

moved during the refining process consists mainly of carbazoles, acridine and many other substances (anthracene residue).

Anthracene oil and green oil are used in the manufacture of lubricating grease by mixing 86 to 88 per cent of the heavy oil, sometimes receiving an addition of creosote, 4 to 7 per cent rosin oil, 4.5 to 6.5 per cent slaked lime and water. Heat is evolved when lime is added to the mixture causing the splashing of the hot liquid. Anthracene oil is employed as fuel for Diesel engines, as an absorbent in the washing of gas, and as a lubricant for the clay moulds in brick making, while the grease serves for the lubrication of wire ropes on ships and in mines. Crude anthracene oil finds use in the form of carbolineum as a paint and preservative of timber, for the water proofing of wood and for making briquettes. The refined anthracene is employed in the manufacture of anthraquinones and alizarin dyes.

Workmen exposed to contact with crude anthracene are men employed in anthracene plants, especially those attending centrifugal machines, hydraulic and filter presses, and purifiers as well as all workers pressing the anthracene cakes, handling the anthracene cakes (yardmen), and grinding the cakes (White; O'Donovan; Leymann). An occupational carcinogenic hazard exists also for the employees of grease factories in which anthracene or green oil is used, particularly for those working as mixers (Kennaway; Oliver; Legge; Sträter). Contact with purified anthracene appears to be innocuous (White; O'Donovan).

The first cases of occupational anthracene epithelioma of the skin were reported by Leymann (1917), who noted that in a 1902 annual report issued by chemical plants located in Oppeln, Silesia, mention was made of the occurrence of warts, hyperkeratoses and eczemas of the hands, arms, feet, knees, neck, chest and back, in 22 out of 30 workers employed since 1892 in an anthracene plant, and that surgical operations, apparently for scrotal cancer, had been performed on three of these workers, who had been in these anthracene operations for 6 to 8 years (Koelsch; Sträter). Rambousek, in 1913, mentioned that contact with crude anthracene oil occasionally gives rise to epithelioma.

Oliver in 1908 recorded the occurrence of anthracene epithelioma in two workers of a grease factory in England. Twelve years later O'Donovan noted the occurrence of four additional cases of this type of industrial neoplasia in workers of an anthracene and alizarin plant, between 1903 and 1920, after Legge had observed previously an additional case of epithelioma in a grease maker (Kennaway). Bridge and Henry mentioned four cases of epithelioma in anthracene workers. There is thus a total of 19 cases of anthracene epithelioma on record. No new case has been reported since 1921.

Anthracene being a photosensitizing substance causes in anthracene workers first an acute erythema developing upon the exposure to solar radiation (Weider; Grincar and Rachmanow). Similar attacks may occur repeatedly