



© Austrian Red Cross

## Technological Hazard Preparedness

### The Basics of Self-Protection



In all technological emergency situations, closely monitor and follow responsible civil authority warnings and instructions on accessing and leaving contaminated areas. Also follow any personal precaution advisories and personal protective measures issued by public health officials.

Much of the standard guidance and training for responding and reacting to hazardous material incidents builds on **three basic concepts** of time, distance and shielding.

#### Time



All individuals should spend the **shortest amount of time** as possible in contaminated areas to minimize exposure to the hazard. Residents should evacuate contaminated areas while emergency responders should only spend the time necessary to complete mission critical tasks.

#### Distance



Generally, the **greater the distance** from the source of harm and contamination, the less the degree of exposure and risk. Whenever possible distance yourself from the hazardous material source. Obey evacuation orders and advisories whenever issued by responsible civil authorities.

#### Shielding



While time and distance can be effective in reducing risk exposure, maintaining **significant physical barriers** between the hazardous materials provides added protection. Depending on the nature of the hazardous material shielding can take various forms: vehicles, buildings, walls, personal protective equipment etc. However, no matter how much shielding is available always take into consideration additional benefits also provided by time and distance

## Implementing the Protective Measures

The following quick reference matrix may be helpful as a basic guide. It provides additional details when confronted with various hazardous materials emergencies. Please augment your understanding of their risks and self-protection options with additional and readily available information on such hazards. Moreover, please note that some possible incidents may simultaneously involve multiple hazardous materials.

Incident	Characteristics	Hazard	Time, Distance & Shielding Measures
<b>Biological</b> 	Public health emergencies, such as epidemics and contaminated drinking water and food. Focused response, on medical care while seeking to discover and control the pathogen.	Serious to fatal illnesses affecting medical care personnel and the general population	<p><b>Time:</b> Benefits vary by the pathogen, difficult to manage as some contagious pathogens may present symptoms days after contact.</p> <p><b>Distance:</b> Good benefit whenever unprotected, including distance from those contaminated or exposed casualties.</p> <p><b>Shielding:</b> Good benefit when appropriate to the pathogen, such as inhalation and splash protection.</p>
<b>Nuclear</b> 	May range from lost or discarded radioactive medical/commercial equipment to weapons and nuclear power plant emergencies.	Primarily radiological poisoning, involving external and/or internal alpha and beta particle contamination, and/or gamma rays exposure. May also involve thermal, chemical, and mechanical risks.	<p><b>Time:</b> Good benefit, exposure time significantly impacts risk.</p> <p><b>Distance:</b> Very good benefit whenever unprotected, including distance from those contaminated or exposed casualties.</p> <p><b>Shielding:</b> Good when appropriate to the specific radiation risk – i.e. gamma rays versus alpha and beta particles.</p>
<b>Incendiary</b> 	Widespread or multiple fires or unusual fire volume for a structure.	Primarily thermal, but may also include asphyxiate risks.	<p><b>Time:</b> Good benefit with limited exposure.</p> <p><b>Distance:</b> Very good benefit when without PPE*.</p> <p><b>Shielding:</b> Good benefit with appropriate PPE*.</p>
<b>Chemical</b> 	Usually hazardous materials, transportation and industrial accidents of varying scope. May also involve military agents.	Primarily chemical poisoning, but may include thermal, asphyxiate, and physical injury risks.	<p><b>Time:</b> Good benefit limiting agent exposure.</p> <p><b>Distance:</b> Good benefit when unprotected, upwind and away from contaminated area and casualties.</p> <p><b>Shielding:</b> Good when shielding appropriate to the agent, i.e. respirator and/or PPE*.</p>
<b>Explosive</b> 	Usually sudden commercial or industrial accidents of varying scope and magnitude. May also involve criminal and terrorist incidents.	Primarily physical injury, but may include thermal, chemical, etiological, or even radiological.	<p><b>Time:</b> Limited benefit as occurs in micro seconds.</p> <p><b>Distance:</b> Good benefit.</p> <p><b>Shielding:</b> Mixed depending on type size or explosion and type of shielding. Beware of structural collapse</p>

\*PPE: Personal Protective Equipment


**Contact details:**

Martin Krottmayr, Sr. Officer Technological Hazards Preparedness  
 martin.krottmayr@ifrc.org

<https://media.ifrc.org/ifrc/techbiohazards/>

