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**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

**An overview of the radium dial workers and on-going follow-up**

**Dr. Nicole Martinez**

Associate Professor

Department of Environmental Engineering and Earth Sciences

Clemson University

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 in the mid-1920s6, 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 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.

**About Dr. Martinez:**

Dr. Martinez is an Associate Professor in the Department of Environmental Engineering and Earth Sciences. Dr. Martinez received her M.S. and Ph.D. in Radiological Health Sciences from Colorado State University, specializing in health physics and radioecology, respectively. Prior to attending graduate school, she served in the United States Navy as a nuclear power instructor and radiation health officer. Dr. Martinez’s current research focuses on the behavior and effects of radiological contaminants in the environment, including radiation transport modeling, improved dosimetric methods, chronic low dose effects to and multi-contaminant response in non-human biota, and mechanisms of competitive uptake in plants. This work contributes to the major research areas in radioecology lacking in data and supports the increasing public interest in nuclear energy, decommissioning, waste management, and environmental stewardship.

**2:30 PM**

**Friday, March 11, 2022**

**Brackett Hall 100**

***In-person attendance is mandatory for graduate students enrolled in EES 8610, EES 9610, and GEOL 8510. You can join online via Zoom only if you have tested positive for COVID-19 and requested an absence or have obtained prior approval for another valid reason.***

**For those attending online, please join via:**

[**https://clemson.zoom.us/j/5783910968**](https://clemson.zoom.us/j/5783910968)