

Doleschall, and seven cases from a German plant were recorded by Lauchs. The occurrence of pitch cancer among workers of this occupational group was, also, mentioned by Hope; and Chorodov and Spector.

An additional source of pitch cancer was discovered by Heller in a carbon factory in Cleveland, where calcined carbon flower (a mixture of lamp black and coke) was softened by the addition of light tar oil and, then, mixed with a medium tar pitch for a binder. The mixers were exposed to pitch fumes and dust, while the millers engaged in grinding operations were exposed mainly to pitch dust. Until 1915 the carbon plates were moulded by hand. After this date the operation was done by hydraulic forming machines, so that only the men shovelling and loading pitch into the melting kettles had any appreciable contact with pitch dust. Between 1920 and 1930 twenty-one cases of skin cancer occurred among the workers, in spite of the installation in 1915 of an exhaust ventilation used to combat the dust hazards.

The manufacture of roofing paper represents another source of pitch-tar-asphalt cancer of the skin. Tar paper is made by soaking paper in tar and drawing this paper through rollers heated to 240°F. In the course of this work the hands and arms of the laborers become soiled with tar. In 1910 Schamberg examined twenty-one workers employed in this field and found 5 of them affected with beginning or well-developed epitheliomas. In 1885 Ball reported two cases of skin cancer from two similar plants employing 17 to 19 men; while Lennhoff and Haagensen mentioned the occurrence of skin cancer in roofers using tar paper as well as paint with tar or mixtures of tar with pitch and asphalt. Similar hazards and results have been observed in connection with the manufacture of felt impregnated with tar and of insulation paper made by the impregnation of paper with asphalt (Nuck).

Tar and pitch cancer has been observed among workers employed in the construction and maintenance of roads (Oliver; O'Donovan; Hunt; Lehmann; Haagensen; Baader), tar cookers, mixers, sprayers, and road menders being those mainly affected.

The extensive use of tar, pitch, and asphalt in the shipbuilding and fishing trades has given rise to a considerable number of skin epitheliomas (Bristol; Shambaugh; etc.) among shipbuilders, fishermen and sailors. Tar and pitch are used for closing seams in ships and boats by calking them with a material containing hemp and tar or asphalt. Tar, asphalt, and pitch are used for the impregnation of nets, ropes, cables, tarpaulins, poles, and deck-floors.

The use of tar or asphalt in providing a protective lacquer for iron pipes (Henry; David-Brassart) and for the lining of Bessemer-Thomas converters (Baader; Beintker) has led to the occasional development of skin cancer among the exposed workers.

Precancerous and cancerous cutaneous lesions have been seen in workers engaged in the production of coal grease, which is made by mixing hot tar oil with small quantities of lime and resin, and, also, in men using the finished