3. Primary and Secondary Education

The great importance of science teaching in public schools is elucidated by considering the following:

- The school, in general, should teach students basic knowledge of the sciences as well as fundamental principles of scientific thinking and problem solving. The aim is to spark the interest of the students in the sciences and prevent them from disliking and rejecting the sciences and possibly scientific professions as the result of negative experiences at school.

- Especially those students who later work in a field unrelated to the sciences have to have a foundation for understanding their world that allows them to make informed decisions.

- In this regard, primary school education is especially important. Teaching lessons that deal with scientific phenomena can form the foundation for a permanent interest in the sciences.

(1) Recommendations for Chemistry Education for Schoolteachers

The promotion of scientific teaching at the schools is a task of high priority for the GDCh. The GDCh supports a closer partnership among the school, industry and university. In cooperation with the Chemical Industry Association, the Chemical Employers Association and the Chemistry Trade Union, this objective was followed in 2002 and 2003 in the "Bildungsinitiative Chemie" (Education Initiative in Chemistry). With regard to the poor results obtained by Germany in the PISA study (Program for International Student Assessment), the education initiative should send a political signal for promoting science teaching at schools.

The GDCh supports the reform of the education of teachers as an important starting point for the future development of school education. But also the prestige of teacher education has to be raised in the academic society. The GDCh has worked out recommendations for the university majors Chemistry Teaching at Upper Level Schools (Gymnasium, grades 11-12 or 13), Chemistry Teaching at the Secondary Level 1 (grades 5-10) as well as recommendations for the education of grammar school teachers.

- A recommendation for the major Chemistry Teaching at a Gymnasium was presented to the education ministries in January 2002. Two varieties are proposed :
    1. The double-major university study with the undergraduate and graduate study culminating in the 1st state board examination;
    2. A graduated university study leading to Bachelor and Master degrees.
- A recommendation for the education of grammar school teachers was presented to the education ministries in June 2002. For all grammar school teachers, the GDCh recommends a compulsory scientific foundation oriented to the school requirements and a minimum competency for interdisciplinary treatment of scientific topics.
- A recommendation for the major Chemistry Teaching at the Secondary Level I was published in December 2003. Two varieties are proposed:
    1. The double-major university study with the undergraduate and graduate study culminating in the 1st state board examination;
    2. A graduated university study leading to Bachelor and Master degrees

(2) Training of Schoolteachers

The competency that teachers acquired during their university studies can be maintained through their participation in regular continuing education programs. Continuing education is important for teachers to refresh their knowledge and obtain new impulses for their teaching lessons.

The GDCh has been active in the area of continuing educations for decades. Two years ago the GDCh started a new initiative in order to intensify the activities in this area. The GDCh is following new paths in the continuing education of teachers and is working closer with the universities and the education ministries.

The following objectives have been set in collaboration with the education ministries and universities:

- To intensify the continuing education of teachers. To be especially addressed here are those teachers who have not or have rarely participated in continuing education programs.
- To secure a qualitatively high standard of teachers' continuing education by considering new chemical, didactic and pedagogical developments.
- To promote existing and novel forms of teachers' continuing education.

- To initiate the establishment of continuing education centers for teachers at universities.
- Up to now we have six continuing education centers for teachers spread all over Germany (Braunschweig, Dortmund, Frankfurt a.M., Erlangen, Stuttgart, Oldenburg/Bremen). A seventh center will be established in Rostock.

(3) International Chemistry Olympiad (IChO)

The International Chemistry Olympiad 2004 will take place from July 18 to July 27 in Kiel and Hamburg, Germany. The GDCh is pleased to have the 36th IChO in Germany and to host the students from more than 60 nations with their mentors and guests.

The International Chemistry Olympiad has a long tradition in Germany. Before the reunification of Germany the 16th IChO took place in West Germany in Frankfurt am Main in 1984. And in 1976 and 1989 the German Democratic Republic (GDR) was responsible for the organization of the IChO in Halle.

The IChO 2004 in Kiel and Hamburg is organized by the Federal Ministry for Education and Research in close cooperation with the University of Kiel and the Leibnitz Institute for Science Education. For planning and running the IChO it is helpful to have in Germany a network of former participants of this competition. They are active in an Association for Promoting the International Chemistry Olympiad. The organization of the IChO was made possible with the sponsorship of the GDCh and the Chemical Industry Association (VCI). GDCh and VCI are official main supporters of the IChO in Kiel and Hamburg.