

IUPAC Committee on Chemistry and Industry
Report to the Bureau and Council – 2007

Mark C. Cesa
Chair, COCI
6 June 2007

I. Executive Summary

The Committee on Chemistry and Industry (COCI) is the focal point in IUPAC for issues of importance in chemistry-related industries. COCI emphasizes sharing best practices globally and focuses on capacity building in the developing world. In 2006-7 COCI organized its activities into five Program Areas and initiated interactions with the IUPAC Divisions and Standing Committees. We have established new collaborative projects consistent with COCI's terms of reference and within the framework of IUPAC's strategic goals.

Highlights of the biennium include:

- Three new COCI projects have been approved for IUPAC and COCI funding, including a regional conference and workshop entitled, "Chemistry in a Changing World – New Perspectives Concerning the IUPAC Family;" a project for preparation and publication of the first in a series of monographs entitled, "Responsible Application of Chemistry. An Introduction to Responsible Care;" and the most recent in a series of workshops in conjunction with the Safety Training Program, "IUPAC-UNESCO-UNIDO Safety Training Program Workshop, Turin, Italy."
- A new "COCI Corner" column in *Chemistry International* has been inaugurated, with articles appearing in the July/August 2006, September/October 2006, and November/December 2006 issues of *CI*. In addition, articles on industrial aspects of the public appreciation of chemistry and on nanotechnology, authored by members of COCI, have also appeared in recent issues of *CI*.
- The World Chemistry Leadership Meeting at Torino has been organized with COCI participation. The topic will encompass the evolving international chemical regulatory environment.
- A mechanism is being implemented for a collaborative effort between COCI and the IUPAC Secretariat to recruit and retain Company Associates. In this biennium new Company Associates have been recruited in the USA, UK, Russia, and Kuwait.
- Eight new trainee candidates have been accepted into the IUPAC-UNESCO-UNIDO Safety Training Program (STP). One new STP Fellow was trained in October 2005 at AstraZeneca facilities in the UK, and two are being trained at Mitsui Chemical Co. facilities in Japan in June 2007. A Safety Training Program Workshop is being held in conjunction with the IUPAC Congress in Torino.
- The Conference on Occupational Health and Safety in East Africa was held in September 2006 in Nairobi, Kenya with IUPAC, COCI and UNESCO support. More than 110 safety professionals from Kenya and surrounding countries attended, along with speakers from Kenya, Tanzania, Uganda, the United Kingdom, and the United States.
- New Representatives to COCI have been nominated from each of IUPAC's Divisions and Standing Committees, and COCI representatives to each Division and Standing Committee have been identified.

II. Activities of COCI Toward the IUPAC Strategic Goals

The IUPAC Committee on Chemistry and Industry (COCI) strives to fulfill its objectives as set forth in its Terms of Reference. The principal objectives are paraphrased here:

- Advise the President and Executive Committee on options and actions by which IUPAC could become more attractive to increased participation by scientists in industry;
- Develop and maintain an active program to recruit, guide and inform Company Associates;
- Develop liaisons with national and international associations that represent chemical industries, chemical societies, and international bodies involved in scientific and industrial development; and
- Initiate and maintain a portfolio of projects with implications for industry.

All of these objectives are intended to contribute to the achievement of the IUPAC strategic goals. References cited in this section of the report can be found at the appropriate locations in Section IV below.

a. IUPAC will provide leadership as a worldwide scientific organization that objectively addresses global issues involving the chemical sciences.

The NGO/IGO/Trade Associations Program in COCI is a focus for NGO status for IUPAC with groups involved in activities of industrial chemical interest and for collaboration with international groups that impact the chemical sciences. COCI is helping to organize the World Chemistry Leadership Meeting at Torino, whose topic will center on the evolving international chemical regulatory environment. COCI TM Colin Humphris and the COCI chair have consulted with IUPAC Past President Leiv Sydnes on the content of the 2007 WCLM. Included in the 2007 WCLM program are presentations on the impact of REACH and SAICM, and the scientific developments and issues impacting the chemical sciences from industrial and academic perspectives. COCI, through the NGO/IGO/Trade Associations Program, is also available to contribute to IUPAC efforts to become an NGO with organizations such as ICCA, UNEP, WHO, and others. (*Committee Information 9; Publications 13, 15*)

b. IUPAC will facilitate the advancement of research in the chemical sciences through the tools that it provides for international standardization and scientific discussion.

Two new IUPAC-funded COCI projects will facilitate scientific discussion between academic and industrial scientists and administrators. In the first, a regional conference and workshop entitled, "Chemistry in a Changing World – New Perspectives Concerning the IUPAC Family," (Project No. 2006-030-1) will be organized under the leadership of TM Jonas Unger to solicit the views and needs of NAOs and CAs. Ideas and suggestions from the Conference will be gathered and addressed to foster new collaborations. Industrial financial support has been secured; we hope that this Conference will serve as a model for future regional meetings worldwide. (*Projects 3*)

The second new project recognizes the importance of Responsible Care in the development of best practice in the developed and developing world. Canadian NR Bernard West has secured a new project entitled, "Responsible Application of Chemistry. An Introduction to Responsible Care." In this project the first in a series of case studies/monographs will be prepared on the responsible handling, manufacture and distribution of chemicals. (*Projects 4*)

A new "COCI Corner" column in *CI* has been started with an article on COCI activities in the July/August 2006 issue. Additional COCI Corner articles have appeared in the

September/October 2006, November/December 2006, May-June 2007, and July-August 2007 issues of *CI*. The COCI Corner will be a regular feature in *CI* and will be the place where COCI news, articles from and by Company Associates, and developments in industrially related chemistry will be communicated. (*Publications 8, 10, 12, 13, 15*)

New representatives to COCI from each of the IUPAC Divisions and Standing Committees have been recruited, and COCI representation on each Division and Standing Committee has been offered, as part of the Division/Standing Committee Collaboration Program's efforts to build new collaborative projects of industrial interest. These representatives will receive relevant communications on COCI activities and will be invited to COCI meetings. Possibilities for collaboration between CCE, Division VII, CHEMRAWN, and COCI are also being pursued. (*Committee Information 4*)

c. IUPAC will assist chemistry-related industry in its contribution to sustainable development, wealth creation, and improvement in the quality of life.

The IUPAC-UNESCO-UNIDO Safety Training Program has made several advances in this biennium. In October 2005 STP Fellow Prof. Said Bayomi of Egypt received training in AstraZeneca facilities in the UK. Mr. Godfred Nyarko of Ghana and Mr. Fabian Benzo Moreira of Uruguay received training at Mitsui Chemical Co. facilities in Japan in June and July 2007. (*Projects 1, Publications 5, 9, 10*)

Eight trainee candidates from among over ten new applicants have been accepted into the Safety Training Program and are awaiting assignment to Host Companies. The new trainee candidates are from Nigeria, Uruguay, Morocco, India, Tanzania, Zimbabwe, and Pakistan. There is a current shortage of Host Companies, and all COCI members have been asked to canvass the CAs in their home countries for interest in participation. The STP Brochure and application form have been updated. Information on the Safety Training Program can be found at the STP Web page. (*Committee Information 2*)

d. IUPAC will foster communication among individual chemists and scientific organizations, with special emphasis on the needs of chemists in developing countries.

In addition to the projects described under Strategic Goal **b** above, COCI has organized workshops related to the Safety Training Program in 2005 and 2007. Following on a successful Safety Training Program Workshop in Beijing in 2005, a workshop is to be held in conjunction with the IUPAC Congress in Torino. Six STP Fellows and two international experts in environmental toxicology are scheduled to participate, with oral presentations, posters, and a panel discussion. (*Committee Information 2, 3; Projects 5*)

Most notably, COCI has collaborated with STP Fellow Kelvin Khisa to organize a Conference on Occupational Health and Safety in East Africa in September 2006 in Nairobi, Kenya. More than 110 participants from Kenya and surrounding countries participated in the Workshop, along with speakers from Tanzania, Kenya, Uganda, the United Kingdom and the United States. Topics of discussion focused on safe practices in the workplace in developing economies. (*Projects 2; Publications 6, 14*)

Through the efforts of United Kingdom NR and IUPAC Bureau Member Alan Smith, COCI now publishes a biennial summary of IUPAC Projects of Interest to Industry for circulation to NAOs and Company Associates. The most recent issue of this summary is scheduled for release before the 2007 General Assembly. (*Committee Information 4*)

e. IUPAC will utilize its global perspective and network to contribute to the enhancement of chemistry education, the career development of young chemical scientists, and the public appreciation of chemistry.

The COCI program on Public Appreciation of Chemistry is working closely with CCE to provide industrial perspectives on this critical activity of the Union, and TM David Evans has published an entertaining article in *CI* on industrial aspects of public appreciation of chemistry. Also in preparation is a guide for chemists making presentations to members of the public on scientific issues. (*Publications 7, 16*)

CD-ROMs containing the DIDAC educational materials in Chinese have been prepared in collaboration between TM Alexandre Pokrovsky and Jinliang Qiao of Sinopec.

f. IUPAC will broaden its national membership base and will seek the maximum feasible diversity in membership of IUPAC bodies in terms of geography, gender, and age.

A mechanism is being implemented for a collaborative effort between COCI and the IUPAC Secretariat to recruit and retain Company Associates. This mechanism includes leadership by a Secretariat employee as Program Leader, who will have overall coordination responsibility for program, including CA recruitment with the proactive assistance of COCI and the NAOs. The Secretariat will be the key repository for information and records on the program, such as the CA database. COCI will appoint a TM (currently Evans) to assist the Program Leader directly. This person will coordinate personal regional contacts by all COCI members to both industry and NAOs and will coordinate preparation of materials for CA recruitment, including brochures, project lists, etc. This person will then be the focal point within IUPAC for communication of CA benefits and activities, and will communicate the results of project and program developments in COCI to enhance the perception of benefits to CAs. A draft of a revised CA Brochure has been completed and is now being edited for printing. (*Committee Information 7, 8*)

Very importantly, new Company Associates in the USA, UK, Kuwait, and Russia have been recruited since the Beijing Congress and General Assembly. Evans, AM Khalida Al-Dalama (Kuwait), the COCI chair, and Pokrovsky have been instrumental in securing these new CAs. (*Publications 1, 4*)

Communication with CAs is an important goal in the CA and NAO Program. In addition to the new regional Conference described in section b above, TM Akira Ishitani, Evans and Unger have all made personal visits to their NAOs and Company Associates to review activities in IUPAC and COCI and to recruit new Company Associates. Unger has visited companies and universities in Italy to recruit new CAs, an Italian NR, and participants in COCI activities at the 2007 Congress and General Assembly in Torino.

COCI continues to work toward increased diversity in its membership. COCI members now span seventeen countries, and three women are currently members of the Committee. COCI has instituted a new nominations subcommittee composed of the chair, secretary and a member from a Division or Standing Committee, which will be charged with identifying candidates for COCI membership encompassing diversity and breadth of experience in the chemical sciences. This subcommittee will recommend membership for 2008-9. (*Members*)

III. COCI Strategy, Structure and Function

COCI places strategic emphasis on projects that share best practices globally and focus on:

- Capacity building
- Public appreciation of chemistry
- The authoritative role of IUPAC as an NGO
- Reputation and trust
- Enabling public and political debates.

To implement this strategy, COCI has a leadership team that oversees projects and budget along with Programs led by Titular Members and staffed by Members and National Representatives. This structure is designed to facilitate generation of new projects and to foster collaboration with IUPAC Divisions and Standing Committees and with the industrial chemical community. Industrial financial support is strongly encouraged for all COCI projects.

Finance and Budget are headed by COCI Secretary and Treasurer Michael D. Booth. This function is charged with managing the project and operating budgets, assisting with reimbursements of allowable expenses, and tracking spending on COCI projects and contracts with Projects Coordinator and TM Aldo Bologna Alles.

The Projects Coordination function, led by Alles, assists members in preparation and submission of project proposals, coordinates sources of funding inside IUPAC and externally, liaises with the IUPAC Projects Committee and Evaluation Committee, and monitors progress on and completion of projects.

The Health, Safety and Environmental Program is led by Cesa, with assistance from Booth, Alles, Al-Dalama, and AM Esmá Toprak. This program administers the IUPAC-UNESCO-UNIDO Safety Training Program, along with regional workshops on Health, Safety and Environmental Management.

COCI's efforts on Public Appreciation of Chemistry are led by Evans. COCI works with CCE on its program in PAC and provides support and input from the industrial perspective, assuring coordination with and differentiation from the myriad efforts in PAC worldwide.

The NAO/Company Associates Recruitment and Retention Program is led by Ishitani, with Evans and Unger. Responsibilities include recruitment and retention of Company Associates in collaboration with the Secretariat, recruitment of National Representatives, and communication with NAOs and CAs on IUPAC matters of interest to industry.

The NGO/IGO/Trade Association Program is led by Humphris, with West and TM Alexandre Pokrovsky. The participants in this program build liaisons with trade associations such as CEFIC and ACC, make connections with government and non-governmental organizations such as UNESCO and ICCA, and assist IUPAC's establishment of NGO and IGO roles with relevant organizations. As such, this program provides access to IUPAC as the "Scientific Straight-edge" on urgent industrial/governmental issues.

Smith (UK) leads the Division and Standing Committee Collaboration Program. Responsibilities include recruitment of representatives from the Divisions and Standing Committees to COCI, and of COCI members as representatives of COCI on the Divisions and Standing Committees.

In 2006-7, COCI has held annual meetings of the Committee as a whole, as well as annual strategy and project planning/review sessions. At these sessions the strategy of the Committee was reviewed and re-established, and new ideas in nanotechnology and the environment, biomonitoring, and biofuels are being evaluated for feasibility as COCI sponsored or co-sponsored projects.

IV. Publications, Committee Information, Projects, Meetings, and Membership

Publications

1. "New CA's Join IUPAC," *Chemistry International*, November-December 2005, p. 19; http://www.iupac.org/publications/ci/2005/2706/iw4_newCAs.html.

2. A. Smith, "Nanotechnology – Does It Have a Sporting Chance?" *Chemistry International*, January-February 2006, 8-9;
http://www.iupac.org/publications/ci/2006/2801/2_smith.html
3. D. A. Evans, "Division Roundup 2005 GA, Committee on Chemistry and Industry," *Chemistry International*, January-February 2006, 17;
http://www.iupac.org/publications/ci/2006/2801/4_divroundups.html.
4. "Two New CA's Join IUPAC," *Chemistry International*, January-February 2006, 20;
http://www.iupac.org/publications/ci/2006/2801/iw3_newCAs.html.
5. "Safety Training Program – Call for Applicants," *Chemistry International*, March-April 2006, 20; http://www.iupac.org/publications/ci/2006/2802/iw3_safety.html.
6. "Occupational Health and Safety Management – 27-29 September 2006, Nairobi, Kenya," *Chemistry International*, May-June 2006, 36;
http://www.iupac.org/publications/ci/2006/2803/ca4_270906.html.
7. D. A. Evans, "The Irrationality of Being – Fear of All Snakes, Spiders, ...and Chemicals," *Chemistry International*, July-August 2006, 12-15;
http://www.iupac.org/publications/ci/2006/2804/3_Evans.html;
<http://www.iupac.org/publications/ci/2006/2804/2804-pp12-16.pdf>.
8. M. C. Cesa, "COCI Corner," *Chemistry International*, July-August 2006, 17-19;
<http://www.iupac.org/publications/ci/2006/2804/2804-pp17-19.pdf>.
9. M. C. Cesa, "IUPAC-UNESCO-UNIDO Safety Training Program," CHAS-9, ACS National Meeting, San Francisco, CA, USA, 10 September 2006.
10. "Safety Training Program - Call for Host Companies," *Chemistry International*, September-October 2006, 21; <http://www.iupac.org/publications/ci/2006/2805/2805-pp18-22.pdf>.
11. A. Smith, "Nanotechnology – Lessons from Mother Nature," *Chemistry International*, November-December 2006, 10-11;
http://www.iupac.org/publications/ci/2006/2806/3_smith.html;
<http://www.iupac.org/publications/ci/2006/2806/2806-pp10-11.pdf>.
12. "Industry and IUPAC Meeting Halfway," *Chemistry International*, November-December 2006, 21; <http://www.iupac.org/publications/ci/2006/2806/2806-pp20-23.pdf>.
13. Dumitrescu, I., "The Chemical Industry and Sustainable Development: The Role of ICCA and SAICM," *Chemistry International*, May-June 2007, 8-11.
14. Khisa, K., "Occupational Health and Safety Management in East Africa: Report on the 3-Day Regional Conference on Occupational Health and Safety Management in East Africa, Nairobi, Kenya 27-29 September 2006," *Chemistry International*, May-June 2007, 32-33.
15. "Emerging Chemical Regulatory Environment – World Chemistry Leadership Meeting, IUPAC 2007 General Assembly, 10 August 2007, Torino, Italy: Conference Announcement," *Chemistry International*, May-June 2007, 34-35.
16. Evans, D. A., "Speaking to the Public About Chemistry," *Chemistry International*, July-August 2007, in press.

Committee Information on the IUPAC Web Site, posted in 2006-7:

1. COCI Home Page: <http://www.iupac.org/standing/coci.html>.
2. IUPAC-UNESCO-UNIDO Safety Training Program:
<http://www.iupac.org/standing/coci/safety-program.html>.
3. Safety Training Program Workshop in Torino, 10 August 2007:
<http://www.iupac.org/standing/coci/stp-07torino.html>.
4. Summaries of IUPAC Projects of Interest to Industry:
April 2006: http://www.iupac.org/standing/coci/Div-Projects-sum_04-2006.pdf.
September 2006: http://www.iupac.org/standing/coci/Div-Projects-sum_09-2006.pdf.
5. COCI 2006 Annual Report: http://www.iupac.org/standing/coci/COCI_rpt2006.pdf.
6. COCI Terms of Reference: http://www.iupac.org/standing/coci/coci_ref.html.
7. Company Associates Brochure:
<http://www.iupac.org/standing/coci/COCIbrochure04.pdf>.
8. List of Company Associates: <http://www.iupac.org/links/ca.html>.
9. World Chemistry Leadership Meeting, Torino:
<http://www.iupac.org/symposia/conferences/ga07/wclm07.html>.

Projects

1. 2004-032-1-022, "IUPAC-UNESCO-UNIDO Safety Training Program 2004", M. C. Cesa;
<http://www.iupac.org/projects/2004/2004-031-1-022.html>.
2. 2005-046-1-022, "Conference on Occupational Health and Safety Management in East Africa", K. Khisa; <http://www.iupac.org/projects/2005/2005-046-1-022.html>.
3. 2006-030-1-022, "Chemistry in a Changing World – New Perspectives Concerning the IUPAC Family," Jonas Unger; <http://www.iupac.org/projects/2006/2006-030-1-022.html>.
4. 2006-047-1-022, "Responsible Application of Chemistry. An Introduction to Responsible Care," Bernard West; <http://www.iupac.org/projects/2006/2006-047-1-022.html>.
5. 2006-051-1-022, "IUPAC-UNESCO-UNIDO Safety Training Program Workshop, Turin, Italy," Mark Cesa; <http://www.iupac.org/projects/2006/2006-051-1-022.html>.

Meetings

1. Strategy and Project Planning Meeting, Research Triangle Park, NC USA, April 2006;
http://www.iupac.org/standing/coci/COCI_minutes060421.pdf.
2. COCI Annual Meeting, Naperville, IL USA, July 2006;
http://www.iupac.org/standing/coci/COCI_minutes060720.pdf.
3. Strategy and Project Planning Meeting, Lyndhurst, UK, April 2007.

Members

Titular Members

Mark C. Cesa (United States) – Chair
Michael D Booth (South Africa) – Secretary and Treasurer
Aldo Bologna Alles (Uruguay)
David A. Evans (United Kingdom)
Colin Humphris (United Kingdom)
Akira Ishitani (Japan)
Alexandre Pokrovsky (Russia)
Jonas Unger (Sweden – Nordic Countries)

Associate Members

Khalidah Al-Dalama (Kuwait)
Jacek Kijenski (Poland)
Nedyalko T. Popov (Bulgaria)
Esma Toprak (Turkey)

National Representatives

Paul Baekelmans (Belgium)
Daniel Bernard (France)
Cao Xianghong (China)
Michael Droescher (Germany)
Hideyuki Ishida (Japan)
Weon Lee (Korea)
Carolyn Ribes (United States)
Alan Smith (United Kingdom)
Bernard West (Canada)

Ex Officio – Division and Standing Committee Representatives to COCI

Peter G. Mahaffy – Committee on Chemistry Education
John M. Malin – CHEMRAWN
John Dymond – Division I
Markku Leskela – Division II
Janine Cossy – Division III
William Work – Division IV
Ales Fajgelj – Division V
Keiji Tanaka – Division VI
Thomas Perun – Division VII
Alan McNaught – Division VIII

Acknowledgments

COCI recognizes with gratitude the new project and operating budgets granted to the Committee for the 2006-7 biennium. COCI also gratefully acknowledges the financial support of UNESCO in several of its projects.

COCI also acknowledges the leadership of past chair David Evans in 2004-5. Under his direction COCI developed an organizational structure that has facilitated significant achievements by the committee, and he has been a tireless contributor to COCI programs in public appreciation of chemistry and in recruitment and retention of Company Associates.

Finally, the Chair gratefully acknowledges the enthusiastic participation and noteworthy accomplishments of the members of COCI.

Mark Cesa
4 June 2007