

The occupational carcinogenesis of the skin caused by mineral oil requires a prolonged period of exposure. Southam placed the minimum exposure time of shale oil cancer at rarely less than 10 years, at which time the precancerous warts make their appearance. Henry (1929), who analyzed large series of cases of mule spinners' cancer for this point, mentioned that the shortest period of exposure observed was 16 years and the longest 63 years; while the maximum incidence occurred after 39 years of contact with the shale oil lubricant. Henry presented his observations on this subject in the following table:

EXPOSURE TIME OF MULE SPINNERS' CANCER (Henry)

Exposure Time Years	15-19	35-39	40-44	45-49	50-54	55-59	60-64
Percentage of Cases	0.6	18.6	18	15	15.6	8.3	3.0

Henry noted that the cancers appeared at a later date than usual, when the exposure either ceased before a neoplasm had appeared or was interrupted for some time.

In the following table the distribution of cases upon the various exposure periods is presented, using for the mule spinners' cancers the data given by Bridge and Henry, and a few cases from the literature were added to the list of mineral oil cancers recorded by the same investigators.

EXPOSURE TIME OF MINERAL OIL CANCERS (Bridge and Henry)

Years	11-15	16-20	21-30	31-40	41-50	51-60	over 60	Total
Mule Spinners' Cancers	9	17	54	107	104	55	6	352
Other Mineral Oil Cancers	8	4	18	18	8	4	0	60
Total	17	21	72	125	112	59	6	412

It may be emphasized that the above data, in regard to the length of exposure time, do not provide any exact information concerning the actual minimum time of contact necessary for the production of a cancerous response in man. It seems probable that the minimum time is definitely shorter than that listed in the table. This conception seems to be justified because the appearance of oil cancer was delayed, when the exposure was discontinued before the tumor became manifest or when the contact was interrupted for some time. Oil cancers with a delayed appearance following a relatively short exposure have been observed in men, who stopped working as mule spinners at an early adult age and drifted into other work. They developed many years later a