

LALP-00-213



LIBRARY COPY

Overview of Environmental Surveillance at Los Alamos during 1999

30th Anniversary Edition



Los Alamos
NATIONAL LABORATORY



8191

Cerro Grande Fire

On May 4, 2000, the National Park Service at Bandelier National Monument set a prescribed fire that subsequently burned out of control. The Cerro Grande wildfire was one of the largest in New Mexico state history and burned about 43,000 acres of forest and residential land, including about 7,500 acres of the Los Alamos National Laboratory site. The Laboratory was closed for two-and-a-half weeks, and the towns of Los Alamos and White Rock were evacuated for several days. The fire was fully contained by June 6 and declared out on July 20. One-hundred twelve Laboratory structures and 235 residential structures were either damaged or destroyed. An estimated 37 million trees were lost in the fire. The human and environmental impacts from this devastating wildfire are still being felt and evaluated.

This annual environmental report focuses on issues and impacts from Laboratory operations in 1999. Its scheduled publication date of October 1, 2000, was delayed largely by the fire and post-fire monitoring and mitigation activities. The next edition, *Environmental Surveillance at Los Alamos during 2000*, will be published in October 2001 and will include surveillance data and analyses of the fire's impacts and its aftermath.

At this time, the Laboratory is conducting an extensive environmental monitoring and sampling program to evaluate the effects of the Cerro Grande fire at the Laboratory and especially to evaluate if public and worker health and the environment were adversely impacted by the fire on Laboratory land. Just as importantly, the program will identify changes in pre-fire baseline conditions that will aid in evaluating any future impacts the Laboratory may have, especially those resulting from contaminant transport off-site.

The program involves a number of different organizations within the Laboratory, as well as coordination with outside organizations and agencies. The primary Laboratory organizations involved are the Hazardous Materials Response Group (ESH-10), the Air Quality Group (ESH-17), the Water Quality and Hydrology Group (ESH-18), the Ecology Group (ESH-20), the Integrated Geosciences Group (EES-13), the Environmental Sciences Group (EES-15), and the Environmental Restoration Project (ER). In addition, the US Department of Energy Radiological Assistance Program (USDOE/RAP) also performed environmental measurements during the Cerro Grande fire.

External organizations participating in the program include the New Mexico Environment Department (NMED), San Ildefonso Pueblo, Santa Clara Pueblo, Cochiti Pueblo, Jemez Pueblo, Los Alamos County, the US Army Corps of Engineers (USACE), the US Environmental Protection Agency (USEPA), the US Fish and Wildlife Service, the US Forest Service, the US Geological Survey (USGS), and the US Park Service (Bandelier National Monument). The Department of Energy has an Agreement-in-Principle in place with NMED that provides for independent oversight monitoring of the Laboratory's activities. The NMED DOE Oversight Bureau (NMED/DOB) performs this monitoring, which involves routine air, water, soil, and sediment sampling and measuring external radiation fields in the environment. All routine monitoring will continue, as well as NMED's special sampling to address specific concerns that the Cerro Grande fire and its aftermath raised.

Through this monitoring and sampling plan, the Laboratory will determine what special sampling is needed as a result of the fire. This special sampling will take place in addition to the extensive and ongoing Environmental Surveillance and Compliance Program the Laboratory routinely operates and maintains. Under the ongoing program, the Laboratory collects more than 11,000 environmental samples each year from more than 450 sampling stations in and around the Laboratory. Many of these sampling and measurement activities are included in this document.



Contents

Preface: Cerro Grande Fire.....	inside front cover
Introduction to the Los Alamos National Laboratory.....	2
Radiation.....	4
1999 Dose and Risk Estimates.....	5
Management of the Environment.....	6
Environmental Monitoring.....	7
Environmental Compliance.....	13
Related Web Sites.....	16



*Most of the information presented in this overview booklet is explained in greater detail in *Environmental Surveillance at Los Alamos during 1999*. If you would like a copy, please contact the Laboratory's Ecology Group at 505-665-8961. These reports are also available on the World Wide Web at <http://lib-www.lanl.gov/pubs/la-13775.pdf>. This overview booklet is available on the World Wide Web at <http://lib-www.lanl.gov/pubs/lalp-00-213.pdf>*



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 science and technology for the purposes of national defense and global security.

Today, the Laboratory's central mission is to reduce the global nuclear danger, ensure safety and confidence in the US nuclear weapons stockpile, and develop technical solutions to reduce the threat of weapons of mass destruction. The Laboratory also addresses energy, infrastructure, and human and environmental health problems.

The 43 square miles of the Laboratory are divided into 47 technical areas that are used for scientific and support building sites, experimental areas, waste disposal locations, roads and utilities, and safety and security buffers. The Laboratory shares Los Alamos County with two residential communities: Los Alamos townsite and White Rock. Most of the other land surrounding the Laboratory is undeveloped, owned by the Pueblo of San Ildefonso, the Bureau of Land Management, the Santa Fe National Forest, 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 1999, more than 264,000 people lived within a 50-mile radius of the Laboratory. The Laboratory and its contractors employed over 13,000 people; the Laboratory is the largest employer in Los Alamos County and northern New Mexico. Other local economic activity is fostered by technology transfer, supporting businesses, and tourism.

The geography and ecology of Los Alamos are 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 Valley and the Jemez Mountains—are significantly lower and higher in elevation than the mesas, which range from

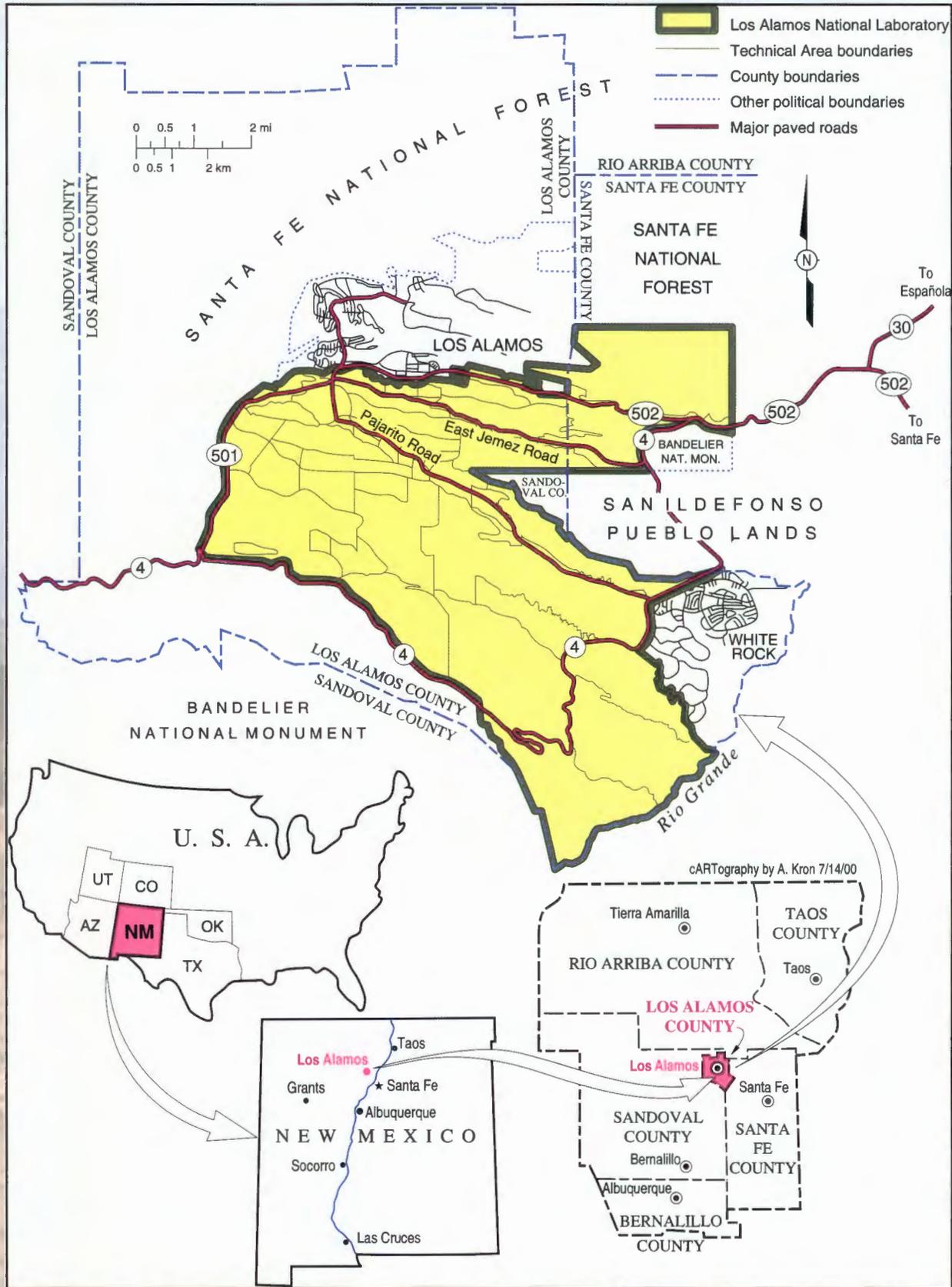
6,200 feet to 7,800 feet. Six vegetation types, piñon-juniper, mixed conifer, ponderosa pine, juniper-grassland, spruce-fir, and subalpine grassland, are well represented in the Los Alamos environs. Hundreds of species of wildlife reside on or near Laboratory property.

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

Laboratory policy requires that operations be conducted in a manner that protects human health and 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 safety and to comply with applicable environmental laws, regulations, and federal orders.

For more than 20 years, the Laboratory has published an annual environmental surveillance report. This overview booklet provides a summary of the monitoring results and regulatory compliance status that are explained at length in *Environmental Surveillance at Los Alamos during 1999*. This booklet also offers brief explanations of important concepts, such as radiation and associated risks. It is organized into five sections: Radiation, 1999 Dose and Risk Estimates, Management of the Environment, Environmental Monitoring, and Environmental Compliance.

Please call the Laboratory's Ecology Group at 505-665-8961 if you have any questions about the information presented in this booklet.





Radiation

background radiation

Although some radiation is the result of human activities, most radiation comes from natural sources. Earth and its inhabitants are exposed to naturally occurring radiation, also called background radiation, every day. Although our understanding of radiation is relatively new and is constantly being improved, radiation has always been a part of life on Earth.

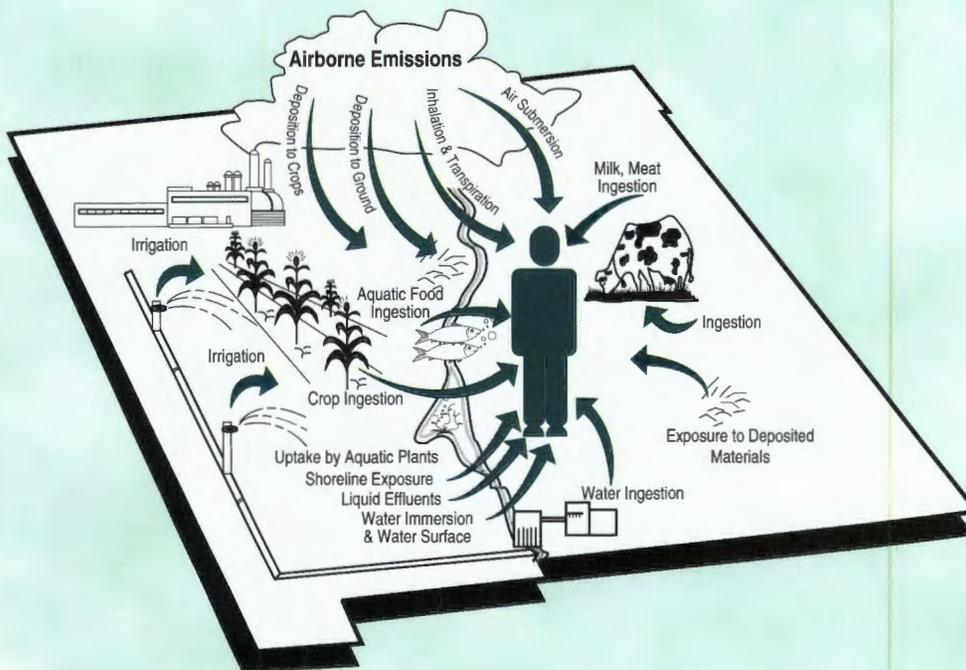
Radiation from cosmic rays, terrestrial sources, and radon contributes the most to an individual's estimated dose. Compared to the national average, Los Alamos and White Rock residential areas have more naturally occurring radiation because of the high altitude and naturally occurring uranium in rocks and soil. The total dose from background radiation, greater than 99% of which is from natural sources, is about 360 mrem in this area and can easily vary by 10 mrem from year to year.

human-produced radiation

Medical procedures and industrial operations also produce radiation. 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 to nuclear research.

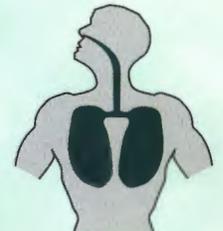
pathways

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:

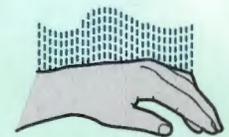
*Inhalation:
Breathing
Smoking*



*Ingestion:
Eating
Drinking
Chewing*



*Absorption:
Through
Skin*



*Absorption:
Through
Wounds*





1999 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 radiation 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 2.6 millirem from TA-18 and smaller contributions from other Laboratory sources for a total dose of 3.2 millirem. This dose is 3.2% 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 1999 effective dose equivalent is calculated to be 0.32 millirem, or 3.2% of the Environmental Protection Agency's standard.

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 5,000 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.

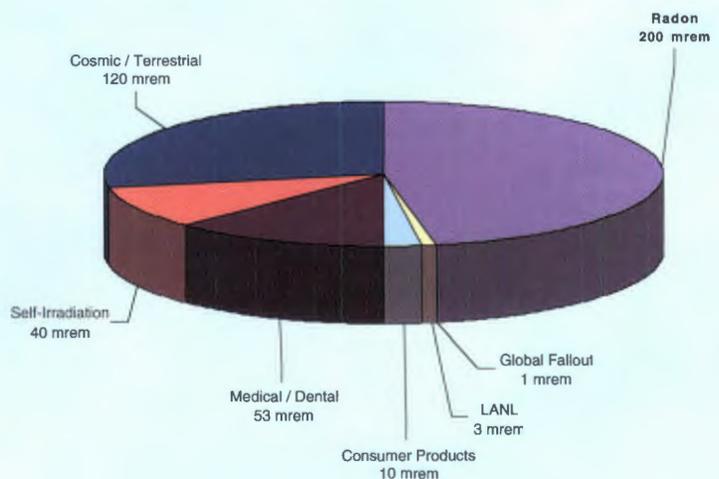
The risk of cancer mortality for every United States resident is one chance in five. The added risk to any individual of cancer mortality caused by Laboratory operations is negligible.

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

Total contributions to 1999 dose for the Laboratory's maximum exposed individual.





Management of the Environment

environmental protection

The Laboratory's Environment, Safety, and Health Division prepares permits, adheres to regulations, performs and documents environmental monitoring and compliance activities, and provides technical advice in the analysis of air, water, sediments, soil, food, flora and fauna, and hazardous materials. Division personnel 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 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 New Mexico Environment Department/Department of Energy Oversight Bureau carries out the requirements. The bureau holds public meetings and publishes reports on its independent assessments of environmental quality at the Laboratory.

During 1999, 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

The bureau monitored air quality at sixteen stations; data were consistent with the levels the Laboratory measured.

Water Quality

Bureau staff collected 60 samples from on-site and off-site wells, springs, and surface water stations. Storm water was collected from five of the Laboratory's seven major drainages.

Sediments, Soils, and Foodstuffs

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

Environmental Restoration

Bureau personnel continued to integrate the regulatory and technical requirements of the regulations governing the Environmental Restoration Project. The Oversight Bureau reviewed investigation and cleanup work associated with the townsite, material disposal areas, and canyons.

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, the Department of Transportation regulations, and the Department of Energy regulations. Subject matter experts validate the technical content of all Laboratory-wide training.

integrated safety management

Integrated Safety Management is the Laboratory's system for performing work safely and for protecting employees, the public, and the environment. Its objectives include conducting Laboratory operations in full compliance with all environmental laws and regulations, preventing adverse environmental impacts and enhancing environmental protection, and adopting proactive approaches to achieve environmental excellence.



Environmental Monitoring

hazardous and solid waste

The Laboratory is continuing its self-assessment program to assess its performance in the proper storage and handling of hazardous and mixed waste. In 1999, the Hazardous and Solid Waste Group completed 1,358 quarterly self-assessments. The New Mexico Environment Department did not conduct an annual hazardous waste compliance inspection at the Laboratory in 1999.

The Laboratory closed one active waste management unit in 1999 and submitted the final report and certification.

The Laboratory met all 1999 Site Treatment Plan deadlines and milestones. The Laboratory treated and disposed of over 650 cubic meters of mixed waste in 1999.

The Laboratory had two underground storage tanks in operation during 1999. One 10,000-gallon tank is for gasoline at a single-pump fueling station; the other 10,000-gallon tank is used as a secondary container during an accidental spill.

The Laboratory contributed 23% of the trash landfilled at the Los Alamos County landfill. During 1999, the Laboratory sent 256 tons of brush for composting and 65 tons of metal for recycling to the county landfill.



environmental restoration (ER)

The Environmental Restoration Project at the Laboratory complements the Laboratory's environmental surveillance program by identifying and characterizing potential threats to human health, the ecology, and the environment from past operations. The ER mission is to mitigate those threats through cleanup actions. They base cleanup decisions on ecological risks and risks to the environment in addition to human-health risks. During 1999, ER reorganized its activities according to the natural watersheds across the Laboratory to ensure that drinking water sources and sensitive natural resources will be protected. See <http://erproject.lanl.gov> on the World Wide Web for additional information.

In 1999, the ER Project remained in compliance with Module VIII of the Resource Conservation and Recovery Act (RCRA) permit.

The ER Project originally involved approximately 2,100 potential release sites (PRSs). In 1999, 280 PRSs had been evaluated and required no further action, and 103 PRSs had been removed from the RCRA permit. The ER project anticipates that the corrective action process for all PRSs will be complete by 2013.



ambient air quality

The ambient air quality in and around the Laboratory meets all Environmental Protection Agency and Department of Energy standards for protecting the public and workers. No radioactive air emissions required reporting under EPA or the New Mexico Environment Department requirements for unplanned releases.

Air monitoring stations record concentrations of various radionuclides in the air. Laboratory staff calculate concentrations of gross alpha and beta activity and tritium, plutonium, americium, and uranium from these readings. Gross alpha and beta activities result almost entirely from the decay of natural radionuclides, primarily radon, and are dependent on variations in natural conditions such as atmospheric pressure, atmospheric mixing, temperature, soil moisture, and the "age" of the radon. 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 Department of Energy's derived air concentration guides and Environmental Protection Agency regulations control the concentration levels of radionuclides allowed in the air. The Air Quality Group routinely publishes air quality data at <http://www.air-quality.lanl.gov> on the World Wide Web.

Radioactive ambient air quality during 1999 was very similar to 1998. In 1999, the Laboratory investigated several instances of elevated air concentrations. These elevated air concentrations were produced by routine Laboratory operations and, in one case, by construction activity in the Los Alamos townsite that resuspended contaminants from the original Laboratory. None of these elevated air concentrations exceeded DOE or EPA protective standards for workers or the public.





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. The Laboratory evaluates these operations to determine impacts on the public and the environment. As of the end of 1999, the Laboratory continuously sampled 31 stacks for the emission of radioactive material to the ambient air. Historically, the Los Alamos Neutron Science Center stack has contributed greater than 90% of the Laboratory's emissions; however, the facility curtailed 1999 operations, and as a result, emissions totaled less than 5% of emissions reported in 1998. While those operations were curtailed, cleanup efforts at a no longer used tritium facility increased. As facility personnel prepared to transfer the facility for decontamination and decommissioning, releases of tritium increased. In all cases where increased emissions were detected, they were still well below the amounts that could result in an off-site individual receiving a dose equal to the regulatory limit of 10 mrem/year.

external penetrating radiation

The Laboratory measures 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) with thermoluminescent dosimeters. Highest doses were measured at locations on-site at Mortandad Canyon, the Los Alamos Neutron Science Center, and Area A. An evaluation of alternate direct penetrating radiation measurement systems supports the conclusion that our thermoluminescent dosimeters overrespond by about 50% to low-energy gamma radiation; therefore, actual doses are smaller than reported.

surface 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. These stations measure the water for levels of plutonium, tritium, strontium, americium, uranium, cesium, alpha and beta particles, and gamma rays. The 1999 surface water runoff analysis results are consistent with past findings. In 1999, all surface water measurements except 16 gross alpha readings and one gross beta reading were below the Department of Energy's derived concentration guides that limit exposure to the public for radioactive effluents in water. 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.



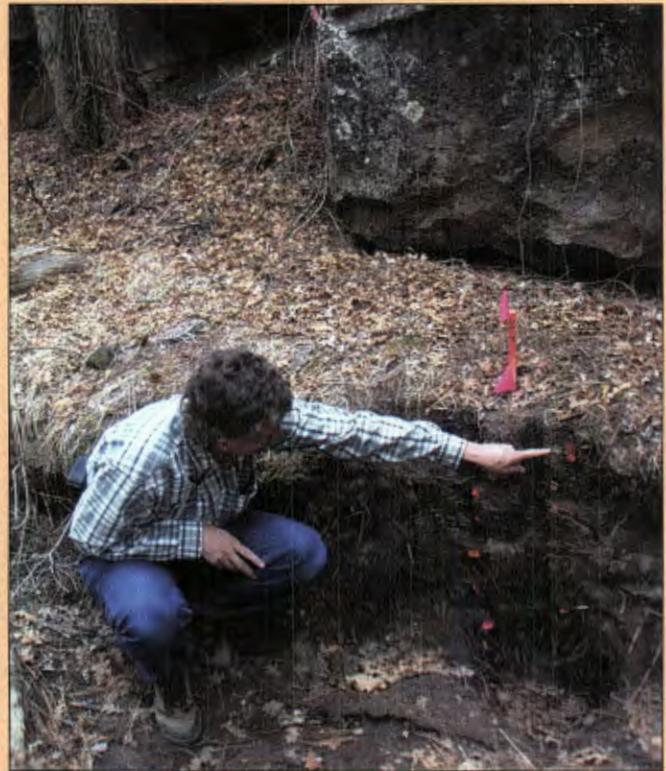
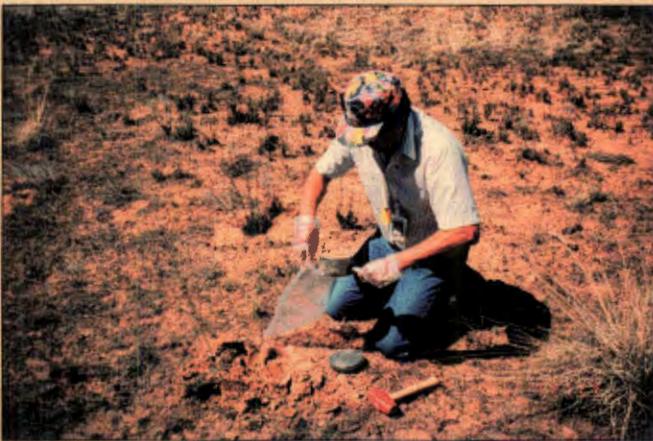
groundwater

The Laboratory also monitors groundwater to determine its quality. The regional aquifer beneath Los Alamos is the primary source of drinking water for the Laboratory and the residents of Los Alamos County. Groundwater samples from the regional aquifer were consistent with previous results. In 1998, testing found high-explosives constituents in the regional aquifer in the southwest portion of the Laboratory at concentrations above the Environmental Protection Agency Health Advisory guidance values for drinking water. Continued testing of water supply wells in 1999 showed that these compounds are not present in Los Alamos County drinking water. Trace levels of tritium are present in the regional aquifer in a few areas where liquid waste discharges occurred. The tritium levels range from less than 2% to less than 0.01% of the drinking water standards and are below detectable levels used to determine compliance with drinking water regulations.

The long-term trends of water levels in the water supply and test wells in the regional aquifer indicate that there is little depletion of the resource as a result of pumping for the Los Alamos water supply.

sediments

Sediment transport associated with surface water runoff is a significant mechanism for contaminant movement. The Laboratory monitors sediments on and near its property and at regional locations for the presence of tritium; uranium; plutonium; cesium; strontium; americium; and alpha, beta, and gamma activity. In 1999, 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 the Environmental Restoration Project requires further evaluation) except on Laboratory property in Mortandad Canyon where three stations exceeded the screening action levels for cesium-137 and one of these stations exceeded the screening action level for plutonium (though the analytical result is uncertain). The Laboratory did not detect any high explosives or other organic compounds at any of the surface water, runoff, sediment, or groundwater stations.



soils

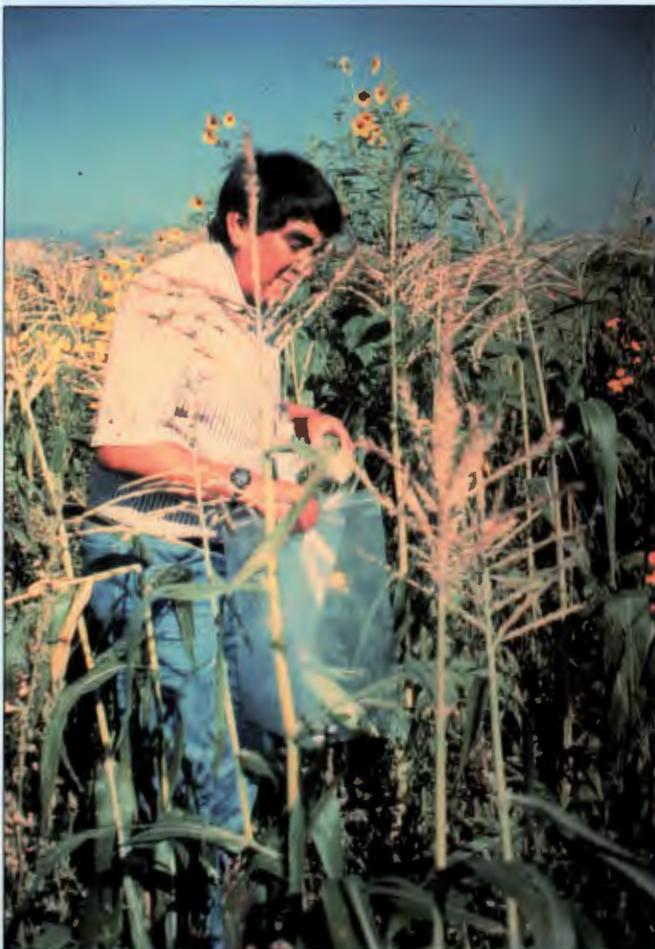
The Laboratory monitors soils both on- and off-site for tritium; strontium; cesium; uranium; plutonium; americium; and alpha, beta, and gamma activities. All levels were within acceptable values, and no action was required to reduce levels of any radioactive element in the soil. The Laboratory also analyzes soils for trace and heavy metals, such as beryllium, lead, and mercury. In 1999, all trace elements 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 1999, samples of fruits, vegetables, wild spinach, herbal tea, honey, milk, piñon, eggs, squirrels, 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.

Foodstuff samples from Laboratory and perimeter locations showed that most radioactivity was attributable to natural sources and/or worldwide fallout. Similarly, all trace elements, including lead, in produce from Laboratory and perimeter areas were within regional background concentrations.





Environmental Compliance

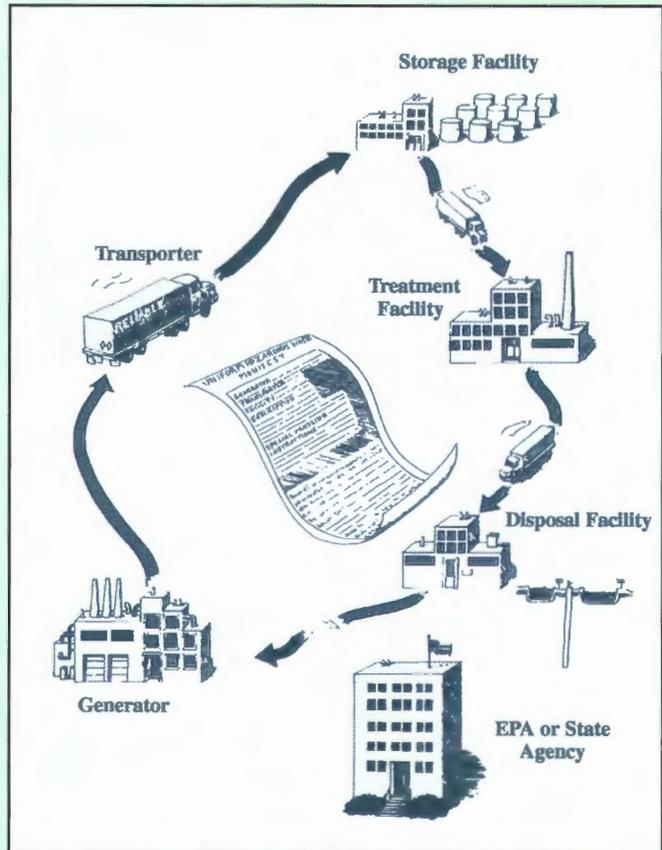
The Laboratory operates under all applicable federal and state environmental, safety, and health laws, codes, orders, and standards. Environmental regulatory agencies include the Environmental Protection Agency and the New Mexico Environment Department. The Department of Energy issues orders that also 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 it produces and to reduce the toxicity of generated hazardous waste by treatment before disposal. The HSWA emphasize reducing the volume and toxicity of hazardous waste.

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. The Laboratory and Department of Energy also consider CERCLA Natural Resource Damage Assessment issues and resolve them with other natural resource trustees as part of the Environmental Restoration remedy. Environmental Restoration cleanup considers integrated resource management activities including biological resource management, watershed management, and groundwater protection.



RCRA - From Cradle to Grave
Tracking of Hazardous Materials

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

EPCRA requires the Laboratory to prepare emergency plans for more than 360 extremely hazardous substances if stored in amounts above threshold limits; provide emergency release notification of leaks, spills, and other releases of certain chemicals; and provide an annual inventory of the quantity and location of hazardous chemicals present above specified thresholds. EPCRA also requires all federal facilities to report total annual releases of listed toxic chemicals. The Laboratory's Emergency Management Plan describes the entire process of planning, responding to, and mitigating the potential consequences of an emergency.

Toxic Substances Control Act (TSCA)

TSCA regulates the Laboratory's use, storage, handling, and disposal of products and equipment containing polychlorinated biphenyls (PCB). PCBs are commonly found in oil products, hydraulic fluids, and sanitary treatment solids and may cause adverse health effects in humans.

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 Pesticide Control Act. Sections that are applicable to the Laboratory include requirements for certification of workers who apply pesticides.

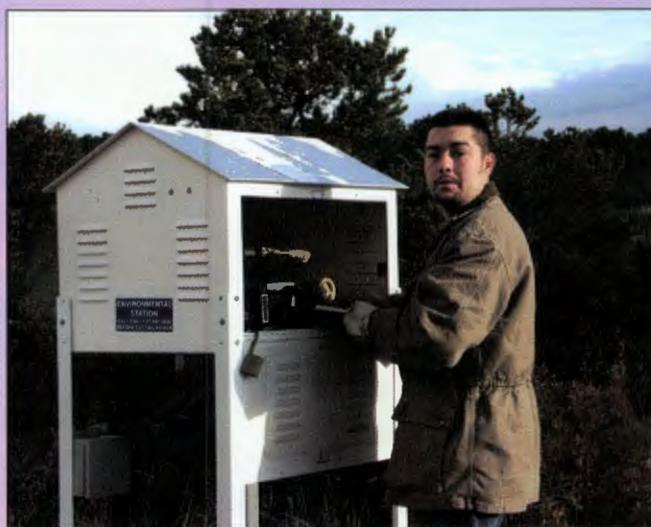
Clean Water Act (CWA)

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.

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 that require careful screening of both radioactive and nonradioactive emissions to the air to protect the public, the ozone layer, and the environment.



Safe Drinking Water Act (SDWA)

On September 8, 1999, operation of the Los Alamos Water Supply System was transferred from the Laboratory to Los Alamos County under a lease agreement. Responsibility for compliance monitoring under the SDWA and the New Mexico Drinking Water Regulations was also transferred to the county. Los Alamos County is now responsible for collecting drinking water samples from the Laboratory's, Los Alamos County's, and Bandelier National Monument's water distribution systems and the Laboratory's water supply wellheads to determine the levels of microbiological organisms, organic and inorganic chemical constituents, and radioactivity in the drinking water.

Endangered Species Act

The Department of Energy and the Laboratory prepare habitat management plans for the threatened and endangered species that could potentially reside on the Laboratory's property. The habitat management plan provides guidelines to protect these species and their habitats from disturbance or adverse habitat alteration caused by the Laboratory's operations.



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. NEPA also requires a decision-making process open to public scrutiny. The Department of Energy, as the Laboratory's sponsoring agency, is responsible for preparation and approval of NEPA documents. Under DOE's compliance strategy for NEPA, a Site-Wide Environmental Impact Statement (SWEIS) was prepared to examine the environmental impacts of operations at a multiprogram site. An earlier SWEIS was prepared in 1979. DOE completed a new SWEIS in January 1999. The Record of Decision was signed on September 13, 1999.

Cultural Resource Compliance Acts

The National Historic Preservation Act requires federal agencies to evaluate the impact of all proposed actions on cultural resources. Federal agencies must also consult with the State Historic Preservation Officer and/or National Advisory Council on Historic Preservation concerning possible effects on identified resources. The American Indian Religious Freedom Act stipulates that it is federal policy to protect and preserve the right of American Indians to practice their traditional religions; tribal groups must receive notification of possible alteration of traditional and sacred places. The Native American Grave Protection and Repatriation Act states that if burials or cultural objects are inadvertently disturbed by federal activities, work must stop in that location for 30 days, and the closest lineal descendant must be consulted for disposition of the remains. The Archaeological Resources Protection Act provides protection of cultural resources and sets penalties for their damage or removal from federal land without a permit.





Related Web Sites

For more information on environmental topics at Los Alamos National Laboratory, access the following Web sites:

<http://lib-www.lanl.gov/pubs/la-13775.pdf> provides access to *Environmental Surveillance at Los Alamos during 1999*.

<http://lib-www.lanl.gov/pubs/lalap-00-213.pdf> provides access to this report.

<http://www.lanl.gov> reaches the Los Alamos National Laboratory Web site.

<http://www.energy.gov> reaches the national Department of Energy Web site.

<http://labs.ucop.edu> provides information on the three laboratories managed by the University of California.

<http://www.esh.lanl.gov/~AirQuality> accesses LANL's Air Quality Group.

<http://www.esh.lanl.gov/~esh18/> accesses LANL's Water Quality and Hydrology Group.

<http://www.esh.lanl.gov/~esh19/> accesses LANL's Hazardous and Solid Waste Group.

<http://www.esh.lanl.gov/~esh20/esh20A.html> accesses LANL's Ecology Group.

<http://erproject.lanl.gov> provides information on LANL's Environmental Restoration Project.

Editor Nikki Goldman
Design and Layout Meghan Mee
Illustration Jim Mahan and Dennis Olive
Printing Coordination Lupe Archuleta
Technical Coordination Robert Prommel and Meghan Mee

The following Los Alamos National Laboratory groups contributed to this booklet:

ESH-17, Air Quality
ESH-18, Water Quality & Hydrology
ESH-19, Hazardous & Solid Waste
ESH-20, Ecology
ER, Environmental Restoration Project

Illustration retrieval numbers:

page 4 esh 96-365c, esh 96-376c
page 13 Environmental Protection Agency

Photography:

cover di000299001
page 1 di000299001
page 7 Environmental Restoration Project
page 8 ESH-17
page 9 ESH-17
page 10 ESH-18, Environmental Restoration Project
page 11 ESH-20, Environmental Restoration Project
page 12 ESH-20
page 15 ESH-20

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 to 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

A US Department of Energy Laboratory