

Chemical, biological, radiological or nuclear events: The humanitarian response framework of the International Committee of the Red Cross

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Abstract

Mounting an effective international humanitarian response to a chemical, biological, radiological or nuclear (CBRN) event, especially if the response is undertaken on an ad hoc basis, would be extremely difficult and would pose many risks to the responders. The International Committee of the Red Cross (ICRC) has created a competency-based capacity to respond to at least small-scale CBRN events, including a deployable capability to undertake operational activities. This involves informed assessments of CBRN risks, timely and competent decisions on how to respond, and effectively mobilizing appropriate resources to implement these decisions, through the creation of an emergency roster. In addition to the acquisition of technical expertise and material resources, the creation of such capacity requires the application of central processes, ensuring systematic management of CBRN response (including risk-based decision-making), standing operational procedures, and availability of and access to the necessary resources. Implementation of the ICRC's CBRN response framework as described in this article should be considered by any agency or other stakeholder preparing for international humanitarian assistance in CBRN events – especially if such events are related to armed conflict.

Keywords: CBRN, humanitarian response, framework, weapon contamination.

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Introduction

An event in which chemical, biological, radiological or nuclear (CBRN) agents are intentionally or unintentionally released, or in which weapons that are specifically designed to inflict harm through the release of CBRN agents are used, has the potential for affecting the lives, health and well-being of a large number of people, directly from exposure to the released agent and/or indirectly after the release and dispersal of the agent, such as through cross-contamination. In a

context of armed conflict, there are complex and interrelated challenges to any agency attempting to bring assistance to those people affected, particularly since the circumstances and effects of agent release and dispersal are likely to be fraught with uncertainty. The complexity of a response may be further aggravated by allegations and implicit or explicit threats of use of CBRN weapons, as those carry additional security, legal, political and media implications of their own.

Recognizing the above, the International Committee of the Red Cross (ICRC) undertook in 2007 a global risk assessment with respect to the use of CBRN weapons, a study of its own history in this domain and an assessment of the capacity of other agencies or coordination mechanisms to respond.¹ The conclusion of this exercise was that:

[A]n effective international assistance response which would be of direct benefit to surviving or potential victims and which provides adequate security for staff is not possible at present. To our knowledge, no government, international organization (including the ICRC and other components of the International Red Cross and Red Crescent Movement), non-governmental organization or collaborative body has either realistic plans or the capacity to mount such an international response.²

There has been no disagreement with a “reality check” subsequently published in the form of an article discussing the lack of plans at the international level to assist victims of a CBRN event and providing recommendations on what such a response would involve.³ The risk assessment, the ICRC’s own history in this domain, the lack of existing capacities for international humanitarian assistance in a CBRN event and the “reality check” article together indicate the futility of any agency attempting such a response on an *ad hoc* basis. This then called for an approach that is thought out in advance, is rational and disciplined, and is both adaptable to and based on the realities of a CBRN event.

In response, in 2010 the ICRC appointed two professionals specialized in the subject matter for a project to introduce, develop and establish a permanent capacity to respond appropriately to at least small-scale CBRN events. The project entailed creating the necessary institutional framework within which the ICRC would respond and which would direct the adaptation of the response preparedness to the complexities of any given event, notably in relation to decision-making and mobilization of deployable human and material resources.

This newly acquired expertise was called upon many times from the outset of the project. Field deployments for assessments and advisory and operational

1 Dominique Loyer and Robin Coupland, “Who Will Assist the Victims of Use of Nuclear, Radiological, Biological or Chemical weapons – and How?”, *International Review of the Red Cross*, Vol. 89, No. 866, 2007, available at: www.icrc.org/eng/assets/files/other/irrc_866_loyer.pdf (all internet references were accessed in December 2015).

2 *Ibid.*, p. 343.

3 Robin Coupland and Dominique Loyer, “International Assistance for Victims of Use of Nuclear, Radiological, Biological and Chemical Weapons: Time for a Reality Check?”, *International Review of the Red Cross*, Vol. 91, No. 874, 2009, available at: www.icrc.org/eng/assets/files/other/irrc-874-coupland-loyer.pdf.

support have been undertaken in relation to several CBRN events, including the nuclear accident in Fukushima in 2011 and the alleged use of nerve agents and chlorine gas in the violent events in North Africa and the Middle East from 2011 until now.

The nascent CBRN response capacity and the framework within which this capacity sits today therefore evolved in the context of responding to real events. The focus has been on the most likely risks to ICRC staff and civilians from CBRN hazards, whether these risks arise from deployment of CBRN weapons or another type of CBRN event. In particular, the ICRC recognizes that armed conflict brings particular risks also from toxic industrial chemicals and from radioactive material, which may be released as a result of mismanagement of chemical or radioactive industrial waste, industrial accidents, unintentional damage to nuclear or chemical facilities in armed conflict, attacks on nuclear or chemical facilities with or without the intention to release the agent or agents concerned, or attacks using radioactive materials or industrial chemicals as weapons. In consequence, the principal risks around which the ICRC's response capacity is being orientated are associated with toxic industrial chemicals, radioactive material or nerve agents.

Given the ICRC's experience to date, foremost amongst the lessons learnt is that a CBRN response framework must be predetermined and agreed upon at the highest level within the organization. Also of critical importance is building external networks of resources, the most important of which for the ICRC are a number of National Red Cross and Red Crescent Societies and specialized Swiss governmental agencies. This article describes the CBRN response framework that was agreed by the ICRC Directorate in 2013. The framework is built on both institutional guiding principles for responding to CBRN events and a dedicated response capacity comprising internal and external networks for response built around a sustainable CBRN sector within the ICRC.

It should be emphasized that the ICRC does not have a stand-by capacity to bring effective assistance to victims of all CBRN events, especially those involving large-scale use of CBRN weapons. The framework described aims to assure the ICRC's ability to continue its operations in the face of a CBRN event, and to respond appropriately without exposing those to whom the organization has a duty of care – for instance, ICRC staff, colleagues from the International Red Cross and Red Crescent Movement (the Movement) and non-ICRC staff associated with the organization – to undue risks. However, the acceptability of risks depends on both the event-specific circumstances and the purpose of the ICRC's response. "Undue risks" may therefore only be defined in a particular context, in line with the provisions of the ICRC's CBRN response framework.

Definitions

Before discussing the ICRC's dedicated CBRN response capacity, some basic terms must be defined and the institutional guiding principles introduced. For the purposes of the ICRC's CBRN response capacity, the following terms are defined:

CBRN agent release and dispersal may be:

- unintentional – for example, natural disease outbreak, natural disaster, accident in transport or at an industrial facility, collateral damage in armed conflict, remnants/contaminants from past agent use; or
- intentional – for example, targeted or indiscriminate military action or attacks by individuals or groups using purpose-built or improvised devices to cause injuries or deaths, temporarily incapacitate, or terrorize.

CBRN events are actions or occurrences that may lead to the release and dispersal of CBRN agents, which are hazardous materials with different properties and origins. Events of concern to the ICRC depend on the context and may involve:

- confirmed, alleged and/or threatened (implicitly or explicitly) use of CBRN weapons;
- confirmed, alleged and/or threatened (implicitly or explicitly) exposure to CBRN agents in the context of armed conflict or other situations of violence;⁴ or
- any other situation that poses risks of exposure to CBRN agents for persons to whom the ICRC has a duty of care.

CBRN response refers to the management of risks from CBRN events, which may comprise prevention, preparation and reaction. It also includes making representations to authorities and communication regarding the international legal obligations of one or more parties to an armed conflict.

Institutional guiding principles

A CBRN response capacity requires more than the allocation of an adequate budget or the acquisition of technical expertise and material resources. There is a need for an overarching institutional framework founded on guiding principles. This implies reflecting on the reasons for concern about CBRN events, describing key objectives of a response to such events within the organization's mandate and duty of care, defining the capacity needed to meet the objectives, and outlining fundamental considerations relating to making difficult decisions. The guiding principles upon which the ICRC's CBRN response framework is based relate to objectives, basic premises, decision-making and the response itself.

Objectives based on mandate and duty of care

Responding to CBRN events in armed conflicts and other situations of violence is within the mandate of the ICRC. There is also an institutional imperative driven

4 This may include situations where there is a risk of a pandemic or epidemic with pandemic potential, given that such events have proven links to armed conflict. For more information on the relationship between pandemics and armed conflict, see G. Dennis Shanks, "How World War 1 Changed Global Attitudes to War and Infectious Diseases", *The Lancet*, Vol. 384, No. 9955, 2014.

by a duty of care to people in its employ and others, which may include families of employees, colleagues from the Movement or other operational partners. With respect to staff health, safety and security, the ICRC considers its duty of care as comprising informed consent, risk mitigation and social security by taking into account the circumstances of the event and an understanding of the health impact specific to the CBRN agent in question.

Because CBRN events are unpredictable, heterogeneous and specific to the agent or agents in question, sitting at the core of the CBRN response framework is how the requirement of the ICRC to fulfil its mandate is reconciled with the duty of care to staff and others. Therefore, the three key objectives of any response to a CBRN event are, in order of priority, to (1) minimize risks to the health, safety and security of persons to whom the ICRC has a duty of care; (2) ensure the integrity of the organization and the continuation of its activities; and (3) provide assistance to affected people, as possible. This priority order results from its inherent logic, as only acceptably healthy, safe and secure ICRC staff members, Movement colleagues, or others associated with the organization (persons to whom the ICRC has a duty of care) will ensure the integrity of the organization and the continuation of its activities, which again is a prerequisite to providing assistance to affected people. In order to reach these objectives, the ICRC may also support the Movement in developing the CBRN response capacities of National Societies.

Basic premises

The main concerns arising from CBRN events are the potential health effects of exposure to such weapons or agents. The effects may range from mild sickness to severe illness or even death, depending on the innate properties of the agent, and may be compounded by psychological reactions because of a potential lack of understanding of the risks.⁵ The latter is exacerbated by the fact that many CBRN agents are difficult to detect or recognize. It might not be known at a given time that exposure has occurred, when or how it has occurred, to where the released agents have dispersed nor for how long the dispersed agents might persist. CBRN events, therefore, pose risks not only to those directly exposed at the time of release but also to others, including responders, who might find themselves unexpectedly in contaminated environments.⁶

In view of this, to achieve the objectives stated above, it is necessary for the ICRC to have the capacity to undertake informed assessments of CBRN risks, make

5 “Uncertainties about releases and exposure levels, and a general lack of public understanding of the risks and adverse health effects to be expected, mean that the threat or actual release of [a] CBRN agent may evoke intense fear and other psychological reactions among the affected population. This can make it difficult to differentiate between the ‘worried well’ [and] those individuals with physical injuries or disease. It has been suggested that fear of [a] CBRN event has caused psychosomatic responses in some cases so it is important to counteract hysteria with calm advice and medical monitoring.” ICRC, *Chemical, Biological, Radiological and Nuclear Response: Introductory Guidance*, 2014, p. 12, available at: www.icrc.org/eng/resources/documents/publication/p4175.htm.

6 *Ibid.*

timely and competent decisions on how to respond, and effectively mobilize resources to implement those decisions. In order to create such a competency-based capacity, central processes must be applied in relation to systematic management of CBRN response (including risk-based decision-making), standing operational procedures and availability of and access to the necessary resources. This is because CBRN events are unpredictable and the organization is only prepared to respond quickly and effectively if processes are already in place to prevent the need to define responsibilities, chain of command and other aspects of response management during the CBRN event. Likewise, when a CBRN event occurs, there must be no debate as to the best operational practices, what resources are required, where such resources can be found or how they can be made available for response efforts.

Decision-making

All decisions relating to a response to CBRN events are based on an analysis of the best available information. This is furnished by the expertise available in the ICRC's Weapon Contamination (WeC) Unit – CBRN sector, the WeC advisers based in the field, and external networks, unless the situation requires immediate action to preserve life, in which case decisions will have to be made on the spot. The ICRC's decision-making process is predetermined in terms of who will make the decisions, when they will be made and what information is taken into account. There are three key considerations that the ICRC applies to this process. First, any response to a CBRN event must take into account policies, capacities and perceptions of governments, authorities (civil and military) and civil society as well as of international organizations and the other components of the Movement. Second, the ICRC may have to reduce or abandon its humanitarian activities because of the nature of a CBRN event in order to minimize risks to staff health, safety and security. Third, depending on the nature of the CBRN event, the ICRC may seek, acquire or otherwise possess extremely sensitive information which must be carefully managed in terms of recording, processing and sharing or dissemination in line with relevant institutional policies, meaning that any action or non-action in response to an allegation of use of CBRN weapons could be interpreted as confirmation or denial of the allegation.

Operational response

The risks of undertaking an operational activity in response to a CBRN event must be weighed against the expected benefits of that activity. An example for how the expected benefits can be assessed relates to medical assistance in a CBRN event. In an article in the *Emergency Medicine Journal*, Malich, Coupland, Donnelly and Baker argue that, first, the widely accepted basic principles of life support⁷ can be

7 In order of priority, the basic principles of life support are maintaining the airway, supporting ventilation, arresting haemorrhage and supporting circulation.

applied to people suffering acute life-threatening effects of CBRN agents, and second, first aid provided by trained non-medical responders to people suffering toxic trauma in a contaminated or potentially contaminated environment is likely to save lives whether or not there is later access to hospital care.⁸

Another imperative for an operational CBRN response is that any activity must be prepared for and planned in the context in which the event occurred. This implies that protection of people involved in the response must be optimized through consideration of the compatibility of the available human and material resources with the requirements of standardized operational practices, the appropriateness of the location, time and duration of the planned operations, and the appropriateness of existing contingency arrangements. With respect to staff health, safety and security, the response to a CBRN event must be as coherent and equitable as possible.

The ICRC's dedicated CBRN response capacity maintains a deployable – albeit still developing – capability to undertake a clearly defined range of prepared operational activities (see below). For these activities to be effective, specific resources are needed in terms of skills, equipment and procedures that, in turn, determine the minimal capacity for a CBRN operational response. A response based on a capacity that falls short of this minimum is likely to be both ineffective and, more importantly, dangerous for those involved.

Dedicated response capacity

To respect and implement the guiding principles, the ICRC draws on a dedicated response capacity for CBRN events. This capacity consists of a network of CBRN and conventional weapons specialists based in the field, along with external networks for response that are built around the WeC Unit within ICRC, comprising the CBRN sector. Offering technical competence and assuming managerial functions, the CBRN sector is charged with overall coordination of all aspects of the ICRC's CBRN response. The sector ensures that a response to CBRN events can be systematically managed, operational practices are defined and kept relevant, and human and material resources are suitable and available.

Systematic approach to management, including risk-based decision-making

In keeping with the stated objectives based on the ICRC's mandate and standard of care, a response to CBRN events, whether or not it involves a field-level operational response, can only be achieved through systematic management processes, including risk-based decision-making, in order to accommodate possibly

8 Gregor Malich, Robin Coupland, Steve Donnelly and David Baker, "A Proposal for Field-Level Medical Assistance in an International Humanitarian Response to Chemical, Biological, Radiological or Nuclear Events", *Emergency Medicine Journal*, Vol. 30, No. 10, 2013.

conflicting imperatives such as those relating to staff health, operational constraints and the needs of victims or potential victims of the event. This requires that a decision on the type and scope of the response be based on an event-specific assessment of the risks. This is the only rational approach in this context because CBRN events are highly complex, fraught with uncertainty, and likely to be emotionally charged.

The management and decision-making element of the ICRC's response capacity applies to all four phases of response to any CBRN event. These are: (1) recognition of and notification about events of concern; (2) analyzing relevant information and making recommendations as to a response; (3) approving (or not) and mobilizing required resources as necessary; and (4) implementing and adapting the response in keeping with the prioritized objectives. Since developing this CBRN response framework, the management of the ICRC's responses to any CBRN event has always covered all four phases. These responses have related to live events affecting ICRC operations or potentially affecting the ICRC, while other involvements have included advisory support and capacity-building for delegations and operational partners within and outside the Movement.

In-house subject-matter expertise is essential for translating existing management and operational practices for all of these phases into an appropriate CBRN response – including through the provision of indispensable analytical and operational capabilities. For example, with respect to contingency planning, identified scenarios of concern to the ICRC may include thematic CBRN risks such as availability, release and dispersal of a certain CBRN agent or effects of exposure, or regional CBRN risks such as the use or threat of use of certain CBRN weapons in a developing or ongoing armed conflict. For such scenarios, contingency planning must incorporate assessments of these risks and decisions on risk mitigation, which, in collaboration with the concerned ICRC field offices, should be facilitated and informed by in-house CBRN specialists.

Standing operational procedures

The ICRC's CBRN response framework foresees a deployable capability to undertake, as a minimum, the following clearly defined functions: Self-protection of staff against the effects of exposure to CBRN agents; CBRN specialist support to humanitarian assistance, notably an advisory role, for example to establish a safe ICRC field office, reconnaissance, for instance where the ICRC plans assistance operations, detection, monitoring and management of contamination, and stand-by medical support for the response; and eventually, humanitarian assistance relating to CBRN events, notably field medical care, management of dead bodies, and management of stockpiled, unexploded or discarded weapons.

To ensure the effectiveness and safety of these functions, the required skills, equipment and procedures are all standardized. An overview of requirements as to training and material is given in [Table 1](#) for each of these functions, with details provided as to the sought competencies and training programme as well as to the equipment kits for personal protection and specific CBRN response tasks.

Table 1. Deployable operational functions for the ICRC's CBRN response – training and material requirements

Operational function	Training		Material	
	Aspired competencies	Programme	Personal protection kits	Task-specific CBRN kits
Self-protection				
Individual and team protection	CBRN awareness, emergency protection	Pre-deployment briefing	Emergency self-protection and decontamination (ESPD)	Emergency victim decontamination (EVD), if any
Humanitarian assistance				
Field medical care	CBRN awareness, emergency protection + CBRN response framework, operational concepts, standard protection, (CBRN) first aid + Function-specific competencies	Basic training course on CBRN response + Training seminars on CBRN medical care/dead body management/weapon contamination management + Pre-deployment Briefing	Standard personal protection equipment (SPPE)	First aid Medical care EVD
Dead body management				
Management of stockpiled, unexploded or discarded weapons				

<p>CBRN specialist support*</p> <p>Advisory</p> <p>Reconnaissance Detection, monitoring, contamination management Team medical support</p>	<p>CBRN response framework</p> <p>CBRN response framework, operational concepts + Function-specific competencies</p>	<p>Advisory tutorial + Pre-deployment briefing</p> <p>Advisory tutorial + Familiarization and exercise on CBRN operational practices for reconnaissance/detection, monitoring and contamination management/medical care + Pre-deployment briefing</p>	<p>ESPD</p> <p>SPPE Enhanced personal protection equipment (recon only)</p>	<p>Detection and monitoring, if any</p> <p>Recon Detection and monitoring Environmental sampling Team decontamination Victim decontamination Medical care</p>
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* People foreseen to undertake CBRN specialist support tasks need to have vocational training relating to civil protection and/or extensive operational experience in CBRN response such, as in first responder units or the military.

The authors stress that the above describes a minimal capacity only; it will prove inadequate to meet all needs of a CBRN event in which many people are directly or indirectly affected. Therefore, while the ICRC prepares to undertake operational activities in response to at least small-scale CBRN events (including threats or allegations), it has also engaged with other stakeholders to support and promote capacity-building for a broader CBRN response (see below).

Specialized resources

The resources required for responding to a CBRN event can broadly be divided into information, people and material. To an extent, the resource requirements for managing the ICRC's response and for maintaining deployable capabilities for a CBRN response can be foreseen. However, depending on the context, additional resources may be needed for the different phases of a response.

The CBRN sector: In-house subject-matter expertise

In coming to terms with, first, the complexity of responding to CBRN events and, second, the fact that resources available to any organization preparing for such events are limited, the ICRC has established a competent and sustainable structure – a designated CBRN sector – as the core element in its CBRN response capacity. The response capacity also comprises other ICRC units and external service providers whose respective roles in the ICRC's CBRN response are aligned with and coordinated through the CBRN sector. For this purpose, the sector is composed of specialist staff covering the indispensable functions of coordination, medical advisory and technical advisory in relation to CBRN response.

The remit of the sector is to ensure that the ICRC's response to CBRN events is systematic and in keeping with the best possible practices. This entails contributing to early warning, operations and contingency planning, critical incident management, rapid deployments, safety and security consultations, and training of ICRC staff, other humanitarian workers and the local population. The trainings for ICRC teams and experts on the ICRC roster for CBRN response are provided in close cooperation with specialized bodies and address, in different courses, CBRN basic response, in collaboration with the Irish Armed Forces; CBRN reconnaissance, in collaboration with Spiez Laboratory; and CBRN medical response. In addition, tailored training and instructions are provided on an as-needed basis to other humanitarian workers or local populations.

Internal resource network

The ICRC's internal network for CBRN response, in addition to the CBRN sector, comprises units whose normal roles and responsibilities also relate to CBRN events, individuals who are specially trained to undertake prepared operational activities in CBRN response, and special advisory bodies, as needed. Units within the ICRC

whose normal roles and responsibilities also relate to CBRN events include those in charge of human resources and staff health, safety and security, regional and local operations, rapid deployments, institutional position and legal assessments relating to the prevention of the use of certain weapons and the protection of civilians, medical assistance, dead body management, weapon contamination management, thematic research and scanning of publicly available information, internal and external communication, or procurement, logistic support and stock management. Individuals trained to undertake prepared operational activities in CBRN response may come from units in charge of medical assistance, dead body management, or the management of stockpiled, unexploded or discarded weapons. Special advisory bodies could be bodies comprising representatives of units concerned with medical aspects of CBRN response in light of ICRC health policies, institutional credibility, and the operational and legal implications of allegations of use of CBRN weapons.

These units, individuals and advisory bodies have specific tasks regarding CBRN response and are expected to be able to assume these tasks. Other ICRC units adapt their routine work as required in a CBRN event of concern to the ICRC. The ICRC's designated CBRN sector coordinates these resources in the context of operations and contingency planning as well as during actual CBRN events through a variety of the ICRC's interaction mechanisms, including through the designation of CBRN focal points and the setting up of CBRN strategic orientation groups or headquarter operational task forces.

External resource network

The extensive resources required for training and maintaining a CBRN response capacity and undertaking operational activities in the context of actual events could not be met by resources available only within the ICRC. Supplementary external resources are needed, and the ICRC's CBRN response capacity therefore includes coordinating with competent organizations and individuals who may provide specialized resources through formal agreements or via a professional interface with contact on a regular basis.

In general, those organizations and individuals that are available to augment and complement the ICRC's own CBRN response capacities may provide information pointing to potential or actual CBRN events or supporting their assessments, information, people and material for building and enhancing CBRN response capacities, people and material for assessing actual CBRN events, and people and material for complementing the ICRC's deployable capability for CBRN response. In relation to operational activities, compliance with the ICRC's competency requirements for required roles and specifications of associated material kits (see [Table 1](#)) will be essential.

Selected specialized Swiss agencies, covering all areas of CBRN response, represent a core of the ICRC's external CBRN response network. These agencies provide, on a formalized basis, access to leading subject-matter competence, and offer resources to the ICRC when necessary.

Another core group in the ICRC's external CBRN response network consists of selected National Red Cross and Red Crescent Societies which have their own CBRN response capacities for a domestic event or have an interest in developing such. The ICRC engages with them, and with the International Federation of Red Cross and Red Crescent Societies, to promote and facilitate exchanges of CBRN experts within the Movement and to ensure, such as through the ICRC's CBRN workshops and training courses, a Movement-wide, harmonized approach to CBRN response, including capacity-building within the Movement. For instance, the developing roster of experts managed by the CBRN sector includes selected volunteers from the National Societies that have CBRN capacities.

The ICRC maintains an external network of individuals specialized in different aspects of CBRN response. The principal function of this network is to provide access to training and assessment skills as well as to pertinent information in relation to a real event. This network includes professional contacts in specialized agencies, UN-based organizations and non-governmental organizations, training and research facilities, and private companies such as equipment manufacturers.

Conclusions

The ICRC has built a capacity to respond to at least small-scale CBRN events. This capacity also includes a deployable capability to undertake operational activities according to prioritized objectives and from within an overall framework agreed by the senior management of the organization. The described framework permits the ICRC to respond to a CBRN event in a manner that is compatible with both its mandate and its duty of care towards staff and others.

If the international humanitarian community is considering responding to a CBRN event, the authors strongly recommend an approach based on such a framework both within and between the various agencies and other stakeholders concerned in order to harmonize their response capabilities for such an event. The response framework, by necessity, must include a thorough – and common – understanding of objectives, mandates and security policies, and most importantly of how and when decisions are made, and by whom. In terms of information management, skills, training and materials, the authors recommend that discussions about how to harmonize capabilities for responding to a CBRN event be initiated at the earliest opportunity. This call has already been responded to by a number of agencies in the context of the violent events in North Africa and the Middle East from 2011 until the present, and has also been taken up in a study presented by the United Nations Institute of Disarmament Research (UNIDIR) in 2014 on humanitarian assistance in case of nuclear weapons use.⁹

9 UNIDIR, *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for United Nations Humanitarian Coordination and Response*, United Nations, 2014.

Though progress is being made in relation to humanitarian response to CBRN events, the authors recall the ICRC's 2009 "reality check"¹⁰ and the fact that there is very little real experience in relation to medical care of victims of a CBRN event that can be brought to bear.¹¹ Also, while recent events involving the confirmed, threatened and alleged use of CBRN weapons have led to a greater awareness of the need to address the humanitarian consequences of such events, there are no indications that an effective international humanitarian response capacity would be available. In reality, whilst calling for greater efforts at the international level as regards response to CBRN events, the authors recognize that the chances are near to zero of bringing effective assistance to victims of large-scale use of CBRN weapons. This underscores the importance, legitimacy and urgency of the continued efforts of the international community to prevent, by any means, such events from ever occurring.

10 R. Coupland and D. Loye, above note 3.

11 G. Malich, R. Coupland, S. Donnelly and D. Baker, above note 8.