

# Management Summary

No clear understanding currently exists in the Netherlands regarding the issue of what civilians actually do in the event of (major) CBRN incidents and whether their behaviour is fundamentally different to that displayed in 'traditional' incidents. It is also unclear whether this behaviour is effective and how this behaviour (whether or not self-reliant) correlates to the services provided by the emergency response teams. The Fire Services Advisory Council has, therefore, asked the Self-Reliance Expertise Centre from the Institute for Safety to carry out a literature study in order to obtain an overview of what is presently known about self-reliance on the part of civilians in the event of major chemical, biological, radiological or nuclear (CBRN) incidents.

The key question for the study is as follows:

*To what extent do people display self-reliant behaviour in the event of major CBRN incidents and what does this mean for the aid supplied by the emergency services?*

The study concerns incidents where there is a (possible) contamination of casualties with chemical, biological or radiological/nuclear agents. It concerns accidents as well as CBRN incidents which have been caused deliberately. The study focuses on the behaviour of civilians during and in the first few hours of the incident. After all, these hours are crucial for the further emergency response. The consequences on behaviour in the longer term and psychological long-term effects are not included in the study.

## *Behaviour in the event of CBRN incidents*

The study shows that there is a great similarity between human behaviour during CBRN incidents and during 'traditional' incidents. The similarities and differences are illustrated in the tables below.

<b>Similar phenomena</b>	<b>Regular</b>	<b>CBRN</b>
<b>Denial and constraining behaviour</b>	+	++
<b>Fear</b>	+	++
<b>Panic</b>	-	-
<b>Own initiative/emergent groups</b>	+	+
<b>Altruism</b>	+	+
<b>Anti-social behaviour</b>	-	-

<b>Divergent phenomena</b>	<b>Regular</b>	<b>CBRN</b>
<b>Worried well/mass hysteria</b>	-	+
<b>Convergence</b>	+	-
<b>Conflict of roles</b>	-	?

In both traditional and CBRN incidents, in the initial phase of an incident, there can be a sense of denial and adherence to existing routines (constraining behaviour), which means that contamination is only discovered at a later stage.

Although people can be more anxious during CBRN incidents than during traditional incidents, generally there is no panic and people provide an altruistic and helpful response in spite of the fact that they run a risk of becoming contaminated themselves in the process. Also in the event of CBRN incidents people prefer to seek familiarity amongst those they know than stay in government-supplied emergency lodging or reception centres. Finally, it is also apparent that in CBRN incidents most people do not wait for help from the emergency services but receive help from bystanders (emergent groups) and/or provide help themselves and, if necessary, find the nearest hospital.

A rather unique feature of CBRN incidents is the phenomenon known as the 'worried well': since contamination is often hard to ascertain, whilst they are not contaminated, many people appear to seek medical advice for peace of mind. This can be the case immediately after an incident but also continue for quite some time thereafter.

One aspect that has not been found in CBRN incidents but is found in traditional incidents is the phenomenon of convergence, the great influx to the scene of the disaster by people who want to offer their help and/or bring goods. This could be to do with the lack of a clearly cordoned off disaster/incident site so that it was unclear to potential helpers where help was needed. Also the time between the start of the contamination and its discovery may have been a factor. Another possibility is that people do not attend the incident site because of a fear of becoming contaminated themselves. The literature provides no guidance in this respect.

One aspect about which there is no clear picture in the literature is the occurrence or not of a conflict of roles amongst emergency responders. Examples exist where emergency responders abandoned their role in order to bring themselves and their nearest and dearest to safety. However, other examples tell another story entirely. Avoiding a conflict of roles is likely more difficult in CBRN incidents than in traditional incidents. Based on this exploratory literature study no clear judgement can, however, be passed in this regard.

#### *Consequences for the emergency services*

If it concerns the consequences of human behaviour for the decontamination process then it is important to take into account that most people will go to the hospital for treatment on their own initiative. This means that the nearest hospitals can be inundated with casualties and secondary contamination of emergency responders can occur in the hospitals.

Another consequence for the emergency services is that proper attention will have to be paid to the phenomenon of the 'worried well'. As a result of the invisible nature of contamination with CBRN material people can display psychosomatic reactions and as a result place heavy demands on the emergency services (decontamination, medical treatment).

In the event of evacuation it must be borne in mind that people seek the closeness of who or what (people or surroundings) is familiar to them. Here, they prefer not to use public shelters, instead wanting to stay with family and friends or in private accommodations. As a consequence, more people can become contaminated than was initially the case.

Overall, in CBRN incidents the communication process is crucial. People will generally react rationally. In the event of invisible threats such as CBRN it is, however, important to take into account the fact that people can interpret inconsistent or vague warnings (such as presence of

people in “white suits”) as being the worst case scenario. Fear of CBRN can, therefore, prompt an evacuation on one’s own initiative, even to far beyond the evacuation zone.

#### *Restrictions of the study*

The literature ultimately gathered reflects just one part of the spectrum of possible CBRN incidents. For instance, the literature does not contain any incidents involving an external contamination for which the decontamination units would be deployed in the Netherlands. Also the literature retrieved contains incidents abroad.

Although earlier case studies in the Netherlands for traditional incidents demonstrate that the displayed behaviour is universal and comparable with behaviour in other countries and cultures, it is in theory possible that this can be different during CBRN incidents.

The above means that the results found must be regarded with a critical eye if these are to be used in order to substantiate decisions regarding the deployment of the decontamination units.

#### *Recommendations*

The following recommendations ensue from the study for the emergency services:

1. Ensure rapid and proper communication immediately after a CBRN incident, whereby recommendations are issued about individual decontamination and the prevention of contamination by or via others.
2. Take into account an influx of contaminated persons to the nearest hospitals and to family or friends in the vicinity. Avoid secondary contamination of emergency responders by setting up a separate chain for contaminated persons. One option might be to station some of the existing decontamination units in the nearest hospitals in order to thus be able to carry out decontamination at the hospital gates.
3. Develop a triage system for CBRN incidents so as to be able to differentiate between those who are actually contaminated and those who merely think they have been contaminated in the event of high numbers of people reporting with possible contamination.

Within the context of this exploratory literature study, a few questions continue to remain open. To this end, the following recommendations have been formulated for further investigation:

#### *Evaluation of future CBRN incidents in the Netherlands*

1. In the event of future incidents involving CBRN on Dutch territory it is recommended to evaluate them thoroughly, not solely in terms of the emergency services and what action they take but also in terms of the human behaviour displayed. The topics of ‘conflict of roles’ and ‘convergence’ can be included as a special area of attention here.
2. In the context of the current study it was noted that rapid and proper communication is crucial to be able to offer an action agenda for the parties affected as quickly as possible. The best way these recommendations can be formulated and the best way that they can be issued was not looked at in any further detail in the context of this study. It is recommended to carry out further study into this.