Revisiting the Doses to Radium Dial Painters in the United States

Many early discoveries involving radiation and radioactivity found medical or commercial use, with radium a prime example. Marie and Pierre Curie discovered radium in 1898 and soon after radium was being marketed as a medicinal cure-all. It was also quickly discovered that radium could be combined with phosphorescent material to make luminous paint, with related patents filed as early as 1903. The first radium dial watches were sold commercially in 1913, followed by a rapid increase in demand for similar radioluminous products through World War I. Thousands of workers, mainly women, painted dials and instruments with radium paint, using their lips to give the brush a fine point. Many dial painters ultimately experienced painful consequences associated with their intakes of radium during work. This tragic experience had a significant historical impact on industrial safety standards, including protection measures taken during the Manhattan Project, and epidemiologic study of the dial painters has formed the basis for radiation protection standards for intakes of radionuclides by workers as well as the public. The study of 3,276 radium dial painters is being updated as part of the Million Person Study (MPS). The NCRP has formed a new Scientific Committee to study methods for computing doses from intakes of radium. This presentation summarizes the history of radium dial painters and describes past and present methods for computing doses from radium intakes for this cohort.

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