

BACKGROUND INFORMATION

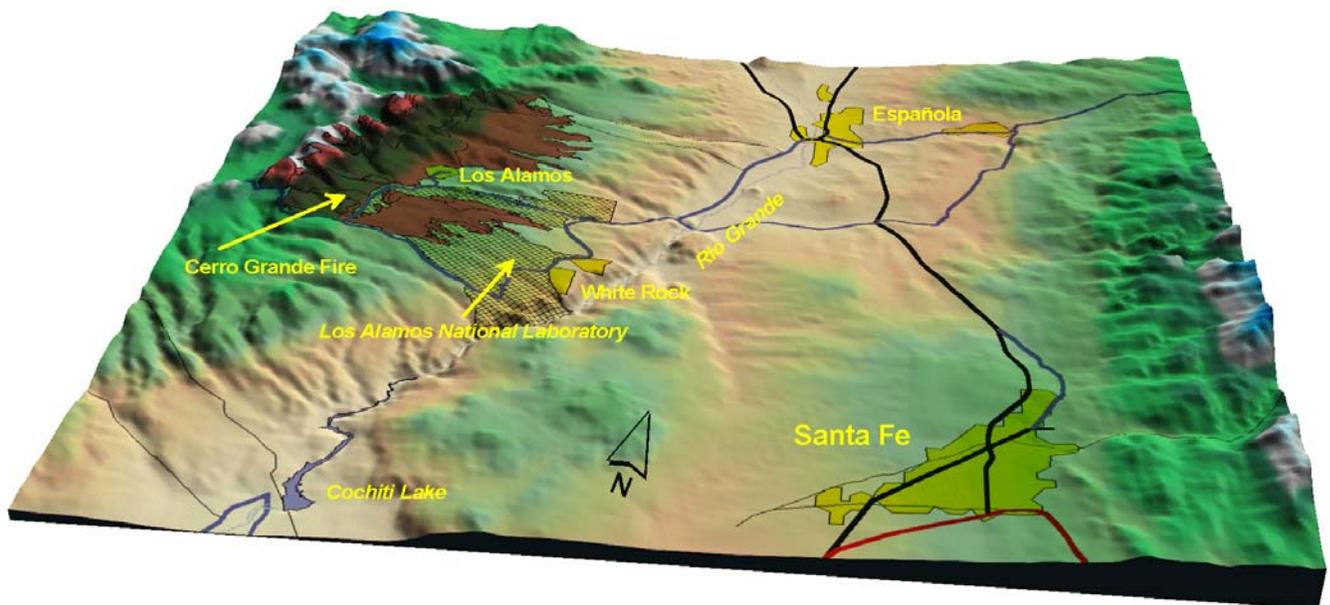
The Cerro Grande Fire burned about 45,000 acres in northern New Mexico in May 2000. The fire burned for 16 days over the Pajarito Plateau, including approximately 7500 acres of the Los Alamos National Laboratory (LANL) site. At the request of the New Mexico Environment Department (NMED), the Department of Energy provided funds for an independent study of public health risks from the fire. *Risk Assessment Corporation (RAC)* performed the study under contract to NMED. RAC estimated the potential risk to the public from chemicals and radioactive materials released from the Cerro Grande Fire burning over LANL property and from the fire itself. A team of national and international scientists led by Colorado State University provided technical peer review of the work. The NMED provided opportunities for public input throughout the 18-month study period. In addition, RAC held three public meetings during the project to answer questions and to talk about the study findings.

SUMMARY OF RISKS

What did we find about potential health risks to the public?

The primary health risks during the fire were associated with breathing materials released into the air. We estimated the risk of cancer from breathing any LANL-derived chemical or radioactive material that may have been carried in the smoke plume to be less than 1 chance in 10 million. Potential exposures in the surrounding communities to LANL-derived chemicals that are not carcinogenic were about 10 times lower than acceptable intakes established by the U.S. Environmental Protection Agency (EPA). The risk of cancer from breathing chemicals and radioactive materials in and on the natural vegetation that burned in the Cerro Grande Fire was greater than that from LANL-derived materials, but still less than 1 chance in 1 million. The vegetation that burned contained naturally occurring chemicals and radioactive materials and radioactive fallout produced during atmospheric tests of nuclear weapons. These materials and the risks they posed are present during any forest fire. The evidence suggests that some adverse health effects did result from breathing high concentrations of particulate matter in the smoke. Such exposures are associated with any forest fire. Deposition of LANL-derived chemicals and radioactive materials from the smoke plume to the soil was minimal.

STUDY AREA



The study area (shown above) encompassed approximately 815,000 acres (3300 km²). We also investigated potential exposures at locations outside the study area (such as Taos). Exposures at these locations were less than the maximum exposures calculated within the study area.

RELEASES TO AIR DURING THE FIRE

➤ Why is the fire important to the release of chemicals and radioactive materials?

The fire released chemicals and radionuclides from the burning and heating of materials located in vegetation and soils across the LANL facility and the surrounding area.

➤ What were the sources of chemicals and radioactive materials released into air during the fire?

Our primary focus was chemicals and radioactive materials from past and ongoing operations at LANL. These materials were detected in soils on LANL property. A secondary analysis examined naturally occurring radionuclides and metals and radionuclides from global atmospheric weapons tests present on all vegetation that burned during the Cerro Grande Fire.

➤ How long did these exposures from breathing air last?

The fire started on May 4, 2000. The fire actively burned on LANL property from May 10 to May 18, and continued to smolder for a considerable time. The majority of LANL-derived materials were released into the air between May 11 and May 13, 2000.

STUDY METHODS & LIMITATIONS

➤ How did we estimate the release and spread of chemical and radioactive materials during the fire?

First, we studied the behavior and progression of the Cerro Grande Fire. Then we used computer models to estimate the movement of combustion products common to all wildfires in the study area. Particulates in air less than 10 micrometers in diameter (PM10) are generated by all wildfires and were measured in air during the fire. We compared the computer model-estimated concentrations of PM10 with the measured concentrations to confirm the computer model estimates and to better understand the uncertainty associated with the results. We used these modeled PM10 concentrations as the basis for estimating the release and spread of radioactive materials and chemicals from areas within LANL.

➤ How certain are the risk estimates?

While the modeling we developed using the PM10 data is quite reliable, the estimates of the quantities of materials available for release to the air, the rate at which these materials were released to the air, and the risk associated with short-term exposure to some chemicals are less certain. Therefore, we made conservative or cautious assumptions to ensure the risks were not underestimated.

➤ How were environmental measurements used in the study?

A large amount of air monitoring data was collected by different agencies during the Cerro Grande Fire. Unfortunately, these data were not sufficient to calculate risk in this study because they were collected for different purposes and did not cover the entire area burned. Also, there were no measurements for some chemicals and radioactive materials, and measurements were not made at all potentially important locations within the study area. As a result, we used computer models to estimate the release and dispersal in the atmosphere of the chemicals and radioactive materials. The environmental monitoring data were useful to identify data trends and to reveal that materials other than LANL-derived contaminants were probably responsible for a large fraction of the airborne contamination, as well as the potential risks to exposed people.

MORE INFORMATION

➤ Where can I get more information about this project?

Contact the NMED DOE Oversight Bureau

2905 Rodeo Park Drive East, Bldg. 1

Santa Fe, NM 87505

Telephone: (505) 827-1536

www.nmenv.state.nm.us/DOE_Oversight/RAC.htm

Information about the Cerro Grande Fire can also be found at several other websites:

➤ www.nmenv.state.nm.us/IFRAT

➤ www.lanl.gov/worldview/news/fire/

➤ www.nps.gov/band/fire.htm



New Mexico
Environment
Department

Risk
Assessment
Corporation

