

LIBRARY COPY



Overview of Environmental Surveillance at Los Alamos during 1997



Los Alamos
NATIONAL LABORATORY



8167

LALP 98-90
September 1998

This information presented in this overview booklet is explained in greater detail in Environmental Surveillance at Los Alamos during 1997. If you would like a copy, please contact the Laboratory's Ecology Group at 505-665-0231.



Contents



Introduction to the Los Alamos National Laboratory 2

Radiation 4

1997 Dose and Risk Estimates 5

Environmental Management Systems at Los Alamos National Laboratory 6

Environmental Monitoring 7

Environmental Compliance 12





Introduction to the Los Alamos National Laboratory

Linking the Rio Grande Valley and the Jemez Mountains, New Mexico's Pajarito Plateau is home to a world-class scientific institution. Los Alamos National Laboratory (or the Laboratory), managed by the Regents of the University of California, is a government-owned, Department of Energy-supervised complex investigating all areas of modern science for the purposes of national defense, health, conservation, and ecology.

The Laboratory was founded in 1943 as part of the Manhattan Project, whose members assembled to create the first nuclear weapon. Occupying the campus of the Los Alamos Ranch School, American and British scientists gathered on the isolated mesa tops to harness recently discovered nuclear power with the hope of ending World War II. In July 1945, the initial objective of the Laboratory, a nuclear device, was achieved at Los Alamos and tested in White Sands, New Mexico. Today, the Laboratory's central mission is to reduce the global nuclear danger. The Laboratory continues its role in defense, particularly in nuclear weapons, including developing methods for safely handling weapons and managing waste.

The 43 square miles of the Laboratory are divided into 47 technical areas that are used for building sites, experimental areas, waste disposal locations, roads and utilities, and safety and security buffers. An experimental area is located west of the Laboratory in Sandoval County at Fenton Hill. The Laboratory shares Los Alamos County with two residential communities: Los Alamos townsite and White Rock. Most of the land surrounding the Laboratory is undeveloped, owned by the Pueblo of San Ildefonso, the Bureau of Land Management, the Santa Fe National Forest, the General Services Administration, and

Bandelier National Monument, or is rural, supported by ranching and light farming. Santa Fe, the state capital, is 25 miles southeast of Los Alamos; Española is located 20 miles to the east; and Albuquerque, New Mexico's largest city, is 60 miles to the south-southwest. In 1997, more than 234,000 people lived within a 50-mile radius of the Laboratory. The Laboratory and its contractors employed over 13,800 people; the Laboratory is the largest employer in Los Alamos County and northern New Mexico. Other local economic activity is fostered by technology transfer and tourism.

The geography and ecology of Los Alamos is inherently diverse. The terrain of the Pajarito Plateau, where Los Alamos is situated, alternates between mesas and deep canyons. The natural borders of Los Alamos—the Rio Grande and the Jemez Mountains—are significantly lower and higher in elevation than the mesas, which range from 6,200 feet to 7,800 feet. Six vegetation types: piñon-juniper, mixed conifer, ponderosa pine, juniper-grassland, spruce-fir, and subalpine grassland are well represented in the Los Alamos environs. Hundreds of species of wildlife, ranging from aquatic invertebrates to large mammals, reside on or near to Laboratory property.

Many of the activities and operations at the Laboratory involve or produce liquids, solids, and gases that contain radioactive and/or nonradioactive hazardous materials. Such activities include conducting research and development programs in basic and applied chemistry and physics, testing and manufacturing explosives, cleaning chemically contaminated equipment, and working with radioactive materials.

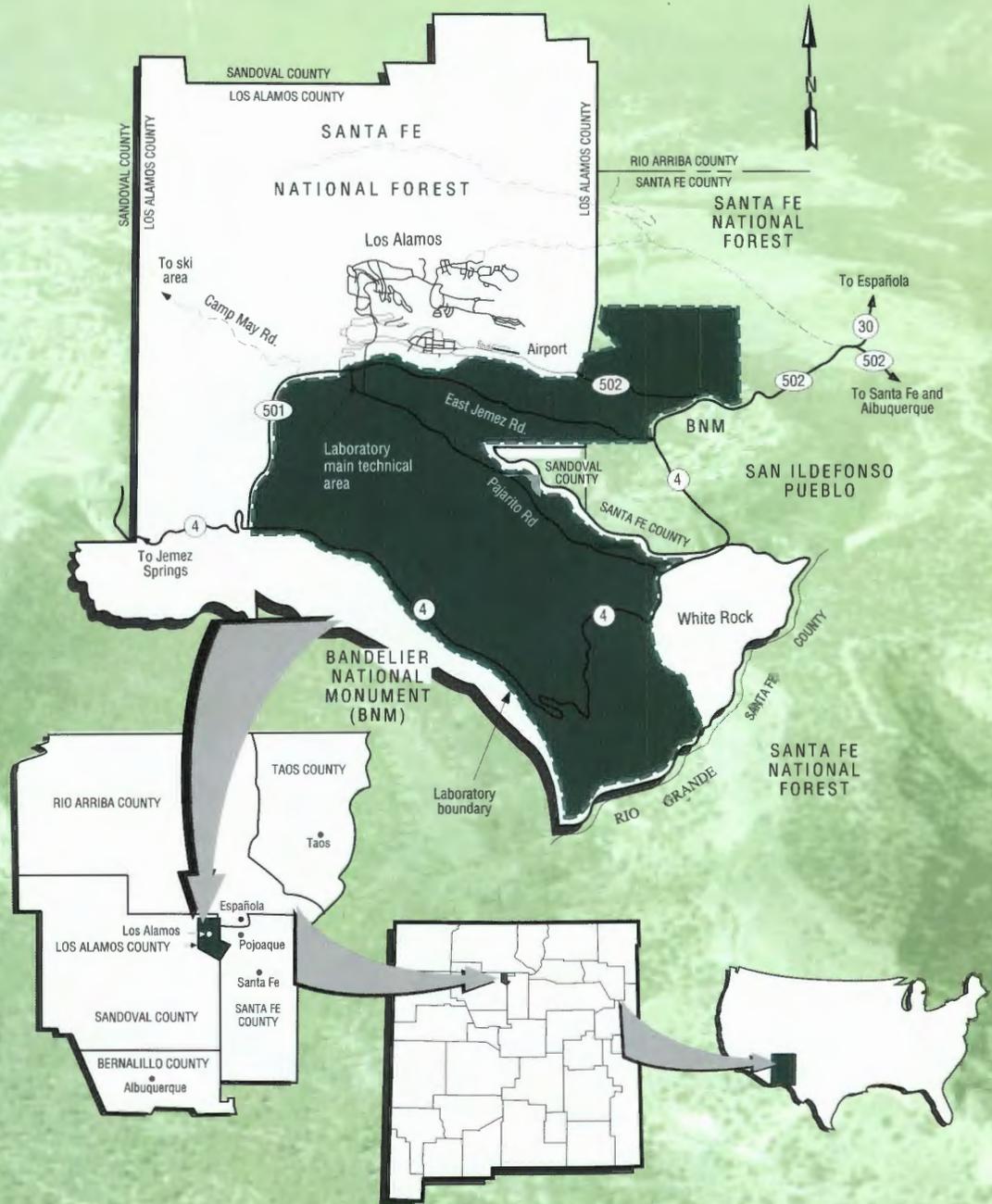
Laboratory policy requires that operations be conducted in a manner that protects the environment and addresses compliance with applicable federal and state environmental protection regulations. This policy is in accordance with Department of Energy requirements to protect the public, environment, and worker health and to comply with applicable environmental laws, regulations, and orders.

For more than 20 years, the Laboratory has published an annual environmental surveillance report. This pamphlet provides a summary of the monitoring results and regulatory compliance status that are explained at length in

Environmental Surveillance at Los Alamos during 1997. This pamphlet also offers an overview that briefly explains important concepts, such as radiation. It is organized into five sections: Radiation, 1997 Dose and Risk Estimates, Environmental Management Systems at Los Alamos

National Laboratory, Environmental Monitoring, and Environmental Compliance.

Please call the Laboratory's Ecology Group at 505-665-0231 if you have any questions about the information presented in this booklet.





Radiation

background radiation

Although some radiation is manufactured by human activities, most radiation can be attributed to natural sources. Naturally occurring radiation, also called background radiation, is received by Earth and its inhabitants every day. Although our understanding of radiation is relatively new and constantly being enhanced, radiation has always been a part of life on Earth.

Radiation from cosmic rays, terrestrial radiation, and radon contribute the most to an individual's estimated dose. Compared to the national average, there is more naturally occurring radiation in Los Alamos and White Rock residential areas because of the high altitude and naturally occurring uranium in rocks and soil.

human-produced radiation

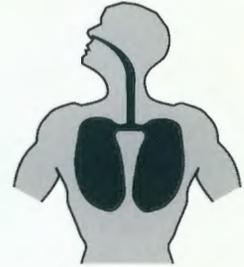
Radiation is also produced by medical procedures and industrial operations. Medical x-rays are a source of radiation, as are consumer goods such as tobacco products, porcelain dentures, television sets, smoke detectors, and microwave ovens. Some of the radiation in the environment is due to fallout from past weapons testing in various countries and nuclear research.

pathways

Both background and human-produced radiation have the potential to reach the public. A pathway outlines the route a radioactive contaminant may follow to reach the human population. Radioactive releases may enter the local environment by air or water and pass through soil, plants, livestock, or wildlife, ultimately reaching humans through inhalation, ingestion, or external exposure, such as absorption through skin or wounds.

Pathways

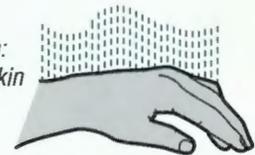
*Inhalation:
Breathing,
Smoking*



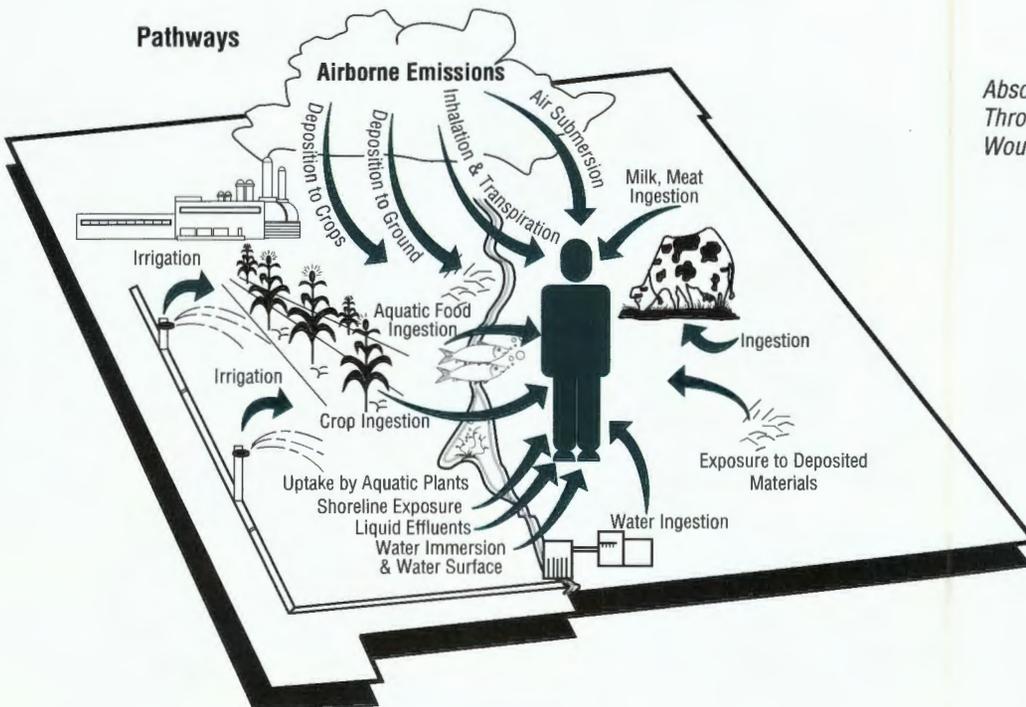
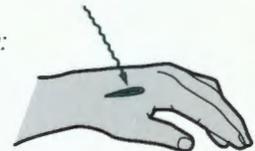
*Ingestion:
Eating,
Drinking,
Chewing*



*Absorption:
Through Skin*



*Absorption:
Through Wounds*





1997 Dose and Risk Estimates

dose

The effects of radiation are related to dose, which is the amount of radiation received. To protect worker and public health and safety, the Department of Energy maintains dose limits based on guidance from the Environmental Protection Agency, the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection. Radiation doses are measured in millirems and typically are assessed for the exposure of a full year.

The maximum doses permitted at Department of Energy sites are in addition to radiation from background, medical, or consumer sources. The Department of Energy's public dose limit is 100 millirem per year from all pathways: inhalation, ingestion, and external exposure. Estimates for radionuclide inhalation are adjusted for living indoors (shielding). Estimates for radionuclide ingestion are based on an annual consumption rate.

To calculate a maximum potential dose to a member of the public, we envision an "average" Los Alamos resident who jogs by the Pajarito Laboratory Site (TA-18) each day. This hypothetical person would receive 5 millirem from TA-18 and smaller contributions from other Laboratory sources for a total dose of 6.1 millirem. This is 6% of the Department of Energy's public dose limit. All other members of the public would receive a smaller dose.

The Environmental Protection Agency limits the effective dose equivalent (an estimate of the total risk of potential effects from radiation exposure) to any member of the public from radioactive airborne releases from the Laboratory to 10 millirem per year. The 1997 effective dose equivalent is calculated to be 3.51 millirem, or 35.1% of the Environmental Protection Agency's standard.

Roentgen equivalent man (rem)

The rem is a unit for measuring dose equivalence. It is the most commonly used unit and pertains to people. The rem takes into account the energy absorbed (dose) and the biological effect on the body (quality factor) resulting from the different types of radiation.

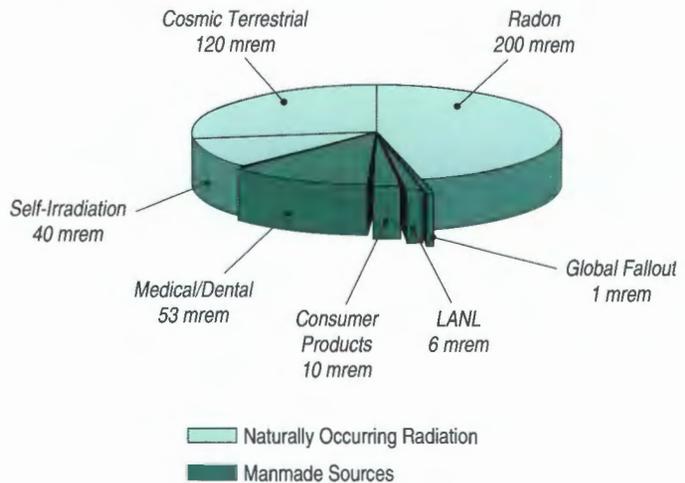
mrem = 1/1000 rem

risk

In March 1996, the Health Physics Society published a position paper on the risks of radiation exposures. They concluded that below an individual dose of 5 rem, or 5000 millirem, in one year "risk estimates should not be used; expressions of risk should only be qualitative emphasizing the inability to detect any increased health detriment (i.e., zero health effect is the most likely outcome)." They further noted that health effects (primarily cancer) from radiation exposure are observed in humans only at doses in excess of 10 rem, or 10,000 millirem, delivered at intense dose rates.

The risk of cancer mortality for every United States resident is one chance in five. The added risk to any individual of cancer mortality caused by Laboratory operations is negligible.

Total contributions to 1997 dose for the Laboratory's maximum exposed individual.





Environmental Management Systems at Los Alamos National Laboratory

environmental protection

The Laboratory's Environment, Safety, and Health Division prepares permits, interprets regulations, performs and documents environmental monitoring and compliance activities, and provides technical advice in the areas of air, water, sediments, soil, food, flora and fauna, and hazardous materials. Personnel in the Division also gather data on measurements of natural radiation and Laboratory radiation sources, monitor weather conditions to assess the movement of airborne contaminants to the environment, and conduct cultural and biological investigations across the site.

environmental oversight

The Environmental Oversight and Monitoring Agreement in Principle (known as the AIP) between the Department of Energy and the State of New Mexico provides technical and financial support from the Department of Energy for state activities in environmental oversight, environmental surveys and sampling, site visits, and document review. The State Environment Department regularly holds public meetings and publishes reports on its independent assessments of environmental quality at the Laboratory.

During 1997, the New Mexico Environment Department/Department of Energy Oversight Bureau reviewed oversight of several of the Laboratory's environmental programs. This independent monitoring program allows the Laboratory's data to be verified.

Highlights of Oversight Bureau Review

Air Quality

Overall, the Oversight Bureau's data from its air particulate samplers were similar to data reported by the Laboratory.

Gamma Radiation Measurements

Levels of gamma radiation measured by the Oversight Bureau's thermoluminescent dosimeters were consistently lower than the levels measured by the Laboratory, and all measurements were below natural background radiation levels.

Water Quality

The Oversight Bureau began evaluating the influence of the Pajarito fault zone on surface water infiltration in Pajarito Canyon, Cañon de Valle, and Water Canyon. Preliminary data from a study on water and sediment quality at two locations on the Rio Grande indicate that water quality is similar both upstream and downstream of the Laboratory.

Sediments, Soils, and Foodstuffs

A preliminary comparison of the analysis of split samples from selected locations indicate Laboratory data on sediments, soils, vegetation, and foodstuffs are consistent with the Oversight Bureau's data and track historical radiological trends.

Environmental Restoration

The Oversight Bureau staff reviewed stabilization measures at TA-21 and TA-9, Area M. The Oversight Bureau continued to work with the Environmental Protection Agency, Department of Energy, and the Laboratory to identify environmental restoration sites with the potential for erosion and to determine what measures are needed to prevent migration of contaminants into watercourses.

National Environmental Policy Act

The Oversight Bureau staff reviewed and commented on three draft National Environmental Policy Act documents for proposed activities at the Laboratory.

environmental, safety, and health training

The Laboratory maintains an extensive training program of environmental, safety, and health courses that meet requirements of the Environmental Protection Agency, the Occupational Safety and Health Administration/Act (OSHA), the Department of Transportation regulations, and the Department of Energy regulations. All Laboratory-wide training is done in conjunction with subject matter experts who validate technical content.

Training is provided for all new employees, contractors, affiliates, long-term visitors, and students. It consists of introductory information on environment, safety, and health topics such as OSHA rights and responsibilities, industrial hygiene, industrial safety, fire protection, and emergency management; general employee radiological training; administrative policies; and security requirements.

In addition, training is available as classroom, self-study, computer-based, or online training in the following categories: waste management; spill coordination; hazardous waste operations; chemical and biological hazards; dosimetry; criticality; safety courses on cranes, forklifts, lasers, lockout/tagout, electrical safety, and pressure safety; and the identification, packaging, shipment, and transport of hazardous materials and wastes, radioactive materials and wastes, explosives, and gas cylinders.



Environmental Monitoring

air

Air monitoring stations record concentrations of various radionuclides in the air. Concentrations of gross alpha and beta activity, tritium, plutonium, americium, and uranium are calculated. Gross alpha and beta activities are due almost entirely to the decay of natural radionuclides (primarily radon for alpha activity) and are dependent on variations in natural conditions, such as atmospheric pressure, temperature, and soil moisture. The differences typically seen in gross alpha and beta results for the various air monitoring stations are most likely attributable to these natural factors. The concentration levels of radionuclides allowed in the air are controlled by the Department of Energy's derived air concentration guides and Environmental Protection Agency regulations. The Air Quality Group began routine publication of air quality data during 1997 at <http://www.air-quality.lanl.gov/> on the World Wide Web.

In 1997, the Laboratory's off-site concentration levels of tritium, uranium, plutonium, and americium were well below any applicable standards. On-site concentration levels did not exceed the Department of Energy's derived air concentration guides, although three instances of elevated air concentrations at on-site stations were investigated in 1997. Although the Environmental Protection Agency regulations are not applicable to on-site air monitoring stations, Laboratory measurements confirm that the regulations were not exceeded at these stations.

During 1997, there were no unplanned releases of air containing radioactive materials. Plutonium and americium concentrations were elevated at TA-54, Area G and at TA-21; gross alpha and beta were elevated at the Los Alamos County Landfill.



Photo by J. Dewart



stack air emissions

Radioactive materials are an integral part of many activities at the Laboratory, and some of these materials may be vented to the environment through a stack. These operations are evaluated to determine impacts on the public and the environment. Gaseous mixed activation product emissions from the Los Alamos Neutron Science Center was the only radiation-producing Lab activity that increased from 1996 to 1997, as a result of an increase in the operation of the accelerator.

external penetrating radiation

Levels of external penetrating radiation (the radiation originating from a source outside the body, including x-rays, gamma rays, and charged particle contributions from cosmic, terrestrial, and man-made sources) are measured with thermoluminescent dosimeters. Above-background doses are measured by dosimeters near TA-18. The maximum total dose a frequent user of Pajarito Road might have received is 5 millirem. Elevated values were also noted in Montandad Canyon and near a former waste site.

Comparison of 1996 and 1997 Airborne Releases of Radionuclides from Laboratory Operations

Airborne Emissions from Monitored Stacks

Radionuclide	Units	Activity Released		Ratio
		1996	1997	1997:1996
Tritium	Ci	680	420	0.62
Uranium	μCi	40 ^a	22	0.55
Plutonium	μCi	23	3.7	0.16
Gaseous mixed activation products	Ci	13,110	19,570	1.56
Particulate/vapor activation products	Ci	0.12	0.93	7.75
Total	Ci	13,790	19,991	

^aStack at TA-21 was eliminated; stack at TA-3, SM-66, was not monitored in 1996.

Ci = Curie, which is the standard unit of measuring radioactivity; 1 Ci = 3.7×10^{10} nuclear transformations per second.
 μCi = microCurie, or 0.000001 of a Curie



water

Within the Laboratory boundary, sources of surface water include spring snowmelt, summer storm runoff, and flow from outfalls that are regulated by the National Pollutant Discharge Elimination System of the Clean Water Act. Surface water is monitored on and adjacent to the Laboratory and at regional locations. Levels of plutonium, tritium, strontium, americium, uranium, cesium, alpha and beta particles, and gamma rays are measured at these stations. In 1997, all measurements except 10 gross alpha and 1 gross beta readings were below the Department of Energy's derived concentration guides that limit potential exposure to the public for radioactive effluents in water. There has been a general downward trend in radioactive levels at most monitoring stations over the past three-and-a-half decades. Surface water is monitored for its content of metals and inorganic chemicals to detect possible contamination resulting from Laboratory operations. Surface waters at the Laboratory are not a source of drinking or household water.

Groundwater is also monitored to determine its quality. The main aquifer beneath Los Alamos is the primary source of drinking water for the Laboratory and the residents of Los Alamos County. Operations at the Laboratory and discharges from county sewage treatment plants have resulted in detectable changes in water chemistry in some parts of the main aquifer. Several Laboratory test wells showed low levels of tritium resulting from Laboratory operations, but the levels were far below Environmental Protection Agency limits. Based on Environmental Protection Agency standards, these small changes have not degraded drinking water and are not a human health concern. There has been no significant depletion of the amount of water in the aquifer.

During 1997, there were no unplanned releases of radioactive liquid materials. There were 18 unplanned releases of nonradioactive liquid materials, including releases of noncontact cooling waters and treated cooling waters, sanitary sewage from the Laboratory's sanitary sewage collection system, diesel, dielectric oil, and drilling water/mud to a watercourse.

sediments

Sediments are monitored on and near the Laboratory and at regional locations for the presence of tritium, uranium, plutonium, cesium, and strontium. In 1997, data from sediment sampling were consistent with results from previous years; none of the sediment samples showed any activity of radioactive substance that exceeded screening action levels (the level at which cleanup activity is required by the Environmental Restoration Project) except on Laboratory property in Mortandad Canyon where three stations exceeded the screening action levels for cesium-137. Sediments are also monitored for trace metals, such as antimony and mercury, and organic contaminants, such as polychlorinated biphenyls (PCB). The 1997 results showed no concentrations above the limits of quantitation levels for trace metals and organic contaminants.



soils

Soils are monitored both on- and off-site for tritium; strontium; cesium; uranium; plutonium; americium; and alpha, beta, and gamma activities. All levels were within acceptable values, and no action was required to reduce levels of any radioactive element in the soil. Soils are analyzed for trace and heavy metals, such as beryllium, lead, and mercury. In 1997, all samples were within acceptable levels for the Los Alamos region.

Trend analyses show that radionuclides in soils, particularly tritium and uranium, from both on- and off-site areas have been decreasing over time, so that today, most radionuclides are approaching values close to background levels.



foodstuffs and associated biota

During 1997, samples of fruits, vegetables, herbal tea, honey, milk, piñon, eggs, fish, deer, elk, and beef cows were collected from the Laboratory and surrounding areas, including several Native American Pueblo communities, to determine the impact of Laboratory operations on the human food chain.

With the exception of wild edible plants and fruits from Mortandad Canyon, foodstuff samples from Laboratory and perimeter locations showed no radioactivity distinguishable from that attributable to natural sources and/or worldwide fallout. Similarly, most heavy metal elements in produce from Laboratory and perimeter areas were within regional background concentrations.





Environmental Compliance

The Laboratory operates under all applicable federal and state environmental, safety, and health laws, codes, orders, and standards. Environmental regulatory agencies include the Environmental Protection Agency and the New Mexico Environment Department. The Department of Energy issues orders that also regulate environmental activities at the Laboratory. Laboratory operations are subject to the following environmental laws.

Resource Conservation and Recovery Act (RCRA) and its Hazardous and Solid Waste Amendments (HSWA)

RCRA requires the Laboratory to regulate hazardous and solid waste, from generation to disposal. Also, RCRA requires the Laboratory to attempt to reduce the amount of hazardous waste produced, and to reduce the toxicity of generated hazardous waste by treatment before disposal. Laboratory staff had frequent interactions with federal and state RCRA personnel during 1997. The Laboratory met the 1997 deadlines and milestones required by the Site Treatment Plan for treating mixed waste generated at LANL.

The New Mexico Environment Department conducted its annual hazardous waste compliance inspection from July intermittently through December 1997. In addition to visiting approximately 680 hazardous and mixed waste satellite accumulation areas, less-than-90-day storage areas, and permitted and interim status storage and treatment facilities located throughout the Laboratory, inspectors walked through approximately 95% of

RCRA - From Cradle to Grave Tracking of Hazardous Materials



the Laboratory, visiting general storage areas, laboratories, and perimeter spaces. New Mexico Environment Department inspectors noted 52 apparent findings. The majority of the apparent findings were of an administrative nature, although 10 of the findings cited wastes that were stored illegally in lieu of disposal or proper storage. Based on its knowledge of the apparent findings the Laboratory has taken appropriate corrective actions. The New Mexico Environment Department had not issued a formal Compliance Order by the end of April 1998.

In 1997, the activities conducted by the Environmental Restoration Project remained in compliance with Module

VIII of the RCRA permit that incorporates HSWA regulations. During 1997, the Environmental Restoration Project submitted 24 RCRA Facility Investigation assessments to the New Mexico Environment Department. Remedial activities conducted during 1997 included cleanup of seven sites including a surface disposal area, three septic systems, an abandoned manhole, a lead storage area, and a firing site. The Environmental Restoration Project demolished seven contaminated structures. As of the end of 1997, approximately 750 potential release sites still require investigation and/or remediation, and approximately 100 buildings await decontamination and decommissioning.



Seven underground storage tanks were removed from Laboratory property during 1997. The New Mexico Environment Department did not conduct an inspection of underground storage tanks in 1997.

Nonhazardous and municipal-type solid wastes generated by Laboratory operations during 1997 accounted for less than 11% of the total volume disposed of at the Los Alamos County landfill. In 1997, more than 11,200 tons of materials—paper, phone books, and construction materials—that would have been sent to the county landfill were recycled.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA outlines the appropriate responses to certain substance releases to the environment. Based on site assessments and inspections, the Environmental Protection Agency ranks potentially health threatening or environmentally unsound hazards at facilities. Special attention is given to these hazardous sites, which are maintained on a national priority list. The Laboratory is not included on the national priority list but is subject to the CERCLA guidelines for remediating Environmental Restoration Project sites that contain certain hazardous substances not covered by RCRA.

Emergency Planning and Community Right-to-Know Act (EPCRA)

The Laboratory submitted two annual reports cited by EPCRA. The Laboratory submitted a report on the quantity and location of 39 chemicals and explosives that exceeded threshold amounts. The material safety data sheet for each chemical and explosive was included in the report. During 1997, the Laboratory also submitted a Toxic Chemical Inventory Report to the Environmental Protection Agency and the New Mexico Emergency Management Bureau covering releases of approximately 41,741 pounds of nitric acid that were used in plutonium metal processing. These releases resulted in air emissions of 573 pounds of nitric acid, 72 pounds of nitrogen oxide, and 214 pounds of nitrogen dioxide.

Toxic Substances Control Act (TSCA)

TSCA regulates the Laboratory's use, storage, handling, and disposal of products and equipment containing PCB that are commonly found in oil products and that may cause adverse health effects in humans.

In 1997, the Laboratory had 25 off-site shipments of PCB waste. The total weight of PCB in those shipments was 46,264 pounds. PCB wastes are sent to

Environmental Protection Agency-permitted disposal and treatment facilities. The Environmental Protection Agency did not conduct an audit of the Laboratory's PCB management program during 1997.

On August 8, 1996, the Department of Energy, the Naval Nuclear Propulsion program, and the Environmental Protection Agency entered into a PCB Federal Facility Compliance Agreement, dealing specifically with radioactive PCB and PCB waste containing RCRA wastes. The Federal Facility Compliance Agreement is intended to be a compliance bridge from now until the Environmental Protection Agency's proposed rule updating the PCB regulations is final. The Laboratory has a total of 119 items that meet the criteria for inclusion in the PCB Federal Facility Compliance Agreement. The Laboratory met the deadlines established by the agreement during 1997.

Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

FIFRA regulates the manufacturing and application of pesticides. The Laboratory is subject to FIFRA and the New Mexico Pest Control Act. The New Mexico Department of Agriculture did not audit the Laboratory's pesticide application program or its certified application equipment during 1997.

Clean Air Act (CAA) and New Mexico Administrative Code (NMAC)

The CAA and the NMAC are federal and state codes concerning air quality and emissions. Both radioactive and nonradioactive emissions to the air are screened carefully to protect the public, the ozone layer, and the environment. The effective dose equivalent from the Laboratory's 1997 radioactive air emissions was below the Environmental Protection Agency's limit of 10 millirem per year to any member of the public. The effective dose equivalent was calculated to be 3.51 millirem using methods that have been approved by the Environmental Protection Agency.

In 1997, the Laboratory reviewed 60 construction or modification projects to determine if they could cause airborne radioactive emissions. After review, none of the projects was shown to require preconstruction approval.

During 1997, the Department of Energy and the Director of the Laboratory entered into a Consent Decree and Settlement Agreement to resolve a lawsuit filed by the Concerned Citizens for Nuclear Safety group in 1994. The suit alleged that the Laboratory was not in full compliance with the Radionuclide National Emission Standards for Hazardous Air Pollutants provisions of the CAA. Many of the provisions of the decree and agreement were initiated in 1997.

Clean Water Act (CWA)

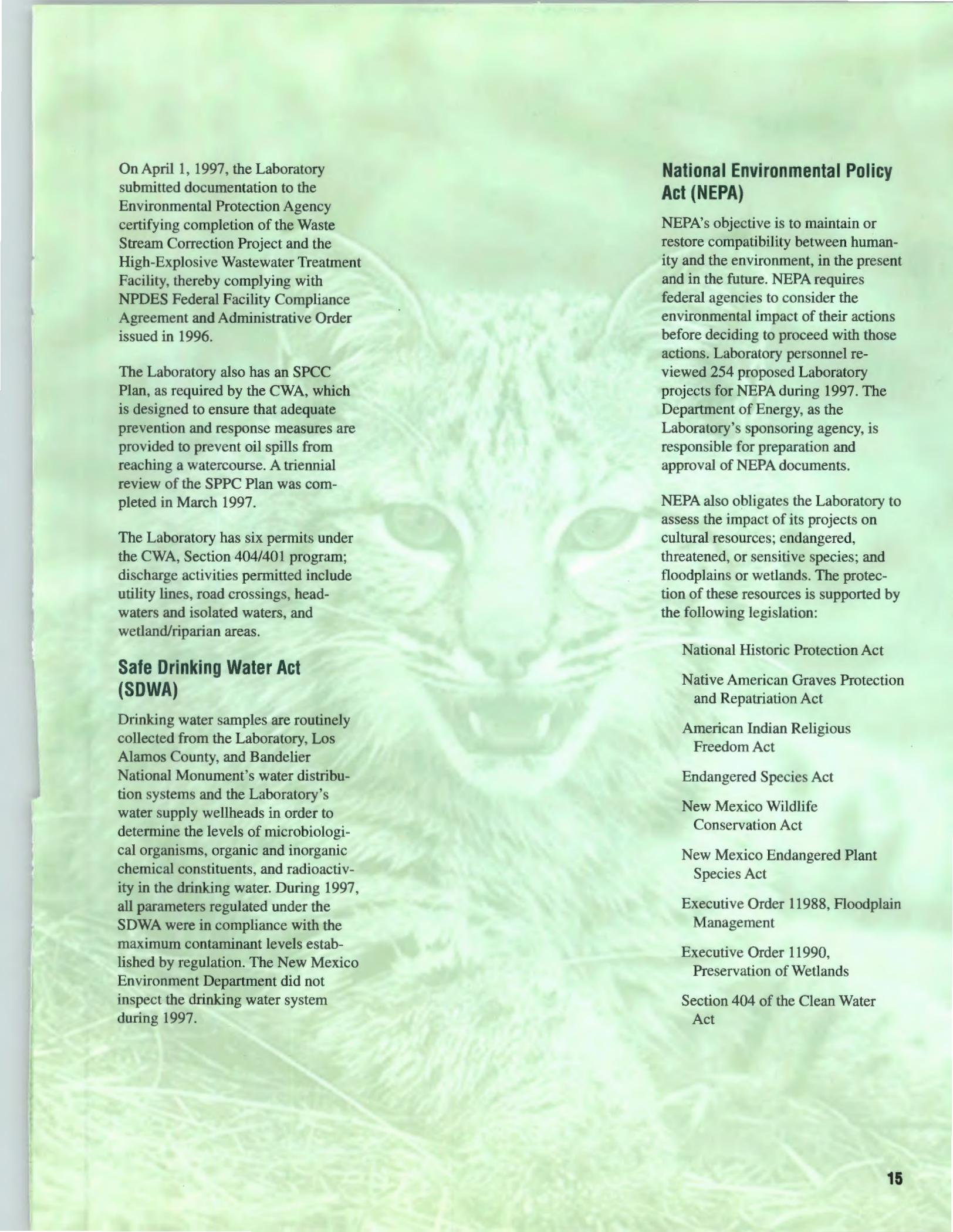
The primary goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The three primary programs at the Laboratory established to comply with the CWA are the National Pollutant Discharge Elimination System (NPDES) programs, the Spill Prevention Control and Countermeasures (SPCC) program, and the Section 404/401 Dredge and Fill Permit program.

The NPDES permits establish specific chemical, physical, and biological criteria that an effluent must meet before it is released to the environment. Although most of the Laboratory's effluent is discharged to normally dry arroyos, the Laboratory is required to meet effluent limitations under the NPDES permit program. The University of California and the Department of Energy are copermittees on the permits covering Los Alamos. The permits are issued and enforced by the Environmental Protection Agency, Region 6, in Dallas, Texas. The New Mexico Environment Department performs some inspections and monitoring for the Environmental Protection Agency. In 1997, Laboratory compliance for the sanitary and industrial waste discharges was 99.4% and 99.5%, respectively. One exceedance occurred at the TA-46 Sanitary Wastewater Systems Consolidation Plant; eight exceedances occurred at industrial outfalls. Water quality parameters were exceeded once at an industrial outfall. The Laboratory investigated the cause of all exceedances and took corrective actions where appropriate.

During 1997, approximately 67 dry tons of sewage sludge generated at the Laboratory's Sanitary Wastewater Systems Consolidation Plant as part of routine wastewater treatment operations were disposed of as PCB-contaminated waste at an off-site Environmental Protection Agency-approved landfill. Although analytical monitoring of this sludge in 1996 demonstrated 100% compliance with the federal standards for land application, the detection of low concentrations (less than or equal to 4.38 parts per million) of PCB in the sludge prompted the Laboratory to suspend all land application activities. All sewage sludge generated at the TA-46 plant is now handled, sampled, and disposed of in accordance with TSCA regulations for 50–499 parts per million PCB-contaminated waste.

On May 15 and 16, 1997, the New Mexico Environment Department Surface Water Quality Bureau conducted a compliance evaluation inspection at the Sanitary Wastewater Systems Consolidation Plant. Inspectors noted four concerns, all of which were administrative in nature. The Laboratory has addressed the concerns noted.

During 1997, the Laboratory had 14 NPDES permits for its storm water discharges. The conditions of these permits require the development and implementation of a Storm Water Pollution Prevention Plan and storm water runoff monitoring at selected facilities. During 1997, the Laboratory developed and implemented 70 Storm Water Pollution Prevention Plans.



On April 1, 1997, the Laboratory submitted documentation to the Environmental Protection Agency certifying completion of the Waste Stream Correction Project and the High-Explosive Wastewater Treatment Facility, thereby complying with NPDES Federal Facility Compliance Agreement and Administrative Order issued in 1996.

The Laboratory also has an SPCC Plan, as required by the CWA, which is designed to ensure that adequate prevention and response measures are provided to prevent oil spills from reaching a watercourse. A triennial review of the SPCC Plan was completed in March 1997.

The Laboratory has six permits under the CWA, Section 404/401 program; discharge activities permitted include utility lines, road crossings, headwaters and isolated waters, and wetland/riparian areas.

Safe Drinking Water Act (SDWA)

Drinking water samples are routinely collected from the Laboratory, Los Alamos County, and Bandelier National Monument's water distribution systems and the Laboratory's water supply wellheads in order to determine the levels of microbiological organisms, organic and inorganic chemical constituents, and radioactivity in the drinking water. During 1997, all parameters regulated under the SDWA were in compliance with the maximum contaminant levels established by regulation. The New Mexico Environment Department did not inspect the drinking water system during 1997.

National Environmental Policy Act (NEPA)

NEPA's objective is to maintain or restore compatibility between humanity and the environment, in the present and in the future. NEPA requires federal agencies to consider the environmental impact of their actions before deciding to proceed with those actions. Laboratory personnel reviewed 254 proposed Laboratory projects for NEPA during 1997. The Department of Energy, as the Laboratory's sponsoring agency, is responsible for preparation and approval of NEPA documents.

NEPA also obligates the Laboratory to assess the impact of its projects on cultural resources; endangered, threatened, or sensitive species; and floodplains or wetlands. The protection of these resources is supported by the following legislation:

- National Historic Protection Act
- Native American Graves Protection and Repatriation Act
- American Indian Religious Freedom Act
- Endangered Species Act
- New Mexico Wildlife Conservation Act
- New Mexico Endangered Plant Species Act
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Preservation of Wetlands
- Section 404 of the Clean Water Act

The Environmental Publications and Design Team of the Ecology Group (ESH-20) would like to thank Karen Lincoln for updating this overview. We'd also like to thank the members of the following Los Alamos National Laboratory groups for their contributions to the booklet.

ESH-17, Air Quality
ESH-18, Water Quality & Hydrology
ESH-19, Hazardous & Solid Waste
ESH-20, Ecology
EM, Environmental Management

This publication was produced by the Communication Arts & Services Group (CIC-1).

Design: L. Kim Nguyen Gunderson
Editing: Louisa Luján-Pacheco
Illustration: Jim Mahan and Dennis Olive

Illustration retrieval numbers:

page 3 esh 96-379c
page 4 esh 96-365c, esh 96-376c
page 5 CIC-1/98-1539
page 12 Environmental Protection Agency

Photography: CIC-9 where indicated by photo negative number; all other photos were provided by Laboratory organizations.

Cover CIC-9, ESH-20, and Stock Photos
page 1 stock photo
page 7 ESH-17
page 9 CIO
page 10 ESH-20, CIC-9
page 11 ESH-20, CIC-9
page 15 stock photo
page 16 stock photo

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the US Department of Energy under contract W-7450-ENG-36. All company names, logos, and products mentioned herein are trademarks of their respective companies. Reference to any specific company or products is not be construed as an endorsement of said company or product by the Regents of the University of California, the United States Government, the US Department of Energy, nor any of their employees. The Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.



Los Alamos

NATIONAL LABORATORY

Los Alamos, New Mexico 87545