

Science.

Technology.

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Radiological Science and Engineering Group

Dose Reconstruction



Past industrial practices, such as the development of nuclear weapons, have resulted in human exposures to radioactive materials and hazardous chemicals that would be unacceptable by current standards. The Radiological Science and Engineering Group (RSEG) of the Pacific Northwest National Laboratory (PNNL) is a world leader in reconstructing past radiological exposures to workers and the public. We have successfully reconstructed worker exposure profiles, workplace radiation fields, likely source terms, transport paths through natural environments, and public exposures.

We can evaluate:

- Workplace exposures based on past nuclear or radiological activities
- Releases to environment (air, soil, water)
- Radiation (beta, photon, neutron) measurements and/or analytical transport calculations
- Environmental transport pathways
- Human intake (dose, health impact, risk).

For more information, contact:

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Proven Experience

The Radiological Science and Engineering Group can evaluate exposure to workers and to the public using deterministic or stochastic methods. We have led programs for numerous research efforts on a range of complex and notable projects:

- U.S. Department of Energy and other sponsors over many years. Evaluation of radiation (beta, photon, neutron) fields and occupational dose (skin, body, organs) from routine practices or incidents using field measurement techniques (photon and neutron spectroscopy, absorbed dose) or analytical (Monte Carlo, discrete ordinate transport) methods.
- Hanford Environmental Dose Reconstruction (HEDR), Washington State/USA. Evaluation of releases and exposures to people living in an area of over 75,000 square miles in the U.S. Pacific Northwest resulting from operation of the first production reactor facilities in the world. Funded by the U.S. Department of Energy and Centers for Disease Control and Prevention.
- Joint Coordinating Committee on Radiation Effects Research (JCCRER), Mayak plutonium workers and Techa River population/Russia. Evaluation of releases and exposures to over 30,000 members of the public and 20,000 workers resulting from operation of the first production reactor facilities in the former Soviet Union, which also reprocessed spent fuel. Doses from ionizing radiation range from very low to very high. Funded by multiple U.S. agencies, and the Russian Ministries of Health and Atomic Energy.
- International Agency for Research on Cancer and the U.S. National Institutes of Occupational Safety and Health. We have prepared dosimetry data for inclusion in worker epidemiologic studies and have participated in review and guidance for dose reconstructions performed by government agencies.

**Pacific Northwest
National Laboratory**

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