

IUPAC

STRATEGIC PLAN - 1998

The International Union of Pure and Applied Chemistry (IUPAC) was formed in 1919 by chemists from industry and academia. Over nearly eight decades the Union has succeeded in fostering worldwide communications in the chemical sciences and in uniting chemistry - academic, industrial and government - in a common language. IUPAC has long been recognized as the world authority on chemical nomenclature, terminology, standardized methods for measurement, atomic weights and many other critically evaluated data. The Union continues to sponsor major international meetings that range from specialized scientific symposia to CHEMRAWN meetings with societal impact. During the Cold War, IUPAC became an important instrument for maintaining scientific and technical dialogue among the world's chemists.

With the major changes that have occurred worldwide in chemistry and the chemical industry, it is important that IUPAC examine its activities and define its role as the organization principally responsible for promotion of the chemical sciences internationally. Following a series of meetings to obtain input from leaders in chemistry on four continents, IUPAC has redefined its mission and established goals and strategies to guide its approach to the shaping of the chemical sciences and the service of chemistry in a rapidly changing world.

Mission Statement

IUPAC's mission is to advance the worldwide aspects of the chemical sciences and to contribute to the application of chemistry in the service of Mankind. In so doing, IUPAC promotes the norms, values, standards and ethics of science and advocates the free exchange of scientific information and unimpeded access of scientists to participation in activities related to the chemical sciences.*

* In recognition of the role of chemistry as a central science in a wide range of fields, the term "chemical sciences" is used here to refer to chemistry, broadly defined, and to those disciplines and technologies that make significant use of chemistry.

Long-Range Goals

To further its mission, IUPAC has established a set of long-range Goals and has formulated strategic thrusts that are aimed at achieving each of the Goals. The Goals are summarized here, and the complete set of Goals and Strategic Thrusts for the current biennium is given on the following pages.

1. IUPAC will serve as a scientific, international, non-governmental body in objectively addressing global issues involving the chemical sciences. Where appropriate, IUPAC will represent the interests of chemistry in governmental and non-governmental forums.
2. IUPAC will contribute to the advancement of research in the chemical sciences throughout the world.
3. IUPAC will assist chemistry related industry in its contributions to sustainable development, wealth creation and improvement in the quality of life.
4. IUPAC will facilitate the development of effective channels of communication in the international chemistry community.
5. IUPAC will promote the service of chemistry to society in both developed and developing countries.
6. IUPAC will utilize its global perspective to contribute toward the enhancement of education in chemistry and to advance the public understanding of chemistry and the scientific method.
7. IUPAC will make special efforts to encourage the career development of young chemists.
8. IUPAC will broaden the geographical base of the Union and insure that its human capital is drawn from all segments of the world chemistry community.
9. IUPAC will encourage worldwide dissemination of information about the activities of the Union.
10. IUPAC will assure sound management of its resources to provide maximum value for the funds invested in the Union.

Goals and Strategic Thrusts - 1998-1999

To further its mission, IUPAC has established a set of long-range Goals and has formulated strategic thrusts that are aimed at achieving each of the Goals. These strategies are intended to guide the development of operational plans and the setting of priorities for optimal use of the Union's resources, both human and financial.

1. *IUPAC will serve as a scientific, international, non-governmental body in objectively addressing global issues involving the chemical sciences. Where appropriate, IUPAC will represent the interests of chemistry in governmental and non-governmental forums.*

IUPAC will conduct projects pertaining to the chemical aspects of important issues of international concern. In addition to projects initiated within IUPAC, input for new projects of scientific and industrial importance may come from international governmental and non-governmental bodies and from appropriate public groups. Examples are the series of CHEMRAWN conferences, the recent *White Book on Chlorine* and the studies of methods for disposal of chemical weapons. IUPAC will not undertake projects that cast it in the role of policy development or as an advocate for special interest groups.

Collaborations with international governmental bodies, such as UNESCO and the World Health Organization, should continue and be strengthened. The IUPAC/UNESCO International Council for Chemistry will serve as the central forum for planning and coordinating work with UNESCO. Collaborations with other individual scientific Unions, with international scientific societies, and with the International Council of Scientific Unions (ICSU) should be enhanced to plan and carry out projects of an interdisciplinary nature.

2. *IUPAC will contribute to the advancement of research in the chemical sciences throughout the world.*

The importance of standardized nomenclature, symbols, terminology and methodology is critical to communication in the chemical sciences. To remain the recognized international authority in this area, IUPAC must ensure that important problems are recognized and treated fairly and expeditiously. Collaborations with national and regional chemistry societies, with governmental bodies and with commercial information organizations should be augmented. Greater efforts should be made to encourage adoption of IUPAC recommendations through contacts with authors, editors and publishers.

The biennial IUPAC Congress is intended to present the most outstanding relevant developments in modern chemistry and to inspire high research standards. Future Congresses should adhere to this principle.

An assessment should be made of IUPAC sponsorship of specialized symposia in order to strengthen this well accepted program. New significant research fields in chemistry should be highlighted by the initiation of relevant high quality symposia.

Special attention should be devoted to improving the quality of the Union's scientific publication program. Bibliometric analysis and other criteria can be used to assess the impact of IUPAC books and the journal *Pure and Applied Chemistry*. IUPAC should take advantage of advances in electronic publishing methods to ensure high quality publications that are disseminated in a rapid and cost-effective manner.

Policies should be developed for IUPAC's role in the preparation and dissemination of critically evaluated databases, from atomic weights to thermodynamic and other chemical data.

3. *IUPAC will assist chemistry related industry in its contributions to sustainable development, wealth creation and improvement in the quality of life.*

IUPAC is unique among the International Scientific Unions in including within its scope a large industrial base. IUPAC is often perceived as being oriented primarily toward academic institu-

tions, but industry benefits equally from much of the Union's work in standardized symbols, nomenclature and terminology, as well as from critically evaluated data. Greater efforts should be made to demonstrate the ways in which IUPAC serves industrial needs directly and indirectly. In addition to the present links provided by the Committee on Chemistry and Industry, serious efforts are needed to engage leaders in the chemical industry and national and international industry associations in dialogue to explore ways in which IUPAC and industry can enhance mutually beneficial interactions.

IUPAC should be particularly alert to projects that help develop the scientific basis for practices and procedures that protect society while encouraging responsible and sustainable development. Such projects may be initiated in the basic chemistry Divisions, as well as in the mission-oriented Divisions [Chemistry and the Environment, and Chemistry and Human Health].

4. IUPAC will facilitate the development of effective channels of communication in the international chemistry community.

The vast potential of the Internet should be utilized to enhance information transfer between IUPAC and chemists in many countries. The Affiliate Member Program already provides a base, which should be expanded many-fold.

Chemistry International should be developed as a forum for highlighting important problems and advances in chemistry and for discussion of science policy and global issues in chemistry.

Increased efforts should be made to provide information on IUPAC activities and news about important matters of international chemistry to major scientific journals and national and regional chemistry news magazines, which routinely reach hundreds of thousands of chemists worldwide. Feedback should be encouraged.

5. IUPAC will promote the service of chemistry to society in both developed and developing countries.

CHEMRAWN Conferences have long provided the principal mechanism for IUPAC to address issues that transcend pure science and have important socio-political aspects. Such Conferences should continue to be promoted, along with follow-up Future Action Programs.

IUPAC bodies should continue to be alert to projects on matters of societal importance (*e.g.*, chemical weapons disposal, environmental cleanup) that depend heavily on chemical sciences and technology.

Within its limited funds, IUPAC should consider ways to foster chemistry in developing countries. In many instances, IUPAC's initiative and scientific expertise has been paired with outside funding sources (*e.g.*, recent UNESCO-supported work in the least developed countries and the UNESCO/UNIDO/IUPAC program in chemical safety) to produce valuable results, and this model should be further elaborated.

6. IUPAC will utilize its global perspective to contribute toward the enhancement of education in chemistry and to advance the public understanding of chemistry and the scientific method.

Scientists everywhere recognize the critical role played by formal and informal education at all levels, from kindergarten through graduate school, not only for future scientists but also for the general public. The problems associated with such educational programs are enormous. Educational systems, administration and curricula vary drastically by country, locality and individual school and teacher. IUPAC cannot hope to make an impact on detailed curricula or outreach activities in individual countries and localities, but it may be able to complement the efforts of national chemical societies and to coordinate exchange of information. IUPAC should examine carefully what long-range role it can realistically play in international science education and develop appropriate policies. Meanwhile, a number of specific activities can usefully be initiated or continued, as described below.

The Committee on Teaching of Chemistry (CTC) has been effective in carrying out its

program on exchange of information on teaching methods, equipment, etc. CTC should continue to serve as the focal point for IUPAC's programs in this area, but its programs should be broadened. In addition, IUPAC Divisions should be invited to develop complementary projects to enhance education at all levels and to coordinate them with CTC.

IUPAC should cooperate in whatever ways are feasible with the major new program established by ICSU on Capacity Building in Science, which will endeavor to disseminate information on science teaching in primary schools and science education for the public.

7. *IUPAC will make special efforts to encourage the career development of young chemists.*

It is apparent that the future development of the chemical sciences lies largely in the hands of the younger generation of scientists, who often encounter severe obstacles in an era of constrained resources. IUPAC should develop programs that are perceived by "younger chemists" to be helpful to them and feasible for the Union to undertake within its resources. Young chemists from developing countries who return after advanced training elsewhere may benefit particularly from these programs and from exchange of information with IUPAC via the Internet.

IUPAC should strongly encourage organizers of the IUPAC Congress and IUPAC-sponsored symposia to provide travel support for younger scientists and to include younger scientists among the invited lecturers.

IUPAC Commissions and other bodies should make special efforts to recruit well qualified younger scientists for their projects. Several National Adhering Organizations (NAOs) now provide travel support for younger scientists to attend the General Assembly as Associate Members, National Representatives or Observers; other NAOs should be encouraged to follow this lead.

8. *IUPAC will broaden the geographical base of the Union and insure that its human capital is drawn from all segments of the world chemistry community.*

The Union is taking active steps toward globalization of its activities with regional meetings and solicitation of input from the world's chemists.

The 42 National Adhering Organizations and 14 Observer Organizations that currently comprise IUPAC are broadly distributed throughout the world, but there are several geographic regions with little or no representation in the Union and a number of countries with substantial academic and industrial developments in chemistry that do not adhere to the Union. IUPAC should encourage such countries to apply for membership. In addition, IUPAC should stimulate less developed countries to seek Observer status.

The Union has long had a formal policy of "fair geographical representation" among Elected Members of the Bureau and informally strives to obtain geographic diversity among IUPAC and Division Officers. While maintaining the focus on expertise, IUPAC's scientific bodies should make efforts to recruit younger chemists, women chemists and chemists from recently developed regions, including in some instances countries that are not yet full Members of the Union.

9. *IUPAC will encourage worldwide dissemination of information about the activities of the Union.*

Much of the valuable work done by IUPAC bodies is published only in *Pure and Applied Chemistry* or in specialized books and journals. Although such formal and archival publication is essential, greater efforts should be made by individual IUPAC bodies, the Secretariat and the NAOs to disseminate this information as early and as widely as possible to the relevant scientific community. In many instances, high quality reports from symposia, workshops and Commission activities should be prepared not only as formal scientific publications but also as semi-popular documents emphasizing applications. For topics that warrant attention in the popular scientific press, carefully drawn news releases are needed.

Contacts with major national chemical societies, regional chemistry federations, industrial associations, and government/industry/university consortia should be expanded to ensure that these organizations are fully aware of IUPAC activities and can provide credit to the Union where its activities complement theirs.

Improved two-way communication with NAOs concerning science policy, planning and implementation of projects and other activities is needed. Special efforts should be made to prepare suitable material describing IUPAC programs and accomplishments in a form that will assist NAOs in recruiting Company Associates.

10. *IUPAC will assure sound management of its resources to provide maximum value for the funds invested in the Union.*

The Union can undertake its many activities only because of stable financial support from its National Adhering Organizations, which in turn usually obtain their resources from government and/or industrial sources. IUPAC has a continuing responsibility to demonstrate to its sponsors that all relevant management tools, including the use of modern information technology, are employed to maximize productivity in the administration of the Union.

IUPAC should encourage philanthropic donations to the Union's endowment. With continued wise investment strategies that assure maximum return consistent with reasonable safety, the endowment and operating reserves will provide a continuing source of funding that augments and leverages the subscriptions from the NAOs.

Although the purpose of the IUPAC publications program is the dissemination of scientific information, this program has for a number of years provided substantial income to help support IUPAC's other work. As the program is redirected in the era of electronic publishing, efforts should be made to continue to have publications as a source of funds, rather than a drain on the Union's resources.

Officers of IUPAC bodies and the Secretariat should continue to be alert to possible sources of funds for specific projects from outside groups (*e.g.*, UNESCO, ICSU, charitable foundations and industry) to augment the base funds provided by NAO subscriptions.

Implementation and Updating of the Strategic Plan

The Strategic Plan is intended to articulate the scientific and operational policy of IUPAC, providing overall policy guidance to the IUPAC Divisions and Standing Committees for assistance in the development of coordinated programs to advance the Union's mission. This Plan should not impede or replace initiatives at all levels within the Union. The Council, Bureau and Executive Committee will formulate procedures for ensuring that operational programs will be drafted and resources allocated within the context of the Strategic Plan, that responsibilities will be assigned for implementation of programs, and that outcomes will be evaluated.

Each biennium the strategic thrusts will be analyzed and updated as needed. The long-range goals may also be revised when appropriate, but probably on a longer timeframe.