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A Course in Laboratory and Stockroom Management

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In 1987, as part of their program evaluation, the School of Education of Stephen F. Austin State University conducted a survey of first-year public school teachers who had graduated from our institution. The data from the high school chemistry teachers surveyed indicated that their knowledge of subject area content was high but that they were not as competent in teaching the laboratory sessions of the material. Recommendations were made to the chemistry department to place more emphasis on laboratory teaching techniques in our preservice program. At the same time, our department had been receiving an increasing number of calls from public school teachers concerning chemical waste disposal, laboratory safety, and stockroom management. These two factors prompted us to propose and design a new course called Applied Chemical Concepts, which was first offered in the Spring semester of 1989 as a graduate level course for inservice science teachers.

Although other educators, such as Bayer¹ and Nicholls,² have described chemical safety courses taught at their institutions that cover some of the aspects of chemical storage and disposal that was taught in this course, we feel that this course is unique because it is designed especially for the preservice chemistry or physical science teacher and addresses many other factors than chemical safety that we feel will be extremely beneficial to the beginning chemistry/science teacher.

The course itself is divided into three main topics: laboratory management, stockroom management, and safety. Under the laboratory management section we addressed such factors as (1) the design and modification of the chemical laboratory, including ventilation requirements, safety equipment, space requirements; (2) the design, modification, and evaluation of laboratory experiments, including both traditional verification and exploratory inquiry types; (3) grouping of students for more effective use of laboratory time and materials; (4) techniques to deal more effectively with special groups of students, such as mobility handicapped, in the laboratory; (5) the role of the computer in the laboratory, including hardware modifications to collect and

analyze data and software availability and evaluation; and (6) simple instrument maintenance.

In the stockroom management portion of this course we covered such topics as (1) design and modification of stockroom facilities, (2) safe storage of chemicals, (3) chemical waste disposal, (4) inventory systems, and (5) purchasing equipment and supplies.

Although safety was highly stressed in the both of the other sections of the course, a separate section was included covering such topics as (1) legal requirements, (2) interpretation and use of MSDS sheets, (3) safety rules and contracts, (4) safety equipment, and (5) safety inspections.

Because no available textbook covered such a wide range of topics, information was pulled from many sources in the literature including books on secondary school science safety by Flinn Scientific Inc.³ and the design of public school science laboratories by the Texas Education Agency.⁴

During the course a practical, hands-on, approach was taken, with the students having the opportunity to design laboratory and stockroom facilities, to conduct evaluations of existing facilities, and review Project Seraphim software. Although designed primarily for the undergraduate preservice teacher, the inservice teachers who completed the course found the topics very practical and useful. All of them made substantial changes in their own courses and physical surroundings based upon the knowledge gained.

It is hoped that a course such as the one described will help produce a well-trained, more effective first-year chemistry teacher, thus providing an improved educational experience for our public school students.

A course syllabus is available from the author upon request.

¹ Bayer, R. *J. Chem. Educ.* **1985**, *62*, 10.

² Nicholls, L. J. *J. Chem. Educ.* **1985**, *62*, 10.

³ Gerlovich, J. A. *School Science Safety—Secondary*, SCICON: Iowa, 1988.

⁴ *Planning a Safe and Effective Learning Environment For Science*, Texas Education Agency: Austin, Texas, 1980.