



Project Summary:

Radium Timepiece Dose Modeling

Government Agency:
U.S. Nuclear Regulatory
Commission

Project Timetable:
August 2006 to
January 2007

Oak Ridge Associated Universities (ORAU) provided assistance to the U.S. Nuclear Regulatory Commission (NRC) by assessing radiological doses to users and possessors of radium-dial timepieces. The Energy Policy Act of 2005 expanded the definition of by-product nuclear material, which brought radium under the jurisdiction of the NRC.

In preparation, the NRC asked ORAU to model the radiological doses to individuals who may be exposed to radium timepieces under a variety of situations. ORAU's report provided critical information as to whether proposed regulations would adequately protect the public from any associated health and safety risks.

Specific tasks completed by ORAU in preparing the report included:

- Estimating radioactivity content of radium timepieces and their components.
- Modeling various exposure pathways including external exposure, inhalation of smoke during a fire, ingestion of paint dust, and radon emanation.
- Estimating doses to potentially exposed people under a variety of situations including wearing a wristwatch, collecting antiques, repairing and refurbishing antiques, and catastrophic fires involving a collection of timepieces.
- Comparing potential doses to existing and proposed regulatory limits.

ORAU's report, titled "Radium Timepiece Dose Modeling," provided the NRC with dose modeling results and detailed explanations of each exposure model. The report provided the NRC with the necessary information to proceed with developing and implementing proposed regulatory changes.

Partnerships for Innovation



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