

SUMMARY

The Environmental Monitoring Program monitors environmental media and facility effluents to assess the effects of the Idaho National Engineering and Environmental Laboratory (INEEL) operations on the environment; to protect public health; and to demonstrate compliance with federal, state, and local regulations. Monitoring data are compared to regulatory criteria to show compliance with regulations and permits and also compared to voluntary protection criteria to assess potential environmental impacts and to ensure protection of public health. Monitoring data from the current year are compared to past monitoring data to identify trends or changes that may indicate loss of control, unplanned releases, or ineffectiveness of pollution prevention programs.

Environmental compliance programs monitor drinking water, storm water, liquid effluents, and groundwater to show compliance with federal, state, and City of Idaho Falls regulations and permits. There were a few instances where permit criteria were exceeded. Corrective action has been taken or is planned to address those situations.

In the past, coliform bacteria were detected in drinking water systems at INEEL facilities as a result of old pipes, stagnant water from buildings and storage tanks where water was seldom used, and biofilm. Water treatment systems for bacteria were installed at all affected INEEL facilities, and as a result, no coliform bacteria were detected in INEEL drinking water systems during 2000.

Groundwater at three locations contained contaminants at or near the drinking water standards. Treatment systems have been installed where necessary, so that water supplied through drinking water distribution systems would meet the drinking water standards.

Liquid effluents from two INEEL Idaho Falls facilities were monitored for compliance with City of Idaho Falls wastewater acceptance forms. All discharges to the sewer system met the discharge limits in the city permits.

Liquid effluent was monitored at the Central Facilities Area, Idaho Nuclear Technology and Engineering Center, and Test Area North, and groundwater was monitored at Idaho Nuclear Technology and Engineering Center and Test Area North for compliance with State of Idaho Wastewater Land Application Permits. Liquid effluents at six additional locations were monitored for characterization and surveillance purposes. All effluent samples taken at the Central Facilities Area Sewage Treatment Plant were in compliance with permit requirements.

Two facilities at the Idaho Nuclear Technology and Engineering Center were monitored under Wastewater Land Application Permits: the Sewage Treatment Plant and the Percolation Ponds. Groundwater sample results from both facilities complied with all permit limits. Total nitrogen concentrations in the Sewage Treatment Plant effluent exceeded the permit limit of 20 mg/L in three monthly samples. As part of the ongoing nitrogen study, an in-depth inventory of nitrogen sources contributing to the Idaho Nuclear Technology and Engineering Center sewage was performed. The study did not identify any new sources. Additional corrective actions are planned, and if these corrective actions do not reduce the

nitrogen to acceptable concentrations, additional operational and plant modifications might be required.

At Test Area North, wastewater effluent and groundwater were monitored for compliance with the Sewage Treatment Plant Wastewater Land Application Permit. All effluent concentrations were within permit limits. Iron, zinc, lead, and total dissolved solids concentrations exceeded the groundwater permit levels in groundwater samples from Test Area North. The elevated iron and zinc concentrations were attributed to galvanic corrosion of the riser pipes. Plans to mitigate the galvanic corrosion are under way.

During 2000, storm water visual inspections were performed at 18 National Pollutant Discharge Elimination System locations. No permit or regulatory limits were exceeded. A required visual inspection was missed at one location. At Test Area North, a small amount of snow melt discharged into Birch Creek from the gravel pit; however, based upon the visual inspections, the water quality was not affected. Because no rainfall or snow melt was discharged down any of the seven injection wells, storm water samples were not collected.

Environmental surveillance programs monitor ambient air, direct radiation, soils, biota, and surface water. Surveillance of environmental media during 2000 did not identify any trends in data that indicated a loss of control or unplanned releases from facility operations.

Ambient air was monitored for radionuclides, particulate matter, nitrogen oxides, and sulfur dioxide. Gross alpha and gross beta radiation from natural background radionuclides are routinely detected in air samples. Cesium-137 and cobalt-60 were the only manmade gamma-emitting radionuclides detected. Cesium-137 was found in samples collected from Experimental Breeder Reactor-I and the Main Gate. Cobalt-60 was detected at the northeast corner of the Subsurface Disposal Area. Cesium-137 and cobalt-60 were detected at the Test Reactor Area. Plutonium-239/240 was detected at the Test Reactor Area and the Rest Area, where strontium-90 was also found. The concentrations of all detected radionuclides were consistent with historical data.

In 2000, wildfires burned approximately 36,000 acres at the INEEL. Air data were evaluated at six air monitors selected based upon proximity to the fire and wind direction to determine the impact of the fire. No manmade radionuclides were detected.

The New Waste Calcining Facility at the Idaho Nuclear Technology and Engineering Center operated only approximately 4 months in 2000. Nitrogen oxide and sulfur dioxide concentrations were well below the Environmental Protection Agency's established ambient air quality standards throughout the year.

Surface water runoff was collected during all quarters of 2000 at the Radioactive Waste Management Complex. Cesium-137 and cobalt-60 were the only manmade, gamma-emitting radionuclides detected. Cesium-137 is commonly detected in environmental samples collected at the Radioactive Waste Management Complex and is usually at or near background concentrations. Americium-241 and plutonium-239/240 were detected at concentrations consistent with those typically

seen in waters collected from areas with high volumes of suspended particulates and were comparable to historical concentrations for that area.

Surface water runoff was also sampled at the Waste Experimental Reduction Facility seepage basins. Cesium-137 was detected at concentrations comparable to historical concentrations and other monitoring results from water samples collected at the INEEL.

Soil samples were collected from the Radioactive Waste Management Complex. Cesium-137, americium-241, plutonium-239/240, and strontium-90 were detected and were consistent with historical concentrations at the Radioactive Waste Management Complex.

Soil samples were collected from outside the Argonne National Laboratory-West. Cesium-137, plutonium-239/240, americium-241, and strontium-90 were detected in concentrations consistent with past analyses.

Direct radiation exposures measured by thermoluminescent dosimeters at both off- and on-Site locations and soil surveys on-Site were consistent with historical data.

Results from the Environmental Monitoring Program demonstrate that the public health and environment were protected, and with few exceptions, sampling results were in compliance with requirements.