

PLAINTIFF'S EXHIBIT

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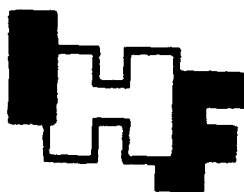
June, 1974
Volume 24, No. 6

INDUSTRIAL HYGIENE DIGEST

ST0095193

LITERATURE
ABSTRACTS

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ENVIRONMENTAL
AND
OCCUPATIONAL
HEALTH AND
SAFETY NEWS



INDUSTRIAL HEALTH FOUNDATION, INC.
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13. General Industry Not Applicable to Agriculture, Committee Says.

Agriculture industry compliance with the noise standard as it will be proposed by the Occupational Safety and Health Administration would not be in the best interests of agricultural employees, according to the OSHA Noise Standards Advisory Committee. The committee made the recommendations May 1 in Washington, D.C., in response to questions from Alexander J. Reis, OSHA associate assistant secretary for noise, who sought its views on the standard's applicability to agriculture. The committee also said it is attempting to develop a "meaningful" hearing conservation program especially tailored to noise exposures of agricultural workers as an alternative to the audiometric testing and medical surveillance requirements outlined in the proposed general industry standard. Testing and monitoring would be neither economically feasible nor practical considering the seasonal employment situations and the large labor turnover patterns of the industry, the committee said. A lack of noise exposure information in the agricultural area identifying sources of exposure and other problem areas was noted also by the group. This lack of data, according to the committee, makes it impossible to make a judgment on whether any application of standards is justified in agriculture.

--Occ. Safety & Health Reporter 3: 1545, May 9, 1974

14. OSHA and NIOSH to Accelerate Standards Development.

At a March 18 meeting of the National Advisory Committee for Occupational Safety and Health, Assistant Secretary of Labor John Stender announced a 30-month, \$3.5 million program in cooperation with NIOSH to develop and issue standards governing approximately 400 toxic substances. At present, standards for the 400 substances exist, but provide only threshold limit values for employee exposure. The first phase of this program will be a pilot project consisting of the development of an initial package of 40 standards. Stender has established an increased emphasis on occupational health as a high OSHA priority. He has said that he will substantially increase the number of health standards personnel and compliance officers to fulfill this goal. The complete standards will prescribe informing employees of hazardous substances, emergency treatment in the event of accidental exposure, and proper conditions and precautions for safe use of the substances. The standards will also prescribe protective clothing or equipment, monitoring or measuring exposure conditions, recordkeeping requirements, and the type and frequency of medical surveillance for employees.

--National Safety News 109: 47, May 1974

15. EPA De-Certifies Duluth Drinking Water Because of Health Hazard.

EPA has notified Duluth, Minn., that its drinking water can no longer be certified for use on interstate carriers because of unresolved questions about its potential as a health hazard. "We cannot continue certification of the unfiltered Duluth drinking water supply as safe for use," EPA Regional Administrator Francis T. Mayo notified the Duluth City Council. His action came in the aftermath of the fast-breaking legal action which saw Judge Miles W. Lord shut down Reserve Mining's plant in Silver Bay, 80 miles north of Duluth, because of possible health hazards resulting from dumping of taconite wastes into Lake Superior. The order was immediately stayed by a three-judge Federal appeals panel pending a hearing May 15. In handing down his decision, Judge Lord said he was conscious of the economic impact of the plant shutdown but declared that health considerations must take priority. The company discharge "large amounts of minute amphibole fibers" into the lake, he said. Prolonged exposure to these fibrous particles, he added, "can produce asbestosis, mesothelioma and cancer of the lung, gastrointestinal tract and larynx."

--Environmental Health Letter 13: 4, May 1, 1974

680/74 OSHA Machine Guarding Standards are Often Cited in Wholesale Trades.

Violations of machine guarding standards were found to be most often cited by the Occupational Safety and Health Administration in inspections of the wholesale and retail trades, according to the Department of Labor. With 10 injuries per 100 man-years worked during 1972, wholesaling was slightly more dangerous than retailing, the report said. The figures reflect the fact that many retail outlets involve some manufacturing activities on a smaller scale. The highest injury rate was found in building materials and tool equipment. Between July 1972, and June 1973, OSHA compliance officers conducted more than 2,500 inspections of wholesale and retail operations. The machinery citations resulted from exposed fan blades and lack of protection from hazards at the point of operation of a machine or from rotating parts, flying chips and sparks, and inward moving nip points, the report said.

--Occ. Safety & Health Reporter 3: 1523, May 2, 1974

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4731. HARKE, H.-P. (Forschungsinst. Cigarettenind. e. V., Gabel-
bergstr. 39, D-2000 Hamburg 54, West Ger.). A. BAARS, B. FRAHM,
G. H. PETERS and C. SCHULTZ. Zum Problem des Passivrauchens:
Abhängigkeit der Konzentration von Rauchinhaltsstoffen in der Luft
verschieden grosser Räume von der Zahl der verrauchten Zigaretten
im Luftraum. [The problem of passive smoking: Concentration of smoke
contaminants in the air of large and small rooms as a function of num-
ber of cigarettes smoked and time.] INT ARCH ARBEITSWED 1974;
12: 1-10. 12 refs. [Abstr. summ.] --An unventilated room of volume
100 m³ was filled with smoke by machine smoking 30, 15, 10 or 5 ciga-
rettes per hour. Concentrations of nicotine, benzene, aldehyde
and carbon monoxide and CO₂ in the air of the room were mea-

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- ...inhibitory... chronic inhalation toxicity of bertrandite and beryl with production of pulmonary tumor by beryl...
 ...Wagner, W. O., Grieb, D. H., Hesse, J. J., M...
 ...Stokinger, H. J. *Toxicol. Pharm.*, 15, 106-110, 1968.
 ...[Animal Experiments: Hamster, Rat, Mouse, Adenocarcinoma, Papilloma, Adenoma, Beryllium, Carcinoma, Endometrium, Lung, Kidney, Liver, Lung, Arteries]
 ...ed forms of **Clinical and psychopathological changes following lead poisoning.** (German)
 ...Poppe, W., Krauspe, M. *Psychiat. Neurol. med. Psychiat.* 21, 124-30, Apr. 69.
 ...[Human, Cognition Disorders, Delusions, EDTA Therapeutic Use, Illusions, Lead Cerebrospinal Fluid, Lead Poisoning, Lymphocytes Analysis, Memory Disorders, Psychopathology, English Abstract]
 ...radiological **Disorders of liver function in occupational chronic lead and mercury vapor poisoning.** (German)
 ...Kosmider, S., Potocka, Z. *Zbl. Arbeitsmed.*, 17, 170-4, Jun. 67.
 ...[Human, Blood Protein Electrophoresis, Lead Poisoning Complications, Liver Diseases Etiology, Mercury Poisoning]
 ...development of **Experimental asbestos carcinogenesis.** (English)
 ...Roe, F. J. *Food Cosmet Toxicol.*, 6, 566-8, Dec. 68.
 ...[Animal Experiments, Mice, Asbestosis, Mesothelioma, Neoplasms Experimental, Sarcoma Experimental]
 ...human body **Asbestos as a carcinogenic hazard.** (English)
 ...Roe, F. J. *Food Cosmet Toxicol.*, 6, 565-6, Dec. 68.
 ...[Human, Asbestosis Mortality, Environmental Exposure, Lung Neoplasms, Male]
 ...Incidence of progressive polyarthritides in pneumoconiosis of miners of the Ostrava-Karvinna Basin. (Czech)
 ...Rosmanith, J., Sitaj, S., Duda, V., Kandus, J., Stepáček, V. *Fysiat. Ústn.*, 47, 186-94, 1969.
 ...[Human, Arthritis Rheumatoid Occurrence, Coal Mining, Czechoslovakia, Latex Fixation Tests, Pneumoconiosis Occurrence, Rheumatoid Factor Blood, English Abstract]

1073/74 NIOSH Ammonia Criteria Document Recommends 50 PPM Exposure Limit.

Occupational exposure to ammonia should be limited to a ceiling concentration of 50 parts per million as determined by a five-minute sampling period, according to recommendations of the National Institute for Occupational Safety and Health submitted to the Occupational Safety and Health Administration. The NIOSH criteria document defined ammonia as gaseous or liquified anhydrous ammonia and aqueous solution such as aqua ammonia and ammonium hydroxide. "Strong aqua ammonia" was defined as aqueous solutions containing more than 10 percent ammonia. "Weak aqua ammonia" was defined as solutions of 10 percent or less. Preplacement medical examinations would be required for all workers whose employment may involve potential exposure to ammonia concentrations in excess of 50ppm.

--Occupational Safety & Health Reporter 4: 222-223, August 1, 1974

1074/74 Asbestos Exposure in Surface Coal Mines and Surface Work Areas of Underground Mines, Finding of Fact.

On the basis of the evidence presented at the hearing June 5, 1974 and on other information available to the Department, the Director of the National Institute for Occupational Safety and Health, pursuant to authority delegated from the Secretary and the Assistant Secretary for Health (35 FR 11150), finds that: 1. There is a causal relationship between occupational exposure to airborne asbestos fibers and the development of disease. 2. Asbestos is infrequently used in surface coal mining operations and rarely, if ever, used in surface operations of underground coal mines. 3. There is medical evidence which indicates that even infrequent exposure to airborne asbestos can cause disease. 4. When asbestos is used in coal mining operations, technology exists for maintaining the 8-hour average airborne concentration of asbestos dust to which miners are exposed at or below two fibers (greater than 5 microns in length) per cubic centimeter of air but not to exceed 10 fibers per cubic centimeter more than one hour of each 8-hour day. 5. A standard requiring coal mines operators to maintain the 8-hour average airborne concentration of asbestos dust to which miners are exposed at or below two fibers (greater than 5 microns in length) per cubic centimeter of air but not to exceed 10 fibers per cubic centimeter more than one hour of each 8-hour day, is necessary for the protection of life and the prevention of occupational diseases of miners.

--Federal Register 39: 28176, August 5, 1974

1075/74 Asbestos Industry Urges Exposure Ceiling of 10 Fibers Over 10-Minute Period.

The Asbestos Information Association/North America has suggested revision of the asbestos standard to include a limit of 10 fibers, longer than 5 micrometers per cubic centimeter of air as determined over a 10-minute period, as well as work practices for the asbestos industry. In a letter to Daniel P. Boyd, Director of OSHA's Office of Standards Development, dated July 15, Robert H. Mereness, executive director of the Association, wrote: "We can report that there is an industry-wide appreciation of the health problems associated with asbestos dust in the workplace, requiring realistic understanding and remedial action where necessary." The recommendations were prepared by the Association's Standards and Technical Committee composed of environmental control engineers, industrial hygienists and safety and health directors, to assist OSHA in its review and possible revision of the standard by early next year. On the question of ceiling concentrations, the Association's recommendation is as follows: "No employee shall be exposed to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined over a 10-minute period by the method prescribed..." Its recommendation would delete the requirement of exposure "at any time" and insert "over a 10-minute period." The Association said that its reasoning was that limitations of the monitoring procedure make it impossible to determine instantaneous peak exposures. A 10-minute sampling period is a practical minimum, it said. In addition, it recommended that monitoring not be required in those situations where significant quantities of airborne asbestos fiber are not released. That, in the view of the Association, would include usage of products where asbestos fibers "have been modified by a bonding agent, coating, binder or other material so that during any reasonable foreseeable use, handling, storage, disposal, processing or transportation, no airborne concentrations of asbestos fiber in excess of the exposure limits prescribed in paragraph (b) of this section will be released." Work practices offered by the Association for OSHA's review include: unloading and storing bagged asbestos fiber; introduction of asbestos fiber into manufacturing processes; asbestos dust and scrap removal and disposal, and housekeeping in the asbestos industry.

--Occupational Health & Safety Letter 4: 6, August 8, 1974

1076/74 OSHA Announces Intent to Prepare Impact Statement on Carbon Monoxide.

The Occupational Safety and Health Administration announced its intention to prepare an environmental impact statement on a proposed standard for occupational exposure to carbon monoxide on August 13. The statement required by the National Environmental Policy Act, will assess the possible environmental impact of the proposed standard. Subject areas to be considered include environmental effects which cannot be avoided should the standard be adopted, alternatives to the standard, the relationship between short-term uses of the environment and the enhancement of long-term productivity, and any irreversible commitments of resources involved if the standard were issued.

--Occupational Safety & Health Reporter 4: 204, August 15, 1974

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- 1438/74 The Biological Effects of Asbestos. S.F. McCullagh. Med. J. Australia 2: 45-49, July 13, 1974. 51 refs.

Recent developments are reviewed. The terms pulmonary asbestosis and pleural asbestosis should be introduced to avoid confusion between the two. Pulmonary compliance is the single most valuable test of lung function in the detection of pulmonary asbestosis, and a method has been described recently which may make this measurement practicable in the routine surveillance of an asbestos exposed workforce. Pleural asbestosis may mimic restrictive lung disease but only if the pleural changes are very extensive. There is little evidence linking these essentially benign changes with mesothelioma. It is now thought that the carcinogenicity of asbestos and of other fibres is a function of their physical rather than of their chemical structure. Lung cancer in an asbestos worker can be attributed to asbestos exposure only if there is also evidence, albeit perhaps only histological, of pulmonary asbestosis. Accumulating evidence continues to emphasize the importance of cigarette smoking in the lung cancer of asbestos workers. Current standards of workplace hygiene are reviewed and conflicting opinions about methods of medical surveillance compared. In the general urban atmosphere, the amount of asbestos is between one hundred thousandth and one millionth of that held to be safe in the workplace. Motor-car brake linings release little, if any, asbestos in their normal road use. The amount of asbestos in water and beverages is likewise negligible.

--Author's abst.

- 1439/74 Biological Effects of Asbestos. Anon. Lancet 2: 706, September 21, 1974. 1 ref.

Information is usefully summarised in the proceedings of a conference held at the International Agency for Research on Cancer. It is interesting to compare the results of epidemiological studies of human populations exposed to asbestos with the pathology of diseases produced by asbestos in animals. Asbestosis and bronchial carcinoma seem to be produced by all fibre types widely used but with clear exposure-response relationships. In contrast, the production of mesothelial tumours in man seems to be closely linked with exposure to crocidolite. When various types of asbestos are injected into the pleural cavity of laboratory animals, all induce mesotheliomas. The apparent discrepancy between the experimental and epidemiological findings can be explained by assuming that small crocidolite fibres, when inhaled, penetrate more readily to the pleural cavity. The dimensions of the crocidolite fibre indicate that it is the most respirable type, and its chemical stability ensures its persistence in lung tissue. The fact that all fibre types so far tested induce mesotheliomas directs attention to the physical properties of the fibres rather than to their chemical composition. This view is reinforced by the finding that fibres composed of glass or aluminium oxide, having the approximate dimensions of small asbestos fibres, are also able to induce mesotheliomas. It is therefore unlikely that trace metal, hydrocarbon, or other contaminants are concerned in the induction of mesotheliomas. However, in the induction of bronchial carcinomas smoking and exposure to all asbestos types probably confer a greater than additive risk. Moreover, chemical carcinogens and asbestos fibres have synergistic effects in the induction of bronchial carcinomas in laboratory animals. These findings have obvious implications for asbestos workers.

--Cond. from text

- 1440/74 Rheumatic Complaints and Pulmonary Response to Chrysotile Dust Inhalation in the Miner and Mills of Quebec. F.M.M. White, et al. Canadian Med. Assn. J. 111: 533-535, September 21, 1974. 17 refs.

In 1967-68 an age-stratified random sample of 1088 current workers in Quebec asbestos mines and mills was surveyed. Questions concerning rheumatic complaints were included in a modified MRC questionnaire used at that time, and on this basis a rheumatic severity gradient was devised. No relationship could be detected between rheumatic complaints and pulmonary radiologic response to chrysotile dust exposure, despite implications in the literature that such a relationship might exist.

--Author's Summary

- 1441/74 Asbestos in Industry. E.E. Gasson. Occ. Health 26: 298-306, August 1974. 9 refs.

The properties, uses, and biological effects of asbestos are reviewed.

--J.F.B.

- 1442/74 Asbestos in Industry - 2. E.E. Gasson. Occ. Health 26: 352-362, September 1974. 1 ref.

The methods of worker protection are outlined briefly. These include engineering controls, personal protection, monitoring, and medical supervision. The special role of the occupational health nurse is discussed. Research programs are currently being conducted by the Asbestosis Research Council in Britain, the U.S. Public Health Service, and the Institute of Occupational and Environmental Health in Quebec, Canada.

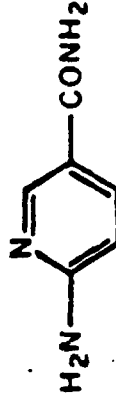
--J.F.B.

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transfer complexes with low-lying excited states. The signals of the azo compds. in complexes with the acceptor were due to a partial transfer of π -electrons to the acceptor mol. and to the presence of addnl. paramagnetic centers. K-28126

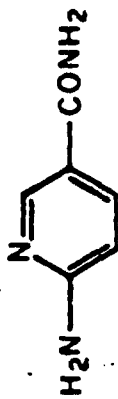
131314a Placental transfer of asbestos. Cunningham, H. M.; Pontefract, R. D. (Health Prot. Branch, Dep. Health Welfare, Ottawa, Ont.). *Nature (London)* 1974, 249(5453), 177-8 (Eng). Asbestos, administered to pregnant rats as a chrysotile [12001-29-5] prepn. contg. $\sim 10 \times 10$ fibers/ μ g, probably crosses the placenta. After i.v. injection of asbestos, e.g. five 2 mg doses at 2-day intervals before caesarean section on the day before parturition, high levels of asbestos were found in fetal lung and liver compared to controls.

131315b Acute gliopathy in spinal cord and brain stem induced by 6-aminonicotinamide. Schneider, H.; Cervos-Navarro, J. (Klin. Steglitz, Freie. Univ. Berlin, Berlin, Ger.). *Acta Neuropathol.* 1974, 27(1), 11-23 (Eng). 6-Aminonicotinamide



(1) [329-89-5] (5-10 mg/kg, i.p.) produced selective damage of neuroglial cells in the gray matter of the spinal cord and lower brain stem of the rat. Oligodendrocytes and astrocytes showed progredient vacuolization and destruction of the rough endoplasmic reticulum, dilatation of the perinuclear cistern, and necrosis within 36 hr after 1 administration. The disintegration of the astroglial processes initiated the incomplete necrosis of the central interior horn of the spinal cord. Since the neurons are

induced by 6-aminocaproic acid. *Neuropathol.* 1974, 27(1), 11-23 (Eng). 6-Aminonicotinamide
J. (Klin. Steglitz, Freie. Univ. Berlin, Berlin, Ger.). *Acta*



(I) [329-89-5] (5-10 mg/kg, i.p.) produced selective damage of neuroglial cells in the gray matter of the spinal cord and lower brain stem of the rat. Oligodendrocytes and astrocytes showed progredient vacuolization and destruction of the rough endoplasmic reticulum, dilatation of the perinuclear cistern, and necrosis within 36 hr after I administration. The disintegration of the astroglial processes initiated the incomplete necrosis of the central interior horn of the spinal cord. Since the neurons are less involved in the affected areas, the biosynthesis of abnormal I analogs apparently occurs mainly in neuroglial cells. The relation between structural lesions and metabolic disturbances, and the pathogenesis of status spongiosus and focal necrosis are discussed in this model of exptl. myelopathy. *Kh-63283*

131316c Effectiveness of organophosphorus complexons during intratracheal poisoning with beryllium chloride. Zaigol'nikov, S. D.; Kuznetsov, A. V.; Matveev, O. G.; Suntsov, G. D. (USSR). *Farmakol. Toksikol. (Moscow)* 1974, 37(2), 239-42 (Russ). When administered intratracheally to rats or mice, beryllium chloride [7787-47-5] caused acute emphysema. Diethylenetriaminepentamethylphosphonic acid calcium sodium salt [52871-36-0], injected i.p. at 100-500 mg/kg, significantly increased the survival of the BeCl₂-treated animals. The prepn. increased the elimination of beryllium ions from the organism.

replacement for sodium triphosphate in household detergents; or a combination of I with sodium nitrite [7632-00-0] (1 g/l.) in the drinking water for 26 weeks, if the sexes were compared separately with neg. controls. In fact, a significant decrease in tumor incidence was obsd. in mice given *N*-nitrosoiminodiacetic acid [25081-31-6] (2 g/l.), the product of the reaction of I with nitrous acid. The tumor incidence was ~10-fold higher in pos. controls given *N*-nitrosopiperidine [100-75-4] (0.1 g/l.) than in neg. controls. Nonneoplastic lesions were equally distributed in all exptl. groups. **K28/26**

59062x Asbestos carcinogenicity. Shabad, L. M.; Pylev, L. N.; Krivosheeva, L. V.; Kulagina, T. F.; Nemenko, B. A. (Inst. Exp. Clin. Oncol., Moscow, USSR). *J. Nat. Cancer Inst.* 1974, 52(4), 1175-87 (Eng). Intratracheal injection (2 mg, 3 times monthly) or inhalation (230 mg/m³, 2 hr 5 times/week) of *chrysotile* [12001-29-5] asbestos dust produced in the USSR induced pulmonary carcinomas, sarcomas, and precancerous lesions in rats. The no. of such lesions increased if benzopyrene [50-32-8] was adsorbed on the chrysotile (0.024 mg/mg dust) or injected intratracheally (1-2 mg) once during chrysotile treatment. Simultaneous inhalation of cigaret smoke (1.5 cigaret/rat/month) also increased the no. of lesions induced by chrysotile. Intrapleural injection (20 mg, 3 times monthly) of chrysotile dust induced several types of metastasizing mesotheliomas and premesotheliomatous lesions. All chrysotile samples contained traces of benzopyrene and could easily adsorb it from benzene solns. at room temp.

59063y Hormone-dependent stem-cell rat leukemia evoked by a series of feedings of 7,12-dimethylbenz[a]anthracene. Huggins, Charles B.; Yoshida, Hiroki; Bird, Colin C. (Ben May Lab. Cancer Res., Univ. Chicago, Chicago, Ill.). *J. Nat. Cancer*

to estimate the threshold limit for myocardial damage. Degenerative changes such as contraction bands, myofibrillar disintegration, myelin body formation, and dehiscence of the intercalated disks were seen in rabbits exposed for more than 4 h to CO concentrations higher than 100 ppm. This high sensitivity of myocardium to CO exposure is explained by the binding of CO to Hb and especially to myoglobin in connection with the prevailing low oxygen tension in normal myocardium. This study, as well as recent reports on the effect of low-level CO exposure in patients with ischemic heart disease, suggest that the CO content in tobacco smoke and in heavily polluted atmospheric air may be deleterious to such patients. A reevaluation of the recommended threshold limit for industrial CO exposure is proposed.

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52308. GROSS, PAUL. (Dep. Pathol., Med. Univ. S. C., 80 Barre St., Charleston, S. C. 29401, USA.) Is short-fibered asbestos dust a biological hazard? ARCH ENVIRON HEALTH 29(2): 115-117. 1974. [In Engl. with Engl. summ.]--Contrary to the determination that the finer the quartz dust, the greater its pathogenicity, the pathogenicity of the finest asbestos dust was shown to be negligible. Research laboratories in Germany, England, South Africa and the USA have found that short-fibered asbestos dust, i.e., less than 5 μ in length, is incapable of causing fibrosis or cancer. This finding, in conjunction with the failure of different laboratories in the United Kingdom and in the USA to discern abnormalities following prolonged asbestos feeding to rats, should lead to the abandonment of the present concept that maintains that mesotheliomas and gastrointestinal cancers arise from the ingestion of asbestos dust cleared from the lungs. These negative results should also allay the alarm that has been raised as a result of the finding of ultramicroscopic mineral fibers in certain beverages and drinking water.

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52313. MILHAM, SAMUEL Jr. and TERRENCE STRONG. (Wash. State Dep. Soc. and Health Serv., Olympia, Wash. 98504, USA.) Human arsenic exposure in relation to a copper smelter. ENVIRON RES 7(2): 176-182. Illus. 1974. [In Engl. with Engl. summ.]--Children living near a copper smelter in Tacoma, Washington, USA, had increased levels of As in hair and urine. The urinary As level decreased with distance of residence from the smelter stack. House vacuum-cleaner dust showed a similar distance relationship. Urine As levels in children varied synchronously over a 5-wk period, indicating that inhalation was the most likely exposure route. In children

CONJUGAL ASBESTOS NEOPLASTIC RISK

by H. Anderson, M.D., I.J. Selikoff, M.D., R. Lilis, M.D.,
S. Daum, M.D., A. Fischbein, M.D. and J. Churg, M.D. Mount
Sinai School of Medicine, New York

As more industrial substances are found to have neoplastic potential, the risk of associated conjugal tumors should be evaluated. Numerous mesotheliomas among family members of asbestos workers have been reported. However, in the absence of well-defined population bases the actual incidence and extent of risk remains unknown. All the household contacts of 1,446 asbestos workers employed in a factory which produced amosite asbestos products from 1941 to 1954 are currently being traced and examined. Four cases of pleural mesothelioma have so far been discovered. Morbidity experience will be investigated for the cohort. Of the first 210 household members studied, 81 (38.6%) had radiologic evidence of asbestos exposure (pleural, parenchymal). The possible relationship of these changes to tumor induction in the future is presently unknown.

This study demonstrated that for one household substance, amosite asbestos, significant household contamination can and does commonly occur, and may result in characteristic radiological changes as well as in neoplastic disease.

MORBIDITY AND MORTALITY AMONG HARD ROCK MINERS EXPOSED AN ASBESTIFORM MINERAL by J. Dean Gillam, M.A., Salt Lake City, Utah, Richard A. Lemen, M.S., Cincinnati, Ohio, V. E. Archer, M.D., Salt Lake City, Joseph K. Wagoner, S.D. Cincinnati, John Dement, M.S., Cincinnati, Ohio, Natl. Inst. for Occup. Safety and Health.

A mortality study and review of chest X-rays of a group of 439 underground metal miners with exposure to an asbestiform mineral found an elevated risk of both malignant and non-malignant respiratory disease, and job related accidents. Environmental data taken in 1960 showed 39% free silica in the airborne dust, while 1974 samples showed 23%. Even the 1960 settled dust samples in areas surrounding the mine showed a .5% arsenic content, current samples showed only .00% concentration in underground airborne dust, and .015% in settled dust. Counts of fibers greater than 5 microns in length averaged 0.24 fibers per milliliter. Seventy deaths were observed over 5613 person years. Ten deaths were attributed to malignant respiratory disease where 3.3 were expected. Non-malignant diseases of the respiratory system accounted for five deaths where 1.4 were expected. Eight job related accidents were observed. The excess malignant neoplasms of the respiratory system may be caused by either arsenic and/or asbestos fiber exposure, while both silica and asbestos f

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Tyler Asbestos Workers Project-S. Donald Greenberg, M. D. The Program was begun July 1974 in Tyler, Texas (Texas Chest Hospital) to investigate a cohort of 890 former asbestos workers. Approximately 90% of these men are cigarette smokers. Unique to the program are the sputum cytopathology studies (both aerosol induced and spontaneous early morning sputa specimens, each worker having sputum cytopathology every 6 mos. This report is based on initial study of 500 sputa specimens from 226 workers. 107 (47%) had no atypias, 107 (57%) had mild atypias, 9 (5%) had severe atypias and 1 (0.4%) had cells of a squamous carcinoma. 75 (32%) demonstrated ferruginous bodies (FB) in their sputa. Only 2 (0.8%) had unsatisfactory specimens (saliva). The number of FB/specimen (4 Papanicolaou stained smears) were counted and reported as "few" (1-14), "moderate" (15-30), and "many" (30+). Of 75 w/FB, 43 (57%) had FB in aerosol specimens, 15 (20%) showed FB in spontaneous produced specimens, and 17 (23%) had FB present in both. The yield of FB in the aerosol induced specimens was almost twice that of the spontaneous specimens. The 19 specimens revealing severe atypias were equally distributed between aerosol induced and spontaneous sputa specimens. In the one patient whose sputa revealed squamous carcinoma cells, the chest roentgenogram showed no localizing lesions; however, fiberoptic bronchoscopy disclosed an ulcerative squamous carcinoma of the bronchus intermedius, proven by washing, brushing & biopsy. It is concluded that sputum cytopathology is an excellent, simple, noninvasive, painless and inexpensive means of early detection of malignant and premalignant lesions of the lung, and that no special techniques are necessary for the detection of FB.

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ASBESTOS, SMOKING AND LARYNGEAL CARCINOMA.

By Robert W. Morgan, M.D., Department of Preventive Medicine University of Toronto, and P. T. Shettigara, M.R.C.V.S., University of Toronto.

This study was designed to examine a previously reported relationship between asbestos exposure and laryngeal cancer. A retrospective case control study of 43 pairs of laryngeal cancer patients and their matched controls examined a number of variables, including smoking, asbestos exposure, and other occupational factors. Cases and controls were matched for age, sex and place of residence. The data indicate a highly significant association between asbestos exposure and laryngeal cancer. Cigarette smoking was also associated with the disease, although the strength of association was not as high as that for asbestos. Exposure to uranium, chromium, nickel, cobalt, arsenic, x-ray, and alcohol did not appear related to later development of carcinoma of the larynx. We therefore conclude that asbestos exposure and cigarette smoking are potent etiologic

M, was the most potent inhibitor of C2 and C4 biosynthesis. Propriolactone and 2 nitrosocompounds also inhibited C2 and C4 synthesis, whereas their noncarcinogenic analogues had no effect. Some carcinogens may interfere with at least 1 normal function of the immune system.

K-28126

1155. ROSEN, PETER, ANGELA SAVINO and MYRON MELAMED. (Dep. Pathol., Mem. Hosp. Cancer and Allied Dis., New York, N. Y. 10021, USA.) Ferruginous (asbestos) bodies and primary carcinoma of the colon. AM J CLIN PATHOL 61(1): 135-138. Illus. 1974. [In Engl. with Engl. summ.]--There is considerable evidence that asbestos may contribute to the development of mesothelioma and pulmonary carcinoma. It was also suggested that asbestos could participate in the genesis of colonic carcinoma. An attempt was made to isolate ferruginous (asbestos) bodies from 21 specimens of bowel. The majority were from patients with primary carcinoma of the colon. No true ferruginous (asbestos) bodies were recovered. The significance of these results is discussed.

1156. SELKIRK, JAMES K., ROBERT G. CROY and HARRY V. GELBOIN. (Mol. Carcinog. Sect., Chem. Branch, Natl. Cancer Inst., Bethesda, Md. 20014, USA.) Benzo[a]pyrene metabolites: Efficient and rapid separation by high-pressure liquid chromatography. SCIENCE (WASH D C) 184(4133): 169-171. Illus. 1974. [In Engl. with Engl. summ.]--High pressure liquid chromatography can separate 8 metabolites of the carcinogen benzo[a]pyrene formed by rat liver microsomes. This method offers major advantages over previous techniques used for the separation of oxygenated polycyclic aromatic hydrocarbons.

1157. SHIMIZU, HIDESUKE, DONALD NAGEL and BELA TOTH. (Eppley Inst. Res. Cancer, Univ. Nebr. Med. Cent., Omaha, Nebr. 68105, USA.) Ethylhydrazine hydrochloride as a tumor inducer in mice INT J CANCER 13(4): 500-505. 1974. [In Engl. with Engl. and Fr. summ.]--The lifetime administration of 0.0125% ethylhydrazine hydrochloride in drinking water to randomly bred Swiss mice, beginning at 7 wk of age, induced tumors of the lungs and blood vessels. Eighty-eight percent of the treated females and 62% of the treated males developed lung tumors, whereas among the controls, the incidence was 21% in the females and 23% in the males. The incidence of blood ves-

ST0095205

200/75 Voluntary Noise Compliance Pact Signed, Apparently With Union Blessing.

OSHA has signed another voluntary noise compliance agreement, this one with the National Concrete Masonry Association--but apparently with none of the restrictions which previously drew disavowals from the AFL-CIO's counsel. At least, three major unions will have a role in monitoring compliance with the agreement, according to the Labor Department. They are the International Union of Operating Engineers, Laborers International Union, and the Operative Plasterers and Cement Masons International Association. Most of the 800 concrete block manufacturers covered by the agreement are small businessmen. The manufacture of concrete blocks is an inherently noisy process, with noise levels generally exceeding the allowable limit of 90 dBA. Under the voluntary agreement, the association will undertake studies aimed at reducing employee exposure to noise at concrete block plants by December 1, 1976. The association has engaged the services of Kodaras Acoustical Laboratories, Elmhurst, N.Y., to develop feasible engineering and administrative controls for noise reduction that each company covered by the agreement will adopt, where applicable, as they become known. The companies also agree to initiate immediately any engineering or administrative controls now feasible, or found to be feasible during the term of the agreement, and complete them within a reasonable time.

--Occupational Health & Safety Letter 8: 2-3, January 22, 1975

270/75

1910.93r Inorganic Arsenic.

K-3154

Permissible exposure limit: No employee may be exposed to airborne concentrations of inorganic arsenic greater than 0.004 mg As/cu m as determined on an eight-hour, time-weighted average basis; or a ceiling limit greater than .01 mg As/cu m averaged over any 15 minute period during the working day. No employee may be exposed to any skin contact with liquid arsenic trichloride, or to repeated skin contact with liquid or solid inorganic arsenic likely to cause skin irritation. Determination and monitoring of exposure: Each employer who has a place of employment in which inorganic arsenic is produced, reacted, synthesized, released, packaged, repackaged, stored, handled or used shall inspect each work place and work operation to accurately determine if any employee may be exposed, without regard to the use of respirators, to inorganic arsenic above the action level. Where a determination shows the possibility of any employee exposure in excess of the action level, without regard to the use of respirators, the employer shall immediately make measurements to accurately determine the actual exposure for each such employee. Such measurements shall be repeated at least monthly for any employee who is exposed, without regard to the use of respirators, in excess of the permissible exposure limit. Such measurements shall be repeated at least bimonthly for any employee who is exposed, without regard to the use of respirators, in excess of the action level. Such measurements may be discontinued for any employee only when at least two consecutive measurements, made not less than five working days apart, show exposures for the employee are at or below the action level. Methods of compliance: Employee exposures to inorganic arsenic shall be controlled to or below the permissible exposure limit by engineering controls, work practices, and personal protection controls as follows: (1) Engineering controls shall be instituted immediately to reduce exposures to or below the permissible exposure limit, except to the extent that such controls are not feasible. (2) Wherever feasible engineering controls which can be instituted immediately are not sufficient to reduce exposures to the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by work practice controls and by respiratory protection. A program shall be established and implemented to reduce exposures to or below the permissible exposure limit, or to the greatest extent feasible, solely by means of engineering controls, as soon as practicable. (3) Written plans for such a program shall be developed and furnished upon request for examination and copying to the Assistant Secretary and the Director. Such plans shall be reviewed and revised as necessary, at least every six months, to reflect the current status of such a program.

--Federal Register 40: 3391-3404, January 21, 1975

271/75

Asbestos in Water.

Asbestos in water can be determined by a modified electron microscope technique developed at Dow Chemical. Dr. Robert J. Moalenar told a Chlorine Institute meeting in New Orleans that a transmission electron microscope equipped with selected area electron diffraction and an energy dispersive spectrometer can identify, count, and measure the size of asbestos fibers in diaphragm-cell chlor-alkali process streams. Dow finds 1 ppb asbestos levels in its chlor-alkali effluent. --Chemical & Engineering News 53: 16, February 10, 1975

272/75

Textile Workers File Petition for Revision of Cotton Dust Rule.

A petition seeking revision of the occupational health standard for cotton dust was filed with the Department of Labor by the Textile Workers Union of America, AFL-CIO. Sol Stetin, TWUA general president, scored the Ford Administration for its "inordinate delay" in developing an appropriate cotton dust standard. In a letter to Assistant Secretary of Labor John H. Stender, Stetin warned that "immediate action" was needed to prevent

ST0095206

K-28126

416/75

Reserve Mining Discharges Ruled Illegal but Court Says Health Risk not Imminent.

K-28126

In a long-awaited decision, a federal appeals court here ruled that discharges into the air and water by Reserve Mining Co.'s iron-ore processing plant in Silver Bay, Minn., "give rise to a potential threat to the public health." In addition, the Eighth Circuit Court of Appeals ruled that the discharges violate federal and state laws and state pollution-control regulations. Even so, in a carefully worded, detailed, 167-page opinion, the court said the danger to health wasn't imminent and thus Reserve didn't have to terminate its operations at once. The case has drawn nationwide attention because it pits economic factors (Reserve Mining is a major employer in the Silver Bay area) against environmental and health concerns. The court itself appeared mindful of this, and said it was attempting to "strike a proper balance between the benefits conferred and the hazards created by Reserve's facility." The court, among other things, decided that air emissions present "a hazard of greater significance" than water discharges. Thus, it ruled that "Reserve must take reasonable immediate steps to reduce its air emissions." Summing up the health issues, the court concluded, "it cannot be forecast that the rates of cancer will increase from drinking Lake Superior water or breathing Silver Bay air. The best that can be said is that the existence of this asbestos contaminant in air and water gives rise to a reasonable medical concern for the public health. The public's exposure to asbestos fibers in air and water creates some health risk. Such a contaminant should be removed." The court said that during the appeal proceedings, Reserve said it would spend \$243 million for plant alterations and construction to halt air and water pollution. The court observed: "Some pollution and ensuing environmental damage are, unfortunately, an inevitable concomitant of a heavily industrialized economy. In the absence of proof of a reasonable risk of imminent or actual harm, a legal standard requiring immediate cessation of industrial operations will cause unnecessary economic loss, including unemployment, and in a case such as this, jeopardize a continuing domestic source of critical metals without conferring adequate countervailing benefits." In a footnote, the court mentions that Reserve employs about 3,000 workers "and is central to the economic livelihood of Silver Bay and surrounding communities." Thus, the court said, the district court "abused its discretion by immediately closing this major industrial plant." --Wall Street Journal 185: 14, March 17, 1975

ST0095207

416/75

Second Circuit Denies Motion for Stay of Vinyl Chloride Rule in All Respects.

A motion to stay the ruling of the U.S. Court of Appeals for the Second Circuit upholding the permanent standard for vinyl chloride pending application for review by the Supreme Court was denied by the Appeals Court in all respects on February 25. The motion, filed by the Society of the Plastics Industry, Inc., Firestone Tire & Rubber Company, and Union Carbide Corporation, included also a request that the court direct the terms of the emergency temporary standard be in effect during the interim period. This also, was denied. SPI is expected to file its petition to the High Court shortly, and probably will add to it another motion for stay because of the Second Circuit's denial.

--Occupational Safety & Health Reporter 4: 1344, March 13, 1975

417/75

OSHRC Rules Contest of Proposed Penalty Alone Automatically Affirms Citation Charge.

The Occupational Safety and Health Review Commission has upheld the principle that when a company contests only a proposed penalty within the time period for objecting to enforcement actions under the law, the uncontested violation itself is automatically affirmed and cannot be reviewed by the commission. In a hearing on the case, the judge ruled that although in its letter to OSHA the firm had contested only the amount of the proposed penalty, it later denied the charge before the case was placed on the trial calendar and within 20 days after OSHA's formal complaint was issued. He concluded that both the alleged violation and the proposed penalty were issues properly before him for decision. In review, however, the commission reversed the judge's decision, ruling that the only issue within OSHRC's jurisdiction was the proposed penalty. The Commission assessed a \$100 penalty (OSHRC Docket No. 1846).

--Job Safety & Health Report 5: 39, February 24, 1975

418/75

OSHA Delay in Issuing Citation Results in Dismissal of Charge.

OSHA's delay in issuing a citation within a reasonable time following inspection of a job site has resulted in dismissal of the charge by Occupational Safety and Health Review Commission, in a case involving a New York construction firm. An employee of the firm was installing perimeter guard rails around the 18th floor of an apartment building under construction when he fell off the building and was killed. OSHA charged that the firm failed to provide the employee with a safety belt for personal protection and proposed a \$900 penalty for the violation. The firm contested the charge, noting OSHA's 2-1/2-month delay in issuing the citation. OSHA claimed the delay was due to a secretary's illness and the area director's preoccupation with additional training duties. The three-member commission upheld a finding in the firm's favor ruling that the delay was unreasonable (OSHRC Docket No. 3123).

--Job Safety & Health Report 5: 39, February 24, 1975

419/75 Chapter XVII—Occupational Safety and Health Administration: Part 1904—Recording and Reporting Occupational Injuries and Illnesses.

In accordance with 29 CFR 1904.15(a), an employer who had no more than ten (10) employees at any one time during calendar year 1973 need not comply with any of the requirements of 29 CFR Part 1904, except § 1904.8 concerning fatalities or multiple hospitalization accidents (i.e., he need not prepare the log, OSHA 100, the supplementary record, OSHA 101, nor prepare or post the summary, OSHA 102). When an employer with only eight, nine, or ten employees is notified in writing in March, 1975 by the Bureau of Labor Statistics that he has been selected to participate in a statistical survey of occupational injuries and illnesses for 1974, he must report to the Bureau of Labor Statistics on the basis of records kept during calendar year 1974.

Effective date. This notice is effective February 12, 1975, and will continue to be applicable for as long as the funding limitation in Pub. Law 93-517 remains in effect, unless modified or revised by the Assistant Secretary in the Federal Register.

--Federal Register 40: 7084, February 19, 1975

420/75 DOL Tells Court New Permanent "MOCA" Standard Could be Developed by July 15.

The Department of Labor, responding to a question of the U.S. Third Circuit Court of Appeals, said a new permanent standard for occupational exposure to 4,4'-Methylene bis (2-chloroaniline) (MOCA) could be developed by July 15, 1975. The court vacated and remanded the MOCA standard and remanded medical examination requirements as well as research laboratory provisions of all 14 carcinogens in a decision in Synthetic Organic Chemical Manufacturers Association, et al. v. Brennan (No. 74-1128) on December 17 (2 OSHC 1402). The Government filed a petition for rehearing on the decision noting the effect of vacating the standard would leave workers unprotected. The Government considered the court's action "too drastic a remedy," and suggested the MOCA standard by remanded as were other issues in the case. The petition for rehearing suggested also that a new standard could be developed. Subsequently a MOCA standard identical to the one vacated by the court was proposed by OSHA "to provide protection for workers." Stephen Eliperin, attorney for the appellate section, civil division of the Justice Department, representing the Labor Department noted in his response to the court the time was necessary "since regulation of industrial carcinogens has proven to be extremely controversial, resulting in numerous appearances and the submission of widely varying regulatory, technical, and scientific views. These views must be studied and evaluated by the Secretary. Since the hearing record will probably close no earlier than April 30, 1975, a July 15 cutoff date will give the Secretary 10 weeks to consider the evidence and to issue a new final standard. This we consider a reasonable and necessary time for evaluation."

--Occupational Safety & Health Reporter 4: 1247-1248, February 20, 1975

421/75 Medical Exams Required for Asbestos Workers.

A Review Commission judge has ruled that an employer must provide medical examinations for employees exposed to any concentrations of airborne asbestos. United Engineers and Constructors, Inc., had contested an OSHA citation for failing to provide preplacement, annual, and end-of-employment examinations for workers engaged in such asbestos operations as stripping dry joints, sleeving induction heating coils, and pulling cable. The company argued that OSHA's asbestos standard requires the exams only if an employee is exposed continually to more than five fibers of asbestos per cubic centimeter. Administrative Law Judge John Morris, however, held that the standard requires exams if employees "are exposed to airborne concentrations of asbestos." The company also challenged the hazards associated with asbestos and argued that because the exams are for research purposes, OSHA should pay for them. Morris ruled, though, that once a standard has been promulgated, OSHA is not obliged to defend its scientific basis in each case. He added that the primary purpose of the medical examinations is to protect employees, not to research the hazards of asbestos.

--Job Safety & Health 3: 28, March 1975

422/75 OSHA Awaits Legal Opinion on 11(c), Who Should Pay for Safety Equipment.

The Occupational Safety and Health Administration is awaiting a decision by the Labor Department Solicitor's Office in regard to an employer's right to require employees to purchase protective safety equipment and whether such a requirement violates the discrimination provisions in Section 11(c) of the Occupational Safety and Health Act. Benjamin Mints, Associate Solicitor, said the standards do not deal directly with who is responsible for purchasing safety equipment. The issue is being addressed by the Third Circuit Court of Appeals in a decision of the Occupational Safety and Health Review Commission that was challenged regarding responsibility for purchase of safety shoes in The Budd Company (1 OSHC 1548). Mints confirmed that the Solicitor's Office is preparing an opinion on the issue for OSHA.

--Occupational Safety & Health Reporter 4: 1321, March 8, 1975

ST0095208

421/75
K2926

INDUSTRIAL DUSTS AND INHALANTS

- 473/75 Background Documentation on Evaluation of Occupational Exposure to Airborne Asbestos. Anon. Am. Ind. Hyg. Assn. J. 38: 91-103, February 1975. 96 refs.

This review presents background information and literature documentation to supplement the "Recommended Procedures for Sampling and Counting Asbestos Fibers: Procedures for the Evaluation of Occupational Exposure to Airborne Asbestos" prepared by the joint ACGIH-AIHA Aerosol Hazards Evaluation Committee. It reviews the nature of the inhalation hazard associated with asbestos fibers, the sampling and analytic methods which have been used, and a rationale for the selection of the membrane filter sampling-optical phase microscope identification and assay methodology which is recommended. --Author's abst.

474/75

- Technological Feasibility of the 2 Fibers/cc Asbestos Standard in Asbestos Textile Facilities. R.A. Curtis and P.J. Bierbaum. Am. Ind. Hyg. Assn. J. 36: 115-126, February 1975. 9 refs.

K2826 The technical feasibility of developing dust control practice which would bring the asbestos industry into compliance with OSHA 2 fibers/cc standard, scheduled to become effective July 1, 1976, has been questioned since its promulgation. This paper presents the results of industrial hygiene surveys, including the results of 243 asbestos air samples, conducted at two asbestos textile production facilities which have achieved the 2 fibers/cc standard. Both facilities use nonconventional production techniques. Conclusions drawn from the investigations express the need for: (1) a study of new products; (2) a tool to motivate consumers to switch to the new products when appropriate; and (3) legislation which will protect all domestic producers of asbestos textiles from certain producers who do not have to absorb the added expense of meeting the OSHA standard. --Author's abst.

475/75

- K-28126* Asbestos Control in Steam Electric Generating Plants. J.H. Fontaine and D.M. Trayer. Am. Ind. Hyg. Assn. J. 38: 128-130, February 1975. 7 refs.

A program to control industrial work exposures to airborne asbestos fibers is presented. The program is consistent with OSHA standards and with current good industrial hygiene practice. The program includes methods of problem evaluation, the establishment of effective corporate standards, and provisions for environmental and medical surveillance. Hazard control measures and techniques are discussed and their merits related. --Author's abst.

476/75

- K-28126* Prevalence of Asbestos Bodies in a Necropsy Series in East London: Association With Disease, Occupation, and Domiciliary Address. I. Doniach, et al. British J. Ind. Med. 32: 18-30, February 1975. 13 refs.

The prevalence of asbestos bodies was measured in lung sections in a necropsy series carried out at the London Hospital (1965-66) after exclusion of all known asbestos factory workers and cases of asbestosis and of mesothelioma. Associations were sought between the presence and number of asbestos bodies with the patients' sex, domiciliary address, occupation, industry, and diseases recorded at necropsy. Asbestos bodies were present in 42% of the 216 men in the series and in 30% of the 178 women. The number of bodies in the positive cases was small in comparison with the numbers seen typically in asbestosis; thus there were less than 6 asbestos bodies per 6.75 mm³ lung tissue in 107 of the total 145 positive cases in contrast to 1,000 or more in asbestosis. In comparison with the overall series, an increased number of asbestos body positives was present in males with carcinoma of stomach and females with carcinoma of breast. In view of this finding lung sections were counted in further post-mortem examples of these carcinomas making a total of 50 males with carcinoma stomach and 82 females with carcinoma breast. Thirty-five positive cases were found in the carcinoma stomach group as against 22.7 expected and 38 in the carcinoma breast group against 26.35 expected. There was no excess of observed over expected asbestos body positives in 51 males with carcinoma of bronchus. There was an excess of asbestos body positives (60.9%) in heavy manual workers and in both heavy and light manual male workers in the shipping (81%), electrical and engineering (56%), and transport (54%) industries. The incidence in male clerical workers was 12.8%. The incidence of asbestos body positives according to home address was highest (53% in males, 45% in females) in patients living in the industrial and dockland area due east of the hospital. The incidence fell in the less industrial areas north-east of the hospital. Consideration of possible environmental sources of the inhaled asbestos suggests that in this survey occupation, industry, and domiciliary area all play a part. The comparatively minor intensity of asbestos pollution in our positive cases showed a positive association with carcinoma of stomach and breast, possibly playing a direct pathogenic role in carcinoma of stomach. No positive association was identified with any other neoplastic disease including carcinoma of bronchus. --Author's abst.