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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

MAY, 1961

(Vol. 25, No. 5)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH 13, PA.



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IN RE: ABRAMS November 1992

INDUSTRIAL HYGIENE FEATURES

See Abst. No. 416 on proposed regulation for the New Federal Hazardous Substances Labeling Act.

See Abst. No. 433 for the role of trauma in oncogenesis: a juridical consideration.

For data on deaths in Canada ascribed to lung cancer consult Abst. No. 434.

Studies in emphysema is the topic of Abst. No. 437.

Abst. No. 442 is concerned with the relationship of dermatology to the arts and sciences.

Information concerning phototoxic bullae among celery harvesters is presented in Abst. No. 443.

Infestation of the imported fire ant at Fort Benning, Ga., is the subject of Abst. No. 444.

For a presentation of current problems in the safe use of food additives consult Abst. No. 446.

Abst. No. 448 describes diphenylthiocarbazone blindness in dogs.

Abst. No. 452 is concerned with the acute inhalation toxicity of heated aerosols of three hydraulic fluids.

The medical aspects of chemical warfare is the title of Abst. No. 453.

Consult Abst. No. 454 for zinc protection against cadmium injury to rat testis.

The treatment of kerosene pneumonitis is outlined in Abst. No. 457.

Abst. No. 463 surveys Q fever in the dairy industry.

Chemical antidotes for radiation injury are considered in Abst. No. 483.

The physician's role in the defense against biological weapons is considered in Abst. No. 500.

FOUNDATION FACTS

NEW MEMBER. The Foundation welcomes to membership Davison Chemical Company, Division of W. R. Grace & Company.

MEETINGS OF THE EXECUTIVE COMMITTEE AND BOARD OF TRUSTEES.

The Executive Committee of the Board of Trustees held its second meeting for 1961 on May 2, at 9:00 a.m. at the Foundation's headquarters. This was followed by a meeting of the Board of Trustees in the afternoon.

DR. H. H. SCHRENK, attended a meeting of the Industrial Hygiene Round Table, at Seven Springs, Pennsylvania, May 5 through 7.

DR. PAUL GROSS, took part in a panel discussion on Pathology of the Pneumoconioses at a meeting of the Pennsylvania Trudeau Society and American College of Chest Physicians on April 20 at the Roosevelt Hotel here in Pittsburgh. He also presented a paper on "The Allergic Aspects of Air Pollution: Pulmonary Pathology" before the Allergy and Chest Sections of the Medical Society of New Jersey, in Atlantic City, on May 17.

26th ANNUAL MEETING

OCTOBER 25 - 26, 1961

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IN RE: ABRAMS November 1992

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

412 Research on Air Pollution.

A major research project now underway which should add valuable information to what is known about the health effects of air pollution, is being sponsored by the Public Health service. The study is a joint project with the Los Angeles County Air Pollution Control District, and the University of Southern California to observe the effects on laboratory animals—mice, guinea pigs, and rabbits—of breathing the same air breathed by people in Los Angeles County. The contaminants of primary interest are those specifically associated with automobile exhaust—hydrocarbons, oxidant, carbon monoxide, oxides of nitrogen, and certain particulates. While the test animals breathe the air at special sites located at varying distances from the heavily traveled thoroughways, a control group of similar animals will be living in purified air from which contaminants have been removed. Commenting on the agreement Dr. L. Otis Emik, Division of Air Pollution, Public Health Service, stated: "In this field of study we have long needed careful observations of the effects on laboratory animals of precisely the same exhaust contaminated air which people breathe. These observations may give us the opportunity to observe in animals, during short periods of time, effects which in human beings might take decades to occur." The University of Southern California will furnish and operate facilities for housing the exposed and control animal colonies, on the grounds of the University Medical School and at sites provided by the Los Angeles County Air Pollution Control District. --

413 Air Pollution Control Library.

A comprehensive technical library specializing in air pollution control and an Audio-Visual Service are now available to scientists, educators, and engineers in New York State. Dr. H. E. Hilleboe, State Health Commissioner and Chairman of the Air Pollution Control Board, has announced. The technical library contains more than 8,000 microfilmed books, articles, and scientific papers ranging from an air pollution control publication printed in 1661, to instruction books for operating giant electrostatic smoke precipitators. Frequently used reference works in their original printed form have also been collected. Located in the State Health Department Building at 84 Holland Avenue, Albany, New York, the library is equipped to provide space, microfilm readers and other necessary facilities to researchers. Filmstrips, motion pictures, more than 1,000 photographs and approximately 800 color slides of air pollution sources, problems, and controls are available for teaching purposes, to illustrate lectures and publications, and for civic group programs. Library privileges and the loan of materials from Audio-Visual Service can be arranged by communicating with the New York State Air Pollution Control Board, 84 Holland Avenue, Albany 8, New York.

414 AP Foundation Board Approves Liquidation; Authorizes Research.

At the annual meeting of the Air Pollution Foundation Board of Trustees held November 3, 1960, several grants for further research were authorized and plans for liquidation of the Foundation were approved. Stanford Research Institute was granted \$50,000 cash, together with an estimated \$40,000 worth of equipment now being used in SRI's South Pasadena laboratories, for continued research in atmospheric chemistry. A cash grant of \$10,000 was made to the University of Southern California for studies on air pollution, and equipment valued at

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\$5,000 was turned over to Southwest Research Institute, San Antonio, Texas, for continued studies on automobile exhaust. Upon final dissolution of the Foundation on or about next May 31, all remaining assets will be donated to the California Institute of Technology for additional research work in the field of air pollution. It is impossible to estimate the probable value of the residue assets at this time.

-- J. Air Poll. Control Assn.

415 Congress on Environmental Health.

The Second Congress on Environmental Health will be held June 6 to 8, 1961 at the University of Michigan, Ann Arbor. Sponsors are the University's School of Public Health and the National Sanitation Foundation in collaboration with the American Public Health Association. Purposes of the congress are to "explore environmental resources and their value and usefulness for man in terms of needs for industry, government, and conservation--in keeping with health, social and economic trends" and to "consider principles and methods of practice which will encourage a maximum development of our environmental resources for society." Participation is by invitation--100 from public health agencies, 100 from industry, and 50 from the public at large. For further information, write to H. E. Miller, School of Public Health, University of Michigan, Ann Arbor, Michigan.

-- Chem. & Eng. News

416 Federal Hazardous Substances Labeling Act.

The Commissioner of Food and Drugs of the Department of Health, Education, and Welfare has proposed the promulgation of regulations with respect to hazardous substances. These proposed regulations were published in the Federal Register, April 29, 1961. Persons may present their views in writing to the Hearing Clerk, Department of Health, Education, and Welfare, 330 Independence Avenue SW, Washington 25, D.C. within 60 days following the date of publication in the Federal Register. Comments may be accompanied by a memorandum or brief, and should be filed in quintuplicate.

COMING EVENTS

- | | |
|--------------|--|
| 417 June 4-7 | American Nuclear Society, Pittsburgh, Pa. |
| June 5-9 | Society of the Plastics Industry, 9th National Plastics Conference and Exhibition, New York, N.Y. |
| June 6-8 | Instrument Society of America. Summer Instrument-Automation Conference and Exhibit, Toronto, Canada. |
| June 8-10 | Manufacturing Chemists' Assoc., White Sulphur Springs, West Virginia. |
| June 11-16 | Air Pollution Control Assoc., New York, N.Y. |
| June 12-14 | American Neurological Assoc., Atlantic City, N.J. |
| June 12-16 | Ninth Annual Technical Writers' Institute, Troy, N.Y. |
| June 12-16 | Symposium on Molecular Structure and Spectroscopy, Columbus, Ohio. |
| June 15-16 | National Colloid Symposium, ACS Division of Colloid and Surface Chemistry, Rochester, N.Y. |
| June 19-23 | Gordon Research Conferences, Cell Structure and Metabolism, Meriden, N.H. |
| June 19-23 | 5th Biennial Conference on Carbon, American Carbon Committee and Pennsylvania State University, University Park, Pa. |
| June 19-24 | American Assoc. of Feed Microscopists. Annual Meeting and Short Course in Feed Microscopy, Denver, Colorado. |
| June 20-22 | American Meteorological Society. Meeting with Pacific Division, AAAS, Davis, California. |
| June 21-24 | American Proctologic Society (members and guests), Pittsburgh, Pa. |
| June 22-23 | American Geriatrics Society, New York, N.Y. |
| June 22-24 | American Physical Society, University of Mexico, Mexico City, Mexico. |

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June 22-24	ACS Division of Analytical Chemistry. Summer Symposium, Cleveland, Ohio
June 22-26	American College of Chest Physicians, New York, N.Y.
June 24	American Academy of Tuberculosis Physicians, New York, N.Y.
June 25-29	17th National Organic Chemistry Symposium. ACS Division of Organic Chemistry, Bloomington, Indiana.
June 25-30	American Medical Association, Annual Meeting, New York, N.Y.
June 25-30	American Society for Testing Materials, Annual Meeting, Atlantic City, N.J.
June 26-30	Gordon Research Conferences, Proteins, New Hampton, N.H.
June 27-29	Society for Investigative Dermatology, New York, N.Y.
June 28	American Society of Facial Plastic Surgery (members and guests), New York, N.Y.

OCCUPATIONAL DISEASE STATISTICS

418 Occupational Disease Statistics. (Cases Reported to the Respective Health Departments.)

	Conn. Feb.	Ind. Jan. -Mar.	Pa. Mar. -Apr.	Tenn. Mar.	Total
Asthma			2		2
Brucellosis		1			1
Dermatitis	38*	7*	21	8	74
Emphysema (pulmonary)				1	1
Fumes (unidentified)			2		2
Irritation of eye			1		1
Lead colic			1		1
Mercury exposure (suspected)			7		7
Pneumoconiosis			14		14
Pneumoconiosis (suspected)			11		11
Pneumonia	1				1
Pulmonary condition			1		1
Respiratory irritation			1		1
Silicosis		3	11	2	16
Silicosis (suspected)			2		2
Silico-TB (suspected)			2		2
Tuberculosis	1		1		2
Total	40	11	77	11	139

• Causes are listed as follows:

Connecticut: Occupational dermatitis due to plants, poison ivy, 1; occupational dermatitis due to oil and greases, and metal cutting compounds, 8; occupational dermatitis due to other chemicals: alkalis 2, chromic acid 1, dyes 2, glues 2, miscellaneous 3, multiple chemicals 2, plating chemicals 1, resin (plastic compounds) 5; occupational dermatitis—other: infection 1, multiple causes 1, miscellaneous 1, soaps or detergents 4, undetermined 2.

Indiana: Soap, 1; cutting oil, 2; cause not stated, 4.

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LEGAL DEVELOPMENTS

419 Board to Schedule Hearings on Submission of Plans.

The New York State Air Pollution Control Board will hold public hearings in the near future on a proposed State-wide rule to require the inspection and approval of plans for construction or modification of pollution sources, such as large heating and power plants, incinerators, and some manufacturing processes. Under the new proposal, plans would not be submitted to the State Board if already approved by municipal agencies with qualified personnel using standards acceptable to the Board. The proposal would not require plans for heating and incineration equipment installed in dwellings containing four or less apartments, restaurants, small bakeries, and other sources of pollution which singly are of minor importance. Protected manufacturing processes and trial installations would receive special handling. The proposal cannot become effective until after State-wide hearings have been held and the rule is adopted by the Board under powers given it by the Public Health Law. Copies of the State-wide proposed rule may be obtained by writing the State Air Pollution Control Board, 84 Holland Avenue, Albany 8, New York.

420 Air Pollution Bills were Introduced at 87th Congress.

Although the 87th Congress had scarcely time to organize, 6 bills concerning air pollution were introduced in rapid succession. In introducing HR3083, Congressman Roberts of Alabama once again took the lead in calling for amendment of Public Law 159. The draft bill includes amendments which would: (1) Eliminate the time limitation and \$5 million ceiling on annual appropriation included in the current act. (2) Authorize the Surgeon General to make investigations and to hold public hearings on air pollution problems which are interstate in nature or are of broad significance. (3) Delete the requirements for allotment of funds appropriated for grants-in-aid and contracts in accordance with regulations prescribed by the Secretary of Health, Education, and Welfare. HR747 introduced by Congressman McDonough calls for federal agencies to cooperate with federal, interstate, state, or local government air pollution control agencies in preventing or controlling air pollution. HR1189 by Congressman McDonough provides that the Secretary of Commerce shall furnish weather reports to certain air pollution control agencies upon request. Perhaps the most significant piece of legislation introduced was Bill HR924 by Congressman Byrnes of Wisconsin. This is a bill "to encourage the prevention of air and water pollution by allowing the cost of treatment works for the abatement of air and stream pollution to be amortized at an accelerated rate for income tax purposes." Similar to other legislation of this type proposed as early as 5 years ago, the main feature of this bill calls for accelerated amortization deductions based on a period of 60 months, subject to certain qualifications.

-- Cond. from J. Air Poll. Control Assn.

421 Supreme Court Hears Case Involving Air Pollution.

The Federal Power Commission has petitioned the Supreme Court to uphold its decision denying Consolidated Edison Company, the Transcontinental Gas Pipe Line Corporation, and the City of New York the use of natural gas as a boiler fuel in its Waterside Plant near the United Nations Building and Tudor City. (The visible pollution from these stacks was commented upon by Soviet Premier Khrushchev in his recent visit.) The City of New York joined the appeal because use of natural gas would greatly reduce air pollution from this plant. In previous hearings, testimony revealed that the fly ash discharge from the boilers in question was 15,000 lbs. a day and the sulfur dioxide discharge 42,000 lbs. daily, while substitution of gas to fire these boilers would eliminate both sulfur dioxide and fly ash. The Federal Power Commission bases its case on conservation of the Nation's dwindling supply of natural gas, other possible means of reducing air pollution, and the necessity of regulating interstate sales to industry.

-- Sanitary Eng. Newsletter

03120811

422 Metropolitan Boston Plans Fight Against Annual \$20 Million Air Pollution Loss.

The air pollution bill recently passed by the Massachusetts legislature permits action for the establishment of a control district covering the Boston area, and preliminary plans have been made for an intensive study of air pollution in the metropolitan area with the use of approximately 20 sampling stations. Boston and surrounding communities suffer a yearly loss of \$20 million because of air pollution, not counting losses in human illness, according to findings of a study conducted by Dr. Ralf Eliassen, Professor of Sanitary Engineering at the Massachusetts Institute of Technology, with the assistance of Dr. James L. Whittenberger, Assistant Dean of the Harvard School of Public Health. The report also stated that present laws and means of control were inadequate to cope with the estimated 2,600 tons of contaminants discharged daily into the Boston metropolitan atmosphere.

-- Sanitary Eng. Newsletter

423 Disability—Dermatitis from Strong Detergent—Claimant's Duty to Seek Prompt Medical Attention.

The claimant was properly denied compensation for a six-month period when she did not attempt to correct her disabling condition by consulting a physician for treatment. The claimant washed instruments and bottles at a hospital. While doing this work she contracted a skin condition from exposure to strong detergents. She began receiving treatments for the condition and soon thereafter quit her job. The inflammation apparently cleared up in six weeks and she was released by the treating physician. Compensation was paid from the time she quit the job until she was released. Six months later she returned to the same physician and again received treatments for the outbreak of the condition. For five weeks she was treated and received compensation. The deputy commissioner awarded her compensation for the six-month period between outbreaks of the condition on the grounds that, even though she made no effort to seek work during that period, if she had she would not have been hired because the rash was present. He found her physically disabled for the entire period. The full commission, however, reversed the deputy because no substantial competent evidence established that the claimant was incapacitated from performing her work in the last occupation in which she was injuriously exposed to hazards of her condition. The court agreed and also stated that the employer was not liable for the six-month period because he was not given the opportunity to reduce his liability during that time. Although it is the responsibility of an employer to provide medical care and pay compensation, there is a corresponding duty of a claimant to take reasonable steps to reduce the liability of his employer by prompt medical attention when needed. The claimant could not prolong her disability at the employer's expense. Certiorari denied. Lobnitz v. Orange Memorial Hospital. Florida Supreme Court. No. 30,717. February 8, 1961.

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BOOKS, PAMPHLETS AND NOTICES

424 A Report on Florida's Air Resources. C. I. Harding, S. B. McKee and J. J. Schueneman. Florida State Board of Health, Jacksonville, Florida. 66 pp. (Feb. 1961).

Florida currently has an air pollution control program. Legislation creating the Florida Air Pollution Control Commission within the State Board of Health was passed in 1957. The Commission has the power, after public hearings, to establish air pollution control districts and to adopt, promulgate, amend, and repeal regulations as it may deem necessary. The program, including enforcement of the Commission's rules and regulations, is operated by the Bureau of Sanitary Engineering of the State Board of Health. One air pollution control district comprising Polk and Hillsborough Counties, served by a staff of 5 state employees, is working on the airborne fluoride problem associated with the phosphate industry. A full-

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time staff member in the Bureau of Sanitary Engineering does all possible to handle other air pollution problems throughout the state. The purpose of this survey is to describe the state's characteristics as they relate to air resources, review present control activities, assess the present and potential status of air pollution, and recommend such changes in existing programs as may be desirable to maintain Florida's reputation as the Sunshine State and to protect the state's air resources.

- 425 Health Statistics from the U. S. National Health Survey. Series B-No. 19. Volume of Physician Visits. United States July 1957 - June 1959. U. S. Department of Health, Education, and Welfare, Public Health Service, PHS Publication No. 584-B19. 52 pp. (Aug. 1960). For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 40 cents.

Persons living in the United States made approximately 5.0 physician visits per person per year during the 2-year period July 1957 - June 1959. This represents an average of about 851.6 million visits per year. Of the total number of physician's visits made, approximately 66% took place in a physician's office, 10% at home, and 9% in an out-patient clinic of a hospital. About 10% of all visits were telephone consultations. Data collected show that about 75% of the physician visits were for the diagnosis or treatment of an illness or injury. Visits for "general checkup" accounted for 8% of the visits and immunizations were involved in 7% of the visits. Beginning with the age group 15-24 years of age, women averaged a greater number of physician visits than men. Although part of the difference is accounted for by visits for the prenatal or postnatal care of women, even excluding this type of visit, the rates for women were still higher than the rates for men. The rate of physician visits was higher among urban residents than among rural residents, and higher for white persons than for nonwhite persons. The rate of physician visits varied directly with amount of family income and with the educational attainment of the head of the family.

- 426 Health Statistics from the U. S. National Health Survey. Series B-No. 22. Loss of Teeth. United States July 1957 - June 1958. U. S. Department of Health, Education, and Welfare, Public Health Service, PHS Publication No. 584-B22. 26 pp. (Sept. 1960). For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 25 cents.

Loss of teeth occurs most often as the result of 2 of the most common diseases affecting the American people—dental decay and periodontal disease. During his lifetime, nearly every person has one or both of these ailments, and when treatment is too long delayed, tooth loss results. Accrued tooth loss in individuals leads ultimately to edentulousness—total loss of permanent teeth—and the number and distribution of edentulous persons provide an index to both the prevalence of dental disease and the extent of dental neglect in the U. S. population. Based on health interviews conducted by the U. S. National Health Survey during July 1957 - June 1958, there were approximately 22 million edentulous persons in the United States—13% of the population of the Nation. A person was classified as edentulous if he had lost all of his permanent teeth, regardless of whether or not he wore dentures. Only 4% of persons 25 - 34 years of age were edentulous, but the percentage was higher in each succeeding age group, reaching 67% for persons 75 years of age and over. In each of the age groups, the edentulous proportion was slightly higher for women than for men. Rural areas had a somewhat higher per cent of edentulous persons than did urban areas and the proportion edentulous was substantially higher in the white population than in the nonwhite population. In general, the proportion edentulous was smaller among members of high income families than among members of low income families.

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- 427 Health Statistics from the U. S. National Health Survey. Series C-No. 5. Selected Health Characteristics by Area, Geographic Regions and Urban-Rural Residence. United States July 1957 - June 1959. U. S. Department of Health, Education, and Welfare, Public Health Service, PHS Publication No. 584-C5. 40 pp. (March 1961). For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 35 cents.

This report, based on health interviews conducted in approximately 73,000 households and covering about 235,000 persons throughout the United States during the period July 1957 - June 1959, presents information on various health topics for the 4 major regions of the United States. About 40.9% of persons living in the United States were reported to have one or more chronic conditions. While some of these conditions were relatively minor, others were serious conditions such as heart disease, diabetes, or mental illness. In the 4 major regions the percentage of persons with one or more chronic conditions ranged from 38.8% in rural-nonfarm areas in the South to 44.9% in urban areas of the West. However, the proportion of persons with limitation of activity due to chronic conditions was higher in the rural-farm areas of the South than in any of the other residence areas. The number of restricted-activity days per person per year ranged from 15.8 days in rural-nonfarm areas in the Northeast to 23.7 days in rural-farm areas of the South. These areas also showed the widest variation in bed-disability days, with persons in the Northeast rural-nonfarm areas having 5.6 bed-days per year and those in the rural-farm areas of the South having 8.8 bed-days. Urban residents in the West region had on the average the highest rate of physician visits, 6.0 per year, for any regional population group, while persons living in rural-farm areas of the South had the lowest rate, 3.4 physician visits per person per year.

- 428 Summary of Present Information on Impact Sensitivity of Titanium when Exposed to Various Oxidizers. W. K. Boyd. DMIC Memorandum 89 (OTS PB 161239). Defense Metals Information Center, Battelle Memorial Institute, Columbus 1, Ohio. 7 pp. (March 6, 1961). No price given.

This review summarizes the present status of the compatibility of titanium with LOX (liquid oxygen) and with other oxidizers such as N_2O_4 , F_2 , and ClF_3 . Considerable experimental evidence has been obtained which indicates that, under certain conditions of impact, titanium and its alloys may ignite in strong oxidizers of the type used in rocket and missile propulsion systems. However, only in the case of LOX does there appear to be danger that the reaction will propagate and completely consume the titanium. In most cases, even though ignition occurs, the damage is not significantly greater than that occurring as a result of the impact alone. The data also suggest that the chance for a reaction can be minimized if the titanium surface in contact with the oxidizer is smooth and surgically clean. In spite of its impact sensitivity, titanium appears to have some areas of application where it can be used in contact with such strong oxidizers as LOX, fluorine, N_2O_4 , ClO_3F , and H_2O_2 . -- Author's summary

INDUSTRIAL MEDICAL PRACTICE

- 429 Report of Committee on Epidemiology of Occupational Diseases: Part I Epidemiological of Occupational Diseases. E. C. Hyatt, Chairman. Trans. 22nd Annual Meeting, American Conference of Governmental Industrial Hygienists, p. 70 (Apr. 23-26, 1960).

The Committee describes in detail the epidemiological procedure to follow in the investigation of an occupational disease outbreak. Material is presented under 9 major headings and each heading is then developed to insure the following of a logical and scientific procedure in order to arrive at a valid conclusion. The procedure involves consideration of statistical methods, medical evaluations, and environmental studies and provides for the "development of final hypothesis explaining all the cases and manner of exposure and development of occupational disease."

-- J. Occ. Med. Absts.

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- 430 Usefulness of Periodic Health Examination. W. D. David.
Arch. Environmental Health 2, 339-342 (Mar. 1961).

In industry, the objectives of periodic health examinations may be to protect and benefit the company, protect the public, or to protect or benefit the individual. Of these objectives, the one most easily evaluated and justified is that of protecting the public. However, two specific objectives are less easily evaluated. These are benefits accruing to the company by conservation of manpower and benefits to the individual by positive maintenance of health. To achieve these objectives, periodic health examinations should result in reduced disability and mortality in the persons examined. This is based on the assumption that early diagnosis and prompt treatment will prevent or delay the further progression of disease or disability. The finding of firm data to support this assumption is the prime area of research concerning the value of health examinations. Other areas of needed research are those of: patient and physician acceptance of the results of positive findings in periodic examinations; cost reduction and mass handling of tests; and the effectiveness of mass screening and diagnostic follow-up of suspects as a substitute for the more comprehensive health maintenance examinations. Current examination procedures also should be reevaluated in terms of their usefulness in detecting disease as well as the efficiency of the techniques employed.

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

- 431 Some Observations on Periodic Executive Health Examinations. C. E. Thompson, E. A. Zaus and P. R. Keller. J. Occ. Med. 3, 215-217 (Apr. 1961).

From the results of 2 surveys and the experience of 4 years of study of executive health programs in action, the following conclusions may be drawn: (1) Most companies feel a definite and real need to have their executives examined. (2) The attitude of the individual executive toward an examination program mirrors, to a great extent, the attitude of the company itself toward such a program, and is influenced by the general rapport between executive and company. (3) Once an executive has had his first examination, he will participate in a repeat program in direct relationship to the percentage of the cost which is assumed by the company. (4) Medical benefits from an executive health examination program are very substantial, both for the individual himself and for his company.

-- Authors' summary

- 432 Psychiatry in Industry as seen by an Industrial Physician. E. F. Buyniski.
J. Occ. Med. 3, 198-202 (Apr. 1961).

There is no question that there is a need for a psychiatric service in industry. The psychiatrist must integrate with the plant community to better understand the needs of the group. He must provide the skills of his profession in such a manner as to make them easily acceptable by the individuals. Once established, he then can concentrate on a variety of programs ranging from groups to individuals, providing the services he thinks the industrial community needs.

-- Author's summary

- 433 The Role of Trauma in Oncogenesis: A Juridical Consideration. L. S. Auster.
J. Am. Med. Assn. 175, 946-950 (March 18, 1961).

Lawsuits based on the contention that cancer resulted from a single injury are frequent. The possibility that trauma may call attention to an existing tumor rather than causing it is often disregarded, and justice is often thwarted by forensic oratory. The most dramatic injuries in litigation are fractures. The court should be advised that falls are more often the result than the cause of a pathological fracture through an area of neoplastic involvement. The criteria developed by Ewing and others, outlined in this paper, have medical acceptance and are gaining legal acceptance as a result of decisions by appellate courts. Impartial panels of experts capable of delivering scientifically valid testimony in cases of alleged negligence have already helped in the search for truth.

-- Author's abst.

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- 434 A Study of Deaths in Canada Ascribed to Lung Cancer. A. J. Phillips.
Can. Med. Assn. J. 84, 795 (Apr. 8, 1961).

A one-year study has been made of the criteria used in the diagnosis of primary lung cancer in Canada. The analysis shows that, of 2,235 deaths, 72.1% were based on pathological evidence, 23.1% on radiological evidence and 4.8% on clinical evidence. The study covers approximately 99% of all primary lung cancer deaths which occurred in Canada in the study year.
-- Author's summary

- 435 Therapeutic Progress of Medical Science--Changing Concepts of the Role of Tobacco in the Management of Disease. P. S. Larson, H. B. Haag and H. Silvette.
Am. J. Med. Sci. 240, 613 (1960).

In the case of specific tobacco-genic diseases properly diagnosed, the cause of the disease, by definition, tobacco, may be forbidden without doubts and should be prohibited without equivocation. It must be concluded, with respect to tobacco-use in the management of non-tobacco-genic but tobacco-aggravated diseases, that there is nothing better than abstinence from tobacco, though sometimes there may be something worse, e.g., emotional disturbances of one sort or another, or the substitution of an even less desirable habit (for example, overeating) for that of moderate tobacco-smoking. These latter conclusions are often swept aside by a realization that the "psychic" good his habit of tobacco-smoking does a particular patient may be greater than its "somatic" harm. Thus, with tobacco-smoking, as with much else in the practice of medicine, the categorical imperative must sometimes yield to individual considerations.
-- Can. Med. Assn. J. Absts.

- 436 The Philadelphia Pulmonary Neoplasm Research Project: An Interim Report. Katherine R. Boucot, D. A. Cooper and W. Weiss. Ann. Internal Med. 54, 363-378 (Mar. 1961).

The Philadelphia Pulmonary Neoplasm Research Project is a prospective investigation of older men by means of semi-annual photofluorograms and questioning about symptoms in order to study the natural history of bronchogenic carcinoma. In 6,137 men over 45 years of age, during a follow-up period of from 3 1/2 to 7 1/2 years, 92 cases of proved bronchogenic carcinoma have been found. Of these, 66 were visible on entry films, a prevalence of 11 per 1,000 in this particular group. Hemoptysis was the most important symptom of lung cancer among these cases. Twenty-six cases of lung cancer developed during the period of observation, an incidence rate of 1 per 1,000 per year. Several cases are presented to demonstrate the type of information which is obtainable by this method. Although the number of cases is as yet small, the majority of carcinomas arose in the periphery; symptoms attributable to the neoplasms often appeared before radiologic abnormalities. The incidence of new, proved lung cancer was twice as high as the incidence of new, proved active tuberculosis. The correlation between smoking and proved bronchogenic carcinoma in this group of men is of a high order. Lung cancer is related to degree and duration of smoking.
-- Authors' summary

- 437 Studies in Emphysema. M. B. Cole, et al. Diseases of Chest 38, 519 (1960).

The studies reported in this paper demonstrate that for clinical purposes, bedside tests for timed and total vital capacity are as valuable as the more time-consuming laboratory tests of pulmonary function. The bedside method has the additional advantage that the clinician in charge of the patient observes the test and can determine the degree of cooperation of the patient. The wide variations between paired tests in patients with emphysema make judgment of the effects of therapy difficult. Some patients respond subjectively to treatment and frequently report improvement which cannot be demonstrated objectively. Objective evidence of improvement requires differences of at least 20% in timed or total vital capacity. These studies additionally show that the height and movement of the diaphragms can be measured at the bedside with sufficient accuracy for clinical purposes and that recourse to elaborate radiographic examinations yields no more significant information.
-- Can. Med. Assn. J. Absts.

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- 438 Unrecognized Airway Obstruction Associated with Smoking: A Probable Forerunner of Obstructive Pulmonary Emphysema. W. Franklin and F. C. Lowell.
Ann. Internal Med. 54, 379-386 (Mar. 1961).

Among 213 male factory workers between the ages of 40 and 60, "heavy smokers" had a mean value for the rate of expiration during the third quarter of forced expiration which was approximately 20% less than that of "light smokers". This difference was significant at the 1% level. This reduction in flow rate was not associated with dyspnea in most instances. The authors believe this change to be similar to that present to a more marked degree in patients with chronic obstructive emphysema, and feel that it supports a causal relationship between smoking and chronic obstructive pulmonary emphysema. -- Authors' summary

- 439 Pulmonary Edema and Permeability of Alveolar Membranes. J. A. Clements.
Arch. Environmental Health 2, 280-283 (Mar. 1961).

The author reviewed the physicochemical and physiological factors that have been implicated in change of membrane permeability and in edema formation. The importance of the properties of the air-surface of the alveolar membranes in respect to both the mechanical characteristics of the fluid balance in the lungs was considered. Correlations were brought out between lung compliance, formation of transudate, and titre of surface active material in extracts of lungs, especially in 2 situations; atelectasis neonatorum and the syndrome following pulmonary artery occlusion. It is speculated that these correlations exist because the state of lipoprotein in and on the alveolar membranes may be the determinant in both the permeability and the mechanical behavior of the alveolar structure.

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

- 440 Maximum Acceptable Concentrations. A Comparison in Russia and the United States. H. B. Elkins. Arch. Environmental Health 2, 45-49 (Jan. 1961).

Concentrations of dusts and fumes reportedly permitted in Russian factories are lower than the maximum acceptable concentrations (MAC) recommended by American authorities. An analysis of about 180 Russian MAC values revealed that the greatest differences were in organic solvent vapors, especially chlorinated hydrocarbons. With irritant gases, the differences were much less, and the MAC's for several dusts and fumes were similar to those used in this country. The most important reason for the differences was the Russian reliance on extremely sensitive animal studies involving conditioned reflexes. The high American values seemed to contribute to the discrepancy.

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

SKIN DISEASES AND BURNS

- 441 Some Unusual Allergic Reactions in Industry. M. M. Key.
Arch. Dermatol. 83, 3-6 (Jan. 1961).

Allergic reactions in industry can take many forms. The most common form is allergic contact dermatitis, which accounts for about 20% of contact dermatitis in industry. Less common is occupational asthma which may be associated with contact dermatitis. Examples of asthma-dermatitis exposure hazards are metal dusts and compounds, castor bean pomace, toluene diisocyanate, spices, flour, and wood dust. Occupational urticaria is rare, but it has been caused by inhalation of aliphatic polyamines, castor bean pomace, sulfur dioxide, ammonia, and formaldehyde.

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

03120817

- 442 Relationship of Dermatology to Arts and Sciences. A. Marchionini.
Arch. Dermatol. 83, 15-25 (Jan. 1961).

With examples from sociology, ethnology, religious science, and the humanities, an attempt was made to demonstrate that use of some of the methods of the social sciences in medical investigations in the dermatological field may offer new possibilities in clarifying etiology and pathogenesis and may point to new means of therapy. By investigating the relationship between dermatology and the social sciences, among others, a better knowledge of the etiology and pathogenesis of noma pellagra could be obtained. The employment of methods of ethnology and religious science were found to be useful in investigating the etiology and pathogenesis of rosacea and rhinophyma. Under special study was the part played by alcoholism as an etiological factor, a subject of particular interest since it has been a problem from time immemorial. It is admitted that alcoholism influences the development of these diseases provided that the constitutional predisposition is present.

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

- 443 Phototoxic Bullae Among Celery Harvesters. D. J. Birmingham, et al.
Arch. Dermatol. 83, 73-87 (Jan. 1961).

Vesicular and bullous dermatitis among celery harvesters has been described frequently as an allergic reaction to celery oil. Recently, a dermatologic investigation of this problem in the Michigan celery farming region revealed that more than one-half of the harvesters displayed vesicular and bullous lesions on exposed areas of the body. Moreover, the majority of the harvesters had experienced similar effects during the past several years. The celery growers were convinced that the fungous disease of the celery (pink-rot) was the cause of the eruption. The lesions were produced readily by applying pink-rot celery or its extract to the skin and then exposing these areas to sunlight or a selected spectrum of the carbon arc lamp. A furocoumarin, which is the phototoxic principle in the celery, appears to be activated between 3,200 and 4,000 Angstroms.

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

- 444 Infestation of the Imported Fire Ant. *Solenopsis saevissima v. richteri*, at Fort Benning, Ga.
A. T. Olive. J. Econ. Entomol. 43, 646-648 (Aug. 1960).

In the fall of 1956, an infestation of the imported fire ant began at Fort Benning, Ga., and became a serious problem the next year. Approximately 300 cases, 5 of which were considered to have been serious were treated for fire ant stings at the United States Army Hospital. By the end of the summer of 1957, injuries had dropped to very few cases because of a successful control program and full cooperation of the post personnel. While chemical control measures were being applied, an educational program was initiated in order to acquaint the personnel of the post with measures to prevent injuries, and first aid procedures to follow in case of injury. The pattern of invasion and dispersion indicated that the family automobile played an important role in the infestation and spread of the imported fire ant.

-- Public Health Eng. Absts.

- 445 Multiple Malignant and Benign Epidermal and Dermal Tumors Following Arsenic.
E. Neumann and R. Schwank. Acta Dermato-Venereol. 40, 400 (1960).

The carcinogenic effect of therapeutic inorganic arsenicals has been emphasized frequently in the medical literature, but reports on the carcinogenic effect of organic arsenicals such as arsenobenzols are rare. There have been infrequent reports of precancerous keratoses and skin cancer following occupational use of arsenic insecticides by agricultural and factory workers and following contact with arsenous ores by miners or metallurgists. In the reported series, of 527 patients with precancerous keratoses or basal or squamous cell epitheliomas, the authors found a correlation between the use of arsenic, usually 20 to 30 years previously, and the presence of multiple extrafacial lesions. In 3 cases, the skin cancer was caused by spraying trees with arsenous preparations. Arsenic was demonstrated histochemically in the skin and lesions of several patients. Seborrheic keratoses and senile angiomas may also have an etiologic relationship to arsenic.

-- J. Occ. Med. Absts.

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CHEMICAL HAZARDS

- 446 Current Problems in Safe Use of Food Additives. D. B. Hand.
Arch. Environmental Health 2, 219-223 (Mar. 1961).

The basic principles for evaluating the safety of food additives have been stated by the Food Protection Committee. In the light of these principles, the following problems remain: (1) The determination of which additives used prior to January 1, 1958, do not require toxicological tests for safety on the basis of being generally recognized by experts as being safe for the intended use. (2) The use of reason in the administration of the provision prohibiting carcinogens in any amount as food additives. (3) The adjustment of pesticide schedules to prevent the accumulation of toxic substances in the bodies of the consumers. (4) The establishment of uniform regulations covering foods that do not enter interstate commerce. The solution of these problems will necessitate a considerable increase in the amount of research and testing that is carried out by both industry and government.

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

- 447 A Progress Report on In-Plant Hazard Identification Systems. J. J. Duggan.
Arch. Environmental Health 2, 269-277 (Mar. 1961).

The use of the simple signal system outlined in this paper brings technical and nontechnical phases of industrial operations much closer together. It emphasizes the contribution that all technical services can make in man's struggle for self-survival. It is a positive approach and it will promote respect for industrial hazards.

- 448 Diphenylthiocarbazone Blindness in Dogs. J. M. Budinger.
Arch. Pathol. 71, 304-310 (Mar. 1961).

Intravenous diphenylthiocarbazone (dithiozone) injection in dogs may produce tapetal zinc loss and necrosis at varying dosage schedules, with secondary retinal detachment and permanent blindness. Notable species differences exist in ocular zinc concentrations, related mainly to the nature of the tapetum. The rabbit, with low choroidal zinc levels, shows great sensitivity to diphenylthiocarbazone ocular injury characterized by retinal degeneration rather than tapetal destruction. Since structure and zinc levels do not seem consistent ways to evaluate potential ocular injury to this drug, primate studies are needed to test the drug's safety in its possible use for human prostatic disease. The small series of this laboratory was free of ocular injury. Diphenylthiocarbazone provides another fruitful approach to the study of trace metals and their place in the anatomic and chemical integrity of animal structures.

-- Author's summary

- 449 Cumulative Effects of Borane Toxicity as Revealed by a Clinical Test. D. F. Miller, et al.
WADD Tech. Rpt. 60-604, Wright Air Development Division, (Aug. 1960). Wright-Patterson Air Force Base, Ohio.

Evidence for the chronic build-up of boranes in the body is presented, based on the use of a previously reported clinical test in animals and to a limited extent in humans. Detectable serum borane levels appeared within 15 minutes in animals exposed to acutely toxic concentrations of the decaborane derivative high energy fuel HEF-3 by intraperitoneal injection. Serum borane levels were elevated for 3 or 4 days after moderate exposures and up to 7 days after severer exposures. If animals are not given a sufficient time to recover from acute exposures, reexposure to an ordinarily insignificant amount results in severe intoxication. Daily administration of doses producing no overt toxicity results in a gradual build up and ultimately

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death. Boranes accumulate in the liver and central nervous system tissue. Evidence of accumulation in workers was also noted. There is rapid penetration of intact skin, serum borane levels have reached 0.5 to 0.6 microgram/liter 4 hours after skin exposure of 2 workers to milliliter amounts of HEF-3, which was washed off within minutes. Serum borane levels ranged from 0.7 to 1.3 micrograms/liter in workers acutely exposed to pentaborane and from 0.15 to 0.22 micrograms/liter in workers chronically exposed to pentaborane and decaborane. Routine use of the test to detect acute exposures and careful follow-up of exposure cases for delayed effects are recommended.

-- J. Occ. Med. Absts.

- 450 Determination of Mixtures of Hydrazine and 1,1-Dimethylhydrazine. H. E. Malone. Anal. Chem. 33, 575-577 (Apr. 1961).

A method for determining mixtures of hydrazine and 1,1-dimethylhydrazine in a nonaqueous titration uses acetic acid as a solvent with perchloric acid in dioxane as the titrant. The method uses the selective action of salicylaldehyde which forms the neutral azine with hydrazine and a basic hydrazine with 1,1-dimethylhydrazine.

-- Author's abst.

- 451 The Jet Fumigator. G. L. Rounds, et al. Anal. Chem. 33, 609-612 (Apr. 1961).

The description and operation of a device for generating parts per billion or parts per million concentrations of gas for fumigation chamber atmospheres are described (Patent application No. S.N. 766292). The device uses a Beckman flame spectrophotometer burner. The fuel used for combustion is hydrogen, with air supplying the oxidant. The gas must be dissolved in a solvent which will not produce objectionable pyrolytic decomposition products in passing through the flame. Water is used as a solvent for hydrogen fluoride in vegetation fumigations.

-- Authors' abst.

- 452 The Acute Inhalation Toxicity of Heated Aerosols of Three Hydraulic Fluids. L. Feinsilver, et al. Am. Ind. Hyg. Assn. J. 22, 14-20 (Feb. 1961).

The following three aircraft engine hydraulic fluids were tested: OS-40, a phosphate ester; XF-408, a mixture of a silicone oil and a fluorochlorohydrocarbon; and MLO-5277, an organo-silicate. It was found that the aerosols (heated and nonheated) of the hydraulic fluids studied are eye and respiratory irritants. It was also observed that toxicity was generally proportional to the normal concentration of the aerosol and to the temperature to which the aerosol was subjected, except in the case of dogs exposed to XF-408. Aerosols of this fluid (unheated and heated at 520°F) caused acute tubular nephrosis. This lesion was not observed in dogs exposed to the aerosol heated at 1020° or at 1560°F, although the incidence of deaths was greatest following exposure to the aerosol heated at 1560°F. OS-40 produced severe pathologic changes in rats and dogs only when the nominal concentration of the fluid heated to 1560°F was 3.5 to 4.3 mg./liter. The toxicity of OS-40 varied with the degree of decomposition of the heated aerosol and with the concentration of aldehydes and carbon monoxide formed as a result of the heating. Maximum effects were produced when the aerosol was heated to 1560°F. From the results of this study it was concluded that OS-40 is the least toxic of the three hydraulic fluids. MLO-5277 was considered to be the most toxic, since there were severe responses in animals exposed to unheated fluid and to low concentrations of the pyrolyzed fluid.

-- Authors' summary

- 453 Medical Aspects of Chemical Warfare. Van M. Sim. J. Am. Med. Assn. 175, 1-3 (Jan. 7, 1961).

The action of nerve gas is to inhibit cholinesterase in the body and so to intensify the actions of existing acetylcholine. The primary cause of death is hypoxia, resulting from paralysis of both central and peripheral respiratory mechanisms. Atropine is therapeutic for certain of the autonomic and central nervous effects but has little if any effect against paralysis of the diaphragm and of accessory muscles of respiration. Therefore, the severe casualty will

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require artificial respiration until there is a return of spontaneous respiration. In the event of chemical warfare, nonmedical people will be responsible for rendering immediate treatment to the mass casualties that will result. The training of both civilian and military populations in treatment procedure is essential.

-- Author's abstr.

- 454 Zinc Protection Against Cadmium Injury to Rat Testis. S. A. Gunn, Thelma C. Gould and W. A. Anderson. Arch. Pathol. 71, 274-281 (Mar. 1961).

The experiments reported in this paper have demonstrated that the subcutaneous administration of cadmium salt, 0.03 mM/kg., to rats produced marked injury to the testis. No pathologic changes were detected in the female reproductive tract or in any other major organ. Testicular injury was characterized by irreversible damage to the seminiferous tubules, resulting in complete loss of fertility. Interstitial tissue was also damaged but later underwent hyperplasia and regained its functional capacity to elaborate androgen. The simultaneous administration of 3.0 mM/kg. of zinc salt protected the testis morphologically from the toxic effects of cadmium for a period of about 8 weeks. Breeding of the rats beginning 8 weeks after the cadmium-zinc injection afforded a much longer period of protection, i.e., at least 20 weeks following cadmium-zinc injection. Breeding the animals immediately following the cadmium-zinc injection, however, shortened the period of protection of about 3 to 4 weeks. Explanations for these protective phenomena are offered based upon recent experimental observations concerning cadmium and zinc metabolism.

-- Authors' summary

- 455 Gastroduodenitis and Peptic Ulcer in Saturnism. F. Bellini and M. Finulli. Med. lavoro 51, 369-375 (May 1960). Italian.

This paper reports an investigation of a series of 457 patients who had been treated for lead poisoning over a period of 15 years. There was a history of occupational exposure to the lead hazard in each case, with colic or other significant digestive disturbances and such positive laboratory findings as reduction of the red blood corpuscles, increase in the number of basophils, increased lead content in blood and urine, coproporphyrinuria. Two hundred sixty-eight patients had been examined by x-ray and 62 (13.5% of the whole series) showed evidence of a gastroduodenitis; 18 (3.9%) had peptic ulcer. Classification by trade showed a fairly uniform distribution among some 10 different occupations where the lead hazard is known to exist. Changes in the gastric juice had been found in 129 out of 158 patients examined. The authors believe that a repetition of local spasms, which occur in lead colic, may cause trophic changes in the gastroduodenal mucosa and that this also suffers toxic damage because of lead being both absorbed by, and excreted through it. They discuss the possible significance of lead poisoning in the pathogenesis of gastroduodenal ulcer.

-- Bull. Hyg.

- 456 Problems of Occupational Hygiene in the Production of Titanium. N. P. Kokorev, D. M. Bobrishev-Pushkin and V. D. Krantsfeld. Gigiena Truda i Professional. Zabolevaniya 4, 23-29 (1960). Russian.

Hygienically, the production of titanium is characterized chiefly by dust formation in the raw materials preparation departments, the evolution of chlorine and especially titanium tetrachloride in the chlorination and rectification departments and by a discharge of magnesia and magnesium chloride in the reduction and separation divisions of the plant. Titanium tetrachloride is subject to hydrolysis in the air with a successive formation of a series of products, which tend to irritate the mucosa of the eyes and upper respiratory tract and when active for a lengthy time may produce toxic bronchitis. The greatest amounts of titanium tetrachloride appear during dismantling of equipment and pipelines during repairing and cleaning. Basic sanitary measures to be carried out in the departments for the preparation of raw materials provide for prevention of dust discharge, creating effective sealing of the equipment, wetting and aspiration. In the chlorination and rectification departments these measures should include reduction of repairs. In the reduction and separation departments, recommendation is made to provide maximum isolation of the processes involving evolution of large gas volumes, along with the mechanization of the more harmful processes.

-- Cond. from Bull. Hyg.

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- 457 Kerosene Pneumonitis Treated with Adrenal Steroids. R. L. Mayock, N. Bozorgnia and H. F. Zinsser. *Ann. Internal Med.* 54, 559-566 (Mar. 1961).

An adult patient developed a severe pneumonitis, with subsequent bronchiectasis and mild liver damage, secondary to the accidental ingestion and inhalation of a kerosene preparation (Ultrasene). He improved dramatically following administration of steroids, relapsed upon their withdrawal, and responded when steroids were administered again. Adrenal steroids may prove useful in the treatment of toxic pneumonitis secondary to inhalation or ingestion of kerosene or other related hydrocarbons. -- Authors' summary

- 458 Poisoning from Insecticides (Irreversible Cholinesterase Inhibitors). K. A. Larsen. *Nord. Med.* 64, 1415-1420 (Nov. 10, 1960).

Three fatal cases of poisoning from irreversible cholinesterase inhibitors are reported. Two of the cases were suicides and one was an accident. Data of 18 cases of poisoning from irreversible cholinesterase inhibitors reported in the Scandinavian literature are presented in tabular form. The modes of poisoning and the prophylactic problems are discussed. There are three ways to prevent these poisonings: (1) Restrictive control of the sale and the use of these insecticides, including courses to inform the workers about the toxicity of the substances and how to use them. (2) Introduction of less toxic insecticides. (3) Prompt, effective and specific treatment of the poisoning, especially with the use of atropine and cholinesterase reactivators like Pyridin-2-aldoxime-methiodide (PAM). -- Bull. Hyg.

- 459 Comparative Investigations of the Narcotic Potency and Acute Toxicity of Nine Solvents. H. Schumacher and E. Grandjean. *Arch. Gewerbepathol. Gewerbehyg.* 18, 109-119 (1960). German.

The narcotic effect on animals of a group of solvents widely used in industry was chosen as the criterion of their affinity for the central nervous system, and correlated with their acute toxicity as estimated by the LD50 by intraperitoneal injection. The solvents investigated were: benzol, toluol, xylol, methylene chloride, chloroform, trichloroethylene, tetrachloroethylene and propionic acid ethyl ester; a toluol-xylol 2 + 1 mixture was also included. -- Cond. from Bull. Hyg.

- 460 On the Presence of Free Epichlorhydrin in Epoxid Resins and Quantitative Methods of Its Determination. B. S. Bokina and E. A. Perehud. *Gigiena Truda i Professional. Zabolevaniya* 4, 40-44 (1960). Russian.

Epoxy resins are polymers, made generally by heating epichlorhydrin and diphenylol propane in an alkaline medium. Depending on conditions of the reaction the products might have a molecular weight of 350 to 4,000. Mention is made of 3 sorts of epoxy resins, ED5, ED6, and E37, having different molecular weights. Industrial processes involving heating epoxy resins are accompanied by the release of "deleterious substances" whose composition has not yet been worked out. The authors determined the quantity of epichlorhydrin obtainable from epoxy resins. The 2 methods used are described in detail. Essentially, in the first, epichlorhydrin is oxidized by iodic acid to formaldehyde which is estimated colorimetrically; in the second method epichlorhydrin is extracted by distillation with benzene, and after burning, the amount of halide is determined. Comparable results were obtained when batches were tested by the 2 methods. With resin ED5 (of low molecular weight) from 0.32% to 0.77% of epichlorhydrin was found in different batches and 0.07% and 0.13% on "experimental models". Resin ED6 yielded 0.21% and 0.27% from different batches. It is concluded that as raised temperatures are involved in processes with epoxy resins practical measures for the removal of toxic mixtures in the atmosphere of industrial premises should be carried out. -- Bull. Hyg.

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- 461 Safety Measures for Workers with Two-Component Plastics. J. Eich.
Zentr. Arbeitsmed. u. Arbeitsschutz. 10, 205-212 (Sept. 1960). German.

This paper is concerned with 3 groups of plastics—polyurethane, epoxy resins, and unsaturated polyester resins which are called two-component plastics because they are produced when and where required by the rapid interaction when mixed of two components each of which can be stored separately for months. An example of this is the two-component adhesives of very great strength which are used for many purposes. There is much chemical detail of the great number of substances used in the production of these plastics with reference also of the toxic irritant effects they may have on the respiratory and other systems, on the eyes and on the skin.

-- Cond. from Bull. Hyg.

INDUSTRIAL DUSTS

- 462 The Mechanics of Respiration in Pulmonary Fibrosis. C. Perret.
Schweiz. med. Wochschr. 90, 1129-1136 (Oct. 8, 1960). French.

After a careful review of the literature, the author describes an investigation into pulmonary compliance which he made in 9 cases of chronic pulmonary fibrosis: diffuse interstitial fibrosis 1 case; scleroderma and sarcoidosis, each 2 cases; asbestosis 1 case; and 3 cases of undetermined cause. The method consisted of intrathoracic pressure recordings by means of an esophageal balloon with direct recording of the volume/pressure tracing on photographic paper. In addition the standard measurements of pulmonary ventilation and gas exchange were made. In all 9 cases compliance was less than normal as compared with a control group of 16 healthy subjects. Compliance varied directly with vital capacity and was lower during muscular exercise than at rest. This reduction of pulmonary compliance was observed even in the first stages of the disease, when the usual functional tests (spirometry, respiratory exchange and arterial blood gas tensions) do not show any alteration. The author concludes that the determination of dynamic pulmonary compliance affords a useful method of assessment in cases of chronic pulmonary fibrosis. It is particularly valuable in those cases in which clinical, radiological and usual functional tests fail to account for the dyspnea and alleged diminished capacity for work.

-- Cond. from Bull. Hyg.

- 463 Q Fever and the Dairy Industry. E. K. Borman. Conn. Health Bull. 75, 105-109 (Apr. 1961).

Coxiella burnetii is the cause of a disease of man known as Q fever. It belongs to the general class of organisms known as the rickettsiae, a group which includes the germs of typhus fever, Rocky Mountain spotted fever and numerous other diseases. Q fever was recognized as comprising a distinct disease in 1935 in Australia. Q fever in man is primarily contracted by breathing particles of dust or other material which contains the causative agent. Nevertheless there is evidence that there are other pathways of infection. Investigations have shown that milk pasteurization by the vat method at 143°F or by the short method at 160°F is not uniformly successful in killing *Coxiella burnetii*. Accordingly, the Laboratory Division of the Connecticut State Department of Health and the Dairy Division of the Department of Agriculture, Conservation and Natural Resources began to survey dairy herds. This survey, carried out in 1959 and early 1960, resulted in proof that serologic evidence of Q fever infection existed for a substantial proportion of Connecticut's dairy herds. Of the first 620 herds tested, 160 (26%) showed such evidence and 86 (14%) showed evidence of heavy infection. The milk industry was informed that the situation would be reviewed and studied by the Milk Regulation Board. Obviously, redefinition of pasteurization was the most practicable and enforceable remedy. However, no case of Q fever had yet been reported in Connecticut. On the other hand, there was serologic evidence from laboratory findings which suggested that many individuals, including children had had Q fever at some past time since residual antibodies were present in their bloods. This made it

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evident that current availability of laboratory facilities for the diagnosis of Q fever would one day uncover a case in man which would lead to an investigation of the victim's milk supply with its attendant possibility that the dealer and the whole dairy industry might suffer damage which could be prevented by a suitable preventive law or regulation.

- 464 Review of Dust Assessment Techniques. C. R. Ross. *Occ. Health Rev.* (Ottawa) 13, 20-25 (1961). The original article appeared in the *Can. Mining Met. Bull.* (June 1960).

The assessment of pneumoconiosis-producing dusts in mines and other industries is usually undertaken for one or more of 3 reasons: (1) To compare dust exposures at particular operations with standards of permissible dustiness in order that hazards may be evaluated and preventive procedures initiated where required. (2) To study particular operations with the objective of improving dust control devices or procedures by locating dust sources. (3) To obtain data, which, along with the results of medical investigations, may assist in understanding the causes of dust-induced diseases or aid in the establishment of permissible standards of dustiness. Most dust measurements are made for the first of these reasons—to evaluate dust hazards so that they may be controlled. For this purpose, 4 different assessment techniques have been in widespread use for many years. One of these is based on the konimeter, an instrument familiar to most Canadian mining men; a second on the impinger, which is also widely used in Canada, and almost exclusively so in the United States; a third on the thermal precipitator, used extensively in Britain and South Africa; and a fourth on the tyndallometer, a light-scattering instrument used in Germany. Each of these devices is described by the author. He further discusses dust assessment under the following headings: Standardization of techniques. Dust assessment for research purposes. Development of dust control devices. New developments in dust assessment techniques.

- 465 On the Routine Measurement of the Size Distribution of Thermal Precipitator Samples by Electron Microscopy. I. Westerboer. *Staub* 20, 361-364 (Oct. 1, 1960). German.

It is customary to count and size dust particles over the whole width of a thermal precipitator deposit because the size distribution across the deposit varies. The object of the present paper is to see whether a single field in the center of the strip can be found which would have the same size distribution as the whole sample. It was found that no such field exists with thermal precipitators which use heated wires but with Walkenhorst's modification of the thermal precipitator in which a flat platinum strip of 1.5 mm. width is used as heating element, the center of the deposit was found to show a size distribution of dust (with 2 test dusts) very similar to that of the average taken over the whole dust trace. Details of the technique used by the author are given and discussed in comparison with similar methods found in the literature.

-- Bull. Hyg.

- 466 Light-Scatter Instrumentation for Measurement of Atmospheric Particulates. J. S. Nader, G. C. Ortman and M. T. Massey. *Am. Ind. Hyg. Assn. J.* 22, 42-48 (Feb. 1961).

The determination of mass and count measurements of particulates in air by use of light scattering instruments is discussed. Operation and performance of the Monitron and a miniaturized portable instrument are described, and data on comparisons with other instruments are given.

-- Authors' abstr.

- 467 Study on Byssinosis. R. Genot. *Arch. belges med. sociale hyg. med. travail et med. legale* 18, 339-357 (May 1960). French.

In a cotton mill employing 474 people, 28 cardroom and 23 other workers were questioned about symptoms and had chest x-rays taken. The method of selection of these workers is not described. Symptoms of dyspnea, dislike for smoking, cough and tightness of the chest and abnormal evening tiredness were found, mainly on Mondays. These symptoms were 4 times more frequent in cardroom workers than in the others. There were no x-ray changes directly associated with these symptoms, though a few cases of emphysema

were reported. The author concludes that there are cases with the symptoms of byssinosis in the mill surveyed but cannot say whether these symptoms are associated with a disabling condition. No pulmonary function tests were made.

-- Bull. Hyg.

468 Fever in Workers in Malt. W. Miskolczy.

Zentr. Arbeitsmed. u. Arbeitsschutz 10, 184-189 (Aug. 1960). German.

The investigation described was made because workers with malt in a brewery complained of attacks of fever with catarrhal symptoms. In this brewery, maize, molasses and rice are additions in the making of beer. Numerous examinations were carried out at different points in the brewery to determine the number and size of the malt dust particles in the air. Bacteriological tests of the dust were also made. The findings of these examinations yielded no explanation of the cause of the feverish attacks and it is considered therefore that the cause must lie in the chemical structure of the seeds from which the malt is prepared. Extracts were made from 3 different kinds of malt and used in intracutaneous skin tests of a number of malt workers and control workers. All malt workers and only one of the controls gave a positive skin reaction. It is concluded that there is some allergic substance in the malt and its dust which plays a part in the cause of the feverish illness of the malt workers. The workers state that after 2 or 3 hours they begin to cough. In the evening the body temperature rises to 37.3° to 37.8°C but the next morning it is normal. X-ray shows increase in transparency and size of the hilum. Vital capacity was found to be reduced in all patients.

-- Cond. from Bull. Hyg.

469 Pneumoconiosis in Coal Miners. G. Worth.

Deut. med. Wochschr. 85, 221-226 (Feb. 5, 1960). German.

In this paper with its numerous references, there is an account of the findings of investigations of pulmonary function of miners before and after a work shift, after experimental exposure to aluminum dust, and also of those miners who had been working for many years. There is also an extended description of clinical observations in miners. The discussion emphasizes the difficulties of assessing the effects on health of exposure to a dusty atmosphere. These effects are of complex nature for contributory factors may be climate and atmospheric pressure, weather, cramped working conditions and increased susceptibility to colds. Impairment of pulmonary function in men working in dusty atmospheres can not always be equated with silicosis.

-- Bull. Hyg.

470 Mechanics of Breathing in Persons with Silicosis. A. Buhlmann and M. Schuppli.

Deut. med. Wochschr. 85, 1745-1750 (Sept. 30, 1960). German.

Up to now, according to the authors, no reports of systematic investigations into the mechanics of breathing in lung fibrosis of the various forms of silicosis have appeared in journals using the German language. The present report covers only silicosis cases, 35 in number. Two of these were of the "subacute" type, a rapidly progressing form of fibrosis leading to death in 3 or 4 years from the start of exposure to sandblasting. The remainder were "ordinary" cases which either progress slowly, or remain stationary over years. These were drawn from miners, dressers of castings, stonemasons and pottery workers. Twenty-three of them were of a severe type judged by the radiograph, and 10 were of a milder type. The tests applied included spirometry, 1-second Tiffeneau test, and assessment of blood gases at rest and exercise, esophageal pressures, and pneumotachograms. In the 2 subacute cases there was a reduction in the lung volume along with a diffusion defect for oxygen; carbon dioxide tension was about normal, showing that the ventilation was quantitatively adequate. The lung expansion was reduced and the elastic resistance raised. The viscous resistance was about normal. These changes correspond to those found in diffuse fibrosis such as asbestosis, the Hamman-Rich syndrome, etc. In the ordinary type, the lung volume was on the average, normal, and where it was altered there was no correlation with the severity of the silicosis as shown by the radiograph. The elastic resistance was not raised except in one case of severe silicosis, where parts of the lung were overdistended. Viscous resistance was raised in 14 out of the 33 cases because of flow resistance in the air passages due to bronchial obstruction.

-- Cond. from Bull. Hyg.

03120825

- 471 The Effect of Triton, a Surface Active Polyoxethylene Ether, on Experimental Infective Pneumoconiosis. P. D. Byers, E. J. King and C. V. Harrison. *Brit. J. Exptl. Pathol.* 41, 472-477 (Oct. 1960). (British Journal of Experimental Pathology, H. K. Lewis and Company, Ltd. 136 Gower St., London WC 1, England*).

The authors have already shown that Triton has no effect on quartz induced silicosis in animals. In view of the work of Rees on the prevention of tuberculosis in mice by Triton, it was thought worthwhile to determine whether it had any effect on the highly modified form of tuberculosis induced in animals by a mixture of dust with a relatively small number of tubercle bacilli—infective pneumoconiosis. Infective pneumoconiosis has already been produced by the vole bacillus (mycobacterium tuberculosis var. muris) and coal dust. In animals injected with coal dust and vole bacilli there were lesions in both the untreated and those treated with Triton. In untreated animals necrosis was present in the lesions as were also vole bacilli; with kaolin and vole bacilli, the lesions were on the whole less in the animals treated with Triton. Necrosis and vole bacilli were present in the untreated and not in the Triton-treated animals. It was found that weights of the trachea-bronchial lymph nodes reflect in a quantitative way the changes in the lungs. These were investigated and the results analyzed statistically. The effect of the Triton on the animals injected with coal and vole bacillus was not significant, but in the animals injected with kaolin and vole bacillus, the treated animals showed a mean weight of only half of that of the untreated animals. The inference is that the effect of Triton may depend on the active pneumoconiosis produced by the particular dust.

-- Cond. from Bull. Hyg.

- 472 Radiographic Images with Direct Enlargement in the Diagnosis of Pneumoconiosis. H. Bastenier, et al. *Bruxelles-med.* 40, 893-903 (June 19, 1960). French. (Bruxelles-medical; revue belge des sciences medico-chirurgicales, 141 rue Belliard, Brussels 4, Belgium*).

The x-ray technique with direct enlargement of lung pictures has two advantages: the small opacities appear larger without enlargement of pneumobronchograms, and shadows produced by superpositionings are dissociated. The direct enlargement of lung pictures may be useful in the diagnosis of the earliest stages of pneumoconiosis but details of method and interpretation of results are to be carefully established. The authors discussed these conditions for the medico-legal diagnosis of pneumoconiosis.

-- APCA Absta.

- 473 Pulmonary Function in Asbestosis of the Lung. An Alveolar-Capillary Block Syndrome. M. E. Bader, R. A. Bader and I. J. Selikoff. *Am. J. Med.* 30, 235-242 (Feb. 1961). (American Journal of Medicine, 11 East 36th St., New York 16, N. Y.*).

Seventeen workers exposed to asbestos dust were studied clinically and by pulmonary function tests. Vital capacity was well preserved in half of the patients and moderately reduced in the remainder. Residual volume was not significantly altered except for a slight increase in 6 patients. The RV/TC ratio was normal in all but 2 patients. Maximum breathing capacity was well preserved in all cases. Analysis of ventilation-perfusion relationships revealed normal intrapulmonary mixing of gases in all but 3 subjects, in whom it was reduced. Hyperventilation was present at rest and exercise in the majority of patients. Arterial oxygen saturation was slightly reduced in 6 patients at rest, and lower than 92% on exercise in 10 patients. While dead space ventilation (expressed as per cent of tidal volume) exceeded the upper limit in 12 patients, alveolar ventilation was increased in absolute terms and in no case was it decreased. The diffusing capacity of the lung for oxygen was measured in 5 patients at rest. In 4 of these it was reduced. In addition, in 4 of these 5 subjects, venous admixture was increased. These abnormalities in pulmonary function correlated poorly with intensity and duration of exposure. A better correlation was found when compared with roentgenographic abnormalities. The physiologic findings noted are characteristic of the alveolar-capillary block syndrome. The pathologic changes produced in asbestosis of the lung are reviewed in relation to this physiological syndrome.

-- Authors' summary

* Address not in current List of Periodicals.

- 474 Dusty Conditions in a Siderite Mine. E. Occella and P. Chiesa.
Med. lavoro 51, 359-368 (May 1960). French.

This paper describes a preliminary study of dust at working places in a siderite mine, where the rock is mainly micaceous and chlorite schists with an average of quartz schists. Chemico-petrographic analyses were made of samples of the mined rock, of sedimented dust, and of airborne dust. Concentrations of the airborne dust were measured by means of a thermal precipitator, the samples being evaluated under a magnification of 200 diameters. The mined rock contained about 20% of free-crystalline silica. The fractions of both the airborne and deposited dusts below 5 microns in diameter had a free silica content smaller than that of the rock sample. In the headings, the free silica content of the fine dust was about 8%, while in the mining areas, it was 2 to 3%. Maximal concentrations of airborne dust were about 2,000 particles per cc. in the headings, and 1,000 in mining areas. The maximal concentrations in the headings were only reached during drilling (with water flush). At such times only, the dust concentrations reached the maximum allowable level of 100 particles of quartz per cc. of air.

-- Bull. Hyg.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 475 Problems of Industrial Hygiene in the Manufacture of Crystalline Transistors. E. I. Goldman.
Gigiena Truda i Professional. Zabolevaniya 4, 30-35 (1960). Russian.

In the manufacture of high frequency transistors, factors are encountered capable of producing unfavorable effects on the health of the workers. They include: pollution of the air with various chemical substances, their hydrogenous and other compounds (germanium, antimony, arsenic, lead, etc.), formation of dust, which carries the above elements, their alloys, silica and other compounds; contamination of the surrounding air with the vapors of solvents, acids, alkali and organic compounds. In sections of the plant, where germanium and silicon undergo alloying, operators may become subject to the influence of electromagnetic fields, while in the control sections—to those of ultra-high frequency and soft x-ray radiation. Hygienic improvement of work conditions in the manufacture of high frequency transistors should follow the lines of maximal mechanization of industrial processes, localization and disposal of resulting vapors, gases and dust. It should also provide for the protection against electromagnetic fields, ultra-high frequency fields and soft x-ray radiation, for effective illumination in operations involving fine visual work and, finally, secure adequate means of individual protection to all operators.

-- Bull. Hyg.

- 476 Recent Welding Practices at Naval Facilities. C. P. I. Bergtholdt.
Arch. Environmental Health 2, 257-262 (Mar. 1961).

The welding field has undergone many changes in the past few years due to introduction of new methods and modification of existing ones. These developments have had a pronounced effect in many aircraft and missile applications. Occupational health personnel have become cognizant of possible new health hazards and also of the probable reduction of some of the hazards of conventional welding because of new procedures. The elimination of exposure to ultraviolet with its associated ozone and oxides of nitrogen is a good feature of some of the new techniques. Industrial hygienists have been working with welding engineers and metallurgists in promoting health protection measures, especially where exotic metals, toxic materials, and high energy sources such as high-frequency, electron beams, and ultrasonics are used.

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

03120827

- 477 Plasma Jet. H. W. Speicher. Arch. Environmental Health 2, 278 (Mar. 1961).

The plasma jet is an arc-gas device capable of heating gas to extremely high temperatures. No combustion is involved. An electric arc is contained within a tube through which gas is blown. The gas is heated as it passes through the arc and is emitted from the device resembling an open welding flame. The gas temperatures are not limited by internal heats of reaction since no combustion takes place. Gases such as nitrogen, argon, and helium are commonly used. By adding electrical energy continuously, the device can develop gas flame temperatures in the range of 30,000°F with some gases. Several precautions should be considered during the use of the plasma jet, namely in respect to noise, eyes, and ventilation. Several modes of operation cause excessive noise which needs control. Either the operation should be placed in an appropriate acoustic housing or persons should be provided with ear protection. A No. 6 shade welding plate mounted in a cover-all goggle or welding helmet usually provides satisfactory protection to the eyes and permits adequate vision of the operation. When some gases such as argon are used, the ultraviolet intensity is sufficient to produce irritation of exposed skin in persons adjacent to the operation. Fine hot spray particulate material should be removed from the breathing zone of the operator and neighboring workers. Oxides of nitrogen concentration may exceed 5 ppm within 1 or 2 feet from the jet. Local exhaust ventilation is desirable for removing toxic gases and particulate matter from the breathing zone of the operator and workmen.

- 478 Newly Developed Electric Torch Studied. Anon. Sanitary Eng. Newsletter, U. S. Dept. of Health, Education, and Welfare, Washington 25, D. C. (Jan. 15, 1961).

Electrically energized plasma torches capable of generating temperatures in the range of 40,000 to 60,000°F have recently been developed to the point of suitability for industrial use. In many surface metallizing and metal cutting operations the devices are superior to conventional equipment and their widespread industrial use is expected. Anticipating such use, engineers of the Division of Occupational Health have engaged in an evaluation of the potential health hazards associated with operation of the torches. Investigations to date show that torch operation generates very high noise levels and intense ultraviolet radiation. The production of toxic materials such as metal fume, ozone and oxides of nitrogen vary with operation and control.

- 479 Professional Deafness Caused by Noise of Some Categories of Workmen in Shipyards. G. Bonati. Rass. med. ind. 29, 127-144 (Mar.-Apr. 1960). Italian.

The author studied deafness from noise in employees of a shipyard. Repeated trauma from noise at first induces a defense mechanism in the middle ear, where the muscles of the ossicles take up a more rigid position, while the sensory elements of the inner ear acquire a degree of resistance to the noise stimuli; it is all part of the process of adaptation to the noisy environment. Very gradually the affected workman becomes aware that his hearing is diminishing. The experience which the author reports covers 2 years of medical care of 103 employees of a large shipyard. Thirty-six riveters who work in pairs, and 33 caulkers were exposed to noise from pneumatic hammers and mechanical drills and chisels; resonance from the empty hull aboard which they worked intensified the noise. These workmen were subjected to continuous noises of the order of about 105 decibels as well as to intermittent noises of 120 to 140 decibels. In the fitting and testing of diesel engines and turbines, 34 motor mechanics were employed and exposed to noises of 90 to 100 decibels. The ages were 31 to 60 and seniority at the job was in no case less than 10 years, in some over 30. The loss of hearing was recorded as a percentage and affected every riveter and caulker, while 11 or 32% of the motor mechanics escaped. The author prescribed selective ear plugs, equipment to cushion the vibrations between tool and handler and appropriate periods of rest with good results.

-- Cond. from Bull. Hyg.

03120828

RADIOACTIVITY AND X-RADIATION

- 480 Radiation Hazards of Mass Miniature Radiography. C. Don.
Can. Med. Assn. J. 84, 573-575 (Mar. 18, 1961).

Radiation hazards to man can be considered as somatic and genetic. The view is advanced that the somatic hazard to individuals from mass miniature radiography is negligible and that the genetic hazard, both to the individual and posterity, is insignificant. If mass miniature radiography were abolished in Britain and in the United States, the saving in genetically significant dosage would be less than one-thousandth of all the dosage from diagnostic x-rays. If it were abolished in Ontario, the saving in genetically significant irradiation would be equivalent to 15.5 hours of naturally occurring background radiation per annum.

-- Author's summary

- 481 Radium Poisoning. An Old Industrial Hazard in a New Form. W. W. Coppinger.
Occ. Health Rev. (Ottawa) 13, 15-17, 26 (1961). The original article appeared in Med. Services J., Can. 16 (Jan. 1961).

An industrial hazard from the "dusting off" of radioactive luminous paint during the normal course of watch and instrument repair has been discovered and the development of a method of controlling this hazard is described. The equipment required is inexpensive and the control techniques and personal hygiene regulations are simple, easy to learn and to maintain. The hazard described, that of radium poisoning, is probably quite widespread, and the effects of this poisoning are so insidious that their true cause is unlikely to be recognized. Since there is no cure once poisoning has occurred, this is a field in which preventive medicine is of great importance.

-- Author's summary

- 482 The Influence of Radioactivity and Lung Burden on the Pulmonary Clearance Rate of Barium Sulfate. H. Cember, J. A. Watson and M. E. Novak.
Am. Ind. Hyg. Assn. J. 22, 27-32 (Feb. 1961).

Barium sulfate particles, whose mean size was 3.6 microns, were intratracheally injected into 3 groups of rats at dose levels of 23.3, 233, and 2,330 micrograms; 3 parallel groups of rats were similarly treated with BaS-35 O₄ that contained 1 millicurie S-35 per dose. The rats were serially sacrificed over a 21-day period, and the barium sulfate left in the lung was determined. In all cases, the lung clearance was found to be exponential in time. The 2,330 microgram dose of BaS-35 O₄ had a deep respiratory tract retention half-time of 27.5 days, while all the other doses, both radioactive and non-radioactive, had clearance half-times of about 10 days.

-- Authors' summary

- 483 Chemical Antidotes for Radiation Injury. J. Doull.
Arch. Environmental Health 2, 284-292 (Mar. 1961).

Regardless of the mechanism by which they act, there are certain properties which protective compounds must exhibit if they are to be of practical value as radiation antidotes. First, in order to prevent damage to a radiation-sensitive site or molecule, they must be able to reach these areas or molecules. With use of labeled compounds it has now been shown that at least some of the sulphydryl protectors are capable of penetrating the cells of the hematopoietic and gastrointestinal systems. Similarly the anoxia-producing protectors which act by interfering with metabolic pathways rather than through the depletion of environmental oxygen must also penetrate the cell. The second requirement is that the toxicity of the protective agent be sufficiently low that protective levels can be achieved without development of severe

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toxic effects. At the present time, this is a major factor limiting the use of the radio-protective agents in clinical therapy. Effective radiation antidotes must also be capable of protecting against different types of radiation. Although little work has been carried out in this area, the preliminary results are not very encouraging. The understanding of the injury and recovery processes in irradiated animals has been greatly advanced during the past 10 years by the developments which have occurred in both the prophylaxis and therapy of radiation damage. It is to be hoped that this increased understanding will permit the discovery of more effective and less toxic chemical antidotes for radiation injury.

- 484 Protection from Total-Body Irradiation. J. M. Knox, et al.
J. Am. Med. Assn. 175, 941-945 (Mar. 18, 1961).

A series of experiments was performed to determine whether agents which alter the effects of ultraviolet light might favorably influence the survival rate after total-body exposure to ionizing irradiation. Antimalarials, psoralen, benzophenones, and a benzotriazole were administered in the diet to albino mice before irradiation. The results were inconclusive but suggested that certain agents of this type may be capable of providing some degree of protection and that further experimentation and evaluation would be justified. The need for research on practical methods for protecting man from the effects of excessive radiation is emphasized. To date, the sulfhydryl compounds have shown the most promise for this purpose.

-- Authors' abstr.

- 485 The Determination of Airborne Radioactivity. L. R. Setter and G. I. Coats.
Am. Ind. Hyg. Assn. J. 22, 64-69 (Feb. 1961).

Natural and artificial airborne particulate radioactivities are separately determined by choice of instruments and time of counting. The natural activities, presumed due largely to radon and thoron daughters, are counted in an alpha scintillation counter before and after the decay of the radon daughters. The artificial radioactivity is counted for beta-gamma activity after most of the natural activity has decayed.

-- Authors' summary

- 486 Communication Media Employed in Health Physics at the Knolls Atomic Power Laboratory.
L. J. Cherubin. Am. Ind. Hyg. Assn. J. 22, 70-74 (Feb. 1961).

The health physicist, as well as the industrial hygienist and safety engineer, have a need for maintaining adequate and effective communications with management, employees and other interested special groups in order to obtain understanding of their effort and objectives and thereby obtaining from those sources their support and acceptance. Communications media employed at the Knolls Atomic Power Laboratory to obtain support and acceptance of the radiation protection activity are discussed in this article with the hope that the interested reader will first consider and evaluate the role of communications as a tool in his own program, and secondly, through their membership in various national organizations, encourage those organizations to provide them with communication tools that are needed.

-- Author's abstr.

- 487 Organization of a Radiation Hazard Emergency Response Capability. A. J. Breslin, W. B. Harris and A. A. Weintraub. Am. Ind. Hyg. Assn. J. 22, 59-63 (Feb. 1961).

The U. S. Atomic Energy Commission in cooperation with the Department of Defense, maintains a nationwide organization of radiation safety teams to provide emergency technical assistance to state and local officials in the event that an accident with public health significance occurs during the utilization, handling, or transportation of radioactive materials. The capability to handle such accidents is not yet adequately developed at the state and municipal levels. The basic mission of the teams is to provide rapid hazard evaluation and recommendations for control. Important requirements for the satisfactory performance of this mission are: (1) Effective liaison with civil authorities. (2) Expeditious team mobilization and transportation. (3) Use of professional radiation safety personnel. (4) Field equipment suitable for rapid, approximate measurements.

-- Authors' abstr.

- 488 Radiation Hazard in Industry. R. R. Newell.
J. Am. Med. Assn. 175, 227-229 (Jan. 21, 1961).

The maximum permissible dose (MPD) is not a measure of radiation injury; it is not a health rule, but an operating rule. Minding this rule reasonably well assures satisfactory protection for the health of those exposed and a negligible augmentation of genetic mutations. For widespread radiation hazard (contamination of environment), it is more efficient to attend to the pertinent measure, namely the over-all population average. Keeping the average below the level of significant augmentation of the mutation rate assures at the same time a negligible frequency of exposures productive of somatic injury.

-- Author's conclusions

- 489 Radiological Warfare. C. L. Hansen, Jr.
J. Am. Med. Assn. 175, 9-11 (Jan. 7, 1961).

When early severe nausea and vomiting are combined with erythema and a depressed absolute lymphocyte count, one can consider it likely that the patient has been exposed to a high dose of ionizing radiation. The total white-blood-cell count with determination of absolute granulocyte and lymphocyte values is the most important diagnostic aid in this situation. Treatment is purely symptomatic. Hospitalization is advised for patients suspected of having received 150 r or more. Therapy is of the greatest value in the dosage range of 200 r to 700 r, where hematopoietic failure and ensuing sepsis can be prevented by transfusions and antibiotics. If partial shielding has prevented injury to critical organs, the prognosis is better and the treatment can be modified accordingly.

--Author's abst.

ENVIRONMENTAL MEASUREMENTS

- 490 Contaminant Generators for Continuous Exposure Inhalation Chambers. R. V. Fultyn.
Am. Ind. Hyg. Assn. J. 22, 49-53 (Feb. 1961).

To conduct investigations of the toxicity of air pollutants on the basis of a 24-hour-per-day exposure, contaminant generators suitable for continuous operations over long periods of time were developed for use with animal inhalation exposure chambers. Tests conducted with a mist generator showed that it was capable of maintaining satisfactorily uniform concentrations in the exposure chambers with a minimum of attention for the periods investigated. The suitability of this generator at other concentration levels, and for the production of aerosols of different materials is currently under investigation.

-- Author's summary

- 491 Enhanced Toxicity of Ozone-Hydrogen Peroxide Mixtures. J. L. Svirbely, Olga J. Dobrogorski and H. E. Stokinger. Am. Ind. Hyg. Assn. J. 22, 21-26 (Feb. 1961).

Concern over enhanced toxicity of air pollutant mixtures has led to the experimental demonstration that hydrogen peroxide in concentrations of a few ppm killed animals after a brief exposure when inhaled with a non-lethal concentration (1 ppm) of ozone. It was possible also to demonstrate a moderate degree of protection against otherwise lethal doses of hydrogen peroxide, by a single prior exposure to hydrogen peroxide. Moreover, cross tolerance against the organic peroxide, cumene hydroperoxide was afforded also by a prior exposure to hydrogen peroxide. Particularly noteworthy, was a tolerance produced by a prior exposure to ozone to mixtures of hydrogen peroxide and ozone, despite the fact that such mixtures normally show enhanced toxicity.

-- Authors' abst.

03120831

- 492 Bacteriological Investigation of Exhaust Air from Hospital Vacuum Cleaners. J. G. Bate. *Lancet* 1, 159-161 (Jan. 21, 1961).

A bacteriological investigation has been made into the quality of exhaust air emitted by 10 vacuum cleaners of types commonly used in hospitals, and 3 suction floor polishers. The exhaust from all but one of the cleaners contained not more than 1 bacteria-carrying particle in 5 cu. ft., which seemed unlikely to constitute a cross-infection hazard. One vacuum cleaner needed additional filtering material to bring the exhaust air up to the standard of the rest. The exhaust from all the suction floor polishers was unsatisfactory in comparison with that from the vacuum cleaners, and if such machines are to continue in use, their filtering systems should be redesigned so as to emit air no less pure than that of the vacuum cleaners. Room air is much disturbed by vacuum cleaners with open exhaust jets, and these should not be operated in hospital wards without some device to diffuse the outgoing stream of air. Where dust is not collected into disposable bags, the emptying of vacuum cleaners is likely to contaminate the air and the staff doing this work. Manufacturers are urged to try to remedy this disadvantage. It is suggested that central vacuum cleaning systems should be incorporated as standard practice in the design and construction of ward blocks in new hospitals.

-- Author's summary

- 493 Microdetermination of Formaldehyde in Air. A. C. Rayner and C. M. Jephcott. *Anal. Chem.* 33, 627-630 (Apr. 1961).

A procedure is described for determining the concentration of formaldehyde in air. Formaldehyde is collected by drawing air at a rate of 1 cfm through an impinger containing 0.005N hydrochloric acid. The collecting efficiency of this solution is 72% with a standard deviation of 5%. A magenta color is produced by adding Schiff's reagent to the formaldehyde solution; acetone increases in depth and stability of the color. The absorbance is measured in a spectrophotometer at 560 millimicrons. The method is sensitive to 0.1 microgram of formaldehyde per ml. of collecting solution. With a sampling period of 1 hour, a concentration as low as 5 ppb in air can be determined. Typical results for urban air are presented. Diurnal variations in formaldehyde concentration are found, with peaks occurring during the morning and late afternoon.

-- Authors' abst.

- 494 Determination of Formaldehyde in Gas Mixtures by the Chromotropic Acid Method. A. P. Altshuller, D. L. Miller and S. F. Sleva. *Anal. Chem.* 33, 621-625 (Apr. 1961).

The modification of the chromotropic acid method for formaldehyde proposed by West and Sen has been investigated. With only minor variations, the present study confirms the previous findings on reagent concentrations, color stability of the product, and the stability of the reagent solution. A much more detailed investigation of the possible interference of olefins, alcohols, aldehydes and ketones, aromatic hydrocarbons, phenols, and of nitrogen dioxide has been made. Nitrogen dioxide, most aldehydes and ketones, and straight-chain alcohols do not interfere significantly. The interference of olefins and aromatic hydrocarbons can be largely eliminated by the use of appropriate sampling conditions.

-- Authors' abst.

- 495 Analysis of Chlorinated Hydrocarbons with the Gas Chromatograph. P. Urone and J. E. Smith. *Am. Ind. Hyg. Assn. J.* 22, 36-41 (Feb. 1961).

Gas chromatographic techniques afford a simple, sensitive, and selective method for the analysis of chlorinated hydrocarbon vapors in air. Higher resolution with better qualitative separations are obtained with paraffin coated columns. As a first approximation, paraffin columns elute chlorocarbons in the order of their boiling points. Quantitative measurements may be made from peak heights or peak areas. However, peak areas vary only slightly with the type of chlorocarbon and may be used independently of the type of chlorocarbon being measured. As little as 200 milliliter samples of air passed through activated silica gel capsules will give measurable peaks when desorbed into a gas chromatograph by means of a heating tube attached to the gas sampling valve of a gas chromatograph.

-- Authors' conclusions

03120832

- 496 A Field Test for Nitrobenzene Vapor in Air. G. C. Hands.
Analyst 85, 843-845 (Nov. 1960).

Previously described methods for the detection and determination of nitrobenzene vapor in air have depended on the further nitration of the compound and then colorimetric determination of the resulting dinitrobenzene, on reduction to aniline and then diazotization and coupling or on polarographic determination of the nitrobenzene, which is trapped in ethylene glycol. The proposed method can be used for determining concentrations of nitrobenzene outside the limits 0.5 to 2.0 ppm by increasing or decreasing the size of the sample. The precision of the determinations is about $\pm 20\%$. A complete determination, including sampling, takes 10 to 15 minutes.

-- APCA Absts.

- 497 Isolation of Proteins from Samples of Airborne Particulates. Velta Coppers and H. J. Paulus. Am. Ind. Hyg. Assn. J. 22, 54-58 (Feb. 1961).

Samples of airborne particulates collected near grain industry mills and plants have been analyzed for protein amounts and types. After preliminary extraction with acetone to remove the non-protein organic matter, total protein determinations were made by micro-kjeldahl and amino acid methods. The results on samples collected in the mill area are comparable for both methods. Following hydrolysis of an airborne sample, 14 amino acids were identified by a two-dimensional chromatogram. Electrophoretic patterns of proteins separated from other particulate matter were made on several air samples. Similar patterns were obtained on samples of wheat bran collected during an unloading operation in a grain storage plant. Further experimental work is planned on separation and identification of specific proteins.

-- Authors' summary

- 498 The Aerosol Efficiency and Pressure Drop of a Fibrous Filter at Reduced Pressures. S. C. Stern, H. W. Zeller and A. I. Schekman. J. Colloid Sci. 15, 546-562 (Dec. 1960). (Journal of Colloid Science, Academic Press, Inc., 111 Fifth Ave., New York 3, N.Y.*).

The collection efficiency of an Institute of Paper Chemistry fibrous filter for mono-dispersed aerosols of 0.026 to 1.71 microns in diameter and the resistance to flow through the filter were investigated experimentally at reduced pressures which simulate air densities in the stratosphere. Single fiber efficiencies in the diffusion and impaction regimes were calculated and compared with theory. Resistance to flow through the mat was analyzed in terms of a drag coefficient of a single fiber imbedded in a mat or flow through a bed composed of capillary tubes. The experimental results show the dominant effects of slip flow in increasing collection efficiency and reducing pressure drop through the filter at reduced pressures.

-- APCA Absts.

PREVENTIVE ENGINEERING

- 499 A Look at the Future. J. H. McNinch. J. Am. Med. Assn. 175, 12-14 (Jan. 7, 1961).

The chemical, biological, and radiological weapons of modern warfare are usually discussed together because they are "area weapons" capable of producing mass casualties, and because they may be considered, all or in part, medical weapons. Much progress has been made in perfecting physical protection against these weapons, but medical protection is much more important if it can be achieved. The problems of medical protection against biological weapons are not nearly as great as those of protection against chemical and radiological weapons, but progress is being made. To accelerate this progress, physicians of this country must participate actively in the research program because of the medical nature of the weapons and the importance of medical protection against them.

-- Author's abst.

* Address not in current List of Periodicals.

- 500 The Physician's Role in the Defense Against Biological Weapons. D. Crozier, W. D. Tigertt and J. W. Cooch. J. Am. Med. Assn. 175, 4-8 (Jan. 7, 1961).

The possibility that biological warfare may be used against the United States cannot be ignored. There is no evidence that it has ever been employed as a major weapons system and its effectiveness has not been proved, but it is feasible. As an area weapon, it would affect civilian as well as military personnel. Recognition of an attack and identification of the agent would be major problems. Artificial immunization constitutes the most effective means of protection. Antibiotics now available are effective against infections with the likely bacterial and rickettsial agents, but viral and mycotic infections would present additional problems. Proper training of civilian and military personnel, advance planning to include stockpiling of adequate amounts of antibiotics, and expansion of present research efforts in the basic processes of infection can provide a reasonably adequate defense.

-- Authors' abst.

- 501 Rocket Propellants. Safety and Industrial Health Aspects. H. M. Bowman. Arch. Environmental Health 2, 293-306 (Mar. 1961).

The quest for the ultimate in rocket propellants, both liquid and solid, is accompanied by many problems. Among them are: performance limitations; temperature and impact sensitivity; and manufacturing, handling, storing, and shipping hazards. Because the energetics and the chemical composition of rocket propellants are always changing as science advances, new health and safety problems continually arise. Rocket-propellant research necessitates a vigorous safety program for all stages, from test tube to launching pad. Both liquid and solid propellants require care in handling, but with the latest safety procedures, hazards can be minimized both for personnel and for equipment. The chemical, physical, and energetic properties of both operational and research-stage propellants are important considerations for safe operation.

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

- 502 Benefits of Central Gas Cleaning Facilities. C. A. Bishop and G. A. Howell. Arch. Environmental Health 2, 240-247 (Mar. 1961).

Factors to be considered by the engineer in determining whether to specify a central gas cleaning system or individual cleaners at each operating unit are discussed. These factors include safety, reliability, and costs. Two open-hearth installations are described in detail. The first makes use of individual cleaners on each open hearth, and the second uses a central cleaning plant for 11 open hearths. Mention is made of central cleaning facilities for other metallurgical operations such as blast furnaces and electric furnaces.

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

- 503 Electro Precipitators. Practical Design Aspects. J. E. Sayers. J. Inst. Fuel 33, 542-550 (Nov. 1960).

The various design factors and operating conditions which have a major influence on the performance of an electro-precipitator installation are discussed. Emphasis is placed on the importance of the detailed design and layout of the discharge and collecting electrode systems and of the necessity for efficient cleaning of the electrodes and effective dust disposal arrangements. Reference is made to the effects of the electrical characteristics of the dust and the carrying gas and to pre-treatment of the dusty gas stream to maintain controlled conditions of temperature and humidity in certain cases. The application of these principles to the design of precipitator installations for power stations and for a number of steel works is considered, with brief descriptions and illustrations of typical installation arrangements in these fields. Reference is made to the difficulties in forecasting with any degree of accuracy the conditions under which a new precipitator installation will have to work and the necessity for a cautious design approach and maximum collaboration between manufacturers and users.

-- APCA Absts.

03120834

COMMUNITY AIR HYGIENE

- 504 Air Pollution. Philip Drinker. New Engl. J. Med. 264, 754-759 (Apr. 13, 1961).

The author discusses the subject under the following headings: Urban Crowding, Flora and Fauna, Tobacco Smoke, Synergistic Effects of Smog Elements, Emissions from Motor Vehicles, Blowby and Crankcase Vents, The Fuel Cell, Extramural Pollution by Industry, Odors, and Alerts and Noxious Smogs. He concludes that air-pollution control in all industrial countries has reached the point where adequate control methods are understood and are available. It has become a matter of balancing the costs against the benefits. But it is the kind of thing that is not done on a community basis unless the citizens make it clear that the improvement is wanted. At present industrial pollution can be controlled very effectively, but urban crowding, vehicular traffic and the pollution that inevitably accompanies them have yet to be controlled.

- 505 Progress Review No. 48. Air Pollution. A. Marsh. J. Inst. Fuel 33, 609-615 (Dec. 1960).

This review outlines the present situation and progress in the field of air pollution and its prevention, and at the same time, indicates the wide variety of aspects of the problem that calls for separate study and action. The investigation and measurement of air pollution are discussed, followed by a review of the Act and progress being made under it in the domestic and industrial fields. Transport pollution, mainly that from road vehicles, and the problem of sulfur emissions are also discussed. Concern about air pollution was, until recently, almost exclusively confined to Great Britain and the United States. The growth of pollution in many parts of the world, as a result of industrialization and urbanization, has led to the study of the problem, research, and preventive measures in many countries. -- APCA Absts. --

- 506 Carcinogens in the Human Environment. W. C. Hueper. Arch. Pathol. 71, 237-267 (Mar. 1961); *ibid.* 355-380 (Apr. 1961).

The growing pollution of the human environment with chemical and physical agents associated with the modern industrial development poses serious problems to medicine, public health, sociology, economy, natural sciences, and technology. Because of the still far-reaching lack of factual knowledge on the carcinogenic agents already present in the human environment and the distinct difficulties encountered in discovering and identifying them by epidemiologic, medical, and experimental procedures, definite efforts should be made to prevent, as much as possible and practicable, any further addition of new industry-related carcinogens to the human environment. Cancer hazards associated with exposure to these agents represent a segment of the general toxic health hazards connected with the production, distribution, and consumption of industrial products and the release of industrial wastes into the environmental air, water, and soil. In view of the rapid growth of industrial activities and of population, the complex problems created by these developments deserve serious and urgent attention by all persons concerned so as to keep them within controllable limits. Cancer hazards of industry-related causation should not be considered as unimportant and unavoidable calculated risks of modern living. They are as amenable to sanitary control measures as communicable diseases have proved to be in past decades. The recently advanced argument that the prophylaxis of environmental cancers can cut us off from all our amusements and that is best, therefore, to enjoy life and take the small risks attached to these things (Wright) reflects a philosophy which denies the best traditions of medical practice and public health, and would open the way for an indiscriminate introduction of any number of highly toxic and carcinogenic materials into the human environment.

-- Cond. from authors' conclusions

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- 507 Air Pollution, the Respiratory Tract, and Public Health. S. L. Andelman. Eye, Ear, Nose, Throat Monthly 39, 961-964 (Dec. 1960). (Eye, Ear, Nose and Throat Monthly, Professional Press, Inc., 5 N. Wabash Ave., Chicago 2, Ill.*).

Effects of aerial sewage on human health range from irritation of the nose, throat, and eyes to aggravation of respiratory tract disorders and cardiovascular ailments. Evidence has been accumulating to link polluted air to the increased incidence of chronic bronchitis, emphysema, bronchospasm, and lung cancer among urban dwellers. Sulfur dioxide has been identified as the principal culprit of the air pollutant family, with ozone being the second most important gaseous offender. Atmospheric concentrations above 0.2 ppm of ozone irritate the air passages of the respiratory tract, cause pain in the chest, cough, dyspnea, and nausea. Exhaust system smog purifiers, as in the approved devices in California, are expected to substantially decrease the amount of carbon monoxide present in the exhaust stream by 60% and the amount of hydrocarbons by as much as 80%. Air pollution was officially recognized as the greatest and most urgent environmental problem facing the peoples of Europe during the World Health Organization Meeting held in Geneva in 1958. Chicago has recently enacted one of the foremost comprehensive air pollution ordinances, and the mayor has appointed three committees to assist the Department of Air Pollution in carrying out the provisions of the law.

-- Cond. from APCA Absts.

- 508 Air Pollution and Respiratory Disease. A Preliminary Report. F. C. Dohan and E. W. Taylor. Am. J. Med. Sci. 240, 337-339 (Sept. 1960).

The authors report high correlation coefficients between the incidence of respiratory diseases among women in electronic factories in five U. S. cities and the annual mean concentration of particulate sulfates in the air. There is little or no correlation with other pollutants, and environmental and social factors did not explain the differences in morbidity.

The authors attribute these differences to pollution by sulfur dioxide, sulfurous and sulfuric acids and their derivatives.

-- Bull. Hyg.

- 509 How to Get Out of Air Pollution Trouble. G. E. Pendray. Public Relations J. 27, 4-6 (Mar. 1961). (Public Relations Journal, Public Relations Society of America, Inc., 2 West 46th St., New York 16, N. Y.*).

The following suggestions are offered in dealing with air pollution complaints: do not attempt to use smooth words or empty promises as a substitute for remedial technical action. Do not ignore protests, or deny the existence of a problem, without investigating to make sure. Do not call the complainers "pinks", troublemakers, or Communists. Do not deny the facts—and certainly not when the evidence is plainly against you. Do not take refuge in legalistic tactics, dodging, bluster or silence. Do not attempt to justify air pollution on economic grounds—with such phrases as "more smoke means more jobs"—"if the town wants our taxes it will have to put up with some of our fly ash", etc. Do not take comfort in the idea that the complainers are the company's own employees, suppliers, or other dependents—"and they wouldn't dare carry the complaints too far." Do not assert that the "plant was here first, and the complainers should have known better than to build their houses so near to it, if they are so sensitive." Do not threaten to move the plant to another community—unless you mean it; your bluff may be called. Do not try to get out of responsibility by pointing an accusing finger at the other fellow. In the experience of the author, he has seen every one of these approaches tried, and seen them fail. They are almost a guarantee of trouble. Sometimes they can change a simple complaint against air pollution into a major public relations disaster. If the company's community relations are bad, dealing merely with air pollution complaints may only be treating symptoms. When air pollution complaints are persistent, consider whether the real trouble may not lie elsewhere. An inexpensive professionally-conducted field check will soon indicate whether this is in fact the case. If it is, the only lasting answer is to correct the basic cause.

* Address not in current List of Periodicals.

03120836

- 510 Why Air Pollution Control Should be Enforced at a Local Level. C. E. Couchman.
J. Air Poll. Control Assn. 11, 173-174 (Apr. 1961).

Experience gained by smoke control agencies, which were the first engaged in air pollution control, proved that effective progress was made when operations were conducted on a local enforcement basis. A major reason for this initial and continued success was the requirement that plans, incorporating control measures, had to be acted upon before installations were made. A similar requirement is very effective in the control of chemical pollution of the atmosphere. Experience has also shown that legislative control, directed at specific sources of air pollutants, is more economical and more effective when enforced at a local rather than at a state level. It is also advocated that the control of all types of air pollution, including radioactivity and those from natural sources, should be consolidated in a single agency, operating, preferably, on a local basis, with the state functioning in an advisory capacity to the local communities. On the other hand, the state should assist in bringing about relief from an air pollution source located outside of a local enforcement area. -- Author's conclusions

- 511 Air Pollution Asthma Among Military Personnel in Japan. H. W. Phelps, G. W. Sobel and N. E. Fisher. J. Am. Med. Assn. 175, 990-993 (Mar. 18, 1961).

Yokohama asthma is distinguished from other forms of asthma in that attacks usually begin in the evening or early morning, are usually accompanied by severe coughing, wheezing, and shortness of breath, and resist treatment by the usual bronchodilating drugs. Considerable morbidity and a number of deaths have been ascribed to this disease. More than 100 patients have been studied. Removal of the patient from the polluted air of the industrialized Kanto Plain (Tokyo-Yokohama region) gave prompt relief. When this was not possible, the use of an oxygen tent with other measures outlined in this paper was frequently necessary.

-- Authors' abst.

MANAGEMENT ASPECTS

- 512 Sickness Absenteeism Can Be Controlled. J. F. McCahan.
Arch. Environmental Health 2, 203-208 (Mar. 1961).

A program for the successful control of sickness absenteeism, which places the primary responsibility for administration upon line supervisors, is described. To be effective the plan requires integrated cooperation from the plant medical and benefit service organization. Charts and graphs show how statistical analysis of the sickness-absence data can identify problem areas that need special attention. Sickness-absence control can result in higher employee earning capacity, in increased production, and, through the resultant savings, in the development of a more comprehensive non-occupational sickness benefit program.

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

- 513 Group Insurance and Health Care Costs. R. R. Shinn.
Arch. Environmental Health 2, 196-202 (Mar. 1961).

When discussing the increasing costs of financing medical care, the correct degree of importance must be assigned to the various factors causing the increase. Misuse and abuse, while existant, are relatively minor causes when compared with other elements. Benefit plans have grown with employee needs—higher dollar-benefit amounts to keep pace with higher services and broader coverage to meet wider needs. Medical services, like other services, have

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been affected by inflation, with a consequent effect on the costs of medical care benefit plans. The cooperative efforts of insurance companies, employers, employees, labor unions, and the providers of medical care can keep the increase from getting out of control, while continuing to provide the quality of medical care that the public, educated to the needs of good health, demands.

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

- 514 Functions and Aims of the United Wire, Metal and Machine Medical Center. B. Rothbard. J. Occ. Med. 3, 209-210 (Apr. 1961).

The United Wire, Metal and Machine Health and Welfare Fund has, since 1955, operated a Medical Center at the Union's headquarters in New York City. The Center carries on a health promotion program among union members and their dependents. Health screening procedures are provided to groups, at which time complete examinations (including specialists' services) are offered. Those persons found to require ambulatory care are referred to their own physicians at their own expense. Patient care in any one of three approved hospitals is completely paid for by the Center. Pre-employment examinations for the industry are provided at the Center, as well as examinations related to subsequent placement problems of employees. The entire program is financed by assessments against the industry as determined in collective bargaining agreements.

-- Author's summary

- 515 Let's Stop Misuse of Medical Money. E. T. Klassen. Arch. Environmental Health 2, 192-195 (Mar. 1961).

This talk before the Industrial Hygiene Foundation emphasizes the alarmingly sharp increase in cost to industry of financing employee group health plans (338% increase in the United States in 10 years). It also emphasizes the need to adopt measures that will avoid abuses and extravagance and insure that funds are properly and reasonably spent. A program so aimed would include: (1) efficient and fair administrative procedures to pay proper claims promptly and to deny improper claims; (2) efforts by insurance carriers, medical societies, and hospital associations to stop careless and unnecessary expenditure of medical funds; (3) cooperation of industry with doctors and hospitals serving employees at the community level; (4) a sound educational program on the subject for all employees; (5) constructive cooperation by labor union leaders. Keeping the practice of medicine under the system of American free-enterprise depends in good part on holding the cost of good health within reasonable bounds.

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

- 516 The Handling of Workmen's Compensation Claims. Problem Presented to Directors of Departments of Industrial Relations. O. T. Clayton. Arch. Environmental Health 2, 359-361 (Mar. 1961).

No plan in the field of workmen's compensation is complete or workable without a medical department or available outside physicians to care for the health and needs of the workers. It is not enough to have a medical room. The best medical facilities consistent with the needs of the employees should be assembled there. A competent physician is not difficult to find. He usually pays his salary many times over by keeping workers on the job and returning them quicker after injury or illness. There is still need for better housekeeping conditions and vigorous safety programs designed to prevent accidents. By keeping the word "safety" constantly before the workers they will have fewer accidents. Safety is not just a word to be passed over lightly; it is a system which should play an important part in every business undertaking. Industrial relations, in order to reduce costs, must analyze individual situations and think in terms of one important problem—concern of the injured employee and his family. If this is done, the results in terms of happiness and health will be amazing to both employees and management.

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ACCIDENTS AND PREVENTION

- 517 Taming Power Presses. H. B. Duffus. Natl. Safety News 83, 224-226 (Mar. 1961).

With over a quarter of a million mechanical presses now in operation throughout the country, serious thought has to be given to improve safety in these operations. The need for this is emphasized by the high potential hazard to the press operator and die setter as they feed and remove material from under the punch, or during die setting operations. Past experience has shown that press operations contribute to a high percentage of finger, hand, and arm amputations in industry. The press builder has done much during the past decade to make the power press a more safe and reliable tool. Better frame design, improved clutch mechanism, and the development of better press control systems have made it possible to apply tools and dies that permit automatic, semi-automatic or remote feeding. While this improved technology is now available on new presses, it will be many years before their total effect will be apparent in press operations. The average age of presses now in use throughout industry is 20 years. By converting clutches, air valves, limit switches, and control systems, many of the average age presses now in use can be brought up-to-date. The author discusses at some length the changes in the American Standard Safety Code for Power Presses, B11.1. Work on the latest revision, recently approved and scheduled for publication in April, 1961, started in 1953.

- 518 Scaffolding Hits High Spots. Anon. Natl. Safety News 83, 48, 50 (Mar. 1961).

A variety of scaffolding finds use on high jobs. Applications range from light, movable platforms for maintenance and repair work, to sectional steel scaffolds used on large building projects. (Wood scaffolding erected on the job by contractors is not treated in this article). Of principal importance in the safe use of scaffolding is knowledge of the type best suited to a given job. Three principal classifications of metal scaffolds are: (1) Built-up scaffolds, as the name implies, are built up from the ground or floor as the work progresses. They can be made up from sectional frames or from tubes and couplers. (2) Hanging scaffolds. This type comprises two classifications: heavy-duty suspended equipment and light-duty swinging scaffolds. (3) Rolling scaffolds. These easily movable units can be made up by fitting casters to either of the two types of built-up scaffolding, or to special aluminum components. Swinging scaffolds are light-duty equipment, primarily for men and hand tools. They are used for painting, tuck-pointing, glazing, and other operations where scaffold height is adjusted frequently as work progresses. A swinging scaffold should be hung securely from eaves, cornices, or other reliable support with strong hooks. Anchorage should be inspected before hooks are placed. Ropes should be of the best grade manila, not less than 3/4 inch on at least 6-inch blocks. Steel cable should not be less than 5/16 inch. Steel cable is wound on a drum, not pulled by hand. Safety belts attached to life lines extending from the roof to the ground should be worn by workers on swinging scaffolds. The safety belt rope should be tied to the life line with a triple sliding hitch. Also described briefly are suspended, heavy-duty scaffolds, ladder-jack scaffolds, railings and toeboards, and sidewalk bridges.

- 519 Floors Can Floor You. Anon. Natl. Safety News 83, 68-70 (Mar. 1961).

Proper care of floors extends their life, makes them safer, and enhances their appearance. Under most conditions, flooring materials can be cared for with a protective coating. Dusting of concrete can be checked by treating with a sealer. If color is desired, a penetrating dye or a floor enamel may be used. Linoleum, asphalt tile, vinyl tile and rubber tile are resilient and decorative. Care consists of cleaning and protecting the surface with a suitable coating. Hardwood flooring in its natural state dries out and cracks and splinters under traffic. Scrubbing raises the grain of the wood and excessive moisture causes it to swell

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and warp. Sealers produce a durable, penetrating finish. Strong alkalis and coarse abrasives are injurious to most types of flooring. Detergents that are both effective and mild will meet most floor maintenance needs. Cleaners should not leave a slippery film. Soap is permissible for concrete, common brick, wood block, and mastic. Marble and smooth tile require a detergent that leaves no slippery residue. Maintenance of hard and resilient floors is of two types: (1) Routine care (usually daily) is designed to keep up the cleanliness and appearance of the floor. It may consist of dry or semi-dry methods, such as sweeping, dust mopping, buffing, or damp mopping. (2) Periodic maintenance removes by scrubbing the more stubborn soils that have survived routine methods. Absorbents are used in machine shops, factories, oil refineries, chemical plants, railroad shops, aircraft hangars, bus and truck terminals, garages and filling stations, institutional kitchens, food processing plants, boiler rooms and many other locations. For winter use on ice and snow they provide increased safety underfoot and better traction for vehicular traffic. Commercial absorbents have a much greater absorbing capacity than sawdust, waste or rags. They are non-combustible and less bulky.

- 520 Don't Fear Electricity But Respect Its Ability to Help or Hurt. Anon.
Natl. Safety News 83, 217-219 (Mar. 1961).

Rules and requirements for the safe installation of electrical equipment are covered by the National Electrical Code developed by the National Fire Protection Association and approved as an American Standard CL-1959. Local codes and regulations have preference, but they are usually based on, or follow the national code. One faulty installation can result in a trap for some employee. It may result in an injury when equipment is first energized or may not become apparent for weeks or months. Jarring, vibration, or wearing of insulation can suddenly energize the entire piece of machinery, motor or control panel and a serious employee injury occurs. During repair or maintenance operations on electrical equipment, exposure to injury from electric shock is much greater. In all cases of repair work on motors, controls or electrical driven machinery, the equipment should be de-energized by opening the necessary switches and locking them in the open position. If no provisions are available for locking the switch open, it should be blocked and a tag attached showing that the switch should not be closed by anyone except the man whose name appears on the tag. A safety program should--include thorough training of employees who install or operate electrical equipment. Such items as electric shock, results and causes, use of rubber protective equipment, insulating floor mats, and personal protective equipment should be thoroughly discussed with each person. Of particular importance is a knowledge of first aid and the use of artificial respiration to restore breathing. Stoppage of normal breathing is a frequent occurrence when electric shock is encountered.

- 521 Corneal Lesions in Agricultural Workers of the Province of Novara. G. Bosso and F. Pacagnino. Med. lavoro 51, 381-384 (May 1960). Italian.

The authors investigated corneal lesions suffered by agricultural workers, mostly on rice cultivation, in the Province of Novara in the 5-year period, 1955 - 1959. There were 148 cases in men and 96 in women, though the latter form the majority of the rice workers. The initial trauma is believed to be from the sharp end of a grain of rice or wheat and the injury is sustained when either carrying the sheaves or bending over the crop during various operations. Infection of the corneal wound supervenes and the process is aggravated if there are pre-existing conditions such as dacryocystitis, obstruction of the tear passages, ectropion or previous conjunctivitis. Perforation of the cornea, a descemetocoele or other serious complications may develop. The occupational complaints dealt with in this paper prevail from May to August when immigrant workers join the local farm laborers. All those at risk should be educated to the importance of seeking the earliest possible treatment for any eye complaint no matter how trivial. Pre-existing abnormalities of the cornea and lachrymal passages should be looked for and treated. The corneal condition has been cured with antibiotics, applied locally or injected subconjunctivally or parenterally according to the severity of the case. Cauterization with tincture of iodine or mercurochrome proved useful in some. Pressure may have to be relieved by tapping the anterior chamber.

-- Cond. from Bull. Hyg.

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522 Humans Need Hard Hats. Anon. Natl. Safety News 83, 106-110 (Mar. 1961).

In many industries the hard hat has become the symbol of safety. This head gear, first introduced in mines shortly after World War I and much improved since then, has an impressive record of lives saved. Head protection has become standard practice in other industries, including construction, logging, shipbuilding, and several types of maintenance work. Head protection is also becoming general among public utility companies where line-men wear protective hats for protection against live wires overhead as well as against impact. Wearing protective hats is included in many labor contracts and unions have helped in educating their members on the need for head protection. A protective hat should have the following requirements: (1) Resistance to impact. (2) Resistance to fire. (3) Resistance to moisture. (4) Light weight. (5) Insulation against electricity if worn around live equipment. The type in general use has a brim all the way around, protecting the head, face and back of the neck. The cap type is sometimes preferred for confined spaces where a brim might be in the way. Materials most widely used in the manufacture of safety hats are laminated plastic, glass fiber, and aluminum alloy. Cloth laminated plastic molded under high pressure resists impact and effects of water and oil. Electrical workers' hats are molded from special plastics and have high dielectric strength in addition to resistance to impact, water and oil. Aluminum alloy is light in weight and meets all requirements for resistance to impact and moisture, but is a good conductor of electricity. Metal hats should not be worn where there is danger of electrical contact. Hats are available from most manufacturers in 7 standard colors—white, gray, red, green, blue, brown, and black. No standards have yet been compiled for the use of color for identification of the wearer.

523 Safety Belts and Harness. Anon. Natl. Safety News 83, 166, 170, 172, 184 (Mar. 1961).

Certain occupations require the use of safety belts or harnesses with life lines. In general, these safety devices are obligatory: (1) For work at high levels. (2) In closed spaces where air may be irrespirable. (3) Where there is danger of being buried by slides of material. Safety belts are used routinely or occasionally by: (1) Structural steel and bridge workers. (2) Window cleaners. (3) Public utility linemen. (4) Forestry workers. (5) Cranemen. (6) Miners. (7) Mechanics. (8) Painters. (9) Workers entering tanks, bins, and underground passages. In selecting equipment, two types should be considered—normal and emergency. Normal use involves comparatively light stresses applied during regular work. These stresses rarely exceed the static weight of the wearer. Emergency use means stopping a man when he falls. This may subject every part of the belt to an impact loading many times the weight of the wearer. The probability of injury depends on the way the load is applied as well as on the total amount of the load. A person can stand a great deal more shock if the belt is tight enough to remain at the waist than if it is jerked up under the shoulders by the impact of a fall. The life line should be long enough to permit freedom of movement, but the life line should be tied off as short as the job will permit. The author briefly describes the type of equipment for various occupations and the care of belts.

MISCELLANEOUS

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524 Pollution and National Water Resources. M. D. Hollis.
J. Am. Water Works Assn. 52, 959-964 (Aug. 1960).

The author, who is Chief Engineer of the U. S. Public Health Survey, points out in this article the increased problems of obtaining water free from pollution. By 1980, the gross water need in the U. S. will be 600 billion gallons per day. Although enough water is available, its distribution and pollution limit its use. With a present sewered population of 105,000,000 there are 100 million people who obtain water from surface streams. The increased pollution, together with the introduction of new pollutants, such as organic compounds, requires enlarged emphasis on pollution control. Both the water works and sewage works industries share the burden of leadership in providing the necessary improvements.

-- Public Health Eng. Absts.

- 525 Industry Solves Its Own Sewage and Process Wastes Treatment Problem. L. C. Geyer. Wastes Eng. 31, 508-510 (Sept. 1960).

The Link-Belt Company's sewage and waste treatment plant consists of industrial wastes sumps, which receive and pretreat batchwise all of the industrial wastes, and a secondary sewage treatment plant. The industrial wastes pretreatment plant consists of three 33,000 gallon treatment tanks, equipped with mixers, skimmers, sludge and effluent draw-offs, and two 5,500 gallon conical tanks for removal of water and oil. Each tank is treated batchwise after jar tests have been run to determine the kind of treatment required. Sulfuric acid is used to neutralize the normally alkaline wastes. Coagulants such as aluminum sulfate and a non-ionic polyelectrolyte have been used to clarify these wastes. Wastes containing water soluble oils are treated with sodium carbonate and lime. After pretreatment the industrial effluents are discharged by way of the plant's sanitary sewer to the sewage treatment plant. The sewage treatment plant consists of primary sedimentation, bio-filtration, and slow sand filtration.

-- Public Health Eng. Absts.

- 526 Flocculation and Flotation of Aqueous Refinery Wastes. P. W. Sherwood. Water and Water Eng. 63, 378-381 (Aug. 1960). (Water and Water Engineering, Colliery Guardian Co., Ltd., 30 Fumival St., London EC 4, England*).

The increasing stress placed on clear industrial effluents has brought with it the introduction of new techniques for the removal of oil from refinery waste water. In a rapidly increasing number of installations, gravity settling is no longer sufficient to meet legal requirements on the oil content of disposable waste waters. In general, it is found that satisfactory oil removal can be achieved by the use of chemical flocculation or by air flotation methods, which are, of course, also applicable to the treatment of wastes from other industries.

-- Public Health Eng. Absts.

- 527 Fluoridation of Water for Dental Public Health. K. R. Elwell. U. S. Armed Forces Med. J. 11, 1085-1097 (Oct. 1960). (U. S. Armed Forces Medical Journal, Superintendent of Documents, Washington 25, D.C.*).

This paper presents a summary of the current status of fluoridation in the United States. Results of all types of investigations have shown that fluoridation is safe, practical, and economical. Fluoridation has been fully endorsed by every major professional and scientific health organization. The small, but vocal group of opponents have been long on opinions but short on evidence to support their views. Careful evaluation of each objection or claim reveal that sound and acceptable evidence consistently supports fluoridation.

-- Public Health Eng. Absts.

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