

IUPAC COMMITTEE ON CHEMISTRY EDUCATION

Seoul, Korea, 19th ICCE 2006

MINUTES

**Meeting at 19th ICCE,
Saturday, August 12, 9:00 – 12:30 and 14:00 – 17:30**

1. Welcome, introduction, and orientation

[\[CCE2006_1_membership\]](#)

Present:

TMs: Peter Mahaffy (chair), Eva Åkesson (secretary), Choon Do, Masato Ito, Natalia Tarasova, Lida Schoen,

NRs: Anthony Ashmore, Liberato Cardellini, Mei-Hung Chiu, Masahiro Kamata, Livneh Mordechai

AMs: None

Standing Committees: Alex Pokrovsky, representing COCI also UNESCO and IOCD, Kew-Ho Lee (Korea) representing CHEMRAWN

Guests: Erica Steenberg (South Africa), Ameen Farouk Fahmy (Egypt), Alastair Hay (UK), Leiv Sydnes

Apologies: /Sending regrets

TMs: Warren Beasley, Ram Lamba

AMs: Hartshorn (Div. VIII - Nomenclature)

NRs: Ludo Brandt, Peter Childs, Hoffman (NA August 12, but in Seoul later for ICCE), Mitchell, Riedel (see report)

Standing Committees: Cesa (COCI)

Presentation round and a short introduction of all participants.

Welcome from the chair, Peter Mahaffy:

It is a tight time schedule and a heavy agenda to go through today, we will try to move quickly through the reports so we will have time to have discussions in groups.

Welcome to the CCE 2006 in Seoul, Korea. I am honoured to serve as the new chair on CCE. I am hoping for an enthusiastic successful meeting week. My ambition is to get everybody involved in CCE activities and projects. We all share a passion for educational issues. It is a moment to reflect on why we are here and what we can do together. We can

support a mission and vision of chemistry as integral to sustainable development, human health, and promote a pedagogical view to move from teacher oriented to learner centred perspective. CCE has cultural diversity as a major strength that we shall utilize fully and set a positive example.

Welcome to all of you!

A special thanks to Prof Choon Do for organizing the 19th ICCE.

Agenda approved with following changes:

The report from Alistair Hay under item 10. 2 will be move to item 5.

Added to the agenda

4.1 Update concerning the task force formed in Beijing to study if the descriptors prepared at a European level may be changed for a worldwide consideration (item 12 in Beijing minutes).

2. Minutes of CCE meeting August 2005, Beijing

[\[CCE2006_2_beijingminutes\]](#)

2.1 Minutes were accepted with one correction - Amongst those present was Jim McQuillan not John McQuillan.

2.2 Matters arising from the minutes

3. Minutes of strategy meeting, Puerto Rico 2006

[\[CCE2006_3_strategyminutes_2006\]](#)

3.1. Noted

3.2. The strategy meeting, reported by Peter Mahaffy, was considered very useful.

- Note in particular item 5, the recommendation for directions for the subcommittees.
- Note also the strategy planning and directions for the future under item 11
- Please also acknowledge funding from Glaxo Smith Kline for the YACs project.
- The ICSU report, Item 7.b, will be distributed to members together with the minutes from this meeting.

4. Business arising from the minutes of CCE and strategy meetings and new Business

4.1 Update concerning the task force formed in Beijing to study if the descriptors prepared at a European level may be changed for worldwide consideration (item 12 in Beijing minutes).

Members: T Mitchell, A Ashmore, M Hoffman, M Ito, W Beasley.

A Ashmore gave a short update on the Bologna process, the Dublin descriptors and the Budapest descriptors which are the discipline descriptors for chemistry. Information concerning the chemistry descriptors and information concerning the Euro bachelor in chemistry can be obtained on the ECTN webpage.

<http://www.cpe.fr/ectn-assoc/network/index.htm>

A general discussion took place about the Bologna process, pointing out both strengths and weaknesses.

The brief report indicated no progress within the task force since the last meeting in Beijing. A Ashmore have sent his remarks/thoughts/suggestions to T Mitchell and has not received any reply. During the discussion a strong emphasis was expressed on the need to involve people from other regions than Europe. The CCE committee agreed on that this could be suitable project for consideration by the CCE Project Group.

Eva Åkesson will contact task force leader T Mitchell and ask for a progress report, discuss CCE's involvement and encourage him to formalize it into a project. N Tarasova expressed her interest to be involved in the upcoming project. Other people who are interested to participate were encouraged to notify E. Åkesson so she could pass on the information to the task force leader.

Alex Pokrovsky pointed out the possibility to get grants from the UNESCO office in Bucharest and he will send this suggestion/information to T. Mitchell.

5. Subcommittee reports

Report from A Hay. (moved from item 10.4 in the agenda)

2005-029-1-050 - Educational material for raising awareness of the Chemical Weapons Convention and the multiple uses of chemicals

A. Hay:

Thanks for the invitation.

A Hay gave a report about how the collaboration was initiated with CCE at a joint workshop with OPCW (the Organization for the Prohibiting of Chemical Weapons), in the UK July 2005. Hay stressed that many chemists are not aware of the Chemical Weapons Convention (CW). The aim of the joint project is to promote codes of ethics and professional conduct among chemists and chemical engineers and to share experiences of these new teaching practices. A workshop has been developed and already been organized at D. Mendeleev University of Chemical Technology of Russia in Moscow in November 2005. The aim is to enable teachers to run a one hour interactive presentation on the subject. (For details look at annex CCE2206 10.1 to the agenda)

Four papers have been produced:

- Multiple use of chemistry (Peter Mahaffy)
- Prohibition of chemical weapons
- Toxicology of chemical warfare (Alastair Hay)
- Codes of conduct (Brian Rappert)

The objective was to test the four papers in Russia in a workshop organized by N Tarasova at Mendeleev University. Tarasova arranged the translation of the papers into Russian. The workshop was well received, and very gratifying, and it provided very helpful feed back to further develop the concept. A second workshop was held in Leeds in 2006. During the 19th ICCE in Seoul a new workshop will be held.

The material (the 4 papers) will formally be handed over to IUPAC, put on the web and as part of the project, transformed into a user-friendly and interactive web-based form. The national societies need to promote this upcoming website.

The chair thanks Alastair Hay for the report and emphasizes the interesting and fruitful collaboration between CCE and OPCW. He encourages everybody to participate in the upcoming workshop at ICCE.

A discussion followed about translation and distribution forms.

AP pointed out UNESCO as a possible partner for support and UNESCO for translation. AP will give N Tarasova a letter draft with a recommendation to UNESCO.

Another suggestion from Ashmore was to target editors for science magazines.

Summary by the chair PM:

- Several on going projects
- The Hay project has been approved for a 6 month extension
- There will be a conference in Bologna in September of the OPCW, at which the IUPAC/OPCW collaboration will be highlighted by Hay and Mahaffy
- The PUC subcommittee will discuss/work on the dissemination and also look into the material and translation issue.
- Tarasova and Prokovsky will see how UNESCO can be used here.

Code of Conduct –proposal

Hay: A draft project proposal to develop an IUPAC code is in preparation by Graham Pearson already exists. It is important that it is not too prescriptive. A small committee will continue to work on it. IUPAC needs to endorse the process and later on endorse the draft. CCE will bring forward the project proposal, perhaps jointly with COCI.

5.1 Public Understanding of Chemistry (Ashmore)

Please note [Item 5 from CCE2006_3_strategyminutes_2006](#)

Presentation and discussion of past activities, membership, plans by new subcommittee chair Anthony Ashmore.

1. Finalize the PUC report
2. Prepare symposium at the general Assembly 2007 in Torino, Italy
3. Find some way of helping national chemical societies
4. Support individual PUC projects

The chair pressed the issue that project have to have proven impact, we should not just distribute project funding to anything anywhere.

Current members Public Understanding Committee:

Anthony Ashmore (chair, UK)

Choon Do (TM, Korea)

Lida Schoen (TM, Netherlands)

Masato Ito (TM, Japan)

Peter Childs (NR, Ireland)

Bob Bucat (Australia)

Liberato Cardellini (NR, Italy)

5.2 Chemistry for Development (Chiu)

Please note [Item 5 from CCE2006_3_strategyminutes_2006](#)

Presentation and discussion of past activities, membership, plans by the new chair Mei-Hung Chiu. Chiu presented tentative plans for the CED subcommittee; a memo was distributed to participants at the meeting along with the written presentation of the chair (annex 5.2). The chair suggests three action lines:

1. Flying chemist program - FCP – an existing plan
Project started 2005, visits have been made to India and Sri Lanka, the aim is to promote chemical education in developing countries.
2. Developing Scientific Chemical Senses (DSCS) – a tentative plan
3. Translation chemistry terminologies in teacher friendly language – a tentative plan.

For more details – see annex 5.2.

Members in CED subcommittee:

Mei-Hung Chiu (chair, Taiwan)

Natalia Tarasova (TM, Russia)

Masahiro Kamata (NR, Japan)

John Bradley (South Africa)

The chair encourage other members of CCE to join the subcommittees, those who are interested should contact the chair of the subcommittee of interest. Further discussion will come in the group discussion later in the afternoon based on the tentative plans and the direction from the strategy meeting.

5.3 Microscale group (Bradley)

Mail from Bradley to PM

PM gave a short report, based on email correspondence from Johan Bradley. 80 countries have been involved in the project. Now, it has slowed down due to lack of funding.

The CCE committee expressed there thanks to John Bradley for his dedicated an enthusiastic work with the microscale project, the importance of A Pokrovsky's role was also pointed out.

5.4 Other reports

- Reidel – Hungary [CCE2006_5.4_Reidel report](#)
- Toshev – Bulgaria [CCE2006_5.4_Toshev report](#)

The chair, Peter Mahaffy, expressed his appreciation to the NRs sending reports to the CCE meeting. Thanks for taking the time to prepare and send an update of the current situation in their countries when not being able to be present. All representatives should be encouraged to do so. In particular, the report from Bulgaria showed some very innovative steps with journal clubs etc. The need of textbooks and literature was noted and all members having the possibility to help were encouraged to do so.

- Reports by CCE members from other regions

Moved to be integrated in the group discussion, item 11. The members were told to think about ideas where CCE can be involved.

- Mahaffy – ICSU Committee for Freedom & Responsibility in Science

[CCE2006_5.4_ICSU CFRS ToR](#)

[CCE2006_5.4_ICSU CFRS Member List](#)

Peter Mahaffy is now a member of this new committee of ICSU. He urged members give him ideas and issues to bring forward within ICSU.

- Brett, Tarasova [CCE2006_5.4_Teaching Chemistry in Foreign Language](#)

The possible role for CCE was discussed. The committee agreed that language issues are important and very complex. The language issue is getting even more important in the light of the Bologna process. The possibility for a project should be discussed in the group later on.

Thanks to Tarasova and Brett for preparing the report!

- DIDAC (Brandt, Pokrovsky)

For information concerning DIDAC, see Beijing minutes item 12.4

A. Prokovsky gave an update concerning news since 2005 and the next step. The Chinese version on CD was presented. This version has been funded by Chinese industry, which also covered the cost for the book print. Now versions in six different languages exist, including Japanese and Russian. Funding for an Arabic version is sought. Altogether 8000 CD-ROMs and 8 tons of materials have been distributed to ministries by UNESCO. UNESCO has no control over the next step in the distribution chain. AP stressed that UNESCO must deal with governments directly. AP recommended CCE to not close the project, but to continue to have the project pending if new sources of funding will arise. It has been a successful project raising 1.2 million dollars from industry which can have follow ups.

P. Mahaffy: The chair expressed thanks to AP and his work on DIDAC.

The committee agreed on not closing the project, and continues to have brief reports on upcoming agendas.

6. Interaction with Divisions and Standing Committees

6.1 Oral report from Chair and Divisional Liaison Officer (Åkesson)

Further details to come under projects, item 11

Eva Åkesson has been liaison officer since 2005 and is appointed for the period 2006-2009

E. Åkesson reported on;

❖ The role of liaison officer:

- To accompany the Chair on his/her visits to divisional meeting at the GA

- To liaise with divisional representatives (AMs on the CCE) concerning projects of joint interest
 - To ensure that joint projects were developed
- ❖ For information on interactions with Divisions in Beijing; look at Beijing minutes item 9 a and b.
 - ❖ Letter to AMs was sent March 22, 2006 from the chair and the Liaison officer. AMs were encouraged to come to the CCE meeting and ICCE in Seoul - as noted the turn out was disappointing. None the less, we must continue to promote interaction between divisions and CCE. A short report about this meeting with the message that we missed the AMs at this meeting and hope to see them at the upcoming GA will be sent to all AMs shortly after this meeting.
 - ❖ The liaison officer will circulate Minutes from meetings to all AMs

An update on contacts after Beijing:

Email contacts with Kahovec concerning organic nomenclature project
Project proposal from Leigh has just arrived.

6.2 Contributions from Divisional Representatives
Moved to afternoon group discussion.

6.3 Contributions from Standing Committee Representatives (Pokrovsky for COCI, IOCD and UNESCO; CHEMRAWN)
Opportunities for collaboration
AP-report:
COCI has a large interest in public understanding. There will be two COCI meetings in the US this year. Nanotechnology for primary level was discussed.

CCE expressed a commitment to work together with COCI and try partnering on projects.

CHEMRAWN

CHEMRAWN has organized 14 conferences and are now seeking to include educational component into upcoming conferences.

CCE has a wish to strengthen the collaboration. In particular, CCE notes the potential for strong interactions related to the work of the Chemistry Education for Development subcommittee.

A summary will be sent to CCE by the CHEMRAWN representative, Next CHEMRAWN conference will be in Canada on the theme Chemistry for Clean Energy.

7. Chemistry International and Chemistry Education International

Editors to report (Ito and Mahaffy for Meyers)

CI: Fabienne expressed her profound regrets not being able to attend at the meeting through P Mahaffy. The new issue of CI focuses on education and will be distributed to all participants at ICCE.

CCE express great appreciation to Fabienne Myers for her interest in our work and the positive expose our projects have been given in CI. All CCE members are strongly encouraged to contribute to upcoming issues of CI.

CEI

Ito reported on interviews with Nobel laureate, he has a few articles ready. He also welcomes participation with articles and reports from others in CCE. Next year, CEI will publish the proceeding from the 19th ICCE, with contribution from plenary and invited lecturers.

Lida Schoen suggested Ito to send an email alert when a new issue is out and also notify F Myers.

CCE thanks Ito for his work as editor.

8. ICCE and Other Educational Conferences

8.1 19th ICCE Seoul 2006

Update, highlights, and statistics (Do)

304 participants from 36 countries, including over 100 from Korea.

110 posters

For those interested, there will be possibilities to visit a high school.

Poster Competition – Chemistry for Humanity (Schoen)

This is collaboration with Science Across the World (SAW). For this competition, there were 945 entries from 32 countries. The quality is very high; some are real pieces of art according to Schoen.

Two lists are created, one for younger and one for older participants. The jury from CCE will select the winners during ICCE and the winners will be announced in September. The Korean Chemical Society has supported the competition.

CCE stress the amazing activity and applaud L Schoen's wonderful job with the poster competition.

8.2 General Assembly and Congress, Torino 2007

Update and status (Mahaffy, Cardellini)

Date 4 -12 August 2007. CCE will use the GA to interact with other divisions.

PM informed about the Hoffmann play "Should've" (see annex 11.3 point 1)

8.3 20th ICCE Mauritius

Update and plans, including satellite meeting (Ramasami)

Ramasami was not present. CCE delegated to Peter Mahaffy and E Åkesson to arrange to meet Ramasami later during the week to discuss the upcoming conference. A meeting with the international advisory committee will also be arranged this week.

8.3 21st ICCE 2010 and future venues (Mahaffy for Beasley)

8.3.1 Report from conference coordinator

[CCE2006_8.3.1_Conference Coordinator Report](#)

A brief report by Peter Mahaffy. Warren Beasley was thanked for his report and his important work as conference coordinator

8.3.2 Preliminary discussion of location of 21st ICCE 2010

Formal decision to be taken in Torino, 2007

Nigeria and Switzerland have indicated interest to host the conference. Formal application has come from Taiwan. Chui presented the proposal from Taipei, Taiwan.

The deadline for submission of letters of intent was extended somewhat, and to ensure that the process of selection is both clear and fair, the CCE Conference coordinator will be asked to prepare a revised timeline for receipt of letters of intent, and preliminary consideration of such proposals prior to Torino in August 2007, when a final decision will be made.

9. Administrative matters

9.1 Finance

Project and Operations Budget (Update from Mahaffy)

Total budget \$ 38300 (2 years 2006-2007)

Project: \$ 20 000, so far spent \$3000

Operation: \$ 18 300. Approximately half is spent after expenses from this meeting are included.

9.2 Roles of officers

[CCE2006_Strategy Meeting2006 Item 4 \(b – h\)](#)

Members were reminded of the sharing of responsibility among officers, and encouraged to work through the appropriate contact person.

9.3 Membership

[CCE2006_Strategy Meeting2006 Item 4 a](#)

Numerous countries missing - NRs - Please come up with suggestions to help to get a broader representation.

9.4 Role of Titular members, associate members, national representatives

[CCE2006_Strategy Meeting2006 Item 4 h](#)

Please give consideration to the suggestion of roles for members, and come with ideas for ways to actively involve yourself and every CCE member in projects and activities

TM: Considered well defined

AM: We have to work harder to realize a fruitful interaction with other division, The GA in Torino is an important opportunity for this.

NR: Are underutilized, how can we engage more NRs in CCE activities?

10. Review of Completed and Current Projects and Current Activities

[CCE2006_10_CCE & Related Projects](#)

[CCE2006_10_Div-Projects-sum_04-06](#)

10.1 Completed projects (CD)

- Flying Chemists Visits
- Russian Clearing House
- Chemical Education Responsible Stewardship (Tarasova)

[CCE2006_10.1_Chem Educ Resp Stewardship](#)

10.2 Current projects (CD)

2001-016-1-050 - IUPAC chemical nomenclature for chemistry teachers at secondary schools (Mahaffy)

- 2002-021-2-050 - A feasibility study of the scope and limitation of machine translations as a means of disseminating useful reading material for chemical education to be used on the internet (Ito)

- 2003-055-1-050 - Young Ambassadors for Chemistry (YAC) – (Schoen)

[CCE2006_10.2_YAC Report](#)

- 2004-047-1-050 - Public understanding of science: identifying IUPAC's niche (Ashmore) [CCE2006_10.2_PUC Report from CI](#)

- 2005-002-2-050 - Micro-scale chemistry for student laboratories in India (Mahaffy)

Mail from JD Bradley 09/08/06

REPORT TO CCE ON GLOBAL MICROSCALE PROJECT FOR 2005-6

As reported at the previous meeting of CCE in Beijing (August 2005), the pace of workshop activities has slowed due to decreased funding. However, during the reporting period, workshops under the auspices of IUPAC and UNESCO (plus other donors such as ISESCO), have been held in Malaysia, Indonesia, Denmark and Iceland. I conducted each of these, and found high interest, as is usual. On each occasion, DIDAC was also presented, either by Dr Pokrovsky (Malaysia, Indonesia) or by Prof Sydnes (Denmark, Iceland). The personal support provided by the Past President is very much appreciated.

The UNESCO website continues to add examples of worksheets supplied by the RADMASTE Centre covering chemistry, electricity, biology and primary science. These are slowly appearing in English, French, and Portuguese languages. They are freely available to all.

Under this project some 80 countries have now hosted workshops under the auspices of UNESCO. In this regard, I would like to correct a misapprehension that might be created by a reference in one of the other reports for this CCE Meeting. This is not a project that disseminates Microscience kits. The workshops disseminate ideas, partly by providing hands-on experiences. The kits and chemicals used at the workshop remain in the country to enable further trial and reflection to take place there. However dissemination of kits is not the aim.

The next workshop, under UNESCO/IUPAC/ISESCO auspices, is due to take place in Surinam in September.

- 2005-003-2-050 - e-Quiz for promoting chemical education (Mahaffy)
- 2005-029-1-050 - Educational material for raising awareness of the Chemical Weapons Convention and the multiple uses of chemicals – Hay
- 2005-030-1-050 - New directions in teaching, learning and evaluation of chemical sciences at tertiary level in Sri Lanka – (Mahaffy)

YAC

Schoen gave an inspiring power point presentation of the YAC project. This is considered to be the flagship of CCE, a model for other and an excellent project.

PUC-report

Ashmore gave a brief history of the project. He stressed that all research concerning public understanding is focused on the western world, little evidence was found for the rest of the world, he was struck by the lack of knowledge in this respect. He also put emphasise on the need of two way communication. He highlighted IUPAC as an actor which must collaborate with others. The primary target was identified in the report; try to help scientist (colleagues within IUPAC to understand the public, help them to do a better job. It was recommended that IUAPC do not work directly towards the public. Next step is to take the report to the Bureau. Dissemination following Bureau approval should be carefully considered. Some discussion followed about the lay diagram. The need to reach teacher organisations was lifted. The deficit model was also discussed and different issues can be important in relation to public understanding in developing countries.

CCE express thanks to Ashmore for his work!

Leiv Sydnes, former president of IUPAC joined the meeting.

Sydnes expressed a will to take part in PUC-activities. He thanks the CCE taking on the task and also hoped for a successful ICCE conference.

Educational activities are important to chemistry and society; we have a tremendous task in front of us. People in chemistry must stress the importance of chemistry in a global perspective. We need to achieve a proper understanding of chemistry. IUPAC must boost chemical education; CCE means an extension of traditional IUPAC projects and to make it accessible to the public. Sydnes also pointed out an article he wrote for CI "Core sciences with political issue which will appear in the September issue.

We have tremendous challenge, like how to teach, how to reach out to the public. We must be creative. Today there are many distractions and a different competition for people's attention, This takes dedication and gives an important position for CCE. Good ideas are limited and it is important to find ways how to raise money from other sources.

Fahmy added the importance to think globally.

11. Proposals for New Projects and Activities

P Mahaffy asked the committee to pay attention to the project system within IUPAC and the need to make money grow. Many projects can receive seed money from IUPAC but need also other sources of funding.

11.1 Reminder of procedure

[CCE2006_11.1_project procedure](#)

11.2 Project budget

Update (Do, Mahaffy)

11.3 Initiatives under consideration and new initiatives

[CCE2006_11.3_NewActivities](#)

The rest of the meeting was devoted to breaking into smaller groups and brainstorming future directions for CCE and generating ideas for new project proposals. We then came back together to discuss and prioritize ideas and assign responsibilities for bringing project proposals forward. Working or project groups will be strongly encouraged to meet further informally during breaks in the ICCE conference during the next week, so we can take advantage of this good opportunity to work together in person.

P Mahaffy reviewed 11.3 as an introduction to the group discussion.

Two discussion groups were formed:

Group 1

Mei-Hung (chair), Liberato, Livneh, Erica, Masahiro, Natalia, Ameen Farouk, Kew-Ho

Group 2

Tony (chair), Ito, Lida, Alastair, Eva, Alex

Both groups will give their report to P Mahaffy on Thursday (17th) the latest. Both groups will continue the discussion tomorrow 16:30. The reports will be attached to the minutes.

The chair Peter Mahaffy thanked everybody for a good meeting!

The meeting adjourned at 18:20

Report from Subcommittee on Public Understanding of Chemistry

Notes of meetings and discussions held on 12 - 17 August 2006, Seoul

1. Membership

The Sub committee comprises: Tony Ashmore (Chair), Masato Ito, Choon Do, Lida Schoen and Liberato Cardellini. Peter Childs will be invited to join. Other members of CCE are also welcome. Peter Mahaffy, Eva Åkesson, Alastair Hay and Alex Pokrovsky (representing David Evans) also participated in discussions.

2. IUPAC's Role in PUC

The draft project report was the subject of a seminar in Beijing, sessions within the ICCE and articles in "Chemistry International". It has been very well received. Following final editing, it will be formally submitted to the Bureau for adoption as a technical report and publication in "Pure and Applied Chemistry". Other publication and dissemination opportunities will be sought by Peter Mahaffy and Tony Ashmore.

3. Torino General Assembly

There are plans for a reading of the Roald Hoffman play. This should be linked to - a workshop on multiple uses of chemicals by Peter Mahaffy and Alastair Hay; and - a symposium on ethical issues facing chemists, and by extension, IUPAC; leading to - a round table discussion to draft guidance on ethics for IUPAC.

Project funding will be required. Tony Ashmore and Peter Mahaffy to draft.

Liberato Cardellini will be asked to liaise with the local organisers on the above.

4. Nanotechnology

Alex Pokrovsky circulated a PowerPoint presentation prepared by Alan Smith. It is a large collection of images of applications of nanotechnology for use in a presentation by an expert. It requires additional material if it is to be used as an educational resource. Tony Ashmore will contact Alan Smith. This may be the subject of a project.

IUPAC is recommended to commission a technical report on nanotechnology - benefits and concerns - as a contribution to its PUC remit within the context of the report in (1) above.

5. Supporting national Chemical Societies

ICCEs and General Assemblies provide an opportunity for chemists involved in the education work of national chemical societies to meet and share good practice. IUPAC can help societies through

Minutes CCE meeting 2006 Korea, Eva Åkesson

dissemination of the PUC report, assistance in helping societies to evaluate and thereby enhance their effectiveness, and through the "Flying Chemists Programme."

A D Ashmore
17 August 2006

Report of The Chemistry Education for Development Subcommittee, following the CCE and Subcommittee Meetings in Seoul

Chair, Mei-Hung Chiu

Membership

Mei-Hung Chiu, Taiwan, Chair

John Bradley, South Africa

Bob Bucat, Australia

Masahiro Kamata, Japan

Ram Lamba, Puerto Rico

Lida Schoen, Netherlands

Natalia Tarasova, Russia

Flying Chemists Program (FCP) --- an existing plan

The Flying Chemists Program was initiated in 2005, with the aim of providing emerging countries means to improve the teaching and learning of chemistry at primary, secondary, and tertiary levels. A FCP visit must be initiated by a National Society, Ministry of Education or Technology, or another comparable substantial organization. Two visits have been carried out under this program in the past two years, providing resources to strengthen chemistry education and to assist a country in its development.

In 2006 a FCP visit was made to Sri Lanka by two CCE members and two external consultants, addressing general issues of tertiary science education, as well as specific topics in physical, inorganic, organic and environmental chemistry. This program is worthwhile continuing in the future, and we are working at integrating it more fully into the work of the Chemistry Education for Development Sub-Committee. Several queries have been made from other countries about criteria for hosting a visit.

Preliminary discussion of two new areas for activities was initiated in Seoul, as outlined below. These will be developed further and brought forward at a later date.

Developing Scientific Chemical Senses (DSCS) --- A Preliminary Idea

Goals:

- To establish mutual understanding between chemical industry and individuals
- To facilitate cooperation between international chemical companies and local residential communities
- To promote the real understanding of chemical processes in daily life
- To create learning opportunity for young students in developing countries

**Translating Chemistry Terminologies to Teacher-Friendly Language --
A Preliminary Idea**

Goals:

- To develop a pedagogical handbook for chemistry teachers
- To provide chemistry terminologies, misconceptions, teaching strategies, instructional resources (including e-learning) to chemistry teachers as well as students
- To link research theory with empirical teaching