



Archived Information

American Chemical Society: Increasing Teacher Knowledge

The crisis in K-12 science education will not be solved without teachers who are expert in content and skilled in using inquiry-based pedagogical techniques in a standards-based curriculum. To address these needs, the American Chemical Society (ACS) publishes information, develops guidance for the preparation of future K-12 science teachers and offers a number of professional development workshops for teachers.

The ACS Committee on Professional Training (CPT) develops and administers **guidelines that define high quality undergraduate chemistry programs**. Chemistry departments that meet these guidelines may offer an ACS-approved undergraduate degree. The guidelines address degree options for the various sub-disciplines of chemistry, including chemistry education. This degree option is designed for students who are completing education courses for a pre-college teaching career. CPT also sets guidelines for departments that grant a chemistry education minor to students pursuing an undergraduate degree in the natural sciences.

The **Journal of Chemical Education** is a monthly publication for chemical educators from the ACS Division of Chemical Education, Inc. This journal contains lab experiments, demonstrations, the latest information on teaching methods and curricula and reports on chemical education research.

The ACS publication, **SourceBook**, provides teaching tips and information from experienced, successful chemistry teachers. *SourceBook* consists of 36 content modules, each featuring an overview of the topic, laboratory activities, demonstrations and more. Materials on pedagogy, safety, teaching the physically challenged, and the use of small-scale chemistry also are included.

Teachers of grades 3-6 can participate in either a 2½ -hour or a one-day **workshop on the National Science Education Standards for Inquiry and Physical Science**. The major resource for the workshops is the ACS book, *Inquiry in Action*, and its accompanying CD-ROM. Teachers conduct a series of investigations to enhance their understanding of physical science topics and to practice an inquiry-based teaching approach.

A six-week **on-line workshop for grade 3-6 teachers** also is available. Many of the components of the online workshop are similar to the in-person workshop described above. Teachers conduct the investigations at home or in school, and then discuss issues regarding the investigations with their on-line classmates. Upon completion of the workshop, teachers receive the *Inquiry in Action* materials and a certificate to apply for continuing education units.

ACS has run six to ten **summer workshops for high school chemistry teachers** using the ACS textbook, *Chemistry in the Community (ChemCom)* every year since 1988. The workshops focus on getting teachers to understand how knowledge becomes chemistry and devising ways to answer and ask questions in a scientific manner. The teachers also spend about 40% of the workshop going over the laboratory activities that are an integral component of the *ChemCom* course. Shorter *ChemCom* workshops are held throughout the year at various venues including NSTA regional and national conventions. An **online ChemCom workshop** also is available, with new sessions offered each quarter.

In collaboration with local community colleges, and with support from NSF, ACS runs three-day **workshops for high school science and technology teachers and coordinators** using the ACS materials, *Science in a Technical World (STW)*. The goals of this workshop are to provide an awareness of technician careers available, and to help foster the relationship between two-year college and high school faculty. Workshop participants have an opportunity to discuss career preparation issues; meet with local area industry representatives to learn about career opportunities available to technicians locally; and become familiar with the ACS *STW* materials, which are designed to teach fundamental science while exposing students to technician careers in various industries. This workshop offers a certificate that can be used by teachers to gain continuing education units. Some sites may provide the option of granting university credit for attending.

ACS conducts **green chemistry workshops for high school teachers** to help them incorporate green chemistry principles into introductory chemistry courses. This 90-minute workshop was developed around a new ACS publication, *Introduction to Green Chemistry*.

ACS offers **special programming for high school teachers** at its spring and fall national meetings. Teachers may attend symposia and events at these meetings to gain continuing education units.