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13—CHEMICAL INDUSTRY AND MISCELLANEOUS INDUSTRIAL PRODUCTS

(PLASTICS, RESINOIDS, INSULATORS, ADHESIVES, ETC.)

HERMAN A. BRUSON

Mines safety and accident prevention. X. Suggestions for reducing accidents. Robert Boone. *Mines Mag.* (Colo. School of Mines) 31, 122, 134, 136, 141 (1941); cf. C. A. 35, 30927.—Descriptive. L. S.

Adequate medical facilities for control of lead absorption. Elston L. Belknap. *Natl. Battery Mfrs. Assoc., Rept. Ind. Hyg. Sessions 15*, Pt. 2, 65-70 (1939); cf. C. A. 35, 821².—Potentially dangerous industrial exposure to lead develops when inhalation of finely divided lead compds. occurs in excess of 1.5 to 3 mg. of lead per 10 cu. m. of air. The commonest signs of lead absorption are a lead line, stippled cells in the blood and lead in the urine (0.1-0.2 mg. per liter). Very frequent medical examination of lead workers is recommended. A. L. Elder

Growths in the respiratory tract. (Preliminary notice.) A. J. Amor. *Ber. 8 intern. Congr. Unfallmed. u. Berufs-krankh.* 2, 941 (1939); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 33 (1940).—Five regions of the respiratory tract are especially sensitive to the action of inhaled vapors and dust: (1) the anterior end of the middle turbinated bone, (2) the portion of the septum opposite (1), (3) the nasopharynx, (4) the larynx and (5) the carina and the entrance to the principal bronchi. The mucous membrane of the respiratory tract is frequently irritated by dust, Cl and SO₂, which cause an epithelial metaplasia. The harmful action of chromic acid and As and Cu salts on the nose causes chronic inflammatory changes, and ulcerations and perforations of the septum. The perforations usually appear in region (2). Each of these substances is an etiological factor in the development of growths of the respiratory tract. Two types of occupational cancer of the lungs are described in the literature: (a) The Schneeberg miners, who suffer from tumors, work with ores contg. Ag, Ni, Co, Bi, As and Ra, which renders the air highly radioactive; As is a known cancerogenic agent and Ra is often considered one. Carcinoma can be produced experimentally with K arsenide. (b) Those who work with chromates, especially with their purification, are also subject to malignant growths of the lungs. The tumors particularly considered in this work are those found in workers engaged in the prepn. of CuSO₄ and in Ni refining. The ore contains Cu, Ni, Co, S and noble metals of the Pt group. The Cu is extd. with H₂SO₄ contg. As. The metallic residues which contain Cu and up to 4% As are ground and calcined. The dust contains Cu arsenide which is continuously inhaled. The air also contains definite amts. of SO₂ and SO₃. The tumors in these workers were all in the ethmoid region. Only 1 case of carcinoma of the nasopharynx and none of the larynx were found. The age of the patients, the period of exposure to the danger and the av. age at death were similar to those in the Schneeberg lung carcinoma and in cancer of the bladder in workers on aniline dyes. Suitable changes with the elimination of As were undertaken; it is assumed that these diseases will disappear in the future. Ruth Berggren

Occupational lung cancer. L. Teleky. *Acta Unio Intern. contra Cancrum* (Paris) 3, 253 (1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 33 (1940).—A very detailed and crit. work on occupational injuries which can lead to lung carcinoma. Diagnosis has changed during the last decades: silicosis is found today where formerly pulmonary tuberculosis would have been the diagnosis; approx. three-fourths of the miners in Joachimsthal now die of lung cancer where earlier, the existence of lung cancer was denied. Scepticism is urged concerning the assertion that lung cancer is increasing. A crit. evaluation of numerous studies on silicosis and cancer reveals no frequent coincidence of lung cancer and severe pneumoconiosis; i. e., there is no evidence that pneumoconiosis predisposes to lung cancer. Although it is theoretically possible that cancer can develop from the scar produced by dust induration in the bronchial mucous membrane, there is no prac-

tical basis for the development of lung cancer from pneumoconiosis in general or silicosis in particular. It is highly probably, however, that asbestosis predisposes to the development of cancer (6 cases of lung carcinoma in 39 published autopsies on asbestosis). The irritant action of asbestos dust may be purely mech. in contrast to the chem. action of quartz dust. Chromate dust also appears to stimulate the development of cancer of the lungs and perhaps also of other organs. The inhalation of producer gas (contains 0.7% tar vapor) has caused several cases of lung cancer in Japan. The no. of observations is yet too small to permit any conclusions. Skin cancer is frequently found in workers exposed to tar dust, pitch dust and tar vapors, but no lung carcinoma has yet been found in such workers. Exhaust gases from motor vehicles contain no substance which has yet been shown to favor the development of cancer. Isolated observations on lung cancer in the As, Ni and Fe oxide industries stimulate further work but do not yet permit any conclusions. However, the cancerogenic action of radioactive substances, especially the Ra emanation (Schneeberg, Joachimsthal) is certain. This injurious action requires years, usually decades, before lung cancer occurs; the cancer often does not develop until years after removal of the harmful action. A true cancer always develops. Ruth Berggren

Lung cancer and occupation. Koelsch. *Acta Unio Intern. contra Cancrum* (Paris) 3, 243 (1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 32-3 (1940).—Practically, dust inhalation alone cannot be recognized as a significant cause of lung carcinoma, in spite of the assumed anatomical possibility. The acute and chronic action of irritants (acid industry) and war gases might in very rare cases cause bronchial cancer. The occurrence of lung cancer in asbestos workers (12 cases to date) must be studied further. Chromate workers are in specific danger of lung cancer. The question of the harmful effects of tar and the action of tobacco smoke has not yet been fully investigated. In England 14 cases of lung cancer and 16 of cancer of the accessory nasal cavities have been observed among workers on Ni ores. The action of Ra emanation is the cause of lung cancer in the miners of Joachimsthal and Schneeberg. Prophylactic measures are briefly discussed.

Chromate lung cancer. W. Alwens and W. Jonas. *Acta Unio Intern. contra Cancrum* (Paris) 3, 103 (1938); *Zentr. Gewerbehyg. Unfallverhüt.* 27, 32 (1940).—A report on recently established cases of lung cancer in chromate workers, most of whom had long since left the industry. The latency period was very long (about 30 years). Chem. investigation revealed a distinct storage of chromates in the lung tissue. The chronic injury of the nasopharynx (almost all had perforations of the septum) through the continuous irritation of the chromates and other industrial products was a particularly marked factor. The hilus glands were always enlarged. Prophylaxis is of prime importance in the control of chromate lung cancer. Ruth Berggren

Chemistry in national defense. Edward R. Weidlein. *News Ed. (Am. Chem. Soc.)* 19, 453-6 (1941).—National problems and the program of the Chemicals, Drugs and Allied Products Section of the Office of Production Management are presented. Defense calls for trained men in the chem. industries and in universities, so they should not be withdrawn from their present positions except when such action is necessary for chem. work in the military service. Civilian as well as military needs are given consideration, but the latter take precedence. Problems confronting us now are minor as compared with conditions in 1917. Cooperation with the Army and Navy Munitions Boards, Council of National Defense, the Office of Administrator of Export Control and the Office of Production Management is stressed. As illustrations of the work done