"Partnerships for Disarmament:
Lessons from Chemical Weapons Disarmament"
Speech to Institute of Chemical Technology
Ahmet Üzümcü, Director-General OPCW
Mumbai, India
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Vice-Chancellor Prof. Yadav,
Chairman Dr Sandhu,
Joint Secretary Mr Kurian,
Prof. Ghosh,
Distinguished faculty members,
Dear students,
Ladies and gentlemen,

At the outset, let me say how delighted I am to be in Mumbai and to address you here today.

The Institute of Chemical Technology has an enviable reputation. I am very impressed by what I have learned today.

The impact of the research conducted here will ensure that the Institute continues to enhance its standing as a centre of excellence.

As I will try to show in my remarks, your research can also contribute significantly to global efforts in the area of disarmament and security.

As you know, I have the honour to serve as the Director-General for the Organisation for the Prohibition of Chemical Weapons, or OPCW – the implementing body for the landmark Chemical Weapons Convention.

In this capacity, I am especially pleased to be visiting India for the second time.

India is a key partner for the OPCW in its mission to eliminate chemical weapons across the globe, and to ensure they are never again made or used.

Yours was one of the first countries to have successfully destroyed their entire stockpile of such weapons under the eighteen-year-old chemical weapons ban.

But India's legacy in chemical disarmament stretches much further back in history.

It is in your country's great epics – the Ramayana and Mahabharata – that we see the first references to the unlawfulness of using poison in war.

In modern times, India's traditions of non-violence, its record in chemical disarmament and your position as a global actor have built immense potential for advancing international peace and security.

And it is in India – a rising economic powerhouse with a vast reservoir of young talent – that the solutions to some of our most daunting security,

human development and environmental challenges will be sought, and found.

I particularly value this opportunity to address an audience of scholars, scientists, academics, future engineers, experts and researchers.

You stand at the vanguard of a key undertaking of our time – making the world a more secure and prosperous place through scientific and technological development.

An undertaking that finds no clearer expression than in the mission statement of this venerable institution – to *'create new knowledge to solve the problems of chemical, biological, materials, and energy industries in service of the nation and in turn the world'*.

This is a statement that resonates strongly with the mission of the OPCW.

For to rid the world of chemical weapons, and to keep them from ever again being developed, requires that science always work in the service of peace.

Before I expand on this, let me point to some of the achievements we have been able to record since the Chemical Weapons Convention entered into force less than two decades ago.

Achievements that, you will recall, earned our organisation the Nobel Peace Prize in 2013.

Today, 90% of all declared stockpiles of chemical weapons worldwide have been destroyed, and what is left – largely in Russia and the United States – will be eliminated by 2023.

In other words, all known stocks of an entire class of weapons of mass destruction will be gone within only eight years.

191 countries are now members of the Chemical Weapons Convention, covering 98 per cent of the world's territory and population, thus making it a truly global norm with force under international law.

This is no mere declaratory regime – far from it.

The OPCW works actively with its Member States to ensure they demonstrate their compliance with the provisions of the Convention.

Our inspectors have conducted some 6,000 inspections – at military as well as commercial industrial facilities around the world – to verify that weapons are being destroyed, and that no activities banned by the Convention are being undertaken.

As is clear from all of this, the OPCW's work to bring about global chemical disarmament has rendered practical, tangible results in what has been an enduring example of effective multilateralism.

This is a point I emphasised in my speech at the Nobel award ceremony in Oslo.

But nowhere has it been more plainly made than in the collective international effort to remove and destroy Syria's chemical weapons.

Within a year of Syria acceding to the Chemical Weapons Convention, and the OPCW agreeing on a programme of destruction of its stockpiles and facilities, all of Syria's declared chemical weapons had been removed from the country and some 98% of them destroyed.

This was an unprecedented mission, involving more than 30 countries, with the United Nations providing important logistical and security support.

The generous extent to which it was subscribed in terms of technical and financial assistance – including India's contribution – attests to the strength of global consensus against these barbarous weapons.

It also served to demonstrate the resilience and ongoing importance of the Chemical Weapons Convention.

At the heart of this solid record of success has been our ability, as a science-based technical organisation, to demonstrate a high degree of technical competence, analytical accuracy and willingness to innovate.

These are professional virtues which, I am sure, are only too well understood here.

From the time that the Convention was being negotiated, scientists and technical experts played a vital role in developing its robust international verification regime.

It was, of course, an historic coalescence of political will that finally brought about a conclusion of these negotiations in 1992.

But, to build that political will, scientists had to first show that compliance with the Convention need not be taken only on trust, but that it could also be proved.

They provided the tools for developing an inspection and monitoring regime that could verify that Member States were holding to their obligations under the Convention.

Science also informs almost every aspect related to implementation of the Convention.

From complicated, environmentally safe technologies for destroying chemical weapons, to sensitive monitoring and detection devices used in the field by OPCW inspectors.

From accurate laboratory analysis of chemical samples, to the development of credible verification techniques and methods.

That is why the OPCW invests so much energy and effort in its partnerships with the scientific community and industry.

The OPCW Scientific Advisory Board is a vital organ in this regard.

It provides independent expert advice on a wide range of topical developments in science and technology with a view to enhancing implementation of the Convention. We are pleased to have an Indian scientist within the Board.

Among issues recently addressed by the Board, for example, was the growing convergence of chemistry and biology, and what implications this could have for the OPCW's verification activities.

We also draw on a global network of 21 OPCW-designated laboratories in 17 countries that have been accredited to the highest possible standards for chemical analysis.

Several of these laboratories played a crucial role in confirming the use of the deadly nerve agent sarin just over two years ago in the Damascus suburb of Ghouta.

In short, scientists help us to better understand how advances in their field can create challenges, as well as opportunities for our work.

The practical importance for disarmament of technical innovation and cooperation with industry was made especially clear in the course of the Syria mission.

Two examples stand out in this respect.

Failure to secure a land-based option for destroying Syria's most dangerous chemical weapons led the United States to develop a sea-based platform based on a field deployable hydrolysis system.

It successfully and rapidly neutralised some 600 tonnes of sulphur mustard and stocks of a precursor chemical for sarin in a safe and environmentally sound manner.

And to destroy other toxic chemicals used in Syria's weapons programme, as well as some of the effluent resulting from the hydrolysis operations, the OPCW engaged two commercial entities through a tender process.

This was a remarkable example of how the private sector can make an important contribution to addressing disarmament challenges.

More recently, we have been analysing evidence for the purposes of investigating allegations of use of toxic chemicals as weapons in Syria, notably chlorine.

This mission is set to expand under the OPCW-UN Joint Investigative Mechanism recently established by the UN Security Council.

The objective of this Mechanism is to identify the governments, individuals or groups that have carried out, or sponsored, attacks using chlorine or other toxic chemicals.

It further represents a crucial step in assigning responsibility regarding allegations of non-compliance with the Convention.

From all of this, one thing is abundantly clear.

Without scientists and industry experts who can communicate effectively with policy makers and diplomats, disarmament cannot hope to make practical, tangible gains.

My message to those of you embarking on careers in science and industry is therefore a simple but very important one.

You need to be aware of the crucial nexus between science and security.

None of you can afford to neglect the broader strategic context and potential impact of your research, just as diplomats cannot afford not to be more literate in the applications of science and technology.

This is especially true in the case of the chemical and biological sciences, given the potential for them to be misused.

The thousands of victims of chemical warfare over the past century are tragic testimony of this.

It is worth recalling in this regard that the Nobel laureate Fritz Haber who saved millions from starvation by devising a way of synthesising ammonia and establishing the modern fertiliser industry also oversaw Germany's chemical weapons programme during the First World War.

The example of Fritz Haber is salutary, particularly in the light of our commemoration earlier this year of the centenary of the first large-scale use of chemical weapons.

We must be alert at all times to the dual use potential of chemical substances and technologies – to benefit as well as to harm humankind.

It is for this reason that we at the OPCW are working closely with partners in universities and research institutions to unroll projects that teach responsible science.

I am pleased to note that India's University Grants Commission has asked universities to include education on the disarmament of weapons of mass destruction and peaceful uses of chemistry in their curriculums.

And the Indian National Authority for the Chemical Weapons Convention has highlighted education as a key method to enhance awareness about chemical disarmament.

At the same time, the OPCW is facilitating a discussion among scientists and industry representatives on the development of ethical guidelines – a sort of Hippocratic Oath for chemistry professionals.

But this is not to say that preventing the re-emergence of chemical weapons is just about preventing misuse of scientific knowledge.

Scientists, as I have shown in the range of activities we undertake at the OPCW, can play a proactive role in not only developing methods to

improve our confidence in verification of disarmament agreements, but also in enhancing safety and security more broadly.

The Bhopal tragedy in India and the recent accident in Tianjin in China alert us to the urgency of work in this area, given the devastating consequences that chemical accidents can have.

Science can also help us to enhance the assistance and protection provisions laid out by the Convention, ensuring that States Parties are well prepared in the event of a chemical weapons attack or industrial accident.

Misuse of chemistry is made all the more complicated by its dual-use nature.

Take the widely traded industrial chemical chlorine, for instance.

The same chemical used to purify municipal water supplies can be used as a poison gas to maim and kill, as the recent tragic events in Syria demonstrated.

This ‘dual-use dilemma’ goes to the very core of what makes our task so challenging.

Given the sheer pace of the discovery of new chemical substances, we need to rethink our strategies.

This means developing new synergies between governments and industry, scientists and civil society that can serve to advance the goals of the Convention.

To supplement our monitoring and control measures, for example, we need to create new proactive partnerships that promote responsible science.

All of these issues come down to one fundamental: the imperative of nurturing a culture of responsible science.

As Prime Minister Modi noted in his address to the Indian Science Congress earlier this year: *"When we speak of science and human development, we cannot divorce it from the question of political decisions, social choices, and of equity, ethics, and access."*

The last two decades have seen incredible strides in the eradication of chemical weapons.

As I have noted, the goal of a world free of these barbarous weapons is now within our reach.

This is not to underestimate the challenges ahead.

We still need to persuade a handful of countries – Angola, Egypt, Israel, North Korea and South Sudan – to join the Convention to make it truly universal.

And, as the likelihood of states using chemical weapons is removed, concerns over non-state actors accessing and using chemical weapons must be addressed in more effective ways.

For as we take the final steps towards destruction of existing chemical weapons stockpiles, we must remember that our success will be measured not just in bombs incinerated or chemical agents neutralised.

It will be measured by how effective we are in preventing chemical weapons from re-emerging in the future.

In this regard, the changing nature of conflict will exact a new force of imagination.

But I draw confidence from the fact that, as we enter an increasingly complex security environment, we have more opportunities for effective collaboration.

Collaboration in which scientists, engineers and industry experts will play a frontline role alongside diplomats and policy makers.

India is, and will remain, an important staging ground for this sort of collaboration.

Your country is home to a large and growing chemical industry, accounting for more than two per cent of its annual GDP.

And it hosts the second-largest number of declared industrial facilities under the Convention.

There is enormous potential for India's chemical industry to partner with us to expand our monitoring and verification goals, and to develop new initiatives for promoting peaceful uses of chemistry.

There lies significant work in enhancing the national implementation of the Convention in many of our States Parties, an important area in which India can provide significant support.

And through dynamic research hubs such as the Institute of Chemical Technology, India can help the machinery of disarmament adapt to new developments in science and technology, and make our mission resilient to new challenges.

Mahatma Gandhi once said, *"Strength does not come from physical capacity. It comes from an indomitable will."*

It is this indomitable will that effective disarmament demands – not only of states and governments, but from all of us – whether in industry, universities, civil society or scientific research institutions.

It is this indomitable will that forms the backbone of international law and the life force of our shared responsibility for peace and human security.

It is this indomitable will that has brought us to the very real prospect of complete chemical disarmament, and will keep our advances from being undone into the future.

As the responsibility for securing and bolstering these gains passes to your generation, the skill and resolve I see here today reassures me that our mission is in good hands.

Thank you for your attention.