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## LEAD SOIL LEVELS AT FOUR ELEMENTARY SCHOOL PLAYGROUNDS IN RAPID CITY

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In the Spring of 1997, students in freshman chemistry participated in a group-oriented field research project to determine lead levels in soils at elementary schools in Rapid City. Student groups were assigned an elementary school in the Rapid City School District as their field site. The site was mapped. Teams of students analyzed traffic patterns at each selected school over an entire day. A site appropriate sampling plan was then developed. Soil core samples were collected and analyzed for lead both as a function of location and depth, using atomic absorption. Students from more advanced chemistry classes assisted in the areas of sample preparation, acid digestion of the soil and performance of the actual sample analysis. Field sample collection was performed in late spring, with the final laboratory analysis completed in May.

During the first part of the semester, lecture time was devoted to building an intellectual framework for the project with, for example, a discussion of the potential sources of lead in soils and what the background levels should be. The work related lecture material through the context of a "real" problem. Training in field and sample collection procedures took place in the first part of the semester. Emphasis was on quality control, establishment of a "true" background for lead levels in soils and scientific ethics (Who does the data belong to?, What should be done with it?, etc.).

Lead levels varied from essentially background to 25 ppm, in solution. Higher levels of lead were observed in older schools and those near major streets, presumable reflecting the time period when leaded gasoline were the standard. Correlation with traffic patterns were partially successful.