CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR RESPONSE

INTRODUCTORY GUIDANCE

For training purposes only

ICRC

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Disclaimer

This document draws on the informed opinion and expertise of the authors and has been subject to review. However, as CBRN response is a complex, dynamic issue, this document is intended for guidance and training purposes only. The information provided will require regular review and should be supported by specific training packages. Readers should always seek real-time expert advice before making decisions on operations.

Note:

CBRN is the ICRC's standard abbreviation. Various acronyms may be used elsewhere:

NBC	[Older English term] Nuclear, Biological, Chemical
NRBC	[French] Nuclear, Radiological, Biological, Chemical
ABC	[German] Nuclear, Biological, Chemical
QBR(N)	[Spanish] Chemical, Biological, Radiological (Nuclear)

1. INTRODUCTION

1.1. Background

The ICRC might be required to undertake activities in locations where there is the potential for either intentional or unintentional release of chemical, biological, radiological or nuclear (CBRN) agents. In such situations, ICRC personnel may be at risk of exposure to CBRN agents with potentially significant consequences for their health and safety, and for the ICRC's ability to undertake field operations.

The characteristics and effects of CBRN agents are unfamiliar to most people. This document provides basic guidance for those who know comparatively little about CBRN response. It should enable the reader to make informed decisions and take appropriate action in situations involving the potential release of CBRN agents.

For the purposes of this document, CBRN agents encompass hazardous materials in the form of: nuclear or radiological materials; biological materials, such as viruses, bacteria, or other microorganisms; and toxic chemicals. CBRN agents may be released in a variety of situations, whether incidentally or maliciously; dispersed as a result of an accident at a location or facility where the materials are produced, used or stored; or spread as a consequence of deliberate action by States, non-State armed groups, or criminals.

The use of biological and chemical weapons is absolutely prohibited under international humanitarian law.[1] This includes a prohibition on the use of riot control agents (i.e. tear gas) as a method of warfare. While there is no specific reference to nuclear weapons in humanitarian law, there are general rules which govern the use of all weapons. It is difficult to envisage how any use of nuclear weapons could be compatible with these rules.[2]

1.2. Objective

The objective of this document is to provide the reader with basic knowledge of CBRN agents and the potential risks they pose in order to facilitate rational decision-making in the event of exposure.

The document focuses on the needs of individuals or groups, primarily relating to health and safety and survival in extreme situations. It can also help counter excessive fear or concerns that might inhibit decision-making and operational safety.

The document covers four main topics:

- Characteristics of CBRN agents
- Characteristics of CBRN events
- Basics of CBRN response
- Response to allegations of use of CBRN weapons.

1 1925 Geneva Protocol; 1972 Biological and Toxin Weapons Convention; 1993 Chemical Weapons Convention; and customary international humanitarian law.
For more information see: http://www.icrc.org/eng/war-and-law/weapons/chemical-biological-weapons/

2 For more information see: http://www.icrc.org/eng/war-and-law/weapons/nuclear-weapons/

2. CHARACTERISTICS OF CBRN AGENTS

CBRN is the acronym for nuclear, radiological, biological and chemical agents. These agents include: material from nuclear fission or fusion, or other radioactive material with the potential to affect human health; biological agents causing infection or disease; and toxic chemicals that can cause poisoning. They are hazardous materials, either naturally occurring or artificially produced, which can have significant adverse effects on human health, including severe illness and death, depending on the nature of the agent and the circumstances of exposure.

The taxonomic grouping of these different materials as 'CBRN agents' is standard international practice, although the exact term or abbreviation may vary. While there may be some similarities between events that lead to their dispersal, CBRN agents are very different in their physical and chemical nature, their origin and their properties. There are also significant differences in the type of injury or illness they produce, and the period of time between exposure and the appearance of signs and symptoms.

Nevertheless, CBRN agents have four key properties in common, which influence the overall approach to treating adverse health effects and managing CBRN events:

- **Toxicity**
  is a measure of the ability of a toxic substance to cause harmful effects or death. Toxicity is generally used to describe chemical agents, whereas the terms 'morbidity' (incidence of disease) and 'mortality' or 'lethality' (number of deaths) are more commonly used for biological agents. For nuclear and radiological agents, 'deterministic effects' refer to immediate damage linked to levels of radiation exposure; 'stochastic effects' are chance effects that appear at a later date (e.g. cancer). All these terms describe the ability to cause injury or death according to the level of exposure.
- **Latency**
  is the interval between exposure to an CBRN agent and the first signs and symptoms of illness or disease. The time of onset depends on a number of factors including the type of agent, its concentration, the amount of exposure and the individual's response. For biological agents the latency period is often called the 'incubation period'. A related factor is the time window for medical treatment. Where this falls entirely within the latency period it may not be possible to deliver effective treatment.
- **Persistency**
  is the capacity of an CBRN agent, once released, to remain capable of causing significant harm for a prolonged period of time. This characteristic depends on two main factors: the inherent physical or chemical stability of the agent and its propensity to degrade in line with certain environmental conditions, such as temperature, moisture, and ultraviolet radiation (i.e. sunlight) levels.[3]

3 The persistency of nuclear and radiological agents will depend on the physical half-life of the radioactive material and its biological half-life once ingested or inhaled. The persistence of biological and chemical agents varies in line with the type of agent used, its propensity to degrade in the environment, and the context of dispersion.

- **Transmissibility**
  is the term used to describe whether an agent can be transmitted from one person to another. The main means of transmission of CBRN agents are cross-contamination and direct physical contact. However, transmissibility is understood differently for certain infectious biological agents, which can be transmitted from person to person directly but without contact (e.g. through the air) or indirectly (e.g. through insect vectors).

In general, toxicity and latency are the main properties to be considered when treating patients who have been exposed to CBRN agents, while persistency and transmissibility are key considerations when managing CBRN events, including when assessing contamination risks for first responders and how to prevent further casualties.

2.1. Nuclear and radiological agents

Nuclear and radiological agents are radioactive materials that present a hazard in two ways:

- Emission of highly penetrating radiation leading to external irradiation of individuals.
- Irradiation of tissues and organs in the body if the agents are inhaled, absorbed through the skin by direct contact or contact with contaminated matter, or ingested in contaminated food or water.

Radioactive materials emit different types of ionizing radiation according to their different physical and chemical properties. Alpha radiation emits particles that consist of protons and neutrons. These particles have a short range and low penetration, e.g. they cannot penetrate human skin, although alpha-emitting materials can still be harmful if inhaled or ingested. Beta radiation emits particles that consist of negatively charged electrons. These particles may travel several feet through the air and are moderately penetrating, e.g. they can penetrate the top layer of human skin. Gamma radiation and X-rays are highly penetrating forms of electromagnetic radiation that can penetrate many centimetres into human tissue.

The differences between nuclear agents and radiological agents relate to their different origin. Nuclear agents are radioactive material generated from nuclear fission or fusion, such as those produced by detonation of a nuclear weapon or releases from damaged nuclear power plants. Radiological agents are radioactive material generated as by-products and waste from the mineral processing industries, produced for use in industrial applications and medical therapy, or occurring naturally in the environment. This document considers only the radioactive effects of either nuclear fission or fusion devices, or industrial and medical sources of radiation.

High doses of radiation from any source can cause acute, life-threatening injuries after an exposure period lasting anywhere from a few minutes to several hours, depending on the dose of radiation and the type (e.g. alpha, beta or gamma). Adverse health effects from such exposure are known as 'deterministic effects'. The effects of low doses of radiation are harder to gauge accurately. Significant exposure to low doses of radiation can lead to an increased risk of cancer at a later date, with potential latency periods of many years. These increased risks

are referred to as 'stochastic effects'. A low-level radiation injury does not usually require immediate medical attention.[4]

2.2. Biological agents

Biological agents are microorganisms (i.e. viruses, bacteria and fungi), whether naturally occurring, genetically modified or synthetically engineered. These agents may cause infection, toxicity or allergy in humans, animals or plants. Toxins are also classified as biological agents. These are naturally occurring poisonous chemicals produced by biological organisms, including plants, animals and microorganisms (although some may be artificially synthesized). As poisons, toxins are comparable to toxic chemical agents in their mechanism of action.

Typical biological agents cause sickness and disease by infection, usually producing symptoms a number of days later. In general, these agents have long latency periods. The route of exposure to a biological agent can have a significant effect on the type and severity of infection. In addition, the method of transmission can have a significant impact on the spread of infection among a population. Some infections may be transmitted only by direct physical contact between individuals or contact with contaminated materials or surfaces. Others are spread from person to person by airborne transmission, enabling the potentially rapid spread of the disease. Some agents may require an insect vector to transmit the infection, e.g. the yellow fever virus carried by mosquitoes.

A wide range of biological agents have been developed as weapons in military biological weapons programmes. Bacterial agents include those causing anthrax, plague, tularaemia, glanders and brucellosis. Viral agents include those causing Q-fever, Venezuelan equine encephalitis, and smallpox. Toxin agents include ricin, botulinum toxin, and staphylococcal enterotoxin B. The severity of illness and the risk of death from exposure to biological agents will depend on several factors, particularly the type of agent, the route and level of exposure, the vulnerability of the victim and the provision of medical treatment.

2.3. Chemical agents

Chemical agents are toxic chemical substances that occur naturally or are artificially synthesized. Many are produced and used for legitimate industrial, agricultural or medical purposes, e.g. hydrogen cyanide (industrial), chlorine (industrial), organophosphates (agricultural) and carbamates (medical).

Chemical agents developed under military chemical weapons programmes include:

- blister agents, such as sulphur mustard (i.e. 'mustard gas'), which cause burns and blisters on the skin upon contact and if inhaled damage the respiratory tract
- nerve agents, such as sarin and VX, which interfere with the transmission of the acetylcholine neurotransmitter causing muscle spasms, secretions, respiratory failure and unconsciousness

4 The immediate effects of a nuclear explosion on human life and health are caused primarily by thermal radiation (or heat), blast waves and accompanying high-speed winds (or fire storms) rather than by ionizing radiation and radioactive fallout. However, many of the survivors would fall victim to radiation sickness in the weeks and months that follow while others would face an increased risk of developing certain cancers, such as leukaemia and thyroid cancer, over time.

- blood agents such as cyanide, which inhibit transfer of oxygen in the blood causing convulsion and respiratory failure
- choking agents, such as phosgene, which cause damage to the lungs resulting in respiratory problems
- incapacitating agents, which act on the central nervous system to cause psychomimetic effects (delusions and hallucinations), such as BZ, or to cause unconsciousness and respiratory failure, such as fentanyl
- irritant agents (also known as riot control agents or 'tear gas'), such as CS, CN, CR and oleoresin capsicum (OC), which cause irritation to the eyes, skin and respiratory tract.

The severity of illness and the risk of death from exposure to chemical agents will depend on several factors, particularly the type of agent, the route and level of exposure, the vulnerability of the victim and the provision of medical treatment.

3. CHARACTERISTICS OF CBRN EVENTS

3.1. CBRN events

CBRN events are actions or occurrences that may lead to the release and dispersal of hazardous CBRN agents in quantities and in circumstances that put individuals or groups at significant risk.

Intentional or unintentional actions or occurrences, including accidents, could give rise to exposure to CBRN agents. Of particular concern are events involving the confirmed or alleged use of CBRN weapons or agents and any threat (explicit or implicit) of use of such weapons or agents.

Examples of CBRN events that may result in **unintentional** releases are:

- industrial accidents involving fire or explosion at a chemical plant or storage facility, an accident at a nuclear power plant, or a leak from a biological containment facility
- accidents at military research, production, and storage facilities for chemical, biological or nuclear weapons
- conflict situations in which an CBRN agent is released because of collateral damage to an industrial plant or a research, manufacturing or military facility
- accidents during transport of CBRN agents for industrial or military purposes
- natural outbreaks of human, animal or plant disease, e.g. pandemic influenza in humans, foot and mouth disease in cattle and fungal blight in plants
- natural disasters, such as an earthquake or tsunami, leading to damage of an industrial plant or a military or storage facility
- contamination from previous incidents, e.g. sites of industrial accidents, or from locations formerly used for the production, storage or testing of CBRN weapons
- remnants of war, such as lost, abandoned or unexploded CBRN weapons, or residual contamination from their use.

CBRN events that involve **intentional** releases include the deliberate use of CBRN agents, whether by States, non-State armed groups or criminals, with the intention to cause injury and death and/or to generate fear and panic in individuals, groups or the local population. Examples are:

- dispersal of CBRN agents as gases, liquids, aerosols, or solids in the air, or on the ground using munitions, explosives or other means of dispersal (e.g. spray devices), leading to contamination over widespread areas or within confined spaces or buildings
- use of CBRN agents in armed conflict or other situations of violence through purpose-built military weapons or improvised devices, with or without explosives
- use of CBRN agents for small or large-scale contamination of food or water supplies

- targeted delivery of CBRN agents to individuals or groups e.g. by post, leading to contamination of individuals and buildings (e.g. anthrax spores), or use of CBRN agents to poison individuals.

Under the Chemical Weapons Convention one legitimate use of toxic chemical agents as weapons is the use of riot control agents (i.e. 'tear gas') for law enforcement purposes only (i.e. it is prohibited to use riot control agents as a method of warfare). Any such use must comply with international human rights law governing the use of force. Riot control agents cause irritation and pain to the eyes, skin, and respiratory tract, and often also cause anxiety and panic. The effects are generally rapid in onset and temporary in nature, mostly disappearing a relatively short time after exposure.

Riot control agents are characterized by their relatively low toxicity and the large difference between the amount that will cause irritation and that which will kill. However, the severity of injuries will depend on the exposure level and the vulnerability of the victim (e.g. asthma suffers are particularly susceptible). Exposure to high concentrations or prolonged exposure, particularly in enclosed spaces, can cause serious injuries (e.g. to eyes, skin and lungs) and even death.

Possible **indications** of an CBRN event are:

- suspicious munitions, devices or packages (boxes with wiring, compressed air cylinders with tubing, containers with powders, liquids or aerosols, etc.)
- oily film or unusual powdery or gel-like substances on exposed surfaces
- unusual liquid sprays or vapours in the air, falling on the ground or on exposed surfaces
- unauthorized, unexplained or out-of-season overhead spraying in the area
- unexplained odours (e.g. smell of bitter almonds, peach kernels, mown hay, cut grass)
- cases of nausea, difficulty in breathing, convulsions, disorientation, or patterns of illness inconsistent with natural disease reported or confirmed by public health agencies
- an abrupt spike in the rate of death among animals in the area
- low-lying clouds or fog unrelated to weather, clouds of dust or of suspended, possibly coloured, particles
- people dressed unusually (long-sleeved shirts or overcoats in warm weather) or wearing protective masks, particularly in crowded areas such as underground train stations or stadiums.

The following **1-2-3 protocol** should be considered where there are casualties from an unknown source or a suspected CBRN event:

- If 1 casualty: proceed as usual
- If 2 casualties: exercise caution before proceeding and look for other indications
- If 3 casualties: do not proceed – refer to the 'Basics of CBRN response' (see Section 4) and seek specialist advice.

3.2. Main concerns, health effects and routes of exposure

The main concern with CBRN events is the potential for adverse health effects from exposure to CBRN agents. Effects may range from mild sickness to severe illness and death, depending on the toxicity of the agents, the means of delivery and the exposure levels, among other factors. These effects can be compounded by psychological effects due to actual or hoax CBRN events. Another concern is the possibility that agents may be released at almost any location and that, if persistent in the environment, may create hazardous environments for the local population and first responders at the place of their release or dispersal.

Depending on the type and characteristic of the CBRN agent, adverse health effects arising from short-term or prolonged exposure may be evident immediately or manifest themselves only later, sometimes even years later. The extent, severity and duration of the effects will be determined largely by the nature and toxicity of the agent, its exposure concentration and duration, the way it is taken into the body and the timing of any medical treatment. In extreme cases, exposure to CBRN agents may kill very quickly. Some CBRN agents have the potential to cause mass casualties and significant loss of life. This exacerbates concern about CBRN events in communities at risk.

A common characteristic of most CBRN agents is that they are difficult to recognize or detect once released. For example, they may be an odourless, colourless chemical or biological agent, or radioactive material emitting radiation that cannot be seen or felt. As a result, it may be difficult to recognize or confirm exposure, and it is likely there will be delays or difficulties in determining the type of agent involved and the extent of the adverse health effects in those exposed.

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 an 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' from those individuals with physical injuries or disease. It has been suggested that fear of an CBRN event has caused psychosomatic responses in some cases and so it is important to counteract hysteria with calm advice and medical monitoring.

Even though the characteristics of CBRN agents differ, routes of exposure can be very similar.

Direct exposure to CBRN agents in the form of vapour, smoke, fine dust or aerosols may occur during or shortly after their release and dispersal via:

- inhalation of airborne material
- absorption through skin, eyes or open wounds
- ingestion via food, water or hand-to-mouth transmission
- injection by instrument or animal vector (e.g. needle stick or insect bite).

In the specific case of nuclear and radiological agents, the penetrating nature of the radiation emitted may be such that exposure occurs without direct contact with contaminants and a person may be at risk solely by being in the vicinity.

Indirect exposure to CBRN agents after their release and dispersal may occur via:

- person-to-person transmission of CBRN agents by contact with contaminated clothing, objects, and surfaces, or through skin contact
- person-to-person transmission[5] of disease or illness caused by biological agents
- resuspension in the air of CBRN agents that have been widely dispersed on the ground, thus increasing the likelihood of their inhalation or ingestion
- transfer of CBRN agents by exposed persons, or transport of material from affected to unaffected areas, causing cross-contamination.

3.3. Circumstances of agent release and dispersal

There are no particular limits to when and where CBRN events might occur and whether individuals or groups may be affected. Circumstances of agent release and dispersal will likely depend on whether the event is intentional or unintentional and on the way in which the agent is disseminated.

In relation to **intentional events**, targets (open or confined spaces, remote or densely populated areas, affecting individuals or large groups, etc.) will likely be determined by three factors:

- **Motivation of the perpetrators**
  whether the intent is – either overtly or covertly – to harm or threaten individuals or groups, cause mass casualties, seek attention, create localized or widespread fear, influence political agendas, or demonstrate particular capabilities.
- **Mechanisms for delivering agents**
  through the expertise and ability of the perpetrators to manufacture and weaponize agents; through access to stockpiles of bulk agents and munitions at military sites; and through access to commercially available agents (e.g. at industrial sites) and improvised delivery devices or dispersal systems (e.g. simple spray devices or industrial crop sprayers).
- **Perpetrators' freedom of movement**
  the ability to deliver the agent or weapon at multiple points of release.

In relation to **unintentional events**, the presence of CBRN agents at a particular site will influence the circumstances of the release. Examples of such sites include commercial, industrial or military facilities where CBRN agents are stored or processed, as well as any transport routes.

Once released, **dissemination of CBRN agents** will vary according to the release scenario, the agent type and its physical properties, the meteorological conditions, the topography of the area, and the potential for indirect transmission and cross-contamination:

- **Release scenario**
  Agent dispersal may be rapid, aided by explosive or powered dispersal systems or munitions, or slow with gradual release or dispersal of agents

5 In some cases this may be transmission from animal to person and vice versa, such as H5N1 influenza or 'bird flu'.

over a period of days, such as following nuclear reactor leaks or through contaminated groundwater.

- **Agent type**
  Physical state and persistency of the agents are key parameters in relation to their dispersal. Agents that are openly released as aerosols, vapour, or gas may be dispersed over a wider area by wind than agents in the form of liquids or larger solid particles. Persistent agents may remain in the environment for a long period, which will contribute to further dispersal by wind and other meteorological factors while non-persistent agents may degrade rapidly, thus limiting the extent of their dissemination.
- **Meteorological conditions**
  Dispersal of agents in the open air will be affected significantly by the prevailing meteorological conditions, especially wind speed and direction, temperature, precipitation, and in the case of certain chemical and biological agents, sunlight.
- **Topography**
  The local terrain will also have an influence on dispersal since agents heavier than air may accumulate in the basements of buildings, in valleys and low-lying areas. Woods, forests or heavily vegetated areas may affect dispersal patterns or ground contamination.
- **Potential for indirect transmission**
  Agents may be transmitted after an event through movement of contaminated persons, vehicles, and materials (including natural matter such as groundwater), moving from affected to unaffected areas.

In sum, CBRN events can create extremely hazardous environments, posing risks both to those directly exposed during a release or dispersal and over time to the local population and first responders. The risks may remain for a considerable time if the agent is stable in the environment.

4. BASICS OF CBRN RESPONSE

In responding to an CBRN event, the primary objective is to reduce the risk of injury to individuals or groups from exposure to CBRN agents. **The three key steps to take in order are**:

1. Avoid or minimize exposure
2. Remove agents from exposed skin, hair and clothing
3. Seek medical attention.

Further specialist guidance is provided in Annex A (Guidance on Emergency Self-Protection and Decontamination) and Annex B (Guidance on Sheltering in Place).

4.1. Avoid or minimize exposure

In order to avoid or minimize exposure to CBRN agents, the **basic principles to keep in mind are time, distance and shielding**:

- Time spent in areas of potential exposure should be minimized
- Distance from areas of potential exposure should be maximized
- Shielding, that is employing a physical barrier against CBRN agents, should be used.

The ability to implement this principle will depend on an assessment of risks in the particular situation, which may lead to a decision to evacuate, shelter, temporarily relocate or continue operations using appropriate protective measures. Until the risks have been established, however, the objective should be to immediately move or stay away from areas of potential exposure, or to seek shelter if unable to leave the affected area.

Evacuation or temporary relocation may be effective if there is a safe location in the immediate area or if there is safe transit available to a more distant safe location. The suitability of a safe location will depend on the nature of the event, the type of CBRN agent involved and the possible extent of its dispersal.

Seeking shelter in a building or another protective structure will provide a barrier to agents dispersed on the ground or in the outside air but even clothing may provide a basic form of shielding to protect skin from contamination. If sheltering in place the location should be above ground level but not on the roof. Basements or cellars should never be used as many CBRN agents are heavier than air and tend to concentrate in such places (see Annex B, Guidance on Sheltering in Place).

Where a group of people are at risk of exposure to CBRN agents, and especially when the event has yet to affect a wider area or region, it is critical that actions should be taken to scale down operations and relocate anybody who is not required to remain. This will be effective in reducing the number of people at risk and enabling those remaining to take maximum advantage of available protective measures.

Distribution and use of specialized **personal protective equipment** (PPE) would normally be limited to those trained in the use of this equipment, such as emergency workers (see Annex A, Guidance on Emergency Self-Protection and Decontamination). For individuals for whom PPE is not available, ordinary clothing may provide a suitable temporary barrier to skin contamination. The approach is to minimize areas of exposed skin, for example, wearing long-sleeved shirts, long trousers and a head covering. If available, a simple face mask should be worn to reduce the risk of inhaling airborne agents, or an improvised mask made from a moistened cloth held over the mouth and nose.

4.2. Remove agents from exposed skin, hair and clothing

If exposure to CBRN agents is unavoidable, all possible efforts should be made to remove agents from skin, hair and clothing. Simple actions can be effective, such as:

- Removing any agent on exposed areas of skin by scraping, wiping with a damp cloth or disposable towel, or washing thoroughly. Care should be taken not to rub the agent further into the skin.
- Showering and washing hair to remove any agent lodged on the body. Start by leaning forward into the stream of water to remove contamination from the hair and head first to minimize spread of contamination further down the body.
- Changing into a clean set of clothing and discarding or sealing contaminated items in a disposable bag (see Annex A, Guidance on Emergency Self-Protection and Decontamination).

4.3. Seek medical attention

If exposure to CBRN agents occurs or cannot be excluded with certainty, medical attention or advice should be sought as soon as possible. Some agent-specific protective measures and medical treatments exist but they may not be available for all agents. Examples include:

- Prophylactic (preventive) use of potassium iodine in a nuclear or radiological event involving the release of substantial amounts of radioactive iodine to prevent an increased risk of thyroid cancer in later life (N.B. this is not effective treatment for exposure to other radioactive materials)
- Vaccines, antibiotics and antidotes to prevent or counteract effects of certain viral, bacterial and toxin biological agents
- Antidote treatment to counteract the effects of certain toxic chemical agents.

If a definitive diagnosis cannot be made of CBRN agent exposure, symptomatic treatment will be required that is directed by medical assessments based on patient history, physical examinations and laboratory tests (where available).

Individual response

If there is a risk of exposure to CBRN agents, the required action at the individual level will depend on whether exposure is foreseen or has already occurred. In either case, keep in mind the basics of CBRN response.

In general, if there is a risk of exposure:

- Remain calm.
- Ensure the following are available and used as appropriate: purpose-built or improvised face masks (e.g. use a moistened cloth over mouth and nose), protective clothing (e.g. long-sleeved shirts and trousers to cover the entire body) and some means of communication (e.g. telephone and/or radio).
- Move to unaffected or well-ventilated locations and stay upwind of contaminated areas or any potential source of agent release.
- If evacuation is not safe or feasible, shelter in a sealed location, which may be adequately improvised by closing doors and windows, using wet towels and clothing to block gaps under doors, and turning off air-conditioning. Do not take shelter in a basement as many CBRN agents are heavier than air and tend to concentrate in basements and cellars.
- In the event of an indoor release, evacuate the affected building and seek a safe location well away from the site of release.
- Avoid contact with anyone who has or may have been exposed and with surfaces and objects that may be contaminated.
- Avoid consumption of water or food products that may be contaminated (e.g. drink only bottled water and consume only packaged foods).

In the event of exposure:

- Use a purpose-built or improvised face mask and protective clothing (as above) and move quickly to an unaffected and well-ventilated location or shelter.
- Remove contaminated clothing and mask, and seal in plastic bags (seek assistance, if possible, bearing in mind the need to avoid cross-contamination). Remove any agent on exposed areas of skin, especially around the eyes and face, by scraping, wiping with a damp cloth or disposable towel, or washing thoroughly.
- If possible, shower and wash hair to remove any agent lodged on the body and rinse eyes thoroughly with clean bottled water.
- Seek medical attention as soon as possible, even if symptoms have not yet become apparent. Be aware that signs or symptoms and complications may still arise, or worsen, several days after exposure.
- Maintain good hygiene practices to avoid the spread of contamination to others.

Operational team response

The potential for an CBRN event to affect an operational team, such as an ICRC delegation, should be determined in the course of general regional and field-level risk assessments. The following should be considered in assessing the risk: the local industrial or military infrastructure, safety and civil protection standards, and prevalent natural hazards. Other factors include: known or suspected possession of CBRN weapons by conflict parties; allegations or rumours of NBRC weapon use or agent release; local security and political conditions; the nature of the conflict and ongoing military actions in the region; and, of course, a confirmed CBRN event.

Good communication is critical to recognizing an CBRN event and taking the best possible steps to mitigate risks to operations. This includes making contact with local or national emergency services as well as international or non-governmental organizations in order to:

- Check for potential targets or sites of release (e.g. presence of existing agents, areas likely to be affected) and any response measures that are in place or planned. Cross-check this against information from other reliable sources.
- Check if rumours or allegations can be substantiated and seek further confirmation of the situation.
- Check local, national, or international media reports for any details of a possible event.
- Inform personnel about the event and outline contingency arrangements to be made once the situation has been clarified.

When preparing a response to an CBRN event, risks to personnel and operations should be assessed based on the nature of the event, the potential extent of agent release and dispersal, and the immediacy of the situation (i.e. Is there a foreseeable risk of an event, is an event happening now, or did an event occur some time ago?). Based on this assessment, a decision must be taken about operational priorities and protective measures.

In general, if there is a risk of exposure:

- Gather and review as much information as possible on the event through all available resources in order to determine, to the extent possible, the type of the event, the nature of the CBRN agents in question, the extent to which operations are or might be affected, and the level of risk to personnel.
- Ascertain the current or planned response of local and/or national agencies and whether support can be obtained under existing emergency management plans.
- Review and prioritize the operational objectives under the circumstances and implement appropriate protective measures based on the basics of CBRN response.
- Consider possible evacuation routes and define appropriate triggers to relocate all or part of the operational team to safer areas, or determine and assess the safety of potential shelters if evacuation may lead to greater risks.
- Arrange temporary or permanent relocation of all personnel or those who are not required to remain for operational purposes and those who do not have sufficient protection from exposure to CBRN agents.
- Ensure all remaining personnel have access to emergency self-protection and decontamination facilities, shelter, medical support and essential supplies, and can manage or contain any possible contamination.
- Ensure that any operational activity in response to the event, other than for self-protection, is carefully planned, prepared and undertaken only if the associated risks are offset by the expected benefits of the activity. This means making available appropriate human and material resources, deciding on the appropriate location, time and duration for operations, and arranging contingency plans.
- Monitor the effectiveness of the protective measures in light of developments. Ensure that all personnel are familiar with and adhere to these measures, and that they are kept informed of any changes.
- Provide counselling for personnel who show signs of fear or panic, or other indications of psychological stress owing to actual or threatened exposure to CBRN agents.

In the event of release (or suspected release):

- Contact all personnel to ascertain their current location, advise them on the risks involved and the extent of affected areas, and convey the details of measures to be put in place and procedures to be observed.
- Implement measures to ensure that personnel can work safely on the premises or relocate elsewhere. Look for local indications of a release of CBRN agents based on information gathered, noting that the greatest short-term risk comes from short latency (i.e. quick-acting) chemical agents or toxins and high-dose radiation, which can be immediately life-threatening.
- Determine the extent to which food and water supplies as well as critical infrastructure, notably transport and health resources, may be adversely affected.
- Determine the status of possible evacuation routes from the area or region in which an event has occurred, i.e. whether roads are open or closed, whether there are available means of transport and whether unaffected areas are accessible for relocation from the affected areas.
- Establish the extent of the potential or actual impact on the local population in terms of people at risk, directly affected, exposed, injured or dead.

5. RESPONSE TO ALLEGATIONS OF USE OF CBRN WEAPONS

In armed conflict or other situations of violence, allegations are often made that one or more of the conflict parties has used CBRN weapons. Such allegations are usually supported by witness accounts, audio-visual records (e.g. video footage, photographs) or physical exhibits (e.g. fragments of weaponry, environmental samples) relating to the circumstances of CBRN weapon use or the medical symptoms seen in alleged victims. However, assessments of allegations are often inconclusive.

When assessing allegations it is important to recognize that a reaction or even a non-reaction may be interpreted as upholding or rejecting the allegations. This may have its own ramifications: for example, the response of the organization might be seen as negligent, adding legitimacy to allegations, or alarmist. It is important to consider any actions carefully in the particular context.

The two main issues of concern regarding allegations of the use of CBRN weapons are the health of people potentially exposed to CBRN agents and possible violations of international law, including international humanitarian law.

With regard to adverse health effects for people who may have been exposed to CBRN agents, the priority is the provision of appropriate medical care, which may require life-saving treatment and stabilization prior to further hospital care (in- or out-patient).

In order to determine the best treatment for a patient, information is needed on the circumstances of the alleged exposure (e.g. date, time, location, release mechanism, nature of dispersal, exposure routes and duration, medical symptoms) and on the type of agent(s) involved. For further details see Annex C (Seeking Clarification of the Circumstances of Alleged CBRN Weapon Use) and Annex D (Form for the Consistent Collection of Clinical Data).

- If such information is available and verified, agent-specific treatment should be given in line with best medical practice.
- If there is not sufficient information to determine the specific agent(s) and the cause of the reported symptoms, the provision of medical care should be in the form of symptomatic treatment guided by medical assessments of patient history, physical examinations and laboratory tests (where available).

In assessing possible violations of international law, including humanitarian law, which prohibits the use of biological and chemical weapons, consideration should be given to ways of preserving evidence (i.e. the chain of custody) in order to determine, with certainty, the credibility of the allegation. In order to make a legal assessment, evidence will be required concerning the type of agent and the circumstances of its use (e.g. deliberate or accidental, in armed conflict or not).

In order to determine the credibility of an allegation, it is necessary to conduct a systematic, objective, professional and timely investigation of both the nature of the exposure and any adverse health consequences. Reliable chain-of-custody processes must be in place for any material evidence that is collected and analysed at the scene of exposure or during medical examinations of victims. Such investigations, which must be undertaken by specialists, can contribute to providing the best possible medical care for victims and to assessing potential violations of international law, including humanitarian law.

It is important to note that:

- there may be a need to protect the identity of the person or people making the allegations;
- medical records are confidential. Consent must be given for a person's medical record to be shared with anyone outside his or her health-care[6] team.

In reality, however, there are many factors, including delays, inability to access the area and lack of resources, which may prevent a systematic investigation of allegations of CBRN weapon use. In such cases, the basic approach in response to an allegation should be: to consult an CBRN specialist; to gather information that will help determine the credibility of an allegation (see Annex C, Seeking Clarification of the Circumstances of Alleged CBRN Weapon Use); and to prioritize provision of the best possible medical care (agent-specific or symptomatic treatment) to those showing symptoms of possible exposure to CBRN agents.

List of annexes

Annex A – Guidance on Emergency Self-Protection and Decontamination

Annex B – Guidance on Sheltering in Place

Annex C – Seeking Clarification of the Circumstances of Alleged CBRN Weapon Use

Annex D – Form for the Consistent Collection of Clinical Data

6 ICRC, Health Care in Danger: The Responsibilities of Health-Care Personnel Working in Armed Conflict or Other Emergencies, Chapter 9, ICRC, Geneva.

ANNEX A – GUIDANCE ON EMERGENCY SELF-PROTECTION AND DECONTAMINATION

Emergency Self-Protection and Decontamination Kit

PURPOSE

The emergency self-protection and decontamination kit is issued to staff that operate in locations where there is a risk of sudden exposure to CBRN agents. It is intended to provide emergency respiratory protection and self-decontamination capability only.

IT IS NOT INTENDED TO ENABLE STAFF TO CONTINUE WITH OPERATIONS IN ENVIRONMENTS CONTAMINATED BY CBRN AGENTS

CONTENTS

ITEM	USE
Escape Hood; Avon EH20 (1 piece)	Emergency respiratory protection
Decontamination Lotion; RSDL (2 packages)	Skin decontamination
Eye Wash, Isotonic Sodium Chloride 0.9%; Cederroth, 235 ml (1 bottle)	Eye decontamination
Hand Disinfectant; Sterillium® Tissue (1 box of 15 wipes)	Hand disinfection
Wash Lotion; Sanalind®, 40 ml (1 bottle)	Removal of excess RSDL lotion
Gloves; nitril (5 pairs)	Hand protection and cross-contamination control
Coverall; Kimberly Clark (1 piece)	Replacement of contaminated clothing
Disposable shoes (1 pair)	Replacement of contaminated clothing
Dressing; surgical, adhesive, sterile (1 package of 5)	Dressing of wounds to keep out CBRN agents
Waste bags; large (3 pieces)	Use as drop sheet (1) and for bagging contaminated items (2)
Plastic bags; small (3 pieces)	Use for bagging contaminated items
Self-adhesive, labelled tape (1 roll)	Labelling/sealing of used waste and plastic bags
Dry wipe cloth (10 pieces)	Removal of excess RSDL lotion
Scissors/Clothing cutter (1 piece)	Removal of clothing

INSTRUCTIONS

If you suspect that you have been exposed to radiological, biological or chemical agents, take the following steps immediately:

1. Put on the Escape Hood (as per the manufacturers' instructions).
2. Move away from the point of release or exposure as quickly as possible and find shelter from any falling agent as quickly as possible.

   DO NOT SHELTER IN SUB-SURFACE STRUCTURES LIKE BASEMENTS, CELLARS OR SUBWAYS.
3. Do not remove the escape hood until you are satisfied that there is no further inhalation risk from the agent (if in any doubt, keep the hood on).

   If you suspect contamination of your face or head prior to donning the escape hood, carry out the following emergency procedure:

   - thoroughly decontaminate your hands and the neck seal of the hood using RSDL
   - use one hand to locate the neck seal of the hood
   - take a deep breath, hold it and close your eyes
   - gently pull the neck seal away from the neck, while using your other hand to decontaminate the affected area with RSDL
   - withdraw your hand and the RSDL sponge; allow the neck seal to reform
   - blow out hard before opening your eyes to clear any vapour from within the hood
   - decontaminate hood neck seal and hands.
4. Once you are away from contaminated areas or sheltering from falling agent, decontaminate any exposed skin (e.g. hands, forearms, neck and throat) using the RSDL sponge following the manufacturers' instructions. Place the RSDL sponge on a clean surface.
5. Remove any rings and place them in a small plastic bag. Put on **TWO** pairs of nitril gloves.
6. Place one of the large waste bags on the ground as a drop sheet. Remove footwear and stand on the drop sheet (ensure you can reach the kit while standing on the drop sheet).
7. Remove clothing, taking care not to disturb the seal of the escape hood when doing so (use scissors/clothing cutter, if required). Place removed clothing in a second large waste bag.
8. Remove watches and any other jewellery and place them in the same small plastic bag as before.
9. Remove the outer pair of gloves and place them in the large waste bag. Close the bag using the 'swan neck' method and seal it with the self-adhesive, labelled tape. Place the sealed bag inside the remaining large waste bag for double containment but leave this bag open for now.
10. Close the small plastic bag containing the jewellery, using the swan neck method and seal it with the self-adhesive, labelled tape. Place the sealed bag inside a second small plastic bag for double containment. Close and seal it using the same method.
11. Decontaminate inner gloves using the RSDL sponge and put on a new pair of gloves over the inner gloves.
12. Decontaminate remaining areas of skin that may have been exposed to agent. Pay particular attention to areas where perspiration accumulates, e.g. groin, armpits, hollow of the knee, etc. If necessary, decontaminate the outside of the escape hood using RSDL but avoid contact with its eye-pieces and filters.
13. Remove the outer pair of gloves and place them in the large waste bag. Put on a new pair of gloves over the inner gloves.

14. Cover any open wounds with the surgical dressings and step off the drop sheet onto uncontaminated ground. Put on coverall and overshoes.
15. Place the drop sheet inside the large waste bag together with any other used items (e.g. RSDL packaging, used RSDL sponges).
16. Remove the escape hood and the outer pair of gloves and place them in the large waste bag. Close the bag using the swan neck method and seal it with the self-adhesive, labelled tape.
17. Remove the inner pair of gloves and place them in the remaining small plastic bag.
18. Use the dry wipe cloth and wash lotion to remove excess RSDL. Where contamination with biological agent is suspected, wash hands thoroughly with hand disinfectant. Place the wipes in the small plastic bag, close the bag using the swan neck method and seal it with the self-adhesive, labelled tape.
19. Securely store the three bags of contaminated clothing, waste material and jewellery until arrangements for their decontamination or disposal can be made.

RSDL should not be used to decontaminate the eyes. If it does come into contact with your eyes, thoroughly rinse the affected eye with the eye wash.

ANNEX B – GUIDANCE ON SHELTERING IN PLACE

Sheltering in Place

IN THE EVENT OF RELEASE OF CBRN AGENTS

1. WHAT IS SHELTERING IN PLACE?

Sheltering in place refers to taking cover in a designated shelter in the event of a release, or suspected release, of CBRN agents.

2. IN WHAT CIRCUMSTANCES SHOULD I SHELTER IN PLACE?

Sheltering in place should be undertaken in the event of sudden outdoor release, or suspected release, of CBRN agents where it is not possible to evacuate the affected area safely (see indicators of release below).

3. WHY SHOULD I SHELTER IN PLACE?

Sheltering in place is a temporary measure aimed at minimizing exposure to harmful levels of CBRN agents. It is an emergency measure of last resort where evacuation might expose people to a greater risk of exposure to CBRN agents. It is used to buy time for those sheltering while a safe evacuation can be planned and carried out or to allow the outside concentration of CBRN agents to fall below levels immediately dangerous to life or health. It should not be seen as a base from which operations can be safely carried out in a contaminated environment.

4. HOW LONG SHOULD I SHELTER IN PLACE?

Sheltering in place is designed to be a temporary measure to avoid exposure to high concentrations of CBRN agents. However, even with a well-prepared, designated shelter, CBRN agents will still penetrate. For this reason, sheltering in place should not exceed two hours.

5. MAKING AN IMPROVISED SHELTER

a. Location of the shelter

Wherever possible the shelter should be located:

- in a room large enough to accommodate all those who are required to take shelter. (It is important to ensure there is sufficient air in the room to prevent build-up of dangerous levels of exhaled carbon dioxide);
- above ground level but not on the roof (note that the shelter should never be located in a basement as many CBRN agents are heavier than air and tend to concentrate in basements and cellars);
- in the centre of the building, ideally with no windows or as few (well-fitting) windows as possible;
- in a room with substantially constructed walls and a well-fitting, preferably lockable door;
- in a room without vents or air-conditioning ducts leading directly to the exterior of the building.

b. Making the shelter

The aim is to create a room where the exchange of air with the outside environment is minimized as far as is possible. The room should be prepared for use in the following manner:

- ensure all windows are tightly closed and if possible locked;
- if necessary to reduce the possibility of the window shattering, place tape crosses on windows (this should not be necessary where windows are protected by 3M screens);
- if there is sufficient material available, line the inside of the room with an impermeable liner, such as polythene sheeting secured in place with duct tape. When lining the inside of the door, leave extra sheeting to overlap the lining on the wall which can be taped closed once the room is sealed;
- if there is insufficient material to line the entire room then ensure that the windows and doors are lined with impermeable sheeting, secured in place with duct tape;
- ensure methods of communication with the outside world, if possible using several methods e.g. land-line, mobile or satellite telephones and two-way radio;
- pre-stock the room with a change of clothing, large heavy-duty plastic bags and adhesive tape so that any potentially contaminated clothing can be removed and sealed in plastic bags;
- ensure a supply of adhesive wound dressings to cover any cuts or breaks in the skin to minimize intake of CBRN agents;
- ensure a supply of buckets, water, soap solution, wipe cloths and towels sufficient for all those who may have been exposed to undertake emergency self-decontamination along with extra towels and water to act as an additional seal at the foot of the doorway;
- ensure a source of emergency lighting, such as torches or battery-powered lanterns.

c. Procedure for sheltering in place

If a release of CBRN agents is confirmed or suspected (see indicators of release below) a decision on whether staff can be evacuated without being exposed to unacceptable levels of risk must be taken immediately. Factors to be considered are the proximity of the building to the confirmed or suspected release, the amount of agent released, the general security situation, the availability of vehicles and whether individuals are able to move. If it is deemed unsafe to evacuate then the following procedure should be followed:

- gather all staff together, ensuring that all staff are accounted for, and inform them of the decision to shelter in place;
- inform those members of staff not present of the decision to shelter in place and advise them not to return;
- close all doors and windows, lock and secure the building as far as is possible;
- turn off any air conditioning or ventilation fans, etc.;
- move to the designated shelter, close the door once everyone is inside;
- seal the overlapping material lining the door with that lining the wall with the duct tape;
- place damp towels at the bottom of the door to reduce the air entering under the door;
- anyone showing any signs of exposure to CBRN agents should immediately remove all clothing, wash using the soap and water, dry themselves with a towel, and put on clean clothing; then seal the clothing, used wipe cloths and towel in the heavy-duty plastic bags using the duct tape; cover any cuts or breaks in the skin with adhesive wound dressings;
- contact the pre-arranged contact person (as per agreed communication procedure) and inform him or her that staff are sheltering in place;

- await further instructions (as per agreed communication procedure).

Never eat, drink or smoke whilst sheltering in place. Avoid contact between hands and face to minimize the possibility of inadvertent intake of CBRN agents.

d. When to stop sheltering in place

Sheltering in place is a temporary measure to reduce the potential for exposure to harmful levels of CBRN agents. Without specialist collective protection facilities, the time for which sheltering in place can be maintained is limited. This is because:

- no improvised shelters can keep out all contamination – after a period of two hours, the concentration of contamination inside the shelter is likely to equal or exceed that outside the shelter;
- as the exchange of air with the outside is restricted, levels of exhaled carbon dioxide may exceed safe levels inside the shelter after a period of a few hours.

Sheltering in place should therefore be limited to two hours unless extreme circumstances prevail (for example, an ongoing bombardment by CBRN munitions, which make the risk of leaving the shelter greater than those of remaining within it).

Before leaving the shelter, every effort should be made to determine whether it is safe to do so. Whilst it is difficult to do this accurately without detection and monitoring equipment, some indicators that the concentration of agent has fallen below levels immediately dangerous to life and health may include the following:

- people have returned to the area (voices, traffic, etc.)
- signs of the presence of animals (bird calls, barking dogs, etc.)
- information from external sources such as local radio broadcasts or information via telephone or two-way radio from external contacts.

Once a decision to leave the shelter has been taken, two people should leave initially whilst the remainder stay inside. These two individuals should monitor each other for signs of exposure to CBRN agents. If any signs are observed, they should return immediately to the shelter and carry out the procedure for entry and decontamination as outlined in Section (c) above. Alternatively, if no signs are observed on the two individuals after a period of ten minutes, those remaining in the shelter should then leave.

ANNEX C – SEEKING CLARIFICATION OF THE CIRCUMSTANCES OF ALLEGED CBRN WEAPON USE

Seeking Clarification of the Circumstances of Alleged CBRN Weapon Use

UNDERSTANDING THE CONTEXT

With any allegation it is essential to assess the indications of CBRN weapon use and the potential consequences for those exposed.

It is important to understand how likely the use of CBRN weapons might be in the particular context. This will depend to a significant extent on the availability of such weapons (or agents that can be used as such[7]) and on the potential motivation behind their use.

Any information or material evidence presented in support of the alleged use of CBRN weapons should also be assessed. Of particular interest is information or material evidence relating to the alleged exposure and the agents involved:

- date, time, and location of the alleged use of CBRN weapons
- release mechanism (e.g. type of weapon or delivery system, and agent involved)
- dispersal of agents (e.g. individuals or groups affected, meteorological conditions, cross-contamination)
- exposure routes and duration (e.g. inhalation, ingestion, dermal contact)
- medical symptoms.[8]

When confronted with an allegation of CBRN weapon use involving people possibly exposed to CBRN agents, their clinical data should be collected in a standard format (see Annex D, Form for the Consistent Collection of Clinical Data) in order to ensure provision of suitable medical care and help establish the facts surrounding the allegation. In general, the best medical care for victims of CBRN weapon use follows the logic of providing, if necessary, immediate life-saving treatment and stabilization (first-aid and/or field medical care[9]) prior to further hospital care (in- or out-patient; agent-specific or symptomatic).

QUESTIONS TO ASK THOSE MAKING ALLEGATIONS OF CBRN WEAPON USE

When speaking to people making allegations of use of CBRN weapons, it is important that interviewers allow them to recall the events without prompting or interrupting. This is known as 'free recall' and reduces the risk of the interviewee

7 There are numerous industrial materials that could be used as improvised CBRN agents; these, although probably not as effective as purposely designed CBRN weapons, could still cause injury or death to those exposed to sufficiently high concentrations. Such exposure could be the result of the deliberate use of improvised agents or owing to an inadvertent release during a conflict, as a result of damage to a storage facility, attack on a tanker vehicle, etc.

8 It is not uncommon for medical personnel who are not trained to recognize signs and symptoms of exposure to CBRN agents, to misdiagnose such exposure.

9 For more information on the concept of CBRN medical care in the field see: G. Malich, R. Coupland, S. Donnelly and D. Baker "A proposal for field-level medical assistance in an international humanitarian response to chemical, biological, radiological or nuclear events," *Emergency Medical Journal*, Vol. 30, No.10, 2012, pp 804-8.

fabricating responses to specific questions. Once free recall is complete, the interviewer can then ask supplementary questions to gather as much relevant information as possible.

The following is a list of the types of information that may help in determining the credibility of an allegation. It should not be regarded as exhaustive; further questions may be required to provide clarification.

1. Ask for information about the date, time and location of the event, including a description of the area where the event is alleged to have occurred. (Was it in a rural or urban setting? If in an urban setting, were the buildings high-rise, single-storey, etc.? If in a rural setting, was it open countryside, a densely wooded area, a hilltop or valley, etc.?)
2. Ask where the victims were or the location of alleged exposure (indoors or outdoors, basement or cellar, at ground-level, first floor or higher, etc.).
3. Ask for a description of the clothes worn by the victims, if any, at the time of alleged exposure. (Where are they now? Is it possible to have these clothes for examination, bearing in mind the risks of cross-contamination?)
4. Ask how the alleged CBRN agents were delivered. (Were any low-flying aircraft seen? If so, what type? Were any explosions noticed? If so, how many and what kind? Were any munitions seen at the scene? Were any unusual objects seen close to the scene of the alleged exposure?)
5. Ask how the alleged agents were dispersed. (Were any unusual mists, vapours or droplets of liquid seen? Did the alleged victims feel anything falling on them?)
6. Ask victims or witnesses to describe any medical symptoms they experienced, or any symptoms witnessed in others, and to state how long after the alleged exposure they began to notice these symptoms.
7. Ask victims or witnesses to describe what action they took, if any, upon realizing that they may have been exposed to some type of agent. (Did they leave the affected area? Go indoors? Remove clothing? Wash or shower? Use a detergent of any kind and if so, what? Take any medicine?)
8. Ask victims or witnesses to describe whether any of the above actions they took had any effect on the medical symptoms they experienced, or witnessed in others, and if so, how quickly any changes began to take effect.
9. Ask victims or witnesses about the number and identity of other people present at the time of the alleged exposure and whether those people suffered any signs of illness (if so, what were these signs?).
10. Ask victims or witnesses for the whereabouts of any of these other people. (Is it possible to speak with them, assuming they have survived, in order to corroborate the alleged victims' account?)

Consider whether it is possible to identify and speak to any attending medical staff in order to corroborate the accounts of victims or witnesses or to initiate specific medical examinations. A standard form for recording clinical data should be used in all cases to ensure that as much relevant information as possible is collected (see Annex D, Form for the Consistent Collection of Clinical Data). The patient must give consent for this information to be shared.

ANNEX D – FORM FOR THE CONSISTENT COLLECTION OF CLINICAL DATA

Data Collection Form

FOR PATIENTS REPORTING EXPOSURE OR SUSPECTED EXPOSURE TO CBRN AGENTS

NOTE: IT MAY BE NECESSARY TO EXCLUDE ANY INFORMATION, PHOTOS, LABORATORY RESULTS, ETC. THAT RELATE TO THE IDENTITY OF THE PATIENT.

PATIENT'S NAME ..... **DATE OF BIRTH**.....

CONTACT DETAILS .....

CIRCUMSTAMCES OF ALLEGED EXPOSURE

DATE & TIME .....

PLACE .....

TIME OF ONSET OF SYMPTOMS .....

DESCRIPTION OF EVENT
(include any observations made by victim of unusual smells, tastes, clouds of smoke, sensations etc. and any symptoms described by patient)

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BRIEF MEDICAL HISTORY OF PATIENT

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EXAMINATION DETAILS

DATE & TIME ..... PLACE ..... EXAMINER .....

OBSERVATIONS

EYES

.....

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NEUROLOGICAL

.....

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MOUTH

.....

.....

NOSE

.....

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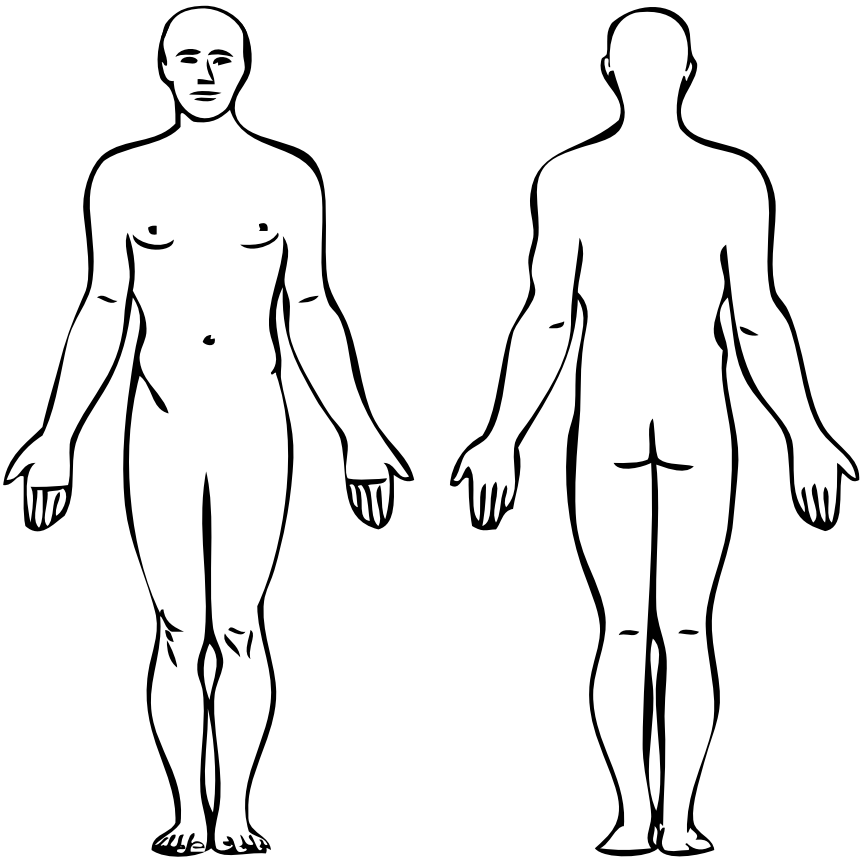

GASTROINTESTINAL

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RESPIRATORY

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URINARY

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SKIN

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ANY ADDITIONAL REPORTED SYMPTOMS

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OTHER TESTS PERFORMED (tick as appropriate)

CBC ☐ RESULT

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LFT ☐ RESULT

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URINE ☐ RESULT

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CHEST X-RAY ☐ RESULT

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ANY ADDITIONAL COMMENTS/OBSERVATIONS

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MISSION

The International Committee of the Red Cross (ICRC) is an impartial, neutral and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of armed conflict and other situations of violence and to provide them with assistance. The ICRC also endeavours to prevent suffering by promoting and strengthening humanitarian law and universal humanitarian principles. Established in 1863, the ICRC is at the origin of the Geneva Conventions and the International Red Cross and Red Crescent Movement. It directs and coordinates the international activities conducted by the Movement in armed conflicts and other situations of violence.

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