



CRPA-CARST Symposium on Radon and Radiation Protection

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Organization

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Title

Radiation Protection and Radon Control in High-Grade Uranium Mining

Abstract

High-grade uranium mining presents some of the most complex radiation protection challenges in the mining industry, driven by elevated gamma radiation fields, significant radon generation, and the presence of long-lived radioactive dust (LLRD). This presentation connects the fundamental principles of nuclear and health physics with their practical application in protecting workers in high-radon, high-radiation underground environments.

The presentation will outline the primary radiation hazards encountered in high-grade uranium mines, with particular emphasis on radon emanation from ore bodies and surrounding host rock, its transport through mine workings, and its contribution to worker dose. The underlying physics governing gamma radiation fields and radioactive decay chains leading to LLRD will be discussed to provide context for exposure pathways and control strategies.

Drawing on operational experience, this presentation demonstrates how an integrated radiation protection program can successfully manage radon and other radiation hazards, maintaining worker doses well below regulatory limits. The session offers a real-world perspective on applying health physics principles in one of the most highly regulated and radon-intensive occupational settings.