oxide has lost its luminosity. The removal of the old paint entails a dust hazard (respiratory introduction and skin contact). Stewart pointed out that laboratory workers handling and manufacturing radioactive material were found to be less continuously exposed, as a rule, and better protected than the dial painters. Depending upon the type of contact with the radioactive substances (skin, inhalation, and ingestion), there occurred different types of manifestations from radium poisoning. There were, according to Stewart, in the 31 establishments handling radioactive substances and employing 253 workers in United States, 23 fatalities from radium poisoning and 19 still living individuals showing symptoms of this disease. The presence of radium poisoning was suspected moreover in 2 fatal and 6 living cases. The largest number of poisonings (33) was furnished by the luminous dial painting industry.

In appraising the relative hazard from radium poisoning in this industry, consideration must be given to the fact that many tasks in the manufacture of luminous dials do not entail an intimate contact with the radioactive material (Bloomfield and Knowles). Workers applying black paint, operating transfer presses, sewing hands on cards, trimming and wrapping dials, distributing dials for painting, and making gelatine pads have only a minor degree of exposure. Tasks which are associated with a close contact with radioactive material are painting of dials with luminous material, mixing of the paint, dusting of the dials, operating the radium transfer press, weighing radioactive material, painting, shipping, repairing, and inspecting radium work, and instructing in the performance of these duties. A second serious health hazard, complicating and possibly aggravating the effects produced by the radioactive substances, may be introduced into such operations by the use of organic solvents, such as benzol, for the cleaning of the applicators, as substances of this type affect the hematopoietic tissues in a similar way as the radioactive material.

Schwartz, Knowles, Britten and Thompson, who made comprehensive studies on the degree of radioactive hazard existing for the various types of workers employed in the luminous dial plants in United States, made the following observations:

Dust in the general air of the workroom was found to be radioactive (an average of 9.8×10^{-10} grams per 10 cubic meters of air). In the vicinity of dial painters the radioactive content of aerial dust was from two to three times that found in the general air. Near dusters it was many times as high. The air of workrooms when freed from dust showed the presence of radon in amounts averaging 2000 times that of normal air. Workers were found to be exposed to gamma and beta rays. The average gamma ray exposure of the workers was equivalent to that which would be produced by about 1 mgm. of radium 50 cm. from the worker. There were no skin necroses of the fingers of the workers indicating a direct radiation effect. An accumulation of radioactive material was noted in the bodies of workers who handled or had previously handled