Occupational Cancers of the Lung in Radioactive Ore Miners in U.S.A.

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The recently published data on the excessive liability of American radioactive ore miners to develop cancers of the lung are of distinct scientific and practical interest. The historical record of the studies leading to this discovery provides a deep insight into the astounding mentality of public health agencies toward such serious health hazards and of the peculiar policies adopted by them to cope with such threats from respiratory cancer hazards to special worker groups as well as to the general population. The information yielded by these investigations has reaffirmed even to the expediently and conveniently sceptic the unpleasant scientific fact that the prolonged inhalation of radioactive gases and dust induces under proper conditions of exposure cancers of the lung in an astonishingly high percentage of the exposed individuals. Because of
the progressive contamination of the general human environment, including
the air, with radioactive matter, although in much smaller concentrations than
those encountered in American pitchblende mines and non-ferrous metal mines
of the Colorado Plateau, these observations have distinct general implications.

It is an intriguing fact that cancers of the lung among radioactive ore miners
represent the oldest known occupational cancers of this organ system, since they
were first recognized for the radioactive cobalt ore miners employed at Schnee­
berg, Saxony, in 1879. Similar observations were made in 1926 among the
uranium ore miners working in the nearby Joachimsthal, Bohemia. Despite a
wide acceptance of the concept that these lung cancers had an occupational,
radioactive etiology, serious doubts were raised in 1948 against my proposal
to a Government agency for conducting a comprehensive epidemiologic study
of the American uranium ore miners for possible lung cancer hazards. Both
Government officials with medical background as well as some of their special
advisors objected against such studies for various reasons. Among others, it
was asserted that the degree of exposure to radioactive materials sustained by
the miners for occupational reasons was minor when compared with that sus­
tained to cosmic radiation. It was held by others that the European experiences
and conclusions were not valid and applicable, since occupational exposure to
other substances encountered in the mines, such as arsenic, or a prolonged “in­
breeding” of the local population in Schneeberg might account for an excissive
susceptibility to the development of lung cancers among the miners. The last
mentioned concept seemed to have a special appeal, since it was proposed by a
well known physicist of the National Cancer Institute, who neglected to con­
sider the biologically embarassing fact that the city of Schneeberg had a
population of about 25,000 and a railroad station for many years. Some ob­
jectors to an epidemiologic survey claimed that there could not be a lung can­
cer hazard for these miners, since the lungs were refractory to the carcinogenic
action of radioactive matter. Perhaps the most candid objection was advanced
by those who maintained that such studies were not in the “public interest” and
that the proponent of such investigative schemes displayed “bad scientific jud­
gement” and should best be dismissed from the Service.

After these initial difficulties had been overcome measurements of the radio­
activity of the air in numerous uranium ore mines of the Colorado Plateau made
by representatives of the U.S. P. H. A. Division of Occupational Health demon­
strated readily that an appreciable number of these mines showed values of
radioactivity well above acceptable level. Several mines indeed had a degree of
radioactivity which was several fold that demonstrated in the worst mines at
Schneeberg, the so-called “death-shaft”. An inspection of a uranium ore mill
demonstrated that in the early days of this survey, respiratory exposure to radio­
active matter was not limited to miners but extended also to millers as well as
to the population living or working near such establishments, since large heaps
of the finely ground wastes containing radium were collected in the yards of