

Radium Dial Painters: An Overview

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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. Although such “tipping” was prohibited in 1926, thousands of women in the US, most of whom were teenagers when they started painting dials, had already spent years licking radium brushes. Being a dial painter was considered glamorous and patriotic, but 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) of low-dose health effects that is designed to evaluate radiation risks among healthy American workers and veterans. This presentation summarizes the history of radium dial painters, presents broad scope information learned to date, and discusses the ongoing follow up work and dose reconstructions that seek to provide new information on the lifetime risk of cancer and other adverse effects of ionizing radiation among women following intakes of radionuclides.

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