ORGANISATION FOR THE PROHIBITION OF CHEMICAL WEAPONS

Science, Peace and Security: Working Towards a World Free of Chemical Weapons

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REMARKS AS DELIVERED

Ladies and gentlemen,

It is a great honour to be with you here today.

The Max Planck Society has long been synonymous with cutting-edge research. Your institute is no exception, having made its mark as a world-leader in heart and lung research and teaching.

I must confess that, when I received the invitation to address your Annual Retreat, I was somewhat daunted. What, after all, could the head of an international organisation dealing with disarmament possibly have to say to an audience of cardio-pulmonary experts?

But, as I sat down to prepare my remarks, a key message became clear to me – one that resonates for you as scientists, no less than for those of us engaged in disarmament. That is that the practice of science matters. It forms the very bedrock of our well-being and prosperity. But, tragically, it can also be misused, as the history of warfare has all too often shown.

We need no more powerful a reminder of this than the development and use of weapons of mass destruction. Initially seen as a weapon to break the deadlock of trench warfare during the First World War, chemical weapons have claimed the lives of countless victims over the past century, from Ieper in Belgium, to Halabja in Iraq, to Ghouta in Syria. It is for this reason – to prevent humankind from destroying itself – that scientists and diplomats have a special responsibility to work together.

And there is no clearer evidence of the value of acting on this responsibility than the history of chemical disarmament. In my remarks today, I intend to tell the story of how our success in ridding the world of chemical weapons has benefitted from collaboration between policy-makers and scientists.

In doing so, I hope to make a further investment in a key factor determining our future success in ensuring that science always serves the cause of peace and security. That is to increase understanding between scientists and diplomats. Between people like you and me, with a view to showing just how much we are working towards common goals. But, before I expand on this, let me give you a snapshot of what it is that we do at the Organisation for the Prohibition of Chemical Weapons, or OPCW.

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The OPCW oversees the implementation of the Chemical Weapons Convention – a landmark treaty that has, since 1997, comprehensively banned chemical weapons. Our organisation is a technical one, and our staff has, for the main part, supported verification of the destruction of stockpiles of chemical weapons across the globe.

Of the more than 70,000 metric tonnes of deadly chemical warfare agents that have been declared to date, nearly 93% have now been destroyed. This includes Syria's chemical weapons programme, which a remarkable international mission has largely eliminated. As the only remaining chemical weapon possessor states, Russia and the United States are scheduled to complete destruction activities in 2020 and 2023. Out of six other countries among our 192 Member States that declared chemical weapons, four have eliminated their stockpiles. Some reagent chemicals in Libya still remain slated for destruction, as are remnants of chemical weapons in Iraq.

As a result, we now stand at the threshold of the complete elimination of all chemical weapons declared to the OPCW.

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Yet, this will not be the end of the long road travelled by global chemical disarmament. Many old and abandoned chemical weapons continue to present hazards for people and the environment, as well as technical challenges for their elimination – notably, World War Two-era stocks abandoned by Japan in China. And, while only four countries still remain outside the Convention, one of these – North Korea – is widely suspected of having a large stockpile of chemical weapons.

At the same time, new and emerging security challenges threaten to undermine the disarmament gains we have made.

Thankfully, the likelihood of states using chemical weapons has been all but removed. But the threat of terrorists making and using such weapons has become a stark reality, as we have seen in the Middle East. It does not take much to imagine foreign fighters returning from ISIS ranks and applying their newly acquired expertise in chemical weapons in their homelands in Europe.

This has clear implications for how we adapt our efforts at preventing both the re-emergence of chemical weapons, as well as misuse of toxic industrial chemicals. For any chemical is regarded as a chemical weapon under the Convention, when it is used to harm or kill, under our so-called general purpose criterion.

Our ongoing challenge – one that will become more complex as the last 3 chemical weapons are destroyed – is to ensure that chemistry is always used to benefit humankind, and never again to harm it.

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At every stage along the long road to ridding the world of chemical weapons, scientists have been an indispensable partner for the OPCW. This was clear from the very outset of efforts to negotiate the Chemical Weapons Convention. Without the involvement of scientists and industrial chemists in the treaty negotiations, we would not have been able to obtain the verification regime that we did – a regime firmly grounded in best-practice methods and techniques.

It is hard to overstate just how critical this regime has been for the integrity of the Convention and for building trust between our Member States. Indeed, as an indication of what went into it, the Verification Annex to the Convention has two and a half times more words than the actual Convention text!

To keep our verification regime up to date, and to keep abreast of the latest developments in science and technology, the OPCW has drawn on independent advice from experts across the globe through its Scientific Advisory Board.

The Board has prepared reports on the convergence of chemistry and biology, the stability and storage of chemical weapons samples, and assistance and protection in relation to chemical attacks. The Board has also been responsive to opportunities beyond verification-related issues, to which I will come shortly. Let me cite here a workshop planned for later this year to review how better understanding of life processes at the molecular level can help us improve medical countermeasures and treatments for exposure to toxic chemicals.

One of the key elements of our day-to-day verification work is sampling and analysis. For this, we draw on our network of 19 cutting-edge laboratories in 15 countries across the globe. They undertake the vital analytical work that underpins our Member States' confidence in the probity of the OPCW's verification regime.

More recently, this work has been put through its paces in investigating allegations of chemical weapon attacks in Syria and Iraq, as well as clarifying Syria's declaration about its chemical weapons programme. Let me give you a pointed example.

In keeping with our mandate, the OPCW Laboratory had commenced a series of international exercises in the analysis of biomedical samples in 2009. An exercise carried out in February to July 2013 involved the analysis of blood plasma that had been spiked with the nerve agent sarin. This proved timely, when the OPCW collected biomedical samples in support of the United Nations Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic that same year.

Based on our exercises, we knew which of our partner laboratories had the expertise to analyse these samples and were, accordingly, able to commission them promptly. In the end, the results of analysis of these samples, along with environmental samples, allowed the UN team to confirm 4 that chemical weapons, more specifically Sarin, had been used in Syria. As you can appreciate, making the grade to become an OPCW-designated laboratory is no mean feat. It requires passing a series of complex proficiency tests, for which the OPCW Laboratory provides assistance and training.

In addition to proficiency testing for environmental samples, the first biomedical proficiency test was recently completed. As a result, we have now designated 17 laboratories from 14 Member States for the off-site analysis of biomedical samples. What this means is that the OPCW has significantly increased its ability to detect exposure to chemical warfare agents – notably, sulfur mustard and nerve agent.

Just as importantly, research among our partner laboratories is further augmenting our capabilities, minimising response times and lowering detection thresholds. Of interest perhaps to this institute will be research being undertaken to detect unique biomedical signatures for chlorine, which has been used repeatedly as a weapon in Syria.

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For all this, we do much more with the scientific community than just engaging on verification related issues. This reflects the fact that the OPCW is not just in the business of getting rid of chemical weapons, real and potential, but also of making them unwanted. We do this by supporting preventive measures against the misuse of chemistry with the promotion of technical cooperation on peaceful uses of chemistry.

This includes running capacity-building programmes across a wide range of areas, such as training on chemical safety and security management, courses for developing chemical analytical and laboratory skills, expert meetings on green chemistry, and various research and conference support programmes.

Many of our programmes focus on regions where need is greatest, such as Africa. The OPCW is also working to foster and expand contacts between chemistry professionals across the globe. To this end, we run a Fellowship Programme to support the mobility and training of 10-15 scientists annually.

We also administer an Associate Programme that places junior chemistry professionals from developing countries in companies around the world, including Germany, to expose them to modern industrial practices.

And, recently, we hosted a symposium on Women in Chemistry aimed at promoting career opportunities for women in the chemical sciences, followed by a three-day basic analytical course at our laboratory. Our overall purpose is clear: to help build an international network of scientists working to enhance our reach.

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Given the particular expertise represented at this institution, I would like to draw your attention to an additional area in which the OPCW is active.

As part of our mandate, the OPCW is required to provide and coordinate assistance in response to requests by any of our Member States in relation to the use, or threat of use, of chemical 5 weapons. To this end, we conduct various training activities and programmes aimed at building capacity for first responders to incidents involving the release of toxic chemicals – from protection, to detection and decontamination.

This is not just for the purposes of contingency planning. Many victims of chemical warfare continue to endure chronic lung ailments as a result of exposure to chemical weapons – sulfur mustard, in particular – most notably, from the Iran-Iraq War and, more recently, in Syria and Iraq. Their plight serves to remind us not only of our duty of care for them, but also of the need to find better ways of treating any future victims.

For this purpose, the OPCW established in 2011 an international support network for victims of chemical weapons, along with a voluntary trust fund to make sufficient resources available. A tangible outcome of this initiative has been the preparation of a practical handbook for the medical management of chemical warfare casualties, which is available on our website.

The sufferings of chemical warfare victims has also been made the subject of a short documentary film produced by the OPCW called *Ich liebe Dich* – likewise accessible on our website. It tells the life-affirming story of the relationship between Kai, who suffered exposure to sulfur mustard in Halabja in 1988, and the doctor who treated him in Vienna. In the film, the doctor recalls his frustration, at the time he treated Kai, with the lack of diagnostic and treatment options for victims of chemical weapons.

I hope that some of the work we are sponsoring through the international support network, especially in lung rehabilitation, might find points of intersection with research being conducted at this institution.

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As you can see from all this, scientists are far from being casual bystanders in the OPCW's mission. What is more, they have an active role not only in informing our work, but also advocating for its importance. This has led us at the OPCW to rethink how we conduct education and outreach activities, based in large part on recommendations from the OPCW's Scientific Advisory Board.

These have included establishing an Advisory Board on Education and Outreach, which is now up and running and prominent educators in the chemical sciences among its members. Its recommendations will help set the direction for how we broaden our community of stakeholders – from scientists to civil society, from industry representatives to members of the general public.

Work in this area will complement our ongoing engagement with academia in developing programmes for nurturing a culture of responsible science in universities and schools. This is, in fact, the subject of another documentary film made by the OPCW – *A Teacher's Mission*. It chronicles the efforts of a Dutch high school teacher to raise his students' awareness of how chemistry has been misused in the past, and the need to draw lessons from this in the present.

The OPCW has also facilitated discussions among scientists from across the globe to develop the Hague Ethical Guidelines – ethical principles for chemistry professionals, which grew out of a 6 German initiative at the OPCW. These guidelines are intended to serve as a practical baseline for adoption by scientific and industry associations, and have attracted a favourable response in several quarters to date.

To give work in this area a practical dimension, we have been rolling out a Responsible Care training programme, whose first workshop was held earlier this year in Moscow in cooperation with CEFIC, the European Chemical Industry Council.

Finally, we have acted to foster more informed dialogue between scientists and policy-makers. Neither side can afford not to understand the political and technical complexities of a rapidly changing strategic landscape and how they affect human security. Diplomats must do more to understand scientific practice and applications, and scientists must do more to understand policy-making processes. And both must be able to explain to each other better what it is that they do and why it is important.

This has been the motivation behind various initiatives by the OPCW, from regular briefings to our Member States on issues discussed by the Scientific Advisory Board, to organised visits by government officials to our laboratory.

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Before concluding, let me leave you with one lesson that has etched itself deeply into my mind. While the facts that science reveal may be ethically neutral, practical applications arising from these facts are not. They carry obligations governed by our common humanity.

Max Planck, you might recall, received the Nobel Prize for Physics in 1918 alongside his compatriot and friend, Fritz Haber, who won the Nobel Prize for Chemistry that same year. It is no exaggeration to say that the Haber Process literally saved millions of people from starvation by creating the basis for the modern fertilizer industry. But Haber also applied his scientific knowledge to running Germany's chemical weapons programme during World War I.

Thankfully, since that time, we have seen chemical weapons stigmatised and comprehensively banned under international law. Commitment by scientists to ensuring that science always serves the cause of peace and security has been crucial for underwriting these achievements. For this reason, the OPCW can make no better investment in the ongoing success of its mission than to intensify its partnership with the scientific community.

For this is a mission in which all humanity has a vital stake – a mission in which scientists, such as yourselves, have a frontline role to play.

Thank you for your attention.