



International and EU Regulation of Countering the Hostile Misuse of CBRN Materials and Knowledge

Knowledge
Materials and
Misuse of CBRN

Methodology for Assessing States' Capacity for Countering the Hostile Misuse of Chemical, Biological, Radiological or Nuclear (CBRN) Materials and Knowledge



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**INTERNATIONAL AND EU REGULATION
OF COUNTERING THE HOSTILE MISUSE
OF CBRN MATERIALS AND KNOWLEDGE**



The present report provides an overview of the international and EU regulatory context of countering the deliberate misuse of CBRN materials and knowledge. The report argues that upholding the international norms against WMD non-proliferation enshrined in the existing international and EU regulations and arrangements in the area of WMD arms control and disarmament, relevant export and import control, and counter-terrorism is an essential requirement for preventing the hostile misuse of CBRN materials and knowledge. The report has been developed within the framework of the project [*Methodology for Assessing States' Capacity for Countering the Hostile Misuse of CBRN Materials and Knowledge \(CBRN\)*](#), funded by the European Union's Internal Security Fund – Police (ISFP).

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Executive Summary

The present report provides an overview of the international and EU regulatory context of countering the deliberate misuse of CBRN materials and knowledge. Part 1 of the report reviews key international and EU regulatory instruments and frameworks that seek to prevent the deliberate misuse of CBRN knowledge and materials. The instruments are grouped in three thematic categories as follows: 1) non-proliferation of weapons of mass destruction (WMD); 2) counter-terrorism, and 3) export and import controls. Part 2 of the report examines the importance of integrating the CBRN safety and security regimes for preventing the deliberate misuse of CBRN knowledge and materials beyond formal regulation. Part 3 of the reports summarises the key findings of the report. In particular, the report emphasises that:

- Upholding the international **norms against WMD** enshrined in the existing international regulations and arrangements in the area of WMD disarmament and non-proliferation, relevant export and import controls, and counter-terrorism is an **essential** requirement for **preventing the hostile misuse** of CBRN materials and knowledge.
- Countering the hostile misuse of CBRN materials and knowledge requires the **full, systematic, and effective** implementation of **both** international and EU **safety** and **security** regulations and arrangements at a national level. **Safety** instruments are those aimed at preventing and dealing with **unintentionally** caused CBRN incidents, such as naturally occurring disease outbreaks and accidents as a result of natural disasters, technical failure, or negligence. **Security** instruments are those aimed at preventing and dealing with **deliberately** caused CBRN incidents, including the use of WMD by a State or non-State actor.
- The **full** and **effective** implementation of the international and EU CBRN safety and security regulations and arrangements at a **national** level requires a combination of **top-down** and **bottom-up** approaches and measures. **Top-down** approaches include government-led initiatives such as national policies, legal acts, and guidelines. **Bottom-up** approaches include civil society-led initiatives such as self-regulation schemes, voluntary standards, and codes of conduct.¹

¹ Tatyana Novossioloova, Lela Bakanidze and Dana Perkins, '[Effective and Comprehensive Governance of Biological Risks: A Network of Networks Approach for Sustainable Capacity Building](#)' in Ben Trump. et al., *Synthetic Biology 2020: Frontiers in Risk Analysis and Governance*, Springer, 2020.



1. Introduction

This report provides an overview of the international and EU regulatory context of countering the deliberate misuse of CBRN knowledge and materials. Part 1 of the report reviews key international and EU regulatory instruments and frameworks that seek to prevent the deliberate misuse of CBRN knowledge and materials. The instruments are grouped in three thematic categories as follows: 1) non-proliferation of weapons of mass destruction (WMD); 2) counter-terrorism, and 3) export and import controls. Part 2 of the report examines the importance of integrating the CBRN safety and security regimes for preventing the deliberate misuse of CBRN knowledge and materials beyond formal regulation. Part 3 of the reports summarises the key findings of the report.

The list of reviewed regulatory instruments is intended as comprehensive but not exhaustive.



2. Key International and EU Regulatory Instruments and Frameworks for Preventing the Deliberate Misuse of CBRN Knowledge and Materials

This section reviews key international and EU regulatory instruments and frameworks that are intended to prevent the deliberate misuse of CBRN knowledge and materials, i.e. the risk that CBRN knowledge and materials could be used in ways that cause harm to humans, animals, plants, or the environment. The section features three thematic categories.

Category 1, Non-proliferation of WMD outlines the international disarmament and arms control regimes for preventing biological, chemical, and nuclear weapons.

Category 2, Counter-terrorism reviews key international and EU instruments that aim to prevent CBRN and WMD terrorism.

Category 3, Export and import controls reviews international arrangements and EU regulations that seek to prevent the illicit trafficking, smuggling, and transfer of WMD/CBRN materials and related information.

Non-Proliferation of Weapons of Mass Destruction (WMD)

This sub-section outlines the international disarmament and arms control regimes for preventing biological, chemical, and nuclear weapons, collectively referred to as weapons of mass destruction (WMD).²

International Biological Prohibition Regime

The **1925 Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare** was concluded under the auspices of the League of Nations and reaffirmed the provisions of the Hague Conventions (1899 and 1907) with respect to the Laws and Customs of War on Land concerning the prohibition of the deployment of poison and poisoned arms.³ The Geneva Protocol contains the following provisions:

*Whereas the **use in war of asphyxiating, poisonous or other gases**, and of all analogous liquids materials or devices, has been justly condemned by the general opinion of the civilized world; and*

*Whereas the **prohibition** of such use has been declared in Treaties to which the majority of Powers of the world are Parties; and*

² For a detailed discussion on the definition of ‘weapons of mass destruction’ and an overview of relevant international instruments, see W. Seth Carus, [‘Defining “Weapons of Mass Destruction”](#)’, Occasional Paper No 8, National Defence University Press, 2012.

³ International Committee of the Red Cross, [Hague Convention, 1899](#) and [Hague Convention, 1907](#).



To the end that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations; [...]

*[T]he High Contracting Parties, so far as they are not already Parties to Treaties prohibiting such use, **accept this prohibition**, agree to **extend** this prohibition to the **use of bacteriological methods of warfare** and agree to be bound as between themselves according to the terms of this declaration.*⁴ [Emphases added]

As of November 2020, the Geneva Protocol has 145 States Parties.⁵

The **1975 Biological and Toxin Weapons Convention (BTWC)** builds upon the provisions of the 1925 Geneva Protocol and constitute the first international legally-binding instrument that outlaws an entire class of WMD. Article I of the Convention states that:

*Each State Party to this Convention undertakes **never in any circumstances** to develop, produce, stockpile or otherwise acquire or retain:*

*(1) **microbial** or other **biological** agents, or **toxins** whatever their origin or method of production, of types and in quantities that have **no justification** for prophylactic, protective or **other peaceful purposes**;*

*(2) weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.*⁶ [Emphases added]

A key element of the BTWC is the **general purpose criterion** which seeks to guarantee a comprehensive international ban on biological and toxin weapons, on the one hand, and ensure the legitimate use of biological agents and toxins for peaceful, prophylactic, and protective purposes, on the other.⁷

The Convention contains provisions for the **prohibition of assisting** in the development or acquisition of biological weapons (Article III); for the obligation of State Parties to take any necessary measures to ensure the **national implementation of the Convention** on the territory under its jurisdiction (Article IV); for **promoting** to “the fullest possible exchange of equipment, materials and scientific and technological information for **the use of bacteriological (biological) agents and toxins for peaceful purposes**” (Article X); and for **reviewing** the operation of the Convention is being realised (Article XII). As of November 2020, the Convention has 183 States Parties and 4 Signatory States, whilst 10 States have neither signed, nor ratified the Convention.⁸

The Second Review Conference of the BTWC in 1986 agreed to the exchange of **Confidence-Building Measures (CBMs)** “in order to prevent or reduce the occurrence of ambiguities,

⁴ International Committee of the Red Cross, [Geneva Protocol of 1925](#).

⁵ International Committee of the Red Cross, [Ratification status of the 1925 Geneva Protocol](#).

⁶ United Nations Office for Disarmament Affairs, [Biological and Toxin Weapons Convention](#), 1975.

⁷ Graham S. Pearson, ‘[Time for Structural Changes to Make the Biological and Toxin Weapons Convention More Effective](#)’, *Global Security: Health, Science, and Policy*, vol.1:1 (2016), pp. 23-28.

⁸ United Nations Office for Disarmament Affairs, Geneva, [Ratification status of the BTWC](#).



doubts and suspicions and in order to improve international cooperation in the field of peaceful biological activities”.⁹ The CBMs consist of six measures as follows:

- 1) **CBM A:** Part 1: Exchange of data on research centres and laboratories;
Part 2: Exchange of information on national biological defence research and development programmes.
- 2) **CBM B:** Exchange of information on outbreaks of infectious diseases and similar occurrences caused by toxins.
- 3) **CBM C:** Encouragement of publication of results and promotion of use of knowledge.
- 4) **CBM D (formally deleted):** Since the Seventh Review Conference of the BTWC, this form is no longer part of the submission process.
- 5) **CBM E:** Declaration of legislation, regulations and other measures.
- 6) **CBM F:** Declaration of past activities in offensive and/or defensive biological research and development programmes.
- 7) **CBM G:** Declaration of vaccine production facilities.

Participation in the CBMs process is voluntary and it is up to States Parties to decide whether their submitted CBM reports are made publicly available. States Parties are expected to submit CBMs on an annual basis. A designated electronic portal – **e-CBM facility** – has been set up to facilitate participation in the CBM process. The facility is available in the 6 official UN languages.¹⁰ A practical guiding document (***Guide to Participating in the Confidence-Building Measures of the Biological Weapons Convention***) that provides step-by-step guidance on completing the CBM forms has also been made freely accessible on the facility website.

The Fifth Review Conference of the BTWC which concluded in 2002 introduced an **Inter-Sessional Programme of Work**, comprising Annual Meetings of States Parties preceded by Meetings of Experts to discuss and promote common understanding and effective action on topics of relevance to the operation of the Convention. The current **BTWC Inter-Sessional Programme 2018-2020** comprises eight days of open-ended **Meetings of Experts (MX)** and a four-day **Meeting of the States Parties** which take place on an annual basis. The Meetings of Experts address the following thematic areas:

- a) *MX1 (2 days): Cooperation and assistance, with a particular focus on strengthening cooperation and assistance under Article X;*
- b) *MX2 (2 days): Review of developments in the field of science and technology related to the Convention;*
- c) *MX3 (1 day): Strengthening national implementation;*
- d) *MX4 (2 days): Assistance, response and preparedness;*

⁹ United Nations Office for Disarmament Affairs, Geneva, [BTWC Confidence-Building Measures Process](#).

¹⁰ United Nations Office for Disarmament Affairs, Geneva [BTWC e-CBM facility](#). United Nations Office for Disarmament Affairs, Geneva, [Guide to Participating in the Confidence-Building Measures of the Biological Weapons Convention](#), 2015.



e) MX5 (1 day): Institutional strengthening of the Convention.¹¹

The BTWC makes specific provisions for actions that may be taken by any State Party if **another State Party is suspected of carrying out illicit activities**. For example, Article VI of the Convention states that:

*(1) Any State Party to this Convention which finds that **any other State Party is acting in breach of obligations deriving from the provisions of the Convention** may lodge a complaint with the **Security Council** of the United Nations. Such a complaint should include all possible evidence confirming its validity, as well as a request for its consideration by the Security Council. [Emphases added]*

*(2) Each State Party to this Convention undertakes to **co-operate** in carrying out any **investigation** which the **Security Council** may initiate, in accordance with the provisions of the Charter of the United Nations, on the basis of the complaint received by the Council. The Security Council shall inform the States Parties to the Convention of the results of the investigation.¹² [Emphases added]*

In addition, under Article VII of the BTWC States Parties are required to **provide assistance** to any State Party which may have been exposed to an attack or a threat thereof involving biological weapons:

*Each State Party to this Convention undertakes to **provide or support assistance**, in accordance with the United Nations Charter, to any Party to the Convention which so requests, if the Security Council decides that such Party has been exposed to danger as a result of violation of the Convention.¹³ [Emphases added]*

In case of a suspected deliberate release of biological agents, any affected state, regardless of whether they are a State Party to the BTWC may request that the **UN Secretary General Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM)** is triggered. The UNSGM grants the UN Secretary General the authority to carry out an investigation including a dispatching a fact-finding team to the site/s of the alleged incident/s and to report to all UN Member States. The primary purpose of the Mechanism is to ascertain in an objective and scientific manner whether a violation of the 1925 Geneva Protocol has taken place.¹⁴

The **1978 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD)** aims to ensure that environmental modification techniques – any technique for changing through the deliberate manipulation of natural processes the dynamics, composition or structure of the Earth, including its biota,

¹¹ Meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, [Report of the Meeting of States Parties](#), BWC/MSP/2017/6, 19 December 2017.

¹² United Nations Office for Disarmament Affairs, [Biological and Toxin Weapons Convention](#), 1975.

¹³ United Nations Office for Disarmament Affairs, [Biological and Toxin Weapons Convention](#), 1975.

¹⁴ United Nations Office for Disarmament Affairs, [Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons](#)



lithosphere, hydrosphere and atmosphere, or of outer space (Article II) – are not used for military or other hostile purposes.¹⁵ According to Article I of the Convention,

1. Each State Party to this Convention **undertakes not to engage in military or any other hostile use of environmental modification techniques** having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party.
2. Each State Party to this Convention **undertakes not to assist, encourage or induce any State, group of States or international organization to engage in activities contrary to the provisions of paragraph 1 of this article.**¹⁶ [Emphases added]

ENMOD has 78 States Parties. To date, two ENMOD Review Conferences have been held – in 1984 and 1992.

International Chemical Prohibition Regime

The **Chemical Weapons Convention (CWC)** was opened for signature in 1993 and entered into force in 1997. Article I of the Convention states that

1. Each State Party to this Convention undertakes **never** under any circumstances:
 - (a) To **develop, produce**, otherwise **acquire, stockpile** or **retain** chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone;
 - (b) To **use** chemical weapons;
 - (c) To engage in any **military** preparations to use chemical weapons;
 - (d) To **assist, encourage** or **induce**, in any way, anyone to engage in any activity prohibited to a State Party under this Convention.
2. Each State Party undertakes to **destroy** chemical weapons it **owns** or **possesses**, or that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention.
3. Each State Party undertakes to **destroy** all chemical weapons it **abandoned** on the territory of another State Party, in accordance with the provisions of this Convention.
4. Each State Party undertakes to **destroy** any chemical weapons **production facilities** it owns or possesses, or that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention.
5. Each State Party undertakes **not to use riot control agents** as a method of warfare.¹⁷ [Emphases added]

CWC defines **chemical weapon** as “toxic chemicals and their precursors, **except where intended for purposes not prohibited under this Convention**, as long as the types and quantities are consistent with such purposes”.¹⁸ The CWC is similar to the BTWC, insofar it

¹⁵ United Nations Office for Disarmament Affairs, [Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques](#), 1976.

¹⁶ United Nations Office for Disarmament Affairs, [Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques](#), 1976.

¹⁷ Organisation for the Prohibition of Chemical Weapons, [Chemical Weapons Convention](#), 1997.

¹⁸ Organisation for the Prohibition of Chemical Weapons, [Chemical Weapons Convention](#), 1997.



also uses the **general purpose criterion** to ensure a comprehensive ban on chemical weapons. Taken together, the BTWC and CWC cover the **entire spectrum** of chemicals, pathogens, toxins, and any other agents of biological or chemical origin, including bioregulators that could be used in ways that cause harm. **Purposes that are not prohibited under the CWC** are defined as:

- a) *Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes;*
- b) *Protective purposes, namely those purposes directly related to protection against toxic chemicals and to protection against chemical weapons;*
- c) *Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare;*
- d) *Law enforcement including domestic riot control purposes.*

Article VI of the Convention specifically addresses activities not prohibited under the CWC.

The Convention further contains provisions for **national implementation**, including the establishment of a designated **National Authority** (Article VII) and the mandate of the implementing body – the **Organisation for the Prohibition of Chemical Weapons (OPCW)** – which seeks to ensure the implementation of the Convention, including the **verification of compliance** and facilitate consultation and cooperation among States Parties (Article VIII). **Toxic chemicals** which have been identified for the **application of verification measures** are listed in **Schedules** contained in the Annex on Chemicals. **Schedule 1** includes toxic chemicals or precursors which have been developed or used as a chemical weapon and have little or no use for purposes not prohibited under the Convention. **Schedule 2** includes toxic chemicals or precursors which possess such lethal or incapacitating toxicity as well as other properties that could enable them to be used as a chemical weapon or the development thereof and are not produced in large commercial quantities for purposes not prohibited under the Convention. **Schedule 3** includes toxic chemicals and precursors which have been developed and used as a chemical weapon but may also be produced in large commercial quantities for purposes not prohibited under the Convention.¹⁹

Under Article IX of the Convention:

*8. Each State Party has the right to request **an on-site challenge inspection of any facility or location in the territory or in any other place under the jurisdiction or control of any other State Party** for the sole purpose of clarifying and resolving any questions concerning possible non-compliance with the provisions of this Convention, and to have this inspection conducted anywhere without delay by an inspection team*

¹⁹ Organisation for the Prohibition of Chemical Weapons, [Chemical Weapons Convention](#), 1997.



designated by the Director-General [of the OPCW] and in accordance with the Verification Annex [to the Convention]. [...]

*10. For the purpose of verifying compliance with the provisions of this Convention, **each State Party shall permit** the Technical Secretariat [of the OPCW] to **conduct the on-site challenge inspection** pursuant to paragraph 8.²⁰ [Emphases added]*

As of November 2020, the CWC has 193 States Parties and 1 Signatory State.²¹ Three States have neither signed nor ratified the Convention.

The **Conference of States Parties** is the principal organ of the OPCW which oversees the implementation of the Convention, promotes its goals, and reviews compliance with its provisions. The Conference of State Parties also oversees the activities of the Executive Council and Technical Secretariat. The Conference takes measures to ensure compliance by considering and adopting the **Programme of Work** of the Technical Secretariat. This Programme of Work determines the number of **Article V (chemical weapons destruction) inspections** as well as the number of **Article VI (industrial) inspections** that will take place each year. The Conference decides upon the **selection methodology** used by the Technical Secretariat to determine which declared industries will be selected for inspection, and any changes to thresholds at which chemicals need to be declared. The Conference meets annually. Special sessions of the Conference are convened every five years to review the operation of the Convention.²²

The **Executive Council** is the OPCW governing body comprising **41 OPCW Member States** that are elected by the Conference of the States Parties and rotate every two years. The Council **supervises the activities of the Technical Secretariat** and is responsible for promoting the effective **implementation** of and **compliance** with the Convention. The Council holds three regular sessions annually.²³

The **Technical Secretariat** facilitates the **implementation** of the Convention, **assists** the Conference of the States Parties and the Executive Council in performing their tasks, and carries out the Convention's **verification measures**.²⁴

International Nuclear Arms Control Regime

The **1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT)** is the cornerstone of the international nuclear arms control regime. The Treaty has 191 States Parties, including the

²⁰ Organisation for the Prohibition of Chemical Weapons, [Chemical Weapons Convention](#), 1997.

²¹ Organisation for the Prohibition of Chemical Weapons, [Status of Ratification of the CWC](#).

²² Organisation for the Prohibition of Chemical Weapons, [Conference of the States Parties](#).

²³ Organisation for the Prohibition of Chemical Weapons, [Executive Council](#).

²⁴ Organisation for the Prohibition of Chemical Weapons, [Technical Secretariat](#).



five nuclear-weapon States (China, France, Russia, UK, and USA).²⁵ Under Article I of the Treaty:

*Each **nuclear-weapon State Party** to the Treaty **undertakes not to transfer to any recipient whatsoever** nuclear weapons or other nuclear explosive devices or **control over such weapons** or explosive devices directly, or indirectly; and **not in any way to assist, encourage, or induce any non-nuclear-weapon State** to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.*²⁶ [Emphases added]

The Treaty also contains provisions for preventing the development of nuclear weapons (Article III):

*1. Each **non-nuclear-weapon State Party** to the Treaty **undertakes to accept safeguards**, as set forth in an agreement to be negotiated and concluded with the **International Atomic Energy Agency** in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to **preventing diversion of nuclear energy** from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied **on all source or special fissionable material in all peaceful nuclear activities** within the territory of such State, under its jurisdiction, or carried out under its control anywhere.*²⁷ [Emphases added]

The NPT regime is complemented by a set of regional agreements which establish nuclear-weapon-free zones in Latin America and the Caribbean; Central Asia; Africa; Southeast Asia; and in the South Pacific.²⁸ Together with the IAEA Statute, the NPT and the treaties establishing nuclear-weapon-free zones form the basis for the IAEA safeguards framework.²⁹ Safeguards are a set of technical measures that are applied by the IAEA on nuclear facilities and material. Through these technical measures, the IAEA seeks to independently verify a State's legal obligation that nuclear facilities are not misused and nuclear material is not diverted from peaceful uses. The implementation of safeguards follows an annual cycle and comprises four main processes: collection and evaluation of safeguards-relevant information; development of a safeguards approach for a State; planning, conducting and evaluating safeguards activities; and drawing of Safeguards conclusions.³⁰ The IAEA has developed a series of guiding documents on the practical implementation of the safeguards framework. At the EU level, under

²⁵ United Nations Office for Disarmament Affairs, [Status of Ratification of the NPT](#).

²⁶ United Nations Office for Disarmament Affairs, [Treaty on the Non-Proliferation of Nuclear Weapons \(NPT\)](#), 1970.

²⁷ United Nations Office for Disarmament Affairs, [Treaty on the Non-Proliferation of Nuclear Weapons \(NPT\)](#), 1970.

²⁸ United Nations Office for Disarmament Affairs, [Nuclear-Weapon-Free Areas](#).

²⁹ International Atomic Energy Agency, [Safeguards Legal Framework](#).

³⁰ International Atomic Energy Agency, [Safeguards Legal Framework](#).



78/164/Euratom the European Nuclear Energy Community (Euratom) applies its safeguards, as defined in Commission Regulation No 302/2005, in cooperation with the IAEA.³¹

The **Treaty on the Prohibition of Nuclear Weapons (TPNW)** was negotiated as a result of a UN General Assembly Resolution adopted in 2017. The Treaty re-affirms the importance of IAEA safeguards for non-nuclear-weapon States and calls upon those States that have not yet concluded safeguards agreements with the IAEA to do so (Article III). Under Article IV of the Treaty,

*2. [...] each **State Party that owns, possesses or controls nuclear weapons or other nuclear explosive devices** shall immediately **remove them from operational status**, and destroy them as soon as possible but not later than a deadline to be determined by the first meeting of States Parties, in accordance with a legally binding, time-bound plan for the **verified and irreversible elimination of that State Party's nuclear-weapon programme**, including the elimination or irreversible conversion of **all nuclear-weapons-related facilities**.*³² [Emphases added]

As of November 2020, the TPNW has 50 States Parties and shall enter into force in January 2021.³³

The **Comprehensive Nuclear-Test-Ban Treaty (CTBT)** was opened for signature in 1996 but is yet to come into force. Under Article I of the Treaty,

*1. Each State Party **undertakes not to carry out any nuclear weapon test explosion or any other nuclear explosion**, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control.*³⁴ [Emphases added]

The CTBT contains provisions for the establishment of an international implementing body – the **Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO)** (Article II), national implementation, including the establishment of a designated **National Authority** (Article III), and a **verification regime** comprising an international monitoring system; consultation and clarification; on-site inspections; and confidence-building measures (Article IV).

As of November 2020, the CTBT has 168 States Parties including three nuclear-weapon States. 44 specific nuclear technology holder States must sign and ratify the CTBT before it can enter into force and 8 of these States are currently missing. Since 1996, a **Preparatory Commission**

³¹ [Agreement between the Kingdom of Belgium, the Kingdom of Denmark, the Federal Republic of Germany, Ireland, the Italian Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands, the European Atomic Energy Community and the International Atomic Energy Agency in implementation of Article III \(1\) and \(4\) of the Treaty on the non-proliferation of nuclear weapons \(78/164/Euratom\) – Protocol](#), 2 February 1978; [Commission Regulation \(Euratom\) No 302/2005 of 8 February 2005 on the application of Euratom safeguards](#), 8 February 2005.

³² United Nations, [Treaty on the Prohibition of Nuclear Weapons](#), 2017.

³³ United Nations Office for Disarmament Affairs, [Status of Ratification of the Treaty on the Prohibition of Nuclear Weapons](#).

³⁴ Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organisation, [Comprehensive Nuclear-Test-Ban Treaty](#), 1996.



for the CTBTO has been in operation and tasked with the building up of the CTBT verification system. The Commission comprises two main organs: a plenary body made up of all States Signatories (184 as of November 2020) assisted by three working groups (on administrative and financial issues; on verification-related issues; and an advisory group) and a **Provisional Technical Secretariat (PTS)** with three technical divisions (International Monitoring System Division; International Data Collection Division; and On-Site Inspection Division).³⁵

Control of Ballistic Missiles

Adopted in 2002, The Hague **Code of Conduct against Ballistic Missiles Proliferation (HCOC)** is a multilateral politically-binding instrument that aims at delegitimising ballistic missile proliferation. HCOC has been developed in response to the need to prevent and curb the proliferation of ballistic missile systems capable of delivering weapons of mass destruction. State subscribing to the Code principles try to exercise maximum possible restraint in the development, testing, and deployment of ballistic missiles capable of carrying weapons of mass destruction.³⁶ As of November 2020, 143 States have subscribed to the HCOC.³⁷ The HCOC is part of the broader international efforts to control the proliferation of ballistic missiles championed by the Missile Technology Control Regime (the latter is discussed in detail in the sub-section on Export and Import Controls).

EU Strategy against WMD Proliferation

The **EU Strategy against Proliferation of Weapons of Mass Destruction** was adopted in 2003.³⁸ The Strategy is underpinned by three inter-related basic principles:

- Effective multilateralism;
- International and regional stability.
- Close international cooperation.

The Strategy recognises the need for integrated implementation of these principles through the range of existing international mechanisms and instruments such as multilateral treaties and verification requirements; national and internationally-coordinated export controls; cooperative threat reduction programmes; political and economic levers (including trade and development policies); interdiction of illegal procurement activities and, as a last resort, coercive measures in accordance with the UN Charter.³⁹

³⁵ Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organisation, [Establishment, Purpose and Activities](#).

³⁶ [The Hague Code of Conduct against Ballistic Missiles Proliferation](#), 2002.

³⁷ Hague Code of Conduct, [List of HCoC Subscribing States](#).

³⁸ [EU Strategy against Proliferation of Weapons of Mass Destruction \(WMD\)](#), 9 December 2003.

³⁹ [EU strategy against Proliferation of Weapons of Mass Destruction \(WMD\)](#), 9 December 2003.



Counter-Terrorism

This sub-section outlines the key international and EU regulatory arrangements that seek to prevent CBRN and WMD terrorism – the risk that non-state actors may acquire WMD/CBRN capability for carrying out politically motivated, including religiously inspired attacks against humans, animals, plants, or infrastructure. The underpinning assumption is that any existing regulations and measures in the field of counter-terrorism are also relevant to the prevention of CBRN and WMD terrorism. This section, however, focuses on regulations and measures that specifically address the risk of CBRN and WMD terrorism. An indicative resource on the issue is the UN Office on Drugs and Crime (ODC) legal training module titled *The International Legal Framework against Chemical, Biological, Radiological, and Nuclear (CBRN) Terrorism* published in 2016. The module is a technical assistance tool for training purposes that aims to familiarize policy and decision makers and counter-terrorism practitioners with the requirements of the relevant international legal instruments, and assist legislative drafters and criminal justice officials with their effective implementation.⁴⁰

UN Security Council Resolutions

Adopted in 2001 under *Chapter VII: Action with Respect to Threats to the Peace, Breaches of the Peace, and Acts of Aggression* of the Charter of the United Nations, **UN Security Council Resolution 1373** seeks to prevent terrorism financing and other forms of support.⁴¹ The Resolution

*[n]otes with concern the close **connection between international terrorism and transnational organized crime**, illicit drugs, money-laundering, illegal arms trafficking, and **illegal movement of nuclear, chemical, biological and other potentially deadly materials**, and in this regard **emphasizes** the need to enhance coordination of efforts on national, subregional, regional and international levels in order to strengthen a global response to this serious challenge and threat to international security;*

and calls upon all States to

*[f]ind ways of intensifying and accelerating the **exchange of operational information**, especially regarding actions or movements of terrorist persons or networks; forged or falsified travel documents; traffic in arms, explosives or **sensitive materials**; use of communications technologies by terrorist groups; and the **threat posed by the possession of weapons of mass destruction by terrorist groups**.*⁴² [Emphases added]

In 2016, the UN SC **Counter-Terrorism Committee Executive Directorate (CTED)** published *Global Survey on the Implementation of Security Council Resolution 1373 (2001)*

⁴⁰ United Nations Office on Drugs and Crime, [The International Legal Framework against Chemical, Biological, Radiological, and Nuclear Terrorism](#), 2016.

⁴¹ United Nations, [Charter of the United Nations – Chapter VII](#), 1945.

⁴² United Nations Security Council, [Resolution 1373 \(2001\)](#), S/RES/1373 (2001), 28 September 2001.



by Member States which considers all operative elements of Resolution 1373 (2001), provides an assessment of its implementation, and sets forth general standards and recommended practices.⁴³

The **United Nations Security Council Resolution (UNSCR) 1540** was adopted unanimously under *Chapter VII* of the Charter of the United Nations in 2004. It is legally binding on all States. The Resolution addresses the **non-proliferation of weapons of mass destruction** and more specifically, the **risk that non-State actors** (i.e. an individual or entity, not acting under the lawful authority of any State) “may acquire, develop, traffic in or use nuclear, chemical and biological weapons and their means of delivery (e.g. missiles, rockets and other unmanned systems capable of delivering nuclear, chemical, or biological weapons, that are specially designed for such use)”.⁴⁴ UNSCR 1540 decides

*[...] that all States shall take and enforce effective measures to establish **domestic controls** to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery, including by establishing appropriate controls over **related materials** [i.e. materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery] and to this end shall:*

- (a) Develop and maintain appropriate effective measures to **account for and secure** such items in **production, use, storage or transport**;*
- (b) Develop and maintain appropriate effective **physical protection** measures;*
- (c) Develop and maintain appropriate effective **border controls** and **law enforcement efforts** to detect, deter, prevent and combat, including through international cooperation when necessary, the illicit trafficking and brokering in such items in accordance with their national legal authorities and legislation and consistent with international law;*
- (d) Establish, develop, review and maintain appropriate effective **national export and trans-shipment controls** over such items, including appropriate laws and regulations to control export, transit, trans-shipment and re-export and controls on providing funds and services related to such export and trans-shipment such as **financing**, and transporting that would contribute to proliferation, as well as establishing end-user controls; and establishing and enforcing appropriate **criminal or civil penalties** for violations of such export control laws and regulations.⁴⁵ [Emphases added]*

UNSCR 1540 and its follow-up resolutions require all States to present a report on steps they have taken to implement the provisions of the resolution and to submit such a report to the **Security Council Committee established pursuant to Resolution 1540**. In addition, **Resolution 2118** which was adopted by the UN Security Council in 2013 following the **use of**

⁴³ United Nations Security Council, Counter-Terrorism Committee Executive Directorate (CTED), [Global Survey of the Implementation of Security Council Resolution 1373 \(2001\) by Member States](#), S/2016/49, 20 January 2016.

⁴⁴ United Nations Security Council, [Resolution 1540 \(2004\)](#), S/RES/1540 (2004), 28 April 2004.

⁴⁵ United Nations Security Council, [Resolution 1540 \(2004\)](#), S/RES/1540 (2004), 28 April 2004.



chemical weapons in Syria further requires that States **inform immediately** the Security Council of any **violation** of **Resolution 1540**, including acquisition by non-State actors of chemical weapons, their means of delivery and related materials.⁴⁶

At EU level, **Directive 2017/541 of the European Parliament and of the Council on combating terrorism** adopted in 2017 establishes minimum rules concerning the definition of criminal offences and sanctions in the area of terrorist offences, offences related to a terrorist group and offences related to terrorist activities. Article 3 stipulates that Member States shall take the necessary measures to ensure that the **manufacture, possession, acquisition, transport, supply or use** of chemical, biological, radiological or nuclear weapons, as well as **research** into, and **development** of, **chemical, biological, radiological or nuclear weapons** are defined as **offences** under national law when such activities are undertaken to intimidate a population; unduly compel an authority to perform or abstain from performing an act; or seriously destabilize a country or international organization.⁴⁷

International Conventions of Relevance to Counter-Terrorism

The **International Convention for the Suppression of Terrorist Bombings** entered into force in 2001. The Convention is pertinent to WMD and CBRN terrorist offences, insofar as Article I defines ‘**explosive or other lethal device**’ as “a weapon or device that is designed, or has the capability to cause death, serious bodily injury or substantial material damage **through** the release, dissemination or impact of **toxic chemicals, biological agents or toxins** or similar substances or **radiation or radioactive material**.” The Convention requires that States Parties shall adopt appropriate measures including **domestic legislation** to ensure that **criminal acts** within its scope are **not under any circumstances** justifiable and are **punished by penalties** consistent with their grave nature (Article V).⁴⁸ As of November 2020, the Convention has 170 States Parties.⁴⁹

The unlawful and intentional use of biological, chemical, or nuclear weapons and of radioactive material is also prohibited under the following international agreements:

- **Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation;**⁵⁰

⁴⁶ United Nations Security Council, [Resolution 2118 \(2013\)](#), S/RES/2118 (2013), 27 September 2013.

⁴⁷ [Directive \(EU\) 2017/541 of the European Parliament and of the Council of 15 March 2017 on combating terrorism and replacing Council Framework Decision 2002/475/JHA and amending Council Decision 2005/671/JHA](#).

⁴⁸ United Nations, [International Convention for the Suppression of Terrorist Bombings](#), 1997.

⁴⁹ United Nations, [Status of Ratification of the International Convention for the Suppression of Terrorist Bombings](#).

⁵⁰ International Maritime Organisation, [Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation](#), 10 March 1988; International Maritime Organisation, [Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation](#), 14 October 2005.



- **Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf**,⁵¹
- **Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation, 2010 (Beijing Convention)**.⁵²

The **Convention on the Physical Protection of Nuclear Material** is an international multilateral agreement which entered into force in 1987. Article II stipulates that the Convention applies to **nuclear material used for peaceful purposes** while in **international transport**, as well as to nuclear material used for peaceful purposes while in **domestic use, storage and transport**.⁵³ The Convention sets out basic **international standards** for the physical protection of nuclear material during international transport (Annex I) and requires that States Parties take appropriate steps at domestic level for the implementation of these standards (Article III). As of November 2020, the Convention has 155 States Parties.⁵⁴

An Amendment to the Convention on the Physical Protection of Nuclear Material was adopted in 2005.⁵⁵ The term ‘**sabotage**’ has been added to the list of definitions in Article I. This term is defined as “any **deliberate act** directed against a nuclear facility or nuclear material in use, storage or transport which could directly or indirectly **endanger** the health and safety of personnel, the public or the environment by **exposure to radiation** or release of radioactive substances.”⁵⁶ Article IA has been added which expands the scope of the Convention by including the “protection of nuclear facilities used for peaceful purposes” and the need to **prevent and combat offences** relating to nuclear material and facilities, and facilitate co-operation among States Parties. Article IIA has been added under which:

Each State Party shall establish, implement and maintain an appropriate physical protection regime applicable to nuclear material and nuclear facilities under its jurisdiction, with the aim of:

- (a) protecting against **theft and other unlawful** taking of nuclear material in use, storage and transport;*
- (b) ensuring the implementation of rapid and comprehensive measures to **locate** and, where appropriate, **recover missing or stolen nuclear material**; [...]*
- (c) protecting nuclear material and nuclear facilities **against sabotage**; and*
- (d) **mitigating** or minimizing the radiological **consequences of sabotage**.*
[Emphases added]

⁵¹ International Maritime Organisation, [Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf](#), 14 October 2005.

⁵² International Civil Aviation Organisation, [Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation](#), 10 September 2010.

⁵³ International Atomic Energy Agency, [Convention on the Physical Protection of Nuclear Material](#), 26 October 1979.

⁵⁴ International Atomic Energy Agency, [Status of Ratification of CPPNM](#).

⁵⁵ International Atomic Energy Agency, [Amendment to the Convention on the Physical Protection of Nuclear Material](#), INFCIRC/274/Rev.1/Mod.1, 8 July 2005.

⁵⁶ International Atomic Energy Agency, [Amendment to the Convention on the Physical Protection of Nuclear Material](#), INFCIRC/274/Rev.1/Mod.1, 8 July 2005.



This article further defines a set of **Fundamental Principles of Physical Protection of Nuclear Material and Nuclear Facilities** that States Parties should follow when implementing the provisions of the Amendment. These Principles include:

- A. Responsibility of the State.
- B. Responsibilities during International Transport.
- C. Legislative and Regulatory Framework
- D. Competent Authority.
- E. Responsibility of the License Holders.
- F. Security Culture
- G. Threat
- H. Graded Approach.
- I. Defence in Depth.
- J. Quality Assurance.
- K. Contingency Plans.
- L. Confidentiality.⁵⁷

In 2004, the IAEA issued a non-legally binding instrument titled **Code of Conduct on the Safety and Security of Radioactive Sources**. The Code addresses the security concerns following the 9/11 attacks in 2001 and in particular, it aims to contribute to:

- “achieving and maintaining a **high level of safety and security** of radioactive sources;
- **preventing unauthorised access or damage to, and loss, theft or unauthorised transfer** of, radioactive sources, so as to reduce the likelihood of **accidental** harmful exposure to such sources or the **malicious** use of such sources to cause harm to individuals, society or the environment;
- mitigating or minimising the **radiological consequences** of **any accident or malicious act** involving a radioactive source.”⁵⁸ [Emphases added]

Two additional documents have been developed to facilitate implementation and compliance with the Code: **Guidance on the Import and Export of Radioactive Sources** and **Guidance on the Management of Disused Radioactive Sources**.⁵⁹

IAEA Member States can express their **political support** for the Code of Conduct and the Guidance documents, as well as to designate a **Point of Contact** for the purpose of facilitating the export and/or import of radioactive sources. As of November 2020, 140 Member States have made a political commitment with regard to the **Code of Conduct**; 123 Member States have notified IAEA of their intention to act in accordance with the **Guidance on the Import**

⁵⁷ International Atomic Energy Agency, [Amendment to the Convention on the Physical Protection of Nuclear Material](#), INFCIRC/274/Rev.1/Mod.1, 8 July 2005.

⁵⁸ International Atomic Energy Agency, [Code of Conduct on the Safety and Security of Radioactive Sources](#), 2004.

⁵⁹ International Atomic Energy Agency, [Guidance on the Import and Export of Radioactive Sources](#), 2012; International Atomic Energy Agency, [Guidance on the Management of Disused Radioactive Sources](#), 2018;



and Export of Radioactive Sources; 145 Member States have nominated a Point of Contact; and 39 have notified IAEA of their commitment to implement the **Guidance on the Management of Disused Radioactive Sources**.⁶⁰

The **International Convention for the Suppression of Acts of Nuclear Terrorism** came into force in 2007.⁶¹ The scope of the Convention is set out in Article II and includes the **intentional use** or the threat thereof, of **radioactive material or nuclear facility** to cause death, serious bodily injury, or substantial damage to property and the environment. Article VI of the Convention states that:

*Each State Party shall **adopt** such **measures** as may be necessary, including, where appropriate, **domestic legislation**, to ensure that **criminal acts** within the scope of this Convention, in particular where they are intended or calculated to provoke a **state of terror** in the general public or in a group of persons or particular persons, are under **no circumstances justifiable** by considerations of a political, philosophical, ideological, racial, ethnic, religious or other similar nature and are punished by penalties consistent with their grave nature. [Emphases added]*

As stipulated in Article VIII of the Convention:

*For purposes of **preventing offences** under this Convention, States Parties shall make every effort to **adopt appropriate measures to ensure the protection of radioactive material**, taking into account relevant recommendations and functions of the International Atomic Energy Agency. [Emphases added]*

As of November 2020, the Convention has 117 States Parties.⁶²

The **UN Convention against Transnational Organised Crime** which came into force in 2003 sets out a legal framework for international cooperation in **combating, inter alia**, such **criminal activities** as money-laundering, corruption, illicit trafficking in endangered species of wild flora and fauna, offences against cultural heritage and the **growing links between transnational organised crime and terrorist crimes**.⁶³ As of November 2020, the Convention has 190 States Parties.⁶⁴

EU Council Decision 2008/615/JHA on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime adopted in 2008 concerns the exchange of information between authorities responsible for the prevention and investigation of criminal offences. The Decision contains rules in the following areas:

⁶⁰ International Atomic Energy Agency, [Status List of Countries Subscribing to the Code of Conduct on the Safety and Security of Radioactive Sources](#), 2020.

⁶¹ United Nations, [International Convention for the Suppression of Acts of Nuclear Terrorism](#), 13 April 2005.

⁶² United Nations, [Status of Ratification of the International Convention for the Suppression of Acts of Nuclear Terrorism](#).

⁶³ United Nations, [United Nations Convention against Transnational Organised Crime](#), 15 November 2000.

⁶⁴ United Nations, [Status of Ratification of the UNCTOC](#).



- a) provisions on the conditions and procedure for the automated transfer of DNA profiles, dactyloscopic data and certain national vehicle registration data;
- b) provisions on the conditions for the supply of data in connection with **major events with a cross-border dimension**;
- c) provisions on the conditions for the supply of information in order **to prevent terrorist offences**;
- d) provisions on the conditions and procedure for stepping up cross-border police cooperation through various measures.⁶⁵ [Emphases added]

The **Counter-Terrorism Agenda for the EU: Anticipate, Prevent, Protect, Respond** published in December 2020 brings together **existing** and **new** strands of work in a **joined-up** approach to combatting terrorism.⁶⁶ With regard to countering CBRN terrorism, the threat from **chemical agents** is prioritised and the feasibility of **restricting access** to certain dangerous chemicals is currently being explored. Mechanisms for **strengthening health preparedness** and response to biological and chemical terror attacks are also being developed.⁶⁷

Export and Import Controls

This sub-section reviews the existing international import and export control arrangements and EU regulations that seek to prevent the proliferation, including the trafficking, smuggling, and illegitimate transfer of WMD/CBRN materials.

International Import and Export Control Arrangements

The **BTWC**, **CWC**, and **NPT** make provisions for prohibiting the provision of assistance in developing biological or toxin, chemical, and nuclear weapons, including through the transfer of such weapons or their means of delivery from one State to another. States Parties to these agreements are required to take appropriate steps and measures for implementing these provisions domestically as part of the overall national implementation of the BTWC, CWC, and NPT. **UNSC Resolution 1540** further requires that **all** States should refrain from providing any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery.⁶⁸

⁶⁵ European Union, [Council Decision 2008/615/JHA of 23 June 2008 on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime](#).

⁶⁶ Communication from the Commission to the European Parliament, the European Council, the Council, the European and Social Committee and the Committee of the Regions, [A Counter-Terrorism Agenda for the EU: Anticipate, Prevent, Protect, Respond](#), COM (2020) 795, 9 December 2020.

⁶⁷ Communication from the Commission to the European Parliament, the European Council, the Council, the European and Social Committee and the Committee of the Regions, [A Counter-Terrorism Agenda for the EU: Anticipate, Prevent, Protect, Respond](#), COM (2020) 795, 9 December 2020.

⁶⁸ United Nations Security Council, [Resolution 1540 \(2004\)](#), S/RES/1540 (2004), 28 April 2004.



The **Australia Group** is an informal forum of countries which, through the harmonisation of export controls, seeks to ensure that exports do not contribute to the development of chemical or biological weapons.⁶⁹ The AG was founded in 1985 to constrain the trade in the technologies and materials of chemical warfare. It was created in response to the rapid proliferation of chemical weapons during that period, their use in the Iran-Iraq war, and the long process of negotiating the Chemical Weapons Convention. In 1990, its scope was extended to include biological weapons. As of November 2020, the Australia Group has 43 participants, including the European Union, and one adherent. Australia Group participants have **licensing measures** over 89 chemical weapons precursors. Participants also require **licences** for the export of specific **dual-use** chemical manufacturing facilities, equipment and related technology; plant pathogens; animal pathogens; biological agents; and dual-use biological equipment and related technology.⁷⁰ Detailed guidance on the **Australia Group Common Control Lists** is provided in the *Australia Group Common Control Lists Handbooks*.⁷¹

The **Green Customs Initiative**, launched in 2004, is a partnership of international entities cooperating to prevent the **illegal trade** in environmentally-sensitive commodities and substances and to facilitate their legal trade. Its objective is to enhance the **capacity of customs** and other relevant **border control officers** to monitor and facilitate the legal trade and to detect and prevent illegal trade in environmentally sensitive commodities, including **toxic chemicals** and certain **living modified organisms** (LMO).⁷² The Green Customs Initiative is pertinent to strengthening the mandate of the **Organisation for the Prohibition of Chemical Weapons** (OPCW) and prohibition of illegal transboundary movements of living modified organisms enshrined in **Article 25** of the **Cartagena Protocol on Biosafety** to the **Convention on Biological Diversity** (CBD).⁷³

The **Zangger Committee** was established in 1974 to harmonise the interpretation of Article III (2) of the NPT as regards nuclear export control policies. According to Article III (2):

*“Each State Party to the Treaty undertakes **not** to provide: (a) **source or special fissionable material**, or (b) **equipment or material** especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, **unless** the source or special fissionable material shall be subject to the safeguards required by this Article.”*⁷⁴ [Emphases added]

The main significance of this paragraph is that NPT States Parties should not export, directly or indirectly, nuclear material and equipment to non-nuclear-weapon States **unless** the export is subject to IAEA safeguards. The Zangger Committee maintains a **Trigger List** (triggering

⁶⁹ The [Australia Group](#), 1985.

⁷⁰ The Australia Group, [Activities](#).

⁷¹ The Australia Group, [Australia Group Common Control Lists](#), 2020. The Australia Group, [Australia Group Common Control List Handbooks](#), 2018.

⁷² [The Green Customs Initiative](#), 2020.

⁷³ [Cartagena Protocol on Biosafety](#), 2000.

⁷⁴ United Nations Office for Disarmament Affairs, [Treaty on the Non-Proliferation of Nuclear Weapons](#), 1970.



safeguards as a condition of supply) of nuclear-related strategic goods to assist NPT Parties in identifying equipment and materials subject to export controls. The Trigger List includes **illustrative examples** of equipment and materials judged to be within the understandings of the Committee. The latest version of the Consolidated Trigger List was communicated to the Director General of the IAEA in March 2020.⁷⁵ The Trigger As of November 2020, the Zangger Committee has 39 members including all the nuclear weapon States.

The **Nuclear Suppliers Group (NSG)** was set up following the explosion in 1974 of a nuclear device by a non-nuclear-weapon State, which demonstrated that nuclear technology transferred for peaceful purposes could be misused.⁷⁶ The Nuclear Suppliers Group (NSG) is a group of nuclear supplier countries that seeks to contribute to the **non-proliferation of nuclear weapons** through the implementation of two sets of Guidelines: **Guidelines for Nuclear Transfers** and **Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software, and Related Technology**.⁷⁷ The NSG Guidelines also contain the so-called “Non-Proliferation Principle,” adopted in 1994, whereby a supplier, notwithstanding other provisions in the NSG Guidelines, authorises a transfer only when satisfied that the transfer would not contribute to the proliferation of nuclear weapons. The NSG Guidelines are **implemented** by each Participating Government (PG) in accordance with its **national laws and practices**. Decisions on export applications are taken at the **national level** in accordance with national export licensing requirements.⁷⁸ As of November 2020, the NSG has 48 Participating Governments and two observers: the Chair of the Zangger Committee and the European Commission.

The **Wassenaar Arrangement (WA)** was established in 1995 to contribute to regional and international security and stability, by promoting transparency and greater responsibility in **transfers of conventional arms and dual-use goods and technologies**, thus preventing destabilising accumulations. Participating States seek, through their national policies, to ensure that **transfers** of these items do not contribute to the development or enhancement of military capabilities which **undermine** these goals, and are not **diverted** to support such capabilities. The aim is also to **prevent** the **acquisition** of these items by **terrorists**.⁷⁹ As of 2020, the Wassenaar Arrangement has 41 participating States. By joining the Arrangement, participating States agree to maintain national export controls via domestic legislation on items included in the **Wassenaar Arrangement Control Lists**: the **List of Dual-Use Goods and Technologies** and the **Munitions List**.⁸⁰ Both lists are pertinent to the prevention of WMD/CBRN proliferation, as the former includes technology and equipment required for work with biological, chemical, and radioactive materials, and the latter specifies agents and materials subject to control. Participating States are required to **report** their arms transfers and

⁷⁵ Zangger Committee, [Basic Document](#), INFCIRC/209/Rev.5, 5 March 2020.

⁷⁶ The [Nuclear Suppliers Group](#), 1974.

⁷⁷ Nuclear Suppliers Group, [Guidelines](#), 2019.

⁷⁸ The [Nuclear Suppliers Group](#), 2020.

⁷⁹ The [Wassenaar Arrangement](#), 1995.

⁸⁰ The Wassenaar Arrangement, [Control Lists](#).



transfers/denials of certain dual-use goods and technologies to destinations outside the Arrangement on a six-monthly basis. To assist Participating States with the implementation of the Wassenaar Arrangement regime, a **repository of best practices** and guiding resources has been set up.⁸¹

Established in 1987, the **Missile Technology Control Regime (MTCR)** is an informal political understanding among states that seeks to **limit the proliferation of missiles and missile technology**.⁸² The MTCR focuses on the risk of proliferation of missiles for the **delivery of all types of WMD**, i.e., nuclear, chemical and biological weapons. The Regime's documents include the *MTCR Guidelines* and the *Equipment, Software and Technology Annex*.⁸³ The Guidelines define the purpose of the MTCR and provide the overall structure and rules to guide the member countries and those adhering unilaterally to the Guidelines. The Equipment, Software and Technology Annex is designed to assist in implementing export controls on MTCR Annex items. It includes a broad range of equipment and technology, both military and dual-use, that are relevant to missile development, production, and operation. Partner countries exercise restraint in the consideration of all transfers of items contained in the Annex. All such transfers are considered on a case by case basis.⁸⁴ As of November 2020, the MTCR has 35 Partner Countries.

EU Import and Export Control Regulations

Council Regulation No 428/2009 of 5 May 2009 sets up a **Community regime for the control of exports, transfer, brokering and transit of dual-use items**.⁸⁵ Under this Regulation, 'dual-use items' refers to items, including software and technology, which can be used for both civil and military purposes, as well as all goods which can be used for both non-explosive uses and assisting in any way in the manufacture of nuclear weapons or other nuclear explosive devices (Article 2). Annex I of the Regulation contains a **List of Dual-Use Items** that are subject to **export authorisation** and **authorisation for brokering services**. The List implements internationally agreed dual-use control arrangements including the Wassenaar Arrangement, the Missile Technology Control Regime (MTCR), the Nuclear Suppliers' Group (NSG), and the Australia Group, as well as the Annex on Chemicals to the CWC. The Regulation contains provisions for the **authorisation procedures** that need to be in place in Member States (Chapter III), including a list of **criteria** for whether or not an authorisation should be granted (Article 12). Exporters and brokers are required to keep **detailed registers** or **records** of their exports

⁸¹ The Wassenaar Arrangement, [Best Practices and Guidelines](#).

⁸² The [Missile Technology Control Regime](#), 1987.

⁸³ Missile Technology Control Regime, [Guidelines for Sensitive Missile-Relevant Transfers](#); Missile Technology Control Regime, [MTCR Equipment, Software, and Technology Annex](#).

⁸⁴ Missile Technology Control Regime, [Guidelines for Sensitive Missile-Relevant Transfers](#).

⁸⁵ European Union, [Council Regulation \(EC\) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items](#). On the EU regulation of CBRN risks, see [Eurojust CBRN-e Handbook](#), June 2017 (version VI).



or brokering services in accordance with the national law or practice in force in the respective Member States (Article 20).

Directive 2009/43/EC of the European Parliament and of the Council of 6 May 2009 aims to simplify the rules and procedures applicable to the intra-Community transfer of **defence-related products** in order to ensure the proper functioning of the internal market.⁸⁶ Under this Directive, “the transfer of defence-related products between Member States shall be subject to **prior authorisation**. No further authorisation by other Member States shall be required for passage through Member States or for entrance onto the territory of the Member State where the recipient of defence-related products is located, without prejudice to the application of provisions necessary on grounds of public security or public policy such as, *inter alia*, the safety of transport” (Article IV). Annex I of the Directive contains a **list** of the defence-related products subject to the authorisation procedure.⁸⁷

⁸⁶ European Union, [Directive 2009/43/EC of the European Parliament and of the Council of 6 May 2009 simplifying terms and conditions of transfers of defence-related products within the Community](#).

⁸⁷ European Union, [Commission Directive \(EU\) 2017/433 of 7 March 2017 amending Directive 2009/43/EC of the European Parliament and of the Council as regards the list of defence-related products](#).



3. Integrating CBRN Safety and Security

This section reviews the scope of international and EU efforts aimed at countering the deliberate misuse of CBRN knowledge and materials and strengthening CBRN security. These efforts, whilst contributing to upholding the norms of WMD non-proliferation extend beyond the originally conceived compass of traditional arms control and disarmament agreements and arrangements to accommodate the complex and multifaceted spectrum of deliberate CBRN risks. Of particular importance is the need for better integration and harmonisation of the international mechanisms that aim to prevent naturally or accidentally caused CBRN incidents (CBRN safety) with the international mechanisms that aim to prevent CBRN deliberate misuse (CBRN security). CBRN safety instruments cover domains such as occupational safety, waste management, transport and transfer safety, and accident management. CBRN security instruments cover physical security, combating smuggling and illicit trafficking, governance of dual-use research, counter-terrorism, and CBRN defence. The section is divided into three thematic categories.

Category 1 addresses nuclear/radiological safety and security.

Category 2 addresses chemical safety and security.

Category 3 addresses biological safety and security.

Nuclear/Radiological Safety and Security

The IAEA advances a strong and sustainable global nuclear safety and security framework in Member States, working to protect people, society and the environment from the harmful effects of ionising radiation.⁸⁸ The Agency recognises the value of fostering a robust nuclear safety and security culture at facilities using radioactive material and works with Member States to promote values, attitudes, behaviours, practices, procedures, and leadership that enhance the safety and security performance of relevant organisations.⁸⁹

The international regime on **nuclear safety** comprises **four** international instruments that have been adopted under the auspices of the **IAEA**. The chief purpose of this regime is to prevent and manage the risk of the **unintentional release** of and **exposure** to ionising radiation that may result, for example, from a nuclear accident caused by a technical failure, human error, or natural disaster; or from the inappropriate handling, transport, or transfer of nuclear or radioactive material, including waste. The **Convention on Nuclear Safety (CNS)** came into force in 1996 and aims to commit Contracting Parties operating land-based **civil nuclear power plants** to maintain a high level of safety by establishing **fundamental safety principles** to which States would subscribe. As of November 2020, the Convention has 89 Contracting

⁸⁸ International Atomic Energy Agency, [Nuclear Safety and Security](#).

⁸⁹ International Atomic Energy Agency, [Safety and Security Culture](#).



Parties.⁹⁰ The IAEA *Code of Conduct on the Safety of Research Reactors* is a non-binding document that was adopted in 2004. The Code is intended to serve as **guidance** on the development and harmonisation of laws, regulations and policies on the safety of research reactors. It provides ‘**best practice**’ guidance to the State, the regulatory body and the operating organisation for management of research reactor safety.⁹¹

The **Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management** came into force in 2001 and applies to spent fuel resulting from the operation of **civilian nuclear reactors** and to **radioactive waste** resulting from civilian applications. It also applies to spent fuel and radioactive waste from **military or defence programmes** if such materials are transferred permanently to and managed within exclusively civilian programmes, or when declared as spent fuel or radioactive waste for the purpose of the Convention. As of November 2020, the Convention has 83 Contracting Parties.⁹²

The **Convention on Early Notification of a Nuclear Accident** came into force in 1986 following the Chernobyl nuclear power plant accident and establishes a **notification system for nuclear accidents** from which a release of radioactive material **occurs** or is **likely to occur** and which **has resulted** or **may result** in an international transboundary release that could be of radiological safety significance for another State. It requires States to **report** the accident’s time, location, nature, and other data essential for assessing the situation. Notification is to be sent to **affected States directly** or **through the IAEA**, and to the IAEA itself. As of November 2020, the Convention has 127 Contracting Parties.⁹³ The **Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency** came into force in 1987 and sets out an **international framework for co-operation** among States Parties and with the IAEA to **facilitate** prompt **assistance** and support in the event of **nuclear accidents** or **radiological emergencies**. As of November 2020, the Convention has 122 States Parties.⁹⁴

The IAEA *Regulations for the Safe Transport of Radioactive Material* form the basis of international model regulations established by other United Nations bodies.⁹⁵ The regulations address **all categories** of **radioactive material** ranging from **very low activity**, including such materials as ores and concentrates of ores, to **very high activity** such as spent fuel and high-level waste. The material to be transported must be categorised on the basis of its activity concentration, total activity, fissile characteristics (if any) and other relevant subsidiary

⁹⁰ International Atomic Energy Agency, [Convention on Nuclear Safety](#), 1994.

⁹¹ International Atomic Energy Agency, [Code of Conduct on the Safety of Research Reactors](#), 2006;

⁹² International Atomic Energy Agency, [Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management](#), 1997.

⁹³ International Atomic Energy Agency, [Convention on Early Notification of a Nuclear Accident](#), 1986.

⁹⁴ International Atomic Energy Agency, [Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency](#), 1986.

⁹⁵ International Atomic Energy Agency, [Regulations for the Safe Transport of Radioactive Material](#), 2018.



characteristics. Packaging and package requirements are specified on the basis of the hazard of the contents.⁹⁶

Key EU regulatory instruments on nuclear safety include:

- Council Regulation (Euratom) **No 1493/93** of 8 June 1993 on **shipments of radioactive substances** between Member States;⁹⁷
- Council Directive **2006/117/Euratom** of 20 November 2006 on the supervision and control of **shipments of radioactive waste and spent fuel**;⁹⁸
- Council Directive **2009/71/Euratom** of 25 June 2009 establishing a Community **framework** for the **nuclear safety** of nuclear installations;⁹⁹
- Council Directive **2013/59/Euratom** of 5 December 2013 laying down basic **safety standards** for **protection** against the dangers arising from **exposure to ionising radiation**.¹⁰⁰

IAEA advances **nuclear security** in order to prevent and manage the risk that nuclear or other radioactive material could be used in criminal or intentional unauthorised acts, including nuclear terrorism, thus creating a threat to international security.¹⁰¹ To better respond to Member States' priorities as regards the implementation of nuclear security, since 2002 the IAEA has been adopting 3-year **Nuclear Security Plans**.¹⁰² The implementation of these Plans has been funded through a designated voluntary financial mechanism, the **Nuclear Security Fund**. Among the areas covered by the **Nuclear Security Plan 2018-2021** are the **physical protection** of materials and associated facilities, including tackling the **insider threat** and strengthening **transport security**; **information security** and **cyber security**; and the protection of materials out of regulatory control, including enhancing **nuclear forensics** capabilities for **detection** and **response** of nuclear events.¹⁰³ Underpinning these activities is a shared recognition of the need for maintaining a **nuclear security culture**, including through sustained **capacity building**, education, and training, and for **keeping pace** with **evolving challenges** and threats to nuclear security using scientific and technological innovations.

⁹⁶ International Atomic Energy Agency, [Transport Regulations and Provisions](#), 2020.

⁹⁷ Euratom, [Council Regulation No 1493/93 of 8 June 1993 on shipments of radioactive substances between Member States](#), 8 June 1993.

⁹⁸ European Union, [Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel](#).

⁹⁹ European Union, [Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations](#).

¹⁰⁰ European Union, [Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation](#).

¹⁰¹ International Atomic Energy Agency, [Security of Nuclear and Other Radioactive Material](#), 2020.

¹⁰² International Atomic Energy Agency, [Nuclear Security Plans](#).

¹⁰³ International Atomic Energy Agency, [Nuclear Security Plan 2018-2021](#), GC(61)/24, 14 September 2017.



Through its **Nuclear Security Series**, the IAEA provides international consensus guidance on all aspects of nuclear security to support States as they work to fulfil their responsibility for nuclear security.¹⁰⁴

Launched in 2010, the **International Nuclear Security Education Network (INSEN)** is a partnership through which the IAEA, educational and research institutions, as well as other stakeholders cooperate to promote sustainable nuclear security education. INSEN members collaborate in the following areas:

- *“Development of **peer-reviewed textbooks, instructional material, computer-based teaching tools**, and exercises and materials for laboratory work;*
- *Faculty development in the different areas of nuclear security through **faculty development courses, faculty exchanges** and **joint** development and implementation of nuclear security **education programmes or courses**;*
- ***Joint** research and development activities to **share** scientific knowledge and infrastructure;*
- ***Student** exchange programmes to foster international **cooperation** and **exchange** of information;*
- ***Implementation** of degree programmes and courses in nuclear security education;*
- ***Quality assurance**: consistency with IAEA defined terminology set out in the IAEA Nuclear Security guidance documents;*
- ***Academic theses supervision** and evaluation;*
- ***Performance of surveys** on the effectiveness of nuclear security education among students and faculty.”¹⁰⁵ [Emphases added]*

The IAEA works with States to establish national **Nuclear Security Support Centres (NSSCs)** to strengthen the sustainability of nuclear security.¹⁰⁶ The main functions of NSSCs include:

- ***Human resource development**, specifically through the provision of a national nuclear security training programme;*
- ***Technical support services** for nuclear security equipment lifecycle management; and*
- ***Scientific support services** for provision of expertise, analysis, and research and development for nuclear security.*
- *The Centres also foster **nuclear security culture** and enhance national coordination and collaboration among organizations involved in nuclear security.¹⁰⁷ [Emphases added]*

To facilitate cooperation among NSSCs, the IAEA administers a **NSSC Network** which is open to all Member States to participate.¹⁰⁸

¹⁰⁴ International Atomic Energy Agency, [Nuclear Security Series](#).

¹⁰⁵ International Atomic Energy Agency, [International Nuclear Security Education Network \(INSEN\)](#).

¹⁰⁶ International Atomic Energy Agency, [Establishing and Operating a Nuclear Security Support Centre](#), 2020.

¹⁰⁷ International Atomic Energy Agency, [International Network for Nuclear Security Training and Support Centres](#).

¹⁰⁸ International Atomic Energy Agency, [International Network for Nuclear Security Training and Support Centres](#).



The EU supports the activities of IAEA in the area of nuclear security. **Council Decision (CFSP) 2020/1656** of 6 November 2020 sets out projects that will be funded by the EU and implemented by the IAEA in the following areas which:

- priority and cross-cutting projects in nuclear security such as the **universalisation** of the Amendment to the Convention on the Physical Protection of Nuclear Material, **computer security** and information technology services, and enhancing **nuclear security culture**;
- **information management** with a focus on assessing nuclear security needs, priorities and threats;
- nuclear security of **materials** and **associated facilities** with a focus on enhancing physical protection and nuclear material accounting and control for the **whole fuel cycle** and a concept paper on the application of physical protection measures in the **age of COVID-19**;
- nuclear security of **materials out of regulatory control** with a focus on **institutional response infrastructure** for material out of regulatory control;
- programme development and international cooperation with a focus on **education** and **training** programme development;
- **gender-focused** capacity building and **education** in **nuclear security**.¹⁰⁹ [Emphases added]

The identified priority areas largely cover the scope of the IAEA *Nuclear Security Plan, 2018-2021*.

The **World Institute for Nuclear Security** (WINS) complements IAEA's activities in the area of capacity building for nuclear security by promoting **professional** development, **certification** of competence, outreach, and **stakeholder engagement**.¹¹⁰ WINS is an international non-governmental membership organisation that brings together private industry, non-profit organisations, academia, law enforcement, government agencies, and national laboratories. The **WINS Academy** offers international certification for nuclear security management and radioactive source security management.¹¹¹ The **WINS Knowledge Centre** serves as a resource repository that provides up-to-date guidance on nuclear security, including best practices, peer review guidelines, and webinars.¹¹²

¹⁰⁹ European Union, [Council Decision \(CFSP\) 2020/1656 of 6 November 2020 on Union support for the activities of the International Atomic Energy Agency \(IAEA\) in the areas of nuclear security and in the framework of the implementation of the EU Strategy against Proliferation of Weapons of Mass Destruction](#).

¹¹⁰ [World Institute for Nuclear Security](#), 2020.

¹¹¹ World Institute for Nuclear Security, [Certification](#).

¹¹² World Institute for Nuclear Security, [Knowledge Centre](#).



Chemical Safety and Security

To prevent the re-emergence of chemical weapons and guarantee the peaceful use of chemicals, the OPCW recognises the need for strengthening both chemical safety and chemical security. **Chemical safety** refers to measures to prevent unintentional releases of toxic chemicals into the environment and to mitigate the impact if such events occur. Chemical safety comprises disciplines such as occupational safety, public safety, process safety, environment safety, consumer safety and transport safety.¹¹³ Chemical safety is not explicitly covered by the CWC but falls within the remit of different international agreements and arrangements.

The **Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade** which entered into force in 2004 sets out legal requirements for the **labelling** and **handling** of hazardous chemicals, and specifically chemicals that are banned or severely restricted, as well as severely hazardous pesticide formulations.¹¹⁴ The **Stockholm Convention on Persistent Organic Pollutants** which came into force in 2004 contains provisions for the **restriction** and **elimination** of the production and use certain **toxic chemicals** which, once released in the environment can **remain intact** for an extended period of time and become **widely distributed** as a result of natural processes.¹¹⁵ The **Globally Harmonized System of Classification and Labelling of Chemicals (GHS)** is an international **arrangement** that defines and classifies chemical products by types of hazard, and communicates health and safety information on labels and safety data sheets. It aims at ensuring that information on physical hazards and toxicity from chemicals be available in order to enhance the protection of human health and the environment during the handling, transport, and use of these chemicals.¹¹⁶ For its own part, the safety of the transport of toxic chemicals is also covered by the **UN Recommendations on the Transport of Dangerous Goods**.¹¹⁷

The **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal** which entered into force in 1992 aims to protect human health and the environment against the adverse effects of hazardous wastes, including **chemical** waste products. Under the Convention, States Parties undertake to ensure that the generation of hazardous and other wastes is reduced to a minimum and that adequate disposal facilities for

¹¹³ Organisation for the Prohibition of Chemical Weapons, [Needs and Best Practices on Chemical Safety and Security Management](#), 25 November 2016.

¹¹⁴ [Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade](#), 1998.

¹¹⁵ [Stockholm Convention on Persistent Organic Pollutants](#), 2001.

¹¹⁶ United Nations Economic Commission for Europe, [Globally Harmonized System of Classification and Labelling of Chemical](#), 2002.

¹¹⁷ United Nations Economic Commission for Europe, [UN Recommendations on the Transport of Dangerous Goods – Model Regulations](#), 2019.



the environmentally sound management of hazardous and other wastes are located within their territory.¹¹⁸

The **Convention on the Transboundary Effects of Industrial Accidents** which entered into force in 2000 aims at preventing industrial accidents, including within the chemical industry as far as possible, by reducing their frequency and severity and by mitigating their effects.¹¹⁹

The **Strategic Approach to International Chemicals Management** (SAICM) is an international policy framework for promoting chemical safety which was developed in 2006. Its overall objective is the achievement of the sound management of chemicals throughout their life cycle so that chemicals are produced and used in ways that minimise significant adverse impacts on the environment and human health.¹²⁰

Key EU regulatory instruments in the area of chemical safety include:

- Regulation (EC) **No 1907/2006** of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);¹²¹
- Regulation (EC) **No 1272/2008** of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures;¹²²
- Regulation (EU) **No 649/2012** of the European Parliament and the Council of 4 July 2012 concerning the export and import of hazardous chemicals;¹²³
- Soveso Directive III – Directive **2012/18/EU** of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances.¹²⁴

Chemical security refers to measures to prevent deliberate releases of toxic chemicals, including by preventing attempts to acquire toxic chemicals or chemical weapons precursors and to mitigate the impact if such events occur.¹²⁵ The OPCW portfolio entails an array of activities that aim at strengthening chemical security and preventing the re-emergence of

¹¹⁸ [Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal](#), 1989.

¹¹⁹ United Nations Economic Commission for Europe, [Convention on the Transboundary Effects of Industrial Accidents](#), 1992.

¹²⁰ [Strategic Approach to International Chemicals Management](#), 2006.

¹²¹ European Union, [Regulation \(EC\) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals \(REACH\), establishing a European Chemicals Agency, amending Directive 1999/45/EC](#).

¹²² European Union, [Regulation \(EC\) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures](#).

¹²³ European Union, [Regulation \(EU\) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals](#).

¹²⁴ European Union, [Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances](#).

¹²⁵ Organisation for the Prohibition of Chemical Weapons, [Needs and Best Practices on Chemical Safety and Security Management](#), 25 November 2016.



chemical weapons. These include systematic review of developments in science and technology with relevance to the CWC, promotion of chemical security education and awareness-raising, capacity building, and industry engagement.

Established in 1997, the **Scientific Advisory Board (SAB)** is an OPCW subsidiary body that enables the Director-General to render **specialised advice in science and technology** to the Conference, Executive Council, or States Parties to the Convention. The SAB **assesses** scientific and technological advances of relevance to the CWC and prepares **regular reports**. The SAB is made up of 25 independent experts from OPCW Member States. The SAB can also establish and coordinate **temporary working groups** to draw upon extended expertise for assessment and reporting on specific issues of relevance to the Convention.¹²⁶ Through its activities, the SAB plays an important role in **facilitating dialogue** between scientists and policymakers. To maximise the effectiveness of this dialogue, the OPCW runs a **Science for Diplomats** programme which serves as an **interactive forum** for promoting scientific literacy allowing policymakers to develop a better understanding of the relevance of science and technology to the **implementation** of the CWC.¹²⁷ The OPCW is further involved in a **large-scale awareness-raising effort** which seeks to foster an understanding of the scope and objectives of the CWC, especially as regards the need to ensure that chemistry is used only for peaceful purposes, and **facilitate multi-stakeholder engagement** and thus, promote the development of a robust culture of chemical safety and security worldwide.

The **Advisory Board on Education and Outreach (ABEO)** was set up in 2015 to ensure that the OPCW's education and outreach activities, and those of States Parties, are effective, sustainable, cost-effective, and benefit from the latest advances in education and outreach **theory or practice**. The ABEO **provides advice** on the development of **education and outreach** strategies, key messages and partnerships that support the implementation of the Convention. The Board also identifies global education and outreach activities relevant to the Convention and those related to disarmament and non-proliferation. It is made up of 15 independent experts specialising in science, education, and security, among other fields.¹²⁸ The OPCW administers and **Education and Outreach Portal** featuring different training resources and other relevant material intended to promote awareness of the CWC.¹²⁹

The **Hague Ethical Guidelines (HEG)** were published in 2015 by an international group of experts under the auspices of the OPCW with the goal of promoting a **culture of responsible conduct** in the chemical sciences and guarding against the **misuse of chemistry**. HEG are intended to serve as elements for **ethical codes** and discussion points for ethical issues related to the practice of chemistry under the Convention. The Guidelines comprise elements focused on the need for ensuring that the chemical sciences are used only for peaceful purposes in line

¹²⁶ Organisation for the Prohibition of Chemical Weapons, [Scientific Advisory Board](#).

¹²⁷ Organisation for the Prohibition of Chemical Weapons, [Science and Technology](#).

¹²⁸ Organisation for the Prohibition of Chemical Weapons, [Advisory Board for Education and Outreach](#).

¹²⁹ Organisation for the Prohibition of Chemical Weapons, [Education and Outreach](#).



with the provisions of the CWC (Figure 1).¹³⁰ The Guidelines have been endorsed by the **International Union of Pure and Applied Chemistry (IUPAC)**, the principal international scientific organisation in the field of chemistry.¹³¹ The OPCW and IUPAC are actively collaborating on promoting the peaceful use of chemistry.¹³²

Figure 1: Elements of The Hague Ethical Guidelines



Source: The author

The OPCW works actively with the State Parties to the CWC to **reconcile** the **ban** on chemical weapons with the **peaceful exchange of knowledge** and **trade** in chemicals. This is particularly important as regards ‘**dual-use chemicals**’ that could be used both in the illegal production of chemical weapons and for peaceful chemical processes. The OPCW runs a number of **programmes, services, and projects** that support the exchange of information, equipment, and chemicals as well as foster the peaceful use of chemistry. These programmes focus on the need for **strengthening economic and technological development** through **capacity building**, the fostering of **relationships**, and **facilitating** exchanges of chemicals, equipment, and data. The

¹³⁰ Organisation for the Prohibition of Chemical Weapons, [Preventing the Re-Emergence of Chemical Weapons](#).

¹³¹ Organisation for the Prohibition of Chemical Weapons, [IUPAC Endorses The Hague Ethical Guidelines](#), 2 May 2016.

¹³² Joint initiatives of IUPAC and OPCW include ‘[Building Broader and Deeper Links between OPCW and IUPAC](#)’ (2018-2019) and ‘[Assessment of the Contribution of IUPAC Projects to the Achievement of the United Nations Sustainable Development Goals](#)’ (ongoing). See also Ayah Wafi, ‘[Building Broader and Deeper Links between OPCW and IUPAC](#)’ (poster presentation).



OPCW further provides expert **support** and **assistance** in building and maintaining capabilities of **analytical chemistry laboratories**.¹³³

The **Chemical Safety and Security Management Programme** is part of the OPCW capacity building portfolio of programmes. The Programme seeks to provide **tools** and **knowledge** to mitigate the **risks** arising from **chemical accidents** and **potential misuse** of toxic chemicals, including the **threat of terrorism**. To this end, the Programme offers **training** to specialists on practical aspects of chemical safety and security, and **forums** to share and discuss best practices among stakeholders, such as National Authorities, policy-makers, chemistry practitioners, and the chemical industry.¹³⁴

The **chemical industry** has been recognised as a key stakeholder with regard to the full and effective **implementation** of the CWC.¹³⁵ The **International Council of Chemical Associations (ICCA)** which represents chemical producers and manufacturers accounting for more than 90 of global chemical sales administers a **voluntary** initiative, **Responsible Care** that aims to promote the **safe** management of chemicals and excellence in environmental, health, safety, and **security performance**.¹³⁶ First initiated in 1984, the Responsible Care initiative reflects the **commitment** of chemical manufacturers, national chemical industry associations, and their partners to the **principles** of **chemical safety** and **security**, **transparency**, **corporate accountability**, and **sustainability**. These principles are codified in the **Responsible Care Global Charter** which has been signed by more than 580 global chemical manufacturing companies.¹³⁷ The Responsible Care Programme serves as an important bridge for dialogue, engagement, and cooperation between the global chemical industry and the CWC.

In 2015, a coordination mechanism comprising the **OPCW-ICCA Joint Steering Committee (JSC)** and the **Chemical Industry Cooperation Group (CICG)** was established to facilitate collaborative activities between the OPCW and ICCA. The membership of the JSC consists of the Director-General and senior OPCW staff and of the ICCA Secretary and senior ICCA staff. Areas of cooperation between the OPCW and chemical industry include education and outreach, capacity building for the national implementation of the CWC, and verification.¹³⁸

¹³³ Organisation for the Prohibition of Chemical Weapons, [Promoting Chemistry for Peace: Economic and Technical Development through Chemistry](#).

¹³⁴ Organisation for the Prohibition of Chemical Weapons, [Capacity Building: Chemical Safety and Security Management Programme](#).

¹³⁵ Organisation for the Prohibition of Chemical Weapons, [Note by the Director General: Engaging Chemical Industry Associations](#), C-22/DG.18, 10 October 2017.

¹³⁶ International Council of Chemical Associations, [Responsible Care Programme](#).

¹³⁷ International Council of Chemical Associations, [Responsible Care Global Charter](#), 29 May 2014.

¹³⁸ Organisation for the Prohibition of Chemical Weapons, [Note by the Director General: Engaging Chemical Industry Associations](#), C-24/DG.17, 4 November 2019.



The **EU** provides direct support for the activities of the **OPCW** in the area of chemical security under **Council Decision (CFSP) 2019/538**. Union-supported activities are grouped in seven thematic project areas as follows:

- Establishment of an **OPCW Centre for Chemistry and Technology** and addressing the **threat** from chemical weapons **use** by supporting the creation of a mechanism for **attribution of legal responsibility**.
- Chemical **demilitarisation** and **non-proliferation**.
- **Operational training** and **capacity building** in the area of **assistance** and **protection** in African States Parties to the CWC.
- International cooperation through **laboratory twinning**, **education**, **outreach**, and **training** in chemical safety and security, analytical chemistry, and chemistry for peaceful uses with a particular focus on engaging **women** and **youth**.
- Promoting the **universality** of the CWC through outreach and **awareness-raising** and enhanced **NGO participation** in the work of the OPCW.
- Strengthening the **national implementation** of the CWC by facilitating **multi-stakeholder engagement** and collaboration.
- Facilitating the **review** and **assessment** of **scientific and technological developments** with relevance to the CWC.¹³⁹

Biological Safety and Security

Biological safety broadly refers to the policies, regulations, and arrangements that aim to prevent the **unintentional (accidental)** release of biological agents and toxins in the environment, including **naturally occurring** infectious **diseases** affecting human, animals, or plants. **Biological security** refers to the policies, regulations, and arrangements that aim to prevent the **deliberate** release of biological agents and toxins.¹⁴⁰

The **complementary role** of **biosafety** and **biosecurity** in preventing the misuse of life sciences is recognised by the States Parties to the **BTWC**. The Eighth Review Conference of the BTWC held in 2016 when considering the national implementation of the Convention called upon States Parties to adopt legislative, administrative, judicial and other measures to ‘ensure the safety and security of microbial or other biological agents or toxins in laboratories, facilities, and during transportation, to prevent unauthorised access to and removal of such agents or toxins.’ The Conference also noted the value of national implementation measures to:

*(a) implement voluntary **management standards** on **biosafety** and **biosecurity**;*

¹³⁹ European Union, [Council Decision \(CFSP\) 2019/538 of 1 April 2019 in support of activities of the Organisation for the Prohibition of Chemical Weapons \(OPCW\) in the framework of the implementation of the EU Strategy against Proliferation of Weapons of Mass Destruction](#).

¹⁴⁰ This section of the report is based on Tatyana Novosiolova, Simon Whitby, Malcolm Dando, and Graham S. Pearson, [Strengthening the Biological and Toxin Weapons Convention: The Vital Importance of Web of Prevention for Effective Biosafety and Biosecurity in the 21st Century](#), November 2019.



- (b) encourage the consideration of development of **appropriate arrangements** to promote **awareness** among relevant professionals in the **private** and **public** sectors and throughout relevant scientific and administrative activities;
 - (c) promote amongst those working in the biological sciences **awareness** of the **obligations** of States Parties under the Convention, as well as relevant **national legislation and guidelines**;
 - (d) promote the **development of training and education programmes** for those granted access to biological agents and toxins relevant to the Convention and for those with the knowledge or capacity to modify such agents and toxins;
 - (e) encourage the promotion of a **culture of responsibility** amongst relevant national professionals and the voluntary development, adoption and promulgation of **codes of conduct**;
 - (f) strengthen methods and capacities for **surveillance and detection** of outbreaks of disease at the national, regional and international levels, noting that the **International Health Regulations (2005)** are important for building capacity to prevent, protect against, control and respond to the international spread of disease; and
 - (g) **prevent** anyone from developing, producing, stockpiling, or otherwise acquiring or retaining, transporting or transferring and **using** under any circumstances, **biological agents and toxins**, equipment, or their means of delivery **for non-peaceful purposes**.¹⁴¹
- [Emphases added]

The current BTWC Intersessional Process 2018-2020 comprising annual Meetings of Experts and Meetings of States Parties addresses five thematic areas which underscore the interconnectedness between biosafety and biosecurity: cooperation and assistance that facilitate the peaceful use of life sciences; review of developments in science and technology of relevance to the Convention; strengthening national implementation; preparedness and assistance in case of an alleged use of biological weapons; and institutional strengthening of the Convention.¹⁴²

Key areas in the biosafety domain that are relevant to strengthening the BTWC include health and food security; safe handling of biological agents and toxins; and biodiversity preservation, including the control of living modified organisms (LMOs).

The **International Health Regulations (IHRs)** adopted in 2005 by the World Health Organization (WHO) are **binding** on all States and seek to “prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade”.¹⁴³ Under the IHRs, States are obliged to “develop, strengthen and maintain [...] the capacity to detect, assess, notify, and report” biological events, as well as to “develop, strengthen, and maintain [...] the capacity to respond

¹⁴¹ Eighth Review Conference of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, [Final Document](#), BWC/CONF.VIII/4, 7 January 2017.

¹⁴² United Nations Office for Disarmament Affairs, [BTWC 2018 Meeting of Experts](#).

¹⁴³ World Health Organisation, [International Health Regulations](#), 2005.



promptly and effectively to public health risks and public health emergencies of international concern”. The electronic **State Parties Self-Assessment Annual Reporting Tool (e-SPAR)** is a web-based platform proposed to support State Parties of the IHR to fulfil their obligation to report annually to the World Health Assembly (WHA) on the implementation of capacity requirements under these Regulations and to encourage the transparency and mutual accountability between States Parties towards global public health security, under the WHO IHR Monitoring and Evaluation Framework.¹⁴⁴ In terms of structure, the e-SPAR tool is similar to the **Joint External Evaluation (JEE) Tool** that is used for voluntary monitoring and features indicators that States can use to assess progress made in achieving IHR core capacities.¹⁴⁵

In case of a human health emergency due to various threats including disease outbreaks, food safety, chemical toxins, zoonosis, natural and manmade disasters etc., WHO Member States can request assistance through the **Global Outbreak Alert and Response Network (GOARN)**, a global technical partnership comprising over 270 technical institutions and networks worldwide that serves as a key WHO mechanism for engaging technical agencies beyond the United Nations in supporting health emergency response operations.¹⁴⁶

The **World Organisation for Animal Health (OIE) Terrestrial Animal Health Code** sets out the standards for the improvement of **animal health** and welfare and **veterinary** public health worldwide, including the safe international trade in terrestrial animals and their products.¹⁴⁷ Likewise, the **OIE Aquatic Animal Health Code** sets out the standards for the improvement of aquatic animal health and welfare of farmed fish worldwide, and for safe international trade in aquatic animals.¹⁴⁸ Both *Codes* provide information on the OIE-listed notifiable terrestrial and aquatic animal diseases that are being monitored in real-time through the **World Animal Health Information System (WAHIS)**.¹⁴⁹ WAHIS also serves as an early-warning system for epidemiological events that occur on the territory of OIE Member States. Besides WAHIS, the OIE administers the **Performance of Veterinary Services (PVS) Pathway**, a capacity building platform that provides national veterinary services with a comprehensive understanding of their strengths and weaknesses using a globally consistent methodology based on international standards.¹⁵⁰

The **International Plant Protection Convention (IPPC)** adopted in 1951 and administered by the **Food and Agriculture Organization** of the United Nations (**FAO**) aims to secure coordinated, effective action to **prevent** and **control** the introduction and spread of pests of

¹⁴⁴ World Health Organisation, [e-SPAR: State Party Annual Report](#).

¹⁴⁵ World Health Organisation, [Joint External Evaluation Tool \(JEE Tool\)](#), 2018; World Health Organisation, [Guidance Document for the State Party Self-Assessment Annual Reporting Tool](#), 2018.

¹⁴⁶ World Health Organisation, [Global Outbreak Alert and Response Network – GOARN](#).

¹⁴⁷ World Organisation for Animal Health (OIE), [Terrestrial Animal Health Code](#), 2019.

¹⁴⁸ World Organisation for Animal Health (OIE), [Aquatic Animal Health Code](#), 2019.

¹⁴⁹ World Organisation for Animal Health (OIE), [World Animal Health Information System](#), 2019.

¹⁵⁰ World Organisation for Animal Health (OIE), [Performance of Veterinary Services \(PVS\) Pathway](#), 2019.



plants and plant products.¹⁵¹ The Convention is recognised by the World Trade Organization's (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) as the only international **standard** setting body for **plant health**. While the IPPC's primary focus is on plants and plant products moving in international trade, the Convention also covers research materials, biological control organisms, germplasm banks, containment facilities, food aid, emergency aid and anything else that can act as a vector for the spread of plant pests – for example, containers, packaging materials, soil, vehicles, vessels and machinery.¹⁵²

FAO also administers the internationally adopted food standards set in *Codex Alimentarius*.¹⁵³ In 2010, FAO established an **Emergency Prevention System for Food Safety (EMPRES Food Safety)** to serve as a key international system to assist in the prevention and management of global food safety emergencies.¹⁵⁴ The EMPRES system allows authorities to better appreciate and understand major food safety risks and to refocus prevention efforts. It also allows early detection of adverse food safety events and prompt and effective response.

ISO 35001:2019 – Biorisk Management for Laboratories and Other Related Organisations sets out a **process framework** for the identification, assessment, control, and monitoring of the risks associated with hazardous biological materials. This ISO Standard applies to any laboratory or other organization that works with, stores, transports, and/or disposes of hazardous biological materials.¹⁵⁵

Both the **WHO** and **OIE** have developed guidance on **safe laboratory practice** that is essential for preventing the accidental release of biological agents and toxins. Key guiding documents in this area include:

- WHO *Laboratory Biosafety Manual (3rd Edition)*, 2004.¹⁵⁶
- WHO *Guidance on Regulations for the Transport of Infectious Substances 2019-2020*.¹⁵⁷
- OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (Terrestrial Manual)*.¹⁵⁸
- OIE *Manual of Diagnostic Tests for Aquatic Animals*.¹⁵⁹

¹⁵¹ United Nations Food and Agricultural Organization (FAO), [International Plant Protection Convention](#), 1951.

¹⁵² United Nations Food and Agricultural Organization (FAO), [International Plant Protection Convention](#), 1951).

¹⁵³ United Nations Food and Agricultural Organization (FAO), [Codex Alimentarius](#), 1963).

¹⁵⁴ United Nations Food and Agricultural Organization (FAO), [Emergency Prevention System for Food Safety \(EMPRES Food Safety\)](#), 2019.

¹⁵⁵ International Organisation for Standardisation, [ISO 35001:2019 - Biorisk management for laboratories and other related organisations](#), 2019.

¹⁵⁶ World Health Organization, [Laboratory biosafety manual](#), 3rd edition, 2004.

¹⁵⁷ World Health Organization, [Guidance on regulations for the transport of infectious substances 2019-2020](#), 2019.

¹⁵⁸ World Organisation for Animal Health (OIE), [Manual of diagnostic tests and vaccines for terrestrial animals](#), 2018.

¹⁵⁹ World Organisation for Animal Health (OIE), [Manual of diagnostic tests for aquatic animals](#), 2019.



The **Convention on Biological Diversity (CBD)** which entered into force in 1993 seeks to ensure (1) the **conservation** of biological diversity; (2) the **sustainable use** of the components of biological diversity; and (3) the **fair** and **equitable** sharing of the **benefits** arising out of the utilisation of genetic resources.¹⁶⁰ To this end, the Convention contains provisions for the **identification** and **monitoring** of biological species that may require urgent conservation (Art. 7), promotion of **awareness** of the measures required for the conservation of biological diversity, including through formal education (Art. 13), and development of appropriate procedures and arrangements for **environmental impact assessment** for any projects that are likely to have significant adverse effects on biological diversity (Art. 14). Article 25 of the Convention establishes an open-ended intergovernmental scientific advisory body – the **Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)** – which provides **assessments** of relevance to the implementation of the CBD, including on the impact of relevant scientific and technological advances, such as **synthetic biology**.¹⁶¹

The **Cartagena Protocol on Biosafety to the Convention on Biological Diversity** which entered into force in 2003 aims to ensure the **safe handling, transport, and use of living modified organisms** (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.¹⁶² The Protocol establishes an **advance informed agreement** (AIA) procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory (Art. 7). It also contains provisions for **risk assessment** (Art. 15) and **risk management** (Art. 16), as well as for **emergency measures** in case of an unintentional transboundary movement of a living modified organisms (Art. 17).

In addition to the Cartagena Protocol on Biosafety, in 2010 the Parties to the CBD adopted the **Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity**.¹⁶³ The Nagoya Protocol which entered into force in 2014 provides a **transparent legal framework** for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of **benefits** arising out of the utilisation of **genetic resources**.

Relevant EU regulatory **acts** in the area of **biosafety** include:

¹⁶⁰ [Convention on Biological Diversity](#), 1993.

¹⁶¹ Convention on Biological Diversity, [Subsidiary Body on Scientific, Technical and Technological Advice \(SBSTTA\)](#), 2020.

¹⁶² [Cartagena Protocol on Biosafety](#) to the Convention on Biological Diversity, 2003.

¹⁶³ [Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity](#), 2014.



- Commission Implementing **Decision (EU) 2018/945** of 22 June 2018 on the **communicable diseases** and related special health issues to be covered by epidemiological **surveillance** as well as relevant case definitions.¹⁶⁴
- **Regulation (EC) No 1069/2009** of the European Parliament and of the Council of 21 October 2009 laying down **health rules** as regards **animal by-products** and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation).¹⁶⁵
- **Decision No 1082/2013/EU** of the European Parliament and of the Council of 22 October 2013 on **serious cross-border threats to health** – this Decision lays down rules on epidemiological surveillance, monitoring, early warning of, and combating serious cross-border threats to health, including preparedness and response planning related to those activities, in order to coordinate and complement national policies.¹⁶⁶
- **EU legal framework on the safe use of genetically modified organisms (GMOs)** – the framework aims to protect human and animal health and the environment by (1) introducing a safety assessment of the highest possible standards at EU level before any GMO is placed on the market; (2) harmonising the procedures for risk assessment and authorisation of GMOs; ensuring clear labelling of GMOs placed on the market in order to enable an informed choice; and (4) ensuring the traceability of GMOs placed on the market.¹⁶⁷

The **European Centre for Disease Prevention and Control**, an EU agency aimed at strengthening Europe's **defences** against **infectious diseases** works to enhance the capability and capacity of the EU **public health microbiology system** to provide the timely and reliable information that underpins infectious threat detection, assessment and surveillance at Member State and EU level for effective prevention and control of infectious diseases.¹⁶⁸ The **EU Laboratory Capability Monitoring System** seeks to assess public health microbiology vulnerabilities, identifying priorities and monitoring the impact of capacity building activities and system reforms at national and EU level on essential public health functions provided by microbiology laboratories. The tool comprises 60 indicators on three public health dimensions: primary diagnostic **testing**; national microbiology **reference laboratory** (NRL) services; and **surveillance** and epidemic **response** support.¹⁶⁹

¹⁶⁴ European Union, [Commission Implementing Decision \(EU\) 2018/945 of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions](#).

¹⁶⁵ European Union, [Regulation \(EC\) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption](#).

¹⁶⁶ European Union, [Decision No 1082/2013/EU of the European Parliament and of the Council of 22 October 2013 on serious cross-border threats to health](#).

¹⁶⁷ European Union, [GMO Legislation](#).

¹⁶⁸ ECDC, [Laboratory Capacity and Capability](#), 2020.

¹⁶⁹ ECDC, [EU Laboratory Capability Monitoring System](#) (EULabCap), 2018.



Both the World Health Organisation and the World Organisation for Animal Health have developed international **biosecurity policy guidance** and **tools** that seek to tackle the risk of **deliberate** misuse of the life sciences.

In 2006, the World Health Organisation published a document titled ***Biorisk Management: Laboratory Biosecurity Guidance***, which addresses laboratory biosecurity basic principles and best practices for preventing the loss, theft, and misuse of biological agents and toxins. The *Guidance* document outlines a comprehensive programme of accountability for valuable biological materials (VBM) stressing the importance of specifying steps and measures for handling breaches or near-breaches in laboratory biosecurity.¹⁷⁰ The *Guidance* further sets out an integrated biorisk management approach underpinned by three key components (emphases added):

1. Reducing the **risk of unintentional exposure** to pathogens and toxins or their accidental release (biosafety), and reducing the **risk of unauthorized access**, loss, theft, misuse, diversion or **intentional release** of VBM to tolerable, acceptable levels (laboratory biosecurity);
2. Providing **assurance**, internally and externally (facility, local area, government, global community, etc.), that suitable measures have been **adopted** and effectively **implemented**;
3. Providing a **framework** for continuous **awareness-raising** for **biosafety**, laboratory **biosecurity** and **ethical** code of conduct, and training within the facility.¹⁷¹ [Emphases added]

In 2010, the World Health Organisation published a document titled ***Responsible Life Sciences Research for Global Health Security: A Guidance Document*** which “aims at strengthening the **culture** of scientific integrity and excellence characterised by openness, honesty, **accountability** and **responsibility**: such a culture is the best **protection** against accidents and **deliberate misuse**, and the best guarantee of scientific progress and development”.¹⁷² The *Guidance* is intended to help researchers and institutions:

1. [Develop] a better **understanding** of the potential **risks** associated with accidents and the **deliberate misuse** of life sciences research;
2. Learn about **practical measures** that will enable them to manage some of the **risks** posed by life sciences research;
3. Assess their needs and capacities using a **self-assessment** tool to **review** existing structures and mechanisms and **identify** potential **needs**.¹⁷³ [Emphases added]

¹⁷⁰ World Health Organization, [Biorisk management: laboratory biosecurity guidance](#), 2006.

¹⁷¹ World Health Organization, [Biorisk management: laboratory biosecurity guidance](#), 2006.

¹⁷² World Health Organization, [Responsible life sciences research for global health security: a guidance document](#), 2010.

¹⁷³ World Health Organization, [Responsible life sciences research for global health security: a guidance document](#), 2010.



The **OIE Biological Threat Reduction Strategy: Strengthening Global Biological Security** that was published in 2015 seeks to develop a sustainable and effective protection against threats from **deliberate** and accidental releases of **animal pathogens** by strengthening existing systems for surveillance, early on-farm detection, and rapid response and fostering scientific networks for promoting biosafety and biosecurity.¹⁷⁴ To facilitate the achievement of these objectives, the OIE has developed **Guidelines for Investigation of Suspicious Biological Events** and **Guidelines for Responsible Conduct in Veterinary Research**. The *Guidelines for Investigation of Suspicious Biological Events* are intended to aid Veterinary Services to prepare for the investigation of **suspicious biological events** in relation to animal health, regardless of their origin, taking into account the additional challenges related to **joint investigations**.¹⁷⁵ The **Guidelines for Responsible Conduct in Veterinary Research** seek to raise **awareness** about the **dual-use potential** of research in veterinary settings, supporting veterinary professionals, researchers and other stakeholders to effectively identify, assess and manage dual-use implications.¹⁷⁶

The EU provides direct support for the international implementation of the BTWC through **Council Decision (CFSP) 2019/97** of 21 January 2019 which is being implemented until 2022.¹⁷⁷ The Council Decision covers six thematic areas of relevance to the BTWC:

- Support for the **BTWC universalisation** thorough in-country stakeholder engagement and regional awareness-raising workshops.
- Capacity development in support of **BTWC national implementation** through legislative assistance, training, and peer-review exercises.
- Fostering **biosecurity networks** in the Global South by engaging next-generation professionals with the BTWC.
- Supporting the inter-sessional programme and preparations for the **Ninth Review Conference of the BTWC** through outreach and awareness-raising activities, sponsorship opportunities, and stakeholder engagement events.
- **Preparedness** of States Parties to **prevent** and **respond** to attacks involving biological agents through table-top exercises, training, and expert workshops.
- **Enabling tools** for **outreach, education** and **engagement**, in order to enhance awareness of the scope of the BTWC and its relevance to the efforts to ensure a holistic counter of disease outbreaks and strengthening the prevention of life science misuse.¹⁷⁸

¹⁷⁴ World Organisation for Animal Health (OIE), [Biological threat reduction strategy: strengthening global biological security](#), October 2015.

¹⁷⁵ World Organisation for Animal Health (OIE), [Guidelines for investigation of suspicious biological events](#), 2018.

¹⁷⁶ World Organisation for Animal Health (OIE), [Guidelines for responsible conduct in veterinary research](#), (2019).

¹⁷⁷ European Union, [Council Decision \(CFSP\) 2019/97 of 21 January 2019 in support of the Biological and Toxin Weapons Convention in the framework of the EU Strategy against Proliferation of Weapons of Mass Destruction](#).

¹⁷⁸ European Union, [Council Decision \(CFSP\) 2019/97 of 21 January 2019 in support of the Biological and Toxin Weapons Convention in the framework of the EU Strategy against Proliferation of Weapons of Mass Destruction](#).



The BTWC biannual meetings and regular Review Conferences provide an essential **platform** for consolidating biosafety and biosecurity efforts and thus ensure that the life sciences are utilised only for peaceful, prophylactic, and protective purposes. The BTWC processes are designed in ways that facilitate engagement with State Parties' **government agencies**, other **intergovernmental organisations**, and **civil society**.

The **InterAcademy Partnership (IAP)** is an international umbrella organisation comprising more than 140 national, regional, and global member science academies.¹⁷⁹ In 2005, the IAP published a **Statement on Biosecurity** with seven guiding principles that demonstrate the **relevance** of the **BTWC** to life science practice and can serve as a basis for the development of professional biosecurity **codes of conduct**:

- **Awareness.** *Scientists should always take into consideration the reasonably foreseeable consequences of their own activities.*
 - *Scientists should recognise that individual good conscience does not justify ignoring the possible misuse of their scientific endeavor.*
 - *Scientists should refuse to undertake research that has only harmful consequences for humankind.*
- **Safety and Security.** *Scientists have a responsibility to use good, safe and secure laboratory procedures, whether codified by law or common practice.*
- **Education and Information.** *Scientists should be aware of, disseminate information about and teach about preventing the misuse of life science research.*
- **Accountability.** *Scientists should report violations of the BTWC or international customary law with appropriate people, authorities and agencies.*
- **Oversight.** *Scientists with responsibility for oversight of research should promote compliance with these principles and act as role models as regards biosecurity.*¹⁸⁰

The International Federation of Biosafety Association (IFBA) is an international non-governmental organisation that brings together biorisk management professionals, biosafety officers, scientists, laboratory personnel, architects, engineers, academics and policy makers to promote safe, secure, and responsible work with biological materials.¹⁸¹ The IFBA administers a Professional Certification Programme in biological risk management, biosafety and biosecurity.¹⁸² To get certified in Biosecurity, practitioners need to hold a valid certification in Biorisk Management and demonstrate understanding of six thematic domains: 1) Biosecurity Conventions, Guidelines and Standards; 2) Biosecurity Risk Assessment and Program Management; 3) Physical Biosecurity Measures; 4) Pathogen Accountability; 5) Personnel Reliability; and 6) Dual-Use and Bioethics.¹⁸³

¹⁷⁹ [InterAcademy Partnership](#), 2020.

¹⁸⁰ InterAcademy Partnership, [IAP Statement on Biosecurity](#), 2005.

¹⁸¹ [International Federation of Biosafety Associations](#), 2020.

¹⁸² International Federation of Biosafety Associations, [Certification Programme – Candidate Handbook](#), 2020.

¹⁸³ International Federation of Biosafety Associations, [Professional Certification in Biosecurity](#), 2020.



4. Conclusion

The present report has sought to offer an overview of the international and EU regulatory context of countering the deliberate misuse of CBRN knowledge and materials. Based on the information provided in the preceding sections, three interconnected points (Figure 2) merit specific attention:

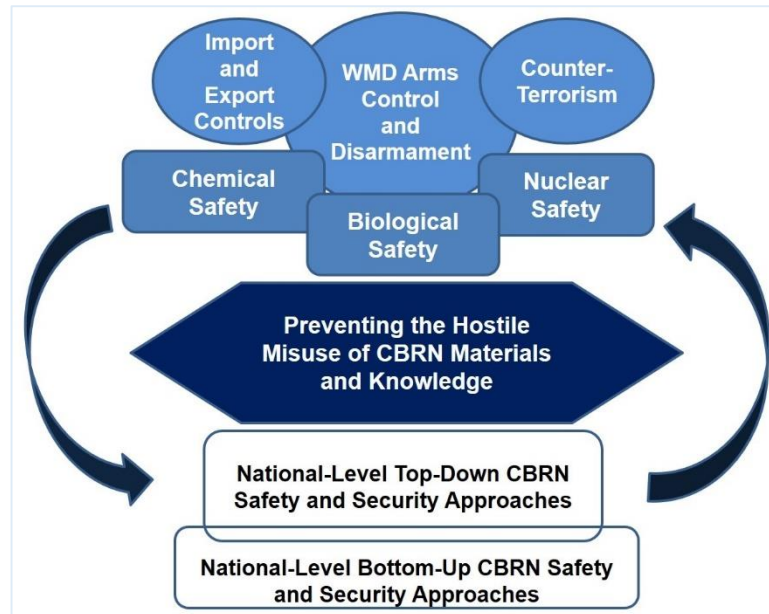
- Upholding the international norms against WMD enshrined in the existing international regulations and arrangements in the area of WMD disarmament and non-proliferation, relevant export and import controls, and counter-terrorism is an essential requirement for preventing the hostile misuse of CBRN materials and knowledge.
- Countering the hostile misuse of CBRN materials and knowledge requires the full and effective implementation of both international and EU safety and security regulations and arrangements at a national level. Safety instruments are those aimed at preventing and dealing with unintentionally caused CBRN incidents, such as naturally occurring disease outbreaks and accidents as a result of natural disasters, technical failure, or negligence. Security instruments are those aimed at preventing and dealing with deliberately caused CBRN incidents, including the use of WMD by a State or non-State actor.
- The full and effective implementation of the international and EU CBRN safety and security regulations and arrangements at a national level requires a combination of top-down and bottom-up approaches and measures. Top-down approaches include government-led initiatives such as national policies, legal acts, and guidelines. Bottom-up approaches include civil society-led initiatives such as self-regulation schemes, voluntary standards, and codes of conduct.¹⁸⁴

Figure 2: Preventing the Hostile Misuse of CBRN Knowledge and Materials –

¹⁸⁴ Tatyana Novossiolova, Lela Bakanidze and Dana Perkins, ‘[Effective and Comprehensive Governance of Biological Risks: A Network of Networks Approach for Sustainable Capacity Building](#)’ in Ben Trump. et al., *Synthetic Biology 2020: Frontiers in Risk Analysis and Governance*, Springer, 2020.



Toward a Comprehensive Approach



Source: The

author