

**The RACER (Risk Analysis, Communication, Evaluation, and Reduction) Stakeholder Environmental Data Transparency Project for Los Alamos National Laboratory - 9499**

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**ABSTRACT**

The RACER (Risk Analysis, Communication, Evaluation, and Reduction) project was created in 2003, as an effort to enhance the Los Alamos National Laboratory's ability to effectively communicate the data used to evaluate environmental risks to the public and the environment.

The RACER project staff consists of members of Risk Assessment Corporation, Los Alamos National Laboratory (LANL), and the New Mexico Environment Department (NMED). RACER staff worked closely with members of the community, tribal governments, and others within NMED and LANL to create innovative tools and a process that could provide information to regulators, LANL and the community about the sources of public health risk and ecological impact from LANL operations. The RACER Data Analysis Tool (DAT) provides the public with web-based access to environmental measurement data collected in and around the LANL site. Its purpose is to provide a "transparent" view to the public of all data collected by LANL and NMED regarding the LANL site. The DAT is available to the public at "www.racernm.com".

**THE RACER DATA ANALYSIS TOOL**

The RACER (Risk Analysis, Communication, Evaluation, and Reduction) project mission is to provide a process and tools that enable the public to identify concerns and provide input to data providers (e.g. LANL or NMED). RACER establishes consistent and transparent access to environmental data; no data interpretation or context is provided. It is up to the data provider to provide users with access to interpretive reports or experts to answer questions that may arise from viewing the data. RACER provides the public with the means to contact data providers directly.

The Data Analysis Tool (DAT) provides the user with a variety of features and functions for analyzing, displaying, and mapping the measurement data. Data may be compared to several applicable standards and screening values provided by various regulators and agencies. The option to download selected data in spreadsheet form for additional analysis is available. All of the nearly six million data records in the LANL environmental databases pertaining to the LANL site are available through RACER. In addition, data from NMED is available.

This is the first time that environmental measurement data related to LANL are organized in a centralized database and are readily accessible to the public. It is also the first time measurement data are presented in a uniform way and in one database from both LANL and the NMED. RACER has been developed independently of LANL but with input from LANL, NMED, San Ildefonso Pueblo, EPA, and members of

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the community. Within LANL, RACER will prove useful by organizing key data available through a self-service web-based interface.

## **PARTICIPANTS**

LANL has stated its commitment to this process and to working closely with all interested parties by adopting a policy of data transparency to educate the public about potential impacts to human health and the environment from operations and cleanup activities.

The RACER project was implemented in 2003 to provide a process to enhance LANL's ability to effectively manage and reduce health risks and ecological impacts. The project is carried out using funds provided by the Department of Energy (DOE), but conducted independently of LANL and the DOE by Colorado State University (CSU). CSU then subcontracted the technical work to Risk Assessment Corporation (RAC) and with the New Mexico Community Foundation (NMCF).

RAC developed RACER with input and approval from the NMED and assistance as needed from LANL. With the completion of the RACER DAT and its Internet website in 2009, operation and maintenance of the database in the future will become the responsibility of a neutral third-party, the New Mexico Community Foundation (NMCF).

When transition to NMCF is complete, NMCF will be responsible for managing the control and maintenance of the DAT and the centralized database. NMCF is independent of the data providing organizations (LANL and NMED), and provides both hosting services and a public collection point for questions regarding the data that are then referred to the data providers. These questions may be about data quality, collection, or interpretation. RACER does not provide answers to these questions directly through the web interface — rather, RACER is about data transparency and not data interpretation.

A crucial part of this project is the involvement of community members. The NMCF also has the role of broadening and enhancing public involvement in the RACER process.

### **The NMCF as an independent convening authority**

The NMCF is a statewide endowment-building and grant-making organization that serves and invests in New Mexico's communities and people. NMCF is committed to helping community members be able to have input into the decisions that are made about their communities. NMCF believes that every person has a role to play in building healthy communities and every community member's insight and opinions should be valued the same. NMCF has taken the role of an objective convener in many areas of New Mexico involving a broad range of subjects and is committed to the RACER project as it sees the need for an objective source to disseminate information and build trust between communities and LANL.

## **OPERATION OF THE DAT**

The RACER project is significant in its comprehensiveness, transparency, and availability of environmental data related to a DOE facility. The RACER database accessed by the DAT is updated weekly. Both LANL and NMED are committed to provide the data from their samples on a regular, consistent basis.

### **The RACER database**

The RACER database consists of a series of tables that organize and enforce consistency among the data needed to support the RACER tools. The types of data that are stored and maintained in these databases include data that provide information about concentrations of chemicals and radionuclides at the LANL

site and surrounding environment. The database also includes standards used to assess human health impacts from these chemicals and radionuclides. Groups or individuals can use the database to access and sort information. The environmental measurement tables currently contain approximately six million analytical results representing multiple decades of environmental monitoring in the LANL vicinity. These data can now be easily accessed and used by the public.

LANL provides weekly updates of its environmental measurement data to the RACER database. These updates include newly collected data and any necessary updates to data already provided to RACER. NMED also provides updates of its measurement data, although on a less frequent basis because of their less extensive sampling efforts.

RACER is focused on providing access to all available environmental data. As a result, Racer may contain data not previously reported and preliminary data that may not have been fully validated. If a data provider makes changes to data already submitted to RACER, these changes will be reflected in the DAT as part of the routine data update process. Users are cautioned to use any data not fully validated carefully, and to seek the advice of the data provider in understanding the results of such use.

### The Data Analysis Tool

The DAT is designed to interact with the RACER measurement database and allows a user to select, evaluate, and analyze LANL data. It is located on the web ([www.racernm.com](http://www.racernm.com)) and can be accessed by anyone who is interested in the data. Some of the DAT capabilities are shown below in figures 1, 2, and 3.

The screenshot displays the RACER Data Analysis Tool interface. At the top, the RACER logo is on the left, and navigation links (Welcome, Launch GIS, Contact Us, Help) and the tool title 'DATA ANALYSIS TOOL' are on the right. Below the header, a series of tabs allows navigation between different steps: 'Specify Analysis Type', 'Select Sample-Defined Sources', 'Select Data Providers and Media' (which is currently selected), 'Select Polygon-Defined Sources', 'Select Locations', 'Select Analytes', 'Select Comparison Value', 'Data Use Options', and 'Analysis Options'. The 'Select Data Provider' section contains a table with two rows: LANL (Los Alamos National Laboratory) and NMED-OB (New Mexico Environment Department Oversight Bureau). Below this, there are two columns of checkboxes for selecting media categories and specific media types. The 'Select Media Category' column has checkboxes for Rock, Sediment, Small mammal, Soil, Storm water, and Surface water. The 'Select Specific Media' column has checkboxes for Nongeologic Sediment, Soil, Geologic Sediment, Snowmelt, Base Flow, and Storm Runoff. A vertical scrollbar is positioned between these two columns. At the bottom of the selection area, it shows 'Total Rows: 20' and 'Total Rows: 6' with a 'clear all' button.

Select Data Provider		Last Update	
LANL	Los Alamos National Laboratory	11/1/2008	<input checked="" type="checkbox"/>
NMED-OB	New Mexico Environment Department Oversight Bureau	11/1/2008	<input type="checkbox"/>

Select Media Category	Select Specific Media
Rock <input type="checkbox"/>	Nongeologic Sediment <input checked="" type="checkbox"/>
Sediment <input checked="" type="checkbox"/>	Soil <input checked="" type="checkbox"/>
Small mammal <input type="checkbox"/>	Geologic Sediment <input checked="" type="checkbox"/>
Soil <input checked="" type="checkbox"/>	Snowmelt <input checked="" type="checkbox"/>
Storm water <input checked="" type="checkbox"/>	Base Flow <input checked="" type="checkbox"/>
Surface water <input checked="" type="checkbox"/>	Storm Runoff <input checked="" type="checkbox"/>

**Figure 1. Data Extraction screen, showing how specific data can be selected by collecting organization (e.g. LANL, NMED), media types (e.g. soil, groundwater, sediment), and analytes (e.g. chromium, arsenic, tritium).**

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connecting community, science and environment

Welcome    Launch GIS    Contact Us    Help

**DATA ANALYSIS TOOL**  
Total site visits: 1558

**Select Specific Data**    home    back    next

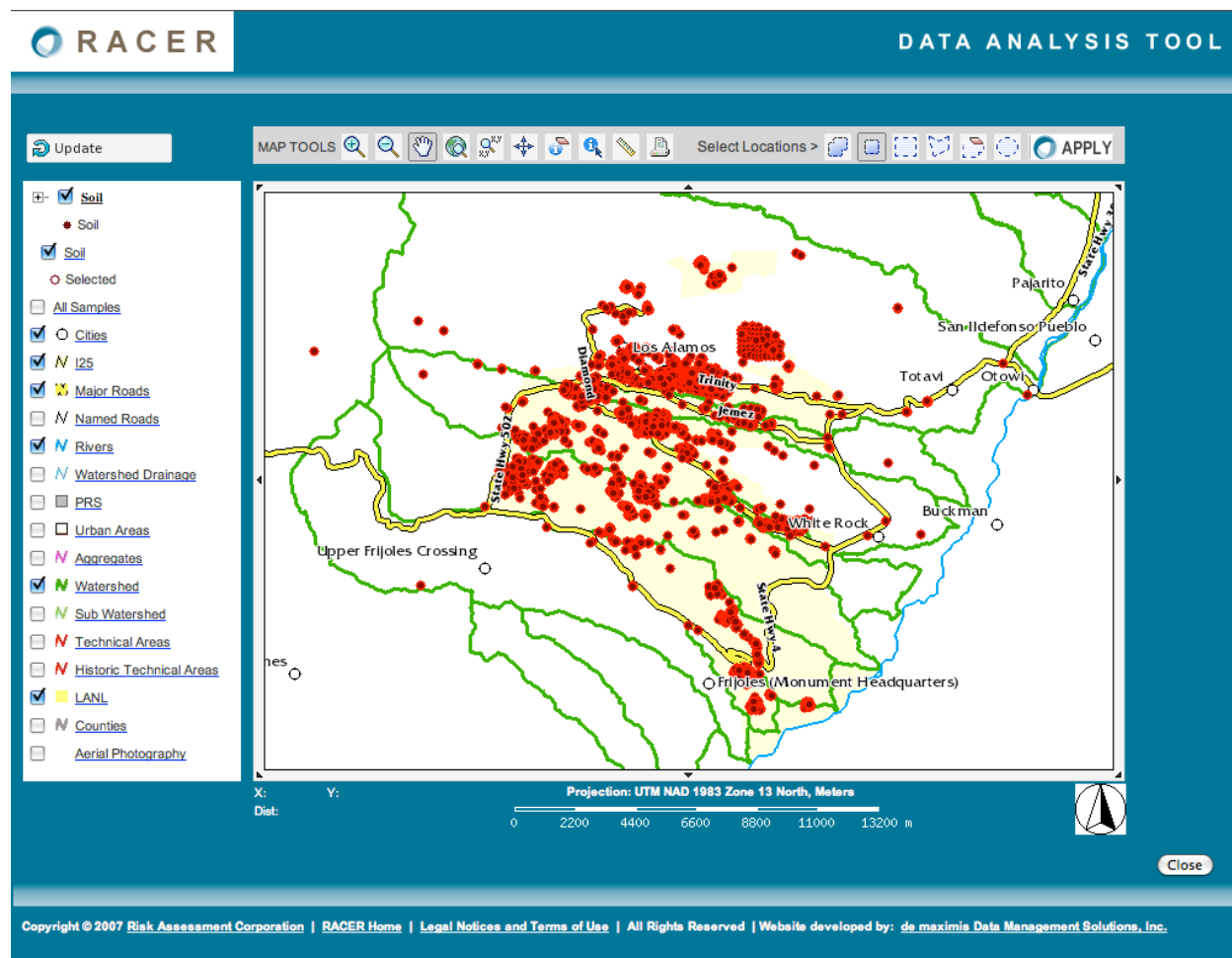
Specify Analysis Type    Select Sample-Defined Sources    Select Data Providers and Media    Select Polygon-Defined Sources    Select Locations    Select Analytes    **Select Comparison Value**    Data Use Options    Analysis Options

Media Category	Comparison Medium	Comparison Type	Comparison Detail	Value Category	Applies to
Air	Air	40 CFR 61	Ambient air	NA	Radionuclides
Ground water	Water	NMED TWSL	Tap water	NA	Chemicals
Ground water	Water	PRG EPA Superfund	Tap water	NA	Radionuclides
Soil	Soil	LANL RAD SAL	Residential soil	NA	Radionuclides
Soil	Soil	SSL	Residential soil (NMED)	NA	Chemicals

[View comparison values](#)

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**Figure 2. Comparing measured concentrations to reference values (e.g. LANL background values, state and federal standards).**



**Figure 3. Mapping samples indicates where they were taken and where a specific analyte has been detected.**

Other capabilities include temporal and spatial analyses (how the concentration of an analyte changes over time and how the concentration varies by location) and comparison of samples collected at the same location by two different groups (e.g. LANL and a regulator).

## CONCLUSION

Public involvement is the goal of the RACER project. The idea is to help neighboring communities understand environmental measurements of chemicals and radionuclides sampled in and around LANL. Anyone who is interested in the environment surrounding LANL is able to participate by visiting the RACER DAT website and performing their own data analysis, using the same data used by LANL and its regulators.

LANL, RAC, NMCF, and NMED are using a number of approaches to tell the public about RACER and to get public feedback. The ultimate goal is to broaden and enhance public involvement through data transparency and participation.