Geotech
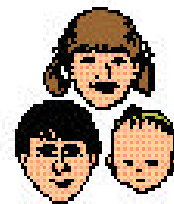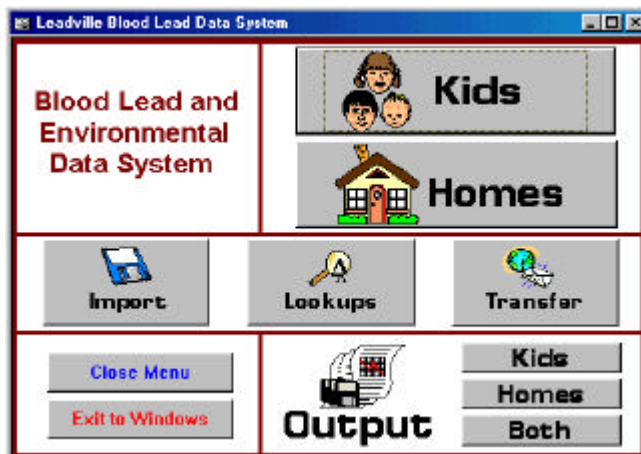## Computer Systems
Blood Lead Data Management

In addition to our expertise in site environmental data management, **Geotech** has evolved a specialty of providing semi-custom software for management of blood lead and related data. These projects have been for a variety of client types and addressed a number of different technical and regulatory issues.

In one of our blood projects, Geotech worked with a city health department to create a system for tracking the concentration of lead in children's blood. This system took children's information, addresses, and venous and capillary blood concentration data from the Stellar System from the Centers for Disease Control and imported it into a customized structure in Microsoft Access. The data was merged with address location coordinates calculated using address geocoding, and with survey data from intervention activities. This data is made available to users in a friendly, flexible way using a form-based query system. Data selected from the query form can be used to create a variety of reports and graphs. The data can also be exported to a geographic information system and placed on a map to assist in analyzing the spatial distribution of the affected population. The system also provides notification when additional testing is due for each child.
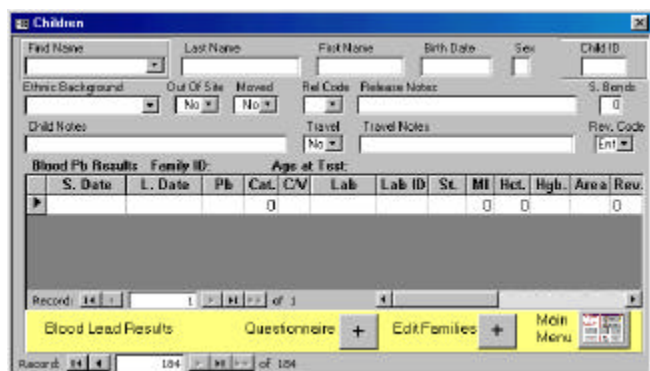
We have completed and are working on several additional blood lead projects. One of these included other metals (arsenic and cadmium), as well as urine tests, segmented hair, and related parameters. Another project extended to environmental data in residences, including soil, interior and exterior paint, water and dust. This project included a system for printing labels for mailings suggesting that children come in for further testing, and managed an incentive program for the parents and children to encourage testing. It also included a system for combining the blood lead information, which is patient confidential, with the residential environmental data, which is not, maintaining the confidentiality while allowing the maximum amount of interpretation of the data to assist with intervention.

We have learned several things in working with our clients on these projects. The first is that every public health project is different. The contaminants can
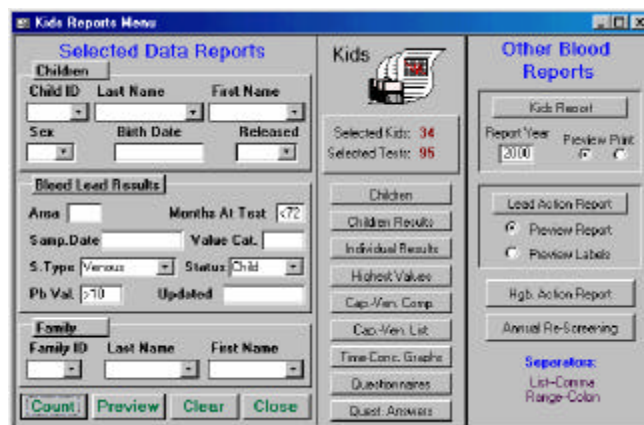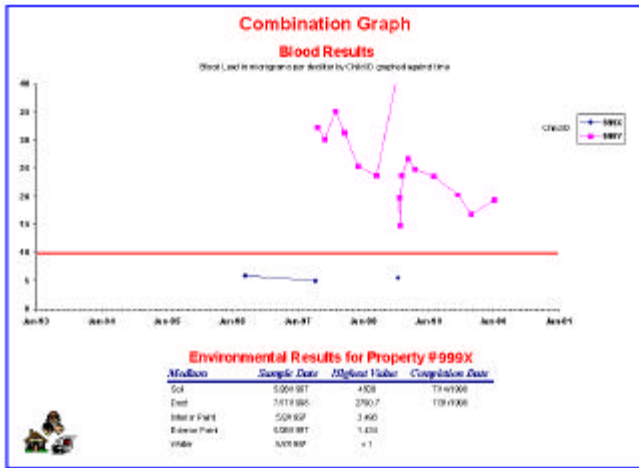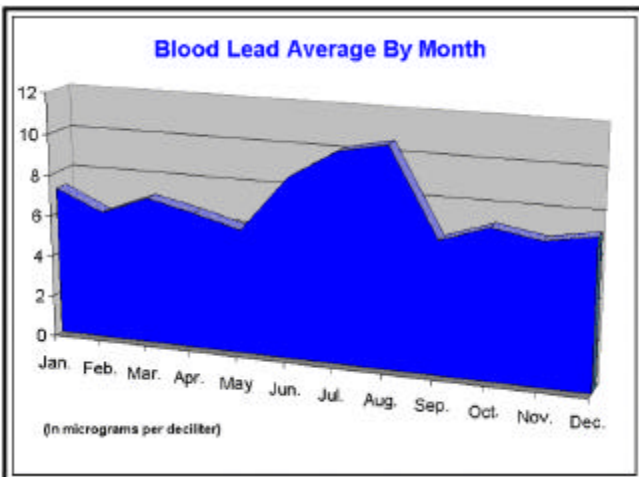
vary, requiring different testing and evaluation. The pathways are variable and never straight-forward, and the demographics of the population provides a complicating overprint. The regulatory environment is different in each area, leading to different data handling and reporting requirements, and different projects have different sources of data, from CDC Stellar to lab electronic data deliverables to hand entry. Finally, the personnel working on the projects have varying computer skill levels, sometimes requiring different approaches in the software.

The technical issues can also provide challenges. Just deciding which data to report and which not to report can be difficult. On two of our projects, the regulators have approved use of geometric means rather than arithmetic means within individuals, making it easier to achieve target levels. Medical confidentiality is an ongoing issue which becomes especially difficult when many different classes of

users with different confidentiality privileges require access to the data. On one project, our client actually runs two systems, one inside and one outside of confidentiality, and the software facilitates appropriate movement of data between the two sites. Our focus has been on helping project staff understand and visualize the data, and we have come up with some innovative ways to do this, such as a graph format that folds multiple years onto one graph to help understand seasonality. The selection screen technology that we use makes it easy to select and report data, even for people who aren't computer experts. And our experience in geographic information systems and other graphical tools allows us to help our clients when they want to do more with their data.
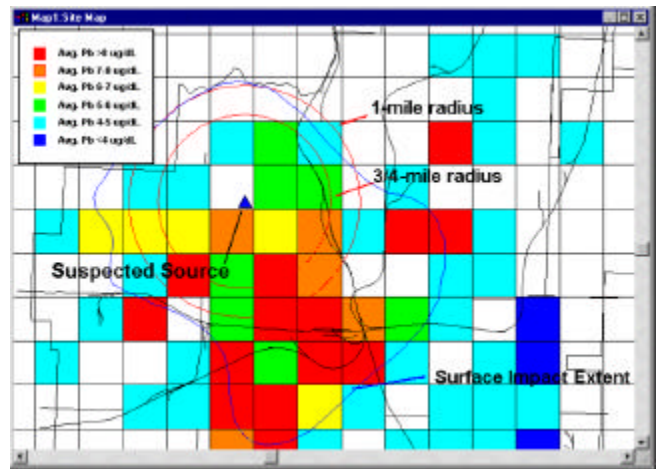
We have addressed these and other issues for our clients for their specific projects, and would be interested in learning more about your project and requirements. Geotech has been in business since 1986 providing technology solutions for earth science organizations. We take pride in the quality of our products and services, and in the high level of satisfaction of our clients. This means that you can rest assured that your interests will come first, and that the solution we provide will fit your needs now and in the future. And our experience in blood lead data management means that we will understand those needs and help you satisfy them as painlessly as possible.

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