

IN RE: ABRAMS November 1992



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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL . . . decisions and trends

JANUARY, 1954

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH 13, PA.

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FOUNDATION FACTS

Foundation Facts is a monthly news-letter issued to industrial concerns holding membership in Industrial Hygiene Foundation. The Foundation is a nonprofit association of industries for the advancement of healthful working conditions.

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Volume 16

January, 1954

No. 1

NEW ADDITIONS TO FOUNDATION MEMBERSHIP

The following companies have recently affiliated with the Foundation:

Asbestos Corporation Limited
Johnson and Johnson
McLain Fire Brick Company
G. H. Packwood Manufacturing Company
Rem-Cru Titanium, Inc.
The Ruberoid Company
St. Regis Paper Company

FOUNDATION IS JOINT SPONSOR OF COURSE ON NOISE

The Foundation, along with the Graduate School of Public Health and the School of Medicine of the University of Pittsburgh, is sponsoring "A Short Course on Noise and its Effect on Hearing." Especially for hygienists, physicians, safety engineers and design engineers, the course is being offered on eight consecutive Monday afternoons, January 4 through February 22, at the Graduate School of Public Health. Topics for the eight sessions are: Elementary Physics of Sound; Physiology of Hearing; Types of Hearing Loss and Their Meaning; Criteria for Hearing-Test Location; Methods of Hearing Testing; Identification of Noise Source (Instruments and Techniques); Control of Source and Individual Protection (Methods, Materials and Expected Magnitude of Noise Reduction); and Correlation of Human and Environmental Studies.

BOARD CHAIRMAN DISCUSSES NATURAL RESOURCES

Andrew Fletcher, President of St. Joseph Lead Co. and the American Institute of Mining and Metallurgical Engineers, and Chairman of the Foundation's Board, participated in a discussion at the Mid-Century Conference on Resources for the Future held in Washington, D. C., on December 3, 1953. The topic was "How Much Should We Depend on Foreign Resources."

MAIN MEETING TRANSACTIONS AVAILABLE SOON

Transactions of the Main Session of the Foundation's 18th Annual Meeting will be mailed to members this month.

03119657

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IN RE: ABRAMS November 1992

TABLE OF CONTENTS

	<u>Page</u>
News Items	1
Occupational Disease Statistics	2
Legal Developments	3
Books, Pamphlets and Notices.	6
Industrial Medical Practice.	6
Skin Diseases and Burns	12
Chemical Hazards	13
Industrial Dusts	25
Physical Aspects of the Environment.	28
Radioactivity and X-Radiation	29
Environmental Measurements	33
Preventive Engineering.	37
Community Air Hygiene.	39
Management Aspects.	40
Accidents and Prevention	41
Miscellaneous.	42
Index	43

03119659

IN RE: ABRAMS November 1992

HAVE YOU READ?

The leadership of Industrial Hygiene Foundation in the field of industrial health was pointed out by the American Institute of Management in the December, 1953, issue of its publication, The Corporate Director.

The bulletin, entitled "The Industrial Health Program for Excellent Management", names ten companies considered to have excellent industrial health programs. The Foundation is proud to note that nine of these are members of I-H-F.

The report points out that, although there is now practically unanimous agreement that industrial health programs are essential, the time has not yet come to relax. "There is still much to be done in industrial health, still much that management can do and must do, for its own sake as well as for the sake of the economy as a whole." The purpose of the report is to show management where its "self-interest" lies.

From a consideration of costs alone, AIM states, health and safety are good business. Among the many advantages of a good industrial health program are: a strong basis of competition in the skilled labor market; savings effected through reduction in absenteeism, in labor turnover and in spoilage; and an increase in productivity, lengthened span of working years for the individual, and improved morale. Labor's growing interest in matters of industrial health and recent changes in compensation laws are other considerations.

Cited as one evidence of industry's genuine interest in the health and safety of its workers is the survey work carried out by the Foundation for its member companies.

The report not only tells why a good industrial health program is so important, but how it can be achieved. It gives examples of the right and the wrong approaches to industrial medicine and hygiene, and discusses the proper place of the medical department in the organization setup and the qualifications of medical personnel. Facts and figures add substance to the material.

Anticipating wide interest in this bulletin, the Foundation is ordering a quantity of reprints which will be available upon request.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1 AEC Offers Eight Fellowships in Industrial Medicine.

Eight fellowships in industrial medicine will be offered by the U. S. Atomic Energy Commission for the 1954-55 academic year. The fellowships are open to United States citizens who hold M. D. degrees from approved medical schools and who have had at least one year of internship. In exceptional cases, equivalent experience may be accepted in lieu of the internship requirement. Successful candidates must be investigated by the FBI and approved by the AEC before receiving fellowships. Awards are for one year's academic training at institutions providing special training facilities in health problems associated with the atomic energy program. Normally, fellows will be eligible for a second or in-plant training year. The stipend during the first year is \$3,600 with \$350 additional for a wife and each dependent child. Further information can be obtained from: AEC Fellowships in Industrial Medicine, Atomic Energy Project, University of Rochester, School of Medicine and Dentistry, Rochester, N. Y., attention Dr. Henry A. Blair.

2 Hearing Loss Investigation in Texas.

New ways of detecting hearing loss in its early stages are being investigated in a sound-treated University of Texas laboratory. The research is being conducted with the aid of custom-built equipment designed especially for this project, plus standard apparatus for measuring hearing. Two years were required to plan, design, and build the laboratory. A bequest from the late W. K. Shepperd of Corpus Christi has made the research possible. Selected individuals with hearing loss will cooperate in the tests. Results of the research will be made available as a public service after investigations are completed.

03119660

3 Industrial Ventilation Conference.

Syracuse University, in cooperation with the New York State Department of Labor, is arranging an intensive three-day conference on Industrial Ventilation, February 1 to 3, 1954. Additional information can be obtained from Miss Eleanor Ludwig, University College, 601 Genesee St., Syracuse, N. Y. --Monthly Bull. N. Y. State Dept. Labor.

IN RE: ABRAMS November 1992

OCCUPATIONAL DISEASE STATISTICS

4 Occupational Disease Statistics.

	Conn. ¹ Nov. 1953	Ind. ¹ Dec. 1953	Wisc. ¹ Nov. 1953	Total
Allergy (drugs)			1	1
Asphyxiation (gas fume, smoke, cleaner fumes)			3	3
Bronchitis (fumes)			1	1
Bronchitis (gases, N.O.C.)	1			1
Brucellosis		1		1
Carbon Tetrachloride Poisoning			1	1
Dermatitis	50*	11**	35	96
Ear Infection			1	1
Hearing Loss (excessive noise)			2	2
Lead Poisoning		1		1
Silicosis (dust, free silica)	3			3
Silico-Tuberculosis			1	1
Skin Infection			12	12
Skin Irritation			6	6
Undulant Fever			1	1
Upper Respiratory Irritation			1	1
	54	13	65	132

1. Occupational disease cases reported to the State Board of Health.

* Chromium and compounds, friction tension and repeated motion, hair-dressing preparation, infections, mechanical irritations, medications, and synthetic resins and chemicals caused one each; abnormalities of humidity, acids, alkalies, and paints and lacquers caused two each; oil and solvent (combination exposure) caused three; dust, organic caused four; solvents (N.O.C.) caused five; soap solutions, glue, etc. caused seven; and oils, fats, and waxes caused sixteen.

** Brucine, cement, glass wool, meat, shellac, and wood caused one each; oil caused four; and the cause of one other was not stated.

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LEGAL DEVELOPMENTS

5 Loss of Hearing Due to Industrial Noise Held Compensable in Wisconsin.

An employee who suffered an impairment of hearing as a result of exposure to industrial noise while working in a drop forge plant and who filed a claim in 1951 was entitled to compensation for his disability as an occupational disease even though he may have sustained no wage loss. In so ruling, the Wisconsin Supreme Court held that an amendment of the 1953 legislature which specifically applies to cases of impairment of hearing as a result of exposure to industrial noise did not apply in the instant case. The 1953 amendment requires a discharge, or transfer of employment, due to the disability, and a resulting wage loss, as conditions precedent to the employee's recovering compensation for such impairment of hearing. -- CCH

6 Partial Silicosis--Common Law Action--Applicability of Workmen's Compensation Law--Deprivation of Remedy--Constitutionality.

The United States Supreme Court denied petition in review on writ of certiorari to the New York Court of Appeals in the case of Cifolo v. General Electric Co. For prior opinion, see IHF Abst. No. 668, July, 1953. Cifolo v. General Electric Co. United States Supreme Court. Docket No. 316. October Term, 1953. November 9, 1953. -- CCH

7 Brewery Worker--Dupuytren's Contraction--Statutes Construed.

"If there is an insidious disease, without manifest symptoms unknown to the employee, the course of which is affected adversely by exposure during the last employment and which results in a disability during such employment, it would seem the intent of the statute that the Board might find upon sufficient record that the disease was 'contracted' during such employment." Thus, an award was affirmed to a brewery worker who, according to medical testimony, probably developed Dupuytren's contraction while working for a previous employer, although the symptoms did not manifest themselves until two years after beginning work for the defendant employer, when the statute provides compensation within twelve months of disability if there have been different employers in similar employment. Ganger v. Liebmann Breweries. New York Supreme Court Appellate Division, Third Judicial Department. No. 252-25. October 16, 1953. -- CCH

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8 Dupuytren's Contraction--Determination of Date of Disability--Sufficiency of Evidence.

The reviewing court found that there was ample lay and medical testimony to justify the Board's finding that a brewery worker had contracted a condition of his hands known as Dupuytren's Contraction, but reversed and remanded the cause on the basis that the date of disability seemed to have been arbitrarily fixed at the date the claimant's work stopped rather than the date he became disabled because of the disease, since all the proof in the record showed that the stoppage of work itself was due to conditions other than the disease. Curran v. Metropolis Brewing. New York Supreme Court, Appellate Division, Third Judicial Department. No. 354-22. December 12, 1953. -- CCH

Silicosis--Death Benefits--Statute Construed.

Although an autopsy revealed that a deceased employee did not suffer tuberculosis along with his disabling silicosis, a 1949 amendment to the Compensation Act, which eliminated a requirement that tuberculosis accompany silicosis before compensation could be granted, inured to the benefit of the dependent widow of an employee who died in 1951 and who was found by the Commissioner in 1947, under the 1945 Act, to be suffering a compensable disability of silicosis accompanied by active tuberculosis of the lungs. Accordingly, the widow was improperly denied death benefits on the theory that the 1945 Act controlled. Webb v. State Compensation Commissioner. West Virginia Supreme Court of Appeals. No. 10,503. February 10, 1953. -- CCH

Silicosis--Death Benefits--Settlement Agreement for Less than Maximum Allowable--Additional Compensation from Special Fund.

The dependent wife and minor daughter of an employee who died of silicosis and a cerebral hemorrhage were properly denied additional compensation from the special fund where an examination of the record revealed that they had settled a disputed claim as to the extent of liability by a compromise agreement on a percentage basis for less than the maximum collectible compensation. Skjefstad v. Ped Wing Potteries, Inc. Minnesota Supreme Court. No. 36,041. July 17, 1953. -- CCH

Tuberculosis--Meat Packing Plant Employee--Alleged Contraction from Diseased Cattle--"Occupational Disease" Construed.

Since an occupational disease is not an accident and is not a disease occasioned by accident, or one which arises from accidental causes, a meat packing plant employee did not state a cause of action for

03119663

an occupational disease under the Compensation Law when he alleged in his claim that he contracted tuberculosis while handling the carcasses of diseased cattle at a time when he had cuts on his fingers that were the result of skinning the legs of carcasses. Jenkins v. Armour & Co. Oklahoma Supreme Court. No. 35,750. September 29, 1953. -- CCH

12 Silicosis--Burden of Proof--Sufficiency of Evidence.

A miner has sufficiently met the burden placed upon him of providing that his disabling silicosis was the result of exposure during the course of his employment where a review of the record revealed that it was uncontradicted that he was suffering from silicosis in an advanced stage; that he was totally and permanently disabled; that he had worked continually for his employer from 1933 to 1951; that there was no proof that he had the disease when he began working for the company in 1933; that, although he did not present proof showing an exposure of five million particles of free silica per cubic foot in the air where he worked, his proof did include a report of a Research Analyst from the College of Engineering of the University of Kentucky which showed that an analysis of the rock strata in the area where the claimant did his last drilling indicated that it contained large amounts of silica; that he did some dry drilling; and that on occasions there was a large amount of dust in the air while the drilling was being done. Judgment affirmed. United States Steel Co. v. Lockhart. Kentucky Court of Appeals. October 16, 1953. -- CCH

13 Death Benefits--Anthraco-Silicosis--Dependency--Sufficiency of Evidence.

The lower court properly denied death benefits to the claimant for the death of her husband from anthraco-silicosis where the record revealed that she had not been living with her husband for twenty-two years prior to his death, that she was not dependent upon the deceased for her support at the time of his death, and that she had, in fact, supported herself from her own income for many years. The reviewing court held that from these facts it was permissible to infer that her failure to take legal action to enforce a support order constituted acquiescence. The reviewing court further held that, inasmuch as the dependency was disputed, it was not a matter of law, but a factual situation. Affirmed. Yanofchick v. State Workmen's Insurance Fund. Pennsylvania Superior Court, Eastern District. No. 50. November 16, 1953. -- CCH

Ambition is not a vice of little people.
-- Montaigne

03119664

IN RE: ABRAMS November 1992

BOOKS, PAMPHLETS AND NOTICES

Interrelations Between the Social Environment and Psychiatric Disorders.
Milbank Memorial Fund, 40 Wall St., New York 5, N. Y. 263 pp.
(1953). \$1.50.

The papers presented at the 1952 Annual Conference of the Milbank Memorial Fund are given here in full. Some of the papers deal with general subjects, such as social concepts and psychiatric research, psychology, social psychology, and the process of socialization in higher animals. Other papers describe local investigations and present their results.

-- FFR

INDUSTRIAL MEDICAL PRACTICE

Whatever is Human is Medical. H. P. Dastur. Natl. Safety News 68,
18-21, 103-114 (Dec. 1953).

The author describes the medical organization of Tata Industries and the numerous problems that have arisen in developing the medical department. They include the obstacles to progress that have confronted other organizations, especially when they are pioneers, and others peculiar to India, especially malnutrition among the workers, and the impossibility of obtaining trade nurses. The human side of personnel management is a matter of great interest, and progress in that field is described. Placement examinations, accident prevention and other features of the medical program are discussed.

Industrial Medicine for the Family Doctor. Doris M. Thompson. Mgmt. Rec. (Natl. Ind. Conference Board) 15, 329, 330, 347 (Oct. 1953).

The majority of general practitioners in industrial areas are concerned with industrial medicine and many of them want to be invited to plants to observe industrial conditions. Several examples are given of the ways in which various companies have recognized and met this

03119665

need, by providing for meetings in the plants, followed by tours through the plants.

- 17 A New Method of Stereoscopic Roentgenography. "Twist Stereo" Method. E. Gordon and J. Sauro. Am. J. Roentgenol. & Radium Therapy 70, 824-826 (Nov. 1953).

The author describes a new method for taking stereoscopic roentgenograms which, like the conventional method, requires two exposures, but eliminates the need for shifting the tube. Instead, the entire body or the part being examined is rotated.

- 18 A Note on Somatotyping in Relation to Certain Chest Conditions. J. Craw. Trans. Assn. Ind. Med. Officers 3, 215-219 (April 1953).

Sheldon's classification of persons according to physical measurements considers three types: (1) asthenic, or tall and thin; (2) pyknic, or round and fat; and (3) middle. These types represent 10, 13, and 77% of the population, respectively. The Middle class can be divided further into subtypes approaching the pyknic and asthenic types, and true middle type. The author, in studies of large numbers of miners, has found evidence that the asthenic and middle-asthenic types are more susceptible to tuberculosis and pneumoconiosis than the other types. In the discussion of the paper, the results of similar investigation by A. L. Cochrane were presented. Using slightly different methods of measurement, he found no positive indication that the asthenic types were predisposed to respiratory disease. It was suggested that the diseases themselves may bring about a change in somatic type. Both the author and Dr. Cochrane expect to investigate the subject further.

- 19 Prevention of Cardiac Disability. L. H. Bronstein, H. J. Bennett, S. C. Franco, I. Klein, H. A. Sampson, and L. J. Goldwater. Ind. Med. & Surg. 22, 578-580 (Dec. 1953).

In recent years an increasing body of information has shown that many persons with heart disease are able to continue successfully to perform a wide variety of jobs with no adverse effect on the course of the disease. Suitable placement, proper advice, and adequate medical supervision are all that are necessary. The personal physician can and should provide the last two of these requirements and should confer with placement or personnel specialists in connection with the first. In localities where a Work Classification Unit has been established, the family doctor is in a position to obtain assistance if he feels the need for it. Several case histories are presented to illustrate some of the ways in which cardiac disability can be prevented. Imposition of unwarranted restrictions increases disability rather than limits it. Insufficient

restrictions may hasten the advent of complete disability or even death. It is the physician's job to steer his cardiac patients along the proper course.

²⁰ He Might Have Been a Cripple. H. W. Park. Natl. Safety News 68, 110, 111, 218-220 (Oct. 1953)

The history of the rehabilitation of an injured worker presented as a demonstration of the value of rehabilitation service. The total cost of hospitalization, Rehabilitation Center services, compensation to the family, and final settlement, was \$5,700, whereas the estimated cost without rehabilitation would have been \$12,000. The available rehabilitation services in Virginia are listed and results of their work are briefly surveyed.

²¹ Vocational Counseling with the Severely Handicapped. M. W. Usdane. Arch. Phys. Med. & Rehabil. 34, 607-616 (Oct. 1953)

Two techniques of proved value in vocational counseling of the severely handicapped are described: job-task assignments and role-playing. In the first, the severely handicapped person has the opportunity under the supervision of a vocational counselor to engage in the actual activity of the trade, utilizing both the tools and the materials. Work habits, work tolerance for a full day's production, perseverance, distractability, interest, and aptitude are among the aspects that can be readily observed through the guidance test class in which job task assignments are utilized rather than the standardized test batteries of aptitudes, skills, and interests. Role-playing can be a rich experience as a technique in helping the severely handicapped to prepare for initial employer interviews. The patient can thus learn from his own experience and be prepared for the actual interview. -- Cond. from author's summary

²² A Plan for Rehabilitating Improved Psychotic Patients. F. Schnadt. Am. J. Psychiat. 110, 253-260 (Oct. 1953).

The re-education center is advocated as an intermediate step between hospitalization of psychotic patients and their discharge. The general method of operation of such a center is described. In general, working conditions would be similar to those in private industry, but patients would not be under pressure to produce. Various types of therapy should be available. A number of advantages of the plan are described. A few factors are mentioned that are not necessarily disadvantages but would require working out in the project.

03119667

- 23 Disability, Rehabilitation, and the Law of Damages. Implications of Modern Rehabilitation Medicine. F. A. Hellebrandt. *Ind. Med. & Surg.* 22, 558-560 (Dec. 1953).

A brief review of problems involved in the resolution of the conflict between disability and rehabilitation suggests first that it is futile to evaluate invalidity without relating the magnitude of the dysfunction measured to the specific stresses to be met. A hypothetical ideal of performance may exceed or fall short of the normal needs of the particular patient. Second, the evidence points clearly to the fact that it is the duty of every individual concerned with the assessing of the consequences of injury to place emphasis on the preservation of function and the development of compensatory skills, rather than on the magnification of disability for the sake of monetary reward. The latter course may produce irreparable degrees of chronic invalidism. It follows, therefore, that no single step in the action to be taken is probably more important than insistence upon a trial of good treatment in a reputable rehabilitation center before deciding on the magnitude of the residual disability for which the patient is to receive compensation. The benefit inherent in total rehabilitation may far exceed the most generous monetary compensation.

-- Author's summary

- 24 Medicolegal Aspects of Industrial Injuries. S. Sherman. *Arch. Phys. Med. & Rehabil.* 34, 485-489 (Aug. 1953).

The importance of industrial injuries, with their related socio-economic aspects has been discussed. Historic origins of compensation legislation were described as well as some concepts of present legislation. It was shown that medicolegal controversies, though complex, occur frequently in industrial injuries and that the physician involved must be thoroughly grounded in disability evaluation before rendering opinions. The physiatrist's role is becoming increasingly important in medicolegal encounters.

-- Author's summary

- 25 The Technical Witness. Preparation for Court Appearance--The Attorney's Viewpoint. T. J. Wade. *Ind. Med. & Surg.* 22, 529-533 (November 1953)

This paper contains much valuable advice for the medical or other professional witness in the preparation and giving of expert testimony. The steps discussed are: learning the facts thoroughly, educating the lawyer, making the report, and helping plan the presentation. Suggestions for courtroom conduct include: (1) tell the truth; (2) come prepared; (3) do not be afraid; (4) be natural; (5) be modest; (6) be frank; (7) be attentive to questions; (8) do not volunteer; (9) do not attempt to be an advocate; (10) do not be belligerent; (11) do not lose your temper; (12) be courteous; and (13) keep your voice up. In summary the responsibility

03119668

for preparing a case for trial falls in large measure upon the expert, but in the courtroom the lawyer must be in absolute command; but if the physician has done his job of preparation properly, he need have no concern.

Courtroom Cues. O. K. King. Med. Economics 31, 100-103, 257-67 (Nov. 1953).

The average physician dislikes going to court, because: (1) he does not know his rights; (2) he does not know court procedure; and (3) he does not know what is expected of him. The author, a judge with wide experience, presents the highlights of a number of topics that will interest all doctors who must face a day in court. Careful preparation of the evidence and conference with the attorney is essential. In direct examination and in cross-examination, the doctor must remember that he is talking to laymen and must make his ideas clear. A number of pitfalls that may occur in cross-examination are discussed. The doctor should ask for a question to be repeated if he has not heard it clearly, and is not required to answer simply, "Yes" or "No." When the opposing attorney produces a book which appears to contradict the testimony, great care is required in the answer. The witness may call for other authorities. Most of the pitfalls can be avoided by careful preparation.

27 A Program for Protection of Research Employees Against Pathogenic Hazards. J. Black, J. M. Lynch, and I. Ladimar. Public Health Repts. 68, 989-992 (Oct. 1953)

Procedures in use at the National Institutes of Health of the Public Health Service for protection of employees against infection are described. An important feature of the program is promotion of hazard-consciousness. A chapter of a safe practice manual contains a guide to safe microbiological practices, for the special benefit of new workers. Some of these practices are described. X-ray and other medical examinations, blood tests and immunizations are features of the program. Employees are urged to report any illness promptly.

28 Bacteriological Safety. A. G. Wedum. Am. J. Public Health 43, 1428-1437 (Nov. 1953).

Recent literature on bacteriological safety in laboratories is reviewed with illustrations of apparatus designed for safety. The best equipment is ineffective if it is not accompanied by good technic, and safety education must be provided. Tables are given listing the infectious hazards of common bacteriological technics.

03119669

- 29 Sanitation of Crushed Ice for Iced Drinks. E. W. Moore, Evelyn W. Brown, and Ellen M. Hall. Am. J. Public Health 43, 1265-69 (Oct. 1953).

Studies of crushed ice dispensed into iced drinks over a period of years showed that the ice often failed to meet a desirable sanitary standard. Evidence was secured that most of the undesirable bacteria were introduced in the dispensing of the crushed ice. A comparatively simple technic was developed for chlorinating the crushed ice previous to dispensing. Two years' experience with this chlorination procedure in some 15 food-serving units has shown that the ice as now dispensed meets reasonable sanitary standards, and that there is no noticeable impairment of flavor in ice water and iced drinks made with the chlorinated ice.

-- Authors' conclusions

- 30 Fear, Frustration, and Futility: The Industrial Aspect. R. T. Johnstone. Arch. Ind. Hyg. & Occ. Med. 8, 391-398 (Nov. 1953).

The author first discusses non-occupational sources of fear, frustration, and futility. The atmosphere in which man works is polluted by the contaminants stemming from international and national unrest. Within a lifetime the greatly accelerated speeds of travel and of communication have brought to us the seething tension occurring in far-off areas. Race, creed, and color prejudices have been greatly accentuated. On the radio or television, to one good play or comedy, there are 20 programs bringing a theme of unhappiness. The worker is thus subject to many causes of tension arising outside his employment. The author then considers the much-discussed problems existing within the working climate. These problems have been relegated to the psychiatrist and the industrial relations specialist because the industrial physician has fallen down on his job. The two most prevalent errors that physicians commit are (1) attempting to carry a too-crowded schedule, and (2) failing to visualize all facets of what is termed work and thereby arriving at an erroneous diagnosis. Examples of both faults are described. The source of fear, frustration, and futility within industry is tripartite, namely medicine, management, and labor. The industrial medical student should be taught human relations as well as scientific medicine; he should be imbued with the fact that he is going to work for workmen, not for a company or a union. The medical director should see that these ideals are followed. Labor should be more realistic in its approach to industrial relations problems. Management is no less faulty in its immaturity. The problems can be solved if medicine, labor and management consider the individual rather than the mass.

03119670

SKIN DISEASES AND BURNS

Dermatitis of Womer Workers in Ricefields and Its Prevention by Means of Barrier Cream. V. Puccinelli. Med. lavoro 44, 75-82 (Feb. 1953). Italian.

Women who work seasonally in Italian ricefields are subject to a dermatitis, which is described. It is apparently caused by repeated wetting and drying of the skin, which aggravates injury from the rice leaves, insect bites, and other trauma. A water-insoluble barrier cream was found to give good protection and to relieve symptoms.

-- Cond. from Bull. Hyg.

Eczema of Hairdressers Caused by Thioglycerin in Permanent Waving by the Cold Process. E. Gasser. Schweiz. med. Wochschr. 83, 448-450 (May 9, 1953). German.

Monothioglycerin is a constituent of certain preparations used in the cold permanent-hair-waving process, which were first introduced into Switzerland in 1952. Other preparations have contained thioglycolic acid. It is stated in the literature that thioglycerin has a very high sensitizing action on the skin both of man and animals, although it is not directly toxic. Experiments on 32 individuals who had been in contact with thioglycerin and were suffering or had suffered from eczema showed that over 80% gave a positive patch test with thioglycerin and only 12% a positive test with thioglycolic acid. Similar patch tests on other sufferers from eczema who had had no contact with thioglycerin were all negative. Some case histories of eczema in hairdressers using thioglycerin are given. No cases in customers have as yet been found. It is recommended that thioglycerin should no longer be used in hair waving.

-- Cond. from Bull. Hyg.

WHERE YOUR MONEY GOES

If you drink or smoke you are paying more taxes than you think. The Chamber of Commerce of the United States points out that in fiscal 1953, Uncle Sam collected \$4.5 billion from your habits-- \$1.7 billion from tobacco taxes and \$2.8 billion from taxes on alcoholic beverages.

CHEMICAL HAZARDS

- 33 Chemical Hazards in Glass and Ceramics Industries. J. A. Houghton. Glass Ind. 34, 369-371, 394 (July 1953).

Exposure to mineral dusts continues to be the most important health hazard in the glass and ceramic industries, but chemical hazards are also present. Arsenic poisoning is almost nonexistent in the industry because its high toxicity is known and care in its handling is habitual. Lead silicates, though not as toxic as some other lead compounds, have occasionally caused lead poisoning and must be considered as a hazard. If visible dust or fume is present in a working area, an engineering survey is in order. Selenium, cadmium, and antimony, although used in small amounts, call for engineering control. Other materials that are highly suspect although not well advertised as toxic materials are barium salts, cryolite and other fluorides, and lithium compounds. Barium sulfate is practically harmless but causes shadows in the lungs which must be considered in x-ray examinations as they may be mistakenly attributed to silica. Skin hazards come mainly from acids and alkalies. Carbon tetrachloride is used for cleaning motors and is the best material for the purpose. It can be replaced by less toxic materials if the method of using is changed so as to avoid solvent action on insulation. General directions for dust control and medical care are reviewed.

- 34 Two Cases of Acute Industrial Intoxication from Chlorine Rapidly Resolved with Aerosol Therapy. G. Donati. Med. lavoro 44, 225 (May 1953). Italian.

Two cases of acute chlorine intoxication are presented. The patients were cured by means of alkaline aerosol inhalation of sodium bicarbonate and benzoate solution carried out immediately after the accident occurred. It is suggested that an aerosol apparatus be at hand at all times in plants in which chlorine poisoning is liable to occur.

-- English summary (Arch. Ind. Hyg. & Occ. Med.)

- 35 Some Physiological Effects of Disulfur Decafluoride (S_2F_{10}) After Intravenous Injection in Dogs. A Note on Its Toxicity to Rabbits. J. P. Saunders, M. Shoshkes, M. R. DeCarlo, and E. C. Brown. Arch. Ind. Hyg. & Occ. Med. 8, 436-445 (Nov. 1953)

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The effects of parenteral injections of a lecithin emulsion of disulfur decafluoride were studied in dogs given single and multiple doses.

IN RE: ABRAMS November 1992

The LD50 of this emulsion for rabbits was found to be 5.8 ± 0.61 mg. of disulfur decafluoride per kg. Single, acutely fatal doses of the emulsion profoundly affect the circulatory and respiratory systems. Death is caused by a fulminant pulmonary edema. Repeated small doses exert the same effects more gradually. The blood hematocrit always rises with the poisoning. The rate of ascent and the level reached afford good prognostic indices for the poisoned dog. The major pathologic effect appears to be diffuse endothelial damage to the cardiovascular system. In the lungs, this apparently leads to self-perpetuating edema. The pathologic effect reported in kidney tubules are probably secondary to anoxic anoxia.

-- Cond. from authors' summary

- 36 Cadmium Intoxication. Clinical Report of an Acute Accidental Group Exposure. M. L. Amdur and R. A. Caputi. Ind. Med. & Surg. 22 561-566 (Dec. 1953)

A clinical report of a group exposure to cadmium is presented. Recovery of all exposed personnel has been complete without residual disability. It is suggested that the inactivation of the sulfhydryl enzyme, acetyl cholinesterase, by cadmium may be responsible for the clinical evidence of disease.

-- Authors' summary

- 37 Chromate Hazards in Industry. E. N. Walsh. Report of the Committee on Occupational Dermatoses, Council on Industrial Health. J. Am. Med. Assn. 153, 1305-1308 (Dec. 5, 1953).

Chromium in metallic form and in its trivalent and hexavalent forms is important in many manufacturing and industrial processes. Some of these are electroplating, anodizing and other anticorrosive metal treatments, tanning of leather, pigments and anticorrosive paints, mordanting of wool, fur, and leather, and photoengraving and lithography. Workers come in contact with chromates in the form of mist or dust that is inhaled and in solution or solid form. Inhalation may produce acute pulmonary symptoms or chromic hepatic intoxication; in some rare instances of long exposure to dust, carcinoma of the lung is apparently produced. Perforation of the lower nasal septum may result from inhalation of mists or dust. Chrome ulcer is produced by contact of the material with an abrasion or any break in the epidermis. Dermatitis due to contact of chromate-sensitive persons with these substances is the most important of the industrial hazards encountered. Apparently only the hexavalent compounds are sensitizing. The incidence of such sensitivity and the factors influencing its production are discussed. Chromate dermatitis is often patchy in distribution and more prolonged in its course than the usual contact dermatitis. Prophylactic measures include protective clothing, proper designing of machinery, and industrial engineering to reduce or to prevent contact with the material and contamination of work areas. Education of

the workers as to the nature of the danger and the early detection, investigation, and management of any eruption that occurs are of great importance. -- Author's summary

- 38 Potassium Dichromate Poisoning and Repeated Poisoning with Uranium Nitrate. Effect on Serum Lipids of Rabbits. F. C. Bauer, Jr., E. F. Hirsch, L. Carbonaro, and G. C. Johnson. Arch. Pathol. 56, 135-141 (Aug. 1953)

Intravenous injection of 30 mg. or more of potassium dichromate produced a transient hyperlipemia in 10 out of 12 rabbits. The greatest increase was in the esterified fatty acid reaction of the serum lipid and is attributed to neutral fat. Cholesterol, cholesterol ester, and phospholipid were increased but only in small amounts. Second and third injections of uranyl nitrate produced significantly less elevation of serum lipids than the similar initial dose of uranium. In view of the increased resistance of renal tubule epithelium to repeated injections of uranium, this result suggests that hyperlipemia of uranium poisoning is consequent to damage of the cells lining the renal tubules. -- Authors' summary

- 39 Studies of the Acute and Chronic Toxicity of Germanium. G. Rosenfeld and E. J. Wallace. Arch. Ind. Hyg. & Occ. Med. 8, 466-479 (Nov. 1953)

Data are presented on the physiological effects of germanium by various routes of administration. Single intraperitoneal dose: the maximum tolerated, minimum lethal, and absolute lethal doses of germanium dioxide (pH 7.3) were approximately 600, 700, and 1,200 mg. per kg. respectively. The major clinical and morphological changes observed after a single lethal dose are profound hypothermia and listlessness, marked diarrhea, sluggish blood flow, edematous or hemorrhagic lungs, peritoneal effusion, and multiple petechiae of the walls of the small intestine. Chronic oral doses: food containing 1,000 ppm or water containing 100 ppm of neutralized GeO_2 inhibited the growth of young rats and caused a 50% mortality. Tolerance was acquired in the survivors and in animals given sublethal doses. The tolerance declined within 6 weeks of the cessation of the dose. No damage was shown after multiple smaller intraperitoneal doses (100 mg. per kg.) of the neutralized GeO_2 or of suspensions of the powder. Single or multiple subcutaneous doses and topical application likewise gave negative results. There was no evidence of hemopoietic effect, fat-mobilizing action (except from the alkaline sodium germanate), or increased oxidative metabolism. Germanium does not behave physiologically like a heavy metal. It is pharmacologically inert as compared with most other elements. A significant toxicity of any of its compounds would likely be due to the toxicity of the non-germanium portion of the molecule. -- Cond. from authors' summary

- 40 Pharmacological Studies of Radiogermanium (Ge^{71}). Part 2. H. C. Dudley. Atomic Energy Commission Publication. BNL-1555, 8 p. (1953).

Studies of the rate of clearance of germanium and germanium dioxide dusts from the lungs of rats indicate that these materials are rapidly eliminated through oxidation and simple solution. The findings strengthen the earlier conclusions that neither elemental germanium nor the oxide constitutes an acute industrial hazard. Good housekeeping methods are mandatory, however, due to the possible presence of hydrides of germanium, arsenic, and small amounts of antimony in germanium samples.

-- Author's summary (Nuclear Sci. Absts.)

- 41 Behavior of Total Coproporphyrin and Free Erythrocytic Protoporphyrin Resulting from Periodic Exposure to Lead. L. Brigatti and C. Grandis. *Med. lavoro* 44, 211-217 (1953) Italian.

In the blood of lead workers showing clinical intoxication there is a reduction in precursor-to-total coproporphyrin ratio of from 0.5 to 0.3. The increase in urinary coproporphyrin excretion parallels the free erythrocytic protoporphyrin.

-- Chem. Absts.

- 42 Kidney Function in Occupational Lead Poisoning. M. Crepet, P. Chiesura, and F. Gobbato. *Folia med.* 36, 181-196 (1953) Italian.

Most subjects showed reduction of glomerular filtration and proportionate decrease in urea clearance. Albuminuria was rare and never were the sediments beyond normal limits. The renal plasma flow was reduced.

-- Chem. Absts.

- 43 Serum Iron and Lead Poisoning. II. Iron Treatment in Experimental Lead Poisoning. G. Graziani, M. Fusco, and L. Rossi. *Folia med.* 36, 218-223 (1953) Italian.

(For first paper see IHF Abst. 937, Sept. 1953) Rabbits were poisoned by doses of 0.1 g. lead acetate given every second day. One group of animals received 50 mg. reduced iron, another group 0.5 mg. iron as an intravenous preparation. In the latter case, the plasma iron was markedly higher than before the lead poisoning, which proved a deficiency in iron utilization. Oral administration did not have this effect which is explained by impaired gastrointestinal absorption.

-- Chem. Absts.

- 44 Lead and Lead Poisoning in Early America. The Pewter Era. C. P. McCord. *Ind. Med. & Surg.* 22, 573-577 (Dec. 1953).

In the 17th and 18th centuries pewter ware was commonplace in household affairs in both Europe and America. The danger involved in its

use seems to have been known to several classes of persons during the colonial years, but those classes apparently did not include physicians. There are no statistics, but merely allusions, to pewter as the cause of diseases now known as lead poisoning. It is difficult to assign credit to anyone for the change, but before 1800 the use of pewter was decidedly on the wane. A number of interesting details are presented.

- 45 Chronic Mercurialism in Felt Hat Industries. G. Baldi, E. C. Vigliani, and N. Zurlo. Med. lavoro 44, 161-198 (April 1953). Italian.

This 37-page article is a review of the occurrence of mercurialism in the felt-hat industry in Italy over the decade 1942-1952. During this period more than 300 cases occurred, two-thirds of which resulted in temporary disability and one-third in permanent invalidism. The cases tended to occur as epidemics. Toxicological investigations showed that the atmosphere in which the outbreaks occurred contained more than 0.5 to 1 mg. Hg per cubic meter, with a maximum of 2 to 3 mg. No cases occurred in atmospheres in which the concentration was lower than 0.1 mg. per cubic meter, thus confirming the American value for maximum allowable concentration. The clinical symptoms, which are described, did not differ from those normally observed in mercurialism. Means of technical and medical prevention are discussed.

-- Cond. from English summary (Arch. Ind. Hyg. & Occ. Med.)

- 46 Decontamination of Mercury in Laboratory Buildings. I. I. Ablichenkov. Gigiena i Sanit., No. 4, 48 (1953). Russian.

After mechanical removal of mercury drops by a suction pipe, the surfaces are washed with 4-5% chloramine or dichloramine in carbon tetrachloride, the building is closed for 8 to 10 hours and then the surfaces are soaked with 4-5% sodium polysulfide solution. After 8 to 10 hours the building is ventilated. The treatment yields mercuric sulfide whose vapor pressure is almost zero. Chlorinated lime can be used instead of chloramines.

-- Chem. Absts.

- 47 Toxicity of Nickel. Y. M. Grushko, V. A. Donskov, and V. S. Kolesnik. Farmakol. i Toksikol. 16, No. 2, 47-49 (1953). Russian.

When rabbits were given nickel sulfate in water the results, with increasing dosage, were 0.0001 mg. per kg. daily for 161 days, no effect, 0.0001, some hyperplasia in liver and spleen and some epithelial damage in the kidneys, 0.01, protoplasmic degeneration, damaged vacuoles, and perinuclear edema; 0.1, severe epithelial damage, acute perinuclear edema and edema in liver parenchyma, and myocardial damage; 0.54, extreme epithelial degeneration and damage to liver parenchyma, severe

myocardial damage. A dog, weight 9.3 kg., received 1 g. nickel chloride daily and died in 3 days. A dog, weight 10.1 kg., showed no effect from 0.75 g. nickel sulfate, but after the same dose on the second day responded with salivation and vomiting. Frogs immersed in 3 and 5% solutions of nickel sulfate died in 60-90 minutes. -- Chem. Absts.

- 48 Studies in Vanadium Toxicity. Reduction in the Cystine Content of Rat Hair. J. T. Mountain, L. L. Delker, and H. E. Stokinger. Arch. Ind. Hyg. & Occ. Med. 8, 406-411 (Nov. 1953).

Administration of vanadium by ingestion in rats resulted in depressed cystine content of the hair. This effect occurred in rats when the diets contained as little as 0.01% vanadium and appeared a more reliable guide to exposure than changes in either body weight, liver- and body-weight ratios, or hematologic response. The rat diet, though not optimal, was sufficient to maintain satisfactory growth. Vanadium produced structural changes in the hair, both gross and microscopic, that were characteristic of cystine deficiency. Toxic effects of vanadium are considered to be associated with failure to metabolize sulfur amino acids properly. Administration of methionine gave some indications of counteracting the unfavorable effects of vanadium on body-weight gains and liver-weight to body-weight ratios. -- Authors' summary.

- 49 Butadiene. Chemical Safety Data Sheet SD-55. Manufacturing Chemists' Assn., Inc., 246 Woodward Bldg., 15th & H St., NW, Washington 5, D.C. 16 pp. (1953) 25 cents.

While handling hazards are not considered to be serious, exposure to the vapors of butadiene may cause minor irritations to the eyes, nose, throat, and lungs. The liquid evaporates rapidly and may therefore cause frostbite when in contact with the skin. Fire and explosion hazards result from the material's physical properties (boiling point -4.7°C and explosive limits 2 to 11.5% by volume in air). Air vapor mixtures can result in peroxide formation which may cause an explosion. With these properties in view, a number of precautions are necessary in handling butadiene. They include avoiding sparks and flame, adequate ventilation, grounding electrical equipment, protective clothing and goggles, fire extinguishing equipment, precautions after spillage, and checking the inhibitor content during storage. These and other precautions are fully described.

- 50 Toxicity Studies of a Nonionic Detergent. Kathleene M. Sweeney and K. A. Oster. J. Am. Pharm. Assn. 42, 556-560 (1953)

Single and repeated dose toxicity studies on a total of 244 rats showed the LD₅₀ of 9-octadecenyl polyoxyethylene glycol ether to be 0.235 g. per kg. on intraperitoneal injection. In concentrations of 0.1 to 0.25%

in drinking water no toxicity was observed in 6 months, but 0.5% caused a slight growth retardation. -- Chem. Absts.

- 51 Odor of Carbon Tetrachloride in Drafting Room. Queries & Minor Notes, J. Am. Med. Assn. 153, 1231 (Nov. 28, 1953)

Carbon tetrachloride is used in a drafting room to clean drawings. The room is permeated with a strong odor for about half of each day. There are no special provisions for ventilation. The question is asked whether an exhaust hood should be used. An exhaust booth will provide some protection, but it would be necessary for the draftsman to thrust his head into the booth. Some general room ventilation of the mechanical type is in order. Substitution of methylchloroform, methylene chloride, or a mixture of methylene chloride and toluene, would reduce the hazard.

- 52 Necrotizing Nephrosis in the Rat Following Administration of Carbon Tetrachloride. R. B. Jennings and W. M. Kearns, Jr. Arch. Pathol. 56, 348-359 (Oct. 1953).

The intraperitoneal administration of carbon tetrachloride to rats on a normal diet was lethal in less than 5 hours when the dose was greater than 0.5 cc. of carbon tetrachloride per 100 gm. of body weight and was almost invariably accompanied by necrosis of the proximal tubules in the outermost zone of the renal cortex. Age, sex, and a high-fat low-protein diet did not influence the production of the renal lesion. The pattern of the necrosis did not follow that of "lower nephron nephrosis." The mechanism of production of the lesion is unknown. Either shock, with decreased renal blood flow, or a direct toxic action are considered the most likely cause of the injury and are being further investigated. -- Authors' summary

- 53 Poisoning Occurring During the Manufacture of Monochloro-Monobromo-Methane. T. Hirokawa and others. Bull. Inst. Public Health (Tokyo) 2, 1-3 (Sept. 1952)

Clinical descriptions of three cases of poisoning during manufacture of monochloromonobromomethane are given. No precautions were taken against extensive leakage from apparatus in which methyl chloride and bromine were mixed to produce the required reaction. Either the final product or methyl chloride or both were presumed to have caused the damage to circulatory system, liver, and nervous system. -- Public Health Eng. Absts.

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- 54 Acute Poisoning with Trichloroethylene. G. Woratz and D. Michel. Deut. Z. Verdauungs-u. Stoffwechselkrankh. 13, 229-236 (1953). German.

Four cases of poisoning are reported. The white blood cell count was variably affected. The nitrogen, glucuronic acid, and indican excretion in the urine was increased. Disturbances of the heart rhythm occurred in 3 patients; 2 showed prolongation of the QT interval and a decrease in serum potassium. -- Chem. Absts.

- 55 Experimental Studies on Carbon Disulfide: Absorption, Elimination, and Distribution in the Body. J. Kobayashi. Japan. J. Nation's Health 21, 43-60 (1952).

1. Urinary Excretion of Carbon Disulfide. The concentration of carbon disulfide in the urine is influenced by its concentration in the air inhaled and urinary excretion begins within 15 to 30 minutes. Thus the concentration in the urine indicates only indirectly its concentration in the air preceding the excretion and it cannot be a measurement of the extent of carbon disulfide poisoning. 2. Amount of Carbon Disulfide Eliminated into the Expired Air and the Urine. Inhalation of air containing 80-120 gamma CS₂ per liter for 2 hours and estimation of CS₂ in the expired air indicated that 75 +10% of CS₂ is expired within 30 minutes after beginning inhalation, and the variety of food scarcely affected this relation. A fat diet caused less retention of CS₂ after inhalation ceases, but also causes retardation of excretion in the urine. The amount of elimination through urine is less than 1% of the absorbed CS₂. 3. Distribution of Carbon Disulfide in the Rabbit Body. The highest carbon disulfide concentrations after inhalation are in the brain, kidney, and heart; less is found in liver, lung, and muscle. -- Adapted from Chem. Absts.

- 56 Toxicologic Study of Organic Silicon Compounds. A. Badinand. Bull. soc. pharm. Bordeaux 90, 298-306 (1952) French.

Methyl- and methylphenyl-siloxanes appear to be nontoxic. Vapors of methyl orthosilicate cause toxic symptoms in guinea pigs. The ethyl derivative is less toxic than the methyl derivative.

-- Chem. Absts.

- 57 Professional Pathology from Acridine. G. Baldi. Med. lavoro 44, 240 (May 1953). Italian.

Acridine is a fluorescent substance which has a distinct photodynamic action and is obtained from the distillation of tar. Industrially, it is used in the manufacture of coloring products and in a few pharmaceutical products, the principal one of which is quinacrine. In practice, toxic manifestations are found only in persons working in the preparation of this antimalarial and are due to solvents and intermediates as well. Eye, respiratory, and skin symptoms are found. Skin symptoms are the severest. Prognosis is good, and recovery takes place after cessation of exposure. Good ventilation and protective equipment should be provided.

-- Cond. from English summary

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- 58 Effects of Aniline Spread in Minimal Doses on Rabbit Skin. M. S. Zakabunia. *Farmakol. i Toksikol.* 16, No. 2, 40-42 (1953) Russian.

The minimum active dose of aniline (40 minutes direct contact with 1 sq. cm. skin, sealed from evaporation) is 0.8 to 2.5 mg. per kg. for rabbits. Of 10 rabbits, 2 showed no change in muscular reflex activity at these doses; 8 ranged from -4% to 20% change, with 16-22% rise in rate of reflex muscle tensing. The chief effect is on the central nervous system; formation of methemoglobin was not affected even by doses up to 50 mg. per kg. -- Chem. Absts.

- 59 Effects of Nicotinic Acid in Acute Aniline Poisoning. A. N. Borisenko. *Farmakol. i Toksikol.* 16, No. 3, 34-39 (1953). Russian.

Acute aniline poisoning in dogs involves effects on the central nervous system and blood, with hypoxia; after 1 to 3 days a stage of erythrocyte destruction and regeneration begins. In the first stage the blood accumulates metabolism products in low states of oxidation, e. g. glucose and pyruvic acid. Since the catalase index generally increases with erythrocyte count, it appears that aniline has no direct effect on catalase activity in the blood. Nicotinic acid, at 0.03, 0.02, and 0.005 g. per kg., lessens and sometimes eliminates hyperglycemia and has a like effect on pyruvic acid content, but with no direct action on catalase activity in the blood. The foremost benefit of nicotinic acid is its regulatory effect on carbon dioxide metabolism. Hence small doses suffice; in test dogs 5 mg. per kg. was ample to prevent death in severe cases of acute poisoning. In the second stage the important effect of nicotinic acid is regulation of pigmentation metabolism, in restoring erythrocyte deficiency, and larger doses (10-30 mg. per kg.) are needed.

-- Chem. Absts.

- 60 Toxicology of Chlorinated Naphthalenes. F. B. Shakhnovskaya. *Farmakol. i Toksikol.* 16, No. 2, 43-47 (1953). Russian.

Mice and rats were exposed 2 hours daily to aerosols of trichloronaphthalene (0.05-0.2 mg. per l., particle size about 1 micron). Other mice received 2.5 mg. per os daily for 20 days; others had skin exposure, in sunflower-seed oil, 2 hours daily, 40-60 days; there was no dermatitis. Some rabbits were given skin exposure tests simultaneously with oral or subcutaneous dosage. When dermatitis occurred it was from internal dosage; direct applications were relatively harmless. Rabbits received 0.4 g. daily for 2 months; some were irradiated with mercury-vapor light (50 cm. distance, 10 minutes, 4 or 5 exposures). Slight erythema resulted, but not dermatitis. Total lipides, phospholipides, cholesterol, and neutral fats were determined in livers of test animals. There was some necrobrotic fatty dystrophy, edema, and reticulo-endo-

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thelial hyperplasia, partly because cholesterol content increased disproportionately more than phospholipide content in liver lipides. More protein (casein) in the diet tends to normalize this effect by favoring phospholipide formation, but has little effect on the clinical course of poisoning. -- Chem. Absts.

Insecticide Toxicity Problems. G. C. Decker. Modern Sanit. 5, 22-25, 65-66 (Nov. 1953).

The author discusses the toxicity of insecticides, mainly with reference to their persistence in foods and conformity with the Food and Drug Act. A table is presented (summarized from Lehman's table) showing the oral acute and chronic toxicity and absorption of the common insecticides. Another table includes stability after application, relative rate of application, and relative persistence. It is emphasized that all the values given in the second table are subject to exception because many independent variables enter into their determination, but the table is useful in showing relative values that give a proper perspective for evaluating hazards. The most toxic materials, parathion and TEPP, are also the least stable, while a number of others whose toxicity is low are so stable that their residual toxicity must be considered. The botanicals, except nicotine, are both non-toxic and unstable, so they are safe for many uses. The use of insecticides in food processing plants as in bakeries, is also considered. Many of the toxic materials can be used in insect control so long as there is no danger of their entering the food products.

Absence of Toxic Manifestations in Worker Exposed to Chlordane. W. C. Alvarez and S. Hyman. Arch. Ind. Hyg. & Occ. Med. 8, 480-483 (Nov. 1953).

Twenty-four men, aged from 21 to 49 years, who were exposed to chlordane for 2 months to 5 years in its process of manufacture were given a complete examination, including several blood chemical and urine studies. There was no evidence of abnormality in the liver, kidneys, skin, nervous, and blood-forming organs. Other findings in some men, including fibrotic changes in the lung, could not be attributed to the chlordane. These results indicate that chlordane is innocuous when breathed or in contact with the skin. Because it is a dense, sticky substance, probably very little is inhaled. These results confirm those of Princi and Spurbeck.

-- Cond. from authors' summary

Poisoning Due to Anticholinesterase. V. Moseley and H. P. Snead. J. S. Carolina Med. Assn. 49, 227-231 (Sept. 1953).

Three cases of poisoning that resulted from anticholinesterase insecticides are described. Two of the patients were employed by a chemical plant and had been exposed to tetraethylpyrophosphate. Both

men had constricted fields of vision and expiratory wheezes over both lung fields. Treatment with atropine and elixir of terpene hydrate led to recovery. The early recognition of the poisoning and prompt treatment resulted in only minor morbidity. The third patient, a farmer, had sprayed tobacco with parathion for four hours, with no protection but a handkerchief tied over his nose. He had been similarly exposed two weeks previously. One hour after the second exposure, he complained of muscle cramps, nausea, sweating, and cough. He was admitted to the hospital in a semicomatose state. The treatment included atropine, (14 mg., total, which was an overdose), dihydrostreptomycin, and procaine penicillin; details are described. The treatment was successful. The danger of additive toxic effects from repeated exposures to small amounts of the insecticide is stressed because of the slow rate of restoration of cholinesterase activity. Safety recommendations are listed.

-- Cond. from J. Am. Med. Assn.

- 64 The Biochemistry of Schradan. B. A. Kilby. Chem. & Ind. 856-861 (Aug. 15, 1953)

Schradan is generally known in the United States as OMPA, an abbreviation for octamethyl phosphoramidate. It is one of the best systemic insecticides because it is absorbed through the foliage or root systems of plants and is transported in the sap so that the whole plant becomes toxic to sap-sucking insects and remains protected from them for several weeks. Extensive studies on animal toxicity are reported. The author concludes that the biochemistry of schradan is still in its early stages, as there are many points still to be explained. Its anticholinesterase activity is much higher in vivo than in vitro, and also much higher in a plant extract than in a pure state. These facts indicate that schradan is converted both in plants and animal bodies into compounds of higher toxicity. It is more toxic to male than to female rats, whereas the reverse is true of parathion, indicating that different enzymes are involved in its metabolism. The causes of cumulative effect and of acquired tolerance are still not understood. The LD₅₀ for parenterally injected schradan in rats is about 8 mg. per kg., whether in single or repeated doses, unless the quantity injected is so low as to produce tolerance.

- 65 Toxicity of Malathion. Summary of Mammalian Investigations. L. W. Hazleton and Emily G. Holland. Arch. Ind. Hyg. & Occ. Med. 8, 399-405 (Nov. 1953).

Malathion is the common name selected for the insecticide 0,0-dimethyl dithiophosphate of diethyl mercaptosuccinate, previously designated as S-(1,2-decarbethoxyethyl) 0,0-dimethyl dithiophosphate. It may find rather wide usage as an insecticide and therefore there may be an appreciable human exposure. The authors report the results of a series of toxicity determinations using various methods of administration. The acute toxicity by oral administration varies from LD₅₀ of 480 mg. per kg.

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in vegetable oil to 5,843 mg. per kg. undiluted, in both cases for rats, with figures of the same order of magnitude for mice. For intraperitoneal injection in mice, the LD₅₀ was about 450 mg. per kg. The acute signs of toxicity are characteristic of anticholinesterase activity. After single exposures to dermally applied malathion, the toxicity is of a low order of magnitude. It is difficult to summarize the experiments on anticholinesterase activity, but in cases where comparisons were made with parathion, the effect of malathion is much lower. No serious damage resulted from inhalation under various conditions. Chronic oral ingestion of 5,000 ppm. resulted in marked depression of cholinesterase levels, and retardation of growth resulted only at 20,000 ppm. or 2%. The authors do not arrive at definite toxicity levels, and the paper should be read for full information. They conclude, however, that malathion is much less toxic to mammals than parathion; the ratio for inhalation in rats is 1 to 135. Neither the acute nor chronic toxicity of malathion should offer extreme hazard in manufacture and application; but it is desirable to maintain a regimen similar to that for other members of its class.

Occupational Allergic Reactions Among Workers in a Penicillin-Manufacturing Plant. Simple and Inexpensive Method of Diagnosis and Treatment. A. E. Roberts. Arch. Ind. Hyg. & Occ. Med. 8, 340-346 (Oct. 1953).

Three cases of occupational allergy to penicillin are described. Two were the respiratory type, and one the cutaneous type. The same simple type of allergenic suspensions were used for cutaneous testing and for hyposensitization. The method of their preparation is described. No special training, expensive apparatus, or time-consuming techniques were required. The results of hyposensitization to penicillin as an occupational allergen were entirely satisfactory, and the patients were enabled to continue work.

Safe Use of Organic Solvents in Industry. A. L. Coleman. Conn. Health Bull. 67, 275-279 (Oct. 1953).

The author discusses briefly the hazards involved in the use of various classes of solvents, including petroleum distillates, halogenated hydrocarbons, aromatic hydrocarbons, carbon disulfide, alcohols, esters, ketones, and ethers. He points out that while the petroleum distillates have low toxicity when pure, they often contain the more toxic aromatic compounds. He also emphasized the distinction between benzine and benzene. The factors to be considered in evaluation of health hazards of solvents are discussed briefly. Change in operating procedure may result in exposure to excessive concentrations. The chronic and acute effects of particular solvents must be distinguished. Preventive measures are discussed briefly.

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- 68 Solvents, Thinners, and Additives. S. B. Levinson. Am. Paint J. 37, 28-36, 64-82 (even pages) (Aug. 3, 1953).

This paper gives a simplified description of these products. It tabulates such data as boiling range, evaporation time, flash point, solvent action, toxicity, tolerances, weight per gallon, and cost for the several types. Various paint additives are also discussed.

-- Battelle Tech. Rev.

INDUSTRIAL DUSTS

- 69 New Investigations on Agglutination of Fine Dust Particles by Means of Sodium Chloride Aerosols and Considerations on the Fine Dusts Problem. L. Dautrebande, H. Beckmann, and W. Walkenhorst. Beitr. Silikose-Forschung No. 19, 20 pp. (1953).

This paper gives new experimental evidence to support Dautrebande's thesis that fine dust is best suppressed by aerosol coagulation. Sodium chloride is the most suitable material. In the present experiments, 1% sodium chloride solutions are sprayed into a test chamber into which coal or quartz dust is introduced and the course of coagulation of the dust is followed by electron microscopy of electrostatic precipitator samples. Coagulation of the dust is very rapid and the aggregates formed are so large that they cannot penetrate into the alveoli. It is concluded that 1% salt solution is adequate, that it does not interfere with visibility and that it should be tried under practical conditions in mines and factories.

-- Cond. from Bull. Hyg.

- 70 Experimental Investigations on the Significance of Particle Size in the Reaction of the Peritoneum to Amorphous Silica. K. D. Lundgren and A. Swensson. Acta Med. Scand. 145, 84-90 (April 15, 1953).

The authors investigated the effect of particle size on tissue reaction to amorphous silica, using single intraperitoneal injections in guinea pigs. For comparison a sample of ordinary ground crystalline silica (range mostly 2-8 microns) was used. Four sizes of amorphous silica were injected varying from over 60 down to 10 millimicrons. The amounts injected were 25 to 100 mg. per kg. of crystalline, 25-400 of coarse amorphous, and 6 to 60 mg. per kg. of the finer grades. The crystalline silica produced the most proliferation, and the amorphous continuously less as the particle size decreased. In the case of the very small particles the proliferations became less marked after 2.5 and 7

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months than after one month. With the middle grades then were two types of reaction, possibly due to agglomerations and discrete particles respectively. The decrease in proliferation from the finest may be due either to elimination after solution or removal by microphages. Experiments are being continued.

Occupational Lung Damage in Ships' Repairers. L. Dunger, M. Sanger, & D. T. J. Bagnall. Brit. J. Radiol. 26, 590-594 (Nov. 1953).

Occupational lung damage in ships' repairers ("boiler-makers"), due to inhaled dust and/or fumes has been described for the first time. Analysis of the materials and the dusts to which these men are exposed while at work revealed the presence of free silica and iron compounds. Two broad groups are described, namely those with definite radiological changes and those without. Each group may be subdivided into those with severe symptoms, especially dyspnea resulting in incapacity, and those without symptoms. Post-mortem findings of severe emphysema with slight pneumoconiosis are reported in two men belonging to the group, with extreme incapacity in the absence of radiological lesions.

-- Authors' summary

72 Asthma and Silicosis. Queries and Minor Notes, J. Am. Med. Assn. 153, 1327 (Dec. 5, 1953).

Asthma occurring for the first time in a 52-year-old person can be aggravated by silicosis. The type of dyspnea caused primarily by silicosis is due to damage of the lung parenchyma and to emphysema. In some persons with silicosis, bronchospasm is induced secondarily. It should also be remembered that a 52-year-old man may have allergic infections or cardiac asthma for the first time. If the patient in question has true asthmatic episodes (relieved by epinephrine or aminophylline), a search for other causative factors should be made by a series of observations such as examination of the sputum for eosinophils and neutrophils, skin tests, and examination for hypertensive, coronary, or syphilitic heart disease.

Asbestosis Bodies and Pseudo-Asbestosis Bodies. J. Ruttner. Schweiz. Z. Allgem. Pathol. u. Bakteriologie 15, 628-631 (1952). German.

The literature on asbestosis bodies is reviewed. Similar products were found by the author in a lung which only contained carborundum and graphite; the bodies were formed around plates and needles of carborundum. The protein and iron which form the bulk of the "bodies" must come from the lung tissues and not from the mineral matter of the dust. Similar bodies could also be produced in vitro but they have not so far been found in animal experiments.

-- Bull. Hyg.

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- 74 Silicosis in Mica Mining in Bihar, India. H. Heimann, S. Moskowitz, C. R. H. Iyer, M. N. Gupto, and N. S. Mankiker. Arch. Ind. Hyg. & Occ. Med. 8, 420-435 (Nov. 1953).

A survey of the problem of free silica exposure and silicosis in mica mining in Bihar, India, is reported. The rock dust to which the miners were exposed varied in free silica content from 11 to 67%, with a median of 42%. The degree of dustiness varied from 800 mppcf for pneumatic drilling with no dust control to 7 mppcf for wet drilling. Nodular and conglomerate silicosis was found in 34% of the 329 examined miners and was directly associated with the degree of dustiness of the occupations and the duration of exposure in those occupations. Pulmonary tuberculosis was found in 18.6% of the miners. The recommendations included: (1) only wet drilling pending investigation of the reasons for the ineffectiveness of the dust traps; (2) limitation of wet drilling to 4 hours per day unless ventilation reduces the dust concentration to below 5 mppcf; (3) wetting of face, walls, roof, and floor after blasting; (4) an interval of several hours between the wetting and resumption of work; (5) no hand drilling without ventilation to maintain a dust concentration below 5 mppcf in the breathing zone; and (6) a medical control program.

-- Cond. from authors' summary

- 75 Pneumoconiosis from Graphite and Carborundum. J. R. Ruttner, P. Bovet, and M. Aufdermaur. Deut. med. Wochschr. 77, 1413-1415 (Nov. 1952) German.

The paper describes a case of pneumoconiosis found in a man who had worked for over 20 years in the milling and bagging plant of a factory making synthetic graphite and carborundum. X-rays taken during the last 4 years of the man's life showed first a soft widely disseminated nodulation and later confluent masses. Silicosis of stage 2 or 3 had been diagnosed 3 years before death. Post-mortem findings are described. They are similar to those found in silico-anthracosis, with much collagenous fibrosis. Analysis of the lung dust and of the airborne dust at the factory showed the complete absence of quartz in both. There was much graphite and little carborundum in the lung dust. Intraperitoneal tests on animals to be described elsewhere (see Bovet, IHF Abst. 393, April 1953) showed that collagenous fibrosis can be caused by carborundum and graphite dusts.

-- Bull. Hyg.

- 76 Pneumoconiosis in the Tungsten-Carbide Tool Industry. Report of Three Cases. C. W. Miller, M. W. Davis, A. Goldman, and J. P. Wyatt. Arch. Ind. Hyg. & Occ. Med. 8, 453-465 (Nov. 1953).

Case reports are presented of three workers in the tungsten-carbide industry who have shown peculiar types of pulmonary reactions and hyperglobulinemia. It is believed that these workers have manifested a specific reaction to the inhalation of an industrial dust or a combination

of dusts. From our histological studies, tungsten carbide does not provoke a necrotizing or fibrosing response within the rat lung parenchyma. Studies of titanium and cobalt, alone and in combination with other dusts known to be used in the cemented tungsten-carbide tool industry, are being pursued. For reasons stated, it is felt most likely that cobalt caused this condition. It is possible that a combination of various powdered metals is necessary to produce this reaction. Individual susceptibility may be an important factor in the production of the disease. One worker has improved radiologically by removal from the industrial environment, whereas the other two have remained virtually static over a period of one year of observation. All three workers have become asymptomatic since removal from exposure to dust.

-- Authors' conclusions

PHYSICAL ASPECTS OF THE ENVIRONMENT

Work with Vibrating Tools. Queries & Minor Notes, J. Am. Med. Assn. 153, 1327 (Dec. 5, 1953).

The question is whether any type of nerve damage normally follows the use of a jackhammer over a period of years. A variety of physiological disturbances are attributed to the action of vibrating pneumatic and electric tools. Some of the differences in manifestations are attributable to the speed and amplitude of the vibration, and to low temperatures often attending such work. As a rule, the severer conditions result from the use of high frequency, low amplitude tools. The major disturbances chiefly involve the fingers and resemble Raynaud's phenomenon. Other frequent damage includes synovitis, tendonitis, arthritis, and bone decalcification in the wrist. Long nerve neuritis is not a common feature but repeatedly has been described, the ulnar nerve being mentioned oftenest. Posture and hardness of the material drilled are often significant factors.

Fatigue--Measurement and Reduction. L. Brouha. Ind. Med. & Surg. 22, 547-554 (Dec. 1953).

The unmeasurable factors which cause stress and fatigue in industry, such as emotional stimuli, boredom, social adjustment, etc., are certainly more numerous than those which can be measured. Certain physical factors which lead to fatigue, however, have been measured and their importance evaluated. As a result we know that industrial fatigue can be reduced, (1) by improving environmental conditions to the best possible level, (2) by designing machines and tools for maximum efficiency with minimum physiological stress, and (3) by choosing workers on the basis

of physiological fitness for the given job and organizing their work to produce minimal fatigue. The accomplishment of these objectives requires the collaboration of the physiologist, the engineer, management, and labor.

-- Cond. from author's conclusions

- 79 Dupuytren's Contracture. Queries and Minor Notes, J. Am. Med. Assn. 153, 1597 (Dec. 26, 1953).

The cause of Dupuytren's contracture is still uncertain. There is no evidence that hard and vigorous use of the hand either causes or aggravates the condition. More than half the patients in carefully recorded series were men who did little work that involved active use of the hands. There is no medical treatment of value. The only certain method of correcting the condition is carefully performed, wide excision of the contracted fascia. The operation should be done if the overlying skin is becoming involved to such an extent that removal of the skin and subsequent skin grafting would be necessary or if a finger is being drawn down into the palm and the thickening and contraction of the fascia is producing a flexion contracture. Early operation in the absence of those conditions does not seem advisable, because similar development may occur in another part of the hand and require a second operation.

RADIOACTIVITY AND X-RADIATION

- 80 Radiation Injury and the Present State of Therapeutics. A Bibliographic Review. T. J. Haley. Ind. Med. & Surg. 22, 569-572 (Dec. 1953).

This brief discussion outlines progress to date in the treatment of radiation injury and serves to point out that such treatment must be a multiple one because the damage produced is multiple, involving almost every body tissue. Available evidence shows that flavonoid medication is of little or no value, and that toluidine blue should be used only as a last resort because of serious side reactions. The exact place of such agents as blood transfusions, plasma volume extenders, and adrenal cortical steroid hormones remains to be determined. Some of the broad spectrum antibiotics are beneficial in radiation injury but more specific agents are needed to counteract the bacteremia produced by certain intestinal organisms.

-- Cond. from author's summary

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Studies during World War II showed that over one-third of all waste scraps was due to uncorrected vision defects.

-- Management Review, Nov. 1953

IN RE: ABRAMS November 1992

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- 81 Radiation Hazards from the Use of Dental X-Ray Units. W. E. Nolan and H. W. Patterson. Radiology 61, 625-629 (Oct. 1953).

A survey of 6 dentists' offices showed that the operators were exposed to 0.2 up to 2.0 roentgen per hour, and receptionists in some cases were exposed to noticeable radiation. A number of recommendations are made, including proper filtration, collimation of the beam, long focal distance, x-ray proof shells housing the tube, new film technics, and a shield for the patients' necks.

- 82 Radiation Hazard During Angiocardiography. W. Dublier, Jr., H. W. Burnett, C. T. Dotter, and I. Steinberg. Am. J. Roentgenol. Rad. Therapy 70, 441-444 (Sept. 1953).

Angiocardiography, since it involves multiple roentgenographic exposures with the injecting physician and patient in close proximity, constitutes a potential radiation hazard. A study of the procedure used at a particular hospital showed that the amount of scattered radiation received by the radiologist is not excessive. Therefore the procedure can be performed with safety, but the techniques vary greatly and warrant individual assessment of the hazards involved.

- 83 Mental Health Implications in Civilian Emergencies. Report of Subcommittee on Civil Defense, Community Services Committee, National Advisory Mental Health Council. Public Health Service. Publication No. 310. 25 pp. (May 1953). For sale by Supt. of Documents, U. S. Gov't Printing Office, Washington 25, D. C. 15 cents.

Preparation for possible atomic bombings and disasters of modern warfare must include psychological preparation, both in preventing apathy toward the possibility of such disasters and in combating panic in case of such a disaster. Care of emotional casualties in the few most affected will aid in avoiding general panic. The principal problems are the training of leadership, preparation of the individual for stability in disaster, placement of children in time of disaster, and public information. These subjects are discussed in this booklet.

- 84 Investigation into the Relationship between Physiologically Low Leucocyte Counts and Sickness Absence. F. M. Turner. Brit. J. Radiol. 26, 417 (Aug. 1953).

The recommendations of the British X-ray and Radium Protection Committee for X-ray and Radium Workers forbid the employment of persons with low total white counts and lymphocyte counts in occupations where they may be exposed to radiation. A study of sickness and casualty records of 154 workers with persistently low leucocyte counts and an equal number

with normal counts showed no significant difference between the two groups in resistance to infection. The suggestion is made that persons should not be debarred from taking up work with ionizing radiations or radioactive isotopes solely on the basis of a physiological leucopenia, but that the clinical assessment of general health should be the determining factor. -- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 85 Radiophotoluminescence Dosimetry System of the U. S. Navy. J. H. Schulman, W. Shurcliff, R. J. Ginther, and F. H. Attix. *Nucleonics* 11, 52-56 (Oct. 1953).

Extensive experimentation and tests with the cooperation of a number of organizations has led to the development of a dosimeter for general distribution to military and civilian personnel. It has a range of 10 to at least 600 r. The response is linear and independent of dose rate up to at least 170 r per minute. The energy dependence is diminished by lead filters. The apparatus consists of a dosimeter, which is essentially a block of silver-activated phosphate glass, and a fluorimeter or "reader", available in two types for precise laboratory and control work and field use respectively. The instrument is fully described and its performance under various conditions is evaluated.

- 86 Protective Mechanisms in Ionizing Radiation Injury. H. M. Patt., *Physiol. Revs.* 33, 35-76 (Jan. 1953).

This paper is an extensive review of prevention and minimization of damage to the human organism from x-rays. It includes 377 references to original papers.

- 87 Role of the Radiologist in Atomic Attack. J. J. Stein, A. W. Bellamy, A. H. Dowdy, and S. L. Warren. *Radiology* 61, 234-242 (Aug. 1953).

All radiologists should learn as much as possible about atomic medicine, and should enter into and cooperate with any program for fact-finding, research, health, and decontamination, as affected by radioactive materials. The Radiological Defense Plan of California is described, including the mobile laboratories and their functions, and brief directions for the care and treatment of persons with radiation injuries.

- 88 Experimental Acute Radiodermatitis Following Beta-Irradiation. C. C. Lushbaugh, J. B. Storer, and D. B. Hale. *Cancer* 6, 671-698 (July 1953).

Five papers are included in the presentation, dealing respectively with: (1) pathogenesis and repair; (2) inhibition of fibroplasia; (3) changes in water, fat, and protein content; (4) changes in respiration

and glycolysis; and (5) histopathological study of modes of action of Alos vera.

Radiation Cataract. W. T. Ham, Jr. Arch. Ophthalmol. 50, 618-643 (Nov. 1953).

The author presents an extensive review of the subject, with a copious bibliography. The effects of neutrons and x-rays on the generative tissue of the lens epithelium are similar to those on other organs, but on account of the unique structure of the lens the toleration dose of ionizing radiation is smaller than in other tissues. Reasons are given for the greater damage produced by neutrons than by x-rays.

Occurrence of Nonequilibrium Atmospheric Mixtures of Radon and Its Daughters. E. C. Tsivoglou, H. E. Ayer, and D. A. Holaday. Nucleonics 11, 40-45 (Sept. 1953).

Mathematical analysis of observed alpha decay curves from filter paper samples of uranium mine atmospheres permitted determination of the actual atmospheric concentrations of the daughters of radon. Theory and supporting laboratory and field results are presented to demonstrate that in practice the atmospheric concentrations of the daughter products do not usually represent full radioactive equilibrium with the parent gas. Ventilation studies in a uranium mine indicated that ventilation is a very practical means of reducing atmospheric concentrations of radon and its daughters to acceptable levels. This study also indicated clearly that the departures of daughter concentrations from their possible equilibrium values became increasingly large as the rate of ventilation was increased.

-- Public Health Eng. Absts.

Reactor-Produced Radioactive Isotopes. S. C. Ingraham II, J. G. Terrill, Jr., and D. W. Moeller. Public Health Repts. 68, 609-615 (June 1953).

The authors review the literature on the use and shipment of radioactive isotopes and the extent of exposure of persons using them. A total of 4,250 curies had been distributed by June, 1952, and the use of the isotopes will probably become much more extensive. Safety in their transportation is assured by the regulations of the Interstate Commerce Commission, and the distribution is controlled by the Atomic Energy Commission. When radioactive isotopes are used in medicine, the radiation exposure is often great, and the patient may become a source of external radiation. The greatest danger in the use of these substances is that small particles may be ingested or inhaled.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

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- 92 Investigation of the Biological Effect of Cosmic Radiation. J. Eugster. Naturw. Rundschau 6, 281-283 (July, 1953). German.

The quality and intensity of cosmic radiation and its biological effects were investigated at various altitudes. The results indicated that the radiation has predominantly a stimulating, rather than a harmful, effect on the life processes. Harmful effects occur chiefly at high altitudes and are caused by the heavy particles of cosmic radiation.

-- Nuclear Sci. Absts.

ENVIRONMENTAL MEASUREMENTS

- 93 The Analytical Chemistry of Micro-Quantities of Beryllium. T. Y. Toribara and Ruth E. Sherman. Atomic Energy Comm. Publication. UR-267, 25 pp. (July, 1953).

Because of the very toxic nature of beryllium, sub-microgram quantities of the element are of biological importance. Colorimetric, fluorimetric, and spectrographic methods used to determine small quantities of beryllium are subject to interferences by other elements necessitating a separation scheme to isolate the element before measurement. The fluorimetric method based on the interaction of beryllium with purified morin is the most sensitive chemical determination; it compares favorably in sensitivity with the spectrographic method. The separation of beryllium from bone proved to be most difficult because of the large quantity of calcium phosphate. By a method which involved precipitation, electrolysis with a mercury cathode, absorption on an ion exchange resin, and complexing with acetylacetone, it was possible to isolate completely the smallest measurable quantity of beryllium from all biological samples. The radioisotope Be^7 was employed in the determination of the efficiency of each stage of the separation scheme.

-- Authors' summary (Nuclear Sci. Absts.)

- 94 Measurement of Lead in Air Dust by Polarography. T. Kito. Igaku Kenkyu 23, 1289-1308 (1953). Japanese.

With a jet dust-counter 50-1000 ml. of air is drawn and lead dust is precipitated on a cover glass, dissolved in 2N nitric acid, evaporated, and dried. It is then dissolved in 2 ml. of supporting electrolyte and measured by polarography. Alternately, air containing lead dust is sucked through 75 ml. of purified water in an impinger. To 50 ml., 10 ml. of concentrated nitric acid is added, evaporated, dried, and

redissolved in the electrolyte. Glycine was the most suitable as the suppressor of palladium. The electrolyte contains 0.1N potassium nitrate, 0.1% glycine, and 0.1N nitric acid, pH being adjusted to 3. Other inorganic materials can be measured simultaneously.

-- Chem. Absts.

95 Determination of Lead Content of Blood in Routine Physical Examinations.

I. Holmquist. Nord. Hyg. Tidskr. No. 7-8, 128 (1953). Danish with English summary.

A spectrographic method was used to determine the lead content of blood at the periodical check-up examination of workers exposed to lead in a lead smeltery. With this method 2,280 determinations have so far been carried out. The number of stipple cells varies considerably from day to day, both in persons exposed to lead and in persons not so exposed. To assess the risk of lead poisoning only in the light of the number of stipple cells is probably a rather uncertain method. The determination of the lead content in the blood contra urine is discussed. The value of the coproporphyrin determination as a routine method is also discussed. With a lead content in the blood of more than 100 gamma per 100 cc., the writer found normal porphyrin values in the urine in 35% of the cases examined.

-- English summary (Arch. Ind. Hyg. & Occ. Med.)

96 Rapid Determination of Mercury Vapor in Air. S. F. Yavorovskaya. Gigiena i Sanit., No. 4, 48-49 (1953). Russian.

The sample is aspirated through silica gel treated with cuprous iodide and iodine. Mercury yields a pink coloration whose intensity is proportional to the mercury concentration. The absorbent is prepared by soaking silica gel grains in saturated copper sulfate solution, followed by saturated potassium iodide solution, drying at 70-80°, and sifting.

-- Chem. Absts.

97 Apparatus for Production of Constant Concentrations of Mercury Vapor in Air. N. D. Rozova. Gigiena i Sanit. No. 4, 50 (1953). Russian.

The apparatus provides for continuous renewal of mercury surface to give a constant rate of evaporation with elimination of fluctuations caused by film formation on the surface.

-- Chem. Absts.

98 The Technique of Determination of Mercury in Urine. A. A. Troitskii. Gigiena i Sanit. No. 4, 51 (1953). Russian.

The sample of 200 ml. urine with 5 ml. of a protein solution and 1 g. sodium chloride is acidified with 5% acetic acid only if the mixture is neutral or basic. If after 20 minutes on a water bath the solution is not

clear, more acetic acid should be added and heated again. If opalescence persists, 8 g. sodium chloride is added and the mixture boiled until complete protein precipitation takes place. If on mixing the coagulated protein with iodine solution the filtrate is lighter than the comparing scale, it is necessary to add iodine until comparison is possible, as otherwise a greenish color interferes with the usual Ginsburg determination of mercury.

-- Chem. Absts.

- 99 Dust Sampler Which Simulates Upper and Lower Lung Deposition.
W. B. Harris and M. Eisenbud. Arch. Ind. Hyg. & Occ. Med. 8,
446-452 (Nov. 1953).

An air-sampling device is described which will obtain a sample of dust in two particle-size fractions. The fraction containing the larger particles simulates in particle-size spectrum that portion of the material which should be retained by the upper part of the respiratory tract. The upper section, assumed to contain approximately 35% of the total lung volume, includes those areas having rapid clearance rates because of ciliary action.

-- Authors' summary

- 100 Absolute Method of Sampling and Measurement of Solid Air-Borne Particulates. D. A. Fraser. Arch. Ind. Hyg. & Occ. Med. 8, 412-419
(Nov. 1953).

A method is presented that permits for the first time an absolute procedure for the analysis of air-borne solid particulates. The method makes use of the combined high efficiency of the molecular filter membrane for sampling and that of the electron microscope for measurement. Simple, inexpensive, laboratory-made holders for the molecular filter membrane have been described. Particle-size distributions obtained by the new method and by standard optical techniques have been critically compared and analyzed.

-- Author's summary

- 101 Integral Optical Dust Measurements. Stetter. Staub. No. 30, 225-234
(Dec. 15, 1952). German.

A theoretical paper which discusses the possibility of optical dust measurements giving a result for weight of dust per volume of air if there is a range of particle sizes. It is found that for particles of the order of 1 to a few microns this is possible if the scattered light is measured over a considerable angular range near to the forward direction, and if the dust cloud is so diluted that extinction can be neglected or allowed for.

-- Bull. Hyg.

- 102 Particle Size Distribution in Hygroscopic Aerosols. G. R. Gillespie. Atomic Energy Comm., Tech. Rept. No. 9, (SO-1010). 58 pp. (May 1953).

The high-velocity cascade impactor is shown to be a convenient device for determining the particle-size distribution of hygroscopic aerosols in the micron and submicron range in both laboratory and field work. A method is presented for obtaining the particle-number concentration of an aerosol by means of the cascade impactor if the particle-size distribution can be described by the logarithmic probability function. Data are presented showing the effect of the conditions of formation, especially the addition of foreign nuclei, on the particle-size distribution of typical hygroscopic aerosols. Evidence was offered that particles rapidly attain equilibrium with their surroundings. If the number concentration was greater than 1 million particles per cc, the particles continued to grow by coagulation.

-- Author's summary (Nuclear Sci. Absts.)

- 103 A New Sampling Technique for Small Airborne Particulates. Particle Size Distribution by Combined Use of Light and Electron Microscope; Interim Report. J. D. Wilcox and W. R. Van Antwerp. Atomic Energy Comm. Publication CRLIR-70; 11 pp. (Feb. 1952).

The sampling technique described permits a particle size analysis of very heterogeneous samples with particles ranging from 0.1 to 100 microns. The particulate matter is removed from the air and deposited directly onto an electron microscope specimen film. A five-stage cascade impactor is used to obtain a partially size-graded sample. The analysis is first made with the light microscope and then with the electron microscope. The number of particles in the complete sample is found by addition of the data from both microscopes.

-- Nuclear Sci. Absts.

- 104 Quantitative Analysis of Powder Mixtures with the Geiger-Counter Spectrometer. H. P. Klug. Anal. Chem. 25, 704-708 (May 1953).

Previously reported studies by the author and others have demonstrated that the reproducibility attained with Geiger-counter x-ray spectrometer depends upon the attention given to such factors as instrument stability, crystal size of powder, mounting of the specimen, and type of scanning technique. The absorptive properties of the sample and the number of components present determine the analytical procedure to be used. Detailed procedures are described for the construction of working curves and are illustrated by examples of analyses of dust for quartz with calcium fluoride as internal standard. Single determinations by manual counting with recent model spectrometers usually yield the quartz content within 5% of the actual amount present in the range 5 to 100% quartz. For recorder counting and in ranges less than 5% the errors may be 2 to 3 times as great.

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- 105 Differential Thermal Analysis for Determination of Quartz in Dusts.
J. A. Schedling. Staub. No. 30, 243-244 (Dec. 15, 1952). German.

This is a brief note on differential thermal analysis for quantitative quartz determination. The author uses a steel sample block and a vertical muffle which can be lowered over the block. Calibrations were made with calcined alumina. A number of talc samples had to be measured which seemed to contain only about 1 or 2 per cent. of quartz. These were measured against quartz-free talc and similar amounts of quartz were then added to the sample to be measured. In this way it was confirmed that reasonable results had been obtained previously and quantitative determinations down to 0.5 per cent. of quartz are said to be possible.

-- Bull. Hyg.

- 106 Determination of Quartz in Dusts from Grinding Operations by Differential Thermal Analysis. J. A. Schedling and Johanna B. Wein. Staub. No. 31, 13-18 (Mar. 15, 1953). German.

The paper gives results of quartz determinations by differential thermal analysis for the dust from synthetic grinding plates made of ceramically bound corundum. It was found that the raw materials, corundum, silicon carbide and titania, did not show any thermal effects in the region of 575° C. but that the felspar, clay kaolinite and iron oxide used in manufacture contained between 4 and 38 per cent. of quartz. Results for a number of disks and bonding mixtures are given. Quartz percentages above 5 per cent. are assessed directly, for smaller percentages an extrapolation technique is used. First the material is tested alone and afterwards known small increments of quartz are added to the sample, giving a series of larger and larger thermal effects. The smallest amount of quartz thus measured was 0.3 per cent.

-- Bull. Hyg.

PREVENTIVE ENGINEERING

- 107 A Calculator for the Solution of Ventilation Network Problems.
D. R. Scott, R. F. Hudson, and F. B. Hinsley. Trans. Inst. Mining Engrs. 112, 623-624 (May 1953).

The authors have previously suggested methods for the estimation of distribution of inflow in mines (IHF Abst. 1241, Dec. 1952). The first-named author has now designed a simple, manually-operated, electrical network calculator which reduces the tedium of the calculations. The calculator consists essentially of a set of variable resistances mounted on a panel, with power supplies and metering arrangements. The leads from the resistances are brought out to a plug board which may be wired to simulate any desired ventilation network. -- Cond. from Bull. Hyg.

- 108 Ventilation of Garages, Factories and Warehouses for Products of Combustion of Gasoline Engines. M. Sheinbaum. Monthly Rev. N. Y. State Dept. Labor. 32, 37-40 (Oct. 1953).

The possibility of carbon monoxide poisoning exists whenever gasoline-powered engines are operated with an enclosure. Concentrations of carbon monoxide may be maintained below the maximum allowable concentration by means of either general or local exhaust ventilation supplementing general natural ventilation. General ventilation finds application in situations in which the engine is in motion, while local exhaust ventilation may be applied to stationary engines. Local exhaust ventilation systems are frequently more complicated in design than general exhaust systems, but require smaller air quantities. A table gives data for computing the recommended general ventilating rate. Ventilation control rates for local exhausts depend on the physical conditions at the point of control. -- Cond. from author's summary

- Performance Characteristics of Wet Collectors. M. W. First, G. A. Johnson, R. Dennis, S. Friedlander, and L. Silverman. Atomic Energy Comm. Publication NYO-1587, 76 pp. (Mar. 1953).

The performance characteristics of an experimental cyclone scrubber and a commercial dynamic inertial-type wet collector were investigated to obtain information concerning the fundamental principles of wet collection and to develop criteria for predicting and improving the performance of practical collecting devices. Although there are disadvantages to wet-dust collection, some types of wet devices can be adapted to continuous and remote-control cleaning of radioactive aerosols. -- Authors' summary (Nuclear Sci. Absts.)

- An Automatic Self-Cleaning Filter. H. E. R. Rayner. Mine Vent. Soc. S. Africa, Monthly Bull. 6, 1-20 (Aug. 1953).

The ideals of an acceptable filter are: (1) minimum initial cost; (2) low operational cost; (3) high efficiency; (4) minimum manual cleaning; and (5) constant quantity exhausted from dust source. Vertical blanket filters, cleaned by washing the blankets without removing them, did not fulfill those requirements. The resistance of horizontal flannel bags can be reduced by gentle shaking, but, because the dust collects in the bag, the number of shakings is limited. By installing the bags in a vertical position, the dust shaken off falls into a basement and the shaking can be carried out any number of times so that there is no need to remove the bags during their useful life. To obviate the necessity of shaking, the top support of the bags was removed and the bags allowed to collapse into the basement of the filter. The collapse of the bags causes them to turn inside out and the dust collected on the inside is shaken off and accumulates in the basement. The basement is washed out at lengthy intervals of the order of two

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years. As the bags inflate when reinstalled a certain amount of dust is liberated. By the use of an automatic airflow controller this dust is kept to a minimum and returned through a by-pass to the basement.

-- Cond. from author's summary

COMMUNITY AIR HYGIENE

- 111 Gas and Vapor Abatement. R. J. Jenny. Air Pollution Abatement Manual, Chapter 10, Manual Sheet P-11. Manufacturing Chemists' Assn., Inc., 246 Woodward Bldg., 15th & H Sts., N.W., Washington 5, D.C. 29 pp. (1953). 60 cents.

This chapter describes methods available for reducing atmospheric pollution contributed by gases or vapors. In the early sections, methods of abatement are described, including waste dispersal by stacks, absorbers or scrubbers, incineration, catalytic combustion, and absorption. The next sections deal with the fundamental principles and design considerations of packed towers. A number of tables and diagrams are included.

- 112 Occupation as a Factor in the Community Health Hazards of Air Pollution. C. A. Mills. Am. J. Med. Sci. 226, 177-178 (Aug. 1953).

The death rates for pneumonia and for cancer of the respiratory tract in the cleanest and dirtiest areas of Chicago are classified according to occupation. The death rates for both diseases in the most polluted areas are found to be 2.5 to 3.5 times as high among laborers with outdoor exposure as among professional workers. The author believes that the higher rate for pneumonia might be attributed to poor housing and low economic status, but that those factors would not account for the high cancer rate. He concludes that urban air pollution is a significant factor in the incidence of cancer.

- 113 Legal Aspects of Air Pollution. W. H. Bell. Modern Sanit. 5, 61-66 (Oct.); 61-65 (Nov. 1953).

The author reviews the history of legislation against air pollution and the reasons for its enactment. He cites numerous cases of injury and nuisance due to air pollution and many court decisions, both in Great Britain and the United States, to show that such legislation is fully justifiable on the basis of fundamental law and the constitution, provided that its provisions are reasonable. The earlier legal actions against factories causing air pollution were on the part of individuals, but now such actions

usually are taken by local governments. In California the county has taken over the control of air pollution, and in a few states the creation of state agencies is being considered. On the other hand, each plant presents an individual problem. Cooperative efforts of public and private interests to minimize atmospheric pollution will assist in formulating recommendations for proper legislation. This involves education of all parties concerned.

114 Air Pollution Activities. Anon. Mech. Eng. 75, 712-714 (Sept. 1953).

A list of 36 universities, colleges, research institutes, and laboratories working on air pollution problems is presented, with a brief statement of the activities of each in the field. This information was obtained by means of a questionnaire submitted by the ASME Committee on Air Pollution.

115 The Use of Averages in Air Pollution Meteorology. I. A. Singer and M. E. Smith. Atomic Energy Commission Publication BNL-1513, 13 pp. (May 1953). Also published more briefly in Air Repair, 3, 201-203 (Feb. 1954).

The literature on the meteorology of stack dispersion contains references to "average" conditions, suggesting that such conditions are common and that dispersion calculations based on them will be representative. Studies made at Brookhaven National Lab. show that the conditions usually described as "average" are in fact uncommon at that location and probably in most locations in the United States. The variability of wind gustiness, an index of dispersion conditions, is described and related to other meteorological parameters to illustrate the desirability of determining the most probable conditions, rather than the average. A study of dispersion from an individual stack should reveal the conditions under which the effluent will have undesirable effects and describe the seasonal and diurnal frequencies of those conditions. Hypothetical examples are used to show how different stack and effluent characteristics may result in wholly different pollution problems under identical meteorological conditions.

- Authors' summary (Nuclear Sci. Absts.)

MANAGEMENT ASPECTS

Renewing Their Youth. A Successful Experiment in the Employment of Pensioners. I. M. Richardson. Trans. Assn. Ind. Med. Officers, 3, 227-229 (April 1953).

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A number of retired men in Scotland were hired as helpers to bakery truck drivers. The experiment was successful from both men's

and employer's standpoints. Their wages were not high enough to interfere with receiving their pensions.

- 117 A Policy Decision for Workmen's Compensation. J. Pollack.
Ind. Labor Relations Rev. 7, 51-62 (Oct. 1953).

The author criticized the present status of workmen's compensation. When compensation laws were first enacted, their aim was to provide to disabled workers at least half their normal income. Under present conditions, three-fourths the normal income would not be too high as compensation. On the other hand, various factors have brought compensation down to less than a third of lost wages. The present compensation payments amount to one cent per hour on the basis of total payroll, while employers are contributing 13 cents per hour to other social insurance and welfare programs. Limiting factors are the specification of flat amounts at relief and maximum weekly benefits. Compensation for permanent disability and death is especially low. There are wide discrepancies in compensation in different states. For instance, maximum compensation for loss of a thumb in Wisconsin exceeds that for an arm in three states or for the loss of a hand in 11 others. Rehabilitation is considered in less than half the states. The following avenues of possible reforms are discussed: (1) improvements in state laws; (2) federal legislation; (3) additional or exclusive remedies by the courts; and (4) collective bargaining. Each of these remedies is being attempted and evaluated; they all have advantages and disadvantages.

ACCIDENTS AND PREVENTION

- 118 Safety. -- Advantages of Operating Manuals. V. R. Croswell.
Ind. Eng. Chem. 45, 116A-118A (Nov. 1953).

Positive directions are more likely to be followed than the same directions given as don'ts. That is one argument for the use of operating manuals. Others are: (1) a manual makes years of experience available to the supervisor; (2) it gives the supervisor his know-how; (3) it anticipates unusual emergencies; (4) it serves as a textbook for the new supervisor; (5) it prevents straying; (6) the operator has constantly available written instructions; and (7) safety can be incorporated in the manual as an essential part of operations. Several objections to the use of manuals are answered. (1) "Our operation is so simple that we don't need it." It is not always simple to assistants or new personnel. (2) "It takes too much time." The time spent in preparing a manual will be saved many times over in subsequent operations. (3) "Manuals tend to standardize and block progress." Manuals can and should be changed to allow for improvements, and the time spent in revision is less than that required to correct errors in unstandardized operations.

- 119 Hazards and Protection in the Plastic Industry. Anon. Sentinel (Factory Insurance Assn.). 9, 4, 5 (Nov. 1953).

A fire hazard is always present in operations involving the use of plastics. The hazard varies greatly with the nature of the material, so users should have full information on the flammability of the materials used. The operations involving the greatest fire hazard are: buffing, which releases flammable dust into the air; spray finishing or dipping using a flammable paint; and drying to remove solvent. Each of these processes calls for suitable safety measures, including exhaust systems with collectors outside the building. General fire protection and warning, best in the form of a sprinkler system, are essential. A table presents the relative explosion hazards of about 30 powders used in the plastic industry. Figures are given for ignition temperature of the dust cloud, minimum energy required for ignition, minimum explosive concentration, maximum pressure, and rate of pressure rise.

MISCELLANEOUS

- 120 Air Disinfection. I. W. Schafer. Z. Hyg. Infektionskrankh. 137, 145-151 (1953). German.

By the continuous evaporation of triethylene glycol a concentration of 10-13 gamma per liter of air can be maintained in a room to give adequate sterilization. By atomizing, a concentration of 136 gamma per liter can be obtained. This concentration quickly kills germs without objectionable subjective effects. The test organism was *Serratia Marcescens*.

-- Chem. Absta.

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INDEX

<u>Acridine</u>		<u>Compensation</u>	
pathology	57	policy decision	117
<u>Aerosols</u>		<u>Cosmic radiation</u>	
hygroscopic		biological effect	92
particle size distribution	102	<u>Court testimony</u>	
<u>Air disinfection</u>	120	preparation for	25
<u>Air pollution</u>		<u>Courtroom cues</u>	26
abatement manual		<u>Dermatitis</u>	
gas and vapor	111	of ricefield workers	31
activities	114	<u>Detergent</u>	
health aspects	112	nonionic, toxicity	50
legal aspects	113	<u>Disulfur decafluoride</u>	
meteorology		physiological effects	35
use of averages	115	<u>Dupuytren's contracture</u>	79
<u>Aniline</u>		<u>Dust</u>	
poisoning		aggregation	
nicotinic acid effects	59	by salt aerosol	69
toxicity through skin	58	analysis	
<u>Asbestosis</u>		by x-ray diffraction	104
and pseudo-asbestosis bodies	73	measurements	
<u>Atomic attack</u>		optical	101
radiologist's role	87	sampler	
<u>Bacteriological safety</u>	28	simulating lung deposition	99
<u>Beryllium</u>		<u>Fatigue</u>	
micro-determination	93	measurement and reduction	78
<u>Butadiene</u>		<u>Fear, frustration and futility</u>	30
chemical data sheet	49	<u>Filter</u>	
<u>Cadmium poisoning</u>		automatic self-cleaning	110
group	36	<u>Gas and vapor abatement</u>	111
<u>Carbon disulfide</u>		<u>Germanium</u>	
metabolism	55	pharmacology	40
<u>Carbon tetrachloride</u>		toxicity	39
and nephrosis	52	<u>Glass and ceramics industry</u>	
in drafting room	51	chemical hazards	33
<u>Cardiac disability</u>		<u>Handicapped</u>	
prevention	19	vocational counseling	21
<u>Chlordane</u>		<u>Iced drinks</u>	
absence of toxicity	62	sanitation	29
<u>Chlorinated naphthalenes</u>		<u>Industrial medicine</u>	
toxicity	60	family doctor	16
<u>Chlorine poisoning</u>		<u>Injuries</u>	
aerosol therapy	34	medicolegal aspects	24
<u>Chromate</u>		<u>Insecticide</u>	
hazards in industry	37	poisoning	63
poisoning		toxicity problems	61
animal experiments	38	<u>Lead</u>	
<u>Civilian emergencies</u>		determination in blood	95
mental health implications	83		

03119702

Lead (cont.)

dust

in air, determination
exposure, and porphyrin

poisoning

history

kidney function

serum iron

Malathon, toxicityMedical department

in India

Mercurialism

in felt hat industries

Mercury

decontamination

in laboratory

determination

in air

in urine

Monochloromonobromomethane

poisoning

Nickel, toxicityOperating manuals

advantages

Particle size measurements

sampling technique

Penicillin

occupational allergy

Plastic industry

fire hazards

Pneumoconiosis

from graphite and carborundum

in ship repairs

tungsten-carbide tool industry

Psychotic patients

rehabilitation of

Quartz

determination

by thermal analysis

Radiation

cataract

Dosimeter

hazard

during angiocardiology

in industry

injury

protection, review

therapeutics

workers

sickness and blood condition

Radioactive isotopes

exposure

RadiodermatitisRadon

mixtures in air

Rehabilitation

and disability

of injured, value

of psychotic patients

Research employees

protection against infection

Respiratory diseases

and somatic type

Retired persons

employment

Roentgenography

stereoscopic

Schradan, toxicitySilica

amorphous

effect of particle size

Silicon

organic compounds

toxicity

Silicosis

and asthma

in mica mining

Solid particulates

sampling, absolute method

Social environment

and psychiatric disorders

Solvents

safe use

thinners, and additives

Thioglycerin

eczema of hairdressers

Trichloroethylene

poisoning

Uranium poisoning

animal experiments

Vanadium

toxicity

Ventilation

for gasoline engines

network problems

calculator for

Vibrating tools

effects

Wet collectors

performance