

IUPAC Division of Chemistry and the Environment (DCE)
Minutes of Division Committee Meeting
4 – 5 August 2007, Torino, Italy

Present: Ken Racke (TM - Division President), Willie Peijnenburg (TM - Division Secretary), Werner Kördel (AM), Nicola Senesi (AM), Yong-Hwa Kim (TM), Laura McConnell (TM), Leo Klasinc (NR, Croatia), Hemda Garelick (TM), Pan-Ming Huang (TM), Elke Anklam (AM), Don Wauchope (TM), Petr Fedotov (AM), Laurence D. Melton (TM), Christoph von Holst (invited observer and Task Group Leader), Manos Dassenakis (NR, Greece).

Apologies: Yehuda Shevah (AM), Walter Benson (AM), Yuanhang Zhang (NR, China), Muhammad Iqbal Bhanger (NR, Pakistan), Reto Battaglia (AM), Ewa Cukrowska (NR, South Africa), Ole Hertel (TM), Kevin Wilkinson (TM), Keiji Tanaka (NR, Japan), Melissa Fitzgeralds (NR, Australia).

0. Executive Summary

Fourteen members of the IUPAC Division of Chemistry and the Environment participated in the 2007 meeting held during the General Assembly of IUPAC in Torino. Thereupon there was one invited observer, Dr. Christoph von Holst, who is also a Task Group Leader. On forehand, three key objectives for the meeting were identified:

? Projects – Review projects and reach required decisions on existing projects and new proposals; allocation of the remaining project budget.

? Membership – Finalize the roster of 2008-2009. Associated Members and National Representatives and appoint Divisional representatives to IUPAC bodies.

? Sub-Committees – Provide time for sub-committees to meet and advance their work, including confirmation of membership; review sub-committee structure and agree on any operational changes.

Thereupon, meetings were organized with representatives of the IUPAC Committees on Chemistry and Industry (COCI) and Chemistry Education (CCE).

1 – Project progress. Thirty-two projects are in progress at the moment, including the projects for which the lead is within one of the other IUPAC-Divisions and to which Division VI is contributing. Progress of projects is in general most satisfactorily, with part of the projects to be finished before the end of the year by means of publication of the project outcome. Other projects are proceeding according to plan, and just two projects need reviving since progress is limited but the topic is considered of importance to IUPAC. The Division allocated remaining project funds for the biennium to three existing projects which had requested continuation and/or additional funds.

2 – New project proposals. Each sub-committee provided ideas for new projects for the next biennium. The ideas will be reformulated into draft project proposals, to be discussed in a teleconference to be held in Spring 2008.

3 – Membership. The composition of the new Division Committee was decided upon. Most noteworthy is that in addition to the regular slots for TMs/AMs/NRs, a proposal was brought forward for a Provisional Member (PM) for an active expert from a scientifically emerging region of Southeast Asia.

4 – Sub-Committees. Within the sub-committees, several new areas of project activities were discussed, including ambitious new book series on biophysico-chemical processes in environmental systems.

The next face-to-face meeting of the Divisional Committee will be organized in September 2009 in Bari (Italy) and hosted by Nicola Senesi.

1. Introduction and apologies

a. Introduction of attendees and apologies

Attendance was experienced as being good: 14 out of the 24 Division members could be welcomed by the Division President, thereupon one invited observer (Dr. Chrisoph von Holst from Belgium) was present.

b. Overview of the Division

The Terms of Reference for the Division will remain unchanged:

Through its internationally recognized membership and project teams, the Division of Chemistry and the Environment (DCE) will provide unbiased and timely authoritative reviews on the behavior of chemical compounds in food and the environment. The DCE will undertake both fundamental and applied evaluations that contribute to solving environmental problems and enhancing the quality of food on a global scale.

2. Minutes, Items of Note from Past Meetings

a. Division Committee Meeting and action points [meeting minutes]

Minutes of the 2006 meeting of the Division and of the Feb-2007 DCE phone conference were circulated prior to the meeting. The minutes were approved without additional comments.

b. Oct-2006 Bureau meeting (Madrid, Spain)

These minutes were already reviewed during the Feb-2007 DCE phone conference. Most noteworthy is the creation of a strategic opportunity fund of 120,000 USD as part of the 2008-2009 biennial budget for allocation across Divisions upon request by the Executive Committee. Also, IUPAC will continue with a Project Committee fund of 110,000 USD.

c. Mar-2007 Executive Committee meeting

The most noteworthy decisions were:

- ❖ Some meetings will be streamlined, like the Bureau meeting that will be moved earlier in the year (April/May 2008 and 2009) to give the Bureau the chance to look on progress earlier. The presidents of the Divisions will be participating in these meetings. Concern is about project funds that are not used. IUPAC wants more control over projects, including notifying Division Presidents on projects not finished as planned, instead of the more or less automatic process of extending projects.
- ❖ Concern has been expressed about unfinished projects past due dates and/or with most/all budget remaining. The Executive Committee (EC) has therefore moved to exercise greater control of overdue projects; Division President (DP) to be notified 6 months after expected completion date that the projects would be terminated in another 6 months unless a rationale were developed and approved by the EC for an extension.
- ❖ The idea has been brought forward of having 2011 as the international year of chemistry.

3. Membership 2008-2009

First, Laura McConnell was thanked for chairing the Nominating Committee (NC), as well as those who served on the NC and contributed nominations. The new officers were welcomed, with a special word for Prof. Nicola Senesi, who is the DP-elect and whose 4-year term will begin Jan-2008.

Following discussion on the roster of candidates to fill the various vacancies, agreement was obtained on the following proposal for Division Membership during the biennium 2008-2009:

Titular Members

Dr. Hemda Garelick	2006-2009	UK
Dr. Ole Hertel	2006-2009	Denmark
Prof. Pan Ming Huang	2006-2009	Canada
Prof. Yong-Hwa Kim	2006-2009	Korea
Prof. Laurence D. Melton	2006-2009	New Zealand
Dr. Willie J.G.M. Peijnenburg (DS)	2006-2009	Netherlands
Dr. Kenneth D. Racke (PP)	2008-2009	USA
Prof. Nicola Senesi (DP)	2008-2011	Italy
Dr. Keiji Tanaka	2008-2011	Japan
Prof. Kevin J. Wilkinson	2006-2009	Canada

Associate Members

Prof. Petr Fedotov	2008-2009	Russia
Prof. Peter Lillford	2008-2009	UK
Dr. Laura McConnell	2008-2009	USA
Prof. Irina Perminova	2008-2009	Russia
Dr. John Unsworth	2008-2009	UK
Dr. Christoph von Holst	2008-2009	Belgium

National Representatives

Prof. Iqbal Bhanger	2008-2009	Pakistan
Dr. Ewa Cukrowska	2008-2009	South Africa
Prof. Manos Dassenakis	2008-2009	Greece
Prof. András Gelencér	2008-2009	Hungary
Prof. Nadia Gharib Kandile	2008-2009	Egypt
Prof. Amir Hussain Khan	2008-2009	Bangladesh
Prof. Leo Klasinc	2008-2009	Croatia
Dr. Werner Kördel	2008-2009	Germany
Dr. Yehuda Shevah	2008-2009	Israel
Prof. Nedyalka Vladimirova Yanishlieva-Maslarova	2008-2009	Bulgaria

Provisional Member

Prof. Pornsawan Visoottviseth	2008-2009	Thailand
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Subcommittee Chairs*

Prof. Nicola Senesi	Subcommittee on Biophysico-Chemical Processes in Environmental Systems
Dr. Kenneth D. Racke	Subcommittee on Crop Protection Chemistry
Prof. Hemda Garelick	Subcommittee on Chemistry of Environmental Compartments
Prof. Laurence Melton	Subcommittee on Food Chemistry

**A complete list of subcommittee members will be prepared in near future.*

In addition to membership, the following assignments were made for representatives of Division VI to IUPAC bodies:

- o CCE (Committee on Chemistry Education) – Dr. Hemda Garelick.
- o COCI (Committee of Chemistry and Industry) – Keiji Tanaka currently serves on committee, and is willing to continue.
- o ICTNS (Interdivisional Committee on Terminology, Nomenclature, and Symbols). Dr. Yehuda Shevah has served over the last few years. The Committee has stated that they prefer a TM or AM (with promise of Division to provide the financial support) in order to be sure that the Committee members attend the GA. As Dr. Shevah will become a NR for Division VI, it was decided that Dr. Petr Fedotov will be nominated as the new representative of Division VI.
- o PAC (Pure and Applied Chemistry) – Dr. Ole Hertel was a member of the editorial board during the last biennium, and will continue serving. Don Wauchope is willing to serve as well, although he will not be a Division member any more. It was discussed during the Division that the role of PAC is changing towards a more scientifically oriented journal. However, it is felt that PAC should serve as the organ for publication of project reports, other outcome of IUPAC activities, etc. It is felt that decisions need to be taken on the future policy of PAC. Outcomes of IUPAC projects are typically not scientific results at the top by novelty as they typically integrate science with additional points of view.

4. Review of current projects

a. Existing project review, progress, spending vs. budget, completion

Prior to the meeting, all project leaders were asked to submit reports. The project reports received were made available to all Division members. Also during the next biennium, regular progress reports will be requested.

A schematic overview of project progress is given in the table below. As can be seen from this table, 32 projects in varying state of development are on the Division list.

630/24/95 (Kördel) Solute movement in soils with potential rapid by-pass transport (completed and report in-press)	Report done, accepted by PAC awaiting publication
1999-041-1-600 (Katayama) Bioavailability of xenobiotics in the soil environment (nearing completion)	Report done; DP to make a reminder for submission by end of year or deactivation.
2001-022-1-600 (Unsworth) Global availability of information on agrochemicals (ongoing – extension under consideration)	Needs extension and additional funding: 3000 USD approved by Div. VI

2001-023-1-600 (Felsot) Agrochemical spray drift: Assessment and mitigation (nearing completion)	Report done; DP to make a reminder for submission by end of year or deactivation.
2001-024-2-600 (Kleter) Impact of transgenic crops on the use of agrochemicals and the environment (completed and report in-press)	Report in press at <i>Pest Manag Sci</i>
2001-026-1-600 (Kördel) Use of reference soils for testing fate and effects of chemicals (ongoing)	Submission by end of 2007; new proposal for next biennium on a related project
2001-039-1-600 (Wauchope) Pest management for small-acreage crops: a cooperative global approach (nearing completion)	Report submitted to PAC; if not accepted = <i>Pest Manag Sci</i> summary and full report Rev Environ Contam Toxicol (perhaps with global FAO/USDA conference)
2002-013-2-600 (Cantrill) Determination of trace elements in oils and fats by inductively coupled plasma optical emission spectroscopy - evaluation of a method by collaborative study (nearing completion)	Limited feedback received, status unclear. The work has been done, but funds have not been used. DP to telephone Dr. Cantrill indicating that we consider the project completed and will reallocate the funds by October 1, 2007.
2003-011-3-600 (Wauchope-Shaw) A critical compendium of pesticide physical chemistry data (ongoing)	Merged with agrochemical info
2003-013-1-600 (Carazo) Crop protection chemistry in Latin America: Harmonized approaches for environmental assessment and regulation (ongoing)	Major workshop Feb-2005; three smaller training sessions later; pesticide chemistry book in preparation
2003-014-2-600 (Senesi) Fractal structures and processes in the environment (completed and report in-press)	Draft to DP and Series Editors Aug; submit by Sep; Outcome also disseminated at Interdivisional Session planned to be held within the EGU (European Geoscience Union) 2008 Congress Vienna-April 2008.
2003-017-2-600 (Garelick) Remediation technologies for the removal of arsenic from water and wastewater (completed and report in-press)	Report for publication in Rev Environ Contam Toxicol. [#] Project officially completed in Dec 2007.
2003-030-1-600 (Cvitas) Glossary of atmospheric chemistry (no progress)	Consider for extension; await for reply with a new date (Aug-2009). DP to contact Prof. Cvitas
2003-058-1-600 (Hertel) Air pollution models in environmental management and assessment (ongoing)	DP to ask Ole for update if beyond Dec-2007
2004-002-1-600 (Stephenson) Glossary of terms related to pesticides (completed and report published)	Done – published in PAC

2004-003-3-600 (Violante) Biophysico-chemical processes of heavy metals and metalloids in soil environments (completed, report in-press)	Book to be published Nov-2007
2004-005-2-500 (Camoës) Comparable pH measurements by metrological traceability (ongoing)	DP to ask Div V for an update
2004-011-1-600 (Parker) Development of simplified methods and tools for ecological risk assessment of pesticides (ongoing – extension under consideration) 2004-015-1-600 (Wilkinson) Environmental colloids: behavior, structure and characterization (completed and report published)	2000 USD of additional funds until end of 2008 agreed by Division Completed; published by Wiley
2004-017-1-500 (Benson) Standardization of analytical approaches and analytical capacity-building in Africa (ongoing)	Delays in initiation due to political situation; DP to request an update via Div V before next meeting
2004-022-3-400 (Fitzgerald) Terminology and measurement techniques of starch components (ongoing)	Workshop held during April; DP to ask Div IV for formal report
2005-024-2-600 (Anklam/Von Holst) Establishment of guidelines for the validation of qualitative and semi-quantitative (screening) methods by collaborative trial: a harmonized protocol (continued as 2006-027-1-600)	Dr. Von Holst new project leader appointed; new target date of Dec-08; report after Glasgow GA 2009
2005-042-1-300 - Chemistry for Biology - an inventory for interdivisional and interdisciplinary activities within IUPAC in the field of biological chemistry	Targeted as special issue of PAC
2005-048-2-100 - Solubility and thermodynamic properties related to environmental issues	DP to ask for update from Div 1
2006-011-1-600 (McConnell) Critical review of available methods to predict VOC emission potentials for pesticide formulations	Just initiated
2006-014-1-600 (Senesi) Biophysico-chemical processes involving natural nonliving organic matter in environmental systems	Just initiated
2006-015-3-600 (Kleter) Evaluation of food and feed safety implications of (altered) residues of pesticides applied on transgenic (GM) crops	Just initiated; project team meet Oct-2007
2006-017-2-600 (Racke) Crop protection chemistry	Workshop planned for Oct-2007 in Beijing,

in Asia: harmonized approaches for safety evaluation, regulation, and protection of trade. IUPAC funds being used for speakers (ACS = 3, CLI = 2; IUPAC = 8; now need 15 (2 additional). Now FAO and EPA speakers need funds.	China; need additional funds; 2000 USD assigned by Division
2006-039-1 (Fedotov) Extraction and fractionation methods for risk assessment related to trace metals, metalloids and hazardous organic compounds in terrestrial environments*	Just initiated
2006-044-2-600 (Linders) Environmental risk assessments for the registration of pesticides used in rice paddy fields	Just initiated; project team to meet Oct-2007
2006-049-2-600 (Dassenakis) Combination of chemical analytical measurements and remote sensing techniques for coastal water monitoring. The cases of Eastern Mediterranean and Black Sea	Just initiated
2007-017-1-000 (Melton) What are dietary fibres?	Just initiated

The report is also available at the following website:

http://www.hebes.mdx.ac.uk/teaching/research/iupac_arsenic_hg/iupac.htm

A collaborative project within COCI on nanomaterials and safety will be fostered. This is a new project proposal.

5. Budget status

An overview of the budget in terms of expenditure, budget available, current allocation, etc. was submitted to all members prior to the meeting. The total project commitment is 40.250 USD. Including operational budget, we have so far under-spent by more than 6000, taking additional commitments into account. This means that we are doing pretty well. Three requests for additional funds were received: 2001-022-1-600 (Unsworth - 3.000 USD requested), 2004-01-1-600 (Parker - 2.000 USD), 2006-017-2-600 (Racke - 2.000 USD). Some of the funds required may be obtained from the divisional reserve fund as cost-sharing. The proposal for funding the amounts requested was unanimously accepted.

Category	Initial	Spent Before GA	Spent After GA	Remaining
Projects	47,600 (70%)	40,250	40,250	6,244
Admin	20,400 (30%)	18,916	(est) 21,506	0
Total	68,000 (100%)	59,166	61,756	6,244

It is expected that the 2008-2009 biennial budget will be the same as the budget for the current biennium: \$68,000 with IUPAC guidelines suggesting 70% for projects and 30% for administration.

6. Review of subcommittee reports

a. Biophysico-chemical processes in environmental systems

An overview of the status of the subcommittee and membership was provided by Nicola Senesi. The report is attached as Appendix I.

b. Crop protection chemistry

An overview of the status of the subcommittee and membership was provided by Ken Racke. The report of the subcommittee is attached as Appendix II.

c. Chemistry of environmental compartments

Yehuda Shevah has provided a written report, which was updated during the meeting of the subcommittee. As it is prescribed that the chairman of a subcommittee needs to be either a TM or AM, it was decided to have Dr. Garelick replace Dr. Shevah as chairman of the subcommittee. The report of the subcommittee is attached as Appendix III.

d. Food chemistry

Two members of the subcommittee were present at the meeting. The subcommittee will be revived by the addition of new Division members with experience in the area of food chemistry.

Three projects are going at the moment (see overview above of Fitzgerald, von Holst, and Melton). Other aspects of importance are nanomaterials used as food additives, the analytical aspects are the first topic to tackle. The next issue is the amount of allergy caused by food. This is a challenging topic for two aspects: i) The additions to food that trigger allergy, the methods for analysis do not measure what actually triggers allergy, ii) Research to identify the groups of proteins that most likely cause allergic reactions in individuals.

Two other items to mention:

i) Fats and oils from fish. Problem is the chemical oxidation, resulting in products that are harmful to humans.

ii) How do food molecules interact? Each bite of food contains thousands of different molecules. These molecules are present in a complex matrix, and the molecules interact in the sense that there synergistic and antagonistic effects, both on the nutritional side and on for instance anti-oxidant properties of chemicals. The question is: what happens in the food during processing? A conference in the area of interactions of chemicals in food is proposed: chemical analysis and nutrition beyond chemical analysis of individual chemicals. The topic could be of enormous value in promoting chemistry to a wide audience.

Lawrence Melton has gracefully accepted the position of Chairman of the Sub-committee.

A point of discussion was to improve the interaction between sub-commissions. It was decided to this end to circulate more information across sub-committees, whilst being aware that this will increase the number of emails sent.

7. New projects and future conferences for DCE sponsorship

a. Project 2007-015 Letcher

- o Future energy: sustainable and clean energy alternatives for our planets. \$4500 requested with Div. I in the lead. Div. VI members have commented, and although favorably viewed as a topic appropriate for IUPAC the proposal is in need of additional details and specificity. The comments of all the reviewers have been returned to Dr. Letcher and the proposal is now being revised.

b. Project 2006-017 Melton

The proposal was approved/funded immediately prior to the Torino GA at the \$3500 level following proposal review based on pre-approval from last year's meeting in Bilthoven.

No other proposals are pending at this moment, but will be prepared up till the next telephone conference of spring 2008.

8. Conferences sponsored by the Division

a. International Congress of Pesticide Chemistry

i) Report from 11th Congress in Kobe, Japan, 2006

The IUPAC International Congress of Pesticide Chemistry has been hosted for more than 40 years. The 11th IUPAC International Congress of Pesticide Chemistry was held during August 2006 in Kobe, Japan, and it was co-organized with the Pesticide Science Society of Japan (PSSJ). More than 1100 chemists from 52 countries participated in the Congress, which was organized around the theme "Evolution for Crop Protection, Public Health, and Environmental Safety". The core of the scientific program consisted of welcoming speeches on behalf of PSSJ and IUPAC, 5 keynote addresses, more than 100 invited lectures, and nearly 600 posters. The Congress included an outreach program to consumer groups and the media which drew nearly 400 additional, non-chemist participants. The proceedings volume was just published in July 2007 by Wiley-VCH. The organizers reported that with expenditures of around 122 million Yen they appear to be in a position to realize a small surplus of around 1 million Yen. IUPAC had provided \$4,000 for support of travel of scientists from developing countries.

ii) Plans for 12th Congress in Melbourne, Australia, 2010

To be organized by the Royal Australian Chemical Institute, Inc. First circular distributed at Kobe Congress during Aug-2006.

b. International Symposium on Mycotoxins and Phycotoxins

i) Report from 12th Symposium in Istanbul, Turkey, 2007

A written report suitable for publication in *Chemistry International* has been received from the Chair of the Organizing Committee, Dr. Hamide Senyuva. Elke Anklam served as official IUPAC representative. The conference was a great success with approximately 580 participants from 65 countries in attendance, who enjoyed 27 invited lectures, more than 100 oral presentations, and 300 poster presentations. The invited lectures are to be published in a special issue of *Food Additives and Contaminants*. IUPAC had provided some funding of \$4,000 under the “scientifically emerging regions” program, and this supported travel of scientists from Chile, Mexico, and South Africa.

ii) Plans for 13th Symposium in Chile, 2010

A proposal for 2010 is being developed for Chile, and is being assisted by Dr. Hans van Egmond of the RIVM (Netherlands) and Prof. Benjamín Suarez. They have asked for a formal letter of decision on IUPAC sponsorship and DP has provided them with an application form. The Division is highly supportive of the continuation of IUPAC sponsorship of the conference, however there is a difficulty related to Chile’s IUPAC membership to be managed. Chile is an NAO in arrears for dues, and it will likely soon (Nov/Dec 2007) be subject to sanctions including an inability to receive new approvals to hold IUPAC-sponsored conferences. What this means for this conference, is that the approval process must be completed before the end of the year and initiation of any membership dues-related sanctions. Sanctions prevent new approvals, but they do not undo previous approvals. **DS to contact Dr. van Egmond to communicate the favorable view of the Division but urge early submission of the application so that approval is granted before any sanctions begin.**

c. International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms

i) Plans for 5th ISMOM in Pucon, Chile, 2008

IUPAC has provided \$6,000 for support of IUPAC lecturers plus some additional local participation under the “scientifically emerging regions” fund. Pan-Ming Huang is organizing IUPAC involvement as the official representative of IUPAC. It should be noted that, as an already approved conference, sponsorship of this event will not be impacted by any future actions on Chile’s IUPAC membership dues status.

d. Agrochemicals Protection Crop, Health, and Environment (Racke)

i) 1st Congress for Delhi, India, 2008

IUPAC sponsorship granted in late 2006 for this first Congress. The Division applied for funds to support 3 IUPAC lecturers and this has now been granted under the “conferences in scientifically emerging regions” fund (6,395 USD). Three members of the Crop Protection Chemistry Sub-Committee (Ken Racke, Denis Hamilton, and Ron Parker) plan to attend and present conference and side lectures based on completed or in-progress IUPAC projects.

e. Fats, Oils, and Oilseeds Analysis

There have been a couple of successful conferences held (Brail, Tunisia) so far under Division sponsorship. Plans for further activities are to be developed. Perhaps an issue for the Food Chemistry Sub-committee may be brought forward.

9. Other business

- Mark Cesa and Mike Booth (COCI representatives - Committee on Chemistry and Industry) visited the meeting to give a presentation on the activities of the standing committee COCI. New project areas are: biofuels, nanotechnology, biomonitoring. Pesticide chemistry is a topic of interest to industry, as well as the activities in analytical methods standardization. COCI can help in these activities. **Division VI will inform COCI that we are willing to cooperate on the project proposal on nanotechnology.**
- Peter Mahaffy and Elsa Åkesson met to discuss the activities of the IUPAC Committee on Chemistry Education (CCE). A document reporting on the activities of the CCE was distributed to the Division VI members.
- Future phone conference. This will be organized in spring 2008, in between the 2007 GA and the 2008 meeting of Division VI.
- 2008 Division Committee Meeting. The 2008 meeting will be hosted by Prof. Senesi in Bari (Italy), on 12/13 September 2008.
- World Chemistry Congress in association with the 2009 GA, Glasgow, Scotland. A proposal will be submitted for addition of a Division-sponsored symposium for the chemistry congress. **DP Ken Racke will notify the scientific program committee of the Division's desire, and along with Hemda Garelick will develop a proposed symposium on "Emerging Environmental Issues"**. A specific lecture on nanotechnology and food will also be proposed by the Food Chemistry Sub-Committee.
- In conclusion, there was a big word of thanks for the services of the people who will leave the Division, most notably Don Wauchope after almost 22 years of service within IUPAC.

Appendix I

Subcommittee “Biophysico-Chemical Processes in Environmental Systems”

Progress Report May 2006-July 2007

1. 2006-2007 Membership

Nicola Senesi, Dr. Prof. (Chairman)

Dipartimento di Biologia e Chimica Agroferstale e Ambientale
Università di Bari
Via Amendola, 165/A
70126 Bari, Italy
Tel: +39-080-5442853
Fax: +39-080-5442850
e-mail: senesi@agr.uniba.it

T.J. Beveridge, Dr. Prof.

Dept. of Microbiology
College of Biological Science
University of Guelph
Guelph, Ontario
Canada N1G 2W1
Phone: 519/824-4120ex.53366
Fax: 519/837-1802
e-mail: tjb@uoguelph.ca

Peter G.C. Campbell, FRSC, Dr., Prof.

INRS-Eau, Terre et Environment
Université du Quebec
2800 rue Einstein
C.P. 7500
Ste-Foy, Quebec
G1V 4C7 Canada
Phone: 418-654-2538
Fax: 418-654-2600
e-mail: campbell@uquebec.ca

Ewa Cukrowska, Dr. Prof.

Environmental Analytical Chemistry
School of Chemistry
University of the Witwatersrand, Johannesburg
Private bag 3
Wits, 2050, South Africa
Phone: +27-11-717-6743
Fax: +27-11-717-6749
e-mail: ewa@aurum.wits.ac.za

Petr S. Fedotov, Dr.

Vernadsky Institute of Geochemistry and Analytical Chemistry,
Russian Academy of Sciences
19 Kosygin Street
119991 Moscow, Russia
Phone: ???
Fax: +7-095-9382054
e-mail: fedotov_ps@mail.ru

P. Ming Huang, Dr. Prof.

Department of Soil Science
University of Saskatchewan
51 Campus Drive, Saskatoon
SK, S7N 5A8 Canada
Phone: 1-306-966-6838
Fax: 1-306-966-6881
e-mail: huangp@sask.usask.ca

Edgard Resto, Dr.

Materials Characterization Center, Inc.
P.O.Box 21972
San Juan, Portorico, PR 00931-1972
Phone: + 787-282-7593/281-0997
Fax: +787-765-5749
e-mail: restoe@gmail.com

James A. Rice, Dr. Prof.

Department of Chemistry & Biochemistry
South Dakota State University
Box 2202
Brookings, SD 57007-0896
Phone: 605-688-4252
Fax: 605-688-6364
e-mail: james_rice@sdstate.edu

Herman Van Leeuwen, Dr.

Lab. for Phys. Chem. and Colloid Science
Wageningen University
Dreijenplein 6, NL-6703 HB
Wageningen, Netherlands
Phone: 31-317-482269
Fax: 31-317-483777
e-mail: herman@FENK.WAU.NL

Antonio Violante, Prof.

Dipartimento di Scienze del Suolo, della Pianta e dell' Ambiente
Università di Napoli Federico II
Via Università 100
80055 Portici (Napoli) Italy

Phone: 39-081-2539176
Fax: 39-081-2539186
e-mail: violante@unina.it

Kevin J. Wilkinson, Dr.

CABE (Analytical and Biophysical Environmental Chemistry/
Chimie analytique et Biophysicochimie de l'environnement)
30, quai Ernest Ansermet
Université de Genève
CH-1211, Genève 4, Switzerland
Phone: 41-22-379-6051
Fax: 41-22-379-6069
e-mail: Kevin.Wilkinson@CABE.UNIGE.CH

Baoshan Xing, Dr. Prof.

Department of Plant, Soil and Insect Sciences
Stockbridge Hall
University of Massachusetts
Amherst, MA 01003-0910, USA
Phone: +413-545-5212
Fax :+413-545-3958
e-mail: bx@pssci.umass.edu

2. Activities by Subcommittee Members

2.1. Prof. P. M. Huang was appointed as the IUPAC Representative to the International Union of Soil Sciences (IUSS) for the promotion and establishment of long-term official linkages between IUPAC and IUSS. This action is considered vital in promoting and facilitating the communication and interactions of pure and applied chemists with soil scientists in ensuring food security and safety, and protecting the environment and ecosystem health, including human health, on the global scale.

Prof. Huang has asked IUPAC Secretariat to disseminate to IUSS Headquarters, c/o Dr. Stephen Nortcliff, IUSS Secretary General, the updated pertinent information of IUPAC's work (e.g., international nomenclature, symbols, units, standard of purity, analytical methods, biennial IUPAC congresses, symposia, workshops, book series, journals, and bulletin publications). Furthermore, he has asked IUSS Headquarters to disseminate the pertinent information of IUSS's work to IUPAC Secretariat.

2.2. Prof. A. Violante and Prof. P. M. Huang have organized a Symposium for IUSS Commission 2.5 at the 18th IUSS World Congress that was held in Philadelphia (USA) on July 9-15, 2006. The Symposium was entitled "Soil Physicochemical-Biological Interfacial Interactions: Impact on Transformations and Bioavailability of Metals and Metalloids", and this was the showcase of the IUPAC book they are editing (see below).

The Symposium consisted of an Oral Session which was held on July 10, 2006 (Dr. K. Kemner gave an invited keynote lecture), a Poster Theater Session held on July 11, 2006 where selected posters (12) were presented in a special oral session, and a Poster Session where more than one hundred scientific contributions were presented (July 9-15, 2006).

More than 100 participants attended the Symposium.

2.3. Prof. P. M. Huang has obtained IUPAC Sponsorship and Financial Support for the IUSS 5th International Symposium on Interactions of Soil Minerals with Organic Components and Microorganisms (ISMOM 5), “Soil-Root-Microbe Interactions and the Impact on the Transformation and Fate of Nutrients and Pollutants in the Ecosystem”, to be held in Pucon, Chile, November 26-30, 2008.

The objective of this symposium is to provide a forum for the interactions of environmental chemists and mineralogists, environmental microbiologists, ecologists, toxicologists and soil scientists to address the current state-of-the-art and identify gaps in knowledge on physicochemical and biological interfacial interactions at the molecular level at the soil-root interface (the rhizosphere) pertaining to the dynamics, transformations, bioavailability, and toxicity of metals, metalloids, anthropogenic organics, and vital elements. This activity should lead to the advancement of frontiers of knowledge on environmental chemistry on soil interfacial reactions in the rhizosphere and the subsequent development of innovative management strategies to sustain environmental quality, ensure food security and safety, and ecosystem health on a global scale.

3. Projects completed

3.1. Project number: 2004-015-1-600

Project Title: Environmental Colloids: Behaviour, Structure and Characterisation

Task Group Leader: Kevin J. Wilkinson

The main output from this project was a book edited by K. J. Wilkinson and J. R. Lead, and published in early 2007 by J. Wiley & Sons Ltd., Chichester, England, as Vol. 10 of the IUPAC Series on Analytical and Physical Chemistry of Environmental Systems, Series Editors J. Buffle and H. P. van Leeuwen.

The Table of Contents of the book is:

Chapter	Authors
1. Environmental colloids and particles: current Knowledge and future developments	J.R. Lead, K.J. Wilkinson
2. Colloidal properties of submicron particles in natural waters	M. Filella
3. Colloid-trace element interactions in aquatic systems	F. Doucet, J.R. Lead, P. Santschi
4. Ultrafiltration and its application to sampling and characterization of aquatic colloids	L. Guo, P. Santschi
5. Characterization of aquatic colloids and macromolecules by field-flow fractionation	M. Hasselhov, F. von der Kammer and R. Beckett
6. Modern electrophoretic techniques for the characterization of natural organic matter	P. Schmitt-Kopplin, J. Junkers
7. Electrophoresis of soft colloids: basic principles and applications	J. Duval
8. Strategies and advances in the characterization of environmental colloids by electron microscopy	D. Mavrocordatos, D. Perret, G.G. Leppard
9. Force microscopy and force measurements of environmental colloids	E. Balnois, G. Papastavrou, K.J. Wilkinson
10. Laser scanning microscopy for microbial flocs and particles	J. Lawrence, T. Neu
11. Study of environmental systems by means of	N. Fatin-Rouge, J. Buffle

fluorescence correlation spectroscopy	
12. Laser induced breakdown detection	J.-I. Kim, C. Walther
13. Probing environmental colloids and particles with X-rays	J.F. Gaillard

All chapters are available, upon request (kj.wilkinson@umontreal.ca), to IUPAC DCE members.

3. Projects approved and in development

3.1. Project number: 2003-014-2-600

Project Title: Fractal Structures and Processes in the Environment

Task Group Leader: Nicola Senesi

A book edited by N. Senesi and K. J. Wilkinson will be the main output from this project.

The Table of Contents of the book is:

N. Senesi and K.J. Wilkinson. Foreword.

1. Ph. Baveye and Ch. W. Boast. Introduction to Fractal Geometry, Fragmentation Processes and Multifractal Measures. Theory and Operational Aspects of Their Application to Natural Systems.
2. G. Bushell. Methods and Techniques for Fractal Analysis of Environmental Systems
3. S. Stoll and S. Diez. Fractal Structures and Processes of Aquatic Particles/Colloids
4. J.Y. Bottero; A. Masion, J. Rose and S. Moustier. Fractal Mechanisms in Coagulation / Flocculation Processes in Environmental Systems.
5. Z. Sokolowska and S. Sokolowski. Fractal Approach to Adsorption/Desorption Processes on Environmental Surfaces
6. J. A. Rice. Applications of Fractals in the Study of Humic Materials
7. L. Boddy and D. P. Donnelly. Fractal Geometry and Microorganisms in the Environment
8. I. Colbeck. Fractal Determinations of Atmospheric Particles

Progress to date: Although the project was delayed sensibly with respect to the initial milestones due to late submission of some chapters, late response from Referees, and late submission of revised chapters (often revised several times), all planned chapters are now submitted, and in the final editing process by the editors. The planned discussion meeting of senior chapter authors and the Editors was held on 19 and 20 May 2007 in Bari, Italy. All chapters have been discussed extensively for their content and format, and agreements were taken on final revision needed by each chapter. The submission to DCE-IUPAC and the Series Editors for final approval of the entire work is expected by the end of August 2007, and to the Publisher Wiley immediately after approval (September 2007), with expected publication of the Book and completion of the Project in early 2008.

An Interdivisional Session on the subject is planned to be held in occasion of the next Congress of the European Geoscience Union (EGU), Wien, Austria 13-18 April 2008.

3.2. Project number: 2004-003-3-600.

Project Title: Biophysico-Chemical Processes of Heavy Metals and Metalloids in Soil Environments

Task Group Leader: Antonio Violante

A book edited by A. Violante, P. M. Huang, and G. Gadd will be the main output from this project.

The Table of Contents of the book is:

A. Fundamentals on Biotic and Abiotic Interactions of Trace Metals and Metalloids with Soil Components.

A.1. P.M. Huang. Impacts of Soil Physicochemical-Biological Interactions on Metals and Metalloids Transformations: An Overview.

A.2. M.J. Borda and D.L. Sparks. Kinetics and Mechanisms of Sorption/Desorption in Soils: A Multi-Scale Assessment.

A.3. N. Senesi and E. Loffredo. Spectroscopic Techniques for Studying Metal-Humic Substance Complexes in Soil: An Overview.

A.4. A. Violante, G.S.R. Krishnamurti and M. Pigna Factors affecting the Sorption-Desorption of Trace Elements in Soil Environments.

A.5. S. Goldberg and L. J. Criscenti. Modeling Adsorption of Heavy Metals and Metalloids by Soil Components.

B. Transformations and Dynamics of Metals and Metalloids as Influenced by Soil-Root-Microbe Interactions.

B.1. G.M. Gadd. Transformation and Mobilization of Metals by Microorganisms.

B.2. S. Fendorf, M. Herbell, K. J. Tufano, B. Kocar. Biogeochemical Processes Controlling the Cycling of Arsenic in Soils and Sediments.

B.3. S. C. Neubauer, D. Emerson, and J. P. Megonigal. Microbial Oxidation and Reduction of Iron in the Root Zone and Mobility of Heavy Metals.

B.4. F. Hinsinger and F. Courchesne Mobility and Bioavailability of Heavy Metals and Metalloids at the Soil-Root Interface.

B.5. M.E. Essington. The Complexity of Aqueous Complexation: In the Case of Aluminum- and Iron(III)-Citrate.

C. Speciation, Mobility and Bioavailability of Trace Metals and Metalloids in Soil Environments

C.1. G.S.R. Krishnamurti and R. Naidu. Chemical Speciation and Bioavailability.

C.3. P. S. Fedotov and M. Mir ?. Fractionation and Mobility of Trace Elements in Soils and Sediments.

C.4. S. Staunton, C-S. A. Haudin, G. Wang and G. Shaw. Source and Mobility of Metallic Radionuclides in Soil Systems.

C.5. P.M. Bertsch and B. Jackson. Biogeochemistry of Uranium and other Actinides in Contaminated Soils and Sediments.

D. Chemical and Biological Remediation of Soils Contaminated with Metals and Metalloids.

D.1. M. Grafe and R. Naidu. Remediation of Metal Contaminated Soils: An Overview.

D.2. L. Diels and K. Vanbroekhoven. Remediation of Metal and Metalloid Contaminated Groundwater.

D.3. R. Melamed and L.Q. Ma. Phosphate-Induced Pb Immobilization in Contaminated Soils: Mechanisms, Assessment and Field Application.

Progress to date: The complete book manuscript has been approved by IUPAC Division VI President. The book is scheduled to be published by John Wiley and Sons, Hoboken, NJ, USA, in November, 2007. Please also refer to the IUPAC Project Progress Reports of A. Violante, Task Group Leader of Project No. 2004-003-3-600, and P. M. Huang, senior Editor of the Series (see below).

3.3. Project number: 2006-014-1-600.

Project Title: Biophysico-Chemical Processes of Natural Non-Living Organic Matter in Environmental Systems.

Task Group Leader: Nicola Senesi

A book edited by N. Senesi, Baoshan Xing and P. M. Huang will be the main output from this project.

The Table of Contents of the book is:

PART I. Fundamentals and impact of mineral-organic-biota interactions on the formation, transformation, turnover, and storage of natural nonliving organic matter (NOM)

1. Evolution of environmental organic matter research
M. H. B. Hayes (Ireland).
2. Formation mechanisms of humic substances in the environment
P. M. Huang and A. Hardie (Canada).
3. Organo-mineral complexes in soils and sediments
G. Chilom and J. A. Rice (USA).
4. The effect of organic matter amendment on native soil humic substances
C. Plaza (Spain) and N. Senesi (Italy)
5. Carbon sequestration in terrestrial ecosystems
M. De Nobili (Italy).
6. Storage and turnover of natural organic matter in soil
M.S. Torn, C. Swanson, and S. E. Trumbore (USA).
7. Black carbon and thermally altered organic matter: the role in the environment
H. Knicker (Germany).
8. Biological activities of humic substances
S. Nardi, P. Carletti, D. Pizzeghello, and A. Muscolo (Italy).
9. Role of humic substances in the rhizosphere
R. Pinton, S. Cesco, and Z. Varanini (Italy).
10. Dissolved organic matter (DOM) in natural environments
F. H. Frimmel and G. Abbt-Braun (Germany).
11. Marine organic matter
M. Perdue and R. Benner (USA).
12. Natural organic matter in atmospheric particles
A. da Costa Duarte and R. M. B. Oliveira Duarte (Portugal).

PART II. Analytical methods for investigation of natural nonliving organic matter

13. Separation techniques of natural organic matter and humic substances
I. Perminova (Russia) and Ph. Schmitt-Kopplin (Germany).
14. Analytical pyrolysis and soft-ionization mass spectrometry
P. Leinweber et al. (Germany).
15. NMR analysis of natural organic matter
A. Simpson and M. Simpson (Canada).
16. Fluorescence, EPR, FTIR, Raman, and UV-visible spectroscopies
L. Martin-Neto et al. (Brasil).
17. Synchrotron-based X-ray spectroscopy
J. Lehmann et al. (USA).
18. Thermal analysis for advanced characterization of humic materials
E. LeBoeuf (USA).

Progress to Date: About all of the 18 chapter manuscripts have been received. Each chapter manuscript is on review by at least two external referees. The authors of the remaining chapters have promised to send in their

manuscripts as soon as possible certainly before the end of August 2007. The editors and lead chapter authors plan to meet at the ASA-SSSA-SSSA International meeting in New Orleans, LA in November, 2007, to exchange comments and suggestions and to integrate book chapters. Please also refer to the IUPAC Project Progress Report of N. Senesi, Task Group Leader of this project for further details.

3.4. The New IUPAC-Sponsored Wiley Series “Biophysico-Chemical Processes in Environmental Systems” edited by P.M. Huang and N. Senesi, and published by John Wiley & Sons, Hoboken, NJ, USA (see also Report on the Series Development by P. M. Huang).

The Wiley-IUPAC Series was created in 2005. The mid-range (2005-2010) planning for the development of this Series is outlined below (see also the Report on the Book Series development by Prof. P. M. Huang).

Volume 1: Biophysico-Chemical Processes of Heavy Metals and Metalloids in Soil Environments

Volume Editors: A. Violante, P.M. Huang and G.M. Gadd

Progress to Date: The complete book manuscript has been approved by IUPAC Division VI President. The book is scheduled to be published by John Wiley and Sons, Hoboken, NJ, USA, in November, 2007. Attached please see the book flyer. Please also refer to the IUPAC Project Progress Report of A. Violante, Task Group Leader of Project No. 2004-003-3-600.

Volume 2: Biophysico-Chemical Processes of Natural Non-Living Organic Matter in Environmental Systems.

Volume Editors: N. Senesi, B. Xing and P.M. Huang

Progress to Date: About all of the 18 chapter manuscripts have been received. Each chapter manuscript is on review by at least two external referees. The authors of the remaining chapters have promised to send in their manuscripts as soon as possible certainly before the end of August 2007. The editors and lead chapter authors plan to meet at the ASA-SSSA-SSSA International meeting in New Orleans, LA in November, 2007, to exchange comments and suggestions and to integrate book chapters. Please also refer to the IUPAC Project Progress Report of N. Senesi, Task Group Leader of this project for further details.

Volume 3: Environmental Biophysico-Chemical Processes Governing Fate and Transport of Pathogens

Proposed Volume Editors: J. Berthelin, H. Quiquampoix and P. Baveye

Progress to Date: This proposed volume would address: (1) chemistry of prions and pathogen proteins, (2) fundamentals of physicochemical-biological interactions of pathogens with components of environmental compartments, (3) rhizosphere aspects, gene transfer, population dynamics, (4) transport of pathogens as influenced by their interactions with physical and chemical properties of soils and aquatic sediments, (5) the influence on plant and animal pathological aspects, and (6) the impact on ecosystem health including human health.

Dr. Jacques Berthelin, Research Director, Centre National de la Recherche Scientifique (CNRS), Nancy France, is the proposed lead

editor of this volume. He is in the process of submitting the proposal for the proposed volume.

Volume 4: Biophysico-Chemical Processes Governing the Transformation and Dynamics of Anthropogenic Organic Compounds in the Environment

Proposed Volume Editors: B. Xing and N. Senesi

Progress to Date: This proposed volume would address: (1) fundamentals of biophysico-chemical processes pertaining to the transformation, dynamics, and fate of organic pollutants in environmental systems, (2) recent advances on sampling and analytical methods of environmental organic pollutants, and (3) remediation of organic contaminants through the combined action of interactions of abiotic and biotic processes.

Dr. Baoshang Xing, Professor of Environmental Chemistry, the University of Massachusetts, Amherst, USA, would be an excellent candidate to serve as Task Force Leader of this book project.

Volume 5: Biophysico-Chemical Processes Governing Enzymatic Activity in Environmental Systems

Proposed Volume Editors: R.G. Burns

Progress to Date: Enzymatic activity plays an enormous role in the biogeochemical cycling of nutrients and pollutants in the ecosystem. The proposed volume is to highlight the recent advances on: (1) fundamentals of enzyme chemistry, (2) enzymatic activity in the transformation of natural and anthropogenic organics, vital elements and toxic metals and metalloids, (3) biophysico-chemical factors affecting enzymatic role in ion cycling, food security and safety, and ecosystem integrity.

Professor Richard R. Burns, an environmental biochemist, the University of Queensland, Brisbane, Australia would be an excellent Task Force Leader of the Project.

Volume 6: Role of Biophysico-Chemical Processes in the Formation, Transformation, Transport and Fate of Environmental Nanoparticles and the Impact on Ecosystem health

Proposed Volume Editors: J.F. Banfield

Progress to Date: Over the past two decades, nanoscale research and development have brought a significant breakthrough in a great many areas of pure and applied sciences. Nanotechnology is concerned with materials and systems at the atomic, molecular, or macromolecular levels, in the length of approximately 1-100 nm range in which the novel and differentiating properties and functions are developed. The proposed volume is to address: (1) the sources and biophysico-chemical formation of nanoparticles in the environment, (2) the structural chemistry of environmental nanoparticles, (3) the surface chemistry of environmental nanoparticles, (4) transformation, transport, and fate of nanoparticles in the environment, and the impact on ecosystem health.

Professor J.F. Banfield, a Biogeochemist, the University of California, Berkeley, CA, USA, would be an ideal Task Force Leader of the Project

Appendix II

CROP PROTECTION CHEMISTRY SUB-COMMITTEE REPORT OF ACTIVITIES AND FUTURE PLANS

28 JULY 2007

TERMS OF REFERENCE

Through its internationally recognised membership, the Committee provides unbiased and authoritative views regarding environmental and human health aspects of crop protection chemistry. Through its timely projects, publications, and outreach activities the Committee seeks to advance research understanding and promote environmental stewardship

MEMBERSHIP

The Committee is currently comprised of 20 members from both developed (15) and developing (5) countries. All members are actively involved in one or more ongoing IUPAC projects, and are drawn from government, academia, and industry to ensure that an adequate and unbiased balance of perspectives and approaches are considered.

OPERATION

The Committee meets formally once each year, generally in association with an IUPAC-sponsored Congress or regional workshop. Committee meetings are generally conducted as a series of concurrent working sessions of the various project teams during a 2 to 3-day period. This annual meeting format facilitates economy of effort and funding by allowing project participants to travel once to contribute for multiple projects. The Committee as a whole meets in plenary session to discuss stimulation of new project ideas, peer review and approve crop protection-related IUPAC project recommendations, and plan future technology transfer activities such as international congresses and regional workshops. The most recent meeting occurred on Awaji Island, Japan during Aug-2006, and the next meeting is planned for Oct-2007 in Beijing, China.

RECENTLY COMPLETED PROJECTS

<i>Project Name (No.)</i>	<i>Project Leader</i>	<i>Status</i>
Bioavailability of Xenobiotics in Soil (1999-041-1-600)	Katayama	Report and recommendations approved. Report in final editing for publication.
Impact of Transgenic Crops on the Use and Environmental Impact of Agrochemicals (2001-024-2-600)	Kleter	Project completed and report in press at <i>Pest Management Science</i> .
Methods for Setting Interim MRLs for Minor-Consumption Crops (2001-039-1-600)	Wauchope	Project completed and report in process of submission to <i>PAC</i> or <i>Pest Management Science</i> .
Spray Drift Assessment and Mitigation (2001-023-1-600)	Felsot	Report and recommendations approved. Final report to be submitted for publication.
Glossary of Terms Related to Pesticides (2004-002-1)	Stephenson	Project completed and report published in <i>PAC</i> (2006), 78:2075-2154.

ACTIVE PROJECTS

<i>Project Name (No.)</i>	<i>Project Leader</i>	<i>Status</i>
Global Availability of Information on Pesticides (2001-022-1-600)	Unsworth	In progress. New project leader has implemented action plan and established coordination with FAO/IAEA-INFOCRIS. Web-based application for launch by Dec-2007. Project extension requested.

A Critical Compendium of Pesticide Physical-Chemical Data (2003-011-3-600)	Wauchope	Original plan developed difficulties with obtaining volunteers for critical reviews, and Div V has now withdrawn from the effort. TGC has now merged effort with Agrochemical Information project 2001-022-1-600.
Crop Protection Chemistry in Latin America: Harmonized Approaches (2003-013-1)	Carazo	In progress. Successful workshop of ~250 attendees held in San Jose, Costa Rica during Feb-2005. Several follow-up training workshops for smaller groups (30-40) of government staff have been held including two on product specifications and one on risk assessment. Translation of a pesticide chemistry textbook into Spanish is nearing completion.
Simplified methods & tools for env. risk assessment of pesticides (2004-011-1)	Parker	In progress. First draft working model evaluated by project team Feb-2005. Several presentations of draft modelling approach made. Project extension requested.

RECENTLY INITIATED PROJECTS

<i>Project Name (No.)</i>	<i>Project Leader</i>	<i>Status</i>
Critical review of available methods to predict VOC emission potentials for pesticide formulations (2006-011-1)	McConnell	Project initiated. Task group meeting planned for Oct-2007.
Evaluation of food and feed safety implications of (altered) residues of pesticides applied on transgenic (GM) crops (2006-015-3)	Kleter	Project initiated. Task group meeting planned for Oct-2007.
Crop protection chemistry in Asia: harmonized approaches for safety evaluation, regulation, and protection of trade (2006-017-2)	Racke	Workshop planned for Oct-2007 in cooperation with China Agricultural University and Beijing Pesticide Society. Primary areas of emphasis identified include regulatory harmonization, residues and trade, product quality and specifications, and environmental risk assessment.
Environmental risk assessments for the registration of pesticides used in rice paddy fields (2006-044-2)	Linders	Project initiated. Task group meeting planned for Oct-2007.

TECHNOLOGY TRANSFER ACTIVITIES

- “11th IUPAC International Congress of Pesticide Chemistry”, Kobe, Japan, 6-11 August 2006. Co-organized with the Pesticide Science Society of Japan (PSSJ). More than 1100 chemists from 52 countries participated in the Congress, which was organized around the theme “Evolution for Crop Protection, Public Health, and Environmental Safety”. The core of the scientific program consisted of welcoming speeches on behalf of PSSJ and IUPAC, 5 keynote addresses, more than 100 invited lectures, and nearly 600 posters. The Congress included an outreach program to consumer groups and the media which drew nearly 400 additional, non-chemist participants. Workshop summary

report published in Chemistry International (2007) 29: 30-32. The proceedings volume was published by Wiley-VCH during Jul-2007.

- **“7th IUPAC International Workshop on Crop Protection Chemistry and Regulatory Harmonization”**, Beijing, China, 9-13 October 2007. This workshop is being planned as part of project 2006-017-2. Co-organization has been agreed with China Agricultural University and the Beijing Pesticide Society, with co-sponsors so far identified including CropLife Asia/CropLife International, Agrochemicals Division of the American Chemical Society, Bayer, BASF, and Dow AgroSciences. Anticipating 300-400 participants from China and surrounding Asian countries.
- **“1st International Conference on Agrochemicals Protecting Crop, Health, and Natural Environment”**, Delhi, India, 8-11 January 2008. Primary organization by the Society of Pesticide Science India, Indian Agricultural Research Institute (IARI) and Indian Council of Agricultural Research (ICAR). IUPAC has now become a co-sponsor and three IUPAC lecturers have been proposed and funded by the IUPAC fund for conferences in scientifically emerging regions. Web site available at <http://www.apchne2008.com/index.asp>.
- **“8th IUPAC International Workshop on Crop Protection Chemistry and Regulatory Harmonization”**, location to be determined for 2009. Proposals being developed for Brazil and Scotland.
- **“12th IUPAC International Congress of Pesticide Chemistry”**, Melbourne, Australia, 4-8 July 2010. Co-organized by the Royal Australian Chemical Institute. 1st Circular distributed at the August 2006 Congress in Kobe, Japan. Web site available at <http://www.raci.org.au/iupacicpc2010/>.

Respectfully submitted,
Ken Racke, Chairman

Appendix III

Environmental Chemistry Division Chemistry of Environmental Compartments Sub-Committee

Status Report July, 2007

Summary

The Sub-committee promotes projects on the chemistry of atmosphere, soil and water and maintains links with the industry and other international bodies. Members of the sub-committee coordinate projects and represent the Division in interdivisional committees and other organizations. Ongoing activity includes degradation, bio-availability and accumulation of chemicals, remote monitoring, codes of practice and modeling of processes. In total, members of the sub-committee direct and coordinate 4 projects and contribute to other 5 joint projects lead by members of the Crop Protection SC. Of the 9 projects, 4 are already at the final stage and therefore new projects need to be soon initiated by the many new members of the Division. Some ideas for new projects are suggested. Publications in press in PAC and elsewhere amount to 13 publications (2003 – 2007).

1. Sub-committee Members:

About 10 member of the Division are active members of the SC, representing Soil, Water and Atmospheric Chemistry and include: Yehuda Shevah (Chair, AM), Willie Peijnenburg (TM, Division Secretary), Hemda Garelick (TM), Laura McConnell (TM), Ole Hertel (TM), Werner Kördel (AM), Leo Klasinc (NR), M. Dassenakis (NR) and Yuanhang Zhang (NR). The SC meets during the Annual Div meetings.

2. Work Plan

Ongoing Projects 2007

DCE No.	Area	Project Title	Project Leader	SC Coordinator	Status Aug 2006
1	2001-026-1-600 Soil	Use of reference soils for testing fates & effects of chemicals	W. Kördel	Kördel	Final Draft Available for discussion and review for publication
2	2003-017-1-600 Water	Valuation of arsenic Contamination in Water & Remediation Options	H. Garelick	Shevah	Accepted for publication
3	2003-058-1-600 Atm	Air Pollution & Human Exposure Modelling	O. Hertel	Klasinc	Ongoing
4	Water	Coastal Waters monitoring by Remote Sensing Techniques	Dassenakis	Dassenakis	Approved and initiated

Joint Projects

DCE No.	Area	Project Title	Project Leader	Sub-Committee Contributor	Status Aug 2005
1999-041-1-600 1	Soil	Bio-availability of xenobiotics in soil	Katayama	Peijnenburg	Final Version, ready for publication
2001-024-2-600 2	Env.	Impact of transgenic crops on the environmental impact of agrochemicals	Kleter	Shevah	Papers presented in Seoul, 2004 Costa Rica, 2005 & Japan 2006. Completed and accepted for publication
2004-017-1-500 3	Env	Standardization of Analytical Approaches and Analytical Capacity-Building in Africa	Benson	Shevah	Ongoing
2006-011 4	Env	Critical review of Available Methods to Predict VOC Emission Potentials for Pesticide Formulation.	McConnel	Peijnenburg, Kördel	Initial Stage
2006-015 5	Env.	Implications of altered residues of pesticides applied on transgenic crops for Food and Food safety	Kleter	Shevah	Initial Stage

3. Projects Descriptions and Current status

a. On-going Projects

1995-630-24: Macropore flow (Kördel) - Final version is accepted for publication in PAC.

2001-026-1-600. Use of reference soils for testing fates and effects of chemicals (*Project Leader: W. Kördel*). The project focuses on the selection of reference soils which could serve to harmonize the testing of the fate and effects of chemicals by OECD, ASTM, ISO, EU and others. Six German soils were characterized and reported. The project includes selection of abiotic criteria for reference matrices definitions/terminology, quality assurance/quality control, outlook and perspectives. The findings were discussed in a two days meeting in ISPRA/Italy, October 2005 and a poster was presented at the IUPAC International Congress of Pesticide Chemistry, Kobe, Japan. The draft of the final report will be available for review in Turin, 2007, after which it will be submitted for publication. The plan is to expand the project to biotic reference matrices, utilizing the remaining budget.

2003-017-1-600. Remediation Technologies for Removal of Arsenic from Water and Wastewater (Project leader: H. Garelick). The project addresses the problem of naturally and anthropogenic occurrence of arsenic in drinking water, affecting the health of millions of people in the developed and third world countries, alike. Arsenic poses a serious health problem and economic consequences to the affected population.

The health implications and the removal effectiveness of available industrial and home made technologies, used for routine treatment of large water works and water points for isolated homestead are discussed, including the salient points of risk assessment for arsenic contamination with special reference to technical challenges for optimizing arsenic remediation measures that are acceptable to the community. The project is conducted in collaboration with

CHEMRAWN and WHO and other agencies, involving a large number of experts from the various continents. The topic is recognized as one of the key topics in the 6th EU Research Framework.

The first Working Group meeting was held in Bath, UK, Oct. 2004 and a poster was presented in Beijing, August 2005, followed by particular presentations at the International Workshop on Arsenic Contamination and Safe Water, Dhaka Bangladesh, December 2005. The papers prepared by the Task Group are available on the Middlesex University website:

<http://www.mdx.ac.uk/www/sprc/handbooks/HG/IUPAC.htm>.

Main Chapters include:

- Caussey D and Priest N: Introduction to arsenic contamination and health risk assessment with special reference to Bangladesh
- Garelick H, Jones H, Dybowska A , Valsami-Jones A. Arsenic pollution sources.
- Feldmann J: Testing for arsenic on site: Field test kits evaluation in terms of sensitivity, reliability, applicability and cost.
- Visoottiviseth P and Ahmed MF: Appropriate Technology for Arsenic Remediation and Disposal of Residues
- Ellis and Garelick: A multi-criteria approach for the assessment of options for the mitigation and remediation of arsenic in drinking water.
- Case studies:
Md Khoda Bux: *Bangladesh*
Visoottiviseth P: *Thailand*:
Földény R, Kováts N, Borbély G Galbács Z: *Hungary*
Alcantar, N: *Mexico*:

The Review, as a whole, has been accepted for publication as a special issues in Reviews in Environmental Pollution and Toxicology and the requested update and reformatting for the journal are ongoing.

2003-058-1-600. Air pollution models in environmental management and assessment (Project Leader, O. Hertel). The aim of the project, co funded by a private foundation in Denmark and the Danish NERI, is a critical review of available models and their suitability for research and environmental management, assessing their applicability and the relevance of the input data. The project is to be published by Kluwer/Springer Press, in 2007. To date, a revision of chapters and contributors is underway and templates for the setup of the chapters have been distributed among the authors. The project is behind schedule, but still proceeding. The draft of the book will be ready for external review in 2007.

2006-049-2-600 Combination of Analytical Measurement and Remote sensing Techniques for Coastal water Monitoring. The Case of Eastern Mediterranean and the Black Seas. (Project leader: Dassenakis). The objectives of this project are, to review the state of the art in remote sensing techniques and methods used for marine environment monitoring and their applications in the Eastern Mediterranean and Black Sea region and to assess the potential for integrative monitoring, using remote sensing data with in situ and laboratory analysis. The project is in its initial stage of data collection and coordination between the contributors for a Task Group Meeting planned in Athens December 2007.

b. Joint Projects

1999-041-1-600 Bioavailability of xenobiotics in the soil environment (Katayama, Crop Protection Sub-committee). The bio-availability of chemicals in soil environment, as a result of dissolution, diffusion, dispersion, convection and uptake is being reviewed, in order to assess the efficacy/toxicity of chemicals. The review is completed and the manuscript was presented in at the IUPAC International Congress of Pesticide Chemistry, Kobe, Japan, 2006.

2001-024-2-600. Impact of transgenic crops on the use of agrochemicals and the environment (Project leader Kleter, Crop Protection Sub-committee). The project was initiated in 2002 to assess the environmental impact of cultivation of transgenic crops, covering a broad range of environmental issues, such as water pollution by pesticides and preservation of biodiversity and contributing to public perception issues surrounding the controversial use of genetically modified crops. Progress made was summarized in papers presented in Workshops in Korea and Costa Rica and a special session was held at the IUPAC International Congress of Pesticide Chemistry, Kobe, Japan, 2006. The Report is in press by Pest Management Science.

2004-017-1-500. Standardization of Analytical Approaches and Analytical Capacity-Building in Africa (Project Leader, Benson). An Inter Divisional project in cooperation with the Analytical Chemistry Division, the International Organization for Chemical Sciences in Development (IOCD) and US National Academy of Science. The project aims to build regional analytical laboratory capabilities in relation to monitoring and enforcement of international trade standards and in the first stage in Uganda, providing technical assistance and procurement of basic equipment.

2006-011 – 1: Critical review of available methods to predict VOC emission potentials for pesticide formulations (Project leader: McConnell). This is an area that is developing and now is a good moment to provide an overview of methods available, some of the regulatory assumptions in VOC emission are invalid and this project will evaluate more accurate methods for distinguishing effects. The project was approved and assigned a budget of 2500 \$. The project started and is the initial stage.

2006-015-3-600: Evaluation of food and food safety implications of altered residues of pesticides applied on TM Crops (Project leader: Kleter). The introduction of transgenic crops and the altered nature and levels of residues of pesticides may also necessitate changing the regulatory Maximum Residue Limit (MRL) as required for free international trade and movement of crop commodities. These and other related issues, are being considered in order to integrate the available information into a critical review of the potential technical, regulatory, and social implications linked with altered residues in transgenic crops. The project was initiated and a paper on the risk assessment and regulation of GM crops will be presented In the upcoming congress on crop protection chemistry co-organized by IUPAC in Beijing next October.

2006-039-2: Extraction and fractionation methods for exposure assessment related to trace metals, metalloids and hazardous organic compounds in terrestrial environments (Project Leader: Fedotov with the contribution of Peijnenburg, Kördel and Cukrowska, among others). The project is a critical evaluation of traditional single and sequential extraction schemes as well as novel flow-through fractionation methods for the assessment of environmental exposure related to trace elements (heavy metals, metalloids) and persistent organic pollutants in soils, sediments, compost, and sewage sludge. It is anticipated that a series of recommendations for accurate and comprehensive studies on the current or potential

mobility/ bioavailability of hazardous compounds in solid phase–soil solution systems will be established. The project was approved for implementation (funding \$6000).

2006-044-2: Env. Risk Assessment of pesticides used in rice paddy field (Project Leader: Linders). Initial stage

c. Projects Revived

1999-014-2-600 Airborne & Remote Sensing of Water Quality (Dekker)

The topic was flagged as being of importance to IUPAC. But, no progress was made since the initial promising stages. and the organization of a session, as part of the Alliance for Marine Remote Sensing Workshop on Freshwater and Near-Shore Remote Sensing, Nova Scotia October 2001, The team leader was informed. The topic is of importance and relevant and a new project is being initiated, focusing on the monitoring of coastal water of the Mediterranean and the Black sea.

2003-030-1-600. Glossary of Atmospheric Chemistry (Project Leader, T. Cvitas).

A Glossary of atmospheric chemistry definitions was initiated, classified into: 1. Physical quantities and units, 2. Measurements, analytical methods and abatement strategies, 3. Chemical and physical constituents in atmospheric processes, 4. Theoretical aspects and 5. Instrumentation in atmospheric chemistry. The project was revived in advance to the GA of 2007, as the topic is of interest to IUPAC.

4. New projects and future IUPAC Conferences of Relevant

a. Preliminary Proposal

- In-situ treatment of polluted soil and water with emphasis on the use of genetically engineered microorganisms. The project was included in 2001 – 2003 work plan, highlighted in Chemistry International as one of the innovative projects, but the project has not advanced beyond the initial stages. The topic is important and relevant and therefore further attempts are being made to initiate the project.

Additional Topics:

- “Waste incineration versus land and water disposal” and “Environmental consequences of stabilized waste residues for fertilizer”. During the GA it was decided to ask Dr. Shevah to provide a more detailed project proposal, including project aims and a balanced view of the pro’s and cons of the topic.
- Tropical forest, sea and animal emissions. This project should also VOC emissions. Leo Klasinc will initiate this project, Laura McConnell is interested to participate.
- Antibiotics discharge in water, soil and air: Dr. Garlick will initiate this project, jointly with a scientist of Thailand and with the help of Prof. Dassenakis (experiences with fish).
- Atmospheric Ammonium Nitrogen. It was suggested during the GA to have Ole Hertel act as the initiator of this project.
- Reference entities for biological matrices. Dr. Kördel will initiate this follow-up project on the project on reference soils.
- Phytoremediation – Arsenic. Dr. Garelick will initiate this follow-up project on the arsenic project, jointly with Dr. Peijnenburg.
- Effect of global warming on global methane emissions. Leo Klasinc will initiate this project.

b. Project Proposed to IUPAC

- Project 2005-048-2 Letcher. Solubility and Thermodynamic properties related to environmental issues. The lead Division is the Physical and Biophysical Division. Comments were provided by various Division VI members and were in general of a positive nature. The proposal was revised and Division VI committed 1250 \$.
- 2007-001-2: Evaluated kinetic Data for Atmospheric Chemistry, R. A. Cox (supplementing 1999 – 037 – 2-100) Budget required 15000. The objective is to evaluate Kinetic data for atmospheric chemistry and enhance its accessibility by placing the material on a web site.
- Electro-chemical DNA based Biosensors – State and Prospect. Prof Jan Labuda, Slovak Univ of Tech, Slovakia. The aim is to review recent development in DNA electrochemistry and DNA based sensors, as a new class of biosensors.

c. Conferences

- 1st Int Conference on Agrochemical Protecting crops health and Natural Environment. Delhi, India, 8-11 Jan 2008. (www.apchne2008.com). Co-sponsored by IUPAC, IUPAC Fund for Conferences in Scientifically emerging regions.
- 5th International Symposium on Interaction of Soil Minerals with Organic Components and Micro-organisms ISMOM – (www.ismom2008ufro.cl). Soil Root Microbe Interactions and impact on the transformation and fate of nutrients and pollutants on the ecosystem will be the topic of this Int. conference to be held on the 24-29 of November 2008, pucon, Chile. The Conference is sponsored by IUPAC at \$6000 out of a total budget of \$22500. The proceedings are to be peer reviewed and published by Elsevier or Springer Verlag. Also selected papers will be published in Geoderma and Pedosphere.

4. Other Activities

O. Hertel: Editorial Board - Pure and Applied Chemistry

Y. Shevah: Interdivisional Committee on Nomenclature and Symbols ICTNS. . Summary of ICTNS activity is appended.

5. Reports and Publications (2003 – 2007)

1. Egli, H., Manos Dassenakis, Hemda Garelick, René van Grieken, WJGM Peijnenburg, Leo Klasinc, Werner Kördel, Nick Priest & Tanja Tavares (2003). Minimum requirements for reporting analytical data for environmental samples.
2. Lintelmann, J, L. Shore, A. Wenzel, F. Dorobek, A. Katayama and N. Kurihara (2003) Oestrogenic Chemicals in the Environment. PAC
3. Van Grieken, R. & Shevah, Y. (2003). Proceedings of the International Symposium on Atmospheric Deposition and impacts on ecosystems, with particular reference to the Mid-East” Tel Aviv. Univ. of Antwerpen Publication.
4. Kleter GA, Bhula R, Carazo E, Felsot AS, Harris CA, Katayama A, Kuiper HA, Racke K, Rubin B, Shevah Y, Stephenson GR, Tanaka K, Unsworth J and Wong SS (2003). Impact of transgenic crops on the use of agrochemicals and the environment, in Proceedings of the IUPAC-KSPS International Workshop on Pesticides 2003, October 13-16, Seoul, Korea, pp. 55-61
5. Shevah Y. 2004. Wastewater Treatment and Reuse for Irrigation. In Encyclopedia of Life Support Systems (EOLSS), Developed under the auspices of the UNESCO, EOLSS Publishers, Oxford, UK, [<http://www.eolss.net>].

6. Slanina, S.; Zhang, Y. 2004. "Aerosols: Connection between Regional Climate Change and Air Quality." *Pure Appl. Chem.* 76:1241-1253.
7. Zhang, Y.; Zhu, X.; Slanina, S.; Shao, M.; Zeng, L.; Hu, M.; Bergin, M.; Salmon, L (2004). "Aerosol Pollution in Some Chinese Cities." *Pure Appl. Chem.* 76:1227-1239.
8. Kleter GA, Bhula R, Bodnaruk K, Carazo E, Felsot AS, Harris CA, Katayama A, Kuiper H, A, Racke K, Rubin B, Shevah Y, Stephenson GR, Tanaka K, Unsworth J and Wong SS (2005). The effect of the cultivation of genetically modified crops on the use of pesticides and the impact thereof on the environment, in IUPAC/CICA-UCR/SFE-MAG International Workshop on Crop Protection Chemistry in Latin America: Harmonized Approaches for Environmental Assessment and Regulation, 14-17 February 2005, University of Costa Rica, San Jose, pp. 49-76.
9. Werner Kördel and Michael Klein 2006. Prediction of Leaching and Groundwater Contamination by Pesticides. *Pure Appl. Chem.* 78:1081-1090.
10. Werner Kördel et al. 2006. Solute movement in Soils. *Pure Appl. Chem.* In press.
11. Kleter GA, Bhula R, Bodnaruk K, Carazo E, Felsot AS, Harris CA, Katayama A, Kuiper H, A, Racke K, Rubin B, Shevah Y, Stephenson GR, Tanaka K, Unsworth J and Wong SS (2007). Altered Pesticide Use on Transgenic Crops and the Associated General Impact from an Environmental Perspective. Accepted For Publication in Pest Management Science.
12. Gijs Kleter and composed of Irene B. de Alleluia, Kevin Bodnaruk, Elizabeth Carazo, Caroline A Harris, Arata Katayama, Baruch Rubin, Yehuda Shevah, Gerry R. Stephenson, Carmen Tiu, and John Unsworth (2007). Altered Crop Protection Agent Residues in Transgenic Crops, IUPAC PROJECT: N0. 2006-015-3-600. Submission made to "project place". Chemistry International Journal.
13. H. Garelick 2007. Reviews in Environmental Contamination and Toxicology.