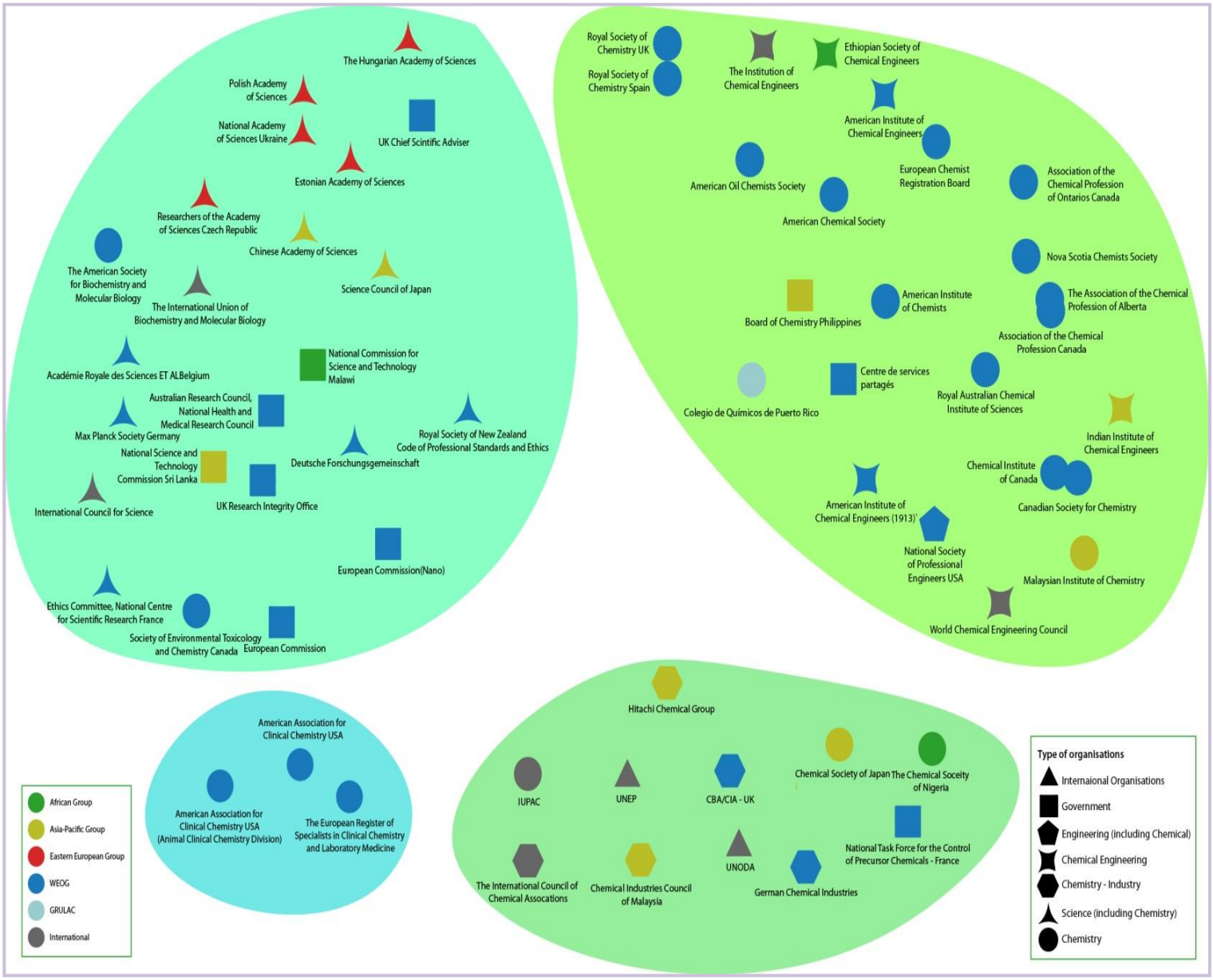
Report of the Workshop on Guidelines for the practice of Chemistry under the Norms of the Chemical Weapons Convention



Organisation for Prohibition of Chemical Weapons
22 May 2015

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Workshop Participants and Observers – 11 March 2015

From Left to Right: (Back Row) Wesam Alwan (Technical Secretariat), Natalie Childress (Technical Secretariat), Johannes Niemeier (Technical Secretariat), Dr Hans-Georg Weinig, Dr Detlef Maennig, Dr Sjoerd Looijs, Dr Nancy Jackson, Dr Jo Husbands, Dr David Gonzalez Berrutti, Dr Steven Hill, Professor Dr Hartmut Frank, Dr Mark Cesa; (Middle Row) Dr Natalia P. Tarasova, Amir Imani (Technical Secretariat), Wardah Amir (Technical Secretariat), Dr Al-Nakib Chowdhury, Professor Jasmin Uddin Ahmad, Dr Muhammad Zafar-Uz Zaman, Professor Peter Mahaffy, Dr Prashant Yajnik; (Front Row) Jonathan Forman (Technical Secretariat), Professor Djafer Benachour, Professor Alejandra Graciela Suárez (Chairperson OPCW Scientific Advisory Board), Yinong Zhao.

Executive Summary

This report summarizes the Workshop on Guidelines for the Practice of Chemistry under the Norms of the Chemical Weapons Convention (CWC). The workshop was held on 11 March 2015 at Organisation for the Prohibition of Chemical Weapons (OPCW) Headquarters in The Hague, The Netherlands and chaired by OPCW Scientific Advisory Board Chairperson Professor Alejandra Suárez.

The workshop brought together practitioners of the chemical sciences to discuss an initiative proposed by the permanent representation of the Federal Republic of Germany to the Nineteenth Conference of States Parties to the Chemical Weapons Convention for a text of ethical guidelines for chemical professionals related to the Convention (C-19/5, Dated 5 December 2014, paragraph 23.3). The event was the beginning of a longer term process to draft text for key elements of CWC relevant ethical guidelines.

Participants addressed three thematic issues: key elements of Chemical Weapons Convention relevant ethical guidelines, principles and best practices for drafting ethical guidelines, and establishing synergy with other current initiatives. Inputs to these three areas were identified for further consideration and a follow up meeting. Taking the initiative forward from the 11 March event, participants are working in correspondence to produce text that can be discussed with stakeholders across the chemical sciences at a forthcoming workshop (tentatively planned for fall 2015).

Introduction and Purpose

The workshop on ethical guidelines for the practice of chemistry under the norms of the Chemical Weapons Convention brought together practitioners of the chemical sciences to discuss an initiative proposed by the permanent representation of the Federal Republic of Germany. This initiative to the Nineteenth Conference of States Parties (CSP-19) to the Chemical Weapons Convention (CWC) called for a text of ethical guidelines for chemical professionals related to the Convention. From the States Parties to the CWC:

> The Conference **welcomed** the initiative for a text of ethical guidelines for chemical professionals related to the Convention and **invited** the Secretariat to inform the Council of its efforts for the advancement of the initiative and its objectives in close collaboration with relevant professional and chemical industry organizations. The Conference **encouraged** States Parties to discuss the matter further (C-19/5, Dated 5 December 2014, paragraph 23.3).

Participants representing a range of stakeholders in the chemical sciences (from academia, industry, and scientific societies) came together to discuss how chemical professionals (practitioners of chemistry) could take the lead in furthering the initiative endorsed at CSP-19. Professor Alejandra Suárez, chairperson of the OPCW Scientific Advisory Board (SAB), convened the workshop at OPCW Headquarters in The Hague; workshop participants included a number of individuals who have experience with both current and previous initiatives involving ethical codes for chemistry. A list of participants is available in Appendix 1.

The workshop was intended to be the first step of a longer process to draft text for key elements for CWC relevant ethical guidelines. Three thematic issues were considered: key elements of Chemical Weapons Convention relevant ethical guidelines, principles and best practices for drafting ethical guidelines, and establishing synergy with other current initiatives; from which a starting point could be developed. The participants provided a series of presentations that described previous and current work in the development of ethical codes as a basis to inform their deliberations. These presentations and workshop outcome are summarised later this report; presentations are collected in Appendix 2.

Taking the initiative forward from the 11 March event, participants are working in correspondence to produce text that can be discussed with a broader group of stakeholders, identify key groups to discuss and propose the text with and to propose details for a follow up workshop. The forthcoming workshop is intended to bring together stakeholders across the chemical sciences to discuss and agree upon text that can be used as guidelines in the development of codes of ethics (tentatively planned for fall 2015). The guidelines would be made available to professional organisations and societies; they would usefully aid those who are seeing to develop their own codes of ethics and conduct and benefit existing codes by providing CWC relevant text and language.

Agenda

Workshop on Guidelines for the Practice of Chemistry under the Norms of the Chemical Weapons Convention

Tuesday, 10 March (Ooms Room)

15:00 Informal meeting of participants (optional)

16:30 Coffee break

17:00 Informal meeting resumes (optional)

18:00 Conclusion of informal meeting

Wednesday, 11 March (Ooms Room)

9:00 Opening remarks:

OPCW Director-General

Workshop Introduction (*Alejandra Suárez, Chairperson OPCW Scientific Advisory Board*)

9:15 Current Initiatives on Ethical Guidelines

The Global Chemists Code of Ethics: An Overview (*Nancy Jackson*)

Hippocratic Oath for Chemists - based on existing ethical guidelines (*Hans-Georg Weinig, German Chemical Society*)

10:00 Previous work with ethical guidelines

IUPAC, OPCW, the Chemical Weapons Convention, and Chemists's Codes of Conduct (*Mark Cesa, President IUPAC*)

10:30 Coffee break

10:45 Previous work with ethical guidelines (continued)

An overview of existing ethical guidelines and codes of conduct (*Amir Imani, Technical Secretariat*)

Codes and responsible science: experiences and lessons learned from the BWC (*Jo Husbands, US National Academy of Science*)

11:30 Responsible Care® (*Sjoerd Looijs, CEFIC*)

12:00 Discussion on how to move forward

13:00 Lunch

14:00 Discussion on how to move forward (Continued)

15:30 Coffee break

15:45 Conclusions

16:30 End of workshop

16:45 Transportation from OPCW to German Mission

17:00 – 19:00 Reception hosted by German Delegation to OPCW

Presentation Summaries

The presentations are briefly described in this section, copies of individual presentations can be found in Appendix 1.

Opening Remarks from the Director General of the OPCW

The workshop was opened by the OPCW Director-General, his remarks are fully reproduced here.

> Professor Suárez,
> Excellencies,
> Distinguished guests,
>
> It is a great pleasure to have such a group of accomplished academic and industrial chemists here at the OPCW to discuss the responsible practice of the chemical sciences.
>
> I especially wish to thank Professor Suárez, the chairperson of our Scientific Advisory Board, for convening this timely workshop.
>
> Next month we will commemorate the centenary of the first large-scale use of chemical weapons at Ieper.
>
> This tragic anniversary serves to remind us all how the perversion of science can blight our humanity.
>
> It is all the more tragic when one considers that chemistry has helped us address pressing problems in both fundamental and applied science, bringing practical and beneficial solutions for our societies' greatest needs.
>
> Yet, since Ieper, the world saw the development of more advanced chemical weapons programmes and, even more tragically, their continued use as a weapon.
>
> In our twenty-first century world, scientific developments proceed at an ever increasing pace.
>
> Against this backdrop, your workshop here today is all the more important.
>
> Your discussion will help define and promote ethical foundations for the responsible practice of chemistry – to ensure that such practice is directed only towards peaceful purposes for the benefit of humankind.
>
> In December 2014, at its nineteenth meeting, the Conference of States Parties welcomed an initiative to develop ethical guidelines for chemical professionals related to the Convention.
>
> This worthy initiative draws on, and supports, past and ongoing efforts by the broader chemistry community on ethical codes.

It is rightly premised on the fact that responsible science can know no borders.

Scientific research cannot be conducted in an ethical vacuum, if its contribution is to secure our future peace and prosperity.

I welcome the approach adopted by The Global Chemists Code of Ethics project. To bring together practitioners of chemistry, from both academia and industry, from around the world to debate and discuss this important issue at its most fundamental level. As you do today.

I am pleased to see representatives from the International Union of Pure and Applied Chemistry (IUPAC), and also members of the Temporary Working Group on Education and Outreach.

The work undertaken by IUPAC – in collaboration with the OPCW and the findings of the TWG – will, I hope, stimulate new ideas and fresh approaches for this workshop.

Equally important in this workshop are the representatives from chemical industry.

No ethical guidelines for the practice of chemistry can be successful without their involvement.

As we look to advance this important project, we must appreciate that producing a code is just a first step.

As we prepare to mark the Ieper anniversary, our remembrance of the many victims of chemical warfare over the past century should focus our efforts.

Efforts to create the foundations for a science that never again harms humankind.

At the same time, we must keep before ourselves the very real prospect of a future free of chemical weapons – and the important role that chemistry has played, and continues to play, in the effective implementation of the Chemical Weapons Convention itself.

Your discussions will serve to deepen the vital partnership between science and disarmament by cementing the ethical foundations on which it must always be based.

I wish you every success.

Thank you.

Workshop on Guidelines for the Practice of Chemistry under the Norms of the Chemical Weapons Convention (Professor Alejandra G. Suárez)

Professor Alejandra Suárez described the background and objective for the workshop on ethical guidelines. Her presentation emphasised the need for chemical professionals to take a

lead role and the importance of building synergy with previous and current initiatives in ethical codes for chemists. The need to identify key elements of Chemical Weapons Convention relevant ethical guidelines; and principles and best practices for drafting ethical guidelines; and to establish synergy with other current initiatives were discussed and formed the basis of the deliberations of the workshop.

The Global Chemists Code of Ethics: An Overview (Dr. Nancy Jackson and Dr. Steven Hill)

The American Chemical Society (ACS), represented by Dr. Nancy Jackson and Dr. Steven Hill, described their Global Chemists Code of Ethics (GCCE) programme. This programme is intended to bring together a diverse group of chemists from around the globe, including from countries and regions currently at risk of chemical threats, to create a code of ethics (the GCCE) that can be taught in local communities to practicing chemists around the world. Ideally, the GCCE would become a standard requirement for newly professional chemists in various communities.

To support the GCCE program, the ACS, in conjunction with the Pacific Northwest National Laboratory and the Chemical Security Program at the United States Department of State, will implement a three day conference in Dhaka, Bangladesh in November, 2015, parallel to the Federation of Asian Chemical Societies' Asian Chemical Congress. The main goals of this workshop are to bring together chemists from around the world share ideas and expertise and to find synergies and common themes in other codes. The workshop will deliver the Global Chemists Code of Ethics (as a document) and develop training materials for universities and others who would adopt this code. The GCCE specifically targets practicing chemists, who are at the frontline and must make decisions related to their work and expertise everyday.

Hippocratic Oath for Chemists - based on existing ethical guidelines (Dr Hans-Georg Weinig, German Chemical Society)

The workshop received an overview of the original Federal Republic of Germany proposal delivered by Dr Hans-Georg Weinig of the German Chemical Society. Dr Weinig described the concepts behind the initiative, the discussions that have taken place leading up to the 11 March workshop and synergies with organisations and initiatives that are being explored beyond the German Chemical Society. The presentation included a proposal to produce a brief (one page) introduction for the GCCE that might serve as a declaration for young scientists when they receive their graduate certificate.

IUPAC, OPCW, the Chemical Weapons Convention, and Chemists' Codes of Conduct (Dr Mark C. Cesa)

Dr Mark Cesa (President of the International Union of Pure and Applied Chemistry, IUPAC) described the mission, goals, and structure of IUPAC; previous and current collaborative work conducted with OPCW and the reports and materials that have resulted. IUPAC has previously called for the need for awareness of CWC within the scientific community, teaching about the CWC and its requirements, and promoting professional conduct of chemists and practitioners of the chemical sciences, engineering, and technologies. IUPAC had also developed a set of recommendations for guidelines for the conduct of chemists in 2005. Dr Cesa described these recommendations which considered thematic issues in the context in which chemists function; including: identification of the risks posed by chemicals, banned and severely restricted chemicals, illicit drugs, chemical or biological and toxin

weapons, harm to the environment, complementarity to Responsible Care® and identification of guiding principles applicable to all chemists.

Additional information on guidelines for codes of conduct can be found the November-December issue of *Chemistry International* (Pearson, Becker, Sydnes, *Chem. Int.*, **2011**, 33(6), www.iupac.org/publications/ci/2011/3306/index.html).

Code of Ethics and Conducts (Amir H. Imani)

Amir Imani (of the Technical Secretariat) briefed the workshop on a text analysis he performed using sixty-three existing codes and guidelines, for both ethics and conduct, relevant to the practice of chemistry. The codes come from a range of national, regional, and international organisations; these included scientific and engineering societies, chemical industry, and governmental organisations. The compiled text of these codes is available as a supplemental document to this report (please contact the Science Policy Adviser at OPCW). A cluster analysis was performed to identify codes with similarity in their text and frequent words and word associations were summarised across the codes. The analysis was not comprehensive across all existing codes, yet it revealed some very informative observations. Codes are often classified by their intent (e.g. conduct or ethics) and their regional context; however the analysis suggested that these attributes of the codes were not always distinguishable between the codes with similar text and high frequency word associations. It was further found that the type of organisation, not the region or purpose of the code, was the most distinguishable characteristic for codes falling into similar clusters of the analysis. The presentation was important to draw attention to currently existing codes and what they cover. A follow up analysis with a more comprehensive set of codes is planned.

In the context of the workshop discussions, only seven of the codes in the data set mentioned the concept of misuse of chemicals. These were codes from the Deutsche Forschungsgemeinschaft, the Max Planck Society, the IUPAC Draft Elements for Codes of Conduct, the United Nations Environment Programme, the National Science and Technology Commission (NASTEC) of Sri Lanka, the United Kingdom Research Integrity Office and the European Register of Specialists in Clinical Chemistry and Laboratory Medicine. Furthermore only three of the codes analyzed mentioned weapons (chemical, mass destruction and/or general use of the term), these were: the 2009 Code of conduct on Chemicals Subject to Trade and Security Controls (United Kingdom), Deutsche Forschungsgemeinschaft and the Max Planck Society. The 1995 code of conduct of the German Chemical Society (GDCh), while not part of the analysis, is also noteworthy as it specifically mentions chemical weapons.

Codes and Responsible Science: Experiences and lessons learned from the BWC (Dr Jo L. Husbands)

Dr Jo Husbands of the United States National Academy of Sciences provided the workshop with an overview of lessons learned from the experience of the Biological Weapons Convention (BWC) 2005 work on codes of conduct for scientists and her own past experiences of engagement with life scientists. Examples were presented on how the power of an event can galvanize participants to act and engage to complete the task at hand (focusing on the experience of the IAP—The Global Network of Science Academies); how different roles are necessary to speak to those at different levels of practice of science (and policy); and the importance of constant feedback and dialogue when developing a code with

the stakeholder communities. Dr Husbands emphasised that creating a code is just a first step, as effective codes are living and evolve with the needs of the community of practitioners. Likewise, a code by itself is not enough; codes are best undertaken as part of a broader strategy of education and engagement such as that recommended by the TWG on Education and Outreach. Educational components and a mechanism for discussion and engagement on the value and benefits of the code are thus also required.

Responsible Care® (Dr Sjoerd Loojis)

Presenting the viewpoint of chemical industry, Dr Sjoerd Loojis of the European Chemical Industry Council (CEFIC) described Responsible Care®; a global initiative launched in 1985 for the continuous improvement in the chemical industry that involves everybody from top management to plant worker. It is a global and voluntary industry initiative where national associations are the formal owners; yet implementation of Responsible Care® shows a commitment to building confidence and trust amongst global stakeholders. A key aspect of Responsible Care® is the engagement of the employee; companies endorse and CEOs commit to (functional and personal commitment) the programme. The chemical industry is already an ardent supporter of the CWC and Dr Loojis provided some insights and concerns from chemical industry in relation to new codes of conduct and ethics.

Outcomes and Next Steps

The discussions produced the following outputs, which are intended to be taken forward into the drafting of text.

In regard to identifying key elements of CWC relevant ethical guidelines,

- Achievements in the field of chemistry should be used exclusively for the benefit of humankind and the environment.

- In order to secure public welfare, chemistry practitioners shall be aware of the potential for misuse of the chemical or scientific knowledge that she or he produces and the precursors she or he utilizes.

- Chemistry practitioners shall be aware of the safety and security concerns of the chemicals she or he handles. These key elements should be universally binding since misuse of chemicals may pose a global threat not only to humankind but also to the environment.

- A chemical practitioner is defined as anyone handling chemicals or knowing about the properties of chemicals. Therefore, it is important to educate chemical practitioners in the risks associated with chemicals.

- These are only some of the key elements identified. This list can be further improved and expanded.

In regard to identifying principles and best practices for drafting ethical guidelines,

- Careful identification of effective practices from existing initiatives should be encouraged, so as to provide a better basis for putting forward effective practices and principles. It would be helpful to identify strategies that have been used to determine whether an initiative is successful.

- In communicating ethical guidelines with respect to multiple uses and the framework of the CWC, it is crucial to identify target audiences. Examples of audiences might be chemical societies, industrial groups, students, ministries of education, business people working in areas that involve chemistry, policy makers, funding agencies, and distributors.

- Ethical guidelines with respect to multiple uses and the framework of the CWC need to be integrated into codes of ethics at all levels! An OPCW expert advisory group on education and outreach could be asked whether they could facilitate this task, perhaps with partners.

- Ethical guidelines with respect to multiple uses and the framework of the CWC need to be integrated into formal and informal educational and outreach activities as well as the development of codes. (Codes alone are not enough).

- Need to integrate ethical guidelines with respect to multiple uses and the framework of the CWC into the formal teaching of chemistry. This might include both core courses in chemistry and separate courses or modules on ethics.

- Codes of conduct/ethics need to be living, dynamic entities that are owned by the stakeholders. Best practices are for groups to review codes on frequent bases and ensure that new practitioners take them on, and also to involve students and others in the development of their own codes. The process of articulating ethical guidelines and codes is as important as the products (written codes) that are produced.

- Chemical weapons issues are best introduced in formal education contexts (and in codes) through the "Multiple Uses" approach, so as to emphasize that most chemicals are beneficial and we need to prevent misuses and abuses.

- From industry – Responsible Care documentation – if there is wording here with respect to multiple uses and the framework of the CWC that is helpful to use as an exemplar, we should communicate this as an "effective practice.

- There is a need for chemical distributors to have a responsible code for distribution of chemicals to ensure the security of the chemical supply chain.

- Examine whether there are experiences with unintended consequences of the implementation of legal requirements and codes. If laws are too strict, people will find ways around them.

In regard to establishing synergy with other current initiatives,

- Go through international chemistry-related organizations (i.e. IUPAC, FACS, FASC, EuCheMS, FLAQ) and other international parties (UN, UNESCO, World Congress, UNEP, etc.) to receive feedback and garner support and interest.

- Universal ideals related to Sustainable Development and Responsible Use should be the emphasis.

- Create an open source resource of codes/recommendations that can be referenced when organizations are initiating code creation.

- Translation of materials by member states is vital.

- Open discussion should be possible before any kind of "public" codes are created.

- Through programs like Responsible Care, there is actually a large population of chemistry practitioners having some kind of training in responsible use and responsibility issues, so is there a need for a code on individual level? Explore this need further.

    - GAP: No systematic education on Responsible Science across academia worldwide. Explore how the Responsible Care model was initiated (in industry), and if a similar model could be used in academia.

- Disasters lead to action: So emphasize not to forget the historical lessons, and not to repeat the mistakes.

In moving forward, workshop chair professor Suárez will lead a correspondence group to draft key elements of ethical guidelines; these will be shared with the broader group of workshop participants for further inputs. This correspondence group will draft a proposal for a future workshop (tentatively to be held in the fall of 2015), propose next steps and identify an extended group of stakeholders to obtain broader views and inputs on the draft text coming from the original workshop participants.

Appendix 1

LIST OF PARTICPANTS OF THE WORKSHOP ON GUIDELINES FOR THE PRACTICE OF CHEMISTRU UNDER THE NORMS OF THE CHEMICAL WEAPONS CONVENTION

	Participants	Institution
1.	Professor Jasim Uddin Ahmad	Federation of Asian Chemical Societies (FACS)
2.	Professor Djafer Benachour	Université Ferhat Abbas (LMPMP)
3.	Dr Mark Cesa	International Union of Pure and Applied Chemistry (IUPAC)
4.	Dr Al-Nakib Chowdhury	Pabna University of Science and Technology
5.	Professor Dr Hartmut Frank	EuCheMS
6.	Dr David Gonzalez Berrutti	Univeridad de la Republica
7.	Dr Steven Hill	American Chemical Society (ACS)
8.	Dr Jo Husbands	The National Academies of Science
9.	Dr Nancy Jackson	US Department of State
10.	Dr Sjoerd Looijs	European Chemical Industry Council
11.	Dr Detlef Maennig	Evonik Industries AG
12.	Professor Peter Mahaffy	The King's University College Edmonton
13.	Prof Alejandra Graciela Suárez	Consejo Nacional de Investigaciones Cientificas y Tecnicas Universidad Nacional de Rosario
14.	Dr Natalia P. Tarasova	IUPAC
15.	Dr Hans-Georg Weinig	German Chemical Society
16.	Dr Prashant Yajnik	Indian Chemical Society
17.	Dr Muhammad Zafar-Uz Zaman	National Engineering & Scientific Commission
18.	Mr Yinong Zhao	Ministry of Industry and Information Technology

Appendix 2
Presentations

Presentation 1: Workshop on Guidelines for the Practice of Chemistry under the Norms of the Chemical Weapons Convention

Workshop on Guidelines for the Practice of Chemistry under the Norms of the Chemical Weapons Convention

Prof. Alejandra G. Suárez

Chairperson OPCW Scientific Advisory Board

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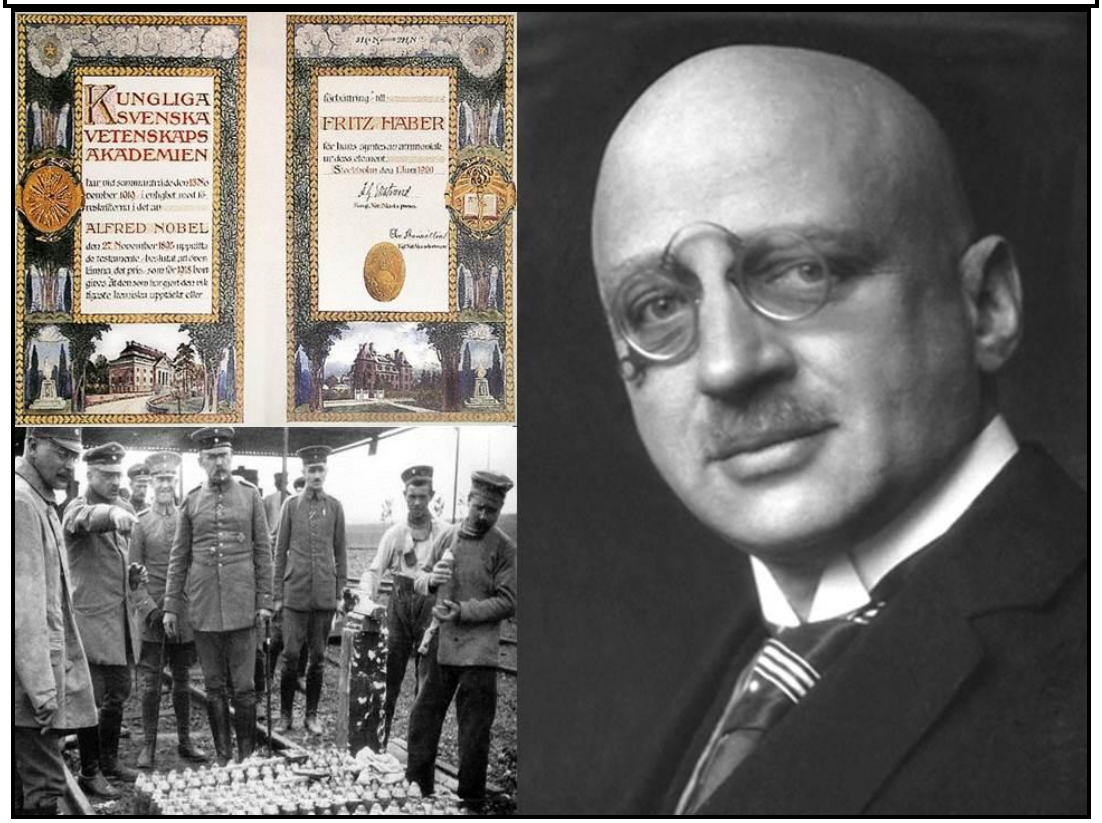


OBJECTIVE

From CSP-19 Final Report (C-19/5, Dated 5 December 2014)

The Conference **welcomed** the initiative for a text of ethical guidelines for chemical professionals related to the Convention and **invited** the Secretariat to inform the Council of its efforts for the advancement of the initiative and its objectives in close collaboration with relevant professional and chemical industry organisations. The Conference **encouraged** States Parties to discuss the matter further. *(paragraph 23.3)*

Workshop:

- To determine the best path to take this initiative forward

- Chemical professionals taking lead role in developing the text

- To create synergy with other efforts to develop ethical codes

10 March Informal Session

1. **Introduction**
   Affiliations
   Interest and previous experiences with ethical codes and guidelines for chemists

2. **Brief overview of March 11 agenda**

3. **Discussion**

11 March Workshop Agenda

1. **Introductions**

2. **Current Initiatives**
   American Chemical Society
   German Chemical Society

3. **Previous Work**
   IUPAC
   Existing codes and guidelines

4. **Experiences from the BWC**

5. **A Chemical Industry Perspective**

6. **The Path Forward**

7. **Evening Reception at German Mission**

Intended Outcome

A Proposal for next steps to move forward

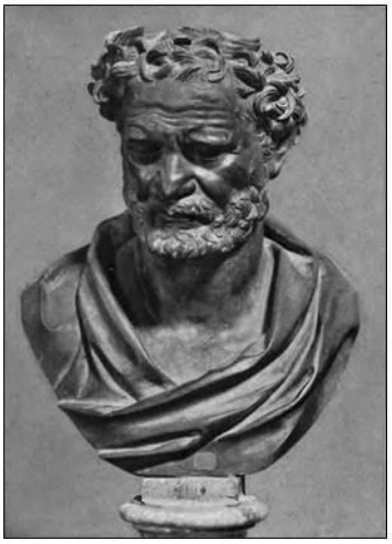
- Identify the key elements of CWC relevant ethical guidelines

- Identify principles and best practices for drafting guidelines

- Establish synergy with other current initiatives

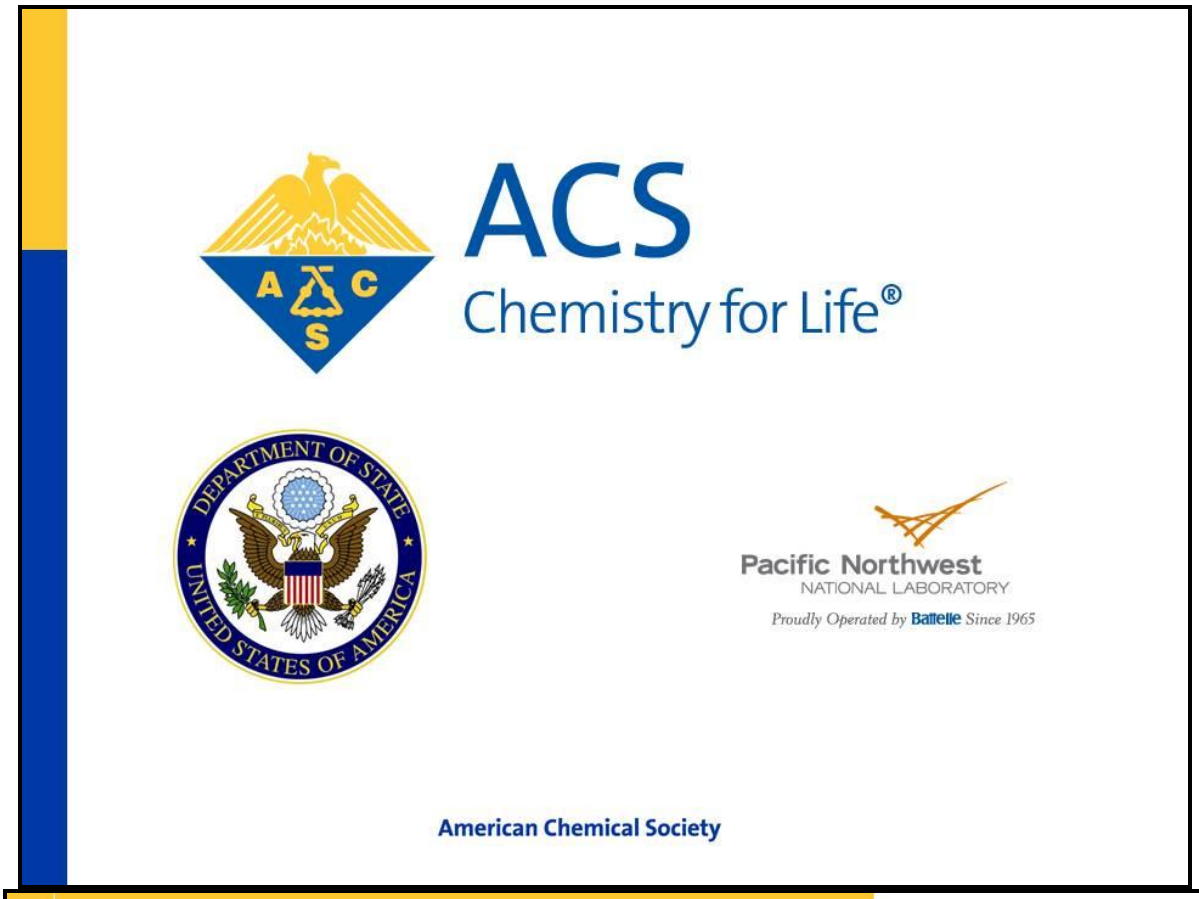
- Next steps
  - Agree on a process to move forward
  - Identify groups to discuss and propose text
  - Provide recommendations
  - Estimate the resources required

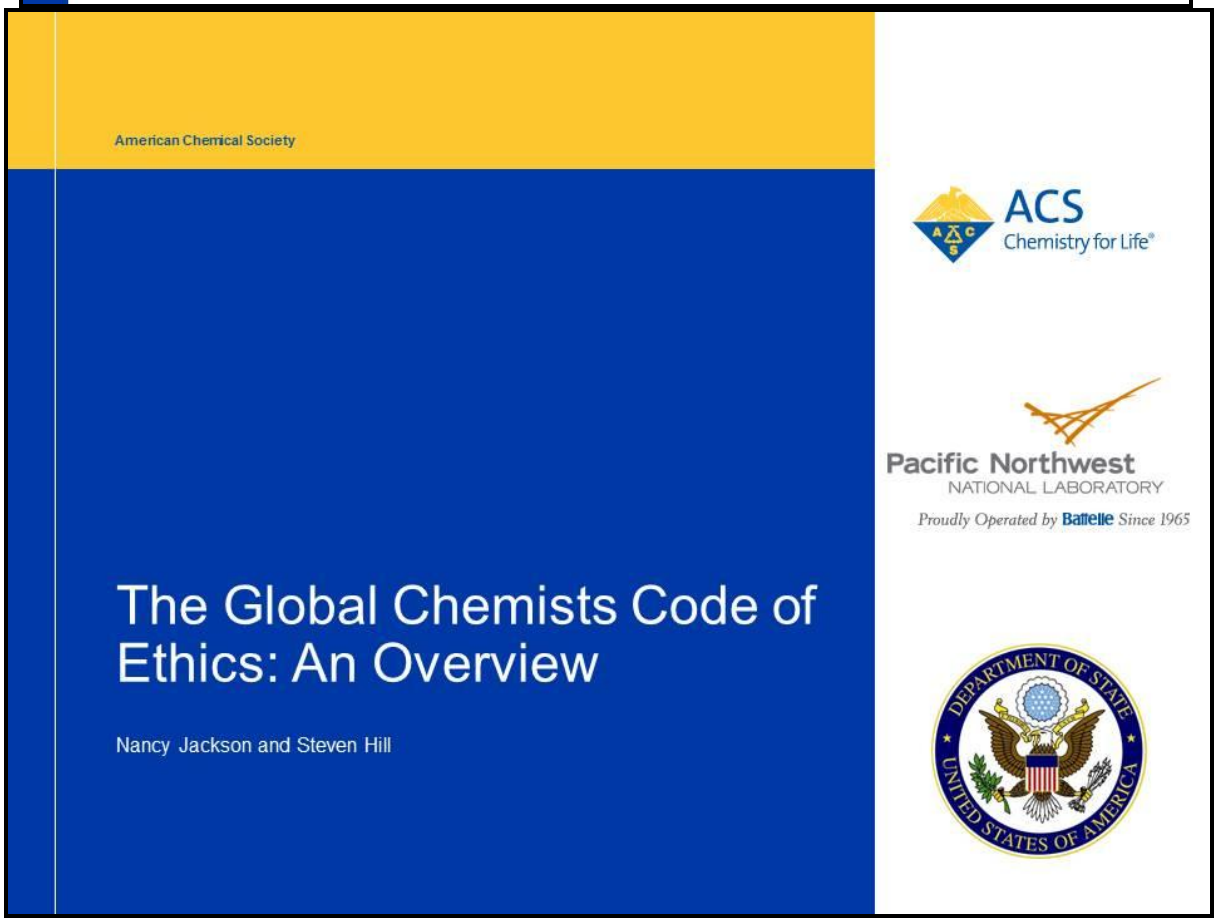
The Practice of Chemistry Began A Long Time Ago



Democritus (460 – 370 BC)
and Lefkippos (Leucippus)
"Philosophers of the atom"

Presentation 2: The Global Chemists Code of Ethics: An Overview





Chemistry has brought much good to the world

ACS Chemistry for Life®

Unfortunately, Chemistry Can be Used for Bad Purposes

ACS Chemistry for Life®

ACS and Chemistry Ethics

- ACS has a long history of leadership on the topic of Chemistry Ethics
- Multiple Sectors:
  - Academia
  - Publishing
  - Industry
- Multiple Committees
  - Committee on Ethics
  - Committee on Chemical Safety
  - Committee on Patents and Related Matters
  - Division of Professional Relations
- International Work in Science & Human Rights

Chemical Professionals Everywhere Want the Safe and Secure use of Chemicals

Countries that I have worked with through Sandia, State Department, OPCW, or ACS ★

ACS and OPCW

- In the last year, ACS has enjoyed a fruitful relationship with the OPCW.
  - May 2014 – Jonathan Forman visited ACS headquarters to meet with ACS leadership and present on "Chemistry Disarmament: The Chemical Weapons Convention"
  - March 2015 – A delegation from OPCW will visit Denver, CO to take part in ACS's upcoming National Meeting.
    - OPCW will receive an official commendation from ACS for its past and continuing efforts to eliminate chemical weapons
    - Varoius representatives of OPCW will present at a technical symposium titled "The Interface of Chemical and Biological Sciences International Disarmament Efforts"

The Global Chemists Code of Ethics (GCCE)

- Therefore, the GCCE program hopes to bring together a diverse group of chemists from around the globe, including from countries and regions currently at risk of chemical threats, to create the GCCE, which can be taught in local communities to practicing chemists around the world.
- Ideally, taking the GCCE will become a standard requirement for newly professional chemists in various communities.
- Other projects currently being undertaken by various organizations target governments, military and other organizations of authority, but the GCCE specifically targets practicing chemists, who are at the frontline and must make decisions related to their work and expertise everyday

Summary

- The American Chemical Society, Pacific Northwest National Laboratories and the U.S. Department of State's Chemical Security Program, will implement a three day conference with the objective of creating a Global Chemists Code of Ethics
- Three days in Dhaka, Bangladesh in November, 2015, parallel to the Federation of Asian Chemical Societies' Asian Chemical Congress
- Main goals:
  - Bring together chemists from around the world
  - Share ideas and expertise
  - Find synergies and common themes in other codes
- Main deliverables:
  - Global Chemists Code of Ethics (a document)
  - Training materials for universities and others

Recruiting from Universities

- How is expertise acquired?
- Terrorist groups recruit science and engineering students

Tuesday, August 10, 2010 Jakarta Globe

Fighting Back: Roundup of 5 in Bandung exposes plan to target capital

Aceh Anti-Terror Sweep Rolls on

Armando Siahaan

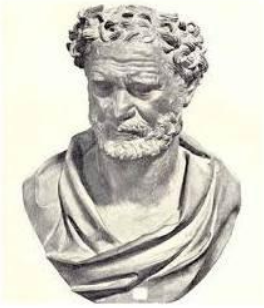
…the squad arrested Kurnia Widodo, a.k.a Ujang, a recent university graduate who majored in chemical engineering. "We believe Kurnia was the technician at the bomb lab," …

Recruiting from Universities

- Aum Shinrikyo recruited young university scientists
  - Masami Tsuchiya – Physical and Organic Chemist. Joined Aum Shinrikyo in 1989

- Tokyo, Japan 1994–1995
  - Sarin and other chemical weapons used to kill ~20 and injure over 4000

Code of Ethics Name



Democritus

"The universe is composed of two elements: the atoms and the void in which they exist and move."

Clara Immerwahr

First German woman to get her PhD in chemistry, married to Fritz Haber. Immer wahr = always true

Steven Hill – ACS Office of International Activities

Concept

- ACS International Activities will implement the GCCE Conference, which will bring together a large number of practicing chemists from a wide range of geographies to provide input, through participation in lectures, panels and round tables, to assist in creating the Global Chemists Code of Ethics.
- The deliverables of the conference will be a document (the code and oath) as well as accompanying training materials that can be used for educational purposes.
- It is currently planned to translate the document into seven languages (in addition to English):
- After the conference, ACS will continue to follow up with participants to track and monitor training sessions and participants to measure reach

Time and Place

- The GCCE Conference will take place over three days, from 15 – 17 November, 2015, in Dhaka, Bangladesh
- The event will be right before the Federation of Asian Chemical Societies' 16th Asian Chemical Congress, taking place in Dhaka 18 – 21, 2015
- The 16th ACC theme will be "Science for Humanity" and will concentrate on sustainable science and development
- It is hoped that the two conferences will be able to cross-populate, with participation in both events during the week of 15 – 21 November 2015

Implementation Structure

Funding and Guidance: U.S. State Dept. Chemical Security Program (CSP)

Implementation and Technical Co-Facilitation: ACS International Activities

Technical Co-Facilitation: Pacific Northwest National Laboratories

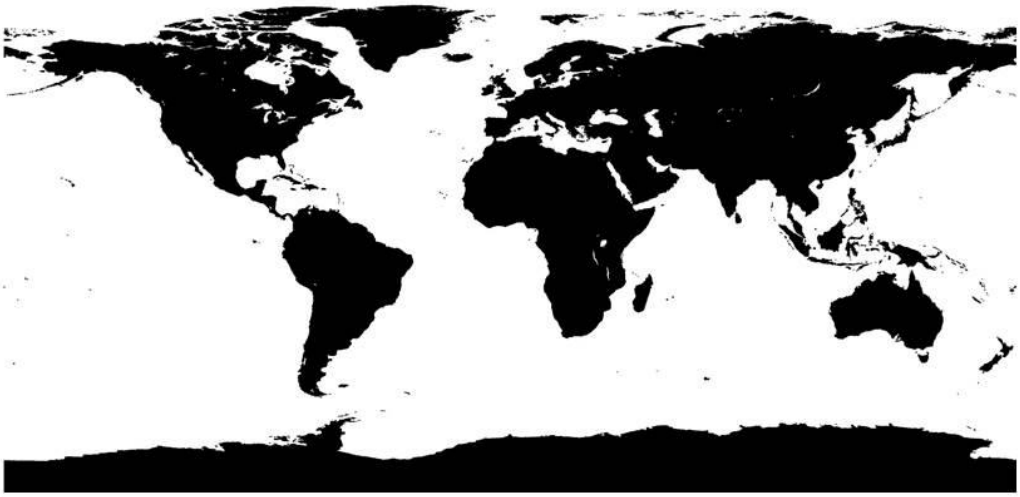
Participation and Content Creation: Up to 80 global participants

Participation

- Goal: Truly global participation
- Up to 30 participants will be sponsored to participate from U.S. State Department CSP priority countries:
  - Yemen
  - Iraq
  - Pakistan
  - Afghanistan
  - Egypt
  - Lebanon
  - Turkey
  - Libya
  - Algeria
  - India
  - Indonesia
  - Saudi Arabia
  - Philippines
  - Malaysia
  - Ethiopia

Participation

Up to 50 spots will be open for participants from around the world



ACS International Reach

- ACS International Activities will utilize its relationships with various chemistry society partners in order to encourage global participation
- ACS Working Partners:
  - Federation of Asian Chemical Societies (FACS)*
  - Latin American Federation of Chemical Societies (FLAQ)*
  - Federation of African Societies of Chemistry (FASC)
  - European Association for Chemical and Molecular Sciences (EuCheMS)
  - German Chemical Society*
  - Chinese Chemical Society*
  - South African Chemical Society*
  - Canadian Chemical Society*

*Note: A Star signifies an official ACS Global Strategic Alliance

Deliverables

Code

- 1-2 page document with actual code
- Oath that can be administered

Training Materials

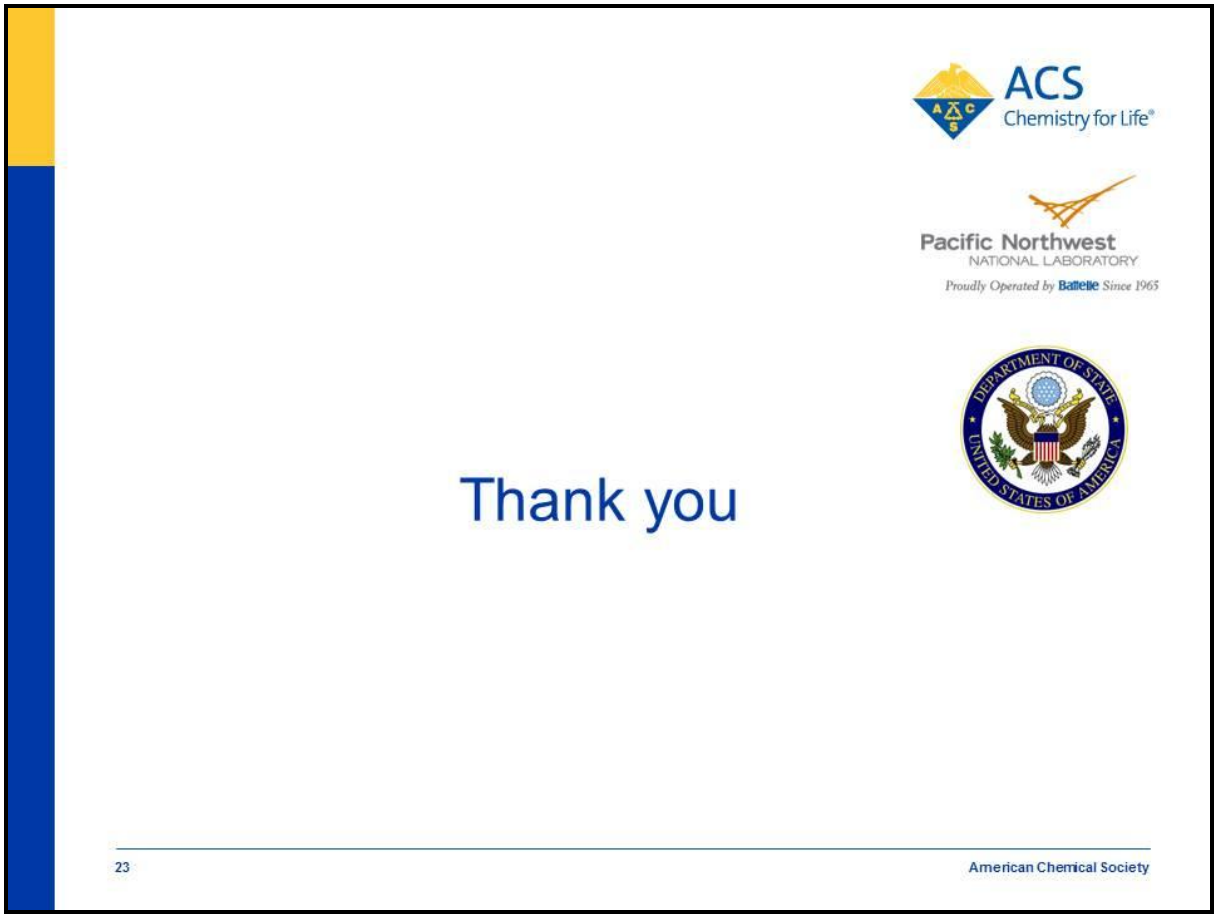
- Materials to provide training on the points of the code

Follow-up

- After the event in Dhaka, sponsored participants will be encouraged through mini-grants to take the code, oath and training materials back to their local communities and to administer the code.
- ACS is now exploring opportunities for partnership (with CSP and other organizations) to take the next steps after the GCCE is drafted
  - Further training/outreach
  - Expansion of educational materials (for various audiences)
  - Work with organizations to implement the code with their students/staff/etc.

Goals today

- Introduce the audience to our GCCE Program
- Learn about other initiatives taking place
- Gain insight from past codes and best practices
- Discuss possible synergies and opportunities for cooperation


ACS
Chemistry for Life®
Pacific Northwest
NATIONAL LABORATORY
Proudly Operated by Battelle Since 1965
DEPARTMENT OF STATE
UNITED STATES OF AMERICA
Thank you
23
American Chemical Society

Presentation 3: "Hippocratic Oath for Chemists"
- based on existing ethical guidelines

GDCh
GESELLSCHAFT
DEUTSCHER CHEMIKER

„Hippocratic Oath for Chemists"

- based on existing ethical guidelines

Workshop on Guidelines for the Practice of Chemistry under the Norms of the Chemical Weapons Convention (CWC)

March 11, 2015, The Hague

Dr. Hans-Georg Weinig • Director Education & Science, GDCh

Ethical Guidelines for Chemists

GDCh
GESELLSCHAFT
DEUTSCHER CHEMIKER

Initiative of the Permanent Representation of the Federal Republic of Germany to the OPCW

Making the World Safer: From the Hippocratic Oath to a New Ethical and Moral Guideline for Chemists

The Hippocratic Oath is the ethic foundation of the Science of Medicine. Although the Oath itself has no legal qualification, its principles play an important role in medical training and are entirely accepted by medical professionals worldwide as the ethical and moral guideline for their activities.

Other sciences, however, namely the science of Chemistry, have not yet established an ethical and moral guideline comparable to the Hippocratic Oath. It was not before Chemical Weapons have been used on a big scale for the first time a hundred years ago, that it was realized what a threat to mankind chemistry can be.

Since then the Science of Chemistry has been used innumerous times with destructive intentions. So far the efforts of the International Community to eliminate Chemical Weapons focused on states. More attention should therefore be devoted to the responsibility of each individual scientist, chemist and chemical engineer. This is also of paramount importance in order to make sure that the know-how of producing Chemical Weapons is not at the disposal of criminal or otherwise hostile groups. The transfer of the concept of the Hippocratic Oath to chemistry therefore appears to be a necessity. […]


ΙΠΠΟΚΡΑΤΟΥΣ
ΟΡΚΟΣ
HIPPOCRATIS
IVSIVRANDVM

Source: http://www.pbs.org/wgbh/nova/body/hippocratic-oath-today.html

Ethical Guidelines for Chemists

GDCh Gesellschaft Deutscher Chemiker

Conference of the States Parties

OPCW — **Conference of the States Parties**

Nineteenth Session
1 – 5 December 2014

C-19/5
5 December 2014
Original: ENGLISH

REPORT OF THE NINETEENTH SESSION
OF THE CONFERENCE OF THE STATES PARTIES
1 – 5 DECEMBER 2014

23.3	The Conference **welcomed** the initiative for a text of ethical guidelines for chemical professionals related to the Convention and **invited** the Secretariat to inform the Council of ist efforts for the advancement of the initiative and its objectives in close collaboration with relevant professional and chemical industry organisations. The Conference **encouraged** States Parties to discuss the matter further.

Ethical Guidelines for Chemists

GDCh Gesellschaft Deutscher Chemiker

International Co-operation: 1st Meeting at OPCW

16 January, 2015, The Hague
OPCW
US and German Permanent Representation
ACS
GDCh

Existing Guidelines

GDCh Gesellschaft Deutscher Chemiker

Contents

I. *Introduction*

II. *Codes of Conduct for Chemists*

1. *Aimed at individual chemists*
   a) *American Chemistry Society*
   b) *American Institute of Chemists*
   c) *Association of the Chemical Profession*
   d) *Association of the Chemical Profession of Ontario*
   e) *Gouvernement du Québec*
   f) *Nova Scotia Chemist Society*
   g) *Chemical Institute of Canada*
   h) *Society of Environmental Toxicology and Chemistry*
   i) *Board of Chemistry*
   j) *Chemical Industries Council of Malaysia*
   k) *Malaysian Institute of Chemistry*
   l) *European Chemist Registration Board*
   m) *Royal Society of Chemistry*
   n) *German Chemical Society*

2. *Aimed at companies and institutions*
   a) *International Council of Chemical Association*
   b) *Chemical Business Assocation*
   c) *UIC/UFCC/PRODAROM/LEEM*
   d) *Federación Empresarial de la Industria Química Espanola*
   e) *German chemical industry*
   f) *Global Biological Resource Centre Network*

3. *Generally aimed at scientists*
   a) *Max Planck Society*
   b) *Deutsche Forschungsgemeinschaft/Leopoldina*
   c) *6th World Science Forum, Rio de Janeiro*
   d) *Science Council of Japan*
   e) *Code of Ethics of Estonian Scientists*

III. *Other Projects*

5

Structure of an „Oath“ for Chemists

GDCh Gesellschaft Deutscher Chemiker

For the Benefit / Welfare of Mankind

here: also related to CWC

Part I:
One page document

including the most important key words / key messages

Part II: Annex

including more details,

possible as evolving document / future compendium

➡ **„Global Chemists‘ Code of Conduct“**

OPCW „education outreach activity“: -> UNESCO / professional associations

6

Authors / Partners

GDCh Gesellschaft Deutscher Chemiker

International Union on Pure and Applied Chemistry

IUPAC

European Association for Chemical and Molecular Sciences

e.g. Working Party on Ethics in Chemistry
(Chair Prof. Dr. Hartmut Frank, Bayreuth, Germany)

EuCheMS

National Chemical Societies

GDCh Gesellschaft Deutscher Chemiker · ACS Chemistry for Life® · Royal Society of Chemistry

and worldwide many, many more…

under the auspices of:

Organisation for the Prohibition of Chemical Weapons

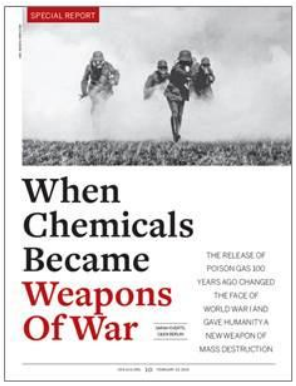
and the Permanent Representations (DE/US) to the OPCW

100 Years Commemoration

GDCh Gesellschaft Deutscher Chemiker

OPCW: 21 April 2015, Ieper, Belgium

Journals, Events



Contact

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Gesellschaft Deutscher Chemiker

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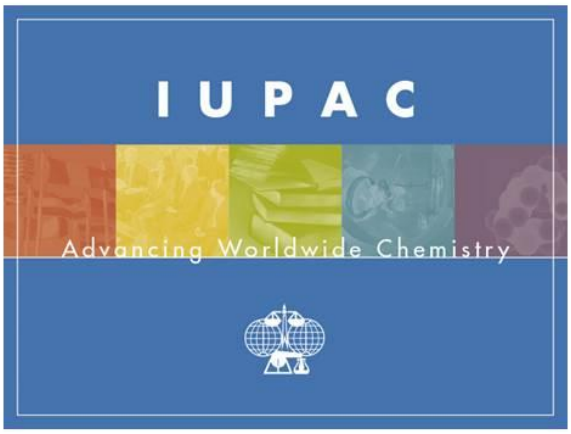
Presentation 4: IUPAC, OPCW, the Chemical Weapons Convention, and Chemists' Codes of Conduct

IUPAC, OPCW, the Chemical Weapons Convention, and Chemists's Codes of Conduct

Mark C. Cesa
President,
International Union of
Pure and Applied Chemistry

11 March 2015



Outline

- About IUPAC
- Science Input to the CWC
- Educational and Public Outreach
- Chemists's Codes of Conduct

I U P A C Advancing Worldwide Chemistry

www.iupac.org

- **The mission of IUPAC** is to advance the worldwide aspects of the chemical sciences and to contribute to the application of chemistry in the service of humankind.
  - Promotes norms, values, ethics of science
  - Advocates free exchange of scientific information and access of scientists
  - Addresses global issues as a scientific, international, non-governmental, objective body

I U P A C Advancing Worldwide Chemistry

IUPAC National Adhering Organizations

IUPAC Advancing Worldwide Chemistry

IUPAC Long Range Goals

- **Provide leadership in objectively addressing global chemical issues**
- Facilitate advancement of chemical research through its conferences and its tools for standardization
- Assist chemical industry in its contributions to human well-being
- **Foster communication across the chemistry community**, particularly in the developing world
- **Enhance chemistry education, career development of young chemists, and public appreciation of chemistry**
- Achieve maximum feasible diversity and inclusion in membership

IUPAC Advancing Worldwide Chemistry

IUPAC Organization

Divisions are the focal point of IUPAC's scientific work

- Physical & Biophysical Chemistry
- Inorganic Chemistry
- Organic & Biomolecular Chemistry
- Polymer
- Analytical Chemistry
- Chemistry & the Environment
- Chemistry & Human Health
- Chemical Nomenclature & Structure Representation

IUPAC Advancing Worldwide Chemistry

IUPAC Organization

Standing Committees and Subcommittees bridge the Divisions to serve important segments of the chemistry community

- Committee on Chemistry and Industry (COCI)
- Committee on Chemistry Education (CCE)
- CHEMRAWN Committee
- Interdivisional Subcommittees
  - Green Chemistry
  - Materials
- Committee on Publications and Cheminformatics Data Standards (CPCDS)
- Interdivisional Committee on Terminology, Nomenclature, and Symbols (ICTNS)

IUPAC Advancing Worldwide Chemistry

IUPAC is a trusted scientific advisor to and partner with the OPCW on new developments in detection and destruction of chemical weapons.

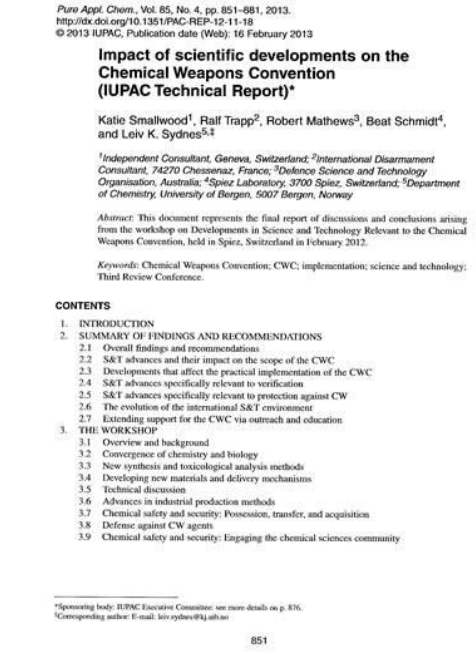
CWC calls for periodic review (5 years) and evaluation of relevant scientific and technological developments.

Workshops organized by IUPAC in collaboration with OPCW
2002, 2007, 2012 to meet CWC review schedule
Some examples of subject areas:
multiple uses of chemicals
New syntheses, analyses, production methods, detection, destruction
Chemical safety and security

IUPAC Advancing Worldwide Chemistry

Outcomes have included identification of need for awareness of CWC in the scientific community, teaching about the CWC and its requirements, and promoting professional conduct of chemists and practitioners of the chemical sciences, engineering, and technologies.

Pure Appl. Chem., **2002**, *74(12)*, 2323-2352
Pure Appl. Chem., **2008**, *80(1)*, 175-200
Pure Appl. Chem., **2013**, *85(4)*, 851-881
Chem. Int., **2013**, *35(4)*, 4-8.
OPCW Today, **2012,** *1(2)*, 18-19; 20-21; 1(1), 7-9.



Pure Appl. Chem., Vol. 85, No. 4, pp. 851–881, 2013.
http://dx.doi.org/10.1351/PAC-REP-12-11-18
© 2013 IUPAC, Publication date (Web): 16 February 2013

Impact of scientific developments on the Chemical Weapons Convention (IUPAC Technical Report)*

Katie Smallwood[1], Ralf Trapp[2], Robert Mathews[3], Beat Schmidt[4], and Leiv K. Sydnes[5,‡]

[1]*Independent Consultant, Geneva, Switzerland;* [2]*International Disarmament Consultant, 74270 Chessenaz, France;* [3]*Defence Science and Technology Organisation, Australia;* [4]*Spiez Laboratory, 3700 Spiez, Switzerland;* [5]*Department of Chemistry, University of Bergen, 5007 Bergen, Norway*

Abstract: This document represents the final report of discussions and conclusions arising from the workshop on Developments in Science and Technology Relevant to the Chemical Weapons Convention, held in Spiez, Switzerland in February 2012.

Keywords: Chemical Weapons Convention; CWC; implementation; science and technology; Third Review Conference.

CONTENTS

*Sponsoring body: IUPAC Executive Committee; see more details on p. 876.
‡Corresponding author: E-mail: leiv.sydnes@kj.uib.no

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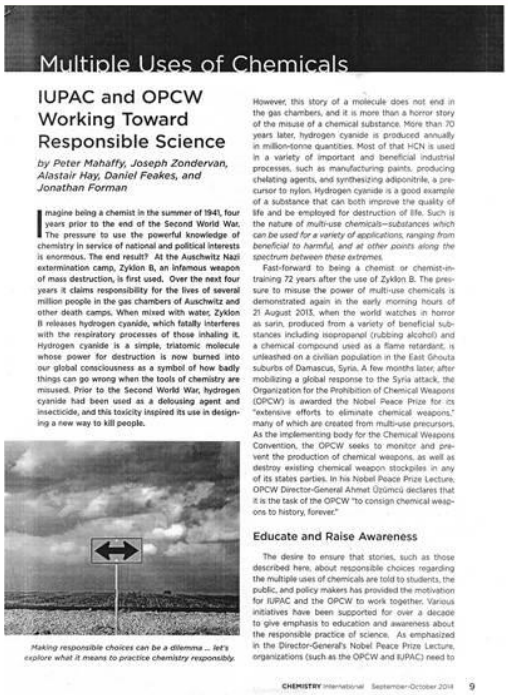
IUPAC Advancing Worldwide Chemistry

Resources for Education, Public Outreach and Professional Conduct of Chemists

Outgrowth of 2002 IUPAC evaluation for CWC

Joint project OPCW and IUPAC
- Multiple Uses of Chemicals
- Web resources
- Workshops
- Educational modules
- Fires – documentary film series

Pure Appl. Chem., **2006**, *78(11)*, 2169-2192.
Chem. Int., **2014**, *36(5)*, 9-13.
OPCW Today, **2013,** *2(5)*, 23-24.



Multiple Uses of Chemicals

IUPAC and OPCW Working Toward Responsible Science

by Peter Mahaffy, Joseph Zondervan, Alastair Hay, Daniel Feakes, and Jonathan Forman

Imagine being a chemist in the summer of 1941, four years prior to the end of the Second World War. The pressure to use the powerful knowledge of chemistry in service of national and political interests is enormous. The end result? At the Auschwitz Nazi extermination camp, Zyklon B, an infamous weapon of mass destruction, is first used. Over the next four years it claims responsibility for the lives of several million people in the gas chambers of Auschwitz and other death camps. When mixed with water, Zyklon B releases hydrogen cyanide, which fatally interferes with the respiratory processes of those inhaling it. Hydrogen cyanide is a simple, triatomic molecule whose power for destruction is now burned into our global consciousness as a symbol of how badly things can go wrong when the tools of chemistry are misused. Prior to the Second World War, hydrogen cyanide had been used as a delousing agent and insecticide, and this toxicity inspired its use in designing a new way to kill people.

However, this story of a molecule does not end in the gas chambers, and it is more than a horror story of the misuse of a chemical substance. More than 70 years later, hydrogen cyanide is produced annually in million-tonne quantities. Most of that HCN is used in a variety of important and beneficial industrial processes, such as manufacturing paints, producing chelating agents, and synthesizing adiponitrile, a precursor to nylon. Hydrogen cyanide is a good example of a substance that can both improve the quality of life and be employed for destruction of life. Such is the nature of multi-use chemicals—substances which can be used for a variety of applications, ranging from beneficial to harmful, and at other points along the spectrum between these extremes.

Fast-forward to being a chemist or chemist-in-training 72 years after the use of Zyklon B. The pressure to misuse the power of multi-use chemicals is demonstrated again in the early morning hours of 21 August 2013, when the world watches in horror as sarin, produced from a variety of beneficial substances including isopropanol (rubbing alcohol) and a chemical compound used as a flame retardant, is unleashed on a civilian population in the East Ghouta suburbs of Damascus, Syria. A few months later, after mobilizing a global response to the Syria attack, the Organization for the Prohibition of Chemical Weapons (OPCW) is awarded the Nobel Peace Prize for its "extensive efforts to eliminate chemical weapons," many of which are created from multi-use precursors. As the implementing body for the Chemical Weapons Convention, the OPCW seeks to monitor and prevent the production of chemical weapons, as well as destroy existing chemical weapon stockpiles in any of its states parties. In his Nobel Peace Prize Lecture, OPCW Director-General Ahmet Üzümcü declares that it is the task of the OPCW "to consign chemical weapons to history, forever."

Educate and Raise Awareness

The desire to ensure that stories, such as those described here, about responsible choices regarding the multiple uses of chemicals are told to students, the public, and policy makers has provided the motivation for IUPAC and the OPCW to work together. Various initiatives have been supported for over a decade to give emphasis to education and awareness about the responsible practice of science. As emphasized in the Director-General's Nobel Peace Prize Lecture, organizations (such as the OPCW and IUPAC) need to

Making responsible choices can be a dilemma ... let's explore what it means to practice chemistry responsibly.

CHEMISTRY International September–October 2014 9

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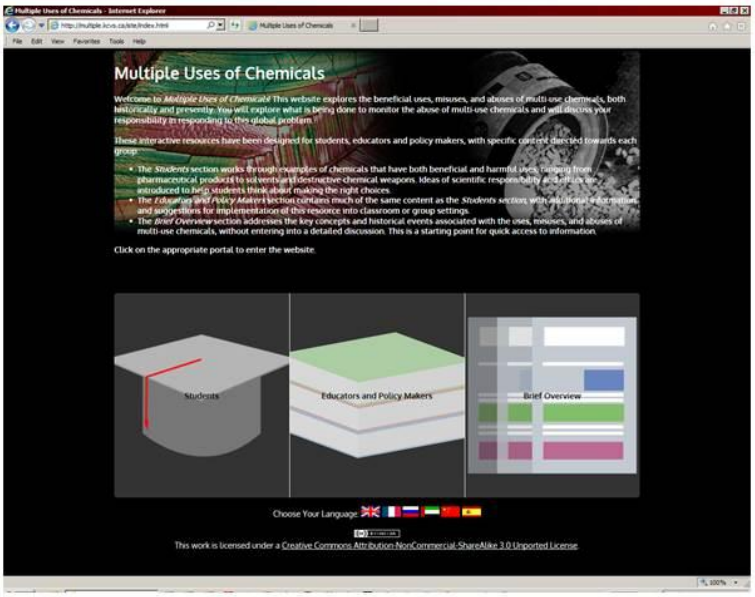
Web resources for students and teachers



http://www.iupac.org/multiple-uses-of-chemicals

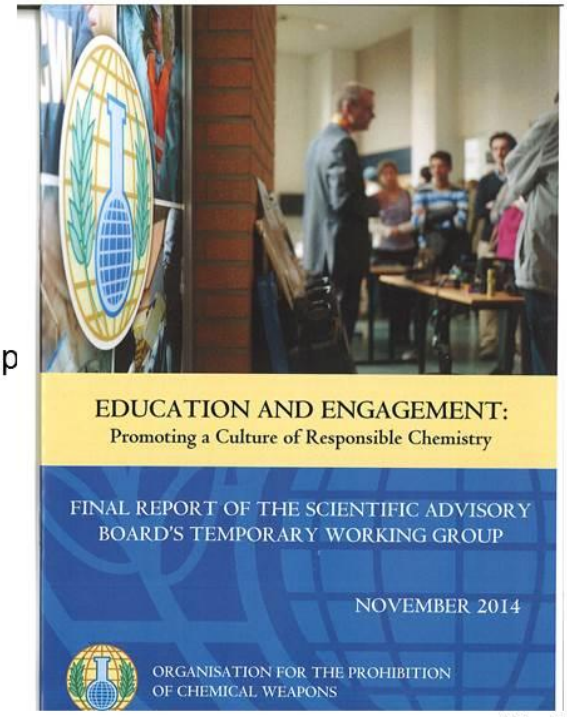
IUPAC Advancing Worldwide Chemistry

OPCW Scientific Advisory Board Temporary Working Group on Science and Technology Relevant to the CWC

IUPAC participation on TWG

Major recommendation:
establish ongoing expert advisory group on education and outreach on the responsible use of science (CWC)

Codes of conduct as an aspect of education and outreach effort



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Vol. 33 No. 6
November-December 2011

Why Codes of Conduct Matter

by Graham S. Pearson, Edwin D. Becker, and Leiv K. Sydnes*

Peter Atkins in his feature article "Where Would We Be without Chemistry?" in the March–April 2011 *CI* (p. 4 in print) reminded us that chemistry, like any great enterprise, has a downside as well as an upside. It is used to make explosives for armaments, it creates poisons, and the effluents of chemistry plants can harm the environment. He went on to say that, with some exceptions, the chemical industry is well aware of its obligations to humanity and the environment and does what it can to avoid the potentially damaging effects of its activities. In the May–June *CI* (p. 8 in print), Bernard West gave us "A Closer Look at Responsible Care: Is There a Broken Link?" As he explains, Responsible Care, adopted in 54 countries, is about building trust through ethical behavior, listening attentively to the evolving concerns of the public, and providing responses that clearly demonstrate the concerns have been heard. He goes on to say that although the application of Responsible Care has led to significant improvements in the performance of the industry, incidents continue to occur. There are still many improvements to be made even within the industries that already adhere to Responsible Care.

It is against this background that it is timely and important to examine why Codes of Conduct are relevant and matter for all those engaged in chemistry. The Codes of Conduct project arose from a workshop held in Oxford in June 2005 to address outreach, education, and the implementation of the Chemical Weapons Convention. Organized by IUPAC and the Organisation for the Prohibition of Chemical Weapons [*Pure and Applied Chemistry* 2006, **78**(11), 2169–2192], this workshop was particularly focused on the misuse of chemicals as weapons, but the discussions about codes of conduct from the outset had considered the broader view of how chemicals might be misused—whether as illicit drugs, to harm the environment, or to harm humans or animals. The discussions had focused on the responsibility of all who are engaged in chemistry to cause no harm, whether they are engaged in industry, academia, or government. Wherever chemists are engaged, they must consider the ethical implications of their work. And this question is especially relevant today in not only the traditional

http://www.iupac.org/publications/ci/2011/3306/2_pearson.html 11/26/2014

IUPAC and Codes of Conduct

Workshop in Oxford, UK 2005
Outgrowth of 2002 Review for CWC

2007 Project on Recommendations for Codes of Conduct

Extend existing codes where possible
- universal principles
- professional society codes
- codes for institutions/ workplaces

IUPAC Advancing Worldwide Chemistry

IUPAC's Approach

Develop an overarching objective that IUPAC recommend that all those engaged in chemistry **review their existing codes** of conduct, or **develop new codes** of conduct, to **promote the safe use of chemicals** in the public interest and in the furtherance of science, and to **encourage compliance** with all relevant international and national laws and regulations.

Recommend that IUPAC and all of its NAOs, Associate NAOs, and national chemical societies review their existing codes or develop new ones to encourage all those within their jurisdiction who engage in science and technology using chemicals to address the principles set out below.

Pearson, Becker, Sydnes, *Chem. Int.*, **November-December 2011**, *33(6)*,

General ethical guidelines

- Ethics guiding scientific experimentation, data collection, and collaborations (Singapore statement; Montreal statement);
- Ethics guiding scientific publishing (Vancouver Convention);
- Ethics guiding scientific assessment (San Francisco Declaration):
- Ethical guidelines for responsibility, freedom and outreach (ICSU Principle of Universality of Science)

Codes of Conduct Received from IUPAC Members

Royal Australian Chemical Institute Code of Ethics

Chemical Institute of Canada Codes of Ethics

Chemistry Industry Association of Canada Responsible Care Codes of Practice

Gesellschaft Deutscher Chemiker Code of Conduct

Società Chimica Italiana Charter of Ethical Principles for the Chemical Sciences

Chemical Society of Japan Environmental Charter '99

Korean Chemical Society Green Chemistry, Clean World
Chemical Society of Nigeria Green Chemistry and Sustainable Development: Challenges and Prospects

Colegio de Químicos de Puerto Rico Manual del Código de Ética

Royal Society of Chemistry Code of Conduct

American Chemical Society The Chemical Professional's Code of Conduct

IUPAC Advancing Worldwide Chemistry

IUPAC Task Group
Recommendations for Codes of Conduct

- Consideration of the context in which chemists function
- Identification of the risks posed by chemicals
  - banned and severely restricted chemicals
  - illicit drugs
  - chemical or biological and toxin weapons
  - harm to the environment
- Complementary to Responsible Care®
- Identification of guiding principles applicable to all chemists

IUPAC Advancing Worldwide Chemistry

IUPAC Task Group
Recommendations for Codes of Conduct

- **Draft elements: Chemists should ensure that:**
  - Their work is ethical and upholds the dignity, standing, reputation and integrity of the profession.
  - Scientific knowledge and technologies are used only for the benefits and betterment of humankind and the environment.
  - Their work is in accordance with the principles of sustainable development and safeguards the earth's capacity to support life in all its diversity.
  - Chemicals, equipment and facilities under their care and supervision are not used for illegal, harmful or destructive purposes.

IUPAC Advancing Worldwide Chemistry

IUPAC Task Group
Recommendations for Codes of Conduct

- **Draft elements: Chemists should:**
  - Ensure the safety of and minimize risk to their fellow workers and colleagues, the general public, the environment and develop sustainable processes.
  - Ensure that their work is, and is perceived to be, adherent to or compliant with national laws and international conventions on chemicals and other related substances.
  - Cooperate with governments and organisations to identify gaps in legislation, regulations and standards, and to develop and implement new laws, regulations and standards to meet these gaps.
  - Report any misuse of chemicals and facilities for criminal and/or destructive purposes to the relevant authority.

IUPAC Advancing Worldwide Chemistry

IUPAC Task Group
Recommendations for Codes of Conduct

- **Draft elements: Chemists should:**
  - Update their knowledge on the latest development in the health and environmental risk of chemicals and related substances.
  - Conduct regular health, safety and security assessments of their work and facilities under their care.
  - Use their knowledge and understanding to facilitate public education, understanding and appreciation of the benefits arising from chemistry.

Acknowledgments

Prof. Leiv Sydnes
Prof. Peter Mahaffy
Prof. Natalia Tarasova
Prof. Graham Pearson
Prof. Alastair Hay
Prof. Edwin Becker

…and many other IUPAC volunteers
…and the OPCW

IUPAC Advancing Worldwide Chemistry

www.iupac.org

Connect with IUPAC

Presentation 5: Code of Ethics and Conducts
A Data-Driven Insight

ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS

Working together for a world free of chemical weapons

Code of Ethics and Conducts

A Data-Driven Insight

11 March 2015

Amir H. Imani
Office of Strategy and Policy
Organisation for the Prohibition of Chemical Weapons

amir.imani@opcw.org

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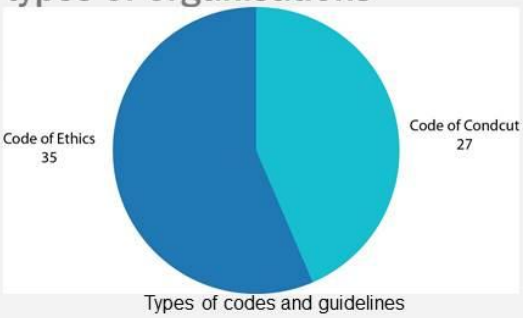
www.opcw.org

ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS

Working together for a world free of chemical weapons

Background information

- A set of 63 codes and guidelines were collected (available in English)
- Codes and guidelines for conduct and ethics
- National, regional, and international
- Multiple types of organisations



Types of codes and guidelines

www.opcw.org

ORGANISATION FOR THE
PROHIBITION OF CHEMICAL WEAPONS

Working together for a world free of chemical weapons

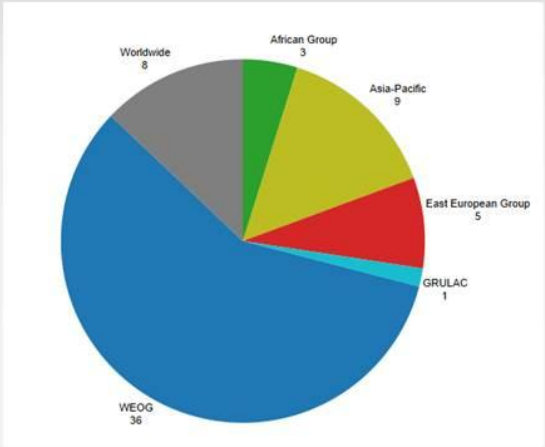
Geographical Distribution of Codes

www.opcw.org

ORGANISATION FOR THE
PROHIBITION OF CHEMICAL WEAPONS

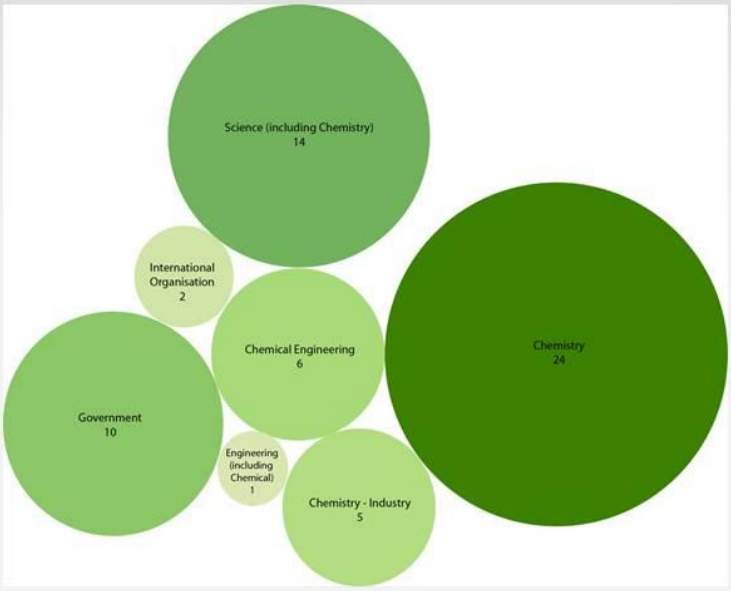
Working together for a world free of chemical weapons

Geographical Distribution of Codes



www.opcw.org

Type of Organisations



ORGANISATION FOR THE
PROHIBITION OF CHEMICAL WEAPONS

Working together for a world free of chemical weapons

Digging Deeper

- Need for a data-driven insight to:
  - Discover patterns in the existing codes
  - Identify areas for future development
- Used text mining and quantitative analysis tools (Provalis QDA Miner)
  - Organised and structured documents
  - Performed text mining and data analysis
  - Visualised results (Tableau, Adobe CC)

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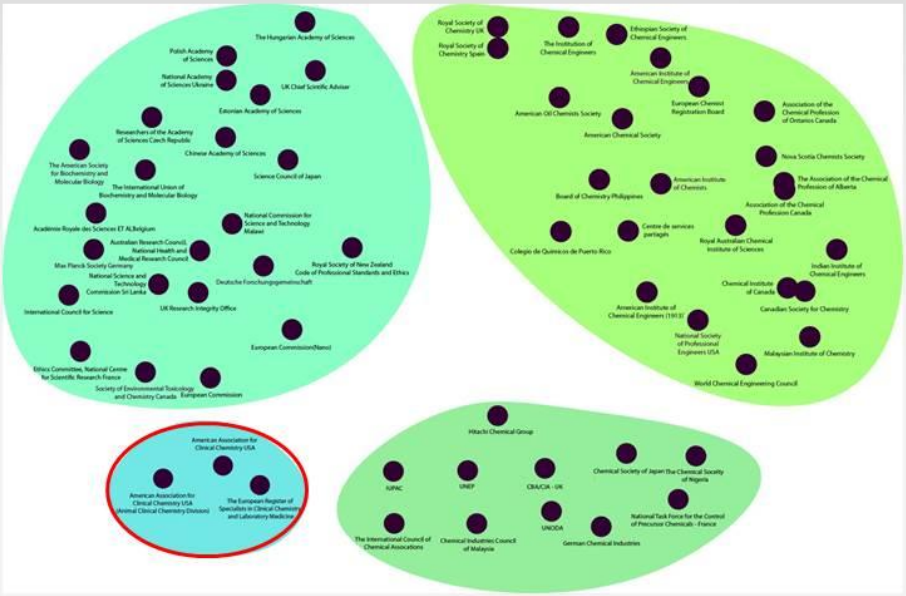
Emerging Patterns: Clusters



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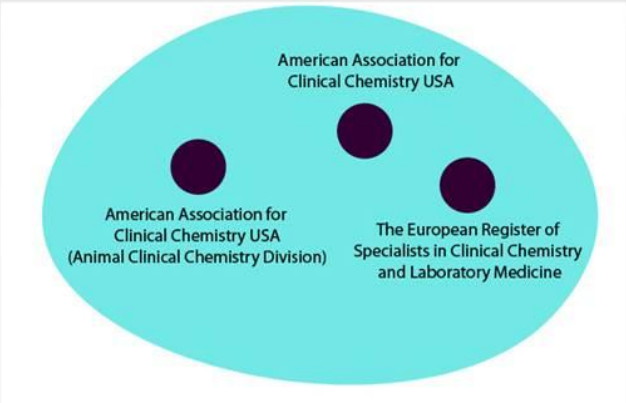
Emerging Patterns: Clusters



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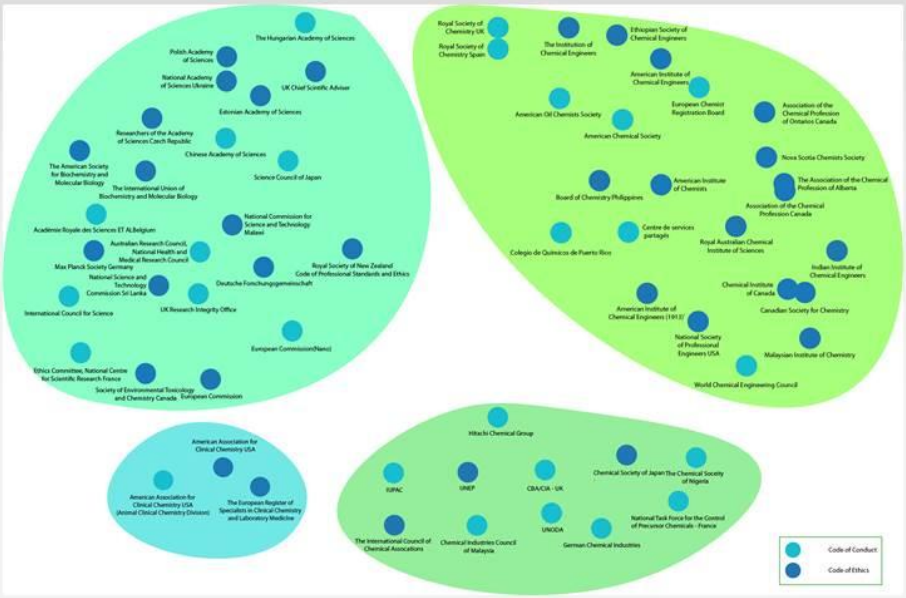
Emerging Patterns: Ethics or Conduct?



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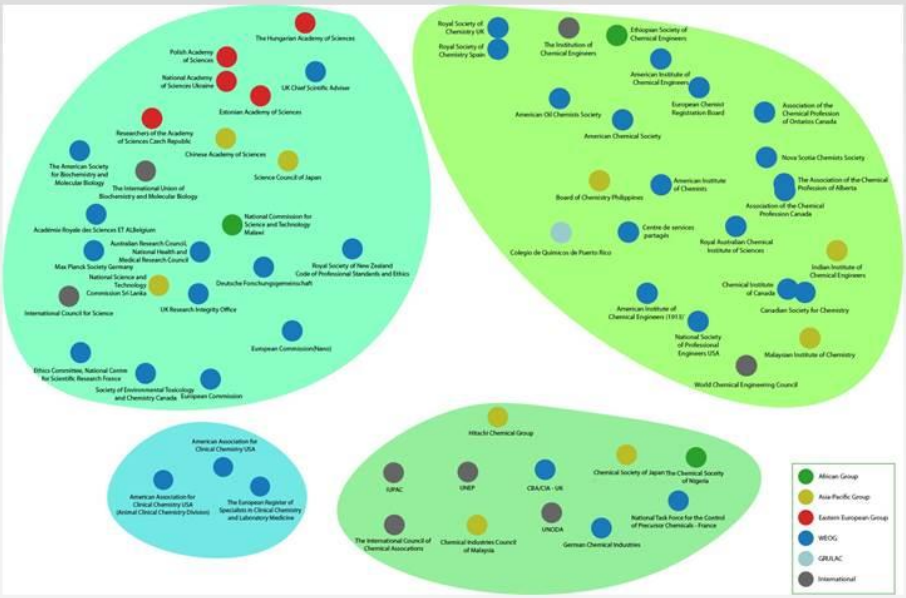
Emerging Patterns: Regions



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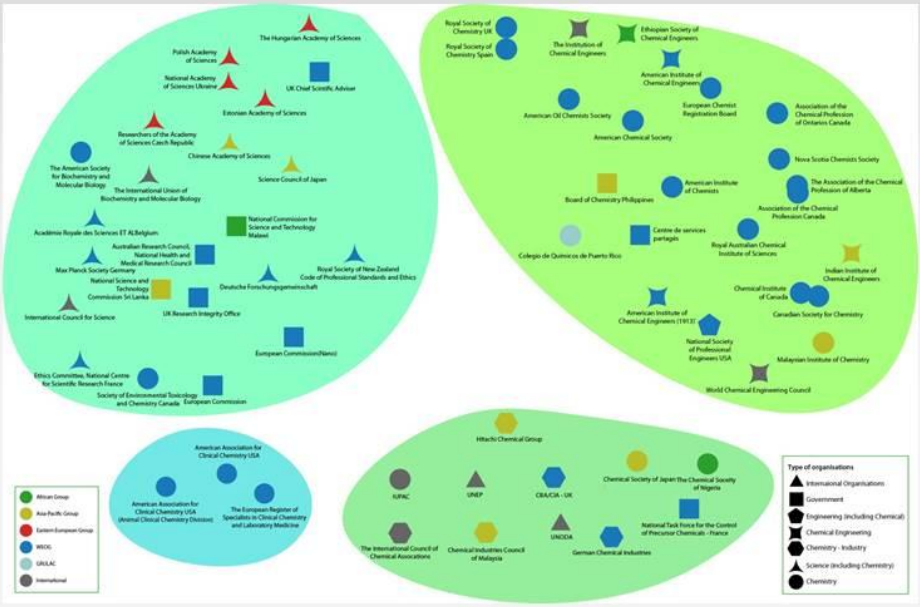
Emerging Patterns: Organisations



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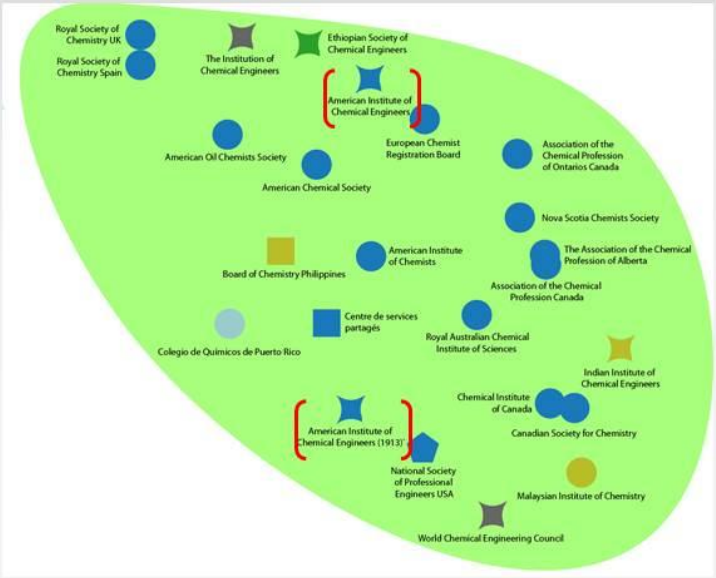

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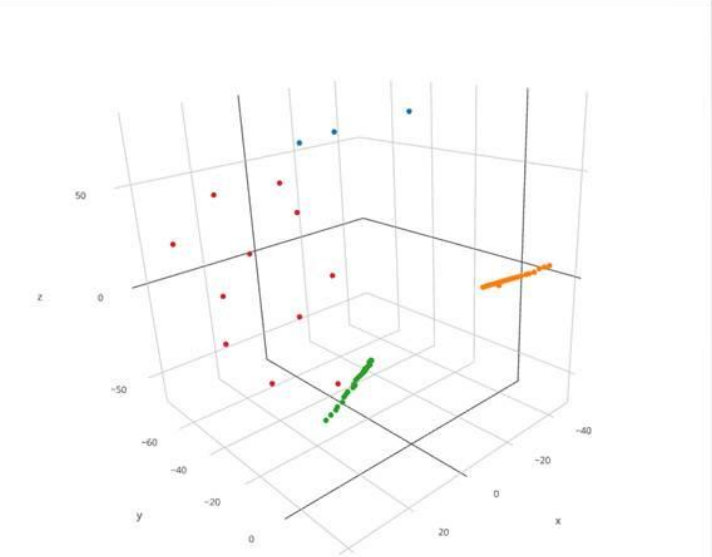
3D View of Clusters



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Content Analysis

- A list of keywords was created.
- Keywords were analysed to:
  - Look at occurrence in the documents
  - Determine the context
  - Examine which keywords are emphasised

Keywords:
CWC
Chemical Weapons Convention
OPCW
BWC
Biological Weapons Convention
WMD
Weapons of Mass Destruction
Dual use
Multiple use
Safety
Security

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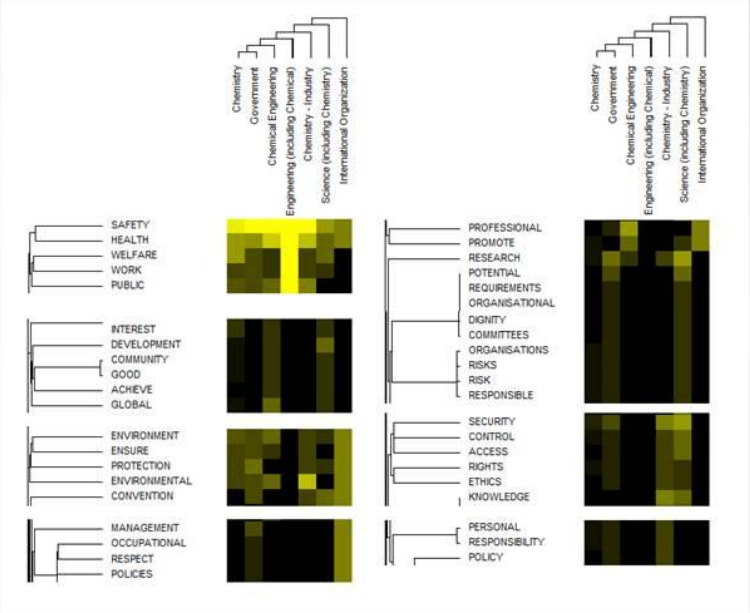
Keywords Heatmap

Chemistry	24
Government	10
Chemical Engineering	6
Engineering (incl. Chem.)	1
Chemistry - Industry	5
Science (incl. Chemistry)	14
International Organisations	2



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Conclusions

- The most distinctive attribute of the codes in our data set is the type of organisation.
- Organisations with similar purposes have similar codes independent of region, and type of document.
- Industry and international organisations are more diverse than national and regional scientific organisations.
- The keyword emphasis of the codes may help to inform drafting of new codes to reach the intended stakeholders.
- The analysis can be expanded with more documents.

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Special thanks to

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Johannes Niemeier

Wesam Alwan

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Presentation 6: Codes and responsible science: Experiences and lessons learned from the BWC

Codes and responsible science: Experiences and lessons learned from the BWC

Jo L. Husbands
Board on Life Sciences
The U.S. National Academy of Sciences

The views presented here are derived from work by the NAS and its constituent bodies but are those of the author alone and do not necessarily represent conclusions or positions of the NAS.

Introduction

Goal

To convey:

- Three lessons learned from the experience of the BWC's 2005 work on codes of conduct for scientists
- Two reflections from a decade of additional experience with efforts to engage life scientists

Background

Codes come in different sizes

- ***Aspirational codes*** (often designated as 'codes of ethics') set out ideals that practitioners should uphold, such as standards of research integrity, honesty, or objectivity. …
- **Educational/Advisory codes** (often designated as 'codes of conduct') would go further than merely setting aspirations by providing guidelines suggesting how to act appropriately. …
- **Enforceable codes** (often designated as 'codes of practice') seek to further codify what is regarded as acceptable behaviour. Rather than inspiring or educating in the hopes of securing certain outcomes, enforceable codes are embedded within wider systems of professional or legal regulation.

Source: Rappert (2004)

Background

- Since 2003, BWC has divided its annual work between review conference into a Meeting of Experts and a Meeting of States Parties
- Topics for the Meetings of Experts selected by States Parties
- In 2005 the meeting "convened to discuss, and promote common understanding and effective action on 'the content, promulgation, and adoption of codes of conduct for scientists'"
- In addition to regular participants, 23 scientific, professional, academic and industry bodies participated in informal exchanges in the open sessions as guests of the meeting

Lesson #1: Power of the event

- Provided a focal point for engaging and promoting action by scientists and science organizations
- Had direct effects: IAP Statement and two union codes were inspired by the Meeting of Experts

Example: IAP

- IAP–The Global Network of Science Academies created a Biosecurity Working Group in 2004
  - Members included national academies of China, Cuba, The Netherlands, Nigeria, the UK, and the US
- One of its primary purposes was to prepare a contribution for the 2005 BWC meeting

Example: IUBMB

Until 2005 IUBMB [International Union of Biochemistry and Molecular Biology] had no official code of ethics. The idea that such a code could be useful came from a meeting in Geneva in which I participated on behalf of IUBMB. … As the Chair of this meeting, John Freeman stated it as important that such meetings include the voice of scientists themselves. Listening to the meeting convinced me that IUBMB should develop an IUBMB Code of Ethics. A special committee … undertook this task. The draft code was sent to biochemists and molecular biologists from around the world who were asked to comment. The code, which covers ethical conduct of scientists at different levels is posted on the IUBMB website.

Source: Mary Osborn, IUBMB Presidential address (2005)

Lesson #2: Different roles at different levels

- IAP began with the idea of creating a code
- Eventually produced a set of principles all codes should address
- Decided actual codes better developed closer to where they will be applied

Lesson #3: Consultation matters

- Provides opportunity to
  - gain acceptance and support for the eventual product
  - discover issues that need to be addressed (or cannot be tackled)
  - begin dissemination process
- Example: Multiple consultations led IAP to shift from code to set of principles

Reflection #1: Producing a code is just the first step

- Key issues are ownership and "uptake": How does one promote the adoption and genuine use of codes?
- Implications for who develops codes and how (see Lessons #1-3)
- Essential role of dissemination
  - Commitment
  - Resources
  - Time

Example

Disseminating a code of conduct is not simply a process of distributing the code to the affected parties; it is also a process of ensuring that the code will be a "living" document and, as such, a vital force in shaping the day scientists in a given context. To achieve this aim, the following points should be considered:

- To make a code effective, strong institutional commitment is needed. This entails that sufficient resources would need to be allocated for developing and disseminating the code.
- A successful code also depends on a strong commitment by individuals who undertake the responsibility for "championing" the code and for disseminating it throughout the institution. Institutions should identify such individuals.
- Allocation of time for discussing the code is required. Multiple existing venues can be used, for example, student orientation sessions, faculty meetings, lab meetings, RCR [Responsible Conduct of Research] courses, conferences and workshops, etc.

Source: National Science Advisory Board for Biosecurity (2012)

Reflection #2: Codes alone are not enough

- Codes should be seen as part of a broader strategy of engagement and education.
- Education needs to come first or in parallel; codes without basic awareness lack context or meaning.
  - But codes can also be useful tools for education and engagement
  - Especially if people have some role in creating or reviewing them.
- In this sense OPCW and the CWC are in a better position than the BWC because the TWG report provides the basis for a strategic approach to codes.

Key TWG Recommendations (1)

- Education and outreach with respect to the responsible use of science, particularly as it is relevant to the Chemical Weapons Convention, should remain a core activity of the OPCW, so as to achieve and maintain a world free of chemical weapons
- To enhance the impact of the work on education and outreach the Technical Secretariat and National Authorities should reach out to national ministries of education and to the scientific networks of national academies at the regional and global level

Key TWG Recommendations (2)

- An ongoing expert advisory group on education and outreach with respect to the responsible use of science, particularly as it is relevant to the CWC, should be established to help OPCW fulfill its mandate for education and outreach
- The core mandate for the expert advisory group should be:
  - To advise the Director-General on matters related to education and outreach, which are embedded in each of the core activities of OPCW;
  - To advise and support the education and outreach work carried out by OPCW staff members, National Authorities and States Parties, and activities at regional and national levels;
  - To maintain a portfolio of education and outreach activities and projects, to validate material that has been developed and to advise on how to make it accessible to target audiences;
  - To monitor global education and outreach activities related to responsible uses of science, particularly as relevant to the CWC; and
  - To develop informal and formal partnerships with international organizations and other stakeholders working in areas related to OPCW's education and outreach mandate.

THANK YOU!

Jo Husbands
jhusband@nas.edu

Note: All NAS reports are available free as pdfs at www.nap.edu

Sources

- Material from the 2005 BWC meetings may be found at http://unog.ch/80256EE600585943/(httpPages)/DA292636AE31F1CBC125718600361E55?OpenDocument.
- The quotation is taken from the "Report of the President" in the IUBMB *Annual Report 2005* (no page number), available at http://www.iubmb.org/index.php?eID=tx_nawsecuredl&u=0&file=uploads/media/Annual_Report_2005.pdf&t=1421687975&hash=897d2062ac44cd5a858e80061a6ecd784efd97b1.
- The IUBMB code may be found at http://www.iubmb.org/index.php?id=155; among the "Obligations to the Public" for members is that "They will not engage knowingly in research that is intended for the production of agents of biological warfare or bioterrorism, nor promote such agents."
- The IUMS code of ethics is discussed and available at http://www.iums.org/index.php/code-of-ethics.
- US National Science Advisory Board on Biosecurity (NSABB). 2012. *Enhancing Responsible Science.* Available at http://oba.od.nih.gov/oba/biosecurity/documents/combined_Codes_PDFs.pdf.
- Rappert, Brian, 2004, *Towards a Life Sciences Code: Countering the Threats from Biological Weapons*, Bradford Briefing Papers (2nd Series), No. 13, Bradford Disarmament Research Centre, University of Bradford; https://bradscholars.brad.ac.uk/bitstream/handle/10454/795/BP_13_2ndseries.pdf?sequence=1.

Presentation 7: Responsible Care®

Responsible Care®

CWC Workshop drafting ethical guidelines

The Hague, 11 March 2015

Sjoerd Looijs,
Cefic Responsible Care Manager

Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

cefic

What is Responsible Care?

Ethical programme

- to continuously improve Health, Safety and Environmental performance of processes and products
- Launched in 1985 in Canada

Commitment that seeks to build confidence and trust

"Our commitment to sustainability"

Themes

- environment, process safety, occupational health, distribution, product stewardship, communication, security

2

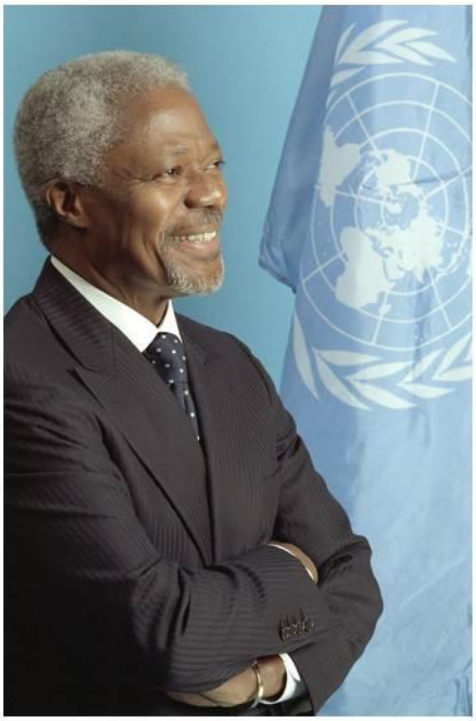
Responsible Care "basics"

- Global Initiative for the continuous improvement in the chemical industry
- Involves everybody from top management to plant worker

- Core Principles:
  1. Improve the safety, health and environmental performance
  2. Use resources efficiently and minimise waste
  3. Report openly on achievements and difficulties
  4. Engage in dialogue with stakeholders, in particular with the local communities who live and work around our sites
  5. Cooperate with regulators, set standards that go beyond regulation
  6. Provide help and advice to foster the responsible management of chemicals throughout the value chain

3

Launch of the Responsible Care Global Charter



- UN Secretary General Kofi Annan gave his personal endorsement citing the Global Charter as

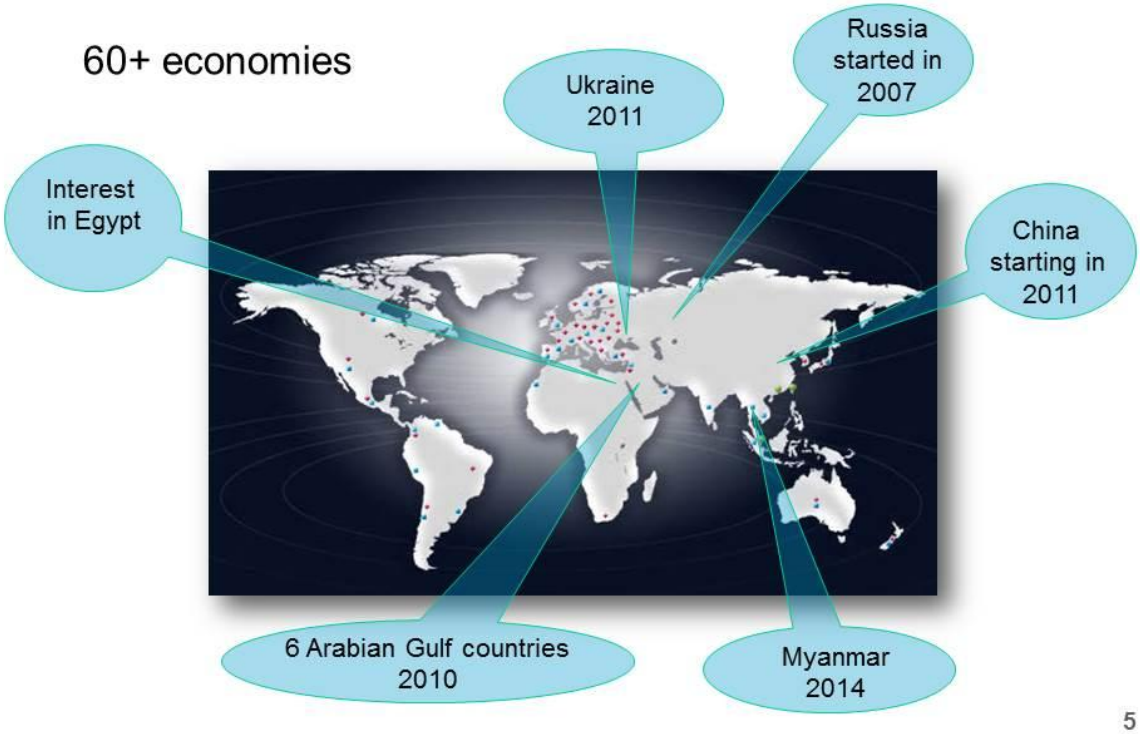
  "An inspiring model of self-regulation that other industries should consider following."

- Emphasis on consumer concerns, value chains, safe chemicals management
- Updated again in 2014

2006 RC programme update

4

Responsible Care worldwide



5

Global Stakeholder interactions - Outreach

global

OPCW (RC chemical safety & security)

UNEP chemicals in products (RC product stewardship)

IAEA (RC distribution)

sector specific

ZDHC initiative of apparel and footwear brands, "Roadmap to Zero"
(Product Stewardship/Value Chain Outreach)

6

In RC employee is integral part of the game

sector ↓ company ↓ CEO ↓ employee

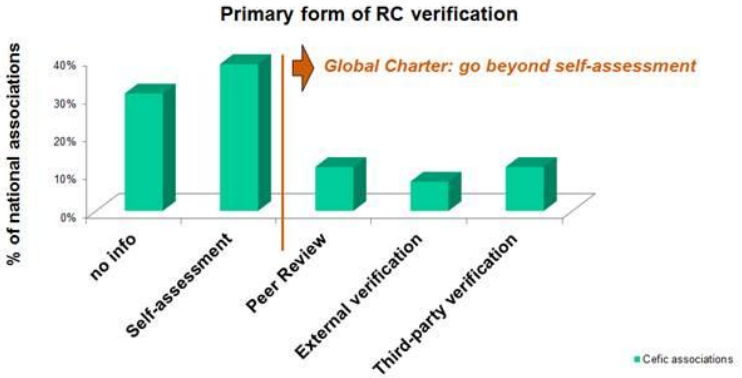
- **Global** and **voluntary** industry initiative
- **National** Associations are the formal **owners** of the RC programme
- **Companies endorse** and **CEOs commit** (functional and personal commitment)
  - **Internal**: employees actively contribute to RC and act/behave accordingly, e.g. "green teams"
  - **External**: open days, community awareness panels, support local communities, stakeholder dialogues

Discuss: does industry need an additional employee "ethics"?

7

RC governance in National Associations

- **From self-evaluation to 3rd party external verification or certification in NAs**



Discuss: do we need to "verify" the sector, company, programme or the employee in order to gain trust in society?

8

Overall discussion

Does industry need an additional "ethics" for employees while they are already committed to RC?

- employee ambiguity, serving two ethical masters
- how and what to verify to gain trust in society, legal consequences
- not develop a new storyline, but stick to existing "RC-ethics", building upon 25 years of experience
- through RC chemical industry is already an ardent supporter of the CWC (part of commitment)

9