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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 and processes 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 community to identify concerns and provide input to guide decisions about the most effective ways to reduce health risks and ecological impacts resulting from operations and waste management activities at Los Alamos National Laboratory (LANL)."

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 and NMED environmental databases pertaining to the LANL site are available through RACER.

This is the first time that environmental measurement data related to LANL are organized in a centralized database and are readily accessible to decision makers and 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 New Mexico Environment Department. RACER has been developed independently of LANL but with input from LANL, NMED, San Ildefonso Pueblo, EPA, and members of the community. Within LANL, RACER will save money and resources by organizing key data for site assessment and data evaluation tasks 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) to serve as the "process steward".

RAC developed RACER with input and approval from the NMED and assistance as needed from LANL. With the availability of RACER DAT on an internet website in the fall of 2008, operation and maintenance of the database is now 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 has had 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 groundbreaking in its comprehensiveness, transparency, and availability of environmental data related to a DOEDOE facility. The DAT accesses the RACER database and 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.

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) 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 shows the RACER DATA ANALYSIS TOOL interface. The top navigation bar includes links for Home, LAURISLIS, Contact Us, and Help, along with a total site visits counter (1452). Below the navigation is a banner with the RACER logo and the tagline "connecting community, science and environment". The main content area is titled "Select Specific Data" and features a grid of buttons for selecting data types: Analyte Type, Sample-Defined Sources, Data Providers and Media, Polygon-Defined Sources, Locations, Analytes, Comparison Values, Data Use Options, and Analytic Options. Below these buttons is a table titled "Select Data Provider" with two rows: LANL (Los Alamos National Laboratory, last updated 11/1/2008) and NMED-CB (New Mexico Environment Department Oversight Bureau, last updated 11/1/2008). To the left is a "Select Media Category" list with items: Rock, Sediment, Small mammal, Soil, Storm water, and Surface water. To the right is a "Select Specific Media" list with items: Nongeologic Sediment, Soil, Geologic Sediment, Snowmelt, Base Flow, and Storm Runoff. At the bottom of the grid are "Total Rows: 20" and "Total Rows: 6". A copyright notice at the bottom of the page reads: "Copyright ©2007 Risk Assessment Corporation | RACER Home | Legal Notices and Terms of Use | All Rights Reserved | Website Developed by the Innovative Data Management Reference Team".

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).

Select Specific Data

DATA ANALYSIS TOOL
Total site visits: 10086

| Selected Comparison Values | | | | | |
|----------------------------|-------------------|-------------------|-------------------------|----------------|---------------|
| Media Category | Comparison Medium | Comparison Type | Comparison Detail | Value Category | Applies to |
| Air | Air | 40 CFR 61 | Air monitor | NA | Radionuclides |
| Ground water | Water | NMED TWL | Tap water | NA | Chemicals |
| Ground water | Water | FRC EPA Superfund | Tap water | NA | Radionuclides |
| Soil | Soil | LANL RAD SAL | Residential soil | NA | Radionuclides |
| Soil | Soil | 95% | Residential soil (NMED) | NA | Chemicals |

[View comparison values](#)

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

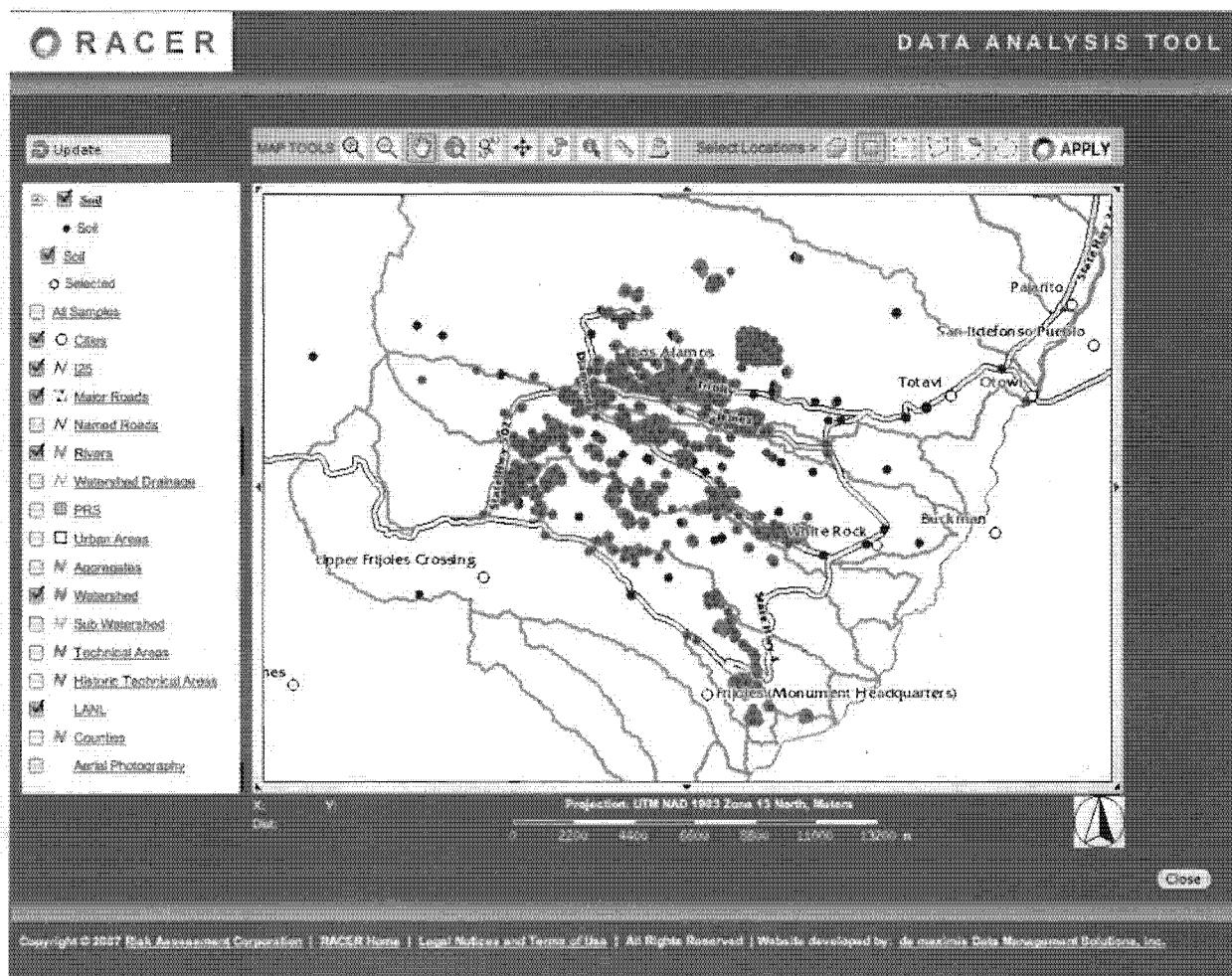


Figure 3. Mapping samples indicates where they were taken and where a specific analyte has been detected.

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 vs. regulators).

CONCLUSION

Public involvement input is vital to the RACER project. The idea is to help neighboring communities understand environmental releases of chemicals and radionuclides as a result of operations and cleanup activities at LANL, and to give people a voice in the decisions that are made about those sources. Anyone who is concerned about reducing health risks and ecological impacts from 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. These approaches include public meetings, interviews, focus groups, an email distribution list, a website, and outreach efforts with local educators. The ultimate goal is to broaden and enhance public involvement through data transparency and participation.