

AperTO - Archivio Istituzionale Open Access dell'Università di Torino

Preparedness obligations related to CBRN industrial accidents

This is the author's manuscript

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1878380> since 2022-11-02T19:50:51Z

Publisher:

Brill Nijhoff

Terms of use:

Open Access

Anyone can freely access the full text of works made available as "Open Access". Works made available under a Creative Commons license can be used according to the terms and conditions of said license. Use of all other works requires consent of the right holder (author or publisher) if not exempted from copyright protection by the applicable law.

(Article begins on next page)

Brill

Chapter Title: Preparedness Obligations Related to CBRN Industrial Accidents

Chapter Author(s): Sophie Domaine

Book Title: International Law and Chemical, Biological, Radio-Nuclear (CBRN) Events

Book Subtitle: Towards an All-Hazards Approach

Book Editor(s): Andrea de Guttry, Micaela Frulli, Federico Casolari, Ludovica Poli

Published by: Brill. (2022)

Stable URL: <https://www.jstor.org/stable/10.1163/j.ctv2kqwzcx.17>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



This book is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0). To view a copy of this license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/>.



JSTOR

Brill is collaborating with JSTOR to digitize, preserve and extend access to *International Law and Chemical, Biological, Radio-Nuclear (CBRN) Events*

Preparedness Obligations Related to CBRN Industrial Accidents

Sophie Domaine

1 Introduction

No matter how stringent prevention measures are,¹ industrial accidents may occur; thus, the international community, the States and the population affected must be prepared to deal with their consequences. Indeed, industrial operations involve substances that do not usually represent a great threat to our health or our environment, but that are nevertheless potentially hazardous. Even the safest plant is never totally risk-free. Preparing for CBRN emergencies is an extremely complex undertaking, which involves a high number of governmental authorities and private actors, at the national, regional, and local level. Moreover, when an incident has potential transboundary impacts, it becomes a matter of international concern and, therefore, international measures – universal, regional, or bilateral – are required.²

This chapter will examine preparedness obligations specifically related to CBRN industrial accidents contained in international treaties, regional instruments, and bilateral agreements (second section).³ When discussing preparedness obligations at universal level, the analysis will be twofold: first, obligations enshrined in multilateral treaties specifically dealing with industrial accidents; then, obligations included in international instruments concerning radionuclear hazards. A review of soft law instruments adopted by international organisations (IOs) relevant to the field will also be conducted (third section). Finally, an attempt to assess current developments in the implementation of preparedness measures for industrial accidents and to reflect on potential improvements will be made (fourth section).

¹ See ch 11 by Creta.

² IAEA, 'Handbook on Nuclear Law – Implementing Legislation' (IAEA 2010) 79.

³ Preparedness obligations for CBRN accidents under EU law will be covered in ch 14 by Ferri.

2 Preparedness Obligations in International Treaties, Regional Instruments, and Bilateral Agreements

Emergency preparedness is defined as '[t]he knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions'.⁴ An industrial accident, on the other hand, is 'an event resulting from an uncontrolled development in the course of any activity involving hazardous substances either [...] [i]n an installation [...] or [...] [d]uring transportation'.⁵ As in the previous chapter, the industrial accidents examined will be sudden-onset-events originating from the following technological hazards: industrial, chemical, and radionuclear.

The adoption of multilateral treaties regarding preparedness and emergency assistance obligations was considered unattainable throughout the 1960s and 1970s.⁶ But then the Chernobyl disaster occurred in 1986 and international agreements on emergency preparedness, whose approval had been discussed at length without result, were promptly adopted.⁷ This section will review the preparedness obligations related to CBRN industrial accidents at different levels: universal, regional, and bilateral. The first subsection will analyse preparedness obligations contained in multilateral treaties which specifically deal with industrial accidents; then, international instruments concerning radionuclear hazards will be discussed.

2.1 *Instruments Directly Dealing with Industrial Accidents*

The most important agreement in the field is the Convention on the Transboundary Effects of Industrial Accidents (TEIA Convention).⁸ Obligations regarding preparedness measures are set out in Article 8. The parties must take all appropriate measures to establish and maintain adequate emergency preparedness for industrial accidents and to mitigate transboundary effects of

4 UNISDR, 'UNISDR Terminology on Disaster Risk Reduction' (May 2009), <<https://www.undrr.org/publication/2009-unisdr-terminology-disaster-risk-reduction>> (all links were last accessed on 30 May 2021). See ch 4 by De Guttry.

5 Convention on the Transboundary Effects of Industrial Accidents (1992) art 1.

6 J Rautenbach, W Tonhauser and A Wetherall, 'Overview of the International Legal Framework Governing the Safe and Peaceful Uses of Nuclear Energy – Some Practical Steps' in *International Nuclear Law in the Post-Chernobyl Period* (OECD/NEA 2006) 9.

7 S Kuş, 'International nuclear law in the 25 years between Chernobyl and Fukushima and beyond ...' (2011) 87(1) *NLB* 7, 9.

8 Convention on the Transboundary Effects of Industrial Accidents (1992).

such accidents. The contingency plans outlined by each party must be shared with all the others and reviewed regularly. The party of origin shall ensure the preparation and implementation of on-site contingency plans for hazardous activities, whereas, each State Party shall guarantee the preparation and implementation of off-site contingency plans, covering measures to be taken within its territory to prevent and minimise transboundary effects. In the case of several States being affected by a hazardous operation, parties are expected to make their plans mutually compatible and, where appropriate, even draw up joint off-site contingency plans to facilitate the adoption of adequate response measures.⁹

Emergency preparedness measures that Contracting States might adopt are included in Annex VII to the Convention. All contingency plans must include the actions necessary to localise emergencies and to prevent or minimise their transboundary effects. They shall also incorporate arrangements for warning people when they need to evacuate, and they should give on-site personnel and rescue forces details of technical and organisational procedures for responding in the event of an industrial accident.

Moreover, according to Article 9, the parties have to ensure that adequate information is given to the public in the areas capable of being affected by an industrial accident arising from a hazardous activity.¹⁰ Each member of the Convention, through the channel deemed appropriate, must transmit to the population the elements contained in Annex VIII, namely, among others: the name of the company carrying out the hazardous activity; an explanation, in simple terms, of the hazardous activity, including the common names or the generic names or the general danger classification of the substances and preparations which are involved and their risks; general information resulting from an environmental impact assessment, if available; general information relating to the nature of an industrial accident that could possibly occur, including its potential effects on the population and the environment; and adequate information on how the affected population will be warned and kept informed in the event of an industrial accident. The public concerned – both in the State of origin and in the potentially affected State – must also be guaranteed an opportunity to participate in relevant procedures to express their views and concerns on preparedness measures. In accordance with each party's national legal system, natural or legal persons who are being adversely affected by the transboundary effects of an industrial accident in the territory of a party must have access to administrative and judicial proceedings, including the

9 Ibid art 8.1, 8.2 and 8.3.

10 Ibid Annex VIII 'Information to the public pursuant to Article 9'.

possibility of starting a legal action and of appealing a decision affecting their rights.¹¹

The only other multilateral treaty focussing specifically on industrial accidents is the Prevention of Major Industrial Accidents Convention.¹² Even though its core focus is prevention, this Convention includes some provisions concerning preparedness. According to Article 9, the employer must establish and maintain a documented system of major hazard control, including the preparation of effective site emergency plans and procedures, with periodic testing and evaluation of their effectiveness resulting in relevant revisions. The employer shall also inform the authorities responsible for the preparation of off-site emergency plans about site emergency procedures and potential accidents originating from the installation.¹³ In compliance with Part IV on 'off-site emergency preparedness', the competent authorities, taking into account the information provided by the employer, must ensure that emergency plans and procedures containing provisions for the protection of the public and the environment outside the site of each major hazard installation are established, updated and coordinated with the relevant actors.¹⁴ In particular, said authorities have to ensure that information on safety measures and the correct behaviour to adopt in the event of a major accident is disseminated to members of the public without their having to request it; that warning is given as soon as possible in the event of an accident of this type; and that where a major accident could have transboundary effects, this information is provided to the States concerned, in order to guarantee cooperation and coordination.¹⁵

Besides these two specifically targeted conventions, international preparedness obligations related to CBRN industrial accidents at the universal level are to be found in the 2005 International Health Regulations (IHR).¹⁶ The purpose and scope of the IHR are to prevent, protect against, control and provide a public health response to the international spread of diseases.¹⁷ There is no explicit mention of emergency preparedness measures in relation to industrial accidents in the IHR; however, in the Preamble,¹⁸ a reference to the resolution

11 Ibid art 9.3.

12 ILO Prevention of Major Industrial Accidents Convention (No. 174) (1993). It only has 18 ratifications. See more in ch 11 by Creta.

13 Ibid art 9(d).

14 Ibid art 15.

15 Ibid art 16.

16 International Health Regulations (2005). IHR are largely discussed in section 2.3 of this volume, which concerns epidemic outbreaks.

17 IHR art 2.

18 Ibid recital III.

adopted in 2002 by the World Health Assembly (WHA) is made, recalling the need to revise and update the IHR taking into account the global public health response to accidental dissemination of biological or chemical agents or radionuclear material.¹⁹ Indeed, the release of this type of material following an industrial accident would constitute a threat to the integrity of public health systems. For these reasons, the WHA urges Member States to ensure that national disease-surveillance plans, complementary to global ones, are put in place and that collaboration and mutual support is guaranteed to enhance national capacity in the fields of epidemiology, laboratory diagnoses, toxicology, and case management. Hence, IHR articles concerning 'Information and public health response'²⁰ must now be read in light of the 2002 WHA resolution, implying that States – bearing in mind that CBRN incidents can affect global public health – must develop, strengthen and maintain the capacity to detect those events.

2.2 *Instruments Concerning Radionuclear Incidents*

Following the Chernobyl nuclear plant accident, two international conventions, based on existing non-legally binding guidelines, were adopted by the international community, under the auspices of the International Atomic Energy Agency (IAEA):²¹ the Convention on Early Notification of a Nuclear Accident (Early Notification Convention) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention).²² With regard to preparedness, according to the Assistance Convention, States must notify the IAEA of the experts, equipment, and materials they can make available to provide assistance in the event of such an accident or emergency. The IAEA may also assist a State Party in the preparation

19 WHA, 'Resolution on global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health' (18 May 2002) UN Doc A55/VR/9. No international treaty regarding biological industrial accidents is in force: these are hardly ever addressed as a separate issue but considered in the broader context of CBRN events. Moreover, they fall outside the definition of technological hazards leading to industrial accidents. See on this aspect ch 11 and ch 30 by Corcione.

20 IHR art 5, 6, 7 and 13.

21 Kuş (n 7) 9 citing IAEA, 'Guidelines for Mutual Emergency Assistance Arrangements in Connection with a Nuclear Accident or Radiological Emergency' (January 1984) INFCIRC/310; IAEA, 'Guidelines on Reportable Events, Integrated Planning and Information Exchange in Transboundary Release of Radioactive Materials' (January 1985) INFCIRC/321.

22 Convention on Early Notification of a Nuclear Accident (1986). Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986). See ch 13 by Bakker and Montanaro for response to CBRN industrial accidents.

of emergency plans and appropriate legislation to deal with potential nuclear accidents; in the development of proper training programmes for personnel to deal with radiological emergencies; and in the promotion of suitable radiation monitoring programmes, procedures and standards.²³ Article 5(1)(g) of the Early Notification Convention requires parties to provide the States concerned and the IAEA with information related to the off-site protective measures taken or planned. As with the Assistance Convention, one of the most significant features of the Early Notification Convention is the role assigned to the IAEA.²⁴ Indeed, according to Article 8, the Agency is required, upon request, to assist a State without nuclear installations itself but bordering a State with an active nuclear programme – which is not party to the convention – to develop an appropriate radiation monitoring system.²⁵

These two conventions represent the cornerstones of the international emergency preparedness (and response) framework applicable to radionuclear accidents;²⁶ still, their texts do not mention the notion of ‘preparedness’ directly. This was introduced in the Convention on Nuclear Safety (CNS),²⁷ adopted in 1994, which finally includes a provision on emergency preparedness. The general aim of the CNS is that Contracting Parties operating land-based civil nuclear power plants maintain a high level of safety by establishing, and subscribing to, fundamental safety principles. The parties’ common interest in achieving higher levels of safety is developed and promoted through regular meetings. For this reason, an innovative and dynamic element was introduced: parties must submit reports on the implementation of their obligations for ‘peer review’ at meetings, that are normally held at IAEA headquarters in Vienna. The CNS specifically addresses emergency preparedness in Article 16 which requires the installation State to ensure that ‘on-site and off-site emergency plans [...] are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency’.²⁸ Each Contracting

23 Assistance Convention art 5(b) i, ii and iv.

24 A Gioia, ‘Nuclear Accidents and International Law’ in A de Guttry, M Gestri, G Venturini (eds), *International Disaster Response Law* (Springer 2012) 97.

25 Early Notification Convention art 8.

26 G Handl, ‘Nuclear Off-site Emergency Preparedness and Response: Some International Legal Aspects’ in JL Black-Branch, D Fleck (eds), *Nuclear Non-Proliferation in International Law – Volume III, Legal Aspects of the Use of Nuclear Energy for Peaceful Purposes* (Springer 2016) 317.

27 Convention on Nuclear Safety (1994). The CNS has currently 90 Contracting Parties, including all States with operating nuclear power plants. See O Jankowitsch-Prevor, ‘The Convention on Nuclear Safety’ in *International Nuclear Law in the Post-Chernobyl Period* (OECD/NEA 2006) 155ff.

28 CNS art 16.1.

Party is also obliged to 'take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response'.²⁹ Likewise, Contracting Parties which do not have a nuclear plant on their territory but are likely to be affected in the event of a radiological emergency at an installation in the vicinity are required to prepare and develop emergency plans for their territory.³⁰ Once preparedness obligations and good practices are enshrined at the international level, it is the responsibility of each Member State and its competent authorities to provide for emergency preparedness regulations and to ensure, more generally, the application of the highest standards of nuclear safety at the national level.³¹

The international emergency preparedness and response (EPR) framework³² not only consists of international legal instruments but also of IAEA safety standards and operational arrangements.³³ Besides its role as leading organisation for the negotiation of international nuclear safety treaties, the IAEA's primary statutory mandate is, in fact, to 'establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the UN and with the specialised agencies concerned, standards of safety for protection of health and minimisation of danger to life and property [...] and to provide for the application of these standards to its own operations'.³⁴ These technical norms are the core of preparedness measures for nuclear and radiological accidents. Although assessing the legal value of the Agency standards goes beyond the scope of this chapter, it is important to underline briefly that, even if they do not have binding force on Member States, they have more force than mere acts of 'soft law' and, indeed, produce highly significant normative effects.³⁵ Indeed, the purpose of these Safety Standards is that they should be applied as binding technical norms through incorporation into domestic or international law.³⁶

29 Ibid art 16.2.

30 Ibid art 16.3.

31 IAEA, 'Action Plan on Nuclear Safety' (13 September 2011) <<https://www.iaea.org/sites/default/files/actionplanns.pdf>>.

32 Nuclear safety and security in Europe will be discussed in ch 15 by Balboni.

33 See, for this categorisation, IAEA, 'Operations Manual for Incident and Emergency Communication' (2019) EPR-IEComm, 1.

34 Statute of the International Atomic Energy Agency (1956) art III.A.6.

35 Handl (n 26) 322.

36 O Jankowitsch-Prevor, 'The Normative Role of the International Atomic Energy Agency, Legal Basis and Legal Sources' in *International Nuclear Law: History, Evolution and Outlook*

The IAEA Safety Standards are divided, hierarchically, into Safety Fundamentals, Safety Requirements and Safety Guides.³⁷ The General Safety Requirements on Preparedness and Response for a Nuclear or Radiological Emergency³⁸ establish the conditions for ensuring an adequate level of preparedness and response for all types of nuclear or radiological emergency. These 26 Safety Requirements are formulated to be of use to governments, emergency response organisations, other authorities at the local, regional, and national levels, as well as to relevant international organisations.

The IAEA published three Safety Guides on the issue of preparedness. According to Article 5(a) of the Assistance Convention, the Agency must disseminate to States Parties information concerning methodologies, techniques and research data relating to emergency response. The Safety Guide on Arrangements for Preparedness for a Nuclear or Radiological Emergency is, thus, aimed at providing guidance on preparedness for nuclear or radiological emergency, describing appropriate responses to a range of potential emergency scenarios, and delivering background information on past experiences.³⁹ The General Safety Guide on Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency contains a set of generic measurements – expressed in terms of radiation dose – that facilitate decision-making concerning preparedness and response actions.⁴⁰ This publication also offers simple language explanations of these criteria for public officials and the population. The latest General Safety Guide published by the IAEA is the Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency.⁴¹ The Guide focusses on communication with the public and media and on the coordination of the official information in preparation for a radionuclear emergency. It supports Member States by outlining, beforehand, the processes needed to provide useful, timely, truthful, consistent, clear, and appropriate information to the public and by explaining how to respond to rumours and requests from the population and from the media.

(OECD/NEA 2010) 22. Handl (n 26) 322 refers to a “Normative Pull’ of EPR-Related Safety Standards’.

37 IAEA, ‘Long term structure of the IAEA Safety Standards and current status’ (May 2021) 4, <<http://www-ns.iaea.org/committees/files/CSS/205/status.pdf>>. There are no Safety Fundamentals concerning preparedness.

38 IAEA, ‘Safety Standards Series No. GSR Part 7’ (2015).

39 IAEA, ‘Safety Standards Series No. GS-G-2.1’ (2007).

40 IAEA, ‘Safety Standards Series No. GSG-2’ (2011).

41 IAEA, ‘Safety Standards Series No. GSG-14’ (2020).

The framework on preparedness for nuclear emergency is undoubtedly complex:⁴² the IAEA Safety Standards series complement the conventions on Assistance and Early Notification and the CNS. States might find it challenging to implement all these rules domestically;⁴³ for this reason, international institutional assistance is necessary and operational arrangements have been developed. Indeed, to clarify the interactions between various international organisations during a radionuclear emergency, a Joint Radiation Emergency Management Plan of the International Organizations (JPLAN) was established.⁴⁴ The Agency also releases and updates an Operations Manual for Incident and Emergency Communication,⁴⁵ in order to provide technical guidance on preparedness measures and information exchange between IAEA Member States, Assistance and Early Notification Conventions' Contracting Parties and concerned IOs.

2.3 *Regional, Subregional, and Bilateral Treaties*

The TEIA Convention covers all types of industrial accidents, except for nuclear accidents or radiological emergencies.⁴⁶ The latter sector is regulated at the universal level within the IAEA framework. As for the European Union, a series of acts relevant to industrial accident prevention have been implemented⁴⁷ and nuclear safety and security in Europe has its own regulatory framework.⁴⁸ Nonetheless, before the adoption of the Assistance and the Early Notification Conventions – and even before the Chernobyl disaster – four Northern European countries had already signed a multilateral agreement on mutual assistance, under the auspices of the IAEA. The Nordic Mutual

42 Criticisms stating that the IAEA EPR requirements are too numerous and detailed, thus, practically impeding States from complying with them, are common; see: Handl (n 26) 324 citing ENCO, 'Review of Current Off-site Nuclear Emergency Preparedness and Response Arrangements in EU Member States and Neighbouring Countries' (December 2013) <<https://op.europa.eu/it/publication-detail/-/publication/e6f9c4fb-8720-44e7-8ae5-331da3b1bf88>>.

43 Handl (n 26) 320.

44 IAEA, 'Joint Radiation Emergency Management Plan of the International Organizations' (2017) EPR-JPLAN, <<https://www.iaea.org/publications/11163/joint-radiation-emergency-management-plan-of-the-international-organizations>>.

45 IAEA, 'Operations Manual for Incident and Emergency Communication' (2019) EPR-IEComm, <<https://www.iaea.org/publications/8939/operations-manual-for-incident-and-emergency-communication>>.

46 TEIA Convention art 2.2.

47 See ch 14 by Ferri.

48 See ch 15 by Balboni.

Emergency Assistance Agreement in connection with Radiation Accidents⁴⁹ was adopted in 1963 by Denmark, Finland, Norway, and Sweden – and the IAEA – to create a sub-regional space of cooperation in the event of an incident involving damage from ionising radiation. The aim of the Agreement is to establish in advance the terms for requesting and providing assistance between Contracting States and the IAEA in case of emergency. The special functions of the Agency, which can be consulted only upon request of a party, are described in Article II and include giving advice on the measures to be taken, assisting Member States that are not parties to said agreement, and coordinating the provision of assistance. Although still primitive, these norms are an initial example of cross-border cooperation related to preparedness for radiological emergencies, representing a sort of foundation for the two 1986 Conventions.

The Eastern part of the European continent has been very active in promoting legal instruments for increased cooperation in disaster management, focussing both on assistance and preparedness.⁵⁰ With regard to the topic of this chapter, it is worth mentioning the various bilateral treaties that the Russian Federation concluded with several States, mainly from Eastern Europe, regarding cooperation in the sphere of the prevention of industrial accidents, catastrophes, natural disasters, and the mitigation of their consequences, in the years following the dissolution of the Soviet Union.⁵¹ Even though the focus of these treaties is prevention, measures regarding preparedness and mutual assistance in case of industrial accidents are included. In general, in each agreement, parties are required to cooperate, to exchange information and to provide assistance for the mitigation of the effects of these accidents. Such cooperation activities encompass, *inter alia*, the exchange of information and technology between specialists and scientists of the two parties; the planning of joint conferences, seminars, workshops, and training; and the co-development and implementation of research projects, publications, reports and case studies.⁵²

49 Nordic Mutual Emergency Assistance Agreement in connection with Radiation Accidents (1964).

50 As illustrated in ch 4 by De Guttry.

51 Russia signed this type of agreement with Kazakhstan, Bulgaria, Moldova, Mongolia, Armenia, Ukraine, Portugal, Greece, and Slovenia. See, eg, Agreement between the Russian Federation and the Republic of Armenia on cooperation in the sphere of prevention of industrial accidents, natural disasters and liquidation of the consequences thereof (1996).

52 *Ibid* art 3.

3 The Role of Soft Law Instruments

Apart from the international obligations illustrated thus far, the area of emergency preparedness for CBRN industrial accidents is characterised by the existence of a large number of soft law instruments. There are many IOs working in the field, which regularly adopt technical guidelines, reports, and recommendations of best practices. This section will briefly analyse the role of some fundamental IOs dealing with CBRN – the WHO, UNEP and the OECD – focussing on the relevance of soft law instruments for preparedness measures related to industrial accidents.

In the context of the UN system, the topic of preparedness for chemical industrial accidents has been addressed by different agencies and offices. Even though the programmes elaborated by these UN organisms are of a soft law nature – therefore not legally binding for Member States – they nevertheless have a strategic role in promoting technical guidelines and best practices, which are eventually incorporated in national rules. The focus of these instruments is the creation of networks, since effective action to ensure preparedness for industrial accidents requires coordinated efforts of multiple stakeholders at the local and national levels, such as government bodies, industry, workers, and community groups.

Through the International Programme on Chemical Safety (IPCS),⁵³ the WHO is attempting to establish a sound scientific basis for the management of chemicals and the strengthening of States' capabilities on chemical safety.⁵⁴ Chemical safety covers all chemicals, natural and manufactured, and the full range of exposure situations, including industrial accidents. In 2017, the Seventieth WHA approved the Road Map to Enhance Health Sector Engagement⁵⁵ within the Strategic Approach to International Chemicals Management (SAICM) policy framework.⁵⁶ In the context of the Chemicals Road Map, the WHO Global Chemicals and Health Network was instituted,⁵⁷ with links to existing subregional, regional, and international networks, aimed at facilitating its health sector implementation. Under the IPCS, the WHO

53 WHO Executive Board, 'Resolution on the International Programme on Chemical Safety' (18 January 1984) UN Doc EB73/Conf. Paper No. 3 Rev. 1.

54 Hereby the link with the 2002 WHA resolution. *Supra*.

55 WHA, Resolution on 'The role of the health sector in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond' (28 May 2016) UN Doc WHA69.4. For the Chemicals Road Map: <<https://www.who.int/publications/i/item/WHO-FWC-PHE-EPE-17.03>>.

56 See <www.saicm.org/>.

57 See <<https://www.who.int/groups/global-chemicals-and-health-network/about>>.

Chemical Risk Assessment Network was also established,⁵⁸ with the objectives, among others, of providing a forum for scientific and technical exchange; facilitating and contributing to capacity building; promoting best practices and the harmonisation of methodologies; and assisting institutions in the identification of research needs and with the promotion of the application of new science in risk assessment. The WHO also convenes international conferences and regional meetings to strengthen the networks cooperation and facilitates emergency responses.⁵⁹ Guidance and training materials to reinforce preparedness for chemical emergencies have also been published.⁶⁰

Under the umbrella of the United Nations Environmental Programme (UNEP),⁶¹ the Awareness and Preparedness for Emergencies at Local Level (APELL) programme has been implemented in more than 30 countries since 1988, to raise awareness about hazards and risks, improve preparedness planning and prepare coordinated emergency plans.⁶² Within the context of the Sendai Framework for Disaster Risk Reduction,⁶³ in 2015, UNEP launched the APELL Handbook,⁶⁴ aimed at promoting a resilient and responsible community and at raising awareness about technological or natural hazards and measures for preparedness and emergency response. The APELL methodology is based on five elements: (i) engaging stakeholders; (ii) understanding hazards and risks; (iii) preparedness planning; (iv) implementing, disseminating, and testing; and (v) maintaining APELL. Furthermore, through the Flexible

58 See <<https://www.who.int/groups/chemical-risk-assessment-network>>.

59 Preparedness and response (ch 13) are inevitably intertwined.

60 See, *inter alia*, WHO, 'Communicating risk in public health emergencies: a WHO guideline for emergency risk communication (ERC) policy and practice' (2017), <<https://www.who.int/publications/i/item/9789241550208>>.

61 UNEP was founded in 1972 following the Stockholm Conference on the Human Environment: see UNGA, 'Report of the United Nations Conference on Human Environment' (5–16 June 197) UN Doc A/CONF.48/14/REV.1.

62 See <<https://www.unep.org/explore-topics/disasters-conflicts/what-we-do/preparedness-and-response/awareness-and-preparedness>>.

63 UNDRR, Sendai Framework for Disaster Risk Reduction 2015–2030 (2015), <<https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>>. The Sendai Framework covers not only natural but also technological hazards, an advancement from its predecessor, the Hyogo Framework for Action 2005–2015. Among technological risks are chemical and industrial, as well as radiological, nuclear, biological and Natech hazards. See UNDRR, 'Global assessment report on disaster risk reduction 2019' (2019) xv, <<https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2019>>.

64 UNEP, *APELL Handbook: A process for improving community awareness and preparedness for technological hazards and environmental emergencies*, Second edition (2015), <<https://www.preventionweb.net/publications/view/45469>>.

Framework for addressing Chemical Accident Prevention and Preparedness (CAPP),⁶⁵ UNEP works to promote chemical accident preparedness in emerging economies and developing countries that need support to address these increased risks. The goal of this Framework is to support national governments in the implementation of an appropriate CAPP programme. These programmes include the collection of laws, regulations, policies, guidance, and other instruments established by a State to address the various aspects of CAPP. A set of guidelines, in collaboration with the Inter-Organization Programme for the Sound Management of Chemicals (IOMC)⁶⁶ and pursuant to the SAICM policy, were released: the Flexible Framework for Addressing Chemical Accident Prevention and Preparedness guidance⁶⁷ and the Implementation-support package.⁶⁸ The experiences regarding the development of CAPP programmes were also encapsulated in a report on Case studies of implementation,⁶⁹ with the objective of disseminating the results and lessons learned from national projects, as well as presenting new recommendations.⁷⁰

Under the umbrella of the OECD,⁷¹ the Nuclear Energy Agency (NEA), an intergovernmental agency bringing together countries in a non-political forum, was established with the aim to 'further the development of the production and uses of nuclear energy [...] for peaceful purposes by the participating countries, through co-operation [...] and a harmonization of measures taken at the national level'.⁷² The NEA does not play an operational role in case of

65 See <<https://www.unenvironment.org/pt-br/node/653>>.

66 The IOMC was established in 1995, following recommendations made by the 1992 UN Conference on Environment and Development to strengthen co-operation and increase international coordination in the field of chemical safety. The participating organisations are FAO, ILO, UNEP, UNIDO, UNITAR, WHO, and OECD. The World Bank and UNDP are observers.

67 UNEP, *A Flexible Framework for addressing chemical accident prevention and preparedness. A guidance document* (2010).

68 UNEP, *A Flexible Framework for addressing chemical accident prevention and preparedness, An Implementation Support Package* (2012).

69 UNEP, *Chemical Accident Prevention and Preparedness, Case studies of implementation* (2015).

70 A review of the efforts and joint activities of the IOs involved in preparedness for industrial accidents can be found in the report of the Inter-Agency Coordination Group, an informal forum that brings together institutions working on the prevention of, preparedness for and response to industrial and chemical accidents: Inter-Agency Coordination Group for Industrial and Chemical Accidents, *International efforts for industrial and chemical accidents prevention, preparedness and response* (2017), <<https://www.preventionweb.net/publication/international-efforts-industrial-and-chemical-accidents-prevention-preparedness-and>>.

71 Convention on the Organisation for Economic Co-operation and Development (1960).

72 Statute of the OECD Nuclear Energy Agency (1995) art 1.

nuclear emergencies, but it is actively involved in efforts to improve the international management of radionuclear accident emergency preparedness through the preparation and conduct of the International Nuclear Emergency Exercise (INEX) series.⁷³ These exercises, carried out by the NEA Working Party on Nuclear Emergency Matters (WPNEM),⁷⁴ are aimed at testing and proving the effectiveness of existing international nuclear emergency response plans and procedures. The WPNEM works to identify needs in preparedness for the early and intermediate phases of a radionuclear emergency, including accidents, in coordination with Member States and other international organisations. From the evaluation of the INEX exercises series, the WPNEM has drawn lessons and knowledge which provided a substantial and unbiased basis for the development of subsequent strategies and recommendations for enhancing emergency preparedness systems nationally and internationally, with a particular focus on decision-making, international communication, and information exchange.

The OECD also adopted a series of Guiding Principles for Chemical Accidents, Prevention, Preparedness and Response.⁷⁵ These Principles constitute a – non-binding – guidance for public authorities, industry, non-governmental organisations, as well as members of the public potentially affected in the event of an accident. They apply to all hazardous installations, and they address issues related to the preparation for accidents through emergency planning, land-use strategy, and communication with the public.⁷⁶

4 Current Developments in the Implementation of Preparedness Measures for CBRN Industrial Accidents

The present chapter has provided an overview of the sources and content of preparedness obligations related to CBRN industrial accidents under international law. The effectiveness of their implementation varies largely depending on the sector.

73 See <https://www.oecd-nea.org/jcms/pl_27015/international-nuclear-emergency-exercises-inex>.

74 Further information at <https://www.oecd-nea.org/jcms/pl_26861/working-party-on-nuclear-emergency-matters-wpnem>.

75 OECD, 'OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response Guidance for Industry (including Management and Labour), Public Authorities, Communities, and other Stakeholders', Second edition (OECD Environment, Health and Safety Publications, Series on Chemical Accidents No. 10 2003).

76 Ibid pt B: Emergency Preparedness/Mitigation, 85–110.

Nuclear accidents – fortunately – rarely occur, but, as the 2011 Fukushima incident reminded us, they can happen, and the international community – as well as national and local authorities – must be prepared to deal with them. While the effects of the Japanese nuclear catastrophe were milder than the ones stemming from the Chernobyl disaster, undoubtedly thanks to the nuclear safety regime developed internationally, Fukushima nevertheless demonstrated that much work still needs to be done. No matter how strong a national EPR framework is, a country cannot cope with a nuclear catastrophe alone: preparedness action at the local level is not enough. Although emergency planning is a matter of exclusive domestic jurisdiction, the Fukushima accident made clear that international coordination of preparedness measures should be strengthened, at least in the case of neighbouring States, which should share cross-border technical expertise and mutual trust.⁷⁷ Also, revising and improving off-site emergency preparedness capabilities at the global level was deemed crucial.

Nonetheless, the international legally binding framework has not been subject to amendments in response.⁷⁸ However, the same year, 2011, the IAEA issued the Action Plan on Nuclear Safety to strengthen nuclear safety, including by reinforcing measures regarding emergency preparedness, through the full cooperation and participation of Member States and the involvement of many stakeholders.⁷⁹ Member States are now obliged to conduct a regular review of their national emergency preparedness arrangements and

77 At present, joint decisions between neighbouring States on how to harmonise communication procedures prior to and during an emergency do not exist, notwithstanding the potential transnational nature of a nuclear crisis. Discussions on cooperation between the Netherlands, Belgium and Germany concerning the nuclear power plants in the border areas are emerging. See Dutch Safety Board, 'Cooperation on nuclear safety, An investigation into the cooperation between the Netherlands, Belgium and Germany concerning the nuclear power plants in the border areas' (January 2018), <<https://www.onderzoeksraad.nl/en/page/4341/cooperation-on-nuclear-safety>>.

78 Following the Fukushima accident, the Contracting Parties to the CNS decided to hold a dedicated meeting in 2012, where the Action Plan was issued. Other dedicated meetings took place, where proposals for amendments to the CNS were discussed; however, the parties eventually agreed, in 2015, on a mere political declaration (IAEA, 'Vienna Declaration on Nuclear Safety' (9 February 2015) IAEA Doc. CNS/DC/2015/2/Rev.1). See SG Burns, 'The impact of the major nuclear power plant accidents on the international legal framework for nuclear power' (2018) 101(1) *NLB* 7, 21–27; E Durand-Poudret, 'Towards a new international framework for nuclear safety: Developments from Fukushima to Vienna' (2015) 95(1) *NLB* 27; PR Johnson, 'The post-Fukushima Daiichi response: The role of the Convention on Nuclear Safety in strengthening the legal framework for nuclear safety' (2013) 91(1) *NLB* 7.

79 IAEA (n 31).

capabilities, with the IAEA Secretariat providing support and assistance; at the same time, the IAEA Secretariat, the Member States and all relevant international organisations are asked to review the international emergency preparedness arrangements and capabilities.⁸⁰ In order to assist with implementing the Action Plan, a report by the IAEA Director General, addressing the causes and consequences of the Fukushima accident and providing a comprehensive understanding of what happened during the accident, was released in 2015,⁸¹ along with five accompanying Technical Volumes, one of which is dedicated to emergency preparedness and response.⁸²

The enhancement of nuclear safety, including emergency preparedness and response, remains one of the priorities identified by the IAEA. As stated in the Agency's 2020 Nuclear Safety Review, Member States are increasingly requesting technical assistance and advice to reinforce national and regional emergency preparedness arrangements. Indeed, in 2019 alone, the Agency held 40 emergency preparedness and response training events at the regional and interregional level and 15 at the national level, with participants from 133 Member States.⁸³ Hence, among the Agency's priorities for 2020 and beyond, related to preparedness, there is the improvement of the IAEA Safety Standards, using the lessons acquired from the Fukushima accident, and the provision of continuous support to Member States to develop their capacity building programmes, through education and training, international conferences, peer reviews, knowledge networks, and relevant workshops.⁸⁴

As for industrial accidents in general, the parties at the 2020 TEIA Convention meeting⁸⁵ concluded that emergency preparedness obligations deriving from the Convention are largely at an acceptable level, even though testing, updating, and reviewing emergency plans in cooperation with neighbouring countries continue to be challenging for many States. Thus, when the parties adopted the subsequent decision on strengthening implementation,

80 Ibid 3.

81 IAEA, 'The Fukushima Daiichi Accident, Report by the Director General' (2015) IAEA Doc. GC(59)/14.

82 IAEA, 'The Fukushima Daiichi Accident, Technical Volume 3/5, Emergency Preparedness and Response' (2015) <<https://www.iaea.org/publications/10962/the-fukushima-daiichi-accident>>.

83 IAEA, 'Nuclear Safety Review 2020' (September 2020) IAEA Doc. GC(64)/INF/3, 4–5.

84 Ibid 5–6.

85 UN Economic Commission for Europe, Conference of the Parties to the TEIA Convention, 'Ninth report on the implementation of the Convention (2016–2018)' (25 September 2020) ECE/CP.TEIA/2020/5.

they committed themselves to make further progress towards reinforcing and developing joint or harmonised emergency plans.⁸⁶

Nonetheless, the production and use of chemicals continue to grow worldwide, particularly in developing countries, and too many industrial accidents involving chemicals still occur. Their consequences may be less severe than they used to be,⁸⁷ but the frequency with which they happen remains a concern.⁸⁸ Among the causes – direct or indirect – of these accidents are the non-compliance of companies with emergency preparedness regulations; the negligence of authorities in supervising companies' business operations, in implementing relevant laws and in conducting safety inspections;⁸⁹ and the failure of on-site and off-site emergency plans and measures related to risk communication.⁹⁰ Ultimately, when sound chemical safety is not ensured, the risk of industrial accidents occurring is significant. Even though preparedness measures related to industrial accidents involving chemicals are outlined on the international plane – albeit mainly by means of soft law – their implementation at the national level is not always effective. Indeed, since the recommendations concerning chemical safety coming from the UN and the OECD are not binding, there is no obligation for the States to implement them. Moreover, even when national legislation is enacted, it is not always easy to ensure that the rules are respected by the companies operating in the State's territory. Just as with nuclear safety, a harmonised global vision regarding preparedness obligations – possibly by means of a targeted binding instrument – could be the right tool to halt the harmful effects of improperly managed chemicals.

86 Economic Commission for Europe, Conference of the Parties to the TEIA Convention, 'Updated draft decision on strengthening the implementation of the Convention' (20 November 2020) ECE/CP.TEIA/2020/L.2, paras 13–14.

87 See, eg, the 1984 Bhopal disaster where a major gas leak accident took place.

88 Examples are the 2015 Tianjin explosions and the 2020 Vizag gas leak. See 'Tianjin explosion: China sets final death toll at 173, ending search for survivors' *The Guardian* (12 September 2015) <<https://www.theguardian.com/world/2015/sep/12/tianjin-explosion-china-sets-final-death-toll-at-173-ending-search-for-survivors>> and 'LG Polymers: Was negligence behind India's deadly gas leak?' *BBC News* (24 May 2020) <<https://www.bbc.com/news/world-asia-india-52723762#:~:text=People%20who%20live%20close%20to,May%20to%20a%20pungent%20smell.&text=a%20toxic%20compound-,The%20cause%20of%20the%20deaths%20was%20inhalation%20of%20vapours%20of,had%20leaked%20from%20the%20factory>>.

89 A Xia, 'Tianjin explosions' in G Davies, J Goldkorn and L Tomba (eds), *China Story Yearbook 2015 Pollution* (ANU Press 2015), 208–209.

90 DS Bisht, 'Vizag gas leak: Curtain calls on the accountability of LG Polymers' *Down ToEarth* (10 July 2020) <<https://www.downtoearth.org.in/news/pollution/vizag-gas-leak-curtain-calls-on-the-accountability-of-lg-polymers-72222#:~:text=Gross%20negligence%20by%20LG%20Polymers,2020%2C%20said%20a%20government%20report>>.

Bibliography

- Burns SG, 'The impact of the major nuclear power plant accidents on the international legal framework for nuclear power' (2018) 101(1) *NLB* 7 21.
- Durand-Poudret E, 'Towards a new international framework for nuclear safety: Developments from Fukushima to Vienna' (2015) 95(1) *NLB* 27.
- Gioia A, 'Nuclear Accidents and International Law' in A de Guttry, M Gestri, G Venturini (eds), *International Disaster Response Law* (Springer 2012).
- Handl G, 'Nuclear Off-site Emergency Preparedness and Response: Some International Legal Aspects' in JL Black-Branch, D Fleck (eds), *Nuclear Non-Proliferation in International Law – Volume III, Legal Aspects of the Use of Nuclear Energy for Peaceful Purposes* (Springer 2016).
- Inter-Agency Coordination Group for Industrial and Chemical Accidents, *International efforts for industrial and chemical accidents prevention, preparedness and response* (2017).
- Jankowitsch-Prevor O, 'The Convention on Nuclear Safety' in *International Nuclear Law in the Post-Chernobyl Period* (OECD/NEA 2006).
- Jankowitsch-Prevor O, 'The Normative Role of the International Atomic Energy Agency, Legal Basis and Legal Sources' in *International Nuclear Law: History, Evolution and Outlook* (OECD/NEA 2010).
- Johnson PR, 'The post-Fukushima Daiichi response: The role of the Convention on Nuclear Safety in strengthening the legal framework for nuclear safety' (2013) 91(1) *NLB* 7.
- Kuş S, 'International nuclear law in the 25 years between Chernobyl and Fukushima and beyond ...' (2011) 87(1) *NLB* 7.
- Rautenbach J, Tonhauer W and Wetherall A, 'Overview of the International Legal Framework Governing the Safe and Peaceful Uses of Nuclear Energy – Some Practical Steps' in *International Nuclear Law in the Post-Chernobyl Period* (OECD/NEA 2006).
- UNEP, *A Flexible Framework for addressing chemical accident prevention and preparedness. A guidance document* (2010).
- UNEP, *A Flexible Framework for addressing chemical accident prevention and preparedness, An Implementation Support Package* (2012).
- UNEP, *APELL Handbook: A process for improving community awareness and preparedness for technological hazards and environmental emergencies*, Second edition (2015).
- UNEP, *Chemical Accident Prevention and Preparedness, Case studies of implementation* (2015).
- Xia A, 'Tianjin explosions' in G Davies, J Goldkorn and L Tomba (eds), *China Story Yearbook 2015 Pollution* (ANU Press 2015).