zoological classification is by-passed in favor of a discussion of the helminths under the headings: (1) Parasites common in man, which also can and do infect other animals. (2a) Parasites common in man, of which the normal host is an animal. (2b) Parasites rarely reported from man, which normally occur in animals, and which are largely of academic interest. (3) Larval parasites of animal origin which can infect man and often cause serious disease. Under each of the above headings the author has discussed several species with regard to their historical significance, geographical distribution, host specificity, life cycle, method of infection, the disease produced, and the method of treatment, if any exists. He also discusses some of the preventive measures that are in existence or might be undertaken to control the spread of these parasites. The paper includes 95 references to the subject.

-- Public Health Eng. Absts.

721 Testing of Metals Used in Orthopedic Surgery. K. H. Tager. Chirurg 33, 129 (Mar. 1962).

(Chirurg, Der. Zeitschrift fuer alle Gebiete der Operativen, Medizin, Springer-Verlag, Heidelberg, Platz 3, Berlin-Wilmersdorf (West), Germany*).

Chemical composition and physical characteristics play an important part in the metals used for osteosynthesis, because therapeutic failures can often be traced to defects in these metals. The literature reveals that breaks in nails and other endoprostheses still occur despite careful attention to chemical, humoral, thermal, physical, electrical and toxic factors that play a part in experimental and clinical implantation of metals. The author submitted a number of broken endoprostheses to metallurgists for analysis. They found that the materials used in these prostheses were not resistant to corrosion. Three-flanged nails and rather solid Bohler nails had become deformed and later had broken. A steel alloy, referred to as 18/8 by German steel makers, proved unsuitable for use in orthopedic prostheses. Steel to which 2.5% of molybdenum had been added in addition to the usual amounts of chromium and nickel also proved nonresistant to corrosion. However, an 18/10/2 chromium-nickel-molybdenum steel, with 0.05% (at least less than 0.07%) carbon, less than 1% silicon, and less than 2% manganese proved satisfactory for osteosynthesis. Another excellent steel alloy used widely in orthopedic surgery contains tantalum, cobalt, chromium, and tungsten. The author concludes that surgeons should demand that metal alloys that are used for orthopedic prostheses should meet certain legally established standards.

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

* Address not in current List of Periodicals.

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- 722 Side Effects with Short Term Phenylbutazone Therapy. J. Kawchak.
Ind. Med. & Surg. 31, 260-262 (June 1962).

Phenylbutazone in a dosage usually of 100 mg. three times a day was prescribed in 75 cases of painful inflammatory disorders not associated with chronic arthritic disease, including five cases of acute superficial thrombophlebitis and one case of gout. Complete or almost complete relief of pain and swelling and resolution of inflammation were rapidly obtained in the majority of cases with bursitis, tendinitis and tenosynovitis and similar disorders. All patients with acute superficial thrombophlebitis sustained complete recovery. Phenylbutazone administered in moderate dosage for short periods of time (approximately one week) is an efficacious means of treating both acute painful nonarthritic inflammatory disorders and acute superficial thrombophlebitis. It is significantly superior in effect to the salicylates, and in view of the relatively brief period of treatment required the incidence of toxic effects in such otherwise healthy patients appears to be reasonably limited.

-- Author's summary

SKIN DISEASES AND BURNS

- 723 Actual Causes of Certain Occupational Dermatoses. J. V. Klauder.
Arch. Dermatol. 85, 441 (Apr. 1962).

Causes of the reported occupational dermatoses were classified into the following categories: (1) primary irritants, 27.5%; (2) trauma and accidental injury, 22.0%; (3) sensitizing substances, 16.2%; (4) wet work (water alone, and soap and water), 15.0%; (5) cleansing agents applied to the skin, 9.6%; (6) petroleum products and other causes of folliculitis, 6.8%; and (7) physical and biologic agents, 3.0%. Unlike other reported causes, dermatoses arising directly or indirectly from trauma or injury were classified in this category, which explains its high incidence and the low incidence of dermatoses caused by physical and biologic agents. Aspects discussed were: diagnosis and prognosis of occupational dermatoses, psychosomatic factors, types of cutting and grinding fluids and their etiologic role, and the changing trends in causes of occupational dermatoses.

-- Public Health Eng. Absts.

- 724 The Demonstration of Bacillus anthracis in Environmental Specimens by Conventional and Fluorescent Antibody Techniques. J. Z. Biegeleisen, Jr., et al.
Am. J. Hyg. 75, 230-239 (Mar. 1962). (American Journal of Hygiene, School of Hygiene and Public Health, Johns Hopkins Press, Baltimore 18, Maryland*).

Bacillus anthracis was recovered from 44.7% of 76 samples of hair, dust floor sweepings, etc., from a goat hair processing mill. The materials were washed in a detergent solution, the organisms concentrated by centrifugation after being heated to 70°C for 10 minutes and aliquotes of the sediment inoculated into mice. Only 2 specimens (2.6%) yielded positive cultures when the same materials were washed in saline and aliquotes plated on suitable media. On the other hand, 12 (48%) of 25 of the air samples taken in the same plant proved culturally positive. Fluorescein-labeled antiglobulin for B. anthracis was used successfully to shorten the time required for both presumptive and definitive identification of the anthrax bacillus. Presumptive identification was based on the staining of colonies from blood agar; definitive identification on application to impression smears of tissues from infected mice. It is concluded that the use of a detergent solution to loosen anthrax spores from materials to which they adhere, followed by injection of the centrifugate into mice, furnished a sensitive procedure for demonstration of B. anthracis in highly contaminated industrial materials. If an homologous fluorescent antiglobulin is employed to stain organisms in tissue impression smears of blood, the time required for final diagnosis may be reduced considerably.

-- Public Health Eng. Absts.

* Address not in current List of Periodicals.

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- 725 Burns from Exposure to Anhydrous Hydrofluoric Acid. P. F. Dieffenbacher and J. H. Thompson. *J. Occ. Med.* 4, 325-326 (June 1962).

The authors present two cases of men employed in a petroleum refinery where they came in contact with anhydrous hydrofluoric acid as it was being used in a catalytic process for making 100-octane aviation gasoline. Anhydrous hydrofluoric acid is locally very corrosive and systemically toxic even in small quantities. Immediate thorough washing with water is the accepted emergency treatment. Some physicians advocate soaking the exposed part in iced magnesium sulfate solution to which alcohol may or may not be added. The authors believe this delays the important treatment, which is the early intracutaneous injection of 10% calcium gluconate to inactivate the hydrogen fluoride and stop the penetration and absorption of the acid. Both cases described had either pathological or clinical evidence of pulmonary involvement which probably resulted from the inhalation of hydrofluoric acid. Cardiac changes may have resulted from pulmonary absorption of hydrofluoric acid and, additionally, as in one case, from cardiac strain from the pulmonary changes. Supportive treatment, as indicated by the condition of the patient, should be given in addition to the early use of calcium gluconate intravenously which the authors believe tends to neutralize any hydrofluoric acid absorbed through the skin or lungs.

- 726 Platinum Allergy in Industry. P. Sauerwald. *Z. ges. Hyg. u. ihre Grenzgebiete* 7, 738-742 (Oct. 1961). German.

In the German Democratic Republic there are two factories where platinum is refined and ultimately cast into ingots. There were only 16 persons at work in the factories and of these 14 who were exposed to platinum dust suffered from allergic manifestations ranging from nasal irritation to severe asthmatic attacks; only one worker had any skin effects. The remaining two workers who had no allergy to platinum were engaged in the process of melting and refined metal. There is an account of the stages in the chemical purification of the metal during which workers are exposed to the dusts of dried platinum ammonium chloride and of spongy platinum. Allergy to platinum was demonstrated in the workers by patch tests and blood examinations the results of which are briefly stated. Some experiments on rats and guinea pigs to study the toxicity of and allergy induced by platinum were also carried out. Measurements of platinum dust at different stages of the process were made. Some suggestions are given for the protection of workers which include keeping the platinum salts dry, grinding the salts in a closed system and the supply of adequate protective clothing.

-- Bull. Hyg.

- 727 The Effect of Water Hardness on the Growth of *Pseudomonas aeruginosa* in Metal Cutting Fluids. E. V. Feisal and E. O. Bennett. *J. Appl. Bacteriol.* 24, 125-130 (Aug. 1961). (Journal of Applied Bacteriology, Bradley and Son, Ltd., Crown Press, Reading, England*).

An investigation of the effect of the salts found in hard water on the growth of *Pseudomonas aeruginosa* in metal cutting fluids is reported. It was found that hard water and the salts found in hard water stimulate the growth of this organism in the two products employed in the study.

-- Bull. Hyg.

CHEMICAL HAZARDS

- 728 Maximum Allowable Concentrations of Mixtures. H. B. Elkins. *Am. Ind. Hyg. Assn. J.* 23, 132-136 (Mar.-Apr. 1962).

In evaluating exposure to mixtures of toxic substances, conclusions are usually based solely on the concentration of the most toxic or major component. This procedure is in general logical only when the different substances act independently. In many cases additive effects may be taken for granted, and in others they should be assumed until evidence to the contrary is

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available. In a number of common processes, a variety of hazardous fumes and gases are produced. In certain of these, lower maximum allowable concentrations for the major components than those used for the pure substance are proposed.

-- Author's abst.

- 729 Range-Finding Toxicity Data: List VI. H. F. Smyth, Jr., et al.
Am. Ind. Hyg. Assn. J. 23, 95-107 (Mar.-Apr. 1962).

A table presents acute toxicity and irritation data on more than 300 compounds, accumulated in a continuing program for screening potential commercial products. The standardized experimental methods are described.

-- Authors' abst.

- 730 The Determination of Urinary Fluorides. L. DuBois, J. L. Monkman and T. Teichman.
Am. Ind. Hyg. Assn. J. 23, 157-163 (Mar.-Apr. 1962).

Determinations of fluoride in urine by an ion exchange procedure and by an electrometric method are discussed. Results are compared for replicate samples analyzed by these methods and by the distillation procedure. The accuracy of the three methods was found to be of the same order. The reproducibility of the electrometric method was superior and the method was more rapid.

-- Authors' abst.

- 731 Experimental Research into Tellurium as an Industrial Poison. S. E. Sandratskaya.
Gigiena Truda i Prof. Zabollevaniya 6, 44 (Feb. 1962).

The author describes investigations into the toxic properties of the aerosols resulting from condensation and disintegration of elemental tellurium and its dioxide, and into the chronic respiratory poisonings resulting from exposure to these aerosols. These investigations revealed that the finely dispersed oxidized condensation aerosol is the most toxic. In concentrations of 0.05 mg. per liter it reduces the growth rate of animals, reduces erythrocyte count, the hemoglobin level, and the catalase, and changes the normal ratio of the serum protein fractions. The liver is the organ that is most susceptible to the injurious effects of this toxic aerosol. Its synthesizing function is impaired, and autopsy studies reveal fatty degeneration. The nervous system is also damaged (prolonged chronaxy with predominance of inhibitory processes and paresis of the hind extremities and tail). In a concentration of only 0.01 mg. per liter the toxicity of this aerosol was slight; it produced only transitory and reversible changes. Aerosols resulting from disintegration produce analogous changes only in concentrations 10 times as high (0.1 mg. per liter). These data make it possible to establish differential ratings for the maximum permissible levels of tellurium aerosols in the atmosphere of industrial premises.

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

- 732 Chlorate Poisoning. N. C. Klendshoj, et al.
J. Am. Med. Assn. 180, 1133-1134 (June 30, 1962).

The patient was a 28-year-old Korean physician engaged in the study of renal physiology. By mistake he ingested 40 g. of sodium chlorate. The major feature of the treatment was the combined use of blood dialysis and exchange transfusion using a total of 18 pints of donor blood.

- 733 Investigations of the Toxicity of Sodium Azide. I. Experimental Investigations of Acute and Subacute Toxic Activity. Ewa Bassendowska and Z. Kowalski.
Med. Pracy (Lodz) 12, 427-442 (1961). Polish.

The toxicity of sodium azide (NaN_3) was studied in rats and mice given the compound subcutaneously in doses of 15-72 mg. per kg. The LD_{50} was 45.1 mg. per kg. for rats and 23.06 mg. per kg. for mice. The animals died with paralysis and respiratory failure. The LD_{50} for rats on intratracheal injection of about 0.4 cc. of an aqueous solution was 47.5 mg. per kg. Irregular results were obtained when sodium azide was applied to the skin and conjunctiva of rabbits, but the compound was evidently absorbed by both these routes. Subcutaneous

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injection in rats in doses of 0.5 LD₅₀ or greater produced changes in respiration. In a study of subacute toxicity rats given daily doses of 20, 30 or 40 mg. per kg. died after 1-4 days, whereas daily doses of 10 mg. per kg. were tolerated for 47-74 days before death supervened. The effect was considered to be cumulative. -- Bull. Hyg.

- 734 Characteristics of Trace Ions Released from Embedded Metal Implants in the Rabbit. A. B. Ferguson, Jr., et al. J. Bone Joint Surg. 44A, 323 (Mar. 1962).

The fate of metal ions released by embedded implants of commonly used alloys was studied in rabbits. Spectrochemical analyses were done of the liver, spleen, kidney, lung, muscle immediately surrounding the implant, and skeletal muscle from elsewhere in the animal. The object of this experiment was to determine: (1) whether ions released from the implant circulated in the body, (2) what organs were inactive in terms of picking up the trace metal ions, and (3) what increase or decrease in concentrations of ions occurred over a 16-week period in the tissues analyzed. Vitallium, 316 stainless steel, incoloy, A-286 stainless steel, aluminum 2024-T3, titanium, zirconium, and puron were imbedded in the skeletal muscles of albino rabbits—one alloy to any one animal. The spleen was found to be the most active site of trace-ion storage. The other organs tended to get rid of an early increase in concentration. Cobalt and nickel were the most active ions in terms of their presence in the organs.

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

- 735 The Prevention of Manganese Poisoning. J. E. Wynter. Ind. Med. & Surg. 31, 308-310 (July 1962).

Manganese is still a poison, even when the amounts absorbed are small. A long period of exposure may bring on poisoning with different initial symptomatology, and it is necessary to be on the alert to discover it. Analyses of the urine and blood for manganese must be made constantly of workers exposed to this element. It is also important to keep a detailed record of the minute quantities contained in the air. The results obtained from this study will be the subject of a later communication.

- 736 Acute Oral and Parenteral Toxicity of Four Titanate Compounds in the Rat. J. R. Brown and E. Mastromatteo. Ind. Med. & Surg. 31, 302-304 (July 1962).

A study of the acute oral and intraperitoneal toxicity of barium titanate, bismuth titanate, calcium titanate, and lead titanate was carried out in white rats of the Wistar strain, each weighing about 250 grams. The acute oral LD₅₀ of these compounds in the rat exceeds 12 g./kg. The intraperitoneal LD₅₀ was found to range from 2.0 g./kg. for lead titanate to 5.3 g./kg. for calcium titanate. Repeated daily dosage of 100 mg. of these titanates to a small group of rats showed no evidence of cumulative effect over a 2 week period. In general, these compounds are relatively insoluble and chemically inert. They have a low order of acute oral and parenteral toxicity to the rat. It is felt, therefore, that the 4 titanates studied would present little industrial hygiene hazard in ordinary handling. Occupational exposures would occur chiefly by inhalation. Control measures should be based on the particular titanate in use; for example, the concentration of lead titanate in the air of the working environment should be based on its lead content. Authors' summary

- 737 Corrosive Gastritis after Formaldehyde Ingestion. M. Roy, Jr., M. A. Calonje and R. Mouton. New Engl. J. Med. 266, 1248-1250 (June 14, 1962).

A case of corrosive gastritis after formaldehyde ingestion (240 ml., 37% solution), believed to be the second of its kind reported in the American literature is presented. X-ray films taken before and after ingestion of formaldehyde are included, along with a brief comment about the agents responsible for corrosive gastritis. -- Authors' summary

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- 738 Observations on the Concentrations of Trichloroethylene in Blood and Expired Air Following Exposure of Humans. R. D. Stewart, et al.
Am. Ind. Hyg. Assn. J. 23, 167-170 (Mar.-Apr. 1962).

Humans were exposed to approximately 200 ppm of trichloroethylene in air. Pre- and post-exposure clinical findings were noted as well as subjective and physiological responses during exposures. Trichloroethylene was detected in the blood in one-half hour and reached a maximum in 2 hours. Trichloroethylene was detectable in the expired air for more than 5 hours after the exposures. Measurement of trichloroethylene in expired air shows promise for evaluation of trichloroethylene exposures. Infrared spectroscopy techniques were used for the determinations.

-- Authors' abst.

- 739 A Modified Spectrophotometric Method for the Determination of Hydrazine. T. Dambrauskas and H. H. Cornish. Am. Ind. Hyg. Assn. J. 23, 151-156 (Mar.-Apr. 1962).

The method is based on the reaction of p-dimethylaminobenzaldehyde with hydrazine and the formation of p-dimethylaminobenzaldazine, which, in the presence of strong acids, is rearranged into a p-quinoid chromophore structure. It was found that sufficient time must be allowed for the completion of aldazine formation and the most intensive color, proportional to the concentration of hydrazine, is developed in the presence of concentrated glacial acetic acid. The method is extremely sensitive and applicable to the determination of hydrazine in biological material.

-- Authors' abst.

- 740 Insecticide Content of Diet and Body Fat of Alaskan Natives. W. F. Durham, et al.
Science 134, 1880-1881 (Dec. 8, 1961).

A study was made of the DDT and DDE content of the diet and body fat of native Alaskans who lived in isolated, primitive areas and had minimal contact with insecticides. No DDT or DDE was detected in any of the native Alaskan foods analyzed with the exception of 2 white owls, both of which contained low levels of DDE. Eskimos store considerably less DDT and DDE in their body fat than the general population in the United States. These low dietary levels and the resultant low levels in body fat are consistent with previously published data on the relationship between intake and storage of DDT.

-- Bull. Hyg.

- 741 Analysis of Synthetic Organic Pesticides in Water. E. Hindin, et al.
J. Am. Water Works Assn. 54, 88-90 (Jan. 1962).

Analytical procedures for detection and quantitative estimation of synthetic organic pesticides in water are briefly summarized. Paper and gas chromatographic methods are used for analyses of chlorinated pesticides. Paper chromatography supplemented with an enzymatic method appears to show promise for determination of phospho-organic and carbamate compounds.

-- Public Health Eng. Absts.

- 742 Myeloneuritis Due to Tricresyl Phosphate in Children During the Poisoning in Morocco in 1959. R. Charlas, et al. Arch. Franc. Pediat. 18, 1173 (Oct. 1961). French. (Archives Francaises de Pediatrie, Societe de pediatrie de Paris, 5 rue d'Universite, Paris 7, France *).

The mass poisoning due to the ingestion of oil with a cresyl phosphate base that occurred in Morocco in 1959, in which 20% of the 10,000 victims were less than 15 years of age, was the first tricresyl phosphate poisoning to have affected a significant number of children. The authors made clinical, biological, and electrological studies of 100 of these children, and followed up 15 of them for several months. Three case studies are presented here. Although the children's form of the disease differs little from the adult form, the following characteristics are peculiar to the former: (1) rareness of digestive prodromes; (2) early development of spasticity; (3) decreased incidence of disorders of sensation, particularly tactile and thermal-gesic; and (4) greater resistance to the process of demyelination produced by the poison.

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

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INDUSTRIAL DUSTS

743 Resolution of Chronic Interstitial Pneumonitis. Experimental Observations.

P. Gross, J. M. McNerney, Marian L. Westrick and Mary Ann Babyak.

Arch. Pathol. 74, 81-87 (July 1962). Complimentary copies available from the Industrial Hygiene Foundation upon request.

Chronic interstitial pneumonitis was produced in guinea pigs by the intratracheal injection of nonfibrogenic silica dust or formalin-killed staphylococci, or both. In many of the animals, the intra-alveolar tissue, constituting an integral part of the proliferated mural tissue, evinced degenerative changes. These changes consisted of condensation, lysis, and fragmentation of reticulin fibers as well as of cellular degeneration. Much of this degeneration had progressed to necrosis. The degeneration and necrosis of proliferated intraalveolar tissue in chronic interstitial pneumonitis tend to reestablish the alveolar lumen and therefore can be considered a type of resolution. This resolution is, however, incomplete because the alveolar walls generally do not return to their normal status but retain a residual degree of thickening. Because a sharp distinction can be made between newly formed and old degenerated reticulin stroma and since "organizing" tissue would be expected to contain newly formed reticulin, therefore, the finding of degenerated instead of newly formed reticulin in apparently organizing alveoli of these experimental animals gives additional support to the view that "organizing" pneumonia is a misconception and that it is nothing more than one of the features of a resolving chronic interstitial pneumonitis.

-- Authors' summary

744 Studies on Coagulation Employing Ammonium Chloride Aerosols. I. Hayakawa.

J. Air Poll. Control Assn. 12, 265-271 (June 1962).

The principal findings of the experimental investigation are: (1) Nonpolar compounds (carbon disulfide, carbon tetrachloride, etc.) increased the stability of an aerosol prepared from a one per cent solution of ammonium chloride. (2) Neutral polar compounds (acetone, ethyl acetate, methyl alcohol, etc.) were shown to increase the stability of the same aerosol system. (3) Acidic polar compounds (acetic acid, formic acid, etc.) decreased the stability of the same aerosol system. (4) The effect of foreign vapors on the coagulation of an aerosol was evident not only in the case of solid particles, but also with an aerosol of liquid particles. The experiments were limited to the effect of 7 foreign vapors (carbon disulfide, carbon tetrachloride, acetone, ethyl acetate, methyl alcohol, acetic acid, and formic acid) on the coagulation rate of one aerosol (ammonium chloride). On the basis of these studies it was felt that additional studies on other aerosols and foreign vapors would be of both significant fundamental and practical value, since clear classification would permit the prediction of the effect of mixtures on the coagulation of smoke. If the rate of coagulation can be increased as a result of mixture of two different kinds of smokes or by the addition of a foreign vapor, the removal of such material from the air by cyclone separators, filters, etc., would be easier and more efficient. On the other hand, if the mixing of two kinds of smokes resulted in increased stability, then these smokes should be kept separate and cleaned individually.

-- Author's summary

745 Analytical Aspects of the Use of Glass Fiber Filters for the Collection and Analysis of Atmospheric Particulate Matter. J. B. Pate and E. C. Tabor.

Am. Ind. Hyg. Assn. J. 23, 115-150 (Mar.-Apr. 1962).

Although the "ideal", or "universal" sampling medium is not available and is not easily defined, the glass fiber filter may be used for air sampling where nondestructive, organic and inorganic analyses are likely to be scheduled. Glass fiber filters free of organic binders are satisfactory for organic determinations. Within the inherent limitations of the media, samples collected on glass fiber filters may be analyzed for metals. Since currently available glass fiber filters differ in their content of various metals, a thorough knowledge of the analytical characteristics of the filter is necessary when samples are collected for the

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purpose of comparing or relating the data to data from similar measurements. The metal measurements of the National Air Sampling Network are estimates used for relative comparisons, and, therefore, are affected greatly by changes in filter composition. Similarly, the growing number of state and community networks (New York, Massachusetts, Texas, Washington, and Maryland) means that the sampling agency has the responsibility of determining analytical characteristics of the filters being used. This is of fundamental importance, if samples are likely to be analyzed at a later date or if the metal data are to be compared with national, state, local, or special study data. All media evaluated in this paper possess analytical characteristics suitable for most sampling programs. The differences between various suppliers' brands of the glass fiber filters make it mandatory for the user to maintain some form of quality control over the filter medium. The quality control program required may be very simple or very complex. This will be dictated however by the extent of the sampling program and the complexity of the expected analyses.

-- Cond. from authors' summary

- 746 Dust Measurements in the Austrian Hard Metal Industry. W. Kitzler.
Staub 21, 530-532 (Dec. 15, 1961).

Two factories handling tungsten, cobalt, titanium, tantalum and niobium were studied by means of a Gothe filter apparatus for weight concentration and a konimeter for number of particles. The former indicated the presence in the atmosphere of up to 46 mg./cu.m., mainly tungsten, and the latter up to 10,000 particles per cu.m. The results of the sampling are compared with data from other countries with unfavorable conclusions regarding conditions in the Austrian establishments.

-- Bull. Hyg.

- 747 Cloth Filtration of Fine Aerosols. F. H. H. Valentin
Brit. Chem. Eng. 7, 268-271 (Apr. 1962).

This study deals with the influence of various structural parameters of a cloth on retention efficiency and pressure drop with respect to a fine (1.0 micron) homogeneous ammonium chloride aerosol. A total of 24 different cloths was tested. The material used was cotton. Wool, terylene, and silicone-impregnated glass cloth were also tested, but no significant differences were found between these materials. All effects could be ascribed to the cloth and fiber properties and not to the chemical nature of the fiber. All fibers simply acted as solid cylinders, which was expected in view of the electrically conducting nature of the aerosol.

-- APCA Absts.

- 748 Pulmonary Disease of Ferroalloy Workers. F. Princi, L. H. Miller, A. Davis and J. Cholak.
J. Occ. Med. 4, 301-310 (June 1962).

A pulmonary disease of occupational origin has been described that the authors have not found in the published literature. It is characterized by recurring bouts of acute pneumonitis with cough, wheezing, anorexia, loss of weight, increased sedimentation rate, linear and nodular fibrosis in the chest roentgenogram, and ventilatory impairment, and is associated with exposure to high concentrations of metallic silicide fumes. Free crystalline silica, either as dust or vapor, was not found in either the atmosphere or the pulmonary tissue. The entire natural history of the disease is not clear, but it is suggested that it probably has occurred among employees in other ferroalloy plants and has not been recognized.

-- Authors' summary

- 749 Dust Control in the Cement Industry. N. Pilpel. Brit. Chem. Eng. 7, 258-263 (Apr. 1962).

There are several stages in the manufacture of cement during which considerable amounts of dust are generated. It is produced during the crushing of the raw ingredients, in the firing kilns, in the cement grinding mills, when powdered materials are being conveyed from one point to another and when the finished cement is packed into bags for shipping. The amount of dust can be reduced other than by installing dust collecting equipment at the points where milling, firing, and clinker grinding are being carried out. One of these is the granulation of the raw meal with water prior to firing; another method is to reduce to a minimum the amount of disturbance occasioned when the raw ingredients and finished cement are conveyed to

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a different location in the plant. Compressed air is used to blow the cement from the storage silos directly into the tank road vehicles or railway tankers through a 4-inch diameter flexible pipes. Details are given of the cleaning equipment which is in current use in cement works in the United Kingdom and abroad.

-- APCA Absts.

- 750 Bagassosis: A True Pneumoconiosis. H. A. Buechner.
Ind. Med. & Surg. 31, 311-314 (July 1962).

Since 1937, when bagassosis was first recognized as an occupational disease, a number of important questions pertaining to this disorder have gone unanswered. Is bagassosis associated with permanent damage to the lungs? Does residual functional disability follow? Should the disease be classified as a true pneumoconiosis and is it an industrially compensable condition? This paper presents an analysis of existing information on the subject derived from autopsy findings, lung biopsy specimens, persistent radiographic changes and pulmonary function testing. On the basis of this evidence, it is concluded that all of the above questions should be answered in the affirmative.

-- Author's summary

- 751 The Extent of Pneumoconiosis and the Course of its Development among Miners in a Coal Mine. W. Zahorski, A. Kujawska and K. Marek. Med. Pracy (Lodz) 12, 455-461 (1961).

An investigation into the incidence and severity of pneumoconiosis has been made on the basis of clinical and x-ray records of 1,308 miners in a coal mine in Poland who were suspected of suffering from silicosis. The observations covered a period of 12 years, and the degree of pneumoconiosis found was recorded on the basis of the Geneva classification. Of the miners examined 19.6% had suspected and 32.8% had undoubted pneumoconiosis. Grade m occurred in 24.4%, n in 2.7%, ABC in 3.8% and p in 1.9%. Tuberculosis was present in 10.7% of workers free from pneumoconiosis and in 23.8% of the remainder. Respiratory insufficiency was present in 9.7% of those free from pneumoconiosis and in the remainder it ranged from 12.7% in the mild forms to 68.9% in those with the most extensive involvement. Pneumoconiosis of grade z appeared after an average period of 23 years of work in the mine, grade m after 26 years and grade ABC after 31 years.

-- Bull. Hyg.

- 752 Occupational Health Study of the Manufacture of Ferrosilicium (Ferrosilicon). J. Bansagi.
Munkavedelem (Budapest) 7, 35-38 (1961).

Silicosis is a widespread occupational health problem in Hungary (Bull. Hyg. 36, 865 (1961)). The author revealed the high incidence of silicosis in the manufacture of ferrosilicon. Silicosis was present in 33.8% of the workers exposed to dust. Ferrosilicon is produced when quartz, coal and iron are heated at 3,000°C. From stone-crushing to the cleaning room nearly every process is connected with dust exposure. The highest dust concentration measured with the konimeter was found at the stone crushing (1,640-1,970 particles per ml.) and at sieving the quartz for coating ingot molds (1,088-1,352 particles per ml.). In the case of the furnaces, 304-936 particles per ml. were measured when the furnace was charged and 720-3,010 particles per ml. when the metal was poured. The free silica content of the dust varied from 35 to 70%, and more than 90% of the particles were less than 2.4 microns in size. According to the exposure, the silicosis developed rapidly. The average number of years before the appearance of radiological silicosis was less than 5 in the case of stone crushers, furnacemen, transport workers, fettlers and mechanics.

-- Bull. Hyg.

- 753 Analysis of the Lipids in Experimental Silica-Induced Lesions and Tissue Reactions by Means of Phospholipids Extracted from These Lesions. A. Collet and H. Daniel-Moussard.
Rev. Franc. Etudes Clin. Biol. 6, 897-904 (Nov. 1961). French. (Revue Francaise d'Etudes Cliniques et Biologiques, Editions Medicales Flammarion, 22 rue de Vaugirard, Paris 6, France*).

Lipids were estimated chemically and histochemically in lesions produced in rats by injection of quartz into the peritoneal cavity or into the lungs. The lipid fractions that were estimated at the same time as the collagen were neutral fats, phospholipids, free and total fatty acids,

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and cholesterol. The most striking finding was an increase in phospholipids, maximum at about 2 weeks after injection of quartz, both in the peritoneum and the lungs. As a second step, phospholipids were extracted from pulmonary silicotic lesions and re-injected intraperitoneally in other animals. Despite repeated injections for 16 days, no peritoneal lesions were found, the only abnormality being a splenomegaly.

-- APCA Absts.

- 754 Is There a Relationship Between Silicosis and Histoplasmosis? W. S. Cortez, et al.
Diseases of Chest 41, 645-651 (June 1962).

It is probable that there is infrequent coexistence of chronic pulmonary histoplasmosis and silicosis. Apparently, silicosis has little effect on benign histoplasmosis, since fewer patients are admitted to the sanatorium from an area of high silicosis incidence than from other areas. It is true that this is also an area of a lesser rate of histoplasmin skin reactivity, but the rate is still high. Further determination of the possible effect of silicosis on the progress of chronic pulmonary histoplasmosis will depend on a diligent search for the accumulation of follow-up data on many more cases such as are presented in this paper.

-- Authors' conclusions

- 755 The Constitutional Factor in Asbestosis. H. Bohlig, G. Jacob and H. Muller.
Arch. Gewerbepathol. Gewerbehyg. 18, 596-609 (1961). German.

The possibility of individual, family or racially conditioned susceptibility to certain diseases has long been discussed. It has been considered in relation to silicosis in a number of papers (Bull. Hyg. 30, 378 (1955)) which are mentioned and discussed in the present paper. In asbestosis, however, because of there being considerably fewer industrial concerns in which asbestos dust is a risk, the literature is scantier than that of silicosis and very few instances of asbestosis among members of the same family have been reported. There are given here detailed family histories and clinical particulars of members of 3 families--2 brothers in each of 2 families and 2 sisters in 1 family--all of whom suffered from the effects of exposure to asbestos in the course of their employments. In addition there is a description with many references of the morbidity of asbestosis and its relation to length of period of exposure to asbestos dust at work. The records of the 6 patients in all of whom x-ray examination showed definite asbestosis were: (1) two brothers died after 18 to 25 years' exposure to asbestos, one of bronchial carcinoma and the other of a pleural tumor; (2) two sisters after 32 to 35 years' exposure were alive, aged 84 and 82 years, but had shortness of breath and bronchial catarrh; and (3) two brothers had only 3 to 4 years' exposure to asbestos and were alive at over 62 years of age. Both of them suffered from some shortness of breath and cough. On this evidence the opinion expressed is that personal constitution plays no part in susceptibility to asbestosis but does influence the progress of the condition.

-- Bull. Hyg.

- 756 The Effect of Massive Doses of Vitamin B₂ on the Development and Course of Experimental Silicosis in Albino Rats. M. I. Razumov, B. K. Skirko and IU. Srubina.
Ark. Patol. 23, 55-62 (1961). Russian.

This investigation is a continuation of the work in which it was shown that only crystalline forms of quartz are dangerous from the viewpoint of silicosis hazards. The following hypothesis was put forward: dust particles interact with the pulmonary tissue due to their piezoelectric properties. As a result of this, disturbances of the tissue metabolic processes take place leading to the development of fibrosis. Since riboflavin takes an active part in the redox processes, experiments were staged to analyze the effect of large doses of the vitamin (250 micrograms) on the development of experimental silicosis in white rats. As shown, administration of riboflavin in large doses to silicotic animals accelerated the development of the pathological process (the fibrous foci in the lung formed earlier than in control animals).

(Authors' English Summary) -- APCA Absts.

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- 757 Diffuse Pleural Mesotheliomas in South Africa. C. A. Sleggs, P. Marchand and J. C. Wagner. *S. African Med. J.* 35, 28-34 (1961).

Although diffuse pleural mesothelioma is regarded as a rare tumor, the authors have had personal experience with 34 cases. This remarkable experience is apparently related to the area of asbestos production in South Africa. Asbestosis was seen in 6 of the 7 autopsies, and in 9 of 11 biopsies. However, only 19 of the persons had been employed in the asbestos industry; all but two of the remaining members of the group had been born and lived in this asbestos-producing area of Cape Province. Symptoms began with bronchitis and pleural pain, progressed to pleural effusion and pleural thickening, and finally manifested thoracic malignancy. Eight patients developed peritoneal involvement. Other metastases had involved cervical nodes, subcutaneous tissue, and the tongue. Experience with therapy had been very unsatisfactory. Of the patients of the group who died, 6% did so within the first year; 4 years was the longest survival time observed.

-- APCA Absts.

- 758 Foreign Body Granulomas Caused by Glove Dusting Powders. K. Hupe. *Chirurg* 33, 97 (Mar. 1962). *Chirurg, Der. Zeitschrift fuer alle Gebiete der Operativen, Medizin, Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf (West), Germany*.*.

After it had been discovered that the use of talcum powder in surgical gloves could give rise to postoperative formation of granulomas and adhesions, it had been recommended that corn starch powder be used in place of talcum. The author investigated the reaction to corn starch powder in 24 rats. Corn starch glove powder was injected subcutaneously into the fat tissue in doses of 50 or 100 mg. and intraperitoneally in doses of 200 mg. The animals were killed in groups of 4 at intervals of one month. Except in 2 animals, in which the subcutaneous fat tissue contained a nodule the size of a millet seed, 1 and 2 months after the injection of 100 mg. of powder, no granuloma formations were detectable macroscopically. None of the animals showed intraperitoneal adhesions. Histological studies on the subcutaneous fat tissues revealed in all animals, at the sites of injection, typical foreign body granulomas with macrophages, histiocytes, lymphocytes, giant cells, fibroblasts, and capillary buds. Starch granules were diffusely disseminated, and after one month about half of the granules had been incorporated into cells, and after 3 months all were intracellular. At this time lymphocytes and giant cells showed considerable retrogression. After 6 months many starch granules had been phagocytized by histiocytes and macrophages. The author concludes that although starch powders are less injurious to tissues than are talcum powders, in that they cause less inflammation and granuloma formation, the difference is only quantitative. They are not indifferent, since inoculated particles are not completely absorbed. The formation of new collagenous or elastic fibers was not observed. No intraperitoneal adhesions developed from corn starch powders.

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

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 759 Myocardial Damage in Caisson Workers. I. Rozsahegyi and I. Kenedi. *Arch. Gewerbepathol. Gewerbehyg.* 18, 610-631 (1961). German.

The present paper, from the State Institute of Industrial Medicine, Budapest, contains an account of the study of 316 caisson workers engaged in building the Budapest underground railway and a control group of 300 men in other types of work. The purpose of the study was to determine the comparative incidence in the 2 groups of electrocardiographic signs of myocardial damage, the actual types of these signs and the relation of these signs to ability to work at increased atmospheric pressure. Among the conclusions the following are stated: (1) Abnormalities in the electrocardiogram were significantly more frequent in caisson workers at all ages than in control workers. This finding is all the more important because the precautions taken

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in the examination of caisson workers before hiring are so stringent. (2) The causes of the different types of abnormality may be (a) air emboli in the branches of the pulmonary or coronary arteries, (b) central nervous system damage from decompression, or (c) left-sided cardiac hypertrophy. (3) Most of the abnormal signs in the electrocardiogram though indicating organic cardiac damage were rarely associated with cardiac symptoms. They were mostly present in men with manifestations of decompression sickness but sometimes in those with no signs or symptoms. Actual cardiac disease was not observed but the period of investigation was not long enough to be certain about the question of whether it does or does not develop in these caisson workers. In a section on preventive aspects it is recommended that the electrocardiograph be used in assessing the fitness of candidates for caisson work and also in their periodic examinations.

-- Cond. from Bull. Hyg.

- 760 The Resistance of Animals to Acute Cold Exposure Following X-Irradiation. B. D. Newsom and D. J. Kimeldorf. Intern. J. Radiation Biol. 4, 143-149 (Nov. 1961). (International Journal of Radiation Biology and Related Studies in Physics, Chemistry and Medicine, Academic Press, 111 Fifth Avenue, New York 3, N. Y. *).

The resistance of rats and guinea pigs to acute exposures of severe cold ($-20^{\circ}\text{C} = -40^{\circ}\text{F}$) is lowered following irradiation. The resistance to cold of rats varied inversely with radiation dose, and the effect was present on the first day after sublethal doses of x-rays. After sub-lethal irradiation (400 r) the altered resistance persisted through the 18th day and then disappeared. After an LD₅₀ exposure to x-rays, the surviving rats exhibited a lowered resistance to cold at 6 months after irradiation.

-- Nuclear Sci. Absts.

- 761 Inner Ear Response to High-Level Sounds. M. Laurence, D. Walsk and P. Schmidt. J. Acoust. Soc. Am. 34, 102 (1962).

Earlier studies have shown that the middle-ear muscle (stapedius) damps the movements of the middle-ear bones, reducing the sensitivity for low-level sound by about 10 db. At the same time the muscle protects the inner ear from high-level sound, particularly, high-frequency sound. The authors have shown before that under appropriate conditions, when the middle-ear muscles are completely inactive, the presentation of a tone rising in intensity caused an electrical response from the cochlea indistinguishable from that attributed to contraction of the muscles. In this paper additional data bearing on this response of the inner ear are presented. The experiments conducted showed that electrical response of the inner ear to rapidly increasing intensity of sound is the result of an overloading process within the inner ear. The response to the fundamental stimulus tone decreases as intensity increases. At the same time harmonics increase and the wave form becomes distorted. This evidence supports the interpretation that the organ of Corti reaches a limit of proportionality that results in true nonlinear distortion, distorted wave form, and increased harmonic content. Within the limits of the experiments performed an increasing rate of rise of stimulus strength did not change the form of the cochlear response.

-- J. Occ. Med. Absts.

- 762 Human Tolerance to Magnetic Fields. D. E. Beischer. Astronautics 7, 24-25, 46, 48 (Mar. 1962).

The physiological and psychological effects of magnetic fields on man were studied. There was no sensation in part and entire body exposure to non-changing fields up to 20 kilogauss for a duration of 15 minutes and no after-effects following exposure to fields of 5 kilogauss for less than 3 days per year per man. However, taste and pain sensation may be caused by fillings of the teeth in high strength fields. Visual sensations are also noticed in alternating fields.

-- Nuclear Sci. Absts.

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RADIOACTIVITY AND X-RADIATION

- 763 A Short Cut to Fuel Element Criticality Analysis. J. J. Rizzo.
Am. Ind. Hyg. Assn. J. 23, 171-173 (Mar.-Apr. 1962).

A method has been furnished which will serve as an aid in estimating the number of uranium bearing fuel elements required to sustain criticality. This is of particular importance in fabrication plants where elements are pickled or tested in autoclaves. In such processes particular attention is exercised by the fabrication engineer to arrange the elements in a regular array. In fact, regular spacing of nuclear material in an environment of hydrogenous liquids, are the basic factors which could contribute to a nuclear disaster. It is hoped that this report will provide an effective guide to anyone who may encounter problems concerning criticality and safety, both in element fabrication plants and critical facilities. The information is summarized in a graph and is sufficient to determine if a system, with any number of elements regularly spaced, could become critical.

- 764 The Medical Control of Ionizing Radiation in Massachusetts Industry. H. Bavley, H. G. Brugsch and R. L. Devlin. J. Occ. Med. 4, 311-313 (June 1962).

The incidence of exposure to ionizing radiation since the inception of the safety code has been quite low. Eighteen radiation incidents have been investigated by the Department of Labor and Industries since December 1957. These incidents concerned possible exposures from equipment such as x-ray machines and an electron beam accelerator, as well as from radioactive materials involved in fires, spills, and in routine plant procedures. Investigation revealed that several of these incidents were due to misuse of film badges, and did not involve over-exposure in the employee. Other incidents were due to improper work practices, inadequate job preplanning and mechanical-shield failures. The time lost from work in industries using ionizing radiation since the inception of this code amounts to less than one work week. It appears certain that properly executed medical control programs have played an important part in keeping the frequency and severity rates much lower than the average accident rate for all industries in Massachusetts. The use of radioactive material and other sources of ionizing radiation will undoubtedly increase in the future. Emergency teams consisting of medical and health physics personnel should, therefore, be established by industries in cooperation with the state, as a supplement to the existing teams to the Atomic Energy Commission. This will greatly reduce the time lag in evaluating possible serious radiation hazard emergencies. In order to help those physicians who may have to treat a patient involved in a radiation accident, the medical profession, through its state or national societies, should organize a radiation incident center similar to the poison information centers now in existence in many cities of the United States. The task conceivably could be taken over by the poison information centers as an additional responsibility.

-- Authors' summary

- 765 Ventilation Design for Fallout and Blast Shelters. G. M. Hama and W. G. Frederick.
Air Eng. 4, 19-21 (Feb. 1962).

The ventilation requirements for fallout and blast shelters are presented. Guides are given for sealing against infiltration, power sources, air requirements for persons in various states of activity, survival times for space volumes with no ventilation and occupants at rest, decay in fallout radiation, and gamma radiation protection factors for various types of structures. The amount of construction material and monitoring equipment needed are also discussed.

-- Nuclear Sci. Absts.

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- 766 A Cumulative Deposition of Fallout within Buildings. A. R. Gould.
Nature 193, 1152-1153 (Mar. 24, 1962).

Simple observations confirmed the existence of a widespread preferential deposition of radioactive fallout within buildings around doors and windows by inertial impact. Smear test taken from a laboratory door showed a surprising quantity of material with an intense alpha activity. It was found that 2 major physical mechanisms of dust depositions by inertial impact and gravitational settling appear to result in quite different concentrations of fallout. Deposits of dust by inertial impact exhibited considerable alpha activity with some 300 counts per hour from 5 sq. cm. of dust after allowing 72 hours for decay of natural radon and thoron daughter activity. Some 500 counts per minute (primarily beta's) were also detected. There appear to be 2 physical factors, impact efficiency and retention in high velocity airstreams, within the restrictive orifices of buildings that result both in an increased rate of deposition and in concentration of fallout by preferential deposition. It is suggested that dust samples may include greatly differing proportions of fallout according to the nature of deposition: gravitational settling, impacted deposits, convected and thermal deposition, and ash. -- Nuclear Sci. Absts.

ENVIRONMENTAL MEASUREMENTS

- 767 Practical Experience with Routine Use of Field Indicators. N. H. Ketcham.
Am. Ind. Hyg. Assn. J. 23, 127-131 (Mar.-Apr. 1962).

Because field-type indicator tests are simple to use and readily available, there is a risk that they may be applied improperly by inexperienced persons. Industrial hygienists can help insure that these devices are used properly and the results interpreted correctly. Information needed for the appropriate application of the tests to specific problems is discussed. Used correctly, this type of test is valuable for many applications including pre-entry vessel-testing, routine monitoring of inhalation exposure in work areas, emergency air sampling, personnel monitoring (indicator crayons), quality control testing, trouble shooting, leak testing, and technical development. -- Author's abst.

- 768 Concentration of Hydrocarbons on Silica Gel Prior to Gas Chromatographic Analysis.
A. P. Altshuller, T. A. Bellar and C. A. Clemons.
Am. Ind. Hyg. Assn. J. 23, 164-166 (Mar.-Apr. 1962).

In the determination of substances in various atmospheres by gas chromatography the sample often must be concentrated prior to analysis. Silica gel at dry ice-acetone temperatures has been found to be a satisfactory adsorbant for concentration of hydrocarbons and sulfur containing compounds. In the present work recovery efficiencies are obtained for a number of four and five carbon paraffins and olefins. Isomerization reactions of olefins on silica gel at elevated temperature were investigated. Losses of very light hydrocarbons are discussed. Reproducibilities are given for the analyses of several three, four and five carbon hydrocarbons existing at concentrations between 0.005 and 0.2 ppm in synthetic smogs. -- Authors' abst.

- 769 Gaseous Pollution from Chimneys. R. S. Scorer and C. F. Barrett.
Intern. J. Air and Water Poll. 6, 49-63 (Jan.-Feb. 1962).

It is not possible to obtain a formula for the ground-level concentration of pollutant emitted from a tall chimney which is applicable in all conditions; a simple theory is therefore used to derive a table from which long-term average concentrations can be estimated. A treatment of the effect of the plume rise due to buoyancy is included. The limitations of the table are discussed, including the effect of buildings. Particular attention is paid to conditions of light wind, and it is shown how to make a rough estimate of pollution in a smog. Finally, an idea of the frequency of the various meteorological conditions is given and meteorological control is discussed. -- Public Health Eng. Absts.

- 770 Basic Theory of Gas Indicator Tube Calibration. B. E. Saltzman.
Am. Ind. Hyg. Assn. J. 23, 112-126 (Mar.-Apr. 1962).

Theoretical mathematical expressions are developed for indicator tube calibration showing effects of gas concentration, sample volume, flow rate, tube diameter, grain size, and experimental errors. In the usual case the kinetic rate of gas sorption is controlling, and stain length is proportional to the logarithm of the product of gas concentration and sample volume. Flow rate must be precisely replicated. Formulas are given for other cases where partial and complete saturation of the stained portion of the indicator gel occur. These expressions should aid in optimal design and development as well as use of indicator tubes.

-- Author's abst.

- 771 Variations in Concentration of Carbon Dioxide in the Free Atmosphere. W. Bischof.
Tellus 14, 87-90 (Feb. 1962). (Tellus, Editor, 124 Lindhagensgatan, Stockholm, Sweden*).

Variations of carbon dioxide in the atmosphere have been investigated by the analysis of 186 flask samples taken from an airplane at heights up to 3 km. during the period 1957-1961. The carbon dioxide concentration changes considerably from one time to another. Above 1,000 m the range is 308 to 320 ppm the average 314 ppm. The range and average both increase towards the ground. A seasonal variation in concentration is noted. The amplitude of the variation decreases with increasing height above the ground. The minimum occurs in summer and the maximum in winter at all altitudes. Some of the seasonal variations at ground level as previously obtained from the Scandinavian network for carbon dioxide sampling do not show up in the analyses from upper levels.

-- Public Health Eng. Absts.

- 772 The Determination of Sulfur Trioxide in Flue Gases. H. Goksøyr and K. Ross.
J. Inst. Fuel 35, 177-179 (Apr. 1962).

A simplified method has been developed for the rapid determination of sulfur trioxide in flue gases. The sulfur trioxide is retained by condensation as sulfuric acid in a certain temperature range below its dewpoint. The collecting apparatus is easy to operate and allows gas sample rates as high as 10 l./min. to be achieved. The sulfuric acid is estimated by a simple acid base titration. Thus in less than 15 minutes a complete determination may be carried out and the apparatus prepared for the next test. The method described has proved reliable and more convenient than the methods previously used.

-- APCA Absts.

- 773 Spectrophotometric Determination of Nitric Oxide in Auto Exhaust. S. W. Nicksic and J. Harkins. Anal. Chem. 34, 985-988 (July 1962).

A convenient and rapid procedure for the oxidation of nitric oxide in auto exhaust to nitrogen dioxide has been developed which permits determination by direct spectrophotometric absorbance measurements. The method is much faster than the phenoldisulfonic acid method commonly used, and the results of the two methods are comparable. A novel recording spectrophotometer for following the oxidation of nitric oxide is also described. Preliminary observations suggest that an apparatus for continuous determination could be developed by compressing and expanding the sample under empirically selected conditions prior to the spectrophotometry.

-- Authors' abst.

- 774 The Determination of Small Amounts of Nitrogen Oxides in Flue Gases. W. Leithe.
Mikrochim. Acta Nos. 1-2, 166-170 (1962). (Mikrochimica Acta, Springer-Verlag, Moelkerbastei 5, Wien 1, Austria*).

A method is described for determining nitrogen oxides in flue gases. The gas sample is shaken with dilute hydrogen peroxide and the resulting nitric acid is titrated acidimetrically. If a foaming agent is added the absorption of the nitrogen oxides is practically complete after a little as 5 minutes shaking.

-- Public Health Eng. Absts.

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- 775 Atmospheric Pollution (Sulfur Dioxide) in Hilly Terrain. E. N. Lawrence.
Intern. J. Air and Water Poll. 6, 5-26 (Jan.-Feb. 1962).

Measurements of sulfur dioxide concentrations by the lead dioxide method are strongly affected by the run-of-wind and, to estimate pollution concentrations, it is more satisfactory for general purposes to use a formula which makes some allowance for the effect of wind. A formula is suggested for the conversion of lead dioxide readings into concentrations of sulfur dioxide, which is to study surface pollution profiles in a hilly rural area surrounded by distant industrial sources. A tendency for maximum concentration is found to occur at an intermediate level between the valley bottom and the surrounding hill tops but there is evidence also of a pollution lapse profile. It is suggested that pollution inversion and lapse are associated, respectively, with over barrier transport and valley infiltration from sources below. Excluding seasonal variation in source strengths, concentrations depend mainly on atmospheric stability; shelter from wind in hilly terrain probably emphasizes this relationship. -- APCA Absts.

- 776 On the Stability of Acrolein toward Photooxidation in the Near Ultraviolet. A. D. Osborne, J. N. Pitts, Jr. and E. F. Darley. Intern. J. Air and Water Poll. 6, 1-3 (Jan.-Feb. 1962).

Acrolein has been photolyzed at 30°C and 3130Å in the presence and absence of oxygen. Only trace amounts of product were formed. Quantum yields of ethylene and carbon dioxide were not more than 0.015 and 0.005, respectively. Under similar conditions acetaldehyde gave appreciable amounts of carbon dioxide, peracetic acid, and methanol. The comparative stability of conjugated unsaturated aldehydes toward photochemical decomposition oxidation make it probable that they persist, if formed in Los Angeles smog, until dispersed. This may account for the persistence of eye irritation after dark when light initiated smog formation has ceased. -- APCA Absts.

PREVENTIVE ENGINEERING

- 777 A Method for the Determination of Minimum Chimney Heights. F. Wippermann and W. Klug. Intern. J. Air and Water Poll. 6, 27-48 (Jan.-Feb. 1962). German.

The paper describes a method of determining minimum chimney heights which are necessary in order to not exceed a given maximum permissible concentration of gas at the surface. The use of nomograms is explained in the first part of the paper, and, in the second part, their theoretical basis is given by showing the derivation of the formulae used and explaining the choice of the meteorological parameters. -- Public Health Eng. Absts.

- 778 Dust-Free Loading of Bulk Materials. Anon. Coal Utilization 16, 20 (May 1962).

A new, more efficient system for dust-free loading of bulk materials from storage silos into bulk carriers has been developed. Benefits of the system are as follows: saving of materials which would otherwise be lost as dust, elimination of the escape of nuisance dust to the atmosphere, quicker loading of transportation equipment, and reduced maintenance of weighing scales and transportation equipment. The system includes a new type of bulk loading spout which is connected by piping to a dust filter. The dust filter draws dust laden air from the carrier through the outer section of the spout. Dust is entrapped on the filter's cloth bags and cleaned air emitted to the atmosphere. Periodically, the filter bags are mechanically shaken and the dust drops through the dust filter hoppers to the silos loading elevator, through which the dust returns to the silo. -- APCA Absts.

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COMMUNITY AIR HYGIENE

- 779 Air Pollution Research. V. Malinoski. *Am. J. Nursing* 62, 64-67 (Jan. 1962).
(*American Journal of Nursing*, 10 Columbus Circle, New York 19, N. Y. *).

The role of the public health nurse, and the techniques used, are emphasized in winning community cooperation specifically as they applied in two community surveys conducted by the U.S. Public Health Service to study the effects of air pollution on health. In the first study in Nashville, Tennessee, three phases are mentioned: repeated testing of pulmonary function of a group with known cardiorespiratory disabilities, a continuing survey of adults and children with asthma, and a morbidity survey employing interviewers. The second survey was made in New Florence and Seward (control group) in western Pennsylvania, about 100 miles from Donora, where the acute episode in air pollution occurred in 1948. In the current survey about 85 % of adults 30 years and over were interviewed and were offered extensive pulmonary testing and a large-sized chest x-ray.

-- APCA Absts.

- 780 The Determination of Gravimetric Pollution Concentrations by Means of Filter Papers.
E. Kemeny. *J. Air Poll. Control Assn.* 12, 278-281 (June 1962).

Conversion factors were determined by means of an electrostatic precipitator, in order to convert pollution concentrations expressed as a photometric unit (OD) $5/3$ per m^3 into concentrations expressed as micrograms per cubic meter. The calibration experiments resulted in values ranging from 4.1×10^3 to 48.8×10^3 . The reason for the fluctuations was found in the deposit collected consisting of a mixture of smoke and soot (small man-made particles) and dust (larger particles of natural origin). The second component proved to be largely dependent on variations in wind speed and was the main cause of the fluctuations. By separating these two factors it was possible to obtain values for the variation of man-made pollutants (smoke and soot) with the cycle of the seasons.

-- Author's summary

- 781 Analysis of Air Pollution Mixtures: A Study of Biologically Effective Components.
Frances L. Estes. *Anal. Chem.* 34, 998-1001 (July 1962).

The biological effectiveness of an oxidant-type air pollution mixture was determined from the inhibition in growth of *E. coli* following exposure to the pollution mixture. Absorption in phosphate buffer and adsorption on a column of C-22 Firebrick coated with 20% (w./w.) disodium phosphate appeared to remove completely the effective components. Both agents removed a part of the oxidant material as determined by the phenolphthalin method. The material absorbed in the phosphate buffer markedly inhibited the oxygen consumption of leukocytes exposed to it. The buffer completely removed the as yet unidentified 302-millimicron absorbing material. However, the apparent concentration in the buffer did not correspond to the apparent concentration in the gas. The data suggested that the 302-millimicron absorbing material contained a biologically effective agent, which might be peroxyacetyl nitrate.

-- Author's abst.

- 782 Storage of Vapors and Gases in Plastic Bags. A. P. Altshuller, A. F. Wartburg, I. R. Cohen and S. F. Sleva. *Intern. J. Air and Water Poll.* 6, 75-81 (Jan.-Feb. 1962).

The results available indicate that plastic bags serve as excellent reservoirs for synthetic mixtures to be used in the calibration of various instruments or chemical methods. Low concentrations of automobile exhaust diluted with air either before or after irradiation appear fairly stable in plastic bags for limited periods of time. Bags are likely to be unsatisfactory for many of the more reactive organic and inorganic species in combustion sources such as formaldehyde, nitrogen dioxide, and sulfur dioxide. Plastic bags of Scotchpak are satisfactory

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over 24-hour periods for storing synthetic and atmospheric samples of aliphatic hydrocarbons and acrolein, but not for storing formaldehyde, ozone, nitrogen dioxide, and sulfur dioxide. Bags of Milar are satisfactory for storing aliphatic hydrocarbons and acrolein, also for synthetic mixtures containing formaldehyde over 24-hour periods, and ozone, nitrogen dioxide, and sulfur dioxide for at least several hour periods. Formaldehyde in atmospheric gases can be stored for several hours. -- APCA Absts.

- 783 Loss of Fluorescent Particles in Atmospheric Diffusion Experiments by Comparison with Radio-xenon Tracer. A. E. J. Eggleton and N. Thompson. *Nature* 192, 935-936 (Dec. 9, 1961).

Zinc cadmium sulfide, dispersed as a fine powder, has been widely used as a tracer in studies of air movement because the particles are easily identified by their fluorescence. Recently, however, there has been reason to suspect that particles were gradually lost, and the experiment described in this paper was intended to find out whether the results obtained were consistent with those given by a radioxenon tracer. Zinc cadmium sulfide and xenon-133 were released simultaneously from a 20-meter stack over a period of 2 hours, and were sampled at points 16 and 60 kil. down-wind. Comparison of the ratios of fluorescent particles to xenon at the two sampling points showed that about 50% of the particles appeared to have been lost between them. Increase in the brightness of the light used in assessing the fluorescent particles increased the number of particles found by about 25% but did not appreciably alter the ratio of the numbers of particles at the two sampling points and therefore did not actually reduce the apparent loss of particles. The loss is so far not explained. -- Bull. Hyg.

- 784 "Tokyo-Yokohama Asthma". The Rapid Development of Respiratory Distress Presumably Due to Air Pollution. H. W. Phelps and S. Koike. *Am. Rev. Resp. Dis.* 86, 55-63 (July 1962).

A disease entity has been presented which is presumed to be caused by air pollution, but the exact etiology is still unknown. Early in its course this disease behaves much like acute bronchitis. Later it is impossible to differentiate from classic asthma. As the disease progresses over weeks or months, it becomes a form of asthmatic bronchitis. The patient receives little symptomatic relief from the usual treatment for asthma. The lack of response to nebulization with bronchodilators is documented by external spirometric studies. Patients with histories of asthma prior to coming to Japan who continue to have asthma in the Kanto Plain (Tokyo-Yokohama area) usually show good response to bronchodilators. The patients with this asthmatic bronchitis have more trouble in the winter months during periods of increased smog concentration. Coughing and wheezing are the most common complaints. Unremitting shortness of breath is experienced throughout the year. Although the study is by no means complete, it is believed that there is evidence that air pollution, of unknown content, is the cause of much disability which, under certain conditions, may progress rapidly to emphysema. -- Cond. from authors' summary

- 785 Polynuclear Aromatic Hydrocarbon Composition of the Atmosphere in Some Large American Cities. E. Sawicki, et al. *Am. Ind. Hyg. Assn. J.* 23, 137-144 (Mar.-Apr. 1962).

The air of 14 American cities was examined for the following polycyclic hydrocarbons: pyrene, benzo(a)pyrene, benzo(e)pyrene, benzo(k)fluoranthene, perylene, benzo(g,h,i)perylene, anthanthrene, and coronene. Occasionally, fluoranthene, chrysene, and benz(a)anthracene were also found in ambient air samples. Of these compounds, chrysene, benz(a)anthracene, benzo(a)pyrene, benzo(e)pyrene, and benzo(g,h,i)perylene have been stated to have some carcinogenic activity. A fairly complete list of polycyclic compounds that have been identified in air, tobacco smoke, and gasoline or diesel exhaust is presented. Both winter and summer measurements were made in 7 of the 14 cities. In all urban samples the concentration of the polycyclic aromatic hydrocarbons was generally greater in winter than in summer. The ratios of benzo(a)pyrene to benzo(g,h,i)perylene and to coronene are introduced as possible indicators of air pollution due to automobile exhaust fumes or coal combustion pollution. Correlation coefficients are given for each of the reported 8 polycyclic hydrocarbons with respect to the other 7. These data show that analysis of any one hydrocarbon except coronene may indicate roughly the total amount of other hydrocarbons present. -- Authors' summary

- 786 Air Pollution and Health: New Facts from New York State. I. J. Brightman, A. Rihm, Jr. and S. W. Samuels. *J. Air Poll. Control Assn.* 12, 275-277, 281 (June 1962).

The subject is discussed under the following subheadings: Air Pollution as a Public Health Problem, Chronic Disease and Air Pollution, and Need for Further Research. The

authors conclude that air pollution should be controlled because of its detrimental esthetic and economic qualities and its too frequently irritating properties. It undoubtedly should be controlled because of its potential effects upon health, particularly its influence upon the development or aggravation of chronic respiratory disorders. However, the evidence in this country is conflicting and detailed studies are needed in the laboratory, clinical, and epidemiologic fields to obtain more direct evidence.

- 787 Establishment of an Intercommunity Air Pollution Program. G. A. Jutze and C. W. Gruber. J. Air Poll. Control Assn. 12, 192-194 (Apr. 1962).

This paper discusses the establishment of the Metropolitan Cincinnati Air Pollution Control Program from 1957 to the present time. The reasons and actions leading to this intercommunity cooperative program are given. Legal arrangements necessary for the formation of joint action in which an existing City Bureau provides air pollution control to other municipalities are discussed in detail. The formal service contract provides four basic services to the organization members: (1) Daily tours of the area for observations of visible air pollution emissions from stacks and vents, noting violation of the Air Pollution Control Ordinance. (2) Investigation of municipal agency and citizen complaints, and determining the validity of the complaints. (3) Industrial plant inspections to familiarize plant personnel with the operation of the program. (4) The formulating of, and follow-up of recommendations for correction of unsatisfactory air pollution conditions noted through direct observations or verification of complaint situations.

-- APCA Absts.

- 788 Gas Cleaning Efficiency Requirements for Different Pollutants. W. C. L. Hemeon. J. Air Poll. Control Assn. 12, 105-108 (Mar. 1962).

This article discusses the value of determining the actual pollutant in a gas effluent that causes damage or nuisance. Control may be keyed to keep that pollutant to the required standard, rather than to attempt to control all pollutants emitted. The need for expressing concentration at ground level with corresponding stack gas data for stack concentration and emission rate is considered. Examples are given of such calculations for a gas (such as sulfur dioxide), dust, smoke and haze, dust fall, incinerator paper ash, odors, and corrosion potential.

-- Public Health Eng. Absts.

- 789 Some Data and Observations on Combustion of Gaseous Effluents from Baked Lithograph Coatings. A. Wallach. J. Air Poll. Control Assn. 4, 109-110 (Mar. 1962).

The waste gaseous effluents from baked coating operations are a concern in air pollution because of their odor and of the irritant effects of the aldehydes present. Tests were made of the effectiveness of high temperature incineration, and catalytic combustion in controlling the effluent from the baking of lithographed cans. Three criteria were used in determining the effectiveness of combustion of the effluent vapors, total aldehydes, smell tests, visual presence or absence of smoke or fumes in the exhaust gases. The results indicate that either type of incineration at temperatures from 600 to 1,000°F caused practically complete elimination of all visible smoke or fumes emitted by the bake oven process; total aldehydes concentration may increase after the oven effluent is incinerated; and is not paralleled by an increase or decrease in effluent irritants; complete elimination of visible fumes or smoke from the exhaust stack does not indicate reduction of irritants.

-- APCA Absts.

- 790 Odor Control Performance of Carbon-Loaded Rayon Monofilaments. A. Turk and A. Berlin. J. Appl. Polymer Sci. 5, 668-675 (1961). (Journal of Applied Polymer Science, Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N.Y. *).

Adsorbent filters designed for air purification in occupied spaces are expected to reduce vapor concentrations from spaces in which initial concentrations are often too low for any direct chemical or physical measurement. Low vapor concentrations were used, approaching those which might exist in an odorous occupied space, and to make sensory odor judgements, in

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a dynamic system of known initial concentration, as functions of adsorbent bed depth and air detention time within the filter bed. The odor control performance of carbon-loaded rayon monofilaments depends on the type and proportion of activated carbon used. The filter efficiency in turn determines the rate of odor reduction in a closed space and the ultimate or equilibrium concentration when odorant generation and removal occur simultaneously. Four types of filters were evaluated: rayon loaded with air-or water purification carbon, granular air-purification carbon, and open-lattice commercial filters. Air laden with synthetic tobacco malodor was streamed through successive increments of adsorbent bed. It was possible to estimate adsorption efficiencies and, by repeating the measurements after various degrees of carbon saturation, to construct adsorption waves. It was found that air-purification carbon was superior to water-purification carbon for loading in the rayon filaments, and that all the rayon-carbon compositions were much superior to the commercial open-lattice filters. -- APCA, Absts.

- 791 A Study of Air Pollution Carcinogenesis. III. Carcinogenic Activity of Gasoline Engine Exhaust Condensate. E. L. Wynder and D. Hoffman. Cancer 15, 103 (1962).

A benzene extract of gasoline engine exhaust "tar" (see Cancer 15, 93 (1962)) was painted 3 times per week for 15 months on the backs of Swiss mice, in concentrations of 50, 33, 25, 10, and 5% in acetone. Cigarette smoke concentrate, similarly dissolved in acetone, was also painted on mice, in order to compare potency of tumor induction. Animals painted with the 50% tar/acetone solutions received approximately 0.85 gm. per month of engine exhaust tar or 0.9 gm. per month of cigarette condensate. The engine exhaust tar proved to be about 1 1/2 to 2 times as active as cigarette condensate, in terms of total papillomas and carcinomas developed at each concentration. Since the concentrations of known carcinogens in the tar was 50-100 times higher than in the condensate, the possible presence of the anti-carcinogens is suggested. -- J. Occ. Med. Absts.

MANAGEMENT ASPECTS

- 792 Consequences of Age Standardization Procedures for Statistics of Sickness Absence in Industry. M. J. W. DeGroot and P. van Leeuwen. Ind. Med. & Surg. 31, 263-271 (June 1962).

This publication presents a comparison of the direct and indirect method of standardization. An analysis is made of the quantitative differences of age standardization applied on absentee data of 93 plants participating in the Diagnosis Statistics of the Netherlands Institute for Preventive Medicine at Leyden, Netherlands. From this analysis the conclusion is drawn that the indirect method of standardization is to be preferred. The advantage of this method is more pronounced when some classes are undermanned or even empty. -- Authors' summary

ACCIDENTS AND PREVENTION

- 793 Use Solvents? Watch for these 5 Hazards. H. H. Fawcett. Occ. Hazards 24, 29-31 (July 1962).

When solvents and electrical equipment get together, the safety man must thwart these potential hazards: (1) Fire. (2) Toxicity. (3) Skin Trouble. (4) Chemical Reactions. (5) Effects on Plastic and Insulation. Among commonly used solvents, benzene, acetone, gasoline, and ether are all highly inflammable. On the other end of the scale are nonflammables, such as carbon tetrachloride and the Freons. High flash points does not mean freedom from fire

hazards. Sprays and mists from high-flash-point solvents can easily ignite in the air. Summer temperatures boosted by heat-producing industrial operations can breed serious fires. Despite all warnings, numerous plants still use gasoline as a cleaning fluid or degreaser. Gasoline is meant to burn in an engine. It has no other legitimate use. Firefighters who may be called on to use vaporizing liquid fire extinguishers learn that carbon tetrachloride, chlorobromomethane, and methyl bromide are toxic at room temperatures and considerably more toxic in the heat of a fire. Solvents, particularly halogenated solvents such as carbon tetrachloride, trichloroethylene, and the Freons, need not burn to decompose. High temperature will break them down. Inert arc welding (heliarc), using argon, produces enough radiation to break down trichloroethylene vapors into phosgene and hydrochloric acid fumes. When this happens workers get sick and equipment corrodes. Except under carefully controlled conditions chlorinated solvents should not be stored in vessels made of active metals such as aluminum or magnesium. Failure to follow this rule caused a plant explosion which took the lives of 10 firemen and injured 37 others. The degree to which solvents affect insulation and parts of electrical systems depends upon the materials. Since there are hundreds of solvents on the market, there can be no single precaution which would apply in all cases. To make sure a plant uses solvents safely requires study.

MISCELLANEOUS

- 794 Treatment Methods for Laundry Wastes. J. F. Spade.
Water & Sewage Works 109, 110-113 (Mar. 1962).

Methods of treatment for laundry wastes are described as chemical precipitation, sand filters, and high rate trickling filters. Emphasis is made on the increasing use of diatomaceous earth filter. Results obtained in the removal of BOD (biological oxygen demand) and detergents (measured by ABS determination) from two commercial type plants are encouraging, but best results are limited to plants operating at a maximum of 40,000 gal./day.

-- Public Health Eng. Absts.

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