



Environmental Science and Research Foundation

Results of INEEL Offsite Environmental Surveillance for the First Quarter of 1997

Environmental surveillance during the first quarter of 1997 (January-March) found no radionuclides in the offsite environment attributable to Idaho National Engineering and Environmental Laboratory (INEEL) operations. The Environmental Science and Research Foundation sampled potential pathways by which radionuclides from the INEEL could reach members of the public. The pathways sampled during the first quarter were air, water, milk, and fine particulate matter. A total of 287 samples were collected and analyzed. Results are presented in the report *INEEL Offsite Environmental Surveillance Program Report: First Quarter of 1997* [ESRF-021(1QT97)].

Air

The Foundation maintained a network of 12 continuously-operating air samplers around the INEEL. Three additional samplers were located on the INEEL for comparison to offsite samplers. Air filters from the samplers were collected weekly for analysis. The filters were analyzed weekly for "gross" activity—a measurement of the total amount of radioactivity per milliliter of air pulled through the filter. At the end of the quarter all of the filters from each location were combined and analyzed for specific radionuclides. Charcoal cartridges included with the air filters trap iodine-131, that exists as a gas. These cartridges were analyzed weekly, since radioactive iodine decays rapidly. Atmospheric moisture and precipitation samples were collected and analyzed for tritium, a radioactive form of hydrogen.

- All concentrations of radionuclides were within the range that is typical of background radioactivity.
- Americium-241 was found in composited air filters from Arco, Blackfoot, Craters of the Moon, the INEEL Main Gate, and Montevieu. The concentrations indicated likely are attributable to worldwide fallout from above-ground nuclear weapons testing but may also be from INEEL operations. The readings were within U.S. Department of Energy guidelines for public protection from radiation, with the highest reading being 0.045 percent of the standard.
- Gross alpha and gross beta concentrations were within expected ranges. There was no difference in detected concentrations between onsite, boundary, and distant locations.

- No iodine-131 was found in any air sample.
- No cesium-137 or plutonium-238 were detected in samples.
- Strontium-90 was detected, at just above the minimum measurable level, in composites of filters from Atomic City and FAA Tower, on the INEEL's eastern boundary. This radionuclide is present worldwide as a result of fallout from historical nuclear weapons testing and has been detected before near the INEEL at similar concentrations. But, it is possible that it resulted from INEEL operations at nearby facilities.
- Tritium was detected in atmospheric moisture samples from Atomic City, Blackfoot, and Idaho Falls and in a precipitation sample from the Central Facilities Area onsite. The detected amounts are within the range usually attributed to historical weapons testing and natural processes. Tritium in onsite samples may have resulted from airborne effluents from the Idaho Chemical Processing Plant.

Water

The Foundation collected five surface water samples from the Magic Valley. Two of these were drinking water samples and three were from springs emerging from the Snake River Plain Aquifer. Each sample was tested for tritium, gross alpha, and gross beta.

- No tritium or gross alpha concentrations were detected.
- All of the samples showed detectable concentrations of gross beta. The detected concentrations were consistent with those acquired naturally as water flows through deposits of uranium and thorium in the earth's crust.

Milk

Milk samples were collected weekly from a dairy in Idaho Falls, as well as monthly from eight other dairies across southeastern Idaho. Each milk sample was analyzed for iodine-131.

- Iodine-131 was not detected in any of the 37 samples.

Fine Particulate Matter (PM-10)

Three PM-10 air samplers collected a total of 21 samples. These devices collect a 24-hour sample every sixth day to measure tiny particles of dust in the air. Such particles are small enough for a person to breathe and may cause health problems. PM-10 samplers are located at Community Monitoring Stations in Blackfoot and Rexburg. An additional sampler in Atomic City began operation during this quarter.

- Dust concentrations averaged 7 micrograms per cubic meter in Atomic City, 12 micrograms per cubic meter in Blackfoot and 10 micrograms per cubic meter in Rexburg. These averages are well below the regulatory standard of 50 micrograms per cubic meter during a year.

For questions or more detailed results, contact:

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NOTE: Photographs suitable for illustrating this information are available for downloading at the Foundation web site.