

cancers cared for at the Memorial Hospital from 1917 to 1930, and found a total of 11 cases of oil and paraffin cancer, involving seven men employed in oil refineries and four men engaged in occupations entailing contact with lubricating oils. Haagensen contended that two cases of this series were not of occupational origin, as the tumors were located in the face and lip, respectively. This claim cannot be recognized any longer as correct, as Heller observed 21 cases of epithelioma of the face and lip in men working in petroleum refineries; and English experiences recorded in this respect leave no doubt that oil and paraffin cancer may affect the face and the lip. Mention may be made, finally, of a statement of von Eiselsberg (1925), which has been quoted in the literature [Bering and Zitzke (1935)] and for which a factual basis could not be ascertained. This investigator contended that in a series of 141 scrotal cancers reported from the United States and observed during 1905 to 1925, 23 cases occurred in paraffin workers and 69 cases in silk spinners.

In addition to the four oil cancers mentioned by Haagensen, there exist only a few reports mentioning the occurrence of this type of industrial neoplasia in the United States. When Hoffman investigated, in 1928, the problem of oil cancer (mule spinners' cancer) in the United States, he noted that among 6 scrotal cancers found in textile workers 3 were present in mule spinners. But one of them came from Canada and two had immigrated from England. Of the other three textile workers, two had been born in England and one, a carpet worker, had worked there. Hoffman expressed, on the basis of this evidence, the suspicion that in all six instances an occupational contact with carcinogenic lubricating oils had taken place outside of the United States. Subsequent studies of Heller covering the same subject have shown that mule spinners' cancers have been contracted definitely in this country. Heller's inquiries at 14 cotton mills located in New England (mainly New Bedford), where the machinery and practice of spinning is similar to that used in England, and where between 500 to 1,000 spinners were employed (1926 to 1929) were negative. He did find at the Massachusetts General Hospital in Boston records of 25 fatal scrotal cancers, which had been observed there between 1887 and 1928, and of which six involved mule spinners. Heller proved that two of these cases originated in the United States. None of these cases occurred during the last fifteen years. Apart from a change in the spinning technique, which was developed in more recent times and which brought about a gradual replacement of mule spinning by the less hazardous ring spinning, Heller expressed the opinion that the character of the lubricating oil used in American plants accounts for the great rarity of mule spinners' cancer in the United States. Heller pointed out that American spindle oils are harmless in carcinogenic respects because this type of lubricating oil is more intensely treated with sulfuric acid than the ordinary lubricating oils.