Education for Peace: New Pathways for Securing Chemical Disarmament

22-23 September 2014

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*** All the documents presented in this booklet can be accessed online on the address below:**

http://www.opcw.org/education-and-outreach-conference

Foreword

As we fast approach the long cherished goal of a world free of chemical weapons, we need to ensure our disarmament gains remain permanent. Education and outreach is a crucial building block to this end.

In September 2014, the Secretariat organised an international conference, "Education for Peace: New Pathways for Securing Chemical Disarmament". The conference not only drew on the OPCW's experience in education and outreach, but also that of other institutions.

This conference was the first of its kind. It brought together some 120 experts from government, science, industry, academia, and civil society from more than 40 countries to share information and exchange best practices on how to promote responsible science in our industry, universities and schools. This included showcasing interactive tools and materials, as well as strategies for engaging teachers and students alike.

The conference amply demonstrated the value of mainstreaming education and outreach as a core activity of the OPCW. This is in line with a key recommendation made at that time by the report of the Temporary Working Group on Education and Outreach.

This booklet draws together the valuable insights from conference participants, as well as an outcomes document that summarises the discussions that took place. I hope that it can serve as a valuable reference document, and also as a baseline for further enhancing our future collective endeavours to help to continue to nurture a culture of science working always in the service of peace.

Ahmet Üzümcü
Director-General OPCW

Agenda

Objectives

The event will provide a forum for wide-ranging discussion and exchanges of ideas and best practices on ways of raising awareness of disarmament and non-proliferation issues, especially in educational institutions. This will include demonstrations of materials and tools in various media formats. The objective will be to identify new, approaches and synergies arising from discussion between different representative groups to better inform future efforts in this area.

Themes

Proposed themes are broad-ranging in an effort to go beyond previous OPCW activities, which have been to date largely focused on science and technology. With the aim of drawing in diverse experience and perspectives through mixed participation in panel discussions, the themes address the following:

- Innovative approaches to teaching and awareness-raising
- Information exchange on national initiatives
- Development of educational tools and materials
- Sharing experiences between international organisations
- Embedding relevant topics in educational curricula
- Developing exhibition packages to promote the Chemical Weapons Convention
- Strategies for reaching high school students
- Promoting ethical standards for scientists
- Utility of induction courses in science faculties
- Challenges and opportunities related to engaging foreign students
- Intangible technology transfer challenges
- New avenues for using social networking tools
- Industry engagement of research institutes

Format

The event will be conducted in both plenary and interactive panel-discussion breakout groups, working along the lines of the above themes. Panellists will include representatives from national governments, members of the Scientific Advisory Board's (SAB) Temporary Working Group (TWG) on Education and Outreach, international organisations, academic and research institutions, and other relevant experts.
All activities will be conducted in English.

Monday 22 September, 2014		
09:30 - 10:00	**Ieper Room**	**Plenary Session**
		Opening remarks by the OPCW Director-General Keynote speech by Prof. Joris Voorhoeve
10:10 - 11:00	**Ieper Room**	**Presentation and screening of "Fires: A Teacher's Mission"**
11:00 - 11:20		**Coffee Break**
11:20 - 12:30	**Ieper Room**	**Where Are We Now? National, Regional and International Activities by the OPCW and Member States**
		Presentations by the National Authority of Argentina and by the Technical Secretariat
12:30 -14:00		**Lunch**
14:00-15:30		**Breakout session 1: Creating Synergies Between Stakeholders**
	Ooms Room 1	**Panel 1: Working with Multiple Stakeholders: Collaboration with Universities and Academic Networks** Alejandra Suarez (Moderator): Seema Gahlaut (CITS), Liz Dallas (Georgia Tech), Maurizio Martellini (Landau Network), Matthew Moran (KCL)
	Room 4.31	**Panel 2: International Organisations: Sharing Experience and Best Practices**Dina Esfandiary (Moderator): John Ennis (UNODA), James Revill (HSP), Dana Perkins (Former 1540 expert), Tibor Toth
	Ooms Room 2	**Panel 3: Professional Training and Capacity Development: Educating the Next Generation of Officials and Experts**TBC (Moderator): Bart Hogenveen (Clingendael), Tanya Mehra (Asser), Stephanie Meulenbelt (TNO),Giorgio Franceschini (PRIF)
15:30-16:00		**Coffee/tea break**
16:00 -17:30		**Breakout session 2: Crafting Messages That Work**
	Ooms Room 1	**Panel 4: Reaching Students and the Need for a Multidisciplinary Approach** Djafer Benachour (Moderator): Chretien Schouteten, Fiona Clark (IBO), Judi Sture (Bradford)
	Room 4.31	**Panel 5: Responsible Science: Ethical Standards for Scientists** Deepti Choubey (Moderator): Jo Husbands (NAS), Leiv Sydnes (IUPAC), Scott Bohle (McGill)

Tuesday 23 September, 2014		
09:30 - 11:00		**Breakout session 3: Using Media That Work**
	Ooms Room 1	**Panel 7: Developing the Right Educational Tools and Material** Jan Apotheker (Moderator): Ludo Juurlink (Leiden), Peter Mahaffy (King's), Catherine Rhodes (Manchester), Knut Hjelleset
	Ooms Room 2	**Panel 8: Innovative Techniques: Active Learning, Role Plays, Simulations and Other Tools** Jo Husbands (Moderator): Alastair Hay (Leeds), Fran Laughlin (THIMUN Foundation), Tatyana Novossiolova (Bradford)
	Ieper Room	**Panel 9: Broadening the Audience: Working with Science and Peace Centres and Museums** Maarten Okkersen (Moderator): Friso Visser (Museon), Elizabeth Lewis (Tehran Peace Museum), Toril Rokseth (Nobel Peace Center)
11:00-11:20		**Coffee/tea break**
11:20-12:30		**Breakout session 4: Sustaining the Momentum**
	Ieper Room	**Panel 10: Maximising Events: The Nobel Peace Prize and the Centenary of the First Use of Chemical Weapons** Maureen Reed (Moderator): Jessica Angstreich (Nobel Peace Center), Filip DeHegheer (Ieper City) and Dominiek Dendooven (In Flanders Fields Museum), Luc Ferrier (Forgotten Heroes)
	Ooms Room 1	**Panel 11: Building and Sustaining Lasting Collaborations Between Multiple Stakeholders** Kirsten Vignard (Moderator): Elisande Nexon (FRS), Constanza Mazzina, Jonathan Forman (OPCW)
	Ooms Room 2	**Panel 12: The National Experience: Programme and Challenges** Burkina Faso, Colombia, Hungary, Sri Lanka
12:40-13:45		**Lunch**
13:45-14:15	**Ieper Room**	**Reading of an extract from "The Chemist" by Chrétien Schouteten**
14:30-16:00	**Ieper Room**	**Final plenary session (Ieper Room)**
		Reports from breakout sessions 1-4 Closing remarks by the OPCWv Director-General
16:00-18:00		**Tour of "Give Peace a Chance" Exihibition, Museon (optional)**

Presentations, Speeches, and Talks by Speakers

Opening remarks by Director-General

Education for Peace: New Pathways for Securing Chemical Disarmament
Director-General OPCW, Ahmet Üzümcü

22 September 2014

Excellencies,
Prof. Voorhoeve,
Distinguished guests,
Ladies and gentlemen,

It is my pleasure and honour to welcome you to this conference, "Education for Peace: New Pathways for Securing Chemical Disarmament."

Many of you are very familiar with our Organisation, but I would like to particularly acknowledge those of you who are here for the first time.

I hope that the information, exhibits and activities that we have laid on for you over the next two days mean that you leave here with a much greater awareness of the OPCW.

As Director-General of the OPCW, I have long been a staunch advocate for enhancing our disarmament efforts through more effective education and outreach.

And I have sought to ensure that the OPCW is an organisation that is responsive to, and engages in, new ideas that make our mission more effective.

Because we have an ambitious agenda before us:

- not only to broaden our community of stakeholders,
- but to empower them – scientists, industry, policy-makers, civic society and students – to help us consign chemical weapons to history, forever.

Indeed, the ongoing effectiveness and achievements of the Chemical Weapons Convention will increasingly depend on our broader interactions in this vein.

This was strongly emphasised at the Third Review Conference in April last year, during which education and outreach featured in over a quarter of all statements during the General Debate.

A handful of States Parties have since then taken this message to heart in developing new initiatives.

I especially commend Argentina for hosting the first regional meeting on education in the responsible use of knowledge on dual use chemicals in Buenos Aires in April specifically devoted to education and outreach, which I had the pleasure of addressing.

It is for these reasons that the OPCW is hosting this important meeting here at our headquarters in The Hague – the first ever on this important subject.

We are doing so at a particularly important juncture in the fight against chemical weapons.

As we fast approach the long cherished goal of global chemical disarmament, we need to position ourselves to ensure that we can make our gains permanent.

We only need to look to our recent past and what lies ahead to see why.

For most of our seventeen-year history, the OPCW has hardly been a household name.Indeed, one media commentator not so long ago referred to us as a "sleepy backwater of disarmament."

Our preference had always been to work behind the scenes with quiet determination in overseeing the destruction of the world's chemical arsenals.

This changed dramatically last year with the award to the OPCW of the Nobel Peace Prize and the mission to eliminate Syria's chemical weapons programme.

Our current high profile, together with intense international scrutiny of our work, makes it more important than ever for us to be able to explain our mission more clearly to more people.

Certainly, there is a good story to tell.

Less than one year since the OPCW's Executive Council adopted its historic decision, 97% of Syria's 1,300-tonne chemical weapons stockpile has been destroyed.

This is, of course, part of a much bigger story.

86% of declared chemical weapons have so far been destroyed across the globe, and the Convention is subscribed to by 190 States.

Clearly, global chemical disarmament has recorded remarkable successes.
But this is not the end of this story – far from it.

We now need to harness renewed interest in chemical disarmament and ensure that it outlives the headlines to focus on what must come next.

This relates to the much harder, less publicly visible task of making sure chemical weapons never return.

It is my firm belief that education and outreach are crucial building blocks for establishing an effective and durable bulwark in this respect – ones to which we must keep adding.

Let me tell you why I believe this to be the case by tracing the OPCW's experience in engaging existing constituencies and creating new ones.

As a science-based treaty, the Chemical Weapons Convention, and those of us who implement it, work on the basis of a self-evident principle – namely, that scientific discovery excites.

We are truly fortunate to be living in an era of unprecedented scientific advances and technological innovation.

Technologies once confined to the realm of science fiction are today a reality. Breakthroughs and new discoveries are continuing to capture our imagination and find their way into our daily lives.

From the outset of negotiations in the 1970s, scientists played a seminal role in laying the foundations of what was to become the Chemical Weapons Convention.

And they continue to do so because of the inherently dual-use nature of the materials and technologies we deal with.

Their services are vital for ensuring that the excitement, which scientific and technological discovery generates, serves the cause of peace, rather than of war.

This means alerting us to discoveries that could challenge implementation of the Convention – as well as those that could enhance it.

To this end, the OPCW has been fortunate in being able to source high-quality advice and expertise from its subsidiary body, the Scientific Advisory Board, which is well known to most of you.

But the Board's work has also alerted us to the need for more broadly based communication – using our partner scientists to help us communicate to more scientists.

This was the basis for creating the Temporary Working Group on Education and Outreach, whose members have generated many of the ideas that will feed into our discussions here over the next two days.

Let me explain what I mean by how we need to broaden our engagement in this regard.

As I suggested earlier, the OPCW's ongoing success will increasingly be measured not by weapons destroyed, but by weapons not re-built.

With 15,000 new chemicals added to the chemical abstracts data base every day, we cannot, of course, hope to control every new chemical.

Nor should we try to.

Collaboration must now become the new form of control that underpins non-proliferation efforts.

This means more than ensuring that policy-makers and scientists understand each other in devising mechanisms for preventing the proliferation of illegal weapons.

It also means a bottom-up approach in reaching out to the emerging and future generations of educators and scientists to shape their worldview.

We need to ensure that they appreciate the broader context in which they practise their research, and how they in turn mentor their students.

The renowned biochemist and science-fiction author Isaac Asimov once said that "we need to deal with the situation in which science gathers knowledge faster than society gathers wisdom."

It is for this reason that the OPCW has worked hard to enhance awareness of the often fine line between beneficial and harmful applications in chemistry through education programmes and outreach to academia.

In short, we want to strengthen efforts towards fostering a culture of responsible science.

This will ensure that current and future generations of scientists understand – and respect – the impact that their work can have on security.

Our aim is not only to nurture more ethical scientists, but also more capable and rounded ones – scientists who have a practical understanding of the broader strategic context of their research.

I have personally sought to deliver such a message at forums that have not traditionally attracted experts, including the EuroScience Open Forum and ECSITE – an annual gathering of science museum executives and educators.

And Technical Secretariat staff have engaged ever widening circles in the scientific establishment, universities and even high schools with this same purpose in mind.

Our central message is this.

Responsible science – science that at all times constrains its potential to harm and proactively engages on global issues – must be an instinctive professional trait for all of its practitioners around the world.

As Albert Einstein put it, scientists have a moral responsibility to humanity.

This is why the OPCW puts great value on engaging scientists around the world through our extensive programme of co-operative activities.

These include participation in scientific conferences, fellowship programmes and training in best practices to safely manage chemicals in a complex industrial environment.

We need to ensure that bright young people share our excitement about the potential of science and the role they can play through better mentorship at the earliest possible stage.

I am sure that every person in this room remembers a teacher that made a difference in their lives, someone who showed them something about the world – or about themselves – that changed their lives.

It could be a school trip, or a lesson, that sparked a question that ignited a passion and ultimately may have propelled a career.

These sorts of interactions are key to how we are scoping our education and outreach endeavours.

To better capture the imaginations of scientists and students, we are moving rapidly towards the development of more dynamic, interactive vehicles for communicating our goals.

We have rolled out a host of new materials and tools designed specifically to assist our education and outreach endeavours.

Much of the inspiration behind them is drawn from our interaction with other international organisations, as well as observing how science centres reach a broad public with innovative exhibitions using cutting-edge multi-media technology and participative design.

The “Give Peace a Chance Exhibition” at the Museon, a few minutes walk from here, is a case in point. You will have the opportunity to visit the exhibition at the end of the conference tomorrow.

Students, including many of you here today, also have an especially important role to play in this respect as commentators and facilitators for OPCW activities, as well as “messengers” on behalf of the OPCW.

Indeed, some of you have done so, or are doing so, as interns at the OPCW. On that note, I would like to thank our current interns for their hard work in supporting this current conference.

Today, I am pleased to announce to you the launch of the OPCW’s web-based education resources. My colleagues will describe the new initiative in more detail later this morning, but simply put the OPCW is now making available a range of educational tools and materials developed over recent months in collaboration with our external partners.

The tools available range from stimulating videos, a lesson plan to accompany one of the videos and a student workbook aimed at high-school chemistry students.

I would encourage you all to look at this new resource, use it if you are involved in teaching and share it widely with your students and colleagues.

Many of these tools, and additional tailor-made ones, also serve a crucial purpose in assisting our Member States better implement their obligations under the Chemical Weapons Convention.
For the scientific establishment is far from being the only constituency we need to engage in a more multilayered way.

Getting the six countries still outside the Chemical Weapons Convention to join as soon as possible remains a top priority.

But we have not lost sight of the importance of achieving common standards and practices in implementation across our entire membership.

Many of our States Parties still need a lot of help, and it is with this in mind that we have developed a range of practical tools.

These include checklists for legislators, model laws and E-Learning Tools.

In a few weeks we will be launching the Legislative Assistance Support Tool (LAST), an online tool which will help States Parties to draft their implementing legislation at the click of a button.

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But we should not overlook those potential advocates for chemical disarmament and non-proliferation who reside outside the communities I have so far mentioned.

A daunting challenge before us is how to engage the broader public over the longer term as we focus attention on post-destruction priorities.

It is with this in mind that we conceived the Fires Project – a series of films related to war and disarmament.
The intention behind these films is not to convey information about what it is that we do and how we do it, but

rather, to affect a personal experience of chemical weapons in their viewers.

You will shortly have the opportunity to view the first of the two films so far completed, “A Teacher’s Mission.”

It is especially relevant to this event, since it takes up the idea of teaching responsible science in a high school setting.
In fact, the teacher who inspired the film, and who is its main subject, Chrétien Schouteten, is here with us today and will be sharing his insights in the course of our discussions.

The second Fires film, “Ich liebe Dich,” is even more powerful.

It features the experience of a survivor of the chemical attack on Halabja in March 1988, Kayvan, and his life in Vienna, which since his medical treatment there almost thirty years ago has been his home.

The idea that any of us could encounter Kai over a game of table football in a prosperous western city is a very powerful one.

It makes us think twice about how chemical weapons have affected human lives as we can also see in modern-day Iran and, more recently still, in Syria as well.

Finally, I would mention here the need for more effective use of real-time communication tools as well as expanding our activity and visibility in social media.

We have seen participation in our social media networks increase exponentially over the course of the Syria mission, with ever more connections being made between disarmament and other global challenges that serve to challenge conventional wisdom.

We still have some way to go in focusing attention on our postdestruction mission in a more strategic way.

But we have made a strong start in the wake of the upswing of hits on our website and the number of followers we have on Facebook and Twitter.

This strong start has been accelerated by our Digital Diplomacy Action Plan, a framework to increase our reach over the longer term through digital platforms, launched in January this year.

From this brief outline, I have sought to give you a sense of the new messages that we are crafting, with new media, and of the new constituencies we are cultivating.

These range from helping our members better implement the Convention, to building the foundations for traditions of responsible science,

from teaching students that chemistry is about more than lab work, to sensitising the general public to the importance of eliminating the scourge of chemical weapons.

Clearly, there is more that we can be doing, and it is for this purpose that we have convened this conference.

We need not only to explore new techniques, but also to develop capacity to absorb feedback from our target audiences, as well as work with them to create new ones.vAnd we need to learn from each other as we do so.

Our imaginations should draw inspiration from the vital contribution that disarmament is making to durable peace.
An important historical marker for focusing our efforts will be the centenary of the first large-scale use of

chemical weapons in Ieper in Belgium on 22 April 2015.

We will be making a special effort to commemorate this important date in a way that informs our efforts to create in the present a future that learns from the past.

This conference, bringing together students and civil society, politicians and professors from across the world is the perfect opportunity for us to broaden our community and exchange ideas on how we can push the boundaries of learning

not only to convey information as effectively as possible,

but also to directly engage people from all walks of life in what we do, why we do it, and what this means for all of us.

And, most importantly, to make them active partners in our collective undertaking.

I have no doubt that the expertise gathered here over the next two days – during our panels, as well as in less formal exchanges – will greatly enhance efforts in this area.

Let us exercise care and judgement to make scientific discoveries a liberating, civilising force, not a leap into conflict and carnage.

Above all, let us educate and empower through participation and interaction.

With that, let me welcome you, once again, to the OPCW.

I wish you frank and productive discussions and hope that they serve to make our common endeavour ever more successful.

Thank you.

Sergio Pérez Gunella: Argentine National Project on Education and Safe use of Chemical Science and Technologies

Argentine National Project on Education on the Responsible and Safe Use of Chemical Science and Technologies

MIN. SERGIO PÉREZ GUNELLA
EXECUTIVE CHAIRMAN
ARGENTINE NATIONAL AUTHORITY

Presidencia de la Nación | Ministerio de Educación | Secretaría de Políticas Universitarias

CONTENTS:

- Outreach and Detection of Declarable Activities
- Identified Challenges
- Implemented Actions
- Development of the Project
- First Regional Meeting on Education in the Responsible Use of Knowledge on Dual Use Chemicals

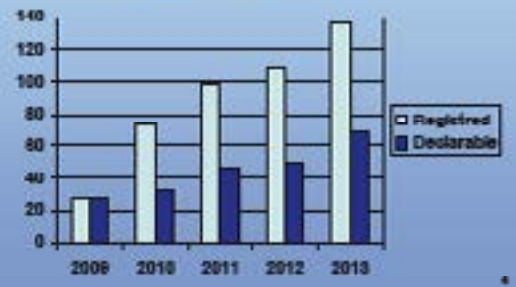
OUTREACH AND DETECTION OF DECLARABLE ACTIVITIES

In 2010 the Argentine National Authority launched a number of activities as part of the next stage in the implementation of the obligations of the CWC:

- Preparation and distribution of informative material for the companies and industry associations;
- Improvement of the declaration forms and electronic formating of the National Authority Registry.

This resulted in:

- 485% raise of registered industries
- 210% raise of declarable industries



IDENTIFIED CHALLENGES

- Lack of understanding and low level of awareness of CWC obligations and the national legislation
  ↳Need to work in the education of professionals
- Expansion of the Argentine chemical industry and the technologies it uses
  ↳Need to promote a culture on the responsible use of chemical knowledge

IMPLEMENTED ACTIONS

- Reach out to the Ministry of Education –Secretary of University Policies (SUP)- to propose establishing a working group on Education and Outreach.
- Evaluation of the Argentine federal and autonomous university system.
- Involvement of associations of deans and national councils of public and private universities.

Careers with degrees in: Chemistry, Chemical Engineering, Biochemistry, Pharmacy, Environmental and Industrial Safety.

DEVELOPMENT OF THE NATIONAL PROJECT

Decision to develop a Project to include contents related to the CWC, the national legislation and the responsible use of chemical knowledge and technology in university education.

Through:

- Certification process of the relevant careers,
- Specific financial support of the SUP,
- Using alternative teaching tools designed by the Project.

7

NATIONAL MEETING & SIGNATURE OF AN AGREEMENT

Buenos Aires, May 2013

The NA and the SUP convened a national meeting with public and private academic institutions to launch the Project.

The Ministry of Foreign Affairs (NA) and the Ministry of Education (SUP) signed a strategic partnership agreement setting goals & actions of the Project.

Buenos Aires, August 2013

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INITIATIVES

The Agreement establishes four main initiatives.

Specific universities were appointed as coordinators of each activity to create "ownership".

- Net of Networks
- "Train-the-Trainers" Programme
- Virtual Classroom
- Travelling Class

Also:

- Development of educational material
- Participation in workshops, seminars and relevant meetings

9

NET OF NETWORKS

Coordinated by the NA and SUP in order to centralize the networks created by different associations of deans and national councils.

Main Objective:

- Facilitate and institutionalize horizontal and vertical communication to share experiences.

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NET OF NETWORKS

COMPLETED ACTIONS	FUTURE ACTIONS
✓ Signature of the Agreement on August 2014: NA & Ministry of Education, CIN (Public Universities) ORUP (Private Universities) AUDEAS (Agricultural engineering) OIRCD (Biology) CONFEDI (Engineering) OUDCN (Exact & Natural Sciences) ECUAFyB (Pharmacy/Biochemistry) FOQFOLI (Chemistry)	➢ Meeting of the members and future members in november 2014 to define paths of action for 2015

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"TRAIN THE TRAINERS" PROGRAMME

Coordinated by the National University of Rosario and the Southern National University (Bahía Blanca)

Main Objective:

- Workshops to train professors in developing didactic classes to:
  - Consider the risks of the misuse of chemicals and promote safety and chemical protection.
  - Develop skills and abilities in relation to the peaceful uses of chemistry.
  - Raise awareness about the CWC and national legislation.

12

First Workshop

"Chemistry for Peace: Ethical Teaching and the Professional Responsability of Educators"

Rosario, June 2013

- Co-organized between the National University of Rosario, the NA, the SPU and the OPCW
- Speakers: Prof. Hay, Mr. Mogi and Prof. Benachour (OPCW TWG on E&O); Mr. Feakes (OPCW TS); Prof. Spanevello (former member of OPCW SAB).

TRAIN THE TRAINERS

COMPLETED ACTIONS	FUTURE ACTIONS
✓ First Workshop in the National University of Rosario, June 2013.	➢ Second Workshop to be held at the Southern National University, 20-21 November 2014. ➢ Third Workshop to be held at the National University of Rosario, May 2015.

VIRTUAL CLASROOM

Coordinated by the Kennedy University with the National University of Lomas de Zamora

- Contents defined by the National Authority, the Ministry of Education and university representatives.
- It will be available to all participating universities, upon agreements.
- A pilot test was run during the 1st half of 2014 in courses of the graduate career in chemistry, with excellent results.

VIRTUAL CLASSROOM

COMPLETED ACTIONS	FUTURE ACTIONS
✓ Development of main contents. ✓ Development and implementation of the virtual classroom platform by the Kennedy University. ✓ Pilot test run during 1st half of 2014.	➢ Agreement between the Kennedy University and the National University of Lomas de Zamora to further develop the platform, pedagogic strategies and didactic materials.

TRAVELLING CLASS

Coordinated by the National University of Córdoba

Main Objectives:

- Train a group of professors in this field.
- Outreach to faculties where there is no educational tools or trained personnel yet,
- Identify particular training needs in clusters of universities in each region.

TRAVELLING CLASS

COMPLETED ACTIONS	FUTURE ACTIONS
✓ Establishment of a commitee of professors to develop the class. ✓ Work on the following topics: Science and Ethics, National Legislation; and Use of Mock Cases. ✓ Pilot experience on 22 August 2014 in Cordoba.	➢ Meeting of the Commitee to define the future implementation of the travelling class. In November 2014.

1st Regional Meeting on Education in the Responsible Use of Knowledge on Dual Use Chemicals

Buenos Aires, 7-9 April 2014

- Opening ceremony co-chaired by OPCW's DG,
- Attended by 42 members of NAs and academy experts from 22 countries of the region,
- Presentations were delivered by Argentina, Brazil, Cuba, Mexico, Uruguay,and representatives of the UN 1540 Committee, the SAB and the TS.

GENERAL CONCLUSIONS

- Raise awareness about the OPCW and CWC among society in general and professionals in the area of chemistry.
- Help NA better implement CWC obligations.
- Concern about the risks of misuse of chemistry, as well as the lack of knowledge about the CWC obligations, the national prohibitions, etc.
- Need of collaboration between the different stakeholders at different national levels, with the NA acting as conduits between them.

RECOMMENDATIONS FOR NAs

- Work with relevant stakeholders at the national level,
- Strengthen education on chemistry, its benefits and risks, at all educational levels, through campaigns and projects aimed at Universities, with specific contents and pedagogical approaches,
- Foster and promote the use of the educational tools and materials developed by the OPCW and IUPAC.
- Promote the establishment of regional or sub regional networks of universities,
- Build synergies in this field with other regional or multilateral institutions and mecnanisms (CELAC, SICA, etc.)

RECOMMENDATIONS FOR THE TS

- Facilitate similar regional meetings,
- Inclusion of Education and Outreach as a topic in regional NA meetings, and other relevant activities,
- Produce more Education and Outreach materials in all languages and to keep them updated,
- Create a special section of the OPCW website,
- Design a "model" for a national outreach event,
- Establish a program to organize regional and sub-regional training courses and workshops (train the trainers)

CONCLUSIONS

- Include education and outreach as a relevant component of the OPCW agenda with adequate funding for its implementation.
- Importance of working together with relevant stakeholders.
- The NAs together with the OPCW are in an unique position to channel efforts and generate new initiatives in this field.

THANK YOU

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Daniel Feakes: OPCW Education and Outreach Approach and Activities

OPCW education and outreach approach and activities

Daniel Feakes
Strategy and Policy Adviser
OPCW

Third CWC Review Conference, April 2013

"Determination to maintain the Convention's role as a bulwark against chemical weapons; to that end to promote, inter alia, outreach, capacity building, education and public diplomacy"

"Encouraged the Secretariat to continue to develop relations and partnerships as appropriate with relevant regional and international organisations, as well as chemical industry associations, the private sector, academia, and civil society, in order to raise awareness of the activities of the OPCW"


FACT SHEET 1

Origin of the Chemical Weapons Convention and the OPCW


FACT SHEET 2

The Chemical Weapons Convention A Synopsis of the Text


OPCW Today

OPCW wins the Nobel Peace Prize


OPCW Today

Reaching out to students, trainees etc

- TS welcomes visits by student groups to the OPCW HQ
- Approximately two groups per week, including trainee diplomats, government officials, and students from around 15 different SPs
- OPCW in fifth year of cooperation with TMC Asser Institute on WMD Summer Programme
- OPCW also building links with TISMUN and TCIMUN

ASSER INSTITUTE

TMUN

Awareness-raising with networks

- Annual conference of the European Network of Science Centres and Museums (ECSITE) in May 2014
- "Day of Excellence" in Dutch higher education science sector in June 2014
- Director-General keynote at EuroScience Open Forum in June 2014

Public exhibitions

- OPCW exhibition at the Nobel Peace Center in Oslo
- Exhibition on international organisations at MUSEON, including items from OPCW
- OPCW information booths at ECSITE conference and THIMUN, TEIMUN and TEDx events

"Encouraged the Secretariat to continue to develop relationships and partnerships with other relevant bodies, national and international, that are working to promote the peaceful and responsible use of chemistry, including capacity building"

"During its discussions, the Working Group considered that the subject was too important to be circumscribed to only providing a better understanding of the obligations of the Convention to future plant or production managers of declarable facilities. The Group therefore proposed a broader scope for the project, in order to promote a culture, among all professionals in the chemical fields, on the responsible use of technical and scientific knowledge, in order to be aware of the potential danger and to prevent all misuse and abuse of chemicals." (Argentina, The Argentine Project on Education and the Chemical Weapons Convention, C-18/NAT.3, 2 December 2013)

Responsible use of chemistry

- TS will broaden and deepen its relationship with IUPAC
- Support exploration of codes of conduct etc
- Strengthen links with BWC
- Further develop links with other relevant organisations, e.g. UNESCO, IGSU, IAP etc

Promoting a culture of responsibility

- TS will continue to seek partnerships with relevant organisations, especially at the regional level
- Facilitate "train-the-trainer" programmes at the national or regional level
- Educational materials are being disseminated to national, regional and international organisations

"Called upon SPs and the TS, as part of efforts to promote the ethical norms of the CWC, to encourage and promote efforts by the appropriate national and international professional bodies to inculcate awareness amongst scientists and engineers at an early stage in their training that the knowledge and technologies used for beneficial purposes should only be used for purposes not prohibited under this Convention"

The "Fires" Project

- Video documentaries profiling individuals with compelling personal stories about chemical weapons, warfare, and disarmament
- The films can be found at www.thefiresproject.com/
- "Fires I" already subtitled into all official OPCW languages with financial support from the UK
- Accompanying lesson plan for use by teachers, also available in all official languages, has already been produced for the first film

"Chemistry in Conflict"

- Educational module for use by high school chemistry students and teachers
- Developed by a group of teachers from local Dutch and international schools
- Collaboration with the International Baccalaureate Organisation, Leiden University, and the Municipality of The Hague
- Financial support from the UK
- The module will soon be freely available for use in high schools worldwide

"Multiple uses of chemicals"

- Interactive educational module entitled "Multiple Uses of Chemicals"
- Cooperation with the International Union of Pure and Applied Chemistry (IUPAC)
- Developed by experts at the King's University College in Canada, with financial support from the European Union and IUPAC
- Already piloted at IUPAC meetings in Istanbul & Durban
- The website can be found at http://multiple.hccs.ca/site/?index.html

"The Third Review Conference acknowledged the role of education, outreach and awareness-raising as a relevant activity for the national implementation of the Convention"

"Encouraged the Secretariat, in concert with the SAB temporary working group on education and outreach, to assist States Parties, upon request, in implementing education and outreach activities, including by disseminating materials, conducting workshops and regional meetings"

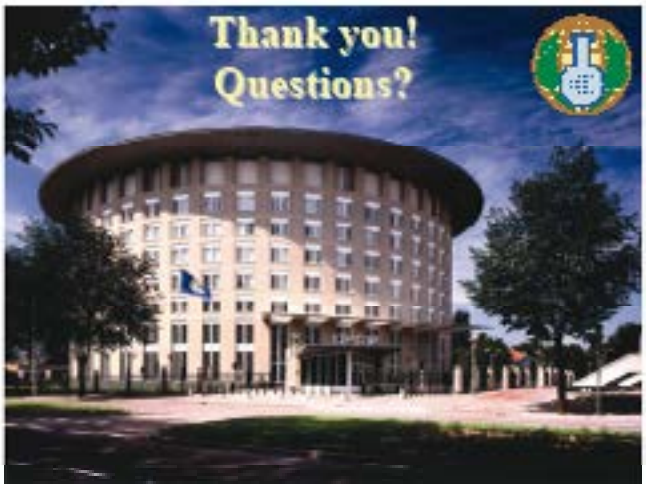
GRULAC regional meeting, April 2014

- 9-11 April in Buenos Aires
- Joint coordination within TS between ICA and OSP
- Participants from 44 NAs and universities in 22 SPs
- Presentations from TWG, 1540 Expert Group and TS
- Meeting report submitted by Argentina (EC-76/NAT.1)
  - General conclusions
  - Recommendations for NAs
  - Recommendations for TS

Next steps

OPCW education webpage and network

Fourth temporary working group meeting



Kesrat Sukasam: Education & Outreach Activities

Education & Outreach Activities

Kesrat Sukasam

Head, Implementation Support Branch

National Implementation

- Article VII: support effective national implementation
- Levels of implementation vary among SPs depend on capacities of the NA
- Engagement and cooperation with key stakeholders is important for effective implementation

Challenges:

- Lack of awareness and understanding on CWC and OPCW among relevant stakeholders
- Requirement for different approaches to different groups:
  - Chemical industry, academia, scientific community, policy makers, legislators, etc

Recommendations from the TRC

- Encouraged the Secretariat, in concert with the SAB temporary working group on education and outreach, to assist States Parties, upon request, in implementing education and outreach activities, including by disseminating materials, conducting workshops and regional meetings

What we want to achieve……
and
What we do

What we want to achieve…..

- Increased awareness and understanding about the OPCW and CWC of all relevant stakeholders for effective engagement, cooperation and support for effective implementation
- National Authorities enable to increase their capacities and ability to better implement CWC obligations in their territories

What we do…..

- **Capacity building:** regional and international events (meetings, workshop, seminar, training…) with participation of different stakeholders……
- **Partnership:** engagement with other partner organizations, participating in relevant events to present and discuss CWC, sharing information, inter-agency cooperation, collaborative activities
- **Awareness raising:** enhance awareness, understanding and knowledge of managers and policy makers on CWC to support national implementation
- **National E&O:** support NAs in conducting national education and outreach activities, participation and provision of relevant materials for use and dissemination by the NAs
- **E-learning:** launch e-learning materials on key elements of CWC for good understanding and raising awareness

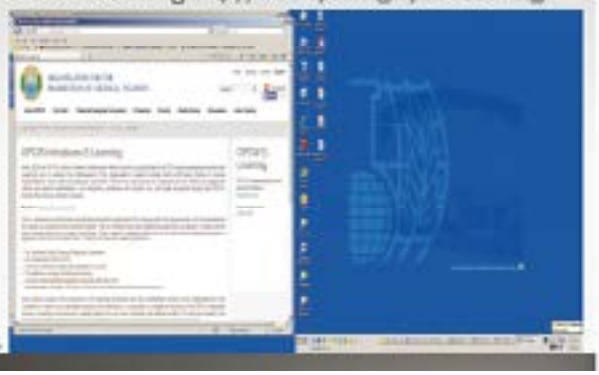
Some key activities

- Training of custom authorities on transfer regime in all regions to effectively fulfill national obligations
- Regional meeting to promote dialogues and cooperation between NA and chemical industry
- Launching a pilot national education and outreach programme for effective planning and implementation
- Regional meetings to share national experiences and best practices on education and outreach among NAs

Some key activities

- Launching Influential Visitors Programme in support of legislation process (pilot)
- Published six e-learning modules regarding CWC available in OPCW website in 3 languages (English, French and Spanish), updated periodically

OPCW E-Learning: http://www.opcw.org/opcw-e-learning/



Conclusion

- Education and Outreach is essential to promote proper engagement of stakeholders for effective national implementation
- E&O is the main focus in ICA/IPB in support of the National Authorities
- Need innovative and ideas for effective implementation

ipb@opcw.org

Thank you

Daniel Feakes: Summary of Breakout Session 1: Creating Synergies Between Stakeholders

Breakout Session 1:
Creating Synergies Between Stakeholders

Daniel Feakes

Panels

- Panel 1: Working with Multiple Stakeholders: Collaboration with Universities and Academic Networks
- Panel 2: International Organisations: Sharing Experience and Best Practices
- Panel 3: Professional Training and Capacity Development: Educating the Next Generation of Officials and Experts

Why?

- Target audiences
- Relevant partners
- Ongoing activities
- Future synergies

What?

- Graduate courses, educational modular courses for Master/PhD students and young scientists
- Professional development courses, training courses for professionals, academic networks etc
- Networks between faculties and international organisations

How?

- Know the audience background, serve the information in palatable form and realistic about the measurable impact of engagement
- Courses combining science and technology with social science
- Cooperation with international organisations
- Education has to be tailored so that it speaks to participants personally
- Utilise good communicators and social media
- A couple of specific ideas:
  - guidance package on how to prepare a simulation exercise
  - safety, non-proliferation etc together and in context

Challenges

- Broad or narrow target audiences?
- Utility of e-learning etc, MOOCs etc?
- Sustainability of activities?
- How to get industry involved?
- Duplication of efforts?
- Evaluation?

Seema Gahlaut: Engaging Students, Politicos, Bureaucrats and Companies in Nonpoliferation

CITS
THE UNIVERSITY OF GEORGIA
CENTER for INTERNATIONAL TRADE & SECURITY

ENGAGING STUDENTS, POLITICOS, BUREAUCRATS AND COMPANIES IN NONPROLIFERATION

[redacted author block]

Center for International Trade & Security (CITS)

CITS

- ESTABLISHED in 1987
- As a Non-Govt Organization/Center
- At the University of Georgia (UGA) - Athens Campus
- Focus on
  - Strategic Trade Controls & Management and
  - WMD Security Culture

Engaged in Research, Outreach & Training

Promoting Nonproliferation: Scope of Work on STC

CITS

CITS has been engaged with almost all relevant stakeholders involved in Strategic Trade Management

LEGAL REGULATORY	OUTREACH	ENFORCEMENT	INDUSTRY-GOVT RELATIONS
• Parliamentary exchanges • Model Law Workshops	• STM training for officials – senior & junior	• STM training for Customs & border security	• STM Outreach for hi-tech industry

ANALYTICAL AND RESEARCH PRODUCTS

UNDERGRADUATE AND GRADUATE INTERNSHIPS

Security Leadership Program: For Students

CITS

- 2-Semester program for USA undergraduates that focuses on all aspects of Nonproliferation
  - Legal Framework
  - International and multilateral Organizations
  - Regional Issues
  - Practical challenges of implementation: national and international obligations
  - Interaction and effective communication with policy makers
- Hands-on research, organization and publication opportunities in on-going projects of CITS
- 100 percent placement in subsequent internship with NGOs, IGOs, US govt agencies and consulting firms

Analytical Support: STC and SC

CITS

- National Reports on STC systems (2004-2012)
- A study of the economic impact of adopting STCs (2014)
- Studies of emerging STC trends (e.g., Israel Transformation) (2011)
- NATO Report on Nuclear Security Framework (2012)
- CITS-SATAN Report on Human Dimension of Security for Radioactive Sources (2014)
- NATO Report on CBRN Security Culture (2014)

150 Diplomats with UNSCR Support

Security & Strategic Trade Management Academy (SSTMA): For Bureaucrats

CITS

The SSTM Academy provides

- An overview of strategic trade control concepts, issues, and standards
- With focus on the range of "how to" options or tools available to participants for implementing STCs

Each biannual SSTMA session consists of two-week long modules that can be taken in sequence or at different times.

Courses are taught by CITS staff, UN and foreign govt officials, industry representatives and policy analysts.

80% trainees sponsored by ECC/DOS/USG – rest are financed by their own governments or agencies

Countries Represented at the SSTM Academy
2006-2014

Since 2006, ~600+ trainees from approx. 60 countries have gone through the training program

Briefings for Relevant Stakeholders in STC

- Outreach in the form of executive briefings or short term training for groups on nonproliferation, STC and Security Culture
  - Legislators and their staff
  - Attorney Generals and Parliamentary Counsels
  - Heads of govt. Labs
  - Company CEOs/CFOs/COOs
  - Industry associations

Promoting Nonproliferation: Scope of Work on CBRN Security Culture

- Research on Human Factor in Compliance
  - With Strategic Trade Controls
  - With CBRN Security Policies & Procedures
- Development of an Assessment Tool for use by Facility Managers
  - Used by BATAN (Indonesia) for radiological materials
  - Used by Nuclear power facilities in Germany, Romania and Bulgaria
  - For bio-medical facilities in an Asian country (on-going)
  - For chemical facilities in an African country (on-going)

Strategies for Getting a Buy-in from the audience -1

- KYC ...or KYA (Know Your Audience) → Look at the world and nonproliferation/security from their eyes
  - Explore how their govt's policy may have influenced their perception of the topic
  - Understand their current job-requirements
  - Assess their highest – and lowest – aspirations

Strategies for Getting a Buy-in from the audience -2

- Make your information digestible
  - Small bites of the meat – what you want them to remember
  - Placed in beds of veggies – links to big-picture issues
  - Paired with their daily bread – how it will help them professionally
  - Rounded off with dessert – interactive sessions

Strategies for Getting a Buy-in from the audience - 3

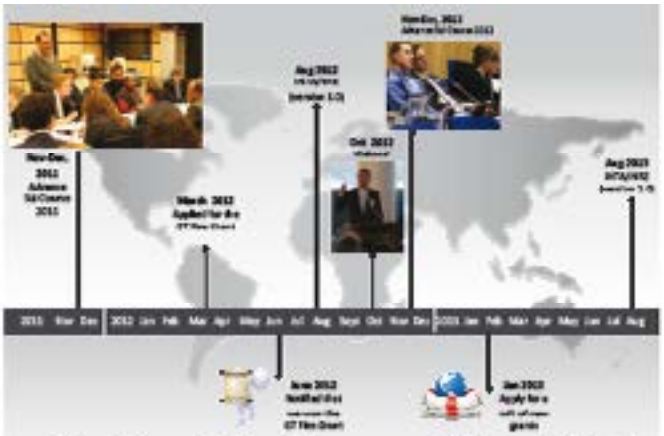
- Curb your enthusiasm
  - Do not expect them to be impressed with the awesome-ness of your expertise – or your topic (dangers of proliferation/security issues)
  - Do expect push-back, suspicion, and even outright hostility
  - Focus on building relationships and networks, not disciples

Liz Dallas: Preparation of a Cross-Disciplinary Nonproliferation Curriculum at GaTech

Georgia Tech | The Sam Nunn School of International Affairs

Preparation of a Cross-Disciplinary Nonproliferation Curriculum at GaTech

Liz Dallas



Timeline of the Courses (CDI and GT)

Fall 2012 Structure – CTBTO, Sci and Tech

- 5 Students (2 PhD NRE, 1 MS AE and 2 PhD INTA)
- 5 lectures with associated readings
- 5 online Moodle modules
- 2 expert meetings at GT
- 2 week stay in Vienna to attend the CTBTO Advanced Science Course
- Final Paper

Fall 2013 Structure – CTBTO/IAEA Policy, Sci and Tech

- 5 Students (3 MS INTA, 2 PhD AE)
- 5 lectures with associated readings
- 9 online Vision eLearning modules
- Additional readings on IAEA and safeguards
- 1 week stay in Vienna for program of combined IAEA/CTBTO/VCDNP content plus one day of expert meetings
- Final Test
- Final Paper

Teaching Challenges

- The challenge of the multidisciplinary/multilevel class
  - How much technical depth and how much INTA depth?
  - Balancing the knowledge bases of the graduate vs undergraduate students
- Grading
  - Testing concerns
- Scheduling
  - High-input class in terms of time (for students and instructor)
  - Ideally, a suite of classes, not just one

GT's challenge going forward RE course development

- Goal setting for future programs
  - Greater dispersion or more depth?
    - Expand to cover CTBTO + IAEA, OPCW
  - Importance of student interaction with international fellows/experts?
    - De-fund the trip to Vienna?
    - How then to catalyze ongoing relationships and help students to investigate sophisticated ideas?
- Institutionalization
  - Permanent curriculum placement
  - Continued cooperation with CTBTO, VCDNP
  - Increase/catalyze cooperation with IAEA, OPCW
  - Funding!!
  - Continued bridge building between schools and departments across GT (CompE, ISYE, AE, EAS, PubPol, HTS and GTRI)


Fall 2014
The Next Incarnation

Maurizio Martellini: Promoting Awareness and Education on Bio-Chem Convergence

OPCW, Education for Peace:
New Pathways for Securing Chemical Disarmament

September 22-23, 2014
The Hague, The Netherlands

Promoting Awareness and Education on Bio-Chem Convergence

BY MAURIZIO MARTELLINI AND ALICE BALDINI
LANDAU NETWORK – CENTRO VOLTA,
& TCTS, COMO, ITALY

Biology ⇄ Chemistry

Advances in biotechnology, nanotechnology, bioengineering, as well as in the chemical synthesis of molecules of biological origin, have brought to a growing convergence between biology and chemistry.

- This introduces new threats and challenges for the organizations dealing with the prohibition of biological and chemical weapons.
- The risk of a "Trojan horse" challenge in Chem: exploiting a new category of "hybrid chemical weapons (CWs)" in the cross-cutting of Bio and Chem, once an entire system of "classical CWs" has been eliminated.
- In addition, new strategies and new instruments must be adopted to educate the scientific and the institutional communities to this developing bio-chemical trend.

BTWC ⇄ CWC

In response to the evolving bio-chemical convergence, the BTWC and CWC should combine efforts to analyze the existing norms/guidelines against biological and chemical weapons and to develop new regulatory mechanisms for bio-chem safety and security.

A joint BTWC-CWC organism could lead the State Parties in the engagement of all relevant stakeholders in the bio-chemical field (from government, industry and academia); as well as in the promotion of raising awareness initiatives, trainings and dissemination of best practices.

Multidisciplinarity as a Tool

Multidisciplinary Research Teams (MRT) are becoming a widespread working methodology in an everyday more interlaced scientific environment.

Such groups may include experts in biology, chemistry, and physics, but also in mathematics, IT and engineering, with the purpose to tackle scientific research (and its consequences) from different points of view.

Multidisciplinarity therefore represents:

- An efficient way of dealing with bio-chem convergence issues;
- The necessary expertise to educate and raise awareness in this area.

The CBRN Centres of Excellence approach

In line with a multidisciplinary approach, the EU CBRN Centres of Excellence (CoE) initiative has adopted an innovative strategy, by establishing National CBRN Teams in the participating countries, which not only address bio-chem issues but also nuclear and radiological issues, therefore including the entirety of CBRN risks. This also allows to keep into account new and emerging technologies in the cross-intersection of bio and chem, such as nano.

An enhanced coordination at all CBRN levels can indeed improve preparedness against illicit non-state actors that could take advantage of a fragmented or disconnected expertise.

Multidisciplinary Consortium

As part of the CBRN CoE Initiative and managed by the Landau Network - Centro Volta,

Project 18: International Network of Universities and Institutes for Raising Awareness on Dual-use Concerns in Biotechnology

has developed a Multidisciplinary Consortium of 18 Universities and Institutes in 14 countries, with the purpose to promote awareness of biosafety, biosecurity and dual use among students at various stages of higher education.

Multidisciplinary Consortium

Through an interaction with the established National CBRN Teams and with relevant national stakeholders, the Multidisciplinary Consortium provides the project with a range of different expertise:

Science, Biotechnology, Biochemistry, Ecology, Political Science, Law, Philosophy, Bioethics, Public Health, Agriculture, Medicine, Bio\Chem

thus facilitating the implementation of a number of activities, including gap analysis, students' seminars and regional meetings, following an holistic approach.

Bio-Chem International Network

A similar structure could be put in place to promote awareness and education on the growing bio-chem convergence (Bio\Chem) based, inter alia, on the following specific elements:

-Formation of mixed groups of bio, chem, IT specialists (the quoted MRT) to teach and assess the development of emerging enabling technologies - such as synthetic biology and nanotechnologies - that pose threats to the CWC and BWC;

-Development of Bio\Chem educational modular courses to introduce Master/PhD students and young scientists to this new security environment;

-Elaboration by the MRT of codes-of-conduct and guidelines for Bio\Chem to be tested in serious gaming scenarios.

- Thank you for your attention -

Maurizio Martellini and Alice Baldini

Landau Network - Centro Volta
& ICIS, Como, Italy

Email: maurizio.martellini@centrovolta.it

Matthew Moran: Lessons from Educational Approaches to Nuclear Security

Lessons from Educational Approaches to Nuclear Security

Centre for Science and Security Studies

www.kcl.ac.uk/csss

- Established in 2003 with a grant from the MacArthur Foundation
  - 9 core staff
  - 20 PhD students
  - 2 MA programmes
- 3 core areas of activity
  - Nonproliferation
  - Nuclear security
  - Disarmament and Strategic Stability
- Academically rigorous, policy relevant research
- Funders include MoD, FCO, DECC, IAEA, UK Dept. of State, UK Dept. of Defence, Carnegie Corp. of New York

Nuclear Security Education and Outreach

- Recent years have seen growing recognition of the need to develop nuclear security education – prior to 2010, there were only a handful of academic courses that dealt with this subject
- 2012 Nuclear Security Summit Communiqué - Emphasised the importance of education and training for raising awareness of key issues and strengthening nuclear security culture
- Consequently, there has been a concerted effort to promote and support nuclear security education and training – CSSS has been heavily involved in this effort

Nuclear Security Professional Development Courses (PDCs)

- 'Train the Trainer' Professional Development Courses (PDCs)
- Bottom up' approach to nuclear security education –
  - Train those responsible for providing nuclear security education, focus on academia but also relevant for industry and regulators
  - Contribute to the development of a new cadre of nuclear security experts
- First sponsored by the IAEA and held at KCL in 2011
- Success of model encouraged broader application
  - Regional hubs for nuclear security education and training
  - South Africa, Indonesia and MENA country
  - Funded by IAEA and PNS – new 4 year contract funded by DECC

Nuclear Security Professional Development Courses (PDCs)

PDCs span two weeks (separated by one month) and cover a range of nuclear security issues:

- Information security and Cyber Security
- Insider threats and security culture
- Nuclear Security and Regulation

Content delivered by international SMEs and local experts

- Academics, industry professionals, representatives from regulatory bodies

Combination of pedagogy and nuclear security-related content – the aim is to increase knowledge of nuclear security *and* how to teach it

- Course approach and Educational handbook

Highly interactive sessions – groupwork, desktop exercises...

Nuclear Security Professional Development Courses (PDCs)

Research into the impact of the South African PDC series shows that the process is having a tangible impact

- PDC participants have established new courses on nuclear security in universities in South Africa, Morocco and Egypt, for example
- Participants have adapted course materials and designed innovative context-specific materials for their own courses
- Industry professionals and members of the policy community are also incorporating nuclear security education into existing training courses

Nuclear Security Education Handbook

- Handbook to support efforts in nuclear security education
- Sets out latest developments in teaching, learning and assessment
- Explores strengths and weaknesses of different teaching methods and examines process of curriculum design
- Applies pedagogical theory and methods to context of nuclear security

Nuclear Security Briefing Book

- Reference guide distributed to state delegates at the 2014 NSS
- Comprises three parts:
  - An introductory guide to nuclear terrorism;
  - An overview of international instruments and initiatives related to nuclear security and how these have developed in recent years;
  - An overview of the evolution and key outcomes of the NSS process to date

http://www.kcl.ac.uk/sspp/departments/warstudies/research/groups/csss/pubs/NSBB---Full-final.pdf

Collaborating on Nuclear Security Education

International Nuclear Security Education Network (INSEN)

•Established by IAEA in 2010 in partnership with education and research institutions – KCL founding member and current Chair

•**Mission** – enhance global nuclear security by developing, sharing and promoting excellence in nuclear security education

•Currently over 100 members from 38 IAEA member states

•Three working groups

- WGI – Educational materials
- WGII – Faculty development
- WGIII – Promote nuclear security education

Example – textbook on IT/Cyber security at a nuclear facility

INSEN achievements

WGI

•Authored 3 textbooks on nuclear security issues – currently nearing end of peer review and revision process

•Teaching materials – a range of presentations, datasets and exercises

WGII

•'Train the trainer' PDCs

- KCL
- Brandenburg – IT/Cyber Security
- WITS in partnership with KCL – Introduction to NS, NS Culture and Information Security, Insider Threats

•Currently surveying INSEN members to chart areas of competency

- Create database of SMEs

INSEN achievements

WGIII

•Growth of INSEN network – 14 new members in the past 6 months

•Broad approach to awareness raising and recruitment

- Promotion of INSEN activities at international conferences and workshops
- Design of INSEN flyers, presentations, posters
- Beginning to engage with social media - @IntNSEduNet

Lessons learned

- Value of the PDC model
  - The combination of educational methods and nuclear security content
  - Providing a forum for educators to interact, develop collaborations and gain exposure to new approaches and methods
  - Massively increases the potential range and scope of dissemination
- Strength of sustained and meaningful international collaboration such as INSEN
- Need to develop resources and materials to support educators in their efforts

Disarmament and Non-proliferation Education Targeted to Youth

history of disarmament as written by Nobel Peace Laureates

www.un.org/disarmament/education/teachers_students/

Reaching out to Youth

- Youthful and energetic staff
- Social Media
- Target areas where youth congregate (in Cyberspace)
- Use materials that provide a point of access
- Ask how they can make a difference

Poetry for Peace

A Poetry Contest with the Government of Japan that shared the testimonies of atomic bomb victims

Art for Peace

An art contest that asked youth across the globe to envision a world free of nuclear weapons

Publications

A publication written to provide youth with actionable steps to promote disarmament in the classrooms, their schools and their communities

Working with Educators

A training for NYC high school teachers to learn about nuclear disarmament and other WMD

Work with victims of Atomic Bombings

An interactive website bringing the testimonies of atomic bomb victims to the public

DISARMAMENT & NON-PROLIFERATION

Using art to teach and learn about disarmament

- Click on the image to view the video of a group of young rappers who have blended their music, poetry and messages of disarmament

rap-nuclear.mp4

Wrapping Up

- material that is not technical, but clear, concise, and universally accessible;
- the importance of building empathy as a motivator for teaching and learning;
- using the arts as instruments of learning

James Revill: The Biological and Toxin Weapons Convention (BWC) & Education for Peace

The Biological and Toxin Weapons Convention (BWC) & Education for Peace

Dr James Revill
Harvard Sussex Program
j.revill@sussex.ac.uk

Outline

- The BWC
- The BWC and Education
  - Substance
  - Process
- Education through the BWC
- What has been done
- Difficulties encountered
- Moving forward

The BWC

IACA

2200 staff members
€ 344 million budget

BWC and Education (substance)

2005 – Topic: the content, promulgation, and adoption of codes of conduct for scientists

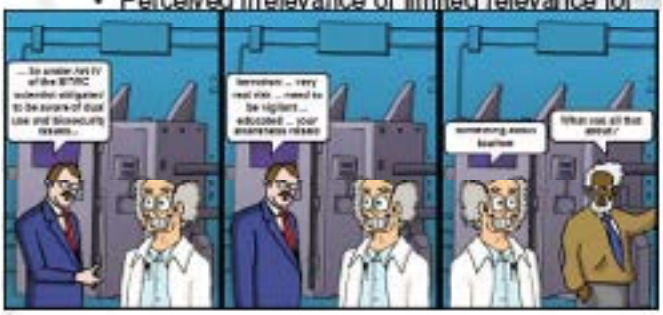
BWC and Education (Process)

Discussion not negotiation – "discuss[ing] and promot[ing] common understandings and effective measures"

What has been done

Limitations

- Perceived irrelevance or limited relevance for



Moving forward

What is the purpose of education?

- Encouraging vigilance against terrorism
- Preventing skills programs
- Stopping people doing bad stuff with science
- All of the above?

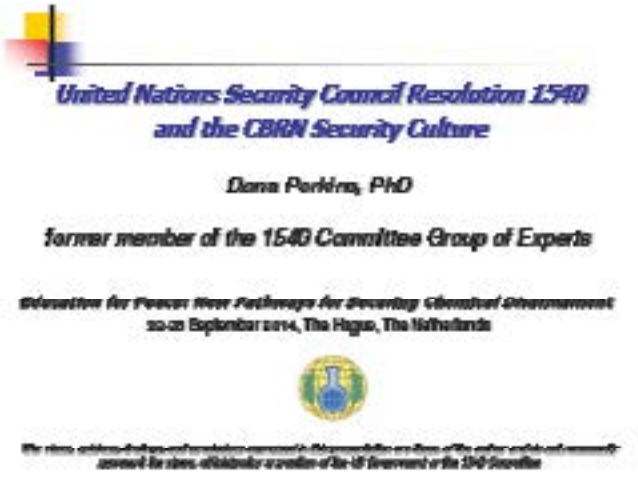
Thanks

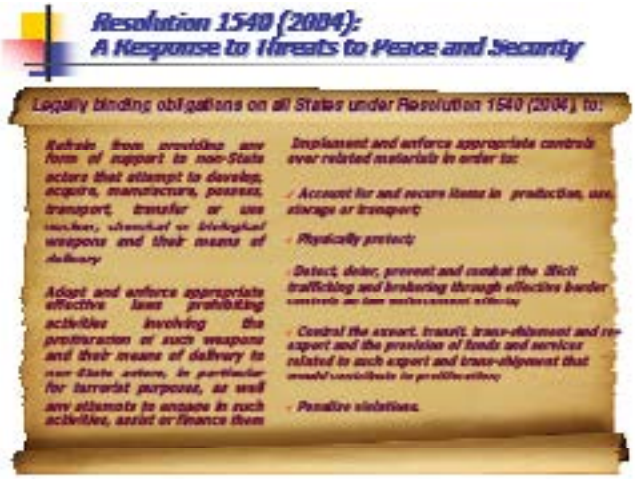
James Revill
Research Fellow
Harvard Sussex Program,
SPRU,
University of Sussex,

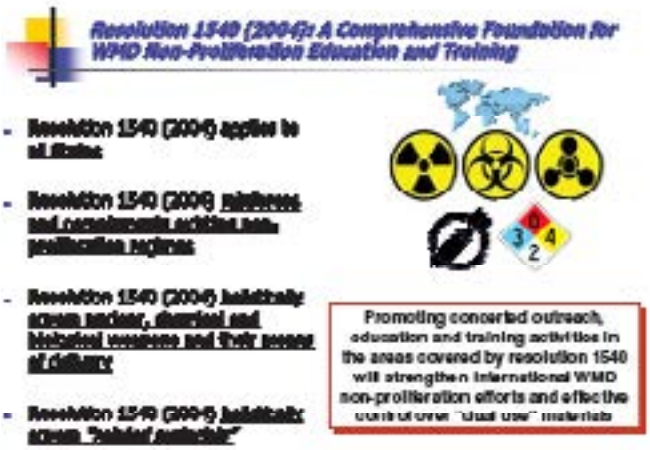
University of Sussex
SPRU – Science Policy Research Unit

Email: j.revill@Sussex.ac.uk

Dana Perkins: United Nations Security Council Resolution 1540 and the CBRN Security Culture







(Underused but not explored in the our survey)

Other Resources not included on the UN Website

Be inspired

"The world as we have created it is a product of our thinking. It cannot be changed without changing our thinking."

-- Albert Einstein --

The Human Factor

- Countering WMDs and CBRN terrorism is about *people*
- Governments use laws and regulations to affect people, to get them to do (or not do) something
- Governments may try to shape how the people think so they see certain issues in a new way
- Or a government may appeal to shared values and beliefs in hopes that people change how they feel toward certain issues
- And in some cases, governments may just direct action, relying on their authority
- In the end, what governments strive to achieve is mostly about changing behavior

WMD Proliferation and CBRN Terrorism are Multi-Faceted Problems requiring Multi-Factorial Solutions

Lessons Learned from the Nuclear Security Culture Domain

A roadmap to CBRN Security Culture

Evaluation and Assessment of the CBRN Security Culture

Conclusions

[redacted]

(d) Invites the 1540 Committee to consider developing, in close cooperation with relevant international, regional and subregional organizations and other United Nations bodies, ways to utilize and maintain expertise, including, in particular, of former experts of the group, that could be made available for specific missions and assistance needs regarding the implementation of resolution 1540 (2004);

Tibor Toth: What is CDI?

What is CDI?

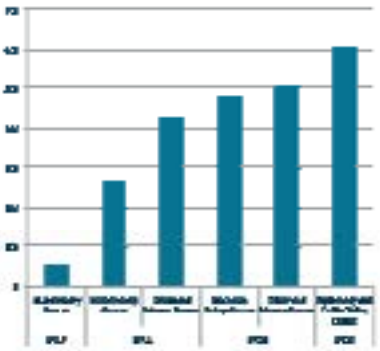
Solid investment in the future of the Treaty by raising awareness of the CTBT and its associated security, civil and scientific benefits.

Three main components:

- Live lecture course
  - 8 courses so far held in Vienna
  - Possibility to hold course elsewhere in the future
- E-learning
  - Live-streaming, video archive, quizzes, peer-reviewed assignment
  - Course can be taken via live-streaming or through tailored course for partner institutions
- Partnerships
  - Promotion of CTBT education beyond the live lecture courses through tailored courses as part of academic curricula
  - Outreach to university professors and scientists (course held in June 2012 and March 2013)

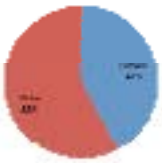
CDI Growth

- A total of 2,490 registered participants
- As of September 2013, 595 certificates issued



Key Demographics I

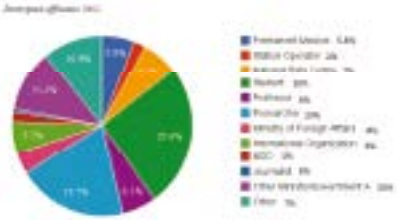
CDI encourages the participation of women, increasing the number of female participants to 42.2% in 2013 – from an average of 32.8% in previous years.



Outreach has been conducted to a number of key groups, including participants from Annex 2 States and developing countries. Courses enjoy a broad geographical attendance.

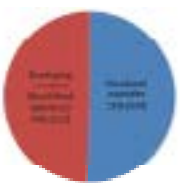
Key Demographics II

In 2012 and 2013, 32.2% from core constituency groups (PMs, station operators, NDCs, MFAs and other government ministries or agencies)



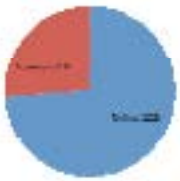
Key Demographics III

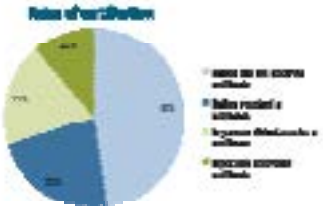
- 4 of the top 5 countries are non-ratifying Annex 2 States
- Half of all participants from developing countries



Platform statistics

- Almost 8,900 individual visitors
- 500,000 page views





E-Learning resources I

- The CTBT tutorial, which provides an introduction to the CTBT and gives participants an opportunity to test their learning through mini quizzes (AR, CH, FR, RU, SP, POR)

- E-learning delivery by iTunes U
  - Launched April 2012
  - 12 different collections and 2 full courses
  - Almost 930 subscribers
  - Almost 7000 downloads

E-Learning resources II

Standalone course modules which can be accessed individually or presented as part of a comprehensive course

- Module 1: The Comprehensive Nuclear-Test-Ban Treaty (CTBT), Nuclear Non-Proliferation Treaty (NPT) and History of Nuclear Testing
- Module 2: International Monitoring System (IMS)
- Module 3: International Data Centre (IDC)
- Module 4: On-Site Inspection (OSI) – Developed by OSI
- Module 5: Civil and Scientific Applications of the Verification System

CTBT Education Portal – educte.ctbto.org

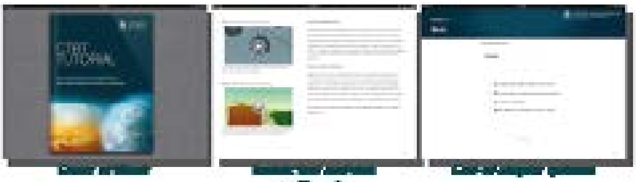
CTBT Educte Portal

Course Homepage

Module Structure

E-learning delivery

- Launch of [illegible] online community of practice in CTBT education based on social web platform
- Development of iBook and ebook of CTBT tutorial



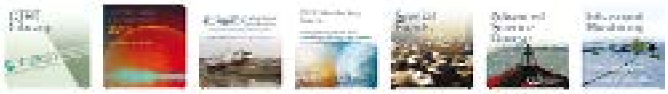
[illegible] [illegible] [illegible]

- Continued development of iTunes U
- Continued development of e-learning platform: content development, best practices, user-friendly interface

Additional resources

- The CTBT tutorial, which provides an introduction to the CTBT and gives participants an opportunity to test their learning through mini quizzes (AR, CH, FR, RU, SP, POR)

- E-learning delivery by iTunes U
  - Launched April 2012
  - 22 different collections and 2 full courses
  - Almost 800 subscribers
  - Almost 7900 downloads



Educational Technology Toolbox

Teaching and Assessment

- Interactive online modules [illegible]
- Embedding and linking to additional Internet resources in one central place
- Multiple-choice quizzes and open-ended assessment methods [illegible]
- Discussion forums, development of wikis, glossaries etc.
- [illegible]

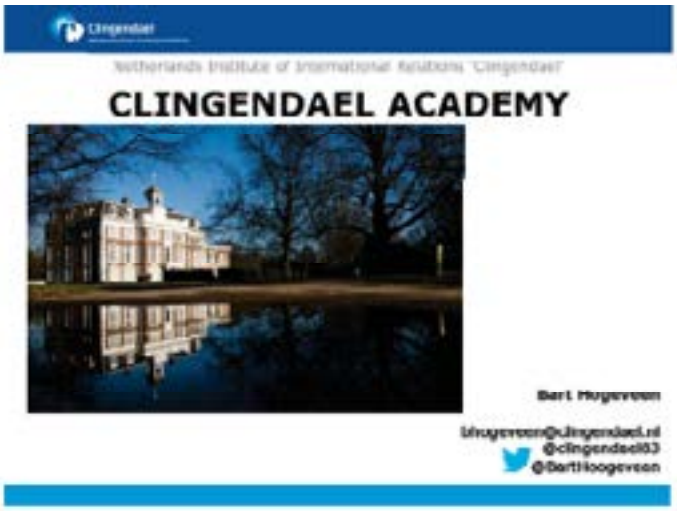
Knowledge Management

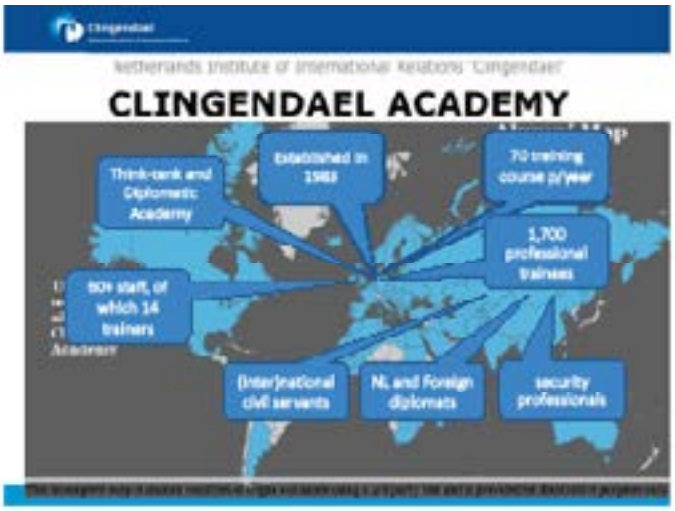
- Digital archiving features for video, documents, audio files, etc.
- Document sharing
- [illegible]
- Discussion forums, wikis, blogs

Online Community Building

- [illegible]
- [illegible]
- [illegible]

Bart Hogeveen: Education for Peace





Tanya Mehra: Professional Training and Capacity Development: Educating the Next Generation- The experience of the T.M.C. Asser Instituut

ASSER INSTITUTE

Professional Training and Capacity Development: Educating the Next Generation

The experience of the T.M.C. Asser Instituut

23 September 2014

Tanya Mehra

ASSER INSTITUTE

TOBIAS MICHAEL CAREL ASSER

*1838 – 1913

*Dutch lawyer/scholar

*Co-winner of the Nobel Peace Prize (1911) for his role in establishing the Permanent Court of Arbitration at the First Hague Peace Conference

ASSER INSTITUTE

T.M.C ASSER INSTITUUT

Asser Institute is an inter-university research center specialized in International and European Law.

What do we do?

- Conduct research & consultancy
- provide training &education;
- Organize conferences & events
- and have own publishing house.

ASSER INSTITUTE

ASSER INSTITUTE

OUR TRAINING PROGRAMMES

I. Capacity building trainings aimed at strengthening the rule of law for judges, prosecutors and civil servants from the judiciary, national ministries of justice and relevant (governmental) organizations.

II. Summer Programmes for young professionals and mid career professionals in different areas of international law.

III. Contributing to curricula development in the different areas of international law to training institutes, universities or organizations.

ASSER INSTITUTE

I. CAPACITY BUILDING TRAININGS

- Trainings are geared to strengthen the rule of law and building the institutional capacity of semi- governmental institutions.
- Elements:
  - funded by the MFA or other ministries;
  - Mainly for judges, prosecutors, civil servants working for semi) governmental institutions;
  - In The Hague and at location;
  - Back Home Action Planning.

ASSER INSTITUTE

ASSER INSTITUTE

MAIN FEATURES OF A TRAINING

- Demand driven & tailor-made.
- Bridging the gap between academic community & practitioners.
- In depth study visits.
- Explore cross cutting subjects.
- Working with partners of complimentary fields.

ASSER INSTITUTE

THE WMD SUMMER PROGRAMME IN BRIEF

- ✓ In close cooperation with OPCW;
- ✓ Evaluations provide input for next year;
- ✓ Covered the NSS 2014 and the destruction and removal of chemical weapons from Syria;
- ✓ E-learning site.

ASSER INSTITUTE

GUEST LECTURERS

- Diplomats, policy makers, legal officers, researchers, academics;
- Representing international organisations, think tanks, universities, NGO'S, ministries;
- From different backgrounds;
- Unique networking opportunity;

ASSER INSTITUTE

FIELD VISITS

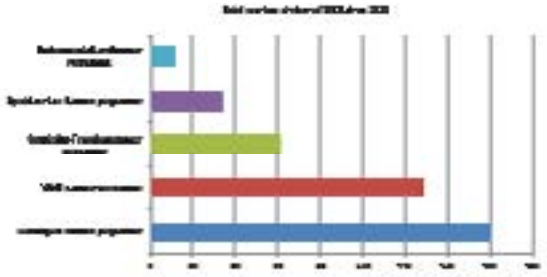
- ✓ OPCW equipment store in Rijswijk
- ✓ Nuclear Research center in Delft
- ✓ Live exercise of alleged use of WMD weapon at TNO Rijswijk

ASSER INSTITUTE

III. CURRICULUM DEVELOPMENT

- Assist (semi) governmental institutions, universities and organisation how to develop and implement a training
- Elements:
  - How to define and select participants?
  - How to conduct a need assessment mission?
  - How to combine lectures with practical exercises?
  - How to ensure sustainability of a training?
  - How to evaluate a training?

TOWARDS AN ASSER ACADEMY?



TOWARDS AN ASSER ACADEMY?

Challenges:

- What kind of digital resources and tools are required?
- How to track the Asser participants?
- How to create an active alumni network?
- Crossing country or cross subject?
- From participant to ambassador

Asser Today

Stephanie Meulenbelt: Network of Universities and Institutes for Raising Awareness on Dual-use Concerns of Chemical Materials

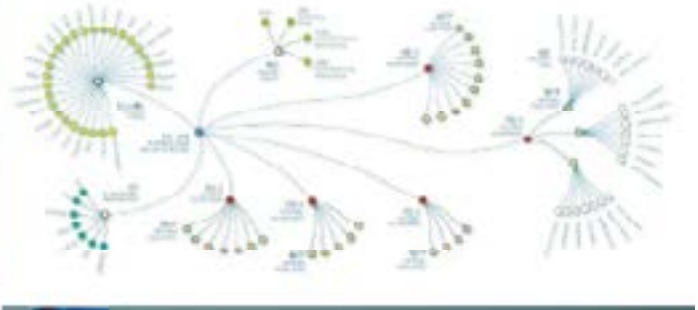
Centres of Excellence

Network of Universities and Institutes for Raising Awareness on Dual-use Concerns of Chemical Materials

Project 31

TNO innovation for life

Brief introduction of the EU CBRN CoE



Project 31 regions

- African Atlantic Façade;
- Central Asia;
- Eastern and Central Africa;
- Gulf Cooperation Council Countries;
- Middle East;
- North Africa;
- South East Asia;
- South East Europe, Southern Caucasus, Moldova and Ukraine

Consortium composition

Implementing consortium

- ENEA – Italy – Consortium Leader
- ICIS – Inabria Center on International Security – Italy
- TNO – Netherlands
- ICRI – Industrial Chemistry Research Institute - Poland
- Polish State Fire Service – Poland

Partner countries

- MESRS – Jordan
- STCU – Science and Technology Center – Ukraine
- [illegible]
- Ukraine Institute of bioorganic and petrochemistry' Scientific and Technological Centre of Ukrainian Chemists Union

Project 31 objective

Project 31 aims at contributing to the safety and security of chemical dual-use materials and processing equipment, via the reinforcement of a chemical safety, security and responsibility culture and the awareness and engagement of both expert and young chemical scientists.

Activities

- Activity A: Organisation of national expert network
- Activity B: Organisation of workshops and training events
- Activity C: Provision of relevant documentation to the trainees

Content of the E-library (Activity C)

Among others:

1. SAFETY AND SECURITY IN CHEMICAL LABORATORIES AND THE CHEMICAL INDUSTRY
   By Alastair Hay (ICAS)
2. DRAFT SYLLABUS DESCRIPTOR
   By TNO experts' group, leaded by Dean Noort
3. CHEMICAL LABORATORY SAFETY AND SECURITY
   By the National Research Council, Lisa Moreno and Tina Masciangioli editors
4. PROMOTING CHEMICAL LABORATORY SAFETY AND SECURITY IN DEVELOPING COUNTRIES
   By the National Research Council, Committee on Promoting Safe and Secure Chemical Management in Developing Countries
5. Etc.

Provisional programme regional workshop (Activity B)

- Module 1 - Concept of Dual-use Chemicals
- Module 2 - Theft and Diversion of Industrial or Laboratory Chemicals
- Module 3 - Implementing Chemical Safety and Security Measures
- Module 4 - International Chemical Controls

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Module I

Concept of Dual-use Chemicals

Concept of dual-use

The concept of dual-use is introduced using the definitions of the OPCW, Sandia National Laboratory and the European Union – Trade Section among others.

Chlorine is one of the most important building blocks of modern industry

17
Cl
35.45

BUT

Examples of dual-use

In this section slides describing different chemical substances are presented:

- Pesticides
- Drugs: Pseudoephedrine
- Sodium azide, sodium amide
- Certain alkyl nitrates
- Chemicals such as chlorine, phosgene and hydrogen cyanide
- Thiodiglycol
- Arsenic Trichloride
- DMMP: Dimethyl methyl phosphonate
- Toxic chemicals: crops and livestock

Video

Module II

Theft and Diversion of Industrial or Laboratory Chemicals

Theft and Diversion etc

In this section different examples on the following themes are introduced:

- Potential targets
- Diversion of industrial chemicals
- Examples of the "Terrorist Handbook"
- Are there dangerous chemicals in your Institute/Laboratory?
- The concept of Chemicals of Concern
- Real-life examples
- Publication of dual-use information

Mayors game

Module III

Implementing Chemical Safety and Security Measures

Chemical Safety & Security

In this part, the concepts of Chemical Safety and Chemical Security as well as the conflicts between both are presented.

Introduction of good laboratory practices and setting priorities.

Chemical management

Be sure you incorporate:

- Safety and security management
  - Physical security of the site
  - Allocation of responsibilities
  - Emergency planning and response
  - Chemical Safety and Security
- Cradle-to-grave care of chemicals
- Inventory and storage management

Conflict between CSS

Chemical Safety and Security (CSS) measures have a lot in common, but there are some conflicts as well:

Conflict	Safety	Security
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	Changes Personal data protection Outsourcing of resources	Stability Data access for profiling Making use of own resources

Site visit

Optional part of the programme is a visit to an university or research institute. For example:

សាកលវិទ្យាល័យភូមិន្ទភ្នំពេញ

ROYAL UNIVERSITY OF PHNOM PENH

Centres of Excellence

Module IV

International Chemical Controls

International Controls

- Australia Group
- European Union
- Organisation for the Prohibition of Chemical Weapons
- United Nations 1540 Committee
- Etc.

What we want to achieve

Network participants will be able to reflect upon the challenges involved in scientific and related research with dual use chemicals materials.

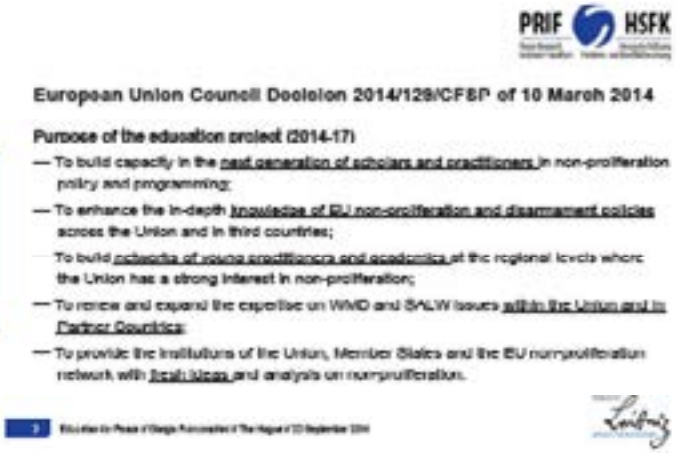
Participants

- Are aware and recognise the issue of dual use chemicals;
- Can take responsibility regarding dual use possibilities;
- Promote the discussion on suitable countermeasures at the(ir) workplace.

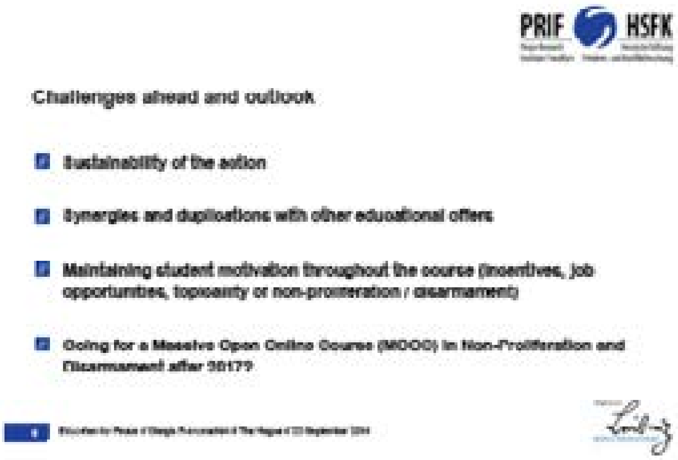
The project should create a basis for collaboration (on future institutional courses on dual use issues).

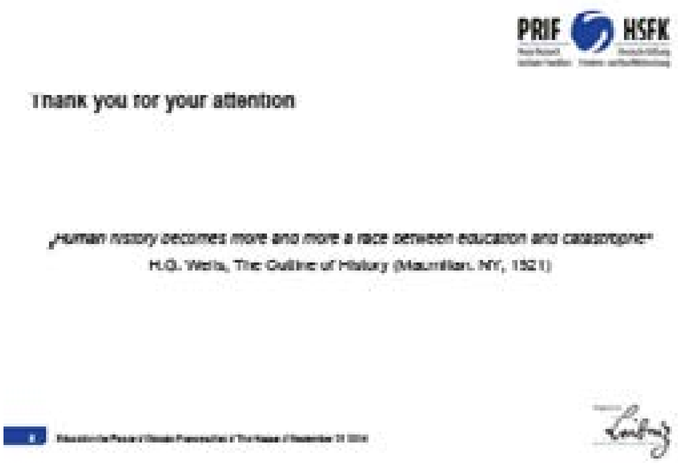
Thank you for your attention.

Giorgio Franceschini: EU Non-Proliferation & Disarmament Education




PRIF HSFK
Milestones (2014-17)
2014: Start of EU Fellowships; eLearning concept development
2016: production and test of 16 eLearning units
2016: full-test of all eLearning units at Goethe University Frankfurt (one semester course within Master Programme "Peace and Conflict Studies")
2017: full launch of the EU Non-Proliferation and Disarmament eLearning programme on open website (www.nonproliferation.eu)


PRIF HSFK
Challenges ahead and outlook
Sustainability of the action
Synergies and duplications with other educational offers
Maintaining student motivation throughout the course (incentives, job opportunities, topicality of non-proliferation / disarmament)
Going for a Massive Open Online Course (MOOC) in Non-Proliferation and Disarmament after 2017?


PRIF HSFK
Thank you for your attention
„Human history becomes more and more a race between education and catastrophe"
H.G. Wells, The Outline of History (Macmillan, NY, 1921)

EDUCATION FOR PEACE

OPCW Conference on Education and Outreach
22/23 September 2014
Breakout Session 2, Panel 4
Crafting Messages That Work

Moral education of students and ethical dilemmas of scientists

Chrétien Schouteten

chretienschouteten@kpnplanet.nl

OVERVIEW

- Biographical note and Interests
- Ethical Dilemmas and Chemical Weapons
- Experiences and Statements

BIOGRAPHICAL NOTE

- Research-assistent in polymer chemistry
- Educator of chemistry teachers
- Chemistry teacher
- Retired

MY INTERESTS

Moral education of students:

- Critical thinking
- Careful communication and cooperation
- Awareness of own behaviour and social responsibility
- Personal development

Ethical dilemmas of scientists:

- Human side of science
- Social responsibility
- Biographical stories

ETHICAL DILEMMAS

- **Peace**

Use of chemical weapons, incendiary bombs, herbicides, cluster munition, landmines ...

- **Justice**

Sharing of raw materials, sources of energy, knowledge, technology, licencies, fraud, credits for scientific discoveries ...

- **Sustainability**

Innovations, green chemistry, environmental protection, biotechnology, genetic modification, research on animals ...

CHEMICAL WEAPONS

- Chemistry
- Biology
- History
- Ethics

A special role to emphasize the human factor:

- Literature
- Visual Arts
- Performing Arts

CHEMISTRY + BIOLOGY

- Definition and types
- Differences with biological weapons
- Structure and properties
- Toxicology
- Dual use
- Synthesis, analysis, protection, prevention, treatment and destruction
- Working and effects of nerve gases

HISTORY + ETHICS

- Use in the past
- Ieper (1915-1918)
- Halabja (1988), Tokyo (1995), Damascus (2013)
- International politics and laws
- CWC and OPCW

- Scientific freedom?
- Social responsibility of chemists?
- Chemistry for war or peace?
- From moral awareness to a moral code?

LITERATURE

- **Poems**

Dulce et Decorum Est, *Wilfred Owen;*

Anthem for Doomed Youth, *Siegfried Sassoon;*

- **Novels**

Under Fire, *Henri Barbusse;*

Goodbye to All That, *Robert Graves;*

All Quiet on the Western Front, *Erich Maria Remarque;*

The Janus Head, *Hermann Heinz Wilk,*

Summer 14, *Rolf Hochhuth;*

Regeneration-Trilogy, *Pat Barker*

VISUAL ARTS

- **Comics**

Fritz Haber I-IV, *David Vandermeulen*

- **Paintings**

Gassed, *John Singer Sargent*

- **Drawings**

Christ with Gas Mask, *Georg Grosz*

- **Etchings (51)**

The War, *Otto Dix*

- **Cartoons**

From man-monkey to monkey-man, *Albert Hahn*

JUST TWO EXAMPLES

From man-monkey to monkey-man, *Albert Hahn*

Christ with Gas Mask, *Georg Grosz*

PERFORMING ARTS

- **Music**

War music, war songs

- **Films**

War films

Haber, *Daniel Ragussis;*

Clara Immerwahr, *Harald Sicherits*

- **Plays**

Poisonous Gas in Our Country

A TV talkshow:

chemist, general, peace activist, Minister of Foreign Affairs, war sociologist. industrialist

The Chemist

A family tragedy:

Fritz Haber and his 2 wives and 2 sons, Max Planck

POISONOUS GAS IN OUR COUNTRY

(not only) ENTHUSIASM AND FUN

Willem Lodewijk Gymnasium Groningen, The Netherlands, 2001

Gymnasium 1 Severomorsk, Russia, 2004

THE CHEMIST

Centenary Fritz-Haber-Institute of Max-Planck-Society Berlin, 2011

Theater 89

EXPERIENCES A MULTIDISCIPLINARY APPROACH STIMULATES:

- connecting chemistry, society and ethics
- showing the complexity of ethical dilemmas
- recognizing and analyzing moral issues
- 'humanizing' chemists
- broadening and deepening knowledge and abilities
- interest, engagement and critical thinking, careful communication and cooperation
- awareness of social responsibility
- personal development
- creative expression of thoughts and feelings

JUST A FEW EXPRESSIONS OF STUDENTS

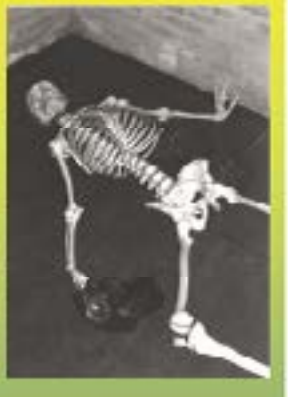
Martin Wagemakers e.a.

Erik Jan Blanksma e.a.

A FEW MORE

Wouter Hilhorst e.a.

Benne Holwerda e.a.



THE LAST ONE ...

Methijs Kloester

STATEMENTS

1.
Teachers have a task in promoting the moral education of students. It is a special challenge for *chemistry* teachers to connect this moral education to ethical dilemmas of chemists.

2.
Too many chemistry teachers are unaware, unable or unwilling to realise this connection. Educators of chemistry teachers should structurally draw more attention to ethical dilemmas of chemists.

3.
A multidisciplinary approach of ethical dilemmas is necessary and should include (if possible) literature and arts in order to emphasize the human factor. Students should be challenged to express their thoughts and feelings in a creative way.

STATEMENTS

4.
OPCW should give more support to (educators of) chemistry teachers in (ethical) questions connected with the subject chemical weapons.

5.
OPCW should organise every year an international conference for (educators of) chemistry teachers in order to share experiences and best practices with the subject chemical weapons.

Fiona Clark: Reaching Students and the Need for a Multidisciplinary Approach

Reaching Students and the Need for a Multidisciplinary Approach

Fiona Clark - International Baccalaureate Organization (IB)

Discussion Plan

- Introduce the International Baccalaureate (IB)
- Overview of the Chemistry in Conflict project
- Secondary (high school) audience
- Organic chemistry knowledge
- Research
- Writing projects
- Debates
- Presentations
- Lab experiments

Our learning community

ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS

International Baccalaureate
Baccalauréat International
Bachillerato Internacional

Universiteit Leiden

Local Dutch and International Schools

International Baccalaureate
Baccalauréat International
Bachillerato Internacional

- The International Baccalaureate® (IB) is a non-profit educational foundation, motivated by its mission, focused on the student.
- Our four programmes for students aged 3 to 19 help develop the intellectual, personal, emotional and social skills to live, learn and work in a rapidly globalizing world.
- Founded in 1968, we currently work with 3,841 schools in 147 countries to develop and offer four challenging programmes to over 1,205,000 students aged 3 to 19 years.

IB Mission Statement

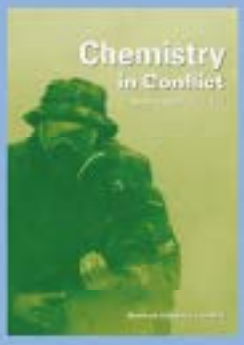
The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

Chemistry in Conflict

- A high school chemistry workbook
- Available in both student and teacher format
- Focused on chemical weapons, dual use chemicals and related ethical issues




Our learning community
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International Schools

Judi Sture: Reaching Students and Scientists with the Multi-disciplinary Approach

OPCW
THE HAGUE
22 SEPTEMBER 2016

EDUCATION FOR PEACE: NEW PATHWAYS FOR SECURING CHEMICAL DISARMAMENT

Reaching Students and Scientists with the Multi-disciplinary Approach

Judi Sture, PhD
Bradford Disarmament Research Centre
University of Bradford, UK

Ethics as a tool to approach science security

- Most science practitioners, funders, policy-makers and so on will accept an ethics approach if it is introduced as "social responsibility"
- Necessary to demonstrate an ethics framework to show how this can "work" in practice
- Ethics is still viewed as a blockage by many, so requires patience and some good examples to use in teaching and sharing
- Within institutions it is vital to get top-down "buy-in" so that everyone has to engage with the topic of security
- BY TAKING A MULTI DISCIPLINARY APPROACH WE CAN AVOID DISCIPLINE SPECIFIC PROBLEMS:
  - A narrow, subject-specific perspective
  - A fear that only one discipline is being "targeted"
  - We can take advantage of a diverse set of skills, perspectives and knowledge and pool these into a central "pot" from where they can be shared as best practice

Benefits of an ethics approach to security

- Multi-disciplinary development is best tackled through professional sharing opportunities, rather than describing these as "classes" or "training"
- If colleagues are to have such events imposed on them, they should be shown the clear advantages of engagement, e.g.:
  - Increased clarity of risk assessments,
  - better ethical assessment of their work,
  - enhanced bids for grants,
  - provision of answers to hostile questions about their research
- Emphasise reduction of risks and enhancement of benefits:
  - Better safety for staff , the local area and beyond
  - Reduced Insurance risks for the institution
  - Institutional reputation enhanced
  - Avoidance or minimisation of litigation arising from scientific research/work
  - And so on....

Ethics, norms and professional levels

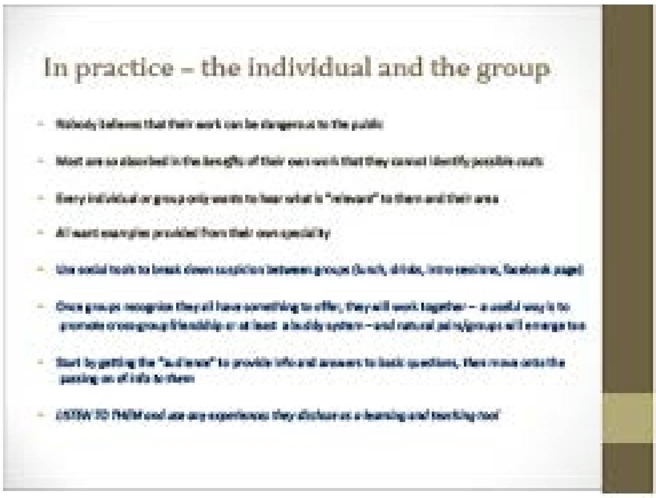
- We are interested in promoting a culture of security in every day science
- Our audience believes they are already doing this
- Once people have an ethics "how to" toolkit that shows them how to ask the right questions in order to satisfy themselves and others that they are doing security effectively, they will usually use it
- The Responsible Conduct of Research (RCR) approach is useful but we are talking about day to day scientific activity that may not constitute research – but which may still be potentially dangerous
- This is a career-long activity from student to Continuing Professional Development
- Compose classes/groups where possible according to their level of seniority or experience – people will only engage effectively with ethical issues at their level of responsibility

Cultural and professional identities

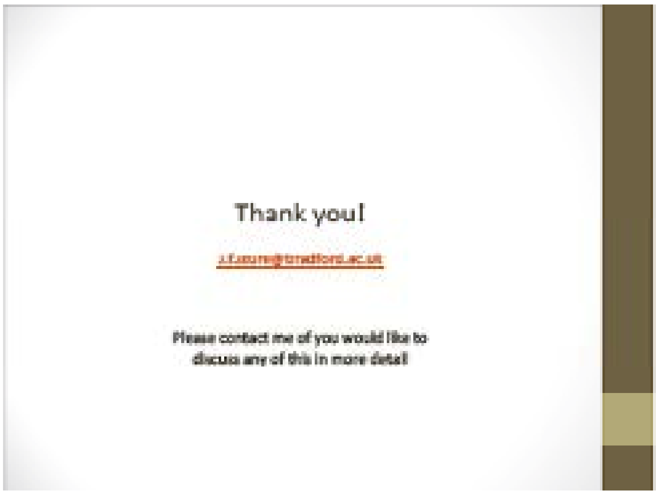
- Science security is best promoted as a development activity, not a security one (avoid the post-war 'diversion' approach)
- Must show people how adopting a security norm will benefit them
  - avoid a "them and us" approach
  - this is a global issue, not a "protect the West" issue
- Vital to look at the cultural identities of the "taught" group/individuals – they are our partners in security (consider their religious, economic, social and technological drivers), not children being taught by parents
- Not teaching something new – people already want to practice responsible science – we can simply provide tools to enhance what's *already in place* (even if that is not much)
- Science security can be promoted as a norm, just as biosafety is an accepted norm and hazardous substances SOPs are a norm (for example)

In practice – the tutor

- Use the audience/group/individual as a helper in the sharing of best practice
- A regular seminar or lunch session is a good location to do this sort of activity (informal way to carry out a formal requirement)
- Have a list of points to get across but do this in different ways to suit each "audience"
  - Chalk and talk may work in some settings (e.g. non-western teaching)
  - Group discussions
  - Small group tasks and presentations
  - Problem-based learning/active group learning is excellent: groups solve the problem and then tutor aligns their findings with the desired outcomes of the session)
  - Online classes and groups can work really well but the tutor needs to be up to speed on technology (or have some kind of tutors assistant)
  - Be prepared to do at least some lecturing element if the group expect this
- CAVEATS
  - Grow a thicker skin
  - Invest in a large crash helmet
  - Be prepared for antagonism
  - Be prepared for constant role-rule-ambiguity
  - Be prepared to repeat everything over and over again
  - Heavy administrative load if done formally
  - Heavy communication load before, during and after sessions


In practice – the individual and the group
Nobody believes that their work can be dangerous to the public
Most are so absorbed in the benefits of their own work that they cannot identify possible costs
Every individual or group only wants to hear what is "relevant" to them and their area
All want examples provided from their own speciality
Use social tools to break down suspicion between groups (lunch, drinks, intro sessions, facebook page)
Once groups recognise they all have something to offer, they will work together – a useful way is to promote cross-group friendship or at least a buddy system – and natural pairs/groups will emerge too
Start by getting the "audience" to provide info and answers to basic questions, then move onto the passing on of info to them
LISTEN TO THEM and use any experiences they disclose as a learning and teaching tool


Ethics Toolkit and other guides
Available for free download at:


Thank you!
Please contact me of you would like to discuss any of this in more detail

Jo L. Husbands: Framing Biosecurity as Part of Responsible Science: Lessons from the NAS Experience

Framing Biosecurity as Part of Responsible Science: Lessons from the NAS Experience

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 international partners, but are those of the author alone and do not necessarily represent their official positions.

Characteristics of the Biosecurity Landscape

- Wide and varied array of stakeholders
  - Relative lack of awareness of biosecurity
  - Continuing controversies over threats and remedies
- Weak regime though a strong international norm
  - Multiple organizations relevant to addressing biorisks

What's Needed

- A way to frame biosecurity that can engage many stakeholders and fit within mandates of relevant international organizations
- Proposal: Use "Responsible Science"
- Draws on 10+ years of experience from NAS and its international partners
  - General engagement activities with scientific community
  - Education Institutes to build networks of faculty

Message #1

Emphasis on Responsible Science provides important opportunities:

- To build upon existing culture of responsibility in the life sciences (and science more generally)
- To take advantage of increasing international emphasis on Responsible Conduct of Science/Research Integrity

Existing Culture of Responsibility

- Traditions of self-governance in the life sciences
  - Sometimes independent initiatives (e.g., some of the continuing efforts related to dual use issues)
  - Often in conjunction with government guidelines, other "soft law" measures
- Biosafety norms and practices
- Codes of ethics and conduct (and practice in industry)
- Norms of science in service to humanity

Growing International Attention

- Reflects increasingly global nature of life sciences research and capacity
  - Building common standards and practices to facilitate collaboration
  - Need to respond to ethical lapses
  - Genuinely international
- Grounded in social responsibility of science – with freedom comes responsibility
- Projects and statements from many sources; some address security issues

Examples

- 2006 IAP (Global Network of Science Academies) Statement on Biosecurity
  - Principles for science bodies preparing codes of conduct
- 2012 IAP/InterAcademy Council report, *Responsible Conduct in the Global Research Enterprise*
  - "Researchers should bear in mind the possible consequences of their work, including harmful consequences, in planning research projects"
  - Education handbook coming out in late 2014
- 2014 IAP *Statement on Realising Global Potential in Synthetic Biology: Scientific Opportunities and Good Governance*
  - "Maintaining biosecurity brings challenges beyond those of biosafety: for biosecurity the core defence rests on the responsibility of the scientific community."

Message #2

Emphasis on responsible science makes scientists part of the solution, not part of the problem

- Scientists and scientific organizations hold important keys to building and sustaining a biosecurity culture
- Scientists and scientific organizations are already contributing to extending the existing culture of responsibility to include biosecurity

Message #3

Framing as Responsible Science:

- Facilitates reaching widest range of scientists (e.g., in academia, industry, public health)
- Is compatible with more security-focused activities for specialized, more directly affected audiences
- Can complement the existing legal and regulatory structure and provide a basis for discussing additional measures or changes in practices

Some Signs of Acceptance

- "Reduce proliferation risks through the advancement and promotion of safe and responsible conduct in the biological sciences." One of five deliverables for Biological Security sub Working Group of the Global Partnership
- "Responsible Science" was the theme for October 2013 GPP meeting
- "In order to further efforts on education and awareness-raising about risks and benefits of life sciences and biotechnology, States Parties agreed on the value of using science responsibly as an overarching theme to enable parallel outreach efforts across inter-related scientific disciplines…" Report of 2013 BWC Meeting of States Parties
- "Our aim is to contribute to efforts towards fostering a culture of responsible science. This will ensure that current and future generations of scientists understand – and respect – the impact that their work can have on security." 2013 Nobel Peace Prize Lecture, Ahmet Üzümcü, OPCW Director-General

THANK YOU!

Jo Husbands
jhusband@nas.edu

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

Resource Materials on Responsible Science from International Science Organizations

- IAP/IAC (2012). *Responsible Conduct in the Global Research Enterprise.* [illegible]
- World Science Forum (2011). *Declaration of the Budapest World Science Forum 2011 on a New Era of Global Science.* [illegible]
- ICSU (2011). Amendment to Statute 5: *The Principle of Universality (Freedom and Responsibility) of Science.* [illegible]
- 2nd World Conference on Research Integrity (2010). Singapore Statement. [illegible]
- World Economic Forum (2008). *Annual Meeting of New Champions of the World Economic Forum: Tianjin Statement by the IAP Young Scientists.* 2008. http://www.interacademies.net/Activities/Projects/IAPYoungScientistsProgramme/13840.aspx
- ICSU Committee on Freedom and Responsibility in the Conduct of Science (2008). Freedom, Responsibility and Universality of Science. [illegible]
- UNESCO (United Nations Educational, Scientific and Cultural Organization). 1999. Declaration on Science and the Use of Scientific Knowledge. World Conference on Science, Budapest, Hungary, June 26–July 1. [illegible]

IUPAC Advancing Worldwide Chemistry

Responsible Science, Ethical Behavior and Codes of Conduct

Leiv K. Sydnes

University of Bergen, Norway
Chair of CHEMRAWN
Chair, IUPAC Committee on Freedom and Responsibility in the Conduct of Science CFRS

CHEMRAWN, The Hague, The Netherlands, September 23rd, 2014

IUPAC Advancing Worldwide Chemistry

Key facts about the world

1. Our world is a dynamic and very complex chemical entity.
2. All human activity influences the chemical balance.
3. The impact may be local, regional and global, but almost always complex.
4. Knowledge is necessary to restore and keep the balance.

IUPAC Advancing Worldwide Chemistry

Science and society interplay

- The significant value of research for society is undisputable.
- The public trust in science and technology is a pillar in society.
- The strength of this pillar depends critically on the collective reputation of research and researchers.

Thus: The research community has to act in a way that is regarded as ethical by people.

IUPAC Advancing Worldwide Chemistry

Ethical aspects are relevant because

1) An independent piece of knowledge or a fact **has no ethical** dimension.
2) Knowledge acquired and utilized by a human being **has in principle an ethical** dimension
3) Knowledge in certain disciplines is more prone to misuse and abuse than others.

IUPAC Advancing Worldwide Chemistry

Consequences of internationalization

- Increased migration due to more multicultural and less homogenious societies.
- Increased tension due to cultural, religous and democratic differences.
- The perception of risks, benefits and ethical behavior has become less uniform.

Conclusion: Clear ethical guidelines are necessary!!

IUPAC Advancing Worldwide Chemistry

Two categories of ethical norms

General norms:

Ethical norms for all sciences and scientists.

Specific norms:

Discipline-specific norms, which have more far-reaching consequences in some sciences than others.

IUPAC Advancing Worldwide Chemistry

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 **outreach** (ICSU Principle of Universality of Science)

IUPAC Advancing Worldwide Chemistry

Dual use – a chemical challenge

Throughout history the dual or rather multiple use of chemicals has been of utmost importance, and examples of beneficial use, misuse, or even abuse are countless.

To communicate this fact is necessary, but a challenge and a risk because without ethical standards even little knowledge in chemistry can turn into a disaster.

An example of dual use

Stabilizing dyed clothes and fabrics

Organization for Prohibition of Chemical Weapons (OPCW)

Preamble

The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

www.singaporestatement.org

Societal Considerations

Researchers as well as research institutions should recognize that they have an **ethical** obligation to weigh **societal** benefits against risks inherent in their work.

IUPAC Advancing Worldwide Chemistry

ICSU Advice on "Science Communication"

It is the responsibility of scientists

1)To communicate research results to society, especially those with an impact on human survival or well being;

2)To assist the media in reporting scientific findings correctly;

3)To strive for high standards in communication: accuracy, individual accountability, reflect uncertainty, avoid sensationalism.

IUPAC Advancing Worldwide Chemistry

Code-of-Conduct

The challenges outlined above call for more focus on ethical norms and standards in the chemical community.

IUPAC and OPCW have discussed composing a code-of-conduct.

So far a personal, living code has been proposed.

IUPAC Advancing Worldwide Chemistry

Draft elements for a living code

- Ensure that the work is ethical and upholds the dignity, standing and integrity of the profession;
- Work to ensure that knowledge and technologies are used for the benefits of humankind and the environment;
- Ensure that chemicals, equipment and facilities under their care are not used for illegal or harmful.

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More draft elements

- Minimize risk to people and the environment;
- Make sure the work is in compliance with national laws and international conventions;
- Report misuse of chemicals and facilities to relevant authority;
- Update knowledge on risks of chemicals;
- Conduct regular HES assessments;
- Contribute to educate the public about issues related to chemistry.

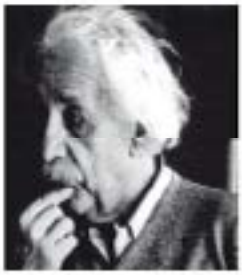
IUPAC Advancing Worldwide Chemistry

Educational consequences

In each and every college and university:

- Reflect on the societal relevance of what we learn;
- Think about if and how new knowledge influences the Nature and our civilization;
- Compose a personal Code of Conduct, a required part of any professional degree programme;
- In the natural sciences, make all the weapons conventions a part of the curriculum.

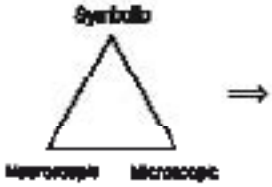
"The significant problems we face [today] cannot be solved at the same level of thinking we were at when they were created."



IUPAC Advancing Worldwide Chemistry

Chemistry into the real world

Chemists' triangle



Life's pyramid

Scott Bohle: Ethics and the Professional Chemist: Training in University Programs; How do we train a Professional Scientist?

Ethics and the Professional Chemist: Training in University Programs

How do we train a Professional Scientist?

Professor Scott Bohle
Chemistry - McGill University

Related Higher Education Professional Programs

- Medicine (Dentistry)
- Law
- Business
- Engineering

Formal Ethics Training (McGill University, 2014)

Profession	Classes	Notes
Medicine, M.D.	Medical Ethics/Health Law	7 sessions at end of second year as part of the transition to clinical practice.
Law, LLB.	Legal Ethics, 1 and 2.	One of six required second year courses. Taken over whole year as part of a Practicum series.
Engineering, B. Eng.	Introduction to the Engineering profession	1 credit first year orientation course for all engineering students. Ethics covered briefly
Business, B. Comm.	Ethics in Management	Full semester 3 credit course utilizing case studies.
Chemistry, B.Sc.		

Two Common Concerns about Introducing Ethics into Chemistry Training

1. Professional ethics are best taught in the research advisor/student encounter at the graduate level

Research groups are often large

Modern research is often highly interdisciplinary

Competitive enormous pressures for funding and publication priority.

One on one time with advisor tends to suffer, and with it the chance for the informal opportunities for training, such as in professional ethics.

Ethical training in chemistry continued

2. Not possible to teach ethics: people either are moral or they are not.

But modern science is an abstract highly technical enterprise everyday morality not really germane.

For example
Who should be a co-author? How does one handle spurious or unaccountable data? Can an experiment by done safely? Role of intellectual property in all phases of science?

Towards solutions....

Not there are obviously ethical issues not mathematical problems with a single solution)

Resources for students and advisors; case studies in ethical science.

Awareness of the Chemical Weapons issues and existence of the of Chemical Weapons Convention.


McGill
OSS
Office for Science and Society
Organisation pour la science et la société


DEMYSTIFY SCIENCE
KEEP PEOPLE UP TO DATE ON SCIENTIFIC PROGRESS
FOSTER CRITICAL THINKING
SEPARATE SENSE FROM NONSENSE
KEEP PEOPLE OUT OF THE CLUTCHES OF CHARLATANS

Reflections on Chemistry Students and Teachers' Knowledge of Concepts Related to the CWC

Temechegn Engida
temechegn@gmail.com
22-23 September 2014
The Hague, Netherlands

INTRODUCTION

- Peace is in the mind of people.
- As such the best avenue to create peace is to educate students through the total curriculum.
- Question: Where are we in this regard?

Case Study

Methodology

- A brief look at the Ethiopian secondary school and undergraduate Chemistry curricula contents in relation to multiple uses of chemicals and the work of OPCW
- Administering a brief Test on the same issues (prepared by myself, not yet validated) in selected senior secondary schools and a University in Ethiopia
- Sample: 52 senior secondary school students, 5 secondary school chemistry teachers (BSc Degree Holders, and 11 University Lecturers (MSc degree holders). Selected on availability and willingness basis

Case Study..

Findings

- Ethiopia's recently developed secondary school chemistry curriculum and harmonized undergraduate chemistry curriculum do not seem to have been influenced by developments in the area of multiple uses of chemicals.
- Neither the objectives nor the content areas of the curricula make any reference to the ideals of the CWC..

Case Study ...

- The University Instructors (MSc holders) attained only as high as 5 out of (only 2 teachers) and as low as 2 out of 8 (5 teachers).

⇒Can we assume that these university instructors (the majority of whom scored about 20% on a test prepared for high school students) are ready to teach secondary school chemistry teachers in relation to the concepts investigated?

Case Study ...

- Some of the secondary school chemistry teachers scored lower than their students in the test.

⇒Our university instructors, high school chemistry teachers, students and their corresponding curricula are not ready for multiple uses of chemistry concepts or not ready to contribute meaningfully to sustainable development agenda through green chemistry education.

Proposals

- INVEST HEAVILY ON CHEMISTRY TEACHERS DEVELOPMENT (BOTH PRESERVICE AND INSERVICE) IN A SYSTEMATIC WAY!
- A mere reliance on developing new chemistry content and making them available for teachers to read could take us no where.
- Similarly, training chemistry teachers in just general pedagogical strategies would not be effective.
- So what should be done?

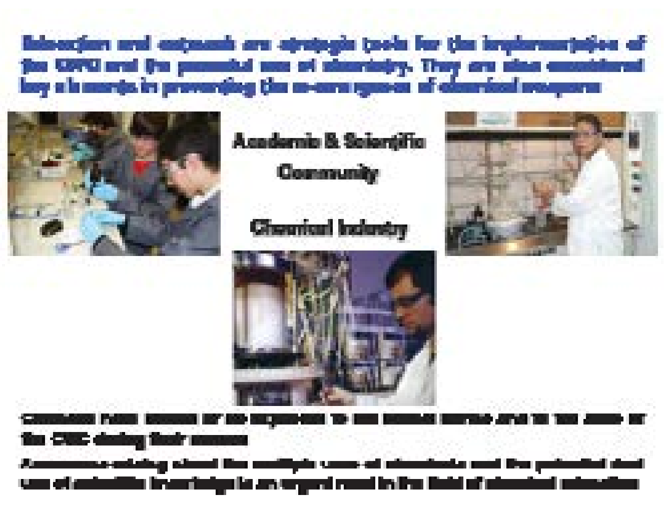
Proposals …

- Approach the issue through Model of integration of peace values into school curriculum (UNESCO, 2001)

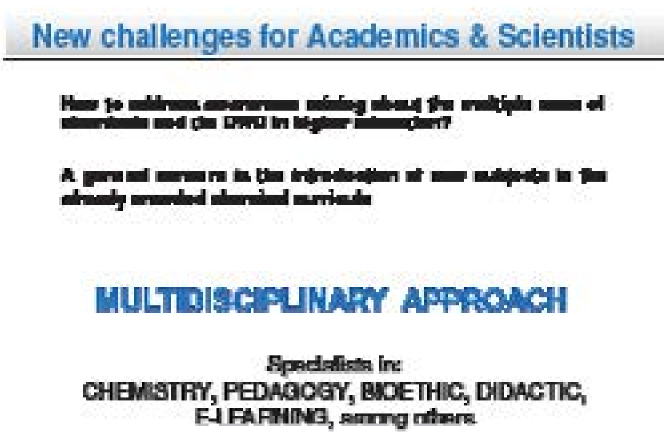
Who Should be doing these?

- National Chemical Societies need to take the lead as they will have easy access to relevant ministries in their respective countries
- FASC should play a catalytic role in terms liaising with African chemical societies, other chemical societies in the world and regional and international professional societies (maybe through FASC's CCEA).
- Development partners that have science education for sustainable development need to be convinced that, ultimately, it is the investment on the youths' science education that determine the attainment of the sustainability agenda.

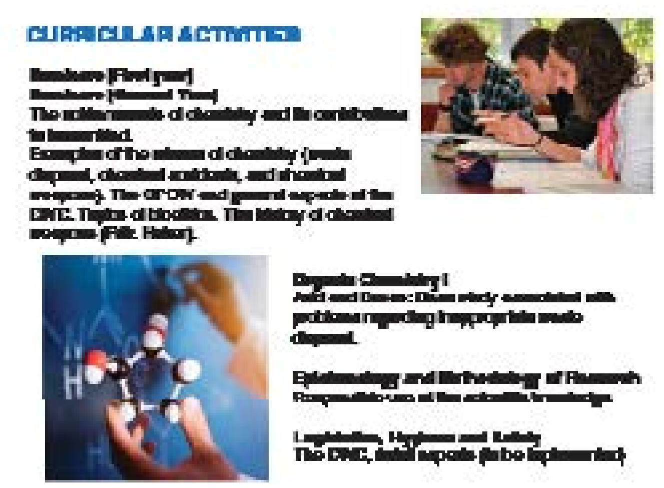

EDUCATION FOR PEACE:
NEW PATHWAYS FOR SECURING CHEMICAL DISARMAMENT
THE CHALLENGE TO INTRODUCE TOPICS RELEVANT TO THE CWC IN THE CHEMICAL EDUCATION
ARGENTINA


Academic & Scientific Community
Chemical Industry


OBJECTIVE
RESPONSIBILITY
SUSTAINABILITY


New challenges for Academics & Scientists
MULTIDISCIPLINARY APPROACH
Specialists in:
CHEMISTRY, PEDAGOGY, BIOETHIC, DIDACTIC,
E-LEARNING, among others


Facultad de Ciencias Bioquímicas y Farmacéuticas
Curricular activities
Elective courses
Complementary activities


CURRICULAR ACTIVITIES

ELECTIVE COURSES

Introduction to Green Chemistry

Biosilica

COMPLEMENTARY ACTIVITIES

WORKSHOP
CHEMISTRY FOR PEACE: ethics and professional responsibility in education
2-3 June, 2013 Rosario, ARGENTINA

PARTICIPANTS
Academics, Scientists
Chemical Industry
Professional and scientific associations
Federal agencies

WORKING AT HIGH SCHOOL

THE WEEK OF CHEMISTRY
Universidad Nacional de Rosario
ARGENTINA

600 students and 60 teachers each year

Conferences:
CHEMISTRY FOR PEACE

MOVING FORWARD

II WORKSHOP: CHEMISTRY FOR PEACE
May 2014
FCByF - UNR

2014-15 Project: FCByF-UNR and Ministry of Education [High School]
Seminars for teachers and students of Technical High Schools - Chemistry

Working together for a world free of chemical weapons

THANK YOU

Douglas Fredman: Safe Science: Promoting a Culture of Safety in Academic Chemical Research

NATIONAL ACADEMY OF SCIENCES

Safe Science: Promoting a Culture of Safety in Academic Chemical Research

Douglas Friedman, Ph.D.

Board on Chemical Sciences and Technology
Board on Human-Systems Integration
National Research Council
National Academy of Sciences
Washington, DC USA

Report Released!

Download PDF and other materials at:

http://dels.nas.edu/safescience

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The Task at Hand

- Examine laboratory safety in chemical research in non-industrial settings.
- Compare practices and attitudes in these settings with knowledge about promoting safe practices from the behavioral science literature.
- Describe, identify the strengths and shortcomings of, and provide guidance on, the roles of the current hierarchy of actors responsible for laboratory safety in U.S. education.
- Examine knowledge from the behavioral sciences and experience with safety systems from other sectors (such as industrial research facilities, nuclear energy, aviation, and health care) for key attributes of successful safety systems and cultures.
- Provide guidance on systems and tools that might be established, maintained, and utilized to raise the overall safety performance.

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Study Committee & Staff:
Broad Community Engagement

Committee

H. Holden Thorp (Chair), Washington University in St. Louis
David M. DeJoy (Vice-Chair), University of Georgia
John E. Bercaw, NAS, California Institute of Technology
Robert G. Bergman, NAS, University of California, Berkeley
Joseph M. Deeb, ExxonMobil Corporation
Lawrence M. Gibbs*, Stanford University
Theodore Goodson, III, University of Michigan
Andrew S. Imada, A. S. Imada & Associates
Kimberly Bagley Jenkins, Oak Ridge National Laboratory
Bradley L. Penuliate, Massachusetts Institute of Technology
Katrina M. Roberts, University of California, Berkeley
Jennifer M. Schomaker, University of Wisconsin-Madison
Alice M. Young, Texas Tech University

Principal NRC Staff

Douglas Friedman, Study Director
Toby Warden, Associate Director

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Organizational Change:
Cultural Topology

Pathological	Bureaucratic	Generative
Power oriented	Rule oriented	Performance oriented
Low cooperation	Modest cooperation	High cooperation
Messengers shot	Messengers neglected	Messengers trained
Responsibilities shirked	Narrow responsibilities	Risks are shared
Bridging discouraged	Bridging tolerated	Bridging encouraged
Failure→ scapegoating	Failure→ justice	Failure→ inquiry
Novelty crushed	Novelty→ problems	Novelty implemented

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Culture Topology – Focused on Safety

Hudson, 2007; Parker et al., 2006

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What is Safety Culture?

- Refers to an organization's shared values, assumptions, and beliefs specific to workplace safety or, more simply, the importance of safety within the organization relative to other priorities.
- Arises not because of a set of rules, but because of a **commitment to safety throughout an organization**
- Supports the free exchange of safety information, emphasizes learning and improvement, and assigns greater importance to identifying and solving problems rather than placing blame
- **High importance is assigned to safety all the time**

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How to Move the Ball Forward?
Categories and Selected Findings

- **Institution-Wide Dynamics and Resources**
  - A strong, positive safety culture is a core element in the responsible conduct of research.
- **Research Group Dynamics**
  - The deeply rooted hierarchy and highly competitive nature of academic research can inhibit the advancement of a strong, positive safety culture.
- **Data, Hazard Identification, and Analysis**
  - Leading indicators from hazard analysis, risk mitigation, and best practices are not being widely used in laboratory safety planning.
- **Training and Learning**

  Laboratory safety training is highly variable across institutions, departments, and research groups.

NATIONAL ACADEMY OF SCIENCES

Institution-Wide Dynamics and Resources
Recommendations

1. Institution leaders must **actively demonstrate** that safety is a core value.
2. Leaders should **include fostering a positive safety culture** in criteria for faculty promotion, tenure, and salary decisions.
3. Leaders should **consider what research can be done safely**, given resources available.
4. Institutions should **have comprehensive risk management plans** for lab safety.

Paraphrasing of recommendations used from Chemical and Engineering News (2014), 92(41), 7.

NATIONAL ACADEMY OF SCIENCES

Research Group Dynamics
Recommendations

5. Department chairs and principal investigators (PIs) should **use engagement strategies and institutional support** to promote a strong safety culture.
6. Department chairs should **promote robust safety collaborations** among PIs, researchers, and safety professionals.

Paraphrasing of recommendations used from Chemical and Engineering News (2014), 92(41), 7.

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Data, Hazard Identification, and Analysis
Recommendations

7. ACS and other organizations should **establish and maintain** an incident and near-miss reporting system.
8. Researchers should **incorporate hazard analysis** into lab notebooks and research processes.

Training and Learning
Recommendation

9. Department chairs and PIs should **develop lab-centric activities** to complement other safety training.

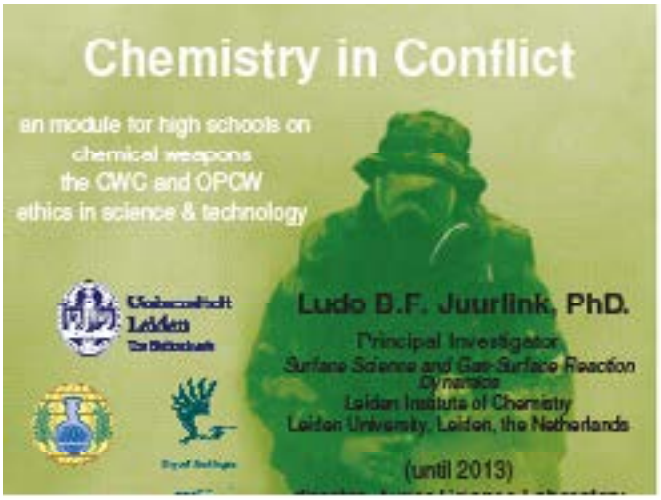
Paraphrasing of recommendations used from Chemical and Engineering News (2014), 92(41), 7.

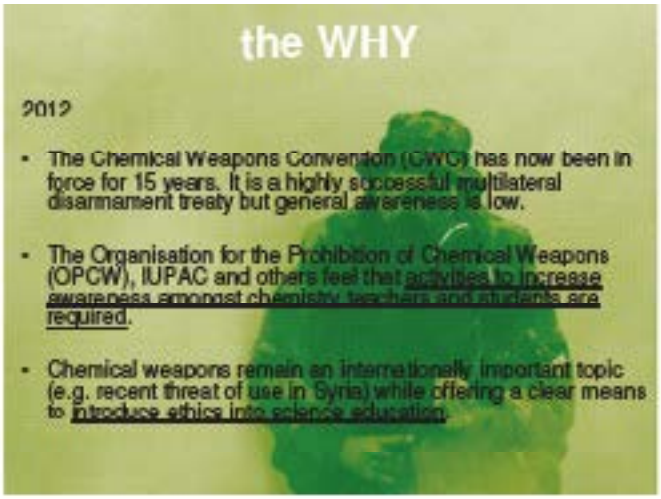
NATIONAL ACADEMY OF SCIENCES

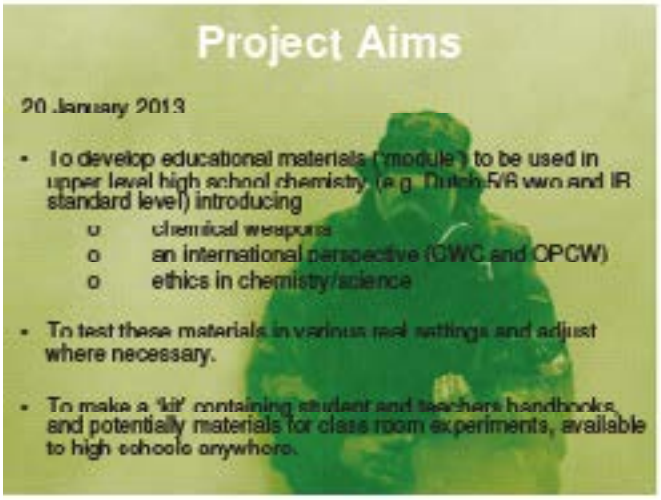
Complexities of Student Perceptions of Laboratory Safety

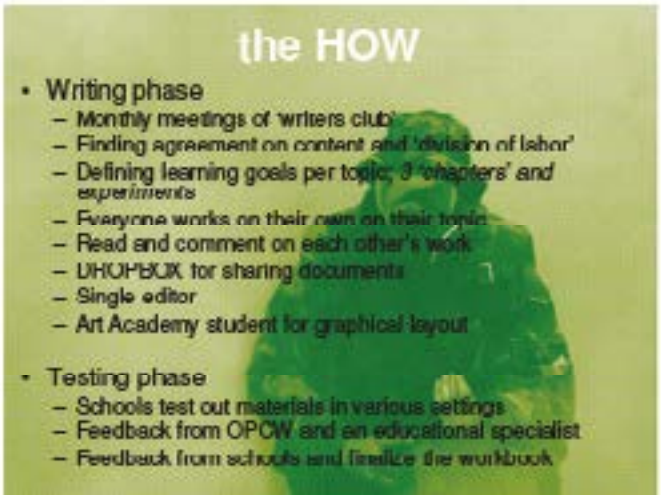
NATIONAL ACADEMY OF SCIENCES

Ludo Juurlink: Chemistry in Conflicts





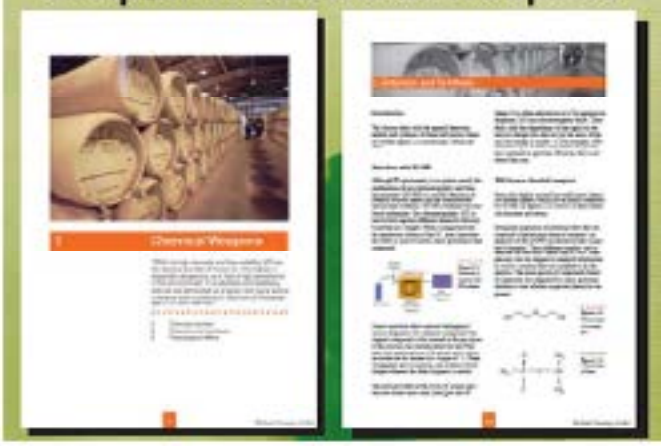




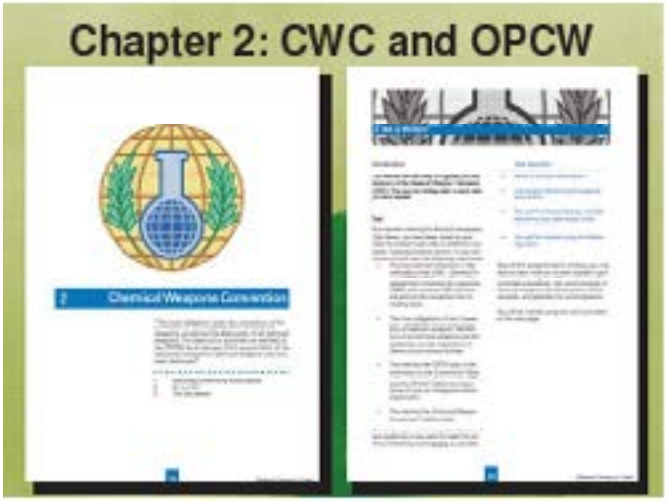
Some Specifics

- English as language
- Chemical content in relation to existing curricula
- One 'lesson' in the ethics section is exchangeable to fit national context/issues
- Dropped the idea of 'a box' with materials
- Experiments for entire classes based on easily available and cheap materials
- Suggestions for student research projects
- Teachers guide to outline various ways of using the workbook, provide answers to questions, ..
- Associated website

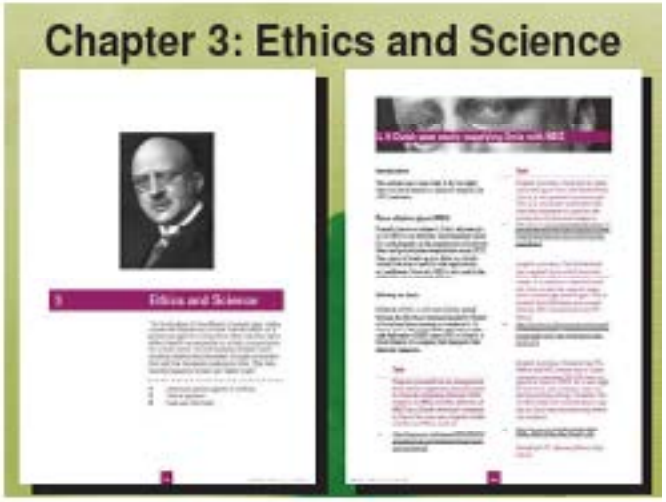
Chapter 1: Chemical Weapons



Chapter 2: CWC and OPCW

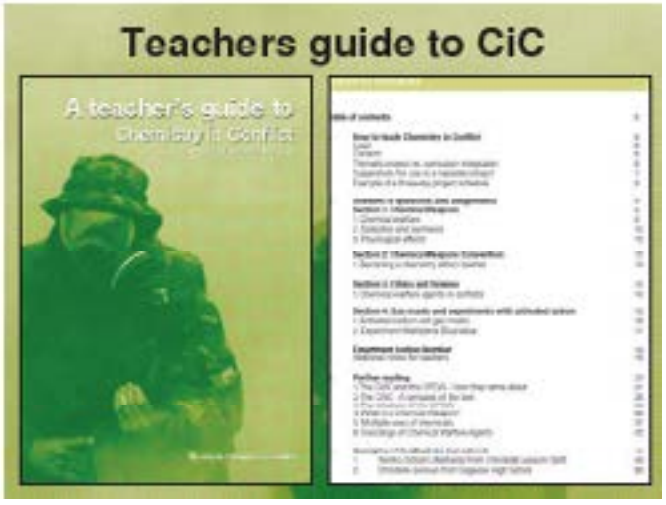


Chapter 3: Ethics and Science



Chapter 4: Experiments/Research

Teachers guide to CiC



Acknowledgments

The committee thanks all of the individuals who shared information with it during the study process, as well as those who reviewed the draft report.

The committee particularly thanks the sponsors of the study: the National Science Foundation, the U.S. Department of Energy, the National Institute of Standards and Technology, ExxonMobil Chemical Company, E. I. du Pont de Nemours, and Company, and the American Chemical Society.

http://dels.nas.edu/safescience

Peter Mahaffy: Education and Outreach: The 3rd Leg on the OPCW Stool

Education and Outreach:
The 3rd Leg on the OPCW Stool

ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS

OPCW Education for Peace Conference
The Hague, NL Sept 22-23, 2014

Prof. Peter Mahaffy
The King's University
Edmonton, Canada
OPCW TWG on Education & Outreach
peter.mahaffy@kingsu.ca

OPCW Mandate: A Three-Legged Stool

"Working Together for a World Free of Chemical Weapons, and Beyond" – OPCW Nobel Lecture

OPCW Mandate: A Three-Legged Stool

"Working Together for a World Free of Chemical Weapons, and Beyond" – OPCW Nobel Lecture

OPCW - international cooperation

- Aim :
  - To promote the Chemical Weapons Convention
- Involvement with:
  - Governments (signatories to the CWC)
  - UN agencies (the UN itself over Syria)
  - Scientific societies (education/advances in science)
  - NGOs (specialist knowledge of CWC)
  - Media (spreading message)
  - General public (to support the CWC)

OPCW Mandate: A Three-Legged Stool

"Working Together for a World Free of Chemical Weapons, and Beyond" – OPCW Nobel Lecture

OPCW – scientific work

- **In-House Specialists** – for inspections, verification of chemical declarations, training in protection/ decontamination
- **Collaboration** with scientific societies and industry:
  - Exchange views about safety and security of chemicals
  - With IUPAC – 5 - yearly reviews of advances in science with relevance to the CWC. Major international conference to produce report for OPCW Scientific Advisory Board (SAB) SAB produces report with recommendations for CWC's 5 - yearly Review Conferences
  - Discussions with scientific societies on how chemical weapons issues can best be discussed in chemistry curricula
  - Funding of projects to facilitate above


Stool
Education and Outreach
International Cooperation
Scientific Work – Production, Monitoring, Destruction
"Working Together for a World Free of Chemical Weapons, and Beyond" – OPCW Nobel Lecture


Raising Awareness
Multiple Uses of Chemicals
www.multiple.kcvs.ca
The King's Centre for Visualization in Science


Multiple Uses of Chemicals
Raising Awareness
Multiple Uses of Chemicals


Contents
Papers
References
About
Video
1. Multi-Use Chemicals
Opium - Morphine
Pseudoephedrine - Methamphetamine
Safrole - Ecstasy
Hydrogen Cyanide - Zyklon B
Thioglycol - Mustard Gas
Organophosphates - Sarin
Saxitoxin
2. Responsible Choices in Chemistry
The Chemical Weapons Convention
The Biological and Toxin Weapons Convention
The Australia Group
3. Convergence of Chemistry and Biology
4. Codes of Conduct


Chemical Warfare Agents – Case Studies
Hydrogen Cyanide
Thioglycol
Organo-phosphates
Bacteria
Nylon
Ballpoint Pen Ink
Parathion Insecticide
Zyklon B
Mustard Gas
Sarin
Saxitoxin


Responsible Choices in Chemistry

Convergence of Chemistry and Biology

- The boundaries between the CWC and BTWC are becoming blurred.

Codes of Conduct

- Enforceable codes of conduct
- Aspirational codes of conduct

www.multiple.kcvs.ca

Questions for Discussion!

- Is the "Multiple Uses of Chemicals" approach a sensible way to place the CWC in the broader context of the responsible use of chemicals?
- CW issues are remote from the experience of many students in the world. Can you think of other examples of multiple uses that could reach these or other audiences, and catalyze thinking about ethical issues in science, as well as the CWC?
- If success is obtained in "working together for a world free of chemical weapons," what comes "beyond" this target for OPCW, working with partners?
- OPCW's Temporary Working Group on Education and Outreach is meeting later this week to consider the future for OPCW's education and outreach mandate. What would you recommend to them for the 3rd leg of OPCW's stool, in light of the above? What partnerships should be supported?

Acknowledgements

- EU funding, through OPCW
- Temporary Working Group on Education and Outreach, OPCW
- IUPAC Committee on Chemistry Education
- Undergraduate student research team at the King's Centre for Visualization in Science

- For Further Information, Contact:
- Alastair Hay : a.w.m.hay@leeds.ac.uk
- Peter Mahaffy : Peter.Mahaffy@kingsu.ca

Thank You!!!

Catherine Rhodes: Using Interdisciplinary Networks to Develop Educational Materials

Using Interdisciplinary Networks to Develop Educational Materials

Catherine Rhodes
Institute for Science, Ethics and Innovation
University of Manchester
catherine.rhodes-1@manchester.ac.uk

- Interdisciplinary Network on Teaching of Ethics for Neuroscientists

Supported by wellcome trust

Arts & Humanities Research Council

- Early Career Researchers Network for Development of Ethics Education in Universities

BRITISH COUNCIL
RESEARCHER LINKS

Currently

- Ethics Education for Neuroscientists
- Online educational module
- 6 units available in initial version
- Plus two introductory briefings
- Pilot implementation and evaluation

NETWORK
euroscience
thics
eaching

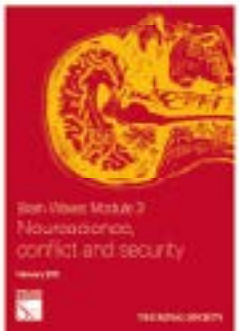
How We Got There

- Context

Walther, G. "Ethics in Neuroscience Curricula", Neuroethics, [illegible]

- Partners

MANCHESTER



Network Activities

- Surveys
- Scoping visits
- Workshops

1. The present state of ethics education for neuroscientists
2. The ideal state of ethics education for neuroscientists in 2015
3. What needs to be done to fill the gaps between the present and the ideal state of ethics education
4. Getting from the present to the ideal state

Neuroethics Educational Module

THE UNITS

1. Science Ethics and Responsible Conduct of Research
2. Clinical Practice
3. Experimental Practice
4. Cognitive Enhancement
5. Uses and Interpretation of Brain Imaging
6. Neuroscience of Morality and Moral Enhancement
7. Concepts and Approaches in (Neuro)Ethics
8. Introduction to Biosecurity and Dual-Use
9. Novel Neuroweapons
10. Chemical Weapons
11. Biological Weapons
12. The CBW Non-Proliferation Regime

- Introductory Briefing to the Neuroethics Educational Module
- Background Briefing: International Law, Ethics and Security

Where Next?

- Completion of initial version of remaining modules
- Revision following evaluation
- Teaching notes
- Supplementary materials
- New version(s)
- Additional funding

"All users of the module are encouraged to provide examples of learning have used it and contribute case studies and other teaching and learning materials to an online collection which can be utilised by other adopters of the module." – Introductory Briefing to the Educational Module

Early Career Researchers Network

- Launched at workshop in Tepic, June 2015.
- Early outputs: workshop report; special issue Revista Electrónica survey of wider education in Mexican universities; teaching collaborations.
- Capacity-building goals.

- Approaches to teaching Chemistry
- Alastair Hay
- University of Leeds
- An OPCW – IUPAC Joint Project:
- Chemical Education and Outreach
- 'Education for Peace' Conference
- OPCW, The Hague 22 23 Sept 2014

A Chemical Plant

Multiple Uses of Chemicals

A Chemical Plant

Misuse of Chemicals

ephedra extracts banned as diet supplements in several countries

Triple Stack

Epehedra
Caffeine
Aspirin (ASA)

Error → Misconduct → Criminal

Non-intentional

Wrong observations
Wrong analysis
Undeclared conflict of interest
Curiosity
Can (suspect) chemical be made?
Suppress knowledge
Make it again
Sell some
Large scale manuf.

Intentional

With apologies to M. Nylonna & S. Simonson
Lancet 2006; 367: 1868-4

Export Industry

Break-Out Session

- Crystal Meth example: What is the role for education and outreach?
  - Access to information
  - Diversion of readily available materials
  - Whose responsibility?
  - Understanding and owning ethical responsibility

Pseudo-Ephedrine/Crystal Methamphetamine

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

Lawful business → Taking advantage → Illegal

Ethical

Produce 2-Chloroethanol
Contracts worldwide
Large order – country in a troubled region
Is it just business?
2-Chloroethanol feedstock for thiodiglycol
Is it still just business?
Don't inform authorities
Fulfil order
Agree future large supply
Fulfil this too

Unethical?

10

Thiodyglycol – Mustard Gas

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

SAMUN: Student Amsterdam Model United Nations at the OPCW

The Hague International Model United Nations

What do we do?

THIMUN Den Haag
THIMUN Singapore
THIMUN Qatar
THIMUN Latin America (Montevideo)

What do students learn?

- Communication and critical thinking skills
- Research skills
- Policy analysis
- The art of negotiation
- Conflict resolution
- Consensus building
- Empathy

Chairs of the disarmament commission

Grade 5 students of the Overseas Family School in Singapore do MUN

Tatyana Novossiolova: Building Sustainable Capacity in Biosecurity: The Benefits of Team-Based Learning

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School of Social & International Studies

Building Sustainable Capacity in Biosecurity: The Benefits of Team-Based Learning

Tatyana Novossiolova
University of Bradford

Education for Peace Conference
Panel 6: Innovative Techniques: Active Learning, Role Plays, Simulations and Other Tools
23 September 2014
OPWC
The Hague, The Netherlands

www.bradford.ac.uk

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Outline

- Need for Education: Strategy and Contents
- Why Active Learning?
- Implications: The Benefits of Team-Based Learning

Based on Bradford Briefing Paper No 7, available at http://www.brad.ac.uk/acad/sbtwc/briefing/3_BP_7.pdf

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S&T Advancement and Biosecurity

- 'genetic engineering technology and the practices of the community that sustains it have definitively displaced the potential threat of biological warfare beyond the risks posed by naturally occurring epidemics'
- '...for voluntary controls to play a useful role in the management of problematic information...scientists will first need to recognise their ethical and moral responsibilities to society in the pursuit of knowledge. Scientists have obligations to society that involve more than blind pursuit of information. Like clinicians, scientists have an obligation to do no harm.'

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Biosecurity Education and the BTWC

The Meeting of States Parties in 2013

•agreed on the value of promoting education on the Convention and the dual-use nature of biotechnology, including through preparing easily accessible and understandable courses, integrating consideration of biosecurity with broader efforts on bioethics, and assessing the impact of such education.

•agreed on the value of using science responsibly as an overarching theme to enable parallel outreach efforts across inter-related scientific disciplines, as well as taking full advantage of active learning techniques, consistent with national laws and regulations

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Education and the CWC

9.101 The Third Review Conference acknowledged the role of education, outreach and awareness-raising as a relevant activity for the national implementation of the Convention [...]

113. The Third Review Conference:

(c) Called upon States Parties and the Secretariat, as part of efforts to promote the ethical norms of the Convention, to encourage and promote efforts by the appropriate national and international professional bodies to inculcate awareness amongst scientists and engineers at an early stage in their training that the knowledge and technologies used for beneficial purposes can also be misused for harmful purposes;

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Combining Strategy and Contents

- *'humans are not adept at making connections between disparate fields or types of knowledge, unless they are specifically helped to do so through education'* (NAS 2000)

Therefore, for education to be effective, attention has to be given both to the content of what is being taught and the method being used for the particular group being educated

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Reverse Engineering Design

Traditional Approaches

1. Select a textbook
2. Compile a syllabus and assignments
3. Construct examinations
4. Describe learning goals and objectives

Active Learning

4. Select a textbook
3. Construct examinations
2. Compile a syllabus and assignments
1. Identify learning goals and objectives

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Team-Based Learning (TBL)

A special form of collaborative learning that uses a specific sequence of individual work, group work and immediate feedback to create a motivational framework, whereby the focus is shifted from conveying concepts by the instructor to the application of concepts by student teams

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1. Pre-Reading Activity
2. Individual Readiness Assurance Test (iRAT)
3. Team Readiness Assurance Test (tRAT)
4. iRAT and tRAT Feedback Session
5. First Team-Based Application Exercise
6. Second Team-Based Application Exercise

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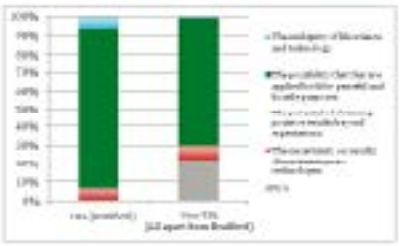
Teaching Biosecurity via Team-Based Learning



"Which of these experiences best defines the dual-use dilemma?"

- *Bioethics and Responsible Research*, interactive seminar held at the University of Bradford (November 2012)
- 30 participants divided into 5 teams

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Biosecurity Team-Based Learning Education Package

Five Threshold Concepts

1. General Purpose Criterion
2. Developments in S&T Relevant to the CBW Non-Proliferation Regime
3. Responsibilities of Life Scientists with Regard to Biosecurity
4. National Implementation of the BTWC
5. Web of Prevention

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Biosecurity TBL Education Package: Key Features

- Comprising pre-readings, iRAT and tRAT quizzes, sample application exercises, detailed train-the-trainer instructions and reference materials
- All materials are open-source, user-friendly and freely available online at http://www.brad.ac.uk/bioethics/
- Adaptable to different learning contexts and suitable to use both with students at university level and with practitioners as part of continued professional qualification

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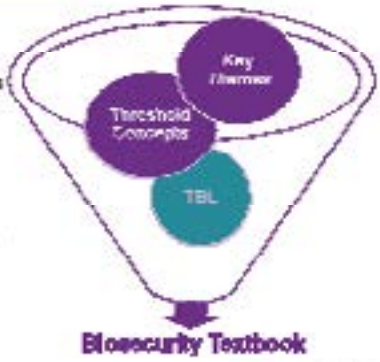
- Jointly funded by Canada's Global Partnership Programme and the UK Global Partnership Programme
- An online book that would be made available initially in both English and Arabic



Biosecurity Textbook

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Implications: Toward Biosecurity Competence

- Team-Based Learning is an efficient and effective technique for teaching biosecurity both to prospective and career life scientists
- It is a teaching game, not a learning game
- It is easy to replicate, so no extensive prior training is required
- It helps learners develop understanding of relevant threshold concepts, make connections between them and acquire skills for their practical application

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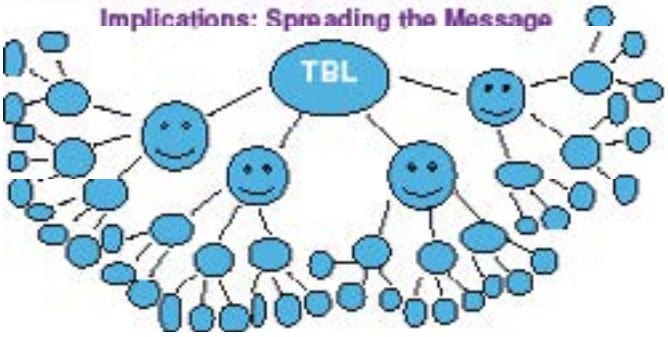
Implications: Spreading the Message



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Thank you for the attention!

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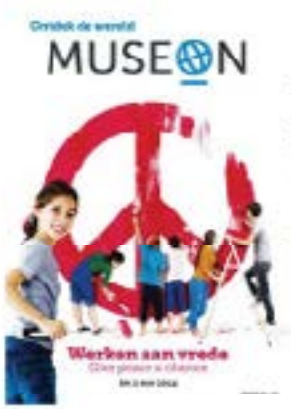
Friso Visser: Museon



- Two words on Museon
- Advocacy Peace & Justice
- Interactivity, educating public and schools
- Dialogue & empowerment

MUSEON

- Founded for object lessons
- Technologies & crafts
- Dedicated to education
- Museon, museum for Culture & Science
- Global museum > Your Planet
- Museon, museum for Culture, Science & Peace

MUSEON

- Founded in 1936
- Temporary exhibitions (1850 m2)
- Permanent (2200 m2)
- Visitors: around 180.000
- School children 45.000
- 2000+ groups/lessons

Global Museum in the city of Peace and Justice

MUSEON

- About the world
  - Planet Earth
  - Life on earth, history, ethnography, technologies
  - People fighting each other (collections WWII)
  - Advocacy for peace and justice
- About the world in the International Zone
  - Visitor Centre – Peace Centre

educating the public beyond the book on the wall

Working for Peace: permanent exhibition Justice & Peace

MUSEON

- Interacting with the public
  - Mixed media
  - Dialogue: museum and public
  - Talking about conflict > looking for solutions
  - Working with institutions
    Positive about future, avoiding depressed visitors
  - Leaving a message
  - Creative Lab

MUSEON

- Interacting with the public (person oriented)
  - Making peace & justice understood for schools
  - Developing programmes
    - Role playing
    - Discussing right and wrong
    - Dialogue between children
    - Aiming at several age groups
    - Facilitating step-in-step programmes

MUSEON

- About the world, peace and justice
- More than broadcasting
- Cooperating with international institutions
- Involving the public
- Dialogue as form
- A positive approach
- Aiming at action

Elizabeth Lewis: Oral History - A tool for Peace Education and Raising Awareness Against Chemical Weapons

ORAL HISTORY

A Tool for Peace Education and Raising Awareness Against Chemical Weapons

Tehran Peace Museum

23 Sep 2014
Elizabeth Lewis

Presentation Outline

- Who we are
- TPM peace education objectives
- TPM oral history projects
  - Bi-lingual recording of chemical weapons survivors' histories
  - The Young Reporters

Presentation Outline

- Who we are
- TPM peace education objectives
- TPM oral history projects
  - Bi-lingual recording of chemical weapons survivors' histories
  - The Young Reporters

Peace is more than the absence of …war

"We wish to cultivate the knowledge, attitudes, skills and behaviours upon which a culture of peace is predicated."

TPM: Peace Education

Community Approach to social change and awareness raising

TPM: Peace Education

We are developing the concept of social investment

TPM: Peace Education

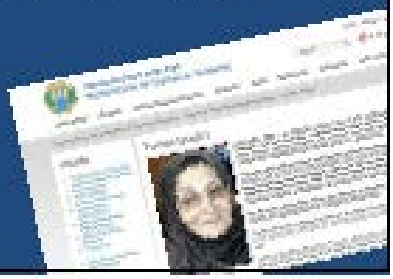
Nurturing intercultural understanding …and global citizenship

Presentation Outline

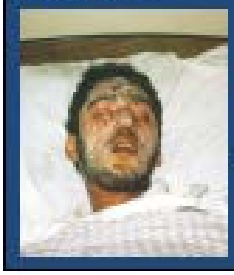
- Who we are
- TPM peace education objectives
- TPM oral history projects
  - Bi-lingual recording of chemical weapons survivors' histories
  - The Young Reporters

Oral Histories – Online

Oral Histories – Online



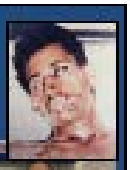
Ali Asghaari

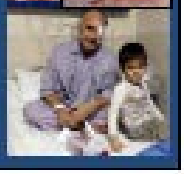


"Not everyone sees you as a war hero. "I have friends and family members who won't even shake my hand. "They are disgusted by my injuries."

Ali Reza Yazdanpanah

- "I am a poster for my country.
- "I want to show myself to the world, to show the effects of these horrible weapons.
- "It is my mission, until my last breath, to share my story and hope people will understand it is important to live a life of peace."





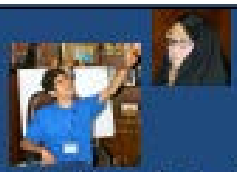
Presentation Outline

- Who we are
- TPM peace education objectives
- TPM oral history projects
  - Bi-lingual recording of chemical weapons survivors' histories
  - The Young Reporters

The Young Reporters Group

"We can help young people to understand about peace by teaching them about war."

Ms. Kuniko Yamamura



"If it is only old people who talk about their own stories... ...this is not the answer for the younger generation."

Kuniko Yamamura

Learning Domains

- Psychomotor
- Cognitive
- Affective

"I had no idea about chemical weapons before I came to the peace museum. I did research on the internet and I made a powerpoint presentation for my school. "

Yas

- "I didn't know about the health consequences of chemical weapons.
- "I did some research before coming to the museum.
- "Meeting the survivors helped me to really understand the consequences and why these weapons are forbidden."

Aryan

"I thought the survivors would be angry and stern.

"In the films that we are shown about the war, the soldiers are depicted as fierce, religious and strict.

"But then we found out that the survivors are just ordinary people like us."

Mohammad

"We survivors will not be around forever.

"Many are already dead and some are very sick.

"Those that are with us will leave us very soon.

"The museum wants the younger, new generation to understand the facts about the war and the cruelty of war and chemical weapons."

Hassan Hassani Sa'di

Ali Reza Shokoohi

"Before I came to the Tehran Peace Museum, I thought war could be a solution – that war is an answer.

But after volunteering here, I realize that war is a last resort.

I have changed my views completely.

I have become more of a pacifist."

Thank You

http://www.tehranpeacemuseum.org/index.php/en/

Toril Rokseth: Using OPCW as a Case for Teaching Peace

Nobel Peace Center
Nobels Fredssenter

PEACE

Using OPCW as a case for teaching peace

Toril Rokseth
Education Manager
The Nobel Peace Center, Oslo
@forlirnk

Educational programs at the Nobel Peace Center

- 600 - 1000 school groups every year
- Permanent
- Temporary
- All levels of the education system
- Tailored to the national curriculum
- Coherent with the center's purpose and values
- Based on our exhibitions

- The Childrens Activity
- The Childrens Peace Club

Some of our methods

- Advice
-
- Challenge
-
- Ask questions
-
- «Show your colours»
-
- Discuss true dilemmas and acknowledge their existence
-
- Gamification
-
- Use space + movements
-
- Simplify complexities

OPCW as case for teaching peace

Discussion starters:

- Why are chemical weapons prohibited?
- What is OPCW and what does a weapon inspector do at work in Libya or Syria?
- What are the rules of war and do they have an effect?
- Is destroying weapons a path to peace?
- What can the international community do when "anyone" can make chemical weapons?
- How have the mechanisms of war changed?

"Chemical weapons are the dark side of chemistry"

What is peace? Is it more than absence of war?

Take a stand!

Should all weapons be prohibited?

- Yes
- No, it is meaningless to prohibit weapons
- It is more important to prohibit Chemical Weapons than other weapons
- Other

Simplify complexities

Simplify complexities

How to solve the conflict?

- Both parties argue based on the case in question
- They listen to each other's arguments
- They demonstrate the will to find a solution that both can live with
- The parties seek help from a third party

Can peace be learned?

Yes. In the words of Nelson Mandela: "Education is the most powerful weapon which you can use to change the world."

Jessica Angstreich: The Noble Peace Prize Exhibition

Nobel Peace Center
Nobels Fredssenter

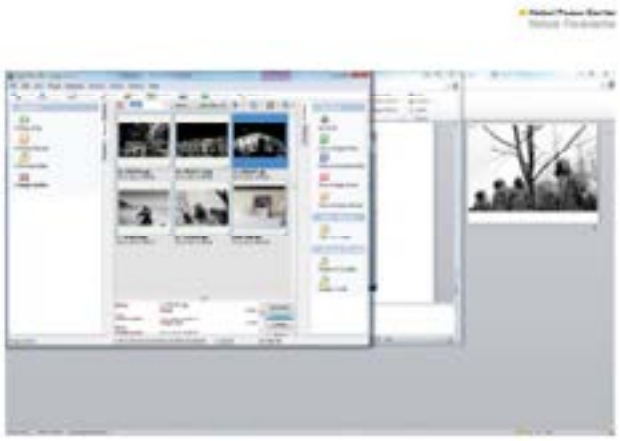
PEACE

The Nobel Peace Prize Exhibition

Jessica Angstreich
Project Manager


ELLEN
HNSON
AF


parliament
Visitors' Centr
Besucherzentrum des Europäis



"worrisome, yet hopeful"

"informative and nose-dieting"

"very interesting"

"eye-opening"

Speech by Filip Deheegher

Dear Ladies and Gentlemen,

Next year on April 22nd at 5 p.m. it will be exactly 100 years that the second battle of Ypres started with the German gas offensive that was mentioned in the witness you just saw. The municipalities of Ypres and the neighbouring Langemark – Poelkapelle want use the centenary of this attack to pay attention to this turning point in modern warfare. This first large scale deployment of the gas weapon in the neighbourhood of Ypres introduced weapons of mass destruction and changed warfare from a soldier to soldier combat into warfare that involved everybody within the range of the weapon: man, women, children, elderly people.

The city of Ypres wants to use this momentum to inform and educate the inhabitants of and visitors to the city (young and grown up)about what happened a century ago, about what happened during the last century, but the city also wants to raise questions about what happens today in the world. In order to realise all this the city will set up a wide range of initiatives starting already on March 1st 2015.

By marking in the landscape for a period of 6 months the historical line where the gas cylinders were put into the ground we want to inform the passengers, visitors and the inhabitants on what happened exactly a century ago in our neighbourhood. On April 22nd next year we will commemorate what happened, by setting up ceremonies on historical places, as we are convinced that is important to be aware about the history, about the historical facts that happened, but maybe as important is what happened after the use of chemical weapons during WWI: On April 22nd a three day international conference "A century of weapons of Mass destruction – Enough" will start. Experts are asked or will be invited not only to talk about a century of chemical weapons but also about the nuclear age, the situation today and the challenges for the future.

The city of Ypres is pleased that on the occasion of the centenary we can welcome the OPCW in Ypres to set up an Extraordinary Meeting of the Executive Council in our cultural infrastructure instead of in the Ypres Room here in this Building. The presentation of the Ypres Declaration and the unveiling of a plaque at the outside of the city hall on the Eve of April 22nd will of course not only bring the attention to the day itself, but will remind people in the future about what happened in our city a century ago.

On the same day we will open anupdated exhibition on the OPCW. The exhibition was made by the Nobel Peace Centre at the occasion of the presentation of the Nobel Peace Prize to the OPCW in 2013.

Two new books will be presented at this occasion: one on the history of Chemical weapons, written by Jean Pascal Zanders, one on the research on human experimentation in Chemical and biological weapons, written by Ulf Schmidt.

Students from secondary schools will watch the theatre monologue" The inventor", a play on the person of Fritz Haber. How can anyone develop such a weapon without ever having regret or remorse?

The city will end up the programme on the commemoration of the first use of gas on large scale with the presentation of an outdoor exhibition on the ramparts of the city: "Making Peace", an exhibition on Disarmament and nonviolence, Conflict prevention and resolution, Economic and social justice, Human rights, law and democracy and finally Environment and sustainable development set up by IPB, the International Peace Bureau.

Ladies and gentlemen,
The name Ypres is and will always be linked to World War I. The events that took place in our city at the beginning of the previous century form an inherent part of the city's history. Because of its past, Ypres clearly has the right and the duty to take a stand in the ever actual debate about war and peace in this world. The given examples must prove clearly that the city of Ieper will use the momentum of the centenary of the first use of the gas weapon to do so.

Thank you

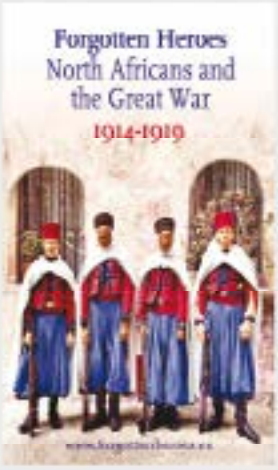
Luc Ferrier: Belgian non – profit organisation International team of historians Independent * Non-political * Non-religious

FORGOTTEN HEROES 14-18 FOUNDATION VZW

Belgian non – profit organisation
International team of historians
Independent * Non-political * Non-religious

As various forms of conflict, war and terrorism specifically, have become more prominent topics in recent years, it is important that we pay attention to how people have viewed and dealt with events like the First World War. Understanding the human aspect of conflicts is important as it not only gives one an understanding of the real consequences of certain actions; it also helps us to understand why things are the way they are.

Download our brochure in English / French / Arabic from website: www.forgottenheroes.eu



FORGOTTEN HEROES 14-18 FOUNDATION VZW

No Story, No Glory

Australia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Belgium	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Canada	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
France	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Greece	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
India	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Italy	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Japan	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Montenegro	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Nepal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
New Zealand	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Portugal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Romania	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Russia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Serbia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
South Africa	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
United Kingdom	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
United States	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FORGOTTEN HEROES 14-18 FOUNDATION VZW

OBLIVION

Algeria - Egypt – Morocco – Tunis
+ 350.000 soldiers
+ 1.000.000 labours

International exhibitions 1918- 2014
0
International events scheduled 2014-2019
0

FORGOTTEN HEROES 14-18 FOUNDATION VZW

Traveling exhibition 2015 – 2022
http://www.forgottenheroes.eu/video.php

Focus on the Human aspect
Asking the visitor to step into the unknown
Depriving the senses to focus attention
Shifting perspectives
Restricting movement
Using metaphor
Being radical and dynamic
Using latest high tech to deliver content
Displaying recorded testimonys of descendants

FORGOTTEN HEROES 14-18 FOUNDATION VZW

Our goal : reaching the Muslim and Arab world and their diaspora.

Elisande Nexon: Collaborative Science: Challenges and Opportunities

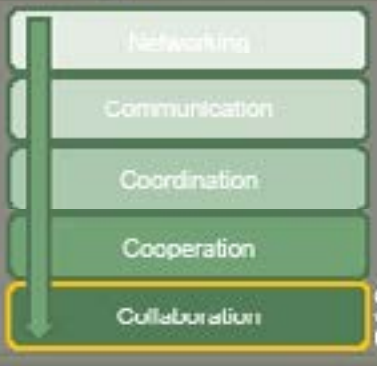
Collaborative science: challenges and opportunities

Education for Peace:
New pathways for securing chemical disarmament
OPCW, 22-23 September 2014

FONDATION pour la RECHERCHE STRATÉGIQUE

Elisande Nexon, Pharm.D.

Types of relationships



Drivers & motivations

- New scientific and economic challenges requiring to share expertise, skills and resources (limited resources and innovation requirements),
- Increasing convergence between disciplines and requirements in terms of complementary expertise,
- Key developments in the ICT field,
- Opportunity to carry out research activities despite the scale or scope, and to share the burden of research activities,
- Example of successful collaborative projects.

Common barriers in collaboration

- Political and social climate,
- Failure to perceive the added-value of collaboration,
- Unrealistic expectations,
- Failure to focus on results,
- No clear definition of roles, expectations and responsibilities,
- Difficulty in achieving and keeping consensus,
- Lack of trust and/or respect between participants,
- Cultural, religious and political differences,
- Ethical differences (e.g. regarding conflicts of interest),
- Common language,
- Too-frequent rotation of members,
- Operational challenges.

Operational challenges. Dealing with…

- A complex scientific environment: lack of administrative and financial resources, especially in small structures,
- Different standards in research practices , different work styles,
- Different institutional requirements and policies,
- Different regulatory and legal frameworks,
- Mechanisms for background checks and vetting,
- Obtention of visas,
- Export control and customs issues,
- Taking care of mandatory certifications,
- Mechanisms to share data and information.

Incentives & disincentives

Benefits must outweigh existing and/or perceived risks and hindrances

- Improving knowledge, increasing the pace of discoveries or of translational research,
- Overcoming scientific and technological barriers,
- Pooling skills and resources,
- Promoting innovation through multidisciplinary and multi-sectoral collaboration…
- Having to deal with operational challenges (e.g. regulatory and financial constraints),
- Competitive economic environment,
- Authorship conflicts and consequences for grants and career progress.

Building and sustaining collaborations

- Creation of a supportive environment,
- Secure a commitment to collaboration,
- Develop a shared vision of goals,
- Do not wait for all partners to get on board to go forward,
- Establish an effective governance system and guidelines,
- Define clear roles and assign responsibilities, taking into account that it may evolve according to the research results,
- Build cultural awareness,
- Develop an effective long-term communication strategy among members and use electronic collaboration tools to foster dialogue,
- Be sure to make information accessible to all partners,
- Draft beforehand an agreement to deal with authorship, intellectual-property, ownership, accountability and data issues (e.g. sharing protocols to ensure the integrity of data, authentification and authorization procedures, and confidentiality management).

Building and sustaining collaborations

Knowing how to design and conduct scientific projects does not mean understanding and mastering the process of international collaboration itself.

- How to measure the effectiveness and efficiency of collaborations? (Indicators include co-publishing, co-patenting, cooperative R&D agreements, shortcomings include availability of data and interpretational difficulties)
- Identification of solutions and pitfalls that could apply to the chemical disarmament field by studying collaborative projects in other fields (e.g. biomedical research, space, ICT, biotechnology)
- New trends in the practice of science, including collaborative work, and organization theory.

Back to a non-proliferation initiative: the EU Non-Proliferation Consortium

- EU Council Decision 2014/129/CFSP. Promoting the European network of independant non-proliferation think tanks in support of the EU Strategy against Proliferation of WMD (created in 2010),
- Four managing institutes (FRS, IISS, PRIF and SIPRI), and a network bringing together more than 60 think tanks and research centres combining almost the entire non-governmental expertise in the Union.

2013 Global Go To Think Tanks Index Report
Best institutional collaboration involving two or more Think tanks
17/80

EU Non-Proliferation Consortium

A mandate, a framework, a platform,…

- A network contributing to the creation of a common European culture on non proliferation and disarmament,
- Specific activities including an annual international conference, consultative meetings and *ad hoc* seminars, a Help-Desk facility,
- A website to facilitate contacts and foster research dialogue ( ).

- The « Next generation » project: online educational modules and training courses, invitation to conferences and seminars, organized by the Consortium, dedicated seminars

FORGOTTEN HEROES 14-18 FOUNDATION VZW

Creating global awareness.

FORGOTTEN HEROES 14-18 FOUNDATION VZW

22 april 1915

FORGOTTEN HEROES 14-18 FOUNDATION VZW

Building bridges for the future.

FORGOTTEN HEROES 14-18 FOUNDATION VZW

Shokran

شكرا

Thank you

Constanza Mazzina: Building and Sustaining Lasting Collaborations Between Multiple Stakeholders

Building and Sustaining Lasting Collaborations Between Multiple Stakeholders

The priority is to educate a new generation of leaders.

What the world requires from today's/ tomorrow's leader

- Awareness about the impact of their decisions/ actions
- Long term mindset
- Creative thinking to find brand-new solutions
- Ethics in the thinking and in the action

Nongovernmental practical interventions have the potentiality to compensate governments' shortfalls and, therefore governments should be more open to joint work and to receive the nongovernmental aid

Paths of cooperation

- Awareness raising.
- Tuned communication.
- Supply of scientific analytic work
- Technical & political advice.
- Partnership with government for strategy setting and decision making.
- Education & training programs for governments officials and other social actors.
- Moderation of processes and relations among stakeholders (national/ international).
- Identification of opportunities and resources.
- Design of paths for international cooperation.

Key issues to keep in mind

Increasing awareness in governments and other social actors about threats and risks is a key to success.

The topics we deal with, disarmament and nonproliferation are transversal to most of ideological and political positions (excluded fundamentalisms) so that we should highlight such basic consensus as the common ground for joint work and synergic action among stakeholders.

The processes we are involved in are of long term, so that we must build long term relationships among stakeholders.

OUR ORGANIZATIONS SHOULD WORK THIS WAY: WITHOUT ideological distinctions, PROVIDING AND OFFERING QUALITY INFORMATION FOR ALL WHO NEED IT.

Final thoughts

Effective Disarmament and nonproliferation can only be achieved by the joint work of all stakeholders within a nation and at the international level.

Every education and capacity building effort should be oriented to promote such cooperation.

Awareness of importance is the first step.

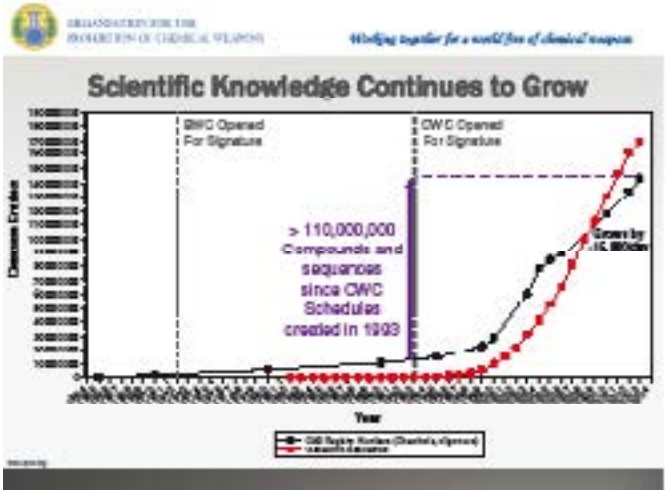
Education for Peace: New Pathways for Securing Chemical Disarmament

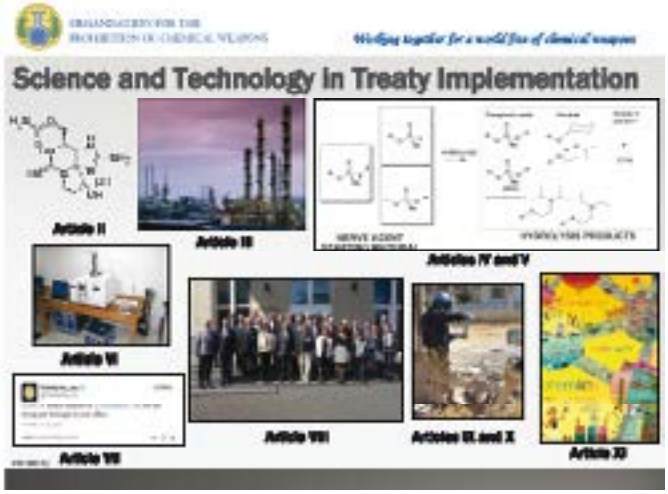
Thank you!

Info@npsglobal.org

OPCW - The Hague - September 2014

Jonathan Forman: Building Relationships Through Subject Matter Engagement

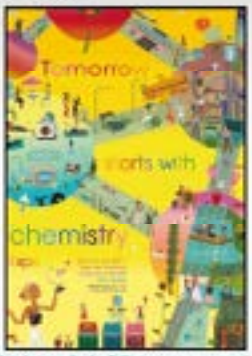




Working together for a world free of chemical weapons

Article XI Programmes

- Analytical Skills Development Course
- Conference Support Programme
- Equipment Exchange Programme
- Laboratory Assistance Programme
- Research Projects Support Programme
- Internship Support programme
- Industry Outreach (Chemical Safety and Security)



www.opcw.org/our-work/international-cooperation/capacity-building-programmes/

Working together for a world free of chemical weapons

To be Part of the Conversation, One Must Engage in It!

Working together for a world free of chemical weapons

Keeping the Conversation Going

- Need Visibility
- Need to recognize Common themes that allow dialogue
- Dialogue is dynamic
  - The message must remain current and speak to issues people can connect with
- "Build it and they will come" does not always work

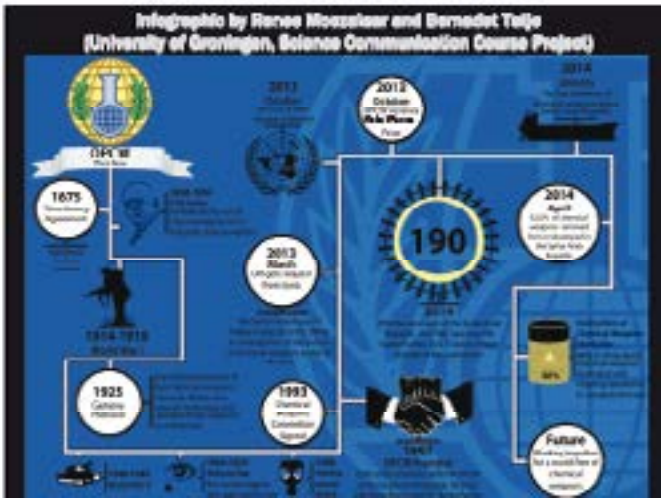
Working together for a world free of chemical weapons

Working with Students and "Young Scientists"

Working together for a world free of chemical weapons

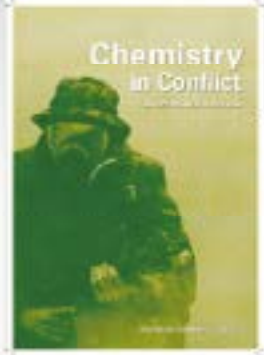
Engagement and Outreach are Not The Same Thing!

SCIENCE IS FUN



Working together for a world free of chemical weapons

CWC in the Science Classroom?



Working together for a world free of chemical weapons

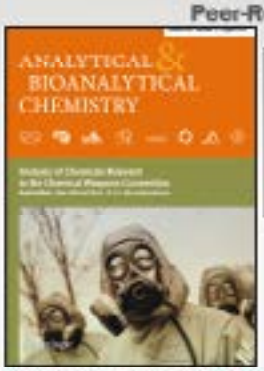
Publications

Working together for a world free of chemical weapons

OPCW in Chemical Society Periodicals

Working together for a world free of chemical weapons

Peer-Reviewed Science



Can technical reports help to raise awareness and drive dialogue?

Working together for a world free of chemical weapons

Do Not Mistake Communication Barriers Between Technical and Non-Technical People For Lack of Interest!

Working together for a world free of chemical weapons

A Call for Proposals

- **We are seeking proposals for scientific publications that:**
  - Teach subject matter or report original research that is relevant to the CWC
  - Can involve student authors and OPCW technical experts
  - Provide opportunities for students to present their work at a relevant conference
- **Purpose:**
  - Draw attention to science relevant to the CWC and the importance of science in disarmament
  - A mechanism to sustain engagement with communities of scientific experts
- **Stay Tuned for More Details!**
  - Contact: [redacted]

Staying Visible

- Classroom projects
- Conference attendance and participation
- Informative Publications
- Participate in the conversation!
  - Personal interactions
  - Social media

Jean Boukari LEGMA: National Authority Initiatives and Challenges for Education and Outreach Burkina Faso

EDUCATION FOR PEACE: NEW PATHWAYS FOR SECURING CHEMICAL DISARMAMENT – 22 and 23 September 2014 The Hague, The Netherlands

NATIONAL AUTHORITY INITIATIVES AND CHALLENGES FOR EDUCATION AND OUTREACH IN BURKINA FASO

Presented by: Pr Jean Boukari LEGMA, Head of National Authority
M. Olivier W. YAMEOGO , Chemist, member of NA

INTRODUCTION

Since 2009 E&O is regularly included in our program of activities.

These courses have global objectives to know the CWC, the rights and obligations of SP's and the status of its implementation in Burkina Faso.

Each training session lasts 3 days and is completed by a report which is sent to the members of the NA ministries.

OUTLINE

- TARGETED AUDIENCE
- CONTENT OF PRESENTATIONS
- TRAINING RESOURCES
- EXPECTED RESULTS
- NATIONAL CHALLENGES
- CONCLUSION

TARGETED AUDIENCE

Stakeholders in the fight against CW.

- officials of custom,
- fire fighters,
- officers of security (police, gendarmerie, fire brigade),
- academia (Lecturers, pHD & Master students) and
- chemical industry (mining, pesticides, paint, cement...)

TARGETED AUDIENCE

During training sessions, members of the NA are requested to attend all courses. This has the advantage to.

- Refresh and deepen the knowledge of NA's members
- Raise more questions about CWC and its implementation in Burkina Faso
- Provide knowledge to newly appointed members of NA

TRAINING RESOURCES

Human resources

are basically the members of National Authority and resource persons (lecturers, Engineers, Technicians, Fire fighters, …)

CONTENT OF PRESENTATIONS

Each training course lasts 3 days
Main themes are:

1) History of the Convention
2) Definition of a Chemical Weapon
3) The scheduled chem. listed in Tables T1, T2, T3
4) The horrific images of victims of CW
5) Assistance and Protection under Article X

CONTENT OF PRESENTATIONS

6) The obligations of States Parties
7) National Authority of Burkina Faso
8) Status of Legislation in Burkina Faso: the texts adopted
9) Disarmament and non-proliferation of CW
10) Economic and Technological Development

EXPECTED RESULTS

Expected result depends on the targeted audience

Each training is official and under Authority of the Ministry of Scientific Research and Innovation. events are covered by the print papers and television.

We have already organised the following courses

December 2009: training for lecturers and PhD students from the Training Unit in Exact and Applied Sciences.

EXPECTED RESULT

November 2010: training for officials of Customs of Burkina. It was organized to prepare the customs authorities for the sub-regional training organized by the OPCW and the Government of BF and entitled "training for customs officials on the transfer regime"; This training was held from April 11 to 14, 2011: All newspapers of the country, radios and TV media covered this international seminar.

EXPECTED RESULT

December 2011,
training for students in master's degree and pHD in chemistry from the Training Unit in Exact and Applied Sciences (University of Ouagadougou).

The training main objective was to make known the OPCW and training opportunities offered by the ICB.

EXPECTED RESULT

During the training, the whole ICB's programme was presented (Associate Program, Analytical skills development course (Finland), Analytical skills development course to Strengthen Cooperation with Africa (South Africa), analytical chemistry courses in French (Tunisia), internship support program, research support program, equipment exchange program). The conditions of participation were presented and the website of the OPCW was visited.

EXPECTED RESULT

December 2012,

training for officials of security including Police, Gendarmerie and Fire Brigade.

It was attended by 15 security officials.

The Focus has been on assistance and protection training in case of attack or threat of CW, assistance and protection offered by the OPCW procedures.

EXPECTED RESULT

December 2013,

Training organized for mining and industrial companies in Burkina Faso.

Companies who participated in this training were

- SOMITA (Gold),
- SEMAFO (Gold),
- Kalsaka Minning (Gold)
- ESSAKANE SA (Gold),
- burkina-manganese (Manganèse),
- Nantou Minning (Zinc).

EXPECTED RESULT

December 2013, (continue)

- CIMAT (Cement)
- TANALIZ (Tannery)
- HAGF Industries (Painting)
- SAPHYTO (Insecticides and Pesticides)
- and Laboratories (universities and independent).

The overall goal was to show the rights and obligations of states parties, rules of Import/export and use of scheduled chemicals

Six medias (TV, News papers, Radios) covered the event.

EXPECTED RESULT

December 2014

This year we are planning to train the officials of the ministry of environment

In fact during a seminar on "**How to build a synergy within the conventions ratified by our country**" , the officials of this ministry asked us to organise an E&O event for them

NATIONAL CHALLENGES

– introduce modules on CWC(ISEPC)

- ISEPC: Higher Institute for Studies in Civil Protection
  - –Regional fire fighter institute
  - –20 countries are involved today
  - –Willing to introduce modules on CWC in its curricula

HIGHER INSTITUTE FOR STUDIES IN CIVIL PROTECTION

HIGHER INSTITUTE AND STUDIES IN CIVIL PROTECTION

NATIONAL CHALLENGES

– introduce modules on CWC (Universi
Ouagadougou)
- University of Ouagadougou
  – More than 10 young lecturers successfully completed Associate Programme and other programmes of ICB and are ready to accept the introduction of CW modules in curricula

NATIONAL CHALLENGES

– Capacities of National Authorities need to be strengthen in order to reach more stakeholders (lawyers, economists, others mining and industrial societies…)

CONCLUSION

Because of these training courses organised with a eye witness of medias for all stakeholders, we can state that OPCW is visible in Burkina Faso.

The peaceful use of chemistry has been enhanced through scientific training of our students and lab technicians.

Our legislation covers all the key areas of the CWC and has been distributed to all the stakeholders engaged in the fight against the CW in Burkina Faso.

Duván OCAMP: Education for Peace in Colombia: Actions in the framework of th CWC and related instrument

«Education for Peace Conference»
OPCW – The Hague
(22-23 September 2014)

«Education for Peace in Colombia: Actions in the framework of the CWC and related instruments»

Presentation by:
Duván OCAMPO
Counsellor - Chairperson of Colombia's National Authority for the Prohibition of Chemical Weapons (ANPROAQ)

Introduction

- Let me tell you the story of Eduar Armando Bastidas, a peasant boy from the province of Huila (Colombia), whose wish was to have a chemistry teacher. So he took action, addressing even the Constitutional Court to have that dream fulfilled... and he did!
- However, the moral to this story is that the State should not only enforce the law but it should also go beyond that and be proactive in providing the best education possible with the means at hand and even through more creative means.

Education and Outreach (I)

- 2011 - The Scientific Advisory Board (SAB), established in 1998, recommended the creation of a working group on education and outreach in 2011.
- 2013 - For the first time States Parties to the CWC by consensus called for the establishment of education and outreach mechanisms during the Third Review Conference (3rd Revcon) in 2013.
- In the final report of the conference academia and the scientific community are called upon to learn about the provisions of the CWC and their implementation.
- Since then the role of education, outreach and the raising of awareness are considered relevant activities for the CWC.

Education and Outreach (II)

- The 3rd Revcon also recommended to the Technical Secretariat, in coordination with the SAB, to assist the States Parties in their own education and outreach activities, including helping with learning materials, workshops and regional meetings.
- Such activities contribute to a better knowledge of the CWC at the domestic level and to gather support from the industry, academia and the public sector for education and outreach activities.

Chemical risks in the GRULAC region

- There is a consensus in Latin America and the Caribbean that the true risk connected to the CWC is not really an intentional attack using chemical weapons but rather accidents that may occur due to inexperience, negligence, lack of resources or a possible breach of deontological ethics not intended to cause harm in the first place.

GRULAC's highlighted programs

- Some countries in Latin America and the Caribbean have developed programs on education related to aspects of the CWC and the responsible uses of chemistry which can be highlighted; among others:
  - Argentina
  - Brazil
  - Cuba
  - Mexico
  - Uruguay

Important Events in GRULAC Countries

- Regional Meeting on «Education for the responsible use of knowledge on dual-use chemicals» (Buenos Aires, Argentina, 7-9 April 2014).
- 15th Regional Meeting of National Authorities of the States Parties of Latin America and the Caribbean (GRULAC)» (Santiago de Chile, 29-31 July 2014).

Recommendations to GRULAC countries (I)

- To foster outreach activities it is recommended to:
  - Identify key stakeholders and work with them hand-in-hand.
  - Encourage teaching about the responsible uses of chemistry at all levels of education.
  - Promote the use of tools, printed and interactive materials provided by the OPCW (e.g. E-learning modules).
  - Stimulate the development of networks of universities, following in this aspect the Argentinian model which has proved to be successful.

Recommendations to GRULAC countries (II)

- To foster outreach activities it is recommended to:
  - Strengthen the dialogue and cooperation between the national authorities, the ministries of national education, civil society, the chemical industry and academia.
  - Deepen cooperation between GRULAC countries, profiting from their relative strengths and similar problems. In that sense, encourage the development of joint research and exchange of students.

Colombian Policy of Educational Quality (I)

- So far there hasn't been any centralized policy for teaching CWC's provisions at all levels of the educational system.
- However, in terms of the application of CWC's postulates in Colombian curricula, there have been efforts to ascertain the importance of the responsible uses of chemistry.
- The Ministry of National Education has thus developped a Policy of Educational Quality that establishes quality paradigms to guide educational processes, related to all areas of science.

Colombian Policy of Educational Quality (II)

- Quality paradigms to guide educational processes:
  - Curricular guidelines.
  - Basic competency standards.
  - Pedagogic guidances.

Curricular Guidelines

- The guidelines apply to education in the fields of Natural Science and Environmental Education, in which the goals are to:
  - Form an ethical conscience of natural sciences vis-à-vis the environment and the quality of life
  - Understand the role of scientific disciplines in the comprehensive education of people.
  - Build and interiorize values such as the respect for life and natural systems, among others.

Basic Competency Standards (I)

- Basic Competency Standards, developed by the Ministry of National Education, pose a significant challenge for citizens, especially in the elementary and secondary education. They are aimed at fostering a comprehensive human development through:
  - Strengthening the moral development that allows students to take more autonomous decisions, focussing on the common good.
  - Promoting and guaranteeing human rights.
  - Helping to build a more peaceful society.

Basic Competency Standards (II)

- Those standards are undergoing a process of examination and adjustment by the Ministry of National Education in order to improve them, particularly in the area of science.
- A Technical Roundtable was created to promote an open debate with professors and other stakeholders.
- Catering to the diversity of Colombia's socio-cultural heritage, educational programs have to be adapted to make them as effective as possible.
- That applies particularly to sciences due to the environmental challenges existent in Colombia, the second most biodiverse country in the world and also home to over 80 different ethnic groups, some with a special link to their ecosystems, their own language and traditional uses of chemistry and biology.

Basic Competency Standards (III)

- Lastly, in the framework of this open discussion, educational stakeholders acknowledge the importance of scientific formation being also a socio-political formation whose ethical priorities should be:
  - To link the learning experiences to actions aimed at developing a planetary ethics of common good.
    To educate in the care of the natural and cultural patrimony.
  - To respect life.
  - To help manage conflicts.
    To acknowledge diversity and encourage respect for others.

Other Educational Initiatives in Colombia

- The two main policy aims of the National Government since taking office on August 2014 have been clearly defined: Peace and Education!
- Strengthening of programs and campaigns in these two fields is to be expected.
- However, other initiatives have been in place since previous years:
- «Citizen Competencies» campaign, aimed at promoting the peaceful solution of conflicts through education. Since 2011 provisions of the CWC are being included.
- «Chemical Arms – Project in which children teach parents about chemistry. Initiated by an inspired teacher at La Gaitana High School in Bogota since 2001; it has since then been replicated in other high schools. It has not, however, become a national policy.
- Many less known initiatives by educators which can be identified, integrated with CWC's objectives and fostered.

Understanding Between the National Authority and Stakeholders (I)

- With the national chemical industry:
- Outreach through OPCW courses and other encounters have helped to empower the chemical industry. A good example was the September 2013 «Workshop on declarations and inspections under article VI of the CWC» held in Bogota.
- This workshop was developed with the aid of the OPCW and addressed to a large number of representatives of the national chemical industry.
- Such outreach activities have a decisive stress on the peaceful uses of chemistry from the industry standpoint.

Understanding Between the National Authority and Stakeholders (II)

- With the national chemical industry:
- A constant dialogue and the invitation to certain meetings of the National Authority have also brought the chemical industry closer to the provisions of the CWC.
- The companies are now aware of their obligations vis-à-vis the CWC and do not see it anymore as a «dangerous issue» that was either totally unknown –and thus a matter of speculation- or even perceived as bad for business.
- In the latter case, there used to be an unfounded fear of being linked to «suspicious» inspections from the OPCW.
- Through direct contacts between the National Authority and the chemical industry those fears have largely faded away.

Understanding Between the National Authority and Stakeholders (III)

- With the educational sector:
- However, the important developments with the chemical industry have not been reflected in the institutions of the educational sector.
- Colombia would like to learn more about the positive experiences of other States Parties in terms of education and outreach; particularly how to teach the provisions of the CWC and the responsible uses of chemistry at all levels of education, from primary to university studies.
- Furthermore, it is important to develop campaigns to raise awareness with the society as a whole.

Redefining priorities

- With an almost universalized Convention, the peaceful uses of chemistry are the new key priorities of the CWC.
- The effective application of the CWC should go beyond the verification and control of industrial activities.
- Colombia is interested in learning more about the «pilot national education program on outreach and education» of the OPCW to begin a potential cooperation in this area.

Links to other instruments and initiatives (I)

- Biological Weapons Convention:
- There are many fields of convergence between the CWC and the BWC: Education is one of them!
- March 2013 – Creation of an Informal Working Group for the constitution of a BWC National Authority in Colombia. It involves national entities and the civil society (academia, industry, research labs).

Links to other instruments and initiatives (II)

- Biological Weapons Convention:
- 2014 – Organization of 3 workshops on the BWC with the support of the BWC-ISU, the EU, some neighbouring countries (Argentina, Chile, Ecuador) and VERTIC.
- The workshops, held in March, June and September, helped spread the knowledge about the BWC, draw experiences from different sectors and gather support for the constitution of a BWC National Authority which will emulate and in many ways complement the work of the CWC National Authority.

Links to other instruments and initiatives (III)

- Biological Weapons Convention:
- A bill underlining the structure and responsibilities of the future BWC-NA has been drafted with the help of VERTIC and is currently under study.
- This experience has helped build bridges with the academia and the industry, enabling to spread the knowledge about the BWC.
- New Operative Protocols on swift and effective responses to CBRN threats are being developped due to this experience and the fact that several actors from the CWC-NA are also part of this Informal Working Group.

Links to other instruments and initiatives (IV)

- 1540 SC Resolution:
- The 1540 Resolution is at the core of disarmament and non-proliferation policies in Colombia since the only possible WMD proliferation may come from non-state actors.
- The convergence of private and public actors related to all WMD has helped to develop effective protocols on prevention and response to CBRN threats .
- To commemorate the 10th anniversary of Resolution 1540, on November 5th 2014 Colombia will launch its 1540 National Action Plan with the help of CICTE, UNODA, the 1540 Committee and national actors, such as: the National Unit on Risk Management and the National Police, among others.

Links to other instruments and initiatives (V)

- Proliferation Security Initiative (PSI):
- Complementary to the work on the 1540 Resolution, exchange of best practices has been carried out in the framework of the PSI.
- A recent example is the bilateral workshop with United States' agencies dealing with PSI issues that was held in Bogota in September 2014.
- Other activities are foreseen in the future.

Links to other instruments and initiatives (VI)

- Community of Latin American and Caribbean States (CELAC):
- CELAC – Declaration of Latin America and the Caribbean as a Zone of Peace Free of Weapons of Mass Destruction (Havanna, 2013).

Conclusions

«The best way to address the duality of chemistry is through dialogue, engagement and education about such issues with the scientific community. Without this, we cannot hope to be successful in ensuring that dual-use knowledge is only ever put into practice in a single use – to benefit humankind.»

(H.E. Ahmet Üzümcü, Buenos Aires, 7 April 2014)

¡Gracias!

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Hungraina Trade Licensing Office: Outreach and Education - State of Paly and Current Issues

Outreach and Education
State of Play and Current Issues

National Authority
Hungarian Trade Licensing Office

OPCW
The Hague, 22-23 Sept. 2014

Agenda

- Introduction to HTLO's responsibilities;
- Remarks to awareness raising in general;
- Current issues, outreach actions.

The Hungarian Trade Licensing Office (HTLO)

Authority of National Industry and Export Control
National Authority

- Implementation of Chemical Weapons Convention;
- Export licensing / import certification;
- Implementation of EU's export control policy;
- Implementing the Biological & Toxin Weapons Convention;
- Implementation of international embargoes;
- National implementation of the export control regimes;
  - Policy;
  - Control powers;
  - Outreach duties / penalties for administrative violations;
  - Drafting legislation.

General remarks to outreach - awareness raising

- Law published – but not necessarily known;
- Obligation to disseminate information and give guidance;
- General aims: prevention, information exchange, rights and obligations set in force, relations established;
- Partnership – cooperation: more effective and efficient;
- Synergy of multiple tools...
- Psychology: Almighty State versus laissez faire;
- Industry versus Academia;

4

General outreach - awareness raising activities

- Annual national inspection plan by the NA;
- Ad hoc inspections;
- Compliance checks – information sharing – awareness.

- Awareness raising among stakeholders (pot. interagency partners):
  - Customs Authority
  - Military units

5

Actions ongoing

National Awareness Raising Action on non-proliferation (ITT) & restrictive measures

Research institutions and Academia

1. Industry (Chemical Industry Association (non-Licensing Operators)
   - Identification,
   - Visits, mail, phone, and meeting campaign,
   - Compliance – self regulation - Internal Compliance Programme
2. Industry R&D and private Academia (Licensing Intel Operators)

New tools ensuring application of ITT/WD:

- Declaration, regular analyses, identified institutions being visited, compliance affirmed

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Challenges

Outreach to Academia on CWC

- No dedicated outreach programme yet on CWC to Academia, however to industry ([illegible]);
- General [illegible] of academia/NGOs towards authorities – principle of freedom of science & research, [illegible] autonomy;
- General assumption:
  - peaceful & safe use of chemistry and research;
  - CW stockpiles „destroyed" – why bother further?
  - no scandals, CWs „unimaginable", [illegible].
- As OPCW list of [illegible] (guidelines, best practices) should help – benefits of Committee;
- Support of Inter-agency Committee on Non-proliferation / CWC & BTWC;
- Optimism: synergies, past experience;
- Human resources...

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Thank You for your attention!

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8

Asitha Kumar Seneviratne: Chemical Management Safety & Security initiatives in Sri Lankan Industry

Chemical Management Safety & Security initiatives in Sri Lankan Industry

Background and approach

In Sri Lanka the Chemical Management Safety & Security aspects are handled by several arrangements and organizations who have got authority through various conventions, and protocols. Subsequently several acts too have been enacted for these purposes. The chemical weapons convention and chemical weapons convention act No.58 of 2008 act is a major component in this regard.

However, this paper will focus on Chemical Management in general, and specially revolving around activities of the Chemical Weapon Convention in Sri Lanka but also discuss broad ranging issues, awareness creation which goes beyond OPCW activities. It will also cover chemical related activities such as chemical leasing, responsible care, education and awareness at all stake holder levels.

This would give an overview of various related and non related activities in Sri Lanka. Therefore, it may be a little difficult to put it into a formal presentation. This would include legal, academic, industry promotional and also educational activities. I will also include most of the awareness and outreach programmes conducted by various agencies in recent past.

Laws, Regulations, Policies in Sri Lanka, regarding Chemical Management

- Chemical Weapons Convention Act No. 58 of 2007 – A National Legislation for the enforcement of the
- convention has been approved by the Sri Lanka Parliament
- Gazette No. 1561/23. Issued by the Ministry of Industrial Development on 15th August 2008 – Regulations framed under section 39 & 24 of the Chemical Weapons Convention Act No. 58 of 2007
- Gazette No. 1627/1 issued by the Ministry of Finance & Planning on 09th November 2009 – Regulations framed under section 20(3) & (4) and section 14 of the Import & Export Control Act No. 1 of 1969
- Chemical Weapons Convention act No. 58 of 2008 and regulations extraordinary No. 1561/23 of 07/08/2008
- Control of Pesticides Act No. 33 of 1980 – Regulation of imports, restriction and ban of pesticides through registration and gazette notification
- Imports and Exports (Control) Act No. 1 of 1969 – Regulation of import of industrial chemicals (except for Board of Investment requirements)
- National Environmental Act No. 47 of 1980 – Limited provisions for regulation thru licensing procedures
- Factory Ordinance of 1946 – Occupational health aspects relating to the industrial chemicals
- Explosive Act No. 21 of 1956 – Excise ordinance
- Customs Ordinance – Import and export of regulated industrial chemicals
- Interagency Coordinating Procedure of Basal, Stockholm and Rotterdam Conventions
- Important Articles: Annex III – Pesticide formulations and industrial chemicals under
- Prior Informed Consent (PIC) Procedure

Out of these procedures the Central National Legislations are Imports & Exports (Control) act and the customs ordinance. Through the recommendations of various national authorities the only organization who can issue an import licence on chemicals is the department of import & export and the Sri Lanka Customs is the organization who is empowered to implement and monitor that licence.

However, I would highlight certain programmes and events conducted by different authorities on this subject area. Significant among are the initiatives taken by the National Authority for Implementation of Chemical Weapon Convention, which is the Ministry of Industry &Commerce. Awareness, Education and outreach is a major component of it. A detail account of such programmes would be highlighted later.
The Chemical Weapons Convention commonly referred to as (CWC) deals with the Prohibition of

Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction. The CWC is an international treaty, which seeks to eliminate this class of weapons in a verifiable manner. It primarily addresses national programmes and indirectly, the threat of Chemical Terrorism.

Sri Lanka and other countries throughout the world have businesses and industries that use toxic chemicals and its precursors for industrial, agricultural, research, medical, pharmaceutical and other peaceful purposes. However, some of these chemicals can also be used to make Chemical Weapons. Due to the existence of dual purpose chemicals, it is pivotal to monitor the activities of industries related to such chemicals.

In order to fulfill obligations of CWC, Sri Lanka has established a National Authority to serve as the National Focal Point for the effective liaison with the Organization for the Prohibition of Chemical Weapons (OPCW) and other states parties. As per the cabinet decision 06/0982/214/014 dated 31st May 2006, the Ministry of Industry and Commerce was designated as the National Authority for the Implementation of the Chemical Weapons Convention at a national level.

According to this Act Sri Lankan national authority must,

- Serve as the National Focal Point for the Convention.
- Regulate the use of Toxic chemicals.
- Conduct periodic inspections of the use of scheduled chemicals.
- Submit annual declarations on the import and use of these scheduled chemicals to the
- Organization for the Prohibition of Chemical Weapons (OPCW).
- Fulfill obligations under the Convention.

In order to fulfill these obligations the National Authority adopts following strategies

- Registration of Scheduled Chemicals users
- Issue import / export recommendations
- Assist in Chemical emergencies
- Provide awareness for industrialists related to scheduled chemicals
- Provide awareness for persons handling hazardous chemical materials
- Provide general awareness to all stake holders
- Conducts client based educational addressing sector based issues
- Adopt necessary measures to ensure that toxic Scheduled Chemicals and their precursors are only used for peaceful purposes
- Collect data on hazardous chemicals
- Develop National Protection Programmes
- Dealing with media

Programme Initiated by the National Authority for the Implementation of Chemical Weapons Convention at a policy and operational

The industrial sector of Sri Lanka is one of the driving forces of the country's economy. Its growing trend poses increasing risks of exposure to hazardous chemicals due to increasing utilization in the in the country. If improperly managed, hazardous chemicals can lead to accidents with dire environmental, economic and social consequences, severely impacting communities and livelihoods. Entire communities may suddenly find themselves deprived of work and their traditional livelihoods significantly affected because of a single chemical accident. Thus, there is a great need to increase Sri Lanka's capacity to adequately prevent the occurrence of chemical accidents and to, in the case that these still occur, be prepared to properly deal with such accidents.

Industrial policy in Sri Lanka has been designed with a view to address key challenges and issues facing all these sectors and placing them in a new high growing path. With the view of achieving sustainable industrial

development and addressing the development constraints, and industrial policy frame work in consistence with the Government policy framework has been designed and will be implemented.
Chemical Weapons Convention (CWC) is an international treaty for the prohibition of development, production transfer, stockpiling, usage and destruction of chemical weapons. The Convention adopted in 1993 completely bans the whole category (chemical) of weapons for mass destruction. Unlike other conventions this includes comprehensive mechanisms to verify its prohibitions.

CWC on 19th August 1994 and the Chemical Weapons Convention Act No. 58 of 2007 have been enforced by the Hon. Minister of Industrial Development on 15th August 2008.

National Authority for the implementation of the Chemical Weapons Convention is an organization which is established under the Ministry of Industry and Commerce to fulfill the national implementation measures under the convention and to serve as a national focal point for the effective liaison within the Organization for the Prohibition of Chemical Weapons (OPCW), The Netherlands and other States Parties.

Also as per the Article X and Article Xi of the Chemical Weapons Convention which is implement under Chemical Weapons Act 57 of 2008 it is required to prepare for emergencies on assistance and protection and facilitate international exchange of scientific and technical information, chemicals and equipments for the production, processing or use of chemicals for purposes not prohibited under the Convention.

Education and Awareness Programmes of National Authority for the Implementation of Chemical Weapons Convention As far as the National Authority of the Implementation of Chemical Weapons (NACWC) in Sri Lanka is concerned educational and awareness programme has been significant. Most of them are educational and awareness programmes targeting a particular set of stakeholders. A brief outline of such programme recently are as follows.

- **Hazmat Training Programme for Fire Brigade in Sri Lanka: 26 - 28 Sep 2011**

As per the request made by the Fire and Rescue Academy, the National Authority conducted a three day training programme at the Fire and Rescue Academy, at Wellawatte for over 30 fire officers. The main objective of this training programme was to provide proper handling of hazardous chemical incidents/ accidents and mitigate expansion of the disaster due to the incident.

- **Awareness Program for Chemical Importers in Sri Lanka: 6th October 2011**

An awareness programme was conducted on 6th October 2011 to introduce the CWC obligations and to familiarize the legislative matters of the Act No 58 of 2007. It aimed at discussing issues faced during the import and export of chemicals. The meeting was chaired by the Honorable Minister of Industry and Commerce, while more than 50 persons participated in this programme.

- **Final Training Programme for First Responders: 02 - 06 April 2012**

Development of the National Protection Programme on chemical emergencies on chemical weapons attack or the release of Toxic Industrial Chemicals was conducted for the First Responders in Sri Lanka.

Selected personnel from SL Armed Services, SL Police, Fire Service Department and medical professionals were trained under this programme. The final training programme for the first responders was held from 2- 6 April 2012 at the Fire & Rescue Academy, Wellawatta.

- **Training Programme for Medical Specialists: 05 April 2012**

The National Authority also conducted the training programme for the Medical Specialist on Chemical Emergency Management at the National Hospital in Sri Lanka. A total of 32 medical officers from hospitals

across the country participated in this programme. It was conducted by Dr. Megan Thomas, Chemical, Biological, Radiological and Nuclear (CBRN) Specialist from the Organization for the Prohibition of Chemical Weapons (OPCW).

- **Identification of Hazardous Chemical Substances and the Development of a Chemical Emergency Programme in Kalutara Industrial Zone: 29th May 2012**

An awareness programme on Chemical Emergency Management was conducted for industrialists in Kalutara Industrial Zone on 29th May 2012 with basic introduction on emergency management preparation. The main objective of this awareness programme was to conduct a survey to assist the safety and security in their respective work places and to achieve sustainable industrial development in Sri Lanka. The industry survey was initiated on 24th July 2012.

- **Awareness Programmes on Hazardous Chemical Management for Sustainable Industrial Development: 26th Sep 2012 – 29th September 2012**

The National Authority in collaboration with the IHRA conducted awareness program on Hazardous Chemical Management for Sustainable Industrial Development on 26th Sep 2012 at the IHRA auditorium. It provided basic knowledge for handling of the hazardous chemicals, health, safety and security of workers and management for sustainable industrial development. More than 80 participants participated in this programme.

- **Identification of Premises of Hazardous Chemical Substances: 22 January 2013**

The National Authority carried out a survey at Kalutara Industrial Zone to assist the safety and security in their respective work places and to achieve a sustainable industrial development in Sri Lanka. The industry survey was initiated on 24th July 2012 while 23 industries were investigated at the industrial zone.

During the survey, the National Authority made certain observations on security measures on handling hazmat chemicals, health and safety of the workers in industries. Reports on the recommendations for the above observations were distributed to the industrialists on 22nd January 2013 at the Auditorium of the Ministry.

- **Fire, Safety and Security Training Programe: 22nd – 24th March 2013**

As a second step for developing a Chemical Emergency Programme in Kaluthara Industrial Zone, the National Authority conducted a basic training program on Fire Safety and Security for safety officers at the Kaluthara Industrial Zone on 22nd March 2013 to enhance a general knowledge of principals of fire chemistry & sources of fire, fire prevention and fighting techniques, basic evacuation and casualty handling procedures and practical experience on fire fighting.

- **Work Place Hazard Management Programme: 06th September 2013**

To enhance the knowledge of safety officers /workers on Health and Safety within the work place, the National Authority conducted workplace hazard management training on 6th September 2013 at Kaluthara Industrial Zone premises. The workshop included theoretical knowledge through lecturing and provided practical training on emergency medical treatments.

- **Training Seminar on ISO Standards: 16th January 2013**

The National Authority in collaboration with Institute of Human Resource Advancement (IHRA), University of Colombo (UOC) conducted a training seminar on ISO Standards for the industrial sector on 16th January 2013; to provide basic knowledge on ISO Standards, Benefits of standards for business, Requirements and guidance for use of popular standards for sustainable industrial development. For this programme 25

participants from companies/institutions participated.

- **Awareness Programme on CWC and Chemical Emergency Management: 25th – 28th March 2013**

As per the request made by Police Training College, Kalutara, the National Authority conducted a three day awareness program on CWC and Chemical Emergency Management for police officers at the Police Training College, Katukurunda from 25th - 28th March 2013. About 250 police officers participated in this programme.

- **Awareness Programme on Hazardous Chemical Management for Sustainable Industrial Development: 17th & 18th May 2013**

The National Authority in collaboration with IHRA.UOC conducted awareness programmes on Hazardous Chemical Management for Sustainable Industrial Development on 17th May 2013 at IHRA.UOC to provide basic knowledge for handling of the hazardous chemicals, health, safety and security for workers and management for sustainable industrial development. This programme was attended by 51 participants from 23 companies.

- **Awareness Programme on Workplace Hazard Management: 11th June 2013**

Institute of Human Resource Advancement (IHRA) of the University of Colombo in collaboration with the National Authority for the Implementation of Chemical Weapons Convention under the Ministry of Industry and Commerce conducted a Workshop on Workplace Hazard Management at the Fire and Rescue Training Academy, Wellawatta on 11th June 2013.

The objective of this programme was to enhance Health and Safety within the working Environment. The workshop included theoretical knowledge through lecturing and providing practical training on emergency medical treatments and fire fighting techniques. Twenty six participant from various private and public sector organizations participated.

- **Programme on Chemical Safety of Food: 29th & 30th August 2013**

The National Authority in collaboration with IHRA. UOC conducted a Programme on Chemical Safety of Food on 29th August 2013 at the IHRA auditorium. Discussions on; Chemical Contaminants in Food and food additives, Chemical Food Sanitation and Hygiene, Negative Impacts of Microbes in the Food Industry, Food and Consumer safety regulations in Sri Lanka and Safe use of Chemicals in Food Industry was carried out. A total of 51 participants from 35 food manufacturing and related organizations were present.

- **Awareness Programee for Scheduled Chemical Users: 8th November 2013**

According to the Chemical Weapons Convention Act it is mandatory for every person who is engaged in the produce, process, import, export or use of any scheduled chemicals to register with the National Authority for the Implementation of Chemical Weapons Convention in Sri Lanka(chemical list is attached) . Any kind of usage of Scheduled Chemicals without a Certificate of Registration is a punishable offence under this Act. To make aware of the Chemical Weapons Convention's obligations and to familiarize the legislation - Act No 58 of 2007, the National Authority conducted an awareness meeting on 8th November 2013 at the Auditorium of the Ministry of Industry and Commerce.

- **Preparedness of Chemical Emergencies Programme for Commonwealth Heads of Government Meeting (CHOGM) 2013**

In accordance with the taskforce Secretariat for CHOGM, the National Authority carried out a series of inspections on awareness and chemical emergency preparedness to manage any potential disasters during CHOGM at main and side event venue areas. In these series of inspections experts from the National Authority covered Hambanthota, Galle, Negambo, Jaela, Battaramulla and other venues in Colombo.

- **Training Programme for Police Officers : 03 March 2014**

As per the request made by the Kalutara Police Training College, the National Authority conducted a one day training programme on Chemical Sampling at a Crime site for a team of Police officers. This training provided the basic knowledge about the chemical sampling and safety procedures to access a chemical incident site. The training was held on 3rd March 2014 at the Kalutara Police Training College. More than 20 participants participated.

- **Templeburg Industrial Zone Survey Inauguration Programme: 07 March 2014**

On request of the Western Province Regional Service Centre an awareness programme on Chemical Emergency Management was conducted for industrialists at the Templeburg Industrial Zone on 07th March 2014 with basic introduction on emergency management plan preparation. The main objective of this awareness programme was to conduct a survey to assist the safety and security in their respective work places and to achieve sustainable industrial development in Sri Lanka.

- **Certificate Programme in Emergency Management (6 months programmes)**

In view of reducing industrial issues through education, the National Authority conducted a training course on Industrial Safety, Environment & Emergency Management. Hence the National Authority in collaboration with the Institute of Human Resource Advancement (IHRA) of the University of Colombo organized a Five Months Certificate Program on Industrial Safety, Environment & Emergency Management. The Inauguration ceremony was held on 26th April 2014 at the Auditorium of the Ministry of Industry and Commerce with the patronage of the honorable minister.

- **4RS Programme for SL NAVY: 16 – 17 July 2014**

The National Authority conducted a training programme for the SL Navy on Mitigating Chemical Accidents/ Hazards , for the Rapid Response Rescue and Relief Squadron from 16th - 17th July 2014. The training programme consisted one theoretical session and one day practical session. Certificates were issued to the 35 participants at the end of the course.

- **Trainig Course for hazardous chemical transporters of Holcim Lanka**

The National Authority in collaboration with the Institute of Human Resource Advancement (IHRA) of the University of Colombo organized a Training Course on Hazardous Chemical Transportation for officials of Holcim Lanka Cement Company. The training was organized on request of Holcim Lanka. Theoretical and practical session were covered in the 2 day sessions.

- **Board Of Investment of Sri Lanka Training**

The National Authority in collaboration with the Institute of Human Resource Advancement (IHRA) of the University of Colombo organized a Training Course on Hazardous Chemical Management and Emergency Response for the staff attached to the Environmental Department of the BOI on request of the BOI. The training course consisted of both theoretical and practical sessions. The programme was held at the auditorium of the BOI, Level 08 West Tower, World Trade Center on 10 - 11 January 2014.

- **More Training Programmes are Pending…**

Such as training and awareness of Chemical management for the staff of the Bandaranaike International Airport, Katunayake and Sri Lanka Ports Authority in next month.

The other important programmes in this field are the ones conducted by the Ministry of Industry and Commerce

through the National Cleaner Production Centre (NCPC). Chemical Leasing and Responsible care are major programmes where educational and outreach concerns have been embodied in to it. Educating the public as well as reducing costs is part of the main programme.

Chemical Leasing

UNIDO, in close cooperation with National Cleaner Production Centre (NCPC) of Sri Lanka introduced the Chemical Leasing concept to Sri Lankan chemical industries in 2008. During the last five years, the chemical leasing business models have been developed and successfully applied in different industrial sectors in the country. Chemical leasing brings together the user and supplier and make supplier too responsible for the environ mental impact resulting from use of chemicals. The process optimization achieved through Chemical Leasing results in improving efficiency and quality while reducing costs.

NCPC has introduced the concept for different industrial sectors in the country including Printing, Painting, Water Treatment, Powder coating and Textile Dyeing. The results obtained have shown that the implementation of chemical leasing has high potential to enhance the efficient management of chemicals and significantly reduce harmful emissions and wastages.

Appling the chemical leasing concept for newspaper printing sector, it was reduced 15% ink consumption and also increase the workers health and safety condition. Supplier was the General Ink Ltd and the user was Wijeya NewspaperS Ltd.

Appling the chemical leasing concept for water treatment sector, it was reduced 20% chemical consumption. Also in the building paint sector it was reduced 12% paint consumption by applying chemical leasing. Strong awareness programmes were instrumental for these developments.

NCPC has introduced the new model to the Sri Lankan agriculture sector and the results showed that chemical leasing approach accounted for more than 40% of cost savings on chemicals. The result of the case studies clearly demonstrates that both agrochemical manufacture and user can benefit by the application of Chemical Leasing. Besides it demonstrates the environmental and the occupational health and safety benefits achieved by the application of Chemical Leasing.

Responsible CARE

Lanka Responsible care Council (LRCC) was initiated as a voluntary association under the National Cleaner Production Centre (NCPC) with the support of International Chemical Council Association (ICCA) in 2012. Currently 25 member companies are engage with the council and NCPC provide technical assistance to improve Environmental, Health and Safety conditions.

The LRCC is an association of chemical companies that have made a commitment to implement Responsible Care. The LRCC provides support to member companies to improve their Responsible Care activities through such measures as meetings where members can exchange information and experiences related to Responsible Care. Also the council promotes effective communications and knowledge sharing with the public and local communities and strives to strengthen its bonds of trust with society. The strategic objective of the council are;

- To anticipate and respond to government policy
- Maintain effective communications and knowledge sharing for members of government and industry stakeholders and to provide better service to members in effective dissemination of information, safety, health and environment issues and monitoring the national and international chemical industry scenario
- Promote industry best practice
- Provide safe chemical management information and resources
- Maintain robust relationship with local chemical suppliers, distributers and users
- Be widely recognized as the Centre of excellence in Sri Lanka for safe chemical management

As a LRCC member, a company manages all aspects of its activities so that it provides a high level of protection for the health, safety and security of its employees, associates, customers, facilities and the public and the environment. The LRCC members' company's Responsible Care programme starts with the member company's senior management making a commitment to the guiding principles. LRCC member companies demonstrate their commitment to sustainable development and continuing improvement by adhering to the following guiding principles:

- To recognized, respect and respond to community concern about our products and operation
- To lead our operations in ethical ways that increases the benefits to society by protecting our people, environment and community
- To develop a procedure in the organization to continually identify, reduce and manage occupational and process safety risks.
- To promote pollution prevention, minimization of waste and conservation of energy and other critical resources
- To counsel customers and other relevant stakeholder groups on the safe use, transportation and disposal of chemical products
- To participate with government and others in creating responsible laws, regulations and subs
- Demonstrating continuous improvement throughout our business and reporting performance
- Inspiring and assisting others to commit to responsible Care

Special Educational and Training Programmes Conducted

2012 Training Programme

Training Programme on Chemical Leasing at Plastic & Rubber Institute (PRI) on 27th January 2012

National Working Group Meeting on Chemical Leasing 24th February 2012 at Institute of Engineering in Sri Lanka (IESL)

Training Programme on Chemical Leasing for Officers from Industrial Development Board 30th & 31st March 2012

Training Programme for Chemical Leasing for Environmental officers in BOI office –Katunayaka EPZ on 24th May 2012

Training on Chemical Leasing for Industrial Development Officers in IDB Kegalla Branch 28th June 2012

26th October 2012 Training Programme on Responsible Care for Industries at PRI

29th – 30th November 2012 Training on Responsible Care and Chemicals Mangement at Institute of Engineering in Sri Lanka (IESL)

2013 training programme

12th February 2013 Workshop on Chemical Leasing and Chemicals Management for Industrialist

27th March 2013 Training on Chemical Leasing for Industrialist

29th May 2013 Working Group meeting on Chemical Leasing

25th July 2013 Workshop on responsible care initiatives in Sri Lanka for Industrialist

20th – 23rd November 2013 Workshop on Safe chemicals management through responsible care for Industrialist

2014 Training Programmes

2014 April 1st five day Training Program on Safe Chemicals Management at PRI(For Industries)

29th July 2014 one day training on Responsible Care and Safe Chemicals Management at PRI(For Industries)

1st August 2014 Responsible Care Certificate Award Ceremony at Mt.Lavinia Hotel (For Member companies)

Inclusion of Chemical Management concerns in Universities Curricular

One of the most significant features in the educational and outreach programme in the area of chemical management in inclusion of such concerns in the degree programmes, in Universities. In fact it is the Cleaner production concerns have been included in the curricular and chemical management is a significant component of it.

Following Universities has Included cleaner production concept in their curricular. Under this subject they have included chemical leasing, sound chemicals management etc

University of Moratuwa(Faculty of Engineering)
University of Peradeniya(Faculty of Engineering)
University of Colombo(Science Faculty)
University of Sri Jayawardanapura (Science Faculty)
Open University of Sri Lanka
Sabaragamuwa University (Science Faculty)
Wayamba University (Science Faculty)
Programmes of the Central Environmental Authority
The Programme initiated by the Central Environmental Authority (CEA)

Similarly the other major project now in progress in Sri Lanka is the project to formulate a Chemical Management Programme for Sri Lanka. This is being initiated by the Central Environmental Authority (CEA). It may be pertinent to note that while the other project of the National Authority concentrated on the Industries situated within the Industrial Estate while this project focused on Industries outside Industrial Estates.

According to the industrial census in Sri Lanka, there are nearly one thousand large, medium and small-scale chemical industries and activities and a myriad of small-and medium-scale activities associated with chemicals such as warehousing, transportation etc in operation at present.

The Central Environmental Authority operates the environmental protection licensing process, as a legally enforced methodology of controlling environmental pollution caused by such industries and activities. CEA has a strong educational and publicity unit headed by a Deputy Director General who are engaged in educational and outreach programmes on as their main activities, in Translating into Sinhalese and Tamil languages the publications containing the recommendations and guidelines presented by the United Nations Environment Programme with regard to the prevention of chemical accidents, chemical management and distributing them among factories, and training officers is one of the main tasks of the Central Environmental Authority (CEA). CEA has a strong unit that covers Environmental Management aspects and Environmental Resource Centres have been established locally. Furthermore it is the CEA who conduct majority of programmes focusing on school children on environmental issues which covers Chemical Management as well.

Conclusion

I basically discuss most of the programmes conducted in the relevant fields, focusing on education awareness feasibilities. It goes beyond OPCW activities but highly relevant. The Ministry of Industry & Commerce as the National Authority and as the Ministry is very much connected to these programmes and myself as the Additional Secretary, Second in Command in the Ministry, (next to the Chief Executive Officer), and as the Acting Head of the National Authority is personally involved in these activities.

Asitha Kumar Seneviratne
Additional Secretary
Ministry of Industry & Commerce
(National Authority of Sri Lanka)
Participant “EDUCATION FOR PEACE: NEW PATHWAYS FOR SECURING CHEMICAL DISARMAMENT” THE HAGUE, THE NETHERLANDS, 22ND – 24TH SEPTEMBER 2014
18/09/2014

Closing remarks by Director-General

Distinguished participants,
Dear colleagues,
Ladies and gentlemen,

This conference has clearly seen us off to a very good start in pooling our experience and stimulating new thinking in the area of education and outreach.

Now, at the end of our discussions, we have a more practical understanding of how to teach more people about disarmament and non-proliferation, in more effective ways.

Your exchanges here have been frank and broad-ranging, as can be gleaned from the moderators' reports.

They have benefited from the very wide professional spectrum that you represent.

They have shown, in very practical ways, how we can learn from each other.

And, importantly, they have served to break down artificial barriers between disciplines and organizations to help us navigate a collective path forward.

If there have been disagreements, they have been productive ones – for they have focused not on what needs to be achieved, but on what works best to achieve already well-defined goals.

My sense from this event is that many of you were surprised, and excited, by the many possibilities for extending our reach to bring about more informed engagement on disarmament and non-proliferation.

I think we can all agree that this conference has helped us scope ways in which we can sharpen our tools and approaches to education and outreach.

Whether through the creation of virtual classrooms, or production of modularized education tools.

Whether through the development of professional codes of conduct, or design of interactive displays in museums.

Whether through better informed exchanges between likeminded institutions, or new opportunities for molding our future scientists.

Measuring our success in reaching broader audiences, and empowering them to participate in promoting science in the service of peace, will be the next order of business.

In the case of the OPCW, we will need to work hard to sustain and deepen the profile we have enjoyed in the wake of the Nobel Peace Prize and Syria mission.

As I mentioned in my opening remarks, we are shifting our focus to a qualitatively harder task as we near complete elimination of existing chemical weapons stocks, namely, preventing the re-emergence of these weapons.

We need to make such weapons unwanted, if they are to disappear from our horizons.

This is, of course, a goal that resonates for all of us, in relation to all types of weapons of mass destruction.

This is no small order.

To achieve it, we will need to help each other in what should be a collective venture.

It is my earnest hope that all of you will be able to return to your institutions better equipped for undertaking education and research on the strength of your discussions over the past two days.

We hope that all of you – whether in government, academia, industry or civil society – will now be able cultivate your constituencies even more productively.

As is clear from our discussions, there is no one way of best doing education and outreach, no one-size-fits-all solution.

Different approaches work for different situations.

Our success will depend on being open-minded and flexible, listening to our audiences, and adapting our messages in ways that they can be better understood.

I also hope that this conference has a productive after-life, and that you will continue to engage with us on this important subject through the virtual network we will establish.

We want to hear from you about new things you are doing and about their impact, about what works well, and what works less well.

With limited resources, none of us can afford to duplicate effort – unless it is to improve techniques and tools that can better serve us.

In short, we must use this network and work together as messengers in a changing strategic environment of rapid advances in science, technology and communication.

I take this opportunity to, once again, thank our moderators and panelists. They have put in an extraordinary effort.

I would also like to thank staff and interns at the Technical Secretariat for their enormous effort in organizing this event.

Finally, I wish to thank all participants.

It is your observations, questions and insights that have underwritten the very high quality of our discussions.

With that, it remains for me to close this conference and wish you well in spreading our common message of education for peace.

Outcomes Document

This document draws together key points made in the course of discussions at the Education for Peace Conference. It is intended as a summary reference guide, in keeping with the conference's purpose to stimulate new thinking on improving education and outreach in disarmament and non-proliferation. As such, this document is not intended to reflect or outline official positions or policies of the OPCW.

1. Creating synregies between stakeholders

- Scientific and technological advances have created a growing convergence between biology, chemistry, and other scientific disciplines in terms of complementary expertise.
- This presents new challenges but also increasing opportunities for organisations dealing with the prohibition of biological and chemical weapons.
- There is much that international organisations and academic networks can learn from each other in the field of education and outreach

Advances in biotechnology, nanotechnology, bio-engineering as well as in the chemical synthesis of molecules of biological origin have blurred boundaries across all technical disciplines and expertise required for applications that range from health care to consumer goods and services. Consequently, there is an increasing convergence between biology and chemistry in terms of scientific research and complementary expertise.

This presents new challenges but also increasing opportunities for organisations dealing with the prohibition of biological and chemical weapons. To take full advantage of these developments, new strategies, involving multi-disciplinary teams, need to be adopted to educate the scientific and institutional communities about this emerging bio-chemical trend.

Strengthening synergies between the Chemical Weapons Convention (CWC) and the Biological Weapons Convention (BWC) would bolster efforts to analyze the existing norms against biological and chemical weapons, as well as help with the development of new regulatory mechanisms for bio-chemical safety and security.

Enhanced BWC-CWC interaction in this area could also assist State Parties in engaging all relevant stakeholders in the bio-chemical field – including those in academia, government and industry. On a broader scale, such synergies would also be beneficial in boosting awareness-raising initiatives, training and dissemination of best practices.

There is a lot of potential for more effective and far-reaching co-operation between countries and international organisations within the chemical and biological domains, based on the rich experiences of the nuclear and radiological sector in building a security culture. Governments, international organisations, civil society and industry are essential actors in these efforts.

To this end, international organisations and academic networks can learn from each other in the field of education and outreach, including the bottom-up approach used in nuclear security education. Nuclear Security Professional Development courses, for example, train those responsible for providing nuclear security education, with a special focus on academia as well as industry and regulators.

Such courses provide a valuable forum for educators to interact, develop collaborative structures and gain exposure to new approaches and methods while at the same time increasing the potential range and scope of

dissemination. Capacity building training and table-top exercises can also play an important role in creating and strengthening synergies between stakeholders.

Building and sustaining lasting collaborations will largely depend on our ability to mould a supportive environment, build cultural awareness and develop a shared vision of goals. A clear definition of roles and responsibilities, as well as a climate of trust between participants, is of great importance in furthering collaboration. Maintaining an ongoing dialogue to remain visible to the stakeholders is critical for these purposes.

2. Creating a culture of responsible science

- It is crucial that we strengthen efforts towards fostering a culture of responsible science.
- We also need to ensure that scientists and educators appreciate the broader context in which they practise their professions.
- Discussions on ethics and the concept of dual-uses and responsible science could start in secondary school and continue throughout life.

As global chemical disarmament gradually shifts focus from completing elimination of existing chemical weapons stocks to the qualitatively harder task of preventing the re-emergence of these weapons, it is becoming increasingly important that we strengthen efforts towards fostering a culture of responsible science at the local, national and international level.

Responsible science – science that at all times constrains its potential to harm and proactively engages on global issues – must be an instinctive professional trait for all of its practitioners around the world. Science cannot afford to be detached from the society that houses it. At the same time, ethics and responsible behaviour are cross cutting and extend well beyond the sciences. This means not only ensuring that policy-makers and scientists understand each other in devising mechanisms for preventing the proliferation of illegal weapons, but also adopting a bottom-up approach in reaching out to future generations of educators and scientists to shape their worldview. Without well-informed scientists, policymakers and a discriminating public, scientific progress may be slowed or even misdirected.

We also need to ensure that scientists and educators appreciate the broader context in which they practise their professions and are aware of the often fine line between beneficial and harmful applications in chemistry. Chemistry cannot be taught in a de-contextualized manner, and it is therefore important that links are created within curricula, integrating peace and disarmament into science-related subjects.

Discussion of ethics and the concept of dual-use would ideally to start in secondary school and continue throughout life. The teacher's mission of providing a holistic education and teaching ethics within the classroom is a permanent duty not only towards students but also society as a whole. Just as important is the adoption of a multi-disciplinary approach that recognises that chemistry and chemicals are at the centre of so many disciplines beyond chemistry – including life sciences, engineering, nanoscience and biology, thus an important part of our daily life.

Beyond secondary education, in particular within undergraduate and graduate chemistry programmes, there is a need for more case studies that use real-life examples rather than relying mostly on theoretical dilemmas and concepts. Within the professional realm, regular workshops and training programmes play a valuable role in engaging educators and scientists as well as policy-makers and industry.

On all levels, fostering a culture of responsible science requires close collaboration between educational institutions and government bodies, as well as regular contact between national chemistry societies and education ministries. To maintain productive collaboration with the scientific community, policy-makers must also engage with scientists about science, learn about their work, and generate interest in scientific solutions to real-world problems.

3. Developing the right education tools and technicques

- *Developing educational tools and devising innovative educational techniques is fundamental for creating a culture of responsible science.*
- *The OPCW has rolled out a range of new materials and tools designed specifically to assist its education and outreach endeavours.*
- *Educating the next generation of officials and experts to be alert to the challenges of chemical disarmament demands high-level professional training and capacity development that keeps audiences interested and involved.*

Capturing the imaginations of scientists and students will require moving rapidly towards the development of more dynamic, interactive vehicles for communicating our goals. It is our shared responsibility, as stakeholders in chemical disarmament, to help foster a culture of responsible science by developing first-class educational tools and materials and devising innovative educational techniques.

The OPCW has rolled out a range of new materials and tools designed specifically to assist its education and outreach endeavours, including web-based education resources and tailor-made e-tools which assist OPCW Member States to better implement their obligations under the CWC. Other tools include videos and films, lesson plans and a student workbook aimed at high-school chemistry students.

Innovative approaches to WMD non-proliferation education and training, such as social media, games and simulations, also provide a low-risk environment in which to learn how to operate in conditions of rampant uncertainty and fluidity.

Interactions should be designed to keep audiences interested and engaged. It is important to regularly re-evaluate the effectiveness of certain online e-learning tools and video lectures vis-à-vis on-site lectures and seminars. It is also worthwhile to consider established gamification techniques in order tocreate clearer incentives – in the form of certificates and diplomas – for completing e-learning modules.

4. Broadening the audence

- The future success of the CWC and the OPCW will depend on our ability engage a broader audience.
- To achieve this, we will need to cultivate new constituencies and be able to reach more people more effectively.
- The importance of drawing on the human factor in chemical disarmament should not be underestimated.

The ongoing effectiveness of the CWC and the OPCW will increasingly depend on our interactions with the broader public. Engaging the broader public and sensitising it to the importance of eliminating chemical weapons is key to making our societies more scientifically literate. Everyone is best served when science has a much broader reach into culture and society.

To achieve this, we will need to cultivate new constituencies and be able to reach more people more effectively – not only to help them understand how disarmament contributes to international peace and security, but also to empower them as stakeholders in consigning chemical weapons to history. It is important to not only explore new techniques, but also to develop the capacity to absorb feedback from our target audiences. This will require more effective use of real-time communication tools and expanding our activity and visibility in social media.

The importance of drawing on the human factor in chemical disarmament, such as helping young people understand the cruelty of chemical weapons through audio and video recordings of survivor stories, should also not be underestimated. In this regard, peace and science centres are vital partners as they reach a broad public with their exhibitions and cutting-edge multi-media technology.

5. Maximising events

- We will need to be imaginative in devising ways of maintaining the high international profile of chemical disarmament in the wake of the 2013 Nobel Peace Prize and the mission to eliminate Syria's chemical weapons.
- The centenary of the first large-scale use of chemical weapons in Ieper in 2015 will be an important platform in this regard, in addition to persuading non-States Parties to join the CWC.

As we set out to tackle future challenges, it is important that we look to the future with a strong appreciation – and understanding – of the past. An important historical marker for focusing our efforts will be the centenary of the first large-scale use of chemical weapons in Ieper in Belgium on 22 April 2015. The event, and the lead-up to it, will also be important in focusing our efforts to persuade non-States Parties to join the CWC.

Speaker Biographies

Alastair Hay

Alastair Hay is Professor of Environmental Toxicology in the medical school at the University of Leeds , Leeds, UK. He has worked on chemical weapons -related issues for nearly 40 years campaigning actively in the 1980s for a comprehensive treaty to outlaw these weapons. As part of his work in this field Hay has conducted 6
investigations of real and alleged chemical weapons use, as well as training numerous doctors, and others, on both what the weapons do and how to collect evidence of their use. As a teacher of medical students (his day job) Hay is keen to explore how to interest others in chemical weapons issues and related ethical concerns and has used many different approaches to actively engage audiences. He will illustrate a few of these in his panel presentation.

Alejandra Graciela Suárez

Prof. Alejandra Graciela Suá¬rez is pro¬fessor at the Universidad Nacional de Rosario and researcher of the Consejo Na¬cional de Investigaciones Cientí¬ficas y Técnicas of Argentina. In June 2013 she became the Chair of the Scientific Advisory Board of the OPCW.

Asitha Kumar Seneviratne

Additional Secretary (Policy Development), Ministry of Industries and Commerce of Sri Lanka

Bart Hogeveen

Expertise: Comprehensive Approach and concept of Defence, Diplomacy and Development (3D); Stabilisation and Security Sector Reform; NATO (ISAF) and EU missions (CSDP); Afghanistan; Strategic planning and policy development.

Bart Hogeveen is Training and Research Fellow at the Clingendael Institute. He joined Clingendael in 2013 and is currently in charge of the international security portfolio of the Academy. In this role, he is member of Europe's New Training Initiative for Civilian Crisis Management (ENTRi) a project of the European External Action Service (EEAS); coordinates the Dutch Police Academy's Columbus course for senior police officers, and Clingendael's contribution to the Dutch Defence Academy's Higher Defence Class.

Prior to joining Clingendael Bart worked with the Dutch Ministry of Defence (2006-9) and was seconded by the Ministry of Foreign Affairs to work for the NATO and EU missions in Afghanistan (ISAF 2009-2010; EUPOL 2011-2013). In his work for Defence, Bart contributed to the strengthening of cross-departmental cooperation in the framework of the Comprehensive Approach to working in conflict and fragile states, which included the formulation of the Dutch policies on Security Sector Reform (SSR) and on Civil-Military Cooperation (CIMIC). In Afghanistan, he advised the NATO Regional Commander on governance and rule of law aspects of stabilisation. With EUPOL he worked on the professionalisation effort of the Afghan Ministry of Interior and the Afghan National Police.

Bart was awarded an MA in International Relations and International Organisations from the University of Groningen (NL).

Catherine Rhodes

Research Fellow in Science Ethics, Institute for Science, Ethics and Innovation - University of Manchester. Catherine's research interests focus on the role of science and the scientific community in the international system. This includes for example: examining the meaning and content of scientific responsibility at the global level; understanding mechanisms for scientific input into regulatory processes; and exploring how scientists organise themselves and interact with international organisations and other actors.
Catherine has a background in international relations and worked at the Bradford Disarmament Research Centre before taking up her current post.

She retains an interest in international actions to prevent the misuse of science, and has recently been involved in a project on developing ethics education for neuroscientists and is leading an international early career researcher network on the development of ethics education in universities.

Chrétien Schouteten

I started my professional life as a research-assistant in the field of polymer chemistry (1965-1972). After being graduated at State University Groningen I worked as a chemistry teacher (1976-2009) and in certain periods also as an educator of teachers. I am retired since 2009.

As a chemistry teacher I was very interested in chemistry and society, the social responsibility of chemists and their ethical dilemmas (especially in times of war or terror). I developed many educational materials, for example on the subject chemical weapons. I got more and more interested in the dramatic life of the Jewish/ German chemist Fritz Haber (1868-1934), "father" of the chemical warfare in the First World War. After my retirement I wrote a play (The Chemist) on his life.

In 2012 OPCW (Eric Vanderborght) produced a film (A teacher's mission) on my work as a chemistry teacher and writer. In 2013 I wrote educational material that can be used after showing this film. I reviewed my activities in an article (Chemistry and Ethics in Secondary Education: 25 years of experience with classroom teaching on chemical weapons) in a special issue of "OPCW Today" (December 2013).

Constanza Mazzina

Constanza Mazzina is a professor in The Non-proliferation for Global Security Foundation – NPSGlobal. She has a PhD in Political Science at UCA, Master's Degree in Economics and Political Science at ESEADE and undergraduate degree in International Relations (USAL). Teacher and researcher UADE and USAL, was a researcher at the Friedrich A. von Hayek Foundation and academic director of Center for the Opening and Development of Latin America - CADAL.

Dana Perkins

Former member of the Group of experts supporting the UN Security Council 1540 Committee. Served as Chief, Biological Weapons Non-proliferation and Counterterrorism Branch with the Office of the Assistant Secretary for Preparedness and Response, US Department of Health and Human Services (2010-2012) and as a liaison to the US State Department for Biological Weapons Convention (BWC) and UN Security Council Resolution 1540 implementation; served as a member of the US delegation to the BWC (2008-2011) and as an advisor to the Secretary of State Hillary Rodham Clinton for the BWC 7th Review Conference. In 2012-2013 Dr. Perkins served in a US Government-seconded position as an expert supporting a subsidiary body of the UN Security Council, the committee established pursuant to resolution 1540 (1540 Committee). She is currently a Senior Science Advisor with the US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response.

Daniel Feakes

Daniel Feakes is the Strategy and Policy Adviser in the Technical Secretariat of the OPCW. From 2009 to 2013 he was a Senior Policy Officer in the OPCW's Verification Division. Daniel is responsible for education and outreach activities within the OPCW and has served as secretary to the temporary working group on education and outreach in science and technology since its establishment in 2012. Before joining the OPCW,

Daniel spent 12 years working for the Harvard Sussex Program on Chemical and Biological Weapons as a Research Fellow at the University of Sussex where he followed chemical and biological weapons issues and published widely on these issues.

Deepti Choubey

Deepti Choubey brings a breadth of experience in research, policy analysis and commentary on global non-proliferation, disarmament and nuclear security issues. She was the Senior Director for Nuclear and Bio-Security at the Nuclear Threat Initiative (NTI) from 2010 until mid-2014. At NTI, she co-led the Global Dialogue on Nuclear Security Priorities in support of the 2014 Nuclear Security Summit. She also co-led the inaugural 2012 NTI Nuclear Materials Security Index. Her responsibilities also included identifying opportunities for reducing nuclear dangers in South Asia and assessing opportunities related to bio-security.

From 2006 to 2010, Choubey was deputy director of the Nuclear Policy Program at the Carnegie Endowment for International Peace. Earlier, Choubey was director of the Peace and Security Initiative (PSI) for the Ploughshares Fund. Before joining Ploughshares, Choubey worked for Ambassador Nancy Soderberg at the International Crisis Group and previous to that worked in the private sector advising companies on strategy. In her career, she has provided analysis for media outlets ranging from National Public Radioand BBC to CNN and MSNBC. She is a published expert and her op-eds can be found in the Washington Post, and the Los Angeles Times, among others.

Choubey holds a master's degree in international affairs from Columbia University's School of International and Public Affairs. She has a bachelor's degree in government from Harvard University. Choubey was a term member at of the Council on Foreign Relations from 2009 to 2014. She is also a former executive board member of Women in International Security and of the Harvard Women's Leadership Project Alumni Network.

Dina Esfandiary

Dina Esfandiary is a Research Associate who joined the Non-Proliferation and Disarmament programme of the International Institute for Strategic Studies (IISS) in London in October 2009. Her research focuses on security, relations between states and non-proliferation in the Middle East, including Iran and Syria's WMD programmes. Prior to this, she worked at a disarmament NGO focusing on non-State actors. Dina has published widely, including in the Atlantic, the Huffington Post, Arms Control Today, Al Monitor, Survival (the IISS' journal),Le Temps, the Australian and theDiplomat. Dina holds MastersDegrees from Kings College London and the Graduate Institute of International Studies in Geneva.

Djafer Benachour

Djafer Benachour is a full time professor of Industrial Chemistry at Ferhat ABBAS University Setif (Algeria). He was vice-president of the Algerian Chemical Society for 15 years. He has been involved in chemistry education at different institutional levels for the past 20 years. He joined the Scientific Advisory Board of the OPCW in September 2009. Currently, he chairs the TWG on Education and Outreach.

Dominiek Dendooven

Historian Dominiek Dendooven (Bruges, 1971) has been working as a researcher and curator for the award-winning In Flanders Fields Museum in Ypres since 1998. He is associated researcher at the University of Antwerp and guest lecturer at the University of Louvain. Dominiek Dendooven has published extensively on the First World War and his main fields of interest are the involvement of ethnic minorities in the conflict and individuals' war experience.

Douglas Friedman

Douglas Friedman is a Senior Program Officer with the Board on Chemical Sciences and Technology at the National Research Council (NRC) of the National Academy of Sciences in Washington, DC. His primary scientific interests lie in the fields of organic chemistry, organic &bio-organic materials, chemical & biological sensing, and nanotechnology, particularly as they apply to national and homeland security.

Dr. Friedman has supported a diverse array of activities since joining the NRC. He served as study director on Safe Science: Promoting a Culture of Safety in Academic Chemical Research;Transforming Glycoscience: A Roadmap for the Future;Determining Core Capabilities in Chemical and Biological Defense Science and Technology;Effects of Diluted Bitumen on Crude Oil Transmission Pipelines;andResponding to Capability Surprise: A Strategy for U.S. Naval Forces. Additionally, he has supported activities on The Role of the Chemical Sciences in Finding Alternatives to Critical Resources;Opportunities and Obstacles in Large-Scale Biomass Utilization;andTechnological Challenges in Antibiotics Discovery and Development.

Dr. Friedman is currently directing studies on security implications of advancing technologies in the life sciences and the industrialization of biology. Prior to joining the NRC Dr. Friedman performed research in physical organic chemistry and chemical biology at Northwestern University, the University of California, Los Angeles, the University of California, Berkeley, and Solulink Biosciences. He received a Ph.D. in Chemistry from Northwestern University and a B.S. in Chemical Biology from the University of California, Berkeley.

Duván OCAMP

Duván OCAMP is Counsellor - Chairperson of Colombia's National Authority for the Prohibition of Chemical Weapons (ANPROAQ)

Elisande Nexon

Elisande Nexon is Research Fellow Foundation for Strategic Research in Paris. She Joined the Foundation for Strategic Research in 2005, after an experience in hospital pharmacy as a clinical research attaché (September-December 2002) and Making internal function (July -September 2003).

Elizabeth Lewis

Elizabeth Lewis(1964, Scotland) has spent the past 27 years travelling and working in 7 different countries (Barbados, Austria, Pakistan, South Africa, India, Thailand and Iran) – with a career teaching English language and Kindergarten in international schools in four of them. Elizabeth received her MA in history at Glasgow University in 1986. Elizabeth currently volunteers at the Tehran Peace Museum and coordinates the bi-lingual oral history project. She is a freelance writer and her interests include travel, music, cooking and, of course, peace studies.

Filip Deheegher

Filip Deheegher (Poperinge, 1968) has been working for the city of Ypres as Head of the Peace and Development service since 2001. He acts as co-ordinator for triennial Peace Prize of the city, he is member of the board of directors of The 2020 Vision Campaign Secretariat of Mayors for peace, also based in Ieper. Filip will be the co-ordinator ofthe program for the centennial of the gas attack in April 2015.

Fiona Clark

Fiona Clarck is the Curriculum Manager with the International Baccalaureate Organization.

Fran Laughlin

Fran Laughlin is THIMUN Board Co-Chair.

Friso Visser

Friso Visser is head of Education and Exhibitions at Museon. He received his formal training in Museology at Reinwardt Academy, Leiden; Geology at Free University Amsterdam and University of Amsterdam and Management Degree at Nyenrode Business University, Breukelen.

Giorgio Franceschini

Giorgio Franceschini is a research assistant at the Peace Research Institute Frankfurt (PRIF) and a theoretical physicist by training. Before joining PRIF he worked as a researcher in the fields of nonlinear dynamics, chaos theory and nuclear fusion at both Berlin and Darmstadt University of Technology. Between 1999 and 2005 he

worked as a technical trainer and consultant in the telecommunications industry.

At PRIF, Franceschini focuses on peaceful and non-peaceful applications of nuclear energy with a special focus on the issue of nuclear weapon modernization campaigns and its impact on the non-proliferation regime. He also coordinates PRIF's activities within the EU Non-Proliferation Consortium where he is responsible for the educational activities of the Consortium and the organization of annual expert meetings between European think tanks and practitioners working in the field of non-proliferation and disarmament.

James Revill

James Revill is a Research Fellow with the Harvard Sussex Program, SPRU, University of Sussex. Over the course of completing his PhD prior to joining the Harvard Sussex Program he worked as a consultant to the United Nations Institute for Disarmament Research (UNIDIR) and completed research fellowships with the Landau Network Centro Volta in Italy and the Bradford Disarmament Research Centre in the UK. Revill's research interests focus on the evolution of the biological weapons treaty regime, treaty compliance, the interplay between science and security, and education & awareness raising efforts amongst life scientists. He has published widely in these areas most recently with a book length report for UNIDIR on 'A peer-review mechanism for the biological and toxin weapons convention' and an article on 'Tacit knowledge and the biological weapons regime'.

Jean Boukari LEGMA

Jean Boukar LEGMA is the head of Burkina Faso National Authority.

Jessica Angstreich

Jessica Angstreich is Project Manager for exhibitions at the Nobel Peace Center in Oslo, Norway. Since 2006 she has lead the development, planning and production of more than 20 exhibitions relating to the Peace Prize, war, peace and conflict resolution, among these the annual Nobel Peace Prize exhibition. She holds a bachelor's degree in cultural management from Telemark University College and the University of Alberta.

Jo L. Husbands

Jo L. Husbands is a Scholar/Senior Project Director with the Board on Life Sciences of the U.S. National Academy of Sciences (NAS), where she manages studies and projects related to biosecurity, particularly (1) education and outreach in the broader context of responsible science and (2) the implications of continuing advances in the life sciences for efforts to mitigate the risks of misuse. She also represents the NAS on the Biosecurity Working Group of IAP: The Global Network of Science Academies, which also includes the academies of Australia, China, Cuba, Egypt, India, Nigeria, Pakistan, Poland (chair), Russia, and the United Kingdom. From 1991-2005 she was Director of the NAS Committee on International Security and Arms Control (CISAC) and its Working Group on Biological Weapons Control.

Before joining the National Academies, she worked for several Washington, DC-based nongovernmental organizations focused on international security. Dr. Husbands is a member of the Temporary Working Group on Education and Outreach in Science and Technology of OPCW's Scientific Advisory Board and a Fellow of the International Union of Pure and Applied Chemistry. She holds a Ph.D. in Political Science from the University of Minnesota and a Masters in International Public Policy (International Economics) from the Johns Hopkins University School of Advanced International Studies.

John Ennis

John Ennis, Chief of UNODA's Information and Outreach Branch on the activities under the UNDIP.

Jonathan Forman

Jonathan Forman currently holds the post of Science Policy Adviser at the Organisation for the Prohibition of Chemical Weapons (OPCW). Dr Forman received a Ph.D. in chemistry from the California Institute of Technology in 1996, after which he worked for a series of biotechnology companies developing molecular

diagnostic and bioanalytical assay technologies for genomic, immunoassay, and cell capture applications. He has been at OPCW (and away from Silicon Valley) since March of 2013.

Joris Voorhoeve

Joris Jacob Clemens Voorhoeve is a Dutch politician, former minister, and university professor. Voorhoeve was the leader of the People's Party for Freedom and Democracy between 1986 and 1990 and served as the Dutch Minister of Defence between 1994 and 1998. He received severe criticism for his role in the Srebrenica massacre but did not resign. He is a member of the Dutch Council of State. In 2010 he left the VVD and joined the liberal Democrats 66 party. Voorhoeve is also a member of the Dutch Foreign Ministry's Advisory Council on International Affairs and of the Trilateral Commission.

Judi Sture

Judi Sture is the Head of the Graduate School at the University of Bradford, England, where she leads two doctoral research training programmes. She lectures in Research Ethics and Research Methodology and is closely involved in devising and developing postgraduate and ethics policy and practice at the University and beyond. As a member of the Welcome Trust Dual-Use Bioethics Group and associate member of the Bradford Disarmament Research Centre she is engaged with colleagues from a number of UK and overseas universities in developing a bioethics approach to counter biosecurity threats in the life sciences.

Kesrat Sukasam

Kesrat Sukasam is the head of OPCW Implementation Support Branch

Knut Hjelleset

Knut Hjelleset is a member of the board of Wikimedia Norway, and is also a long time activist in the Norwegian Peace Association. His contribution to the conference will concern the possibilities, pitfalls and benefits for organizations with global outreach, such as the OPCW, of using Wikipedia as a channel for communication on very complex and sensitive issues.

Leiv Sydnes

Leiv Kristen Sydnes is a Norwegian chemist, specializing in organic chemistry. He was born in Haugesund, and took his education at the University of Oslo. He has the dr.philos. degree from 1978. He was hired as an associate professor at the University of Tromsø in 1978, and was later promoted to professor. In 1993 he moved to the University of Bergen. He presided over the Norwegian Chemical Society from 1992 to 1996 and the International Union of Pure and Applied Chemistry from 2004 to 2005.[1] He is a member of the Norwegian Academy of Science and Letters[2]and the Norwegian Academy of Technological Sciences.[3]

Liz Dallas

Liz Dallas is a non-proliferation researcher. She holds a BS in chemistry and an MS in analytical chemistry, and the early days of her research career were focused on developing a field-deployable sensor that was rugged and reliable enough to be used by the lay person in field conditions. Following this research, she moved into developing and editing graduate level science textbooks, including Radioanalytical Chemistry (Kahn, 2006) and Chemical Sensors (Janata 2007). She proceeded to develop and teach science textbook, laboratory and testing materials for kids aged 5-18, which served to further develop her understanding of conveying complex material in a manner appropriate to younger age brackets. Since 2010, she has worked toward a PhD in International Relations at Ga Tech and taught non-proliferation studies to engineers, scientists and social scientists at that institute. In 2013-14, she worked as a trainer of On-Site Inspectors for the Comprehensive Nuclear Test Ban Treaty Organization (CTBTO), developing the largest-scale training conducted to date by the organization, in preparation for Integrated Field Exercise 2014.

Luc Ferrier

Luc Ferrier is the founder and chairman of the Forgotten Heroes 14-19 Foundation, which is a Belgian non-governmental, independent, non-political, non-religious organization created in 2012 to focus on the

human aspects of the soldiers and labors of the MENA region during the First World War. He assembled an international team of historians specialized in the North African, Middle east and Arab history under the supervision of Prof. Eugene Rogan and personally presented his project to the governments in Algeria, Egypt, Morocco and Tunis where an overall approval for he initiative was received.

Ludo Juurlink

Ludo Juurlink was born in 1972 in Deurne, the Netherlands. He studied chemical technology at Delft University of Technology and chemical education at the HKLT in Tilburg prior to obtaining a PhD in physical chemistry from Tufts University in 2000. He continued his education as a postdoctoral fellow at Leiden University and is now a Principal Investigator at the Leiden Institute of Chemistry. His research group focuses on gas-surface reaction dynamics and surface science in relation to heterogeneous catalysis and sustainable energy. Ludo was director of Leiden University's Junior Science Lab from 2007 until 2013, developed educational materials for high schools and universities, and is currently writing a popular chemistry book for laymen.

Maarten Okkersen

Maarten Okkersen (1959) studied applied arts at the Art Academy in The Hague and History at University of Leiden. He worked as a producer with multimedia artists for The Worldwide Video Festival and was a assistant-producer for film productions.

As Head of Communications in the Museon, a museum for culture and science, he is responsible for marketing, design management and international projects. He is also member of the programme committee of ECSITE, chair of the editorial board of SPOKES magazine and member of the borad of VSC, the Dutch Science Center Association.

Matthew Moran

Matthew Moran is Lecturer in International Security, and Deputy Director (Research Development) of the Centre for Science & Security Studies (CSSS) in the Department of War Studies In King's College London. He joined King's College London in 2009 to work on issues relating to nuclear non-proliferation in South-East Asia and North Africa. His current research project focuses on issues relating to Iran's nuclear programme.

Maureen Reed

Dr. Maureen Reed is the Executive Director of the Nobel Peace Prize Forum, a position she has held since the Norwegian Nobel Institute moved the Forum permanently to Minneapolis, Minnesota, USA in 2011. The mission of the Forum is to inspire peacemaking by studying the work of Nobel Peace Prize winners, and Dr. Reed's responsibility is to spread that inspiration to thousands of in-person and virtual attendees every year.

A graduate of the University of Minnesota Medical School, Dr. Reed practiced medicine for twenty years in the Twin Cities and served on the 2007 Minnesota Health Care Transformation Task Force. She was twice elected to the University of Minnesota Board of Regents and also served as its chair. She holds an adjunct faculty appointment at the School of Public Health and the School of Medicine, and she is a past chair of the University of Minnesota Alumni Association.

Her business experience includes serving as President of Aspen Medical Group, Vice President and Medical Director of HealthPartners, and Executive Director of the Parks and Trails Council of Minnesota. She was previously a candidate for U.S. Congress.Dr. Reed has worked for brief stints in Norway, Thailand, and Uganda.

Maurizio Martellini

Prof. Maurizio Martellini is Director of the Insubria Center on International Security (ICIS), Secretary General of the Landau Network-Centro Volta (LNCV), Executive Secretary of the International Working Group (IWG), Professor of Physics at the University of Insubria (Como, Italy), and Member of the Pugwash

General Conferences. He is an advisor of the Italian Ministry of Foreign Affairs.

As ICIS Director and LNCV Secretary General, Prof. Martellini organizes International Conferences, Schools and Workshops and edit publications as well as specific Case Studies. His fields of Research and Analysis are: global environmental and resources' issues, global scientists engagement, management and disposal of hazmats; scientific and technological aspects concerning international security, CBRN risks mitigation issues; science and engineering diplomacy; and CBRN education and awareness. He is also Team Leader or Expert of different EU CBRN CoE projects.

Peter Mahaffy

Peter Mahaffy is Professor of Chemistry at the King's University in Edmonton, Canada and co-director ofthe King's Centre for Visualization in Science, which provides digital learning resources used by a quarter million students, educators and the public from over 100 countries each year. He carries out research in chemistry education, visualization in science, and organic chemistry, and is currently working on the use of rich contexts in the teaching and learning of chemistry, the interface between chemistry and sustainability, and the responsible uses of chemistry.

Mahaffy recently completed six years of service as chair of the International Union of Pure & Applied Chemistry's (IUPAC) Committee on Chemistry Education (CCE), where he co-facilitated the process to obtain UN designation of 2011 as the International Year of Chemistry and served on the global IYC-2011 Management Committee. He was a charter member of the International Council of Science (ICSU) Committee on Freedom and Responsibility in the Conduct of Science, and serves on the temporary working group on education and outreach for the Organization for the Prohibition of Chemical Weapons (OPCW).

He has received both national and international awards for contributions to chemistry, chemistry education, and public understanding of science and has presented over 70 plenary, keynote or invited lectures to scientists, educators, and the public on six continents in the past six years. He is co-author of an international 1st year university chemistry textbook: Chemistry: Human Activity, Chemical Reactivity, which has just gone into its 2nd edition.

Sergio Pérez Gunella

Sergio Pérez Gunella is the Exectuive Chariman of Argenitine National Authority.

Scott Bohle

Scott Bohle is an inorganic chemist who has travelled widely before assuming his current position as a CRC Chair of Chemical Biology at McGill University in Montreal Canada. Upon completion of his Bachelor's degree at Reed College, Portland Oregon, he spent a term years teaching in the Peace Corp in the South Pacific Island State of Western Samoa. He resumed his studies in chemistry at the University of Auckland where he obtained his Ph.D. in 1988 for research related to the chemistry of low valent phosphorus. This training was followed by postdoctoral fellowships in Freiburg Germany, with Professor Heinrich Vahrenkamp doing cluster chemistry, and at Stanford University doing biomimetic metalloporphyrin chemistry with Professor Jim Collman.

In 1991 he started his independent career at the University of Wyoming and rose rapidly to the Rank of Full Professor. In August 2002 he moved to McGill University in Montreal. Current research interests include the biochemistry of reactive cytotoxins, the bioinorganic chemistry of malaria, and the synthesis of nitrogen compounds. He has hiked, sailed, and climbed extensively in North America and counts bird watching and orienteering as past times.

Seema Gahlaut

Dr. Seema Gahlaut is the Assistant Director, Center for International Trade and Security and Adjunct Assistant Professor, School of Public and International Affairs, University of Georgia, USA. As the head of Training and Outreach, she directs all CITS programs aimed at assisting government officials, legislators, industry and the

academia on issues relating to implementation and enforcement of controls over WMD-relevant technologies. This includes the Security and Strategic Trade Management Academy, Asian Fellows Program, and Enterprise Outreach Workshops around the world. She is a member of the Export Control Experts Group in the WMD Working Group of the Council for Security Cooperation in the Asia Pacific (CSCAP). She recently directed the CARICOM 1540 project aimed to assist the 15 Caribbean nations in designing the legal framework for implementing UNSC Resolution 1540.
Dr. Gahlaut is currently engaged in designing training programs on chemical security for Saudi and Pakistani officials, and an in-depth introductory course on trade compliance for Kenyan officials. She is also developing a training curriculum on implementation of UNSC Resolutions 1540 (regulating non-state actor activities in dual-use transactions such as export, re-export, brokering and facilitation) and 1373 (financing of terrorism), and UN Conventions on combatting money laundering, organized crime and corruption.
She has received research and travel grants from the United States Institute of Peace, Ploughshares Fund, Smith Richardson Foundation and the Carnegie Corporation of New York. In addition, she continues to brief U.S. and foreign government and private sector officials on a range of international trade and security issues.

She has appeared on CNN TalkBack Live and often contributes to Voice of America, Radio Free Asia and BBC Radio (Hindi Service) as an expert. She has been quoted in a variety of publications such as the New York Times, Mother Jones, Atlanta Journal and Constitution, Aerospace Daily, Asia Times, Times of India, and Bloomberg.com. Her op-eds have appeared in ForeignPolicy.com, Bulletin of the Atomic Scientists, The Hindu, The Times of India, Encyclopedia of Globalization, Defense News, Export Practitioner and Journal of Commerce. She has contributed articles to journals such as Orbis, Defense & Security Studies, Comparative Strategy, Arms Control Today, Perspectives on Politics, USI Journal and the Indian Defense Review.

Stephanie Meulenbelt

Stephanie Meulenbelt (1986) received her MA (2010) in Criminology from Utrecht University, the Netherlands, and her LLM (2011) in International Law and World Order from the University of Reading, UK. After finishing her work at the Netherlands Institute of Human Rights, where she conducted research on transitional justice and victims' role in international criminal trials, she joined the Office of Special Projects of the Organisation for the Prohibition of Chemical Weapons (early 2012). She was involved in developing and maintaining a database on chemical safety and security initiatives (on international, regional, and national – including industrial– levels) and performed preparatory work for projects intending to increase chemical safety and security. Thereafter, she joined TNO, where she conducts research on a variety of security and defence related topics and contributes to the implementation of several projects in the framework of the EU CBRN Risk Mitigation Centres of Excellence Initiative as well as projects for the Dutch Ministry of Defence.

Tanya Mehra

Tanya Mehra is senior education manager at the T.M.C. Asser Instituut. With a background in international law Tanya Mehra is involved in developing, setting up and implementing tailor-made trainings and summer programmes at the TMC Asser Instituut in the broad field of international law for a diverse audience ranging from judges to civil servants, from students to journalists.

She is responsible for the 5 summer programmes the Asser Instituut organized with different partners in the field. She has developed and organizes together with the OPCW the annual Summer Programme on Weapons on Mass Destruction in a Changing World.

Since 2006 she is responsible for the Hague Forum for Judicial Expertise (HFJE), a training facility offering tailor made training programmes in the broad field of international law and rule of law for judges, prosecutors and other professionals working in the justice sector. Through conducting need assessment missions, curricula development and delivering tailor-made training for participants mainly from post-conflict countries Tanya Mehra has gained a vast experience in capacity building projects geared towards strengthening the rule of law in developing countries.

Recently Tanya Mehra has been involved in Curriculum Development for the 'International Institute of Justice

and the Rule of Law' in Malta and is the project leader of the ICCT/Asser's rule of law project 'Protecting Intelligence Sources and Witnesses in Terrorism-Related Court Cases', which relates to the efforts of the GCTF Criminal Justice Sector and Rule of Law Working Group and the GCTF Rabat Memorandum on Good Practices for Effective Counterterrorism Practice in the Criminal Justice Sector.

Tatyana Novossiolova

Tatyana Novossiolova is a Wellcome Trust Doctoral Researcher at the Bradford Disarmament Research Centre (BDRC), University of Bradford, UK. She is currently working on a project on the governance of biotechnology in Post-Communist Russia. Other research interests include arms control and biological non-proliferation, terrorism and pedagogy. Tatyana has been involved in curricula development for academic and specialised training courses in the area of arms control and biosecurity. She has delivered lectures and seminars at undergraduate and postgraduate level, and led professional training sessions within the framework of the EU CBRN Centres of Excellence initiative. Past collaborations include work with the Public Health Agency of Canada (PHAC) and the Landau Network-Centro Volta, Italy. Tatyana has published widely in the academic literature, produced policy papers and participated in numerous international conferences and workshops. She holds a BA (Hons) First-Class Degree in International Relations and Security Studies.

Temechegn Engida

Dr Temechegn Engida has been the Programme Officer for ICT Use in Education at the UNESCO-International Institute for Capacity Building in Africa (IICBA) since October 2003. He has been designing and implementing many education and ICT projects for Africa, some of which are the ICT-enhanced Teacher Standards for Africa, ICT-enhanced Teacher Development Model, and Contextualizing Science Teacher Education in Africa Using OpenSource Software.

Prior to this, he spent about 15 years in the Addis Ababa University, Faculty of Education, teaching both undergraduate and postgraduate (MA and PhD) courses as well as researching and advising research works through face-to-face and distance modes. He was the first Associate Dean for Research and Postgraduate Programs of the Faculty of Education in the AAU. He served as the founding President of the Federation of African Societies of Chemistry and is serving as Editor-in-Chief of the African Journal of Chemical Education.

Tibor Toth

Ambassador Tibor Tóth has been the Executive Secretary of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) since 2005. He has been actively involved in international disarmament and non-proliferation issues for over three decades. From 1990 to 1993 and from 2003 to 2005, he was the Ambassador and Permanent Representative of Hungary to the United Nations in Geneva. From 1997 to 2001 he served in the same capacity to the United Nations in Vienna. In these capacities he represented Hungary at the Conference on Disarmament, the International Atomic Energy Agency and its Board of Governors, as well as the CTBTO. He was also Ambassador and Permanent Representative to the Preparatory Commission of the Organization for the Prohibition of Chemical Weapons in the Hague, and from 1994 to 1996 served as the Deputy State Secretary of Defense responsible for international affairs.

From 1992 to 2004, he chaired the Biological Weapons Convention negotiations on an implementation and verification regime. In 1992 he negotiated the Chemical Weapons Convention provisions on the Executive Council and in 1990 he initiated the joint organization of the Open Skies Conference by Canada and Hungary (later depositaries of the 1992 Treaty on Open Skies, which established a programme of unarmed aerial surveillance flights over all NATO and Warsaw Pact countries).

Toril Rokseth

Toril Rokseth is Education Manager at the Nobel Peace Center

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