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## Editor's Corner - A Letter to the Editor: Commentary on a Recent Survey of Iowa Chemistry Teachers

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### **A Letter to the Editor: Commentary on a Recent Survey of Iowa Chemistry Teachers**

In the fall of 1989, I conducted a survey of chemistry teachers in the state of Iowa to gather information on the current conditions of chemistry teaching and the continuing education needs of chemistry teachers. This survey asked chemistry teachers about their training in science and chemistry, the percentage of students in their schools who elect to take chemistry, the text books in current use, the amount of time spent in laboratory experimentation and what they saw as their greatest need for update workshops.

Only 14 of the 201 respondents had chemistry as their only teaching assignment. Thirty-seven of the respondents were teaching chemistry and only one other subject. Three fourths of the responding teachers taught at least three different subjects. Teacher trainers need to realize the multidisciplinary nature of most of the high school teaching assignments in Iowa and encourage aspiring chemistry teachers to broaden their interests and preparation.

The survey showed that in only 62 of the 201 schools surveyed did more than 50 percent of the students elect to take chemistry. I find this rather disturbing. If chemistry is presented correctly, it is fun, relevant, challenging, interesting and rewarding. Career opportunities in the field of chemistry are numerous, and a shortfall of chemists is projected for the next several decades.

I suspect I know part of the reason for the lack of interest in chemistry. I believe it can be attributed to the text books currently being used. According to the survey, the most commonly used text book is *Chemistry, A Modern Course* (41 percent of the respondents), followed closely by *Modern Chemistry* (35 percent of the respondents). Both of these texts, in my opinion, present too much material at a level too high for most high school students to comprehend. High school chemistry teachers seem to feel that they must present all this material to students so that the students' collegiate freshman year will be easier. To me, the duty of high school chemistry teachers is not to try to duplicate the chemistry taught during the freshman year at the university, but to make and keep students interested in chemistry.

The most overwhelming need expressed by teachers was for good laboratory activities that could be completed within the regularly scheduled chemistry class time. Class periods ranged from 40 to 58 minutes in length. Those teachers having to conduct meaningful laboratory experiences in 40 minutes understandably found it difficult. Eighty percent of the teachers surveyed cited lack of time as the primary reason they spent very little time in the laboratory. All

teachers responding to the survey agreed that chemistry is a laboratory science, yet almost half (41 percent) spent less than one session out of five in the laboratory. The vast majority of teachers (185 out of 201) spent less than half of their teaching time in the laboratory.

The fact that chemistry is not being taught as a laboratory science disturbs me the most. We all call chemistry a laboratory science, and yet the majority of the teachers in this survey do not teach it that way. To me, the way students get interested in chemistry, or any other science, is through laboratory activity. Student interest in the sciences is waning (as is evidenced by fewer and fewer students electing careers in science). I believe that students in Iowa who elect three years of science in high school do so not because they like science but because the major universities in the state have this as an entrance requirement. There is a substantial drop in the number of students who complete three years of science in high school and then register for science classes in the state universities.

I wonder when we science educators will learn that it is not the students' fault that fewer of them show an interest in careers in science. Students are naturally going to gravitate to "where the action is." For the most part they don't see much action in the sciences at the present time. We all need to quit offering excuses for the way we teach science and make more of an effort to put science teaching back into the laboratory. Science isn't fun or meaningful while listening to a science lecture or working science problems. Science becomes fun and meaningful when it is learned in the laboratory, where students can manipulate variables and become a part of the learning process.

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