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PLAINTIFF'S EXHIBIT

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568 Nine Years' Toxicity Control in Insecticide Plants. I. Hoogendam, J.P.J. Versteeg, and M. de Vlieger. Arch. Environmental Health 10, 441-448 (March, 1965).

More than 300 workers have been employed in the Royal Dutch/Shell plants in Pernis manufacturing aldrin, dieldrin, and endrin over periods up to nine years. These workers have been under thorough medical supervision, including periodic electroencephalographic examinations and liver function tests. Seventeen of them had convulsive intoxications. Five of these 17 had more than one convulsion each. Clinical, neurological, and electroencephalographic recovery has been rapid and complete in all cases after removal from exposure, though at times this was only temporary. No impairment of liver function could be detected. The pattern and rate of absenteeism is not different from that of other industrial workers. The maintenance and supervision of hygienic discipline and selection in personnel placement are important factors in controlling toxicity hazards. -- Authors' summary

569 Bird Mortality after Spraying for Dutch Elm Disease with DDT. C.F. Wurster, Jr., Doris H. Wurster, and W.N. Strickland. Science 148, 90-91 (April 2, 1965).

In Hanover, New Hampshire, where elms were sprayed with DDT, 151 dead birds were found; 10 dead birds were found in Norwich, Vermont, where no DDT was used. Chemical analyses of dead birds, observation of symptoms of DDT poisoning, and a population decline after spraying all indicate severe mortality among certain species in Hanover. -- Authors' abs

INDUSTRIAL DUSTS

570 Asbestosis and Pulmonary Carcinoma. F.R. Dutra and J.D. Carney. Arch. Environmental Health 10, 416-421; editorial comment 422-423 (March, 1965).

Asbestosis is a chronic progressive pulmonary disease which results from irritation of the lungs by crystalline asbestos fibers. The disease is often unsuspected clinically because the occupational exposure to dust containing asbestos fibers has not been elicted, and because the chest films may not be diagnostic even in the presence of disabling abnormality. In asbestosis, pulmonary and subpleural fibrosis distort the lungs and lead to respiratory insufficiency. Squamous metaplasia of the bronchial epithelium is induced by the irritating fibers, and in some cases there is progression to squamous cell carcinoma of the lung. Pleural mesothelioma is also reported, particularly in cases of asbestosis in South Africa. -- Authors' summary

571 Pulmonary Function of Uranium Miners. V.E. Archer, H.P. Brinton, and J.K. Wagoner. Health Physics 10, 1183-1194 (Dec. 1964).

Analysis has been made of several ventilatory function field measurements made on uranium miners in 1957 and in 1960. Results show that cumulative exposure to the atmosphere in uranium mines adds to the loss in ventilatory function that results from aging and from cigarette smoking. The data indicate that high radon daughter levels are associated with transient improvement in ventilatory function. Two possible explanations of this "transient improvement" are discussed. Long exposures within uranium mines are definitely detrimental to ventilatory function. There are 34 references. -- Public Health Eng. Abstr

572 Error in the Determination of Average Concentration of Dust as a Function of the Number of Individual Measurements. J. Juda and K. Budzinski. Staub 24, 283-287 (Aug. 1964). German.

The strong dependence of dust concentration on time leads to difficulties in the determination of the average value. A formula which reproduces the sum frequency of the dust concentration distribution with sufficient accuracy is given. The relationships for the tolerance in determination of the average value are derived and the results are shown in a diagram. -- APCA Absts.

578 Deposition and Retention of Dust in the Human Lung. C.N. Davies.
Staub 24, 316-323 (Aug. 1964). German.

The relationships between particle size and the retention of dust in human lungs, obtained by a new method, is compared with alveolar deposition calculated by the British criterion for selective sampling based on the square of the diameter and 50% penetration for spheres of unit density with a diameter of 5 microns. The calculated curve predicts the retention of too few particles above 5 microns and too many below. It also fails to explain why some large particles are exhaled. The discrepancies are due to variations in bronchial path length, to the anatomical dead space and to departure of the particles from a spherical shape. The design of the hexhlet dust sampler is discussed. -- APCA Absts.

579 The Effect of Polyvinyl-Pyridine-N-Oxide Treatment on the Development of Experimental Silicosis. J. Ottowicz and G. Leballeur.
Ann. Occ. Hyg. (London) 7, 137-143 (June, 1964).

The effect of polyvinyl-pyridine-N-oxide on the development of experimental silicosis was investigated histologically and biochemically. It was found that PVP-N-oxide treatment by subcutaneous weekly injections of 1 ml. prevented—or at least greatly retarded—the development of fibrosis and suppressed the migration of macrophages into the parenchymal connective tissue of the lungs. After six months the lungs of untreated animals contained, on the average, nearly four times more collagen than the treated animals. -- APCA Absts.

580 The Pathology of Mesotheliomata and an Analysis of Their Association with Asbestos Exposure
D. O'B. Hourihane. Thorax 19, 268-278 (May, 1964).

Thirty-four cases were available for study. The tumors had occurred in seven men and 27 women whose ages ranged from 42 to 70. The symptoms prior to death had been of short duration: the maximal time was 12 months and in many patients the period was less than three months. In 17 patients the tumor had arisen in the pleura, in 13 patients in the peritoneum, and probably in the peritoneum in four others. The tumor was epithelial in origin in 19, from fibrous tissue in five, and of mixed origin in 14. There was involvement of regional lymph nodes in nine patients, metastasis to bone in three, and metastasis to viscera in seven. In nine cases there were areas of focal necrosis. Asbestos bodies were found in 14 cases: in six cases of pleural tumor and in eight cases of peritoneal tumor. A search for asbestos bodies was made from routine necropsy material from 50 cases of carcinoma of the lung. They were found in lung or hilar lymph nodes in 6% of these but never in the pleura, within the tumor, or in any other viscus. The strict criteria for the diagnosis of mesothelioma are discussed in detail, and the need for necrospy to exclude the presence of a primary tumor elsewhere is emphasized.
-- Am. Rev. Resp. Dis. Absts.

581 Effect of Talc Dust Inhalation on Lung Function. M. Kleinfeld, et al.
Arch. Environmental Health 10, 431-437 (March, 1965).

Pulmonary function tests were performed on 43 workers engaged in the milling of talc. The mean duration and weighted average of exposures were 19.0 years and 62.3 mppcf, respectively. The predominant symptoms were dyspnea (29) and cough (12). Basilar crepitations and clubbing were noted in 12 and 8, respectively. The mean predicted values for the various pulmonary function parameters measured were within the 95% confidence limits of the control group. However, an appreciable number of talc workers had values which fell outside these limits. This was particularly evident in the vital capacity, total lung capacity, and pulmonary diffusing capacity for carbon monoxide ($D_{L_{CO}}$). There were 16 who showed pulmonary infiltration on their chest roentgenograms as compared to 27 without such evidence. Those with positive radiologic findings had a proportionately greater number of respiratory symptoms and signs and abnormal pulmonary function values as compared to those without. In general, the correlation between the degree of pulmonary function impairment and the clinical and roentgenographic findings was poor. In those with pulmonary infiltration, $D_{L_{CO}}$ showed a fair correlation with the degree of pulmonary infiltration and clubbing, while the total lung capacity showed a weak correlation with clubbing only. The lack of a good correlation between the degree of pulmonary function impairment and the clinical, roentgenographic, and environmental findings observed in the present study has also been reported in other pneumoconioses. There are 13 references.
-- Authors' summary