

The occurrence of a pulmonary carcinoma in a worker, who had been employed for 20 years in an aniline plant and subsequently for 8 years in a briquette factory, was recorded by Rodenacker. Müllschitzky noted that during the last ten years only one case of pulmonary malignancy in a tar worker in Germany was recorded. The investigator added a new case of this neoplasia occurring in a man who had a scrotal cancer 15 years previously, a penile cancer 12 years previously, and multiple papillomas and epitheliomas of the skin 3 years previously.

While isolated case reports, concerning the appearance of lung cancer in different occupations having contact with tar, do not carry convincing weight because of their singularity, the observation of an excessive incidence of these tumors among a well defined group of workers with exposure to tar is of much greater significance in regard to the causal relationship. This type of evidence has been supplied recently by Japanese investigators (Kawahata; Kuroda and Kawahata). There occurred within 6 years, 21 cases of lung cancer among the workers employed in the generator gas plants of several steel factories. These men were exposed to the massive inhalation of fumes charged with fine, hot tar particles and high temperature distillation products of tar when they opened the holes on top of the generators for the frequent addition of coal and during the stoking process. The general incidence of lung tumors was 5 cases per 1,000 workers employed. There were 2 cases in 1933, 4 cases in 1934, 6 cases in 1935, 5 cases in 1936 and 4 cases in 1937.

The age distribution was as follows:

Years	35	38	39	40	42	44	45	46	47	48	50	54	65
Cases	2	2	1	2	2	2	3	1	1	2	1	1	1

The average age in this type of tar cancer of the lung is markedly younger than that of the cryptogenetic variety. The exposure time varied from 9.25 years to 23.25 years, the average being 16.6 years. In the oldest individual, the first symptoms developed 10 years after cessation of occupational contact. The right lung was involved in 12 cases, the left in 5 cases and a bilateral location existed in 9 cases. In 19 instances, the cancer was locally related to a large bronchus, in 8 cases, there was an intralobular location; while in one case a multiple, miliary variety was seen, which resembled grossly in appearance a miliary pulmonary tuberculosis. The histological examination of 5 cases showed 3 squamous cell carcinomas without cornifications and 2 adenocarcinomas. Several causal factors (a massive exposure to a highly carcinogenic agent; the high temperature of the inhaled material; the general irritative action of the dust and fumes inhaled) apparently combined to elicit not only a carcinogenic pulmonary response at a relatively early age, but also in a high proportion a bilateral involvement.

These claims and observations supporting a causative relationship between the occupational soot evil and lung cancer have met with objections from