Environmental Chemistry:
Research into a context-based learning approach

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Discussions held in the chemical education community have generated a variety of reports and recommendations for reforming the chemistry curriculum .The recommendations refer to teaching chemistry in the context of real-world issues has been suggested as a way to motivate and interest students. We suggest that real-world problems highlight the interdisciplinary nature of chemistry and the relevance of chemistry to the students' lives. An active learning environment, requiring students to solve more sophisticated problems, design their own experiments, and think critically about the results, can serve as an example to a real-world learning environment. We have attempted to incorporate these recommendations by using analytical chemistry together with environmental chemistry as a springboard for teaching chemistry.

Some of the goals of our project are (1) to provide a meaningful "need" for learning a new chemical theory, (2) to create a coherent flow of activities in which students learn the chemical concepts from their own activities, and (3) to explore students' understanding in each stage of their experiments' performance. More explicitely, our main goal is to enhance students' awareness of the connections between chemistry and real life issues, and to engage them in a more sophisticated laboratory work, which is contradicted to the traditional approach used in the laboratory high school curriculum.

In order to achieve our goals, we developed an analytical chemistry unit, which is focused on environmental chemistry issues in which the students spend six laboratory sessions (four hours each), learning the concepts of analytical chemistry in the context of a specific environmental problem. Two laboratory modules have been developed on the topics of drinking-water quality, and the greenhouse effect. A variety of alternative teaching techniques are used in order to increase student participation and motivation. We will present an over view of these laboratory experiments as well as on overview of the whole curricular unit.