Background briefing: What happens if nuclear weapons are used?

Right now, there are increasing threats to use nuclear weapons from both North Korea and the United States, to unleash fire and fury, and to incinerate cities. Yet, there is very little discussion about the actual consequences of using nuclear weapons- this briefing provides a short overview of what a nuclear weapon could actually do.

What happens if a nuclear weapon is used today?

The explosion of a Hiroshima-sized (15 kt) nuclear weapon over a densely populated area such as Tokyo, Los Angeles or Seoul would likely kill more than 100,000 people immediately. Up to 800,000 more deaths could occur within a few weeks. The combined effects of blast, burn, and radiation are multiple pathways to harm. The recent test by North Korea has been estimated to have a yield of 100 kilotons (about seven times as large as the Hiroshima bomb), and could cause the number of deaths in a densely populated area to reach over a million.

The extent of the damage varies depending on factors including the height of detonation, time of day, atmospheric conditions, terrain and infrastructure such as buildings.

Initial Flash
Any person or object exposed to the explosion would first experience an extremely intense flash of heat and light. It would burn anything flammable within up to 3km of the explosion. This would temporarily blind anyone that looked in that direction, causing traffic accidents and blocking roads in the vicinity of ground zero.

Blast
The initial blast wave feels like wind blowing around 800 km/h (500 mph). It would destroy everything (including concrete buildings) within a 1.1 km radius. Winds could reach up to 110 km/h in a 3km circle, strong enough to lift people and objects and turn them into deadly projectiles. The blast sound of a thousand thunderstorms is deafening for at least 15km.

Firestorm
A few minutes after the explosion, firestorms would result from the coalescing of individual fires started by the initial flash of light and heat and consume all flammable materials and available oxygen.

Due to the large area of the fire, the fire zone would act as a huge pump, sucking in air from the surrounding areas and driving heated air upwards. This pumping
action would create winds with velocities as high as 50-80 kilometers/hour, and is what creates the iconic mushroom cloud.

The temperature in the fire zone, the hurricane-force winds, the lack of oxygen, the destruction of water mains and tanks by the shock wave, and the presence of debris from the blast blocking roads and access routes would make firefighting almost impossible.

The number of acute deaths caused by fire could be 3–4 times higher than deaths caused by the blast.

**Radiation**
This is what makes a nuclear weapon different, and causes the long-lasting intergenerational impacts.

The initial pulse of neutrons and gamma rays emitted from a nuclear explosion irradiate all living things directly exposed, and those within a 1.3km radius can expect to die in the coming hours to weeks from the acute radiation effects. Radiation exposure could lead to a variety of symptoms including nausea, bloody diarrhea, and hemorrhages.

Longer term radiation exposure effects are often fatal and include leukemia, thyroid cancer, breast cancer, and lung cancer, as well as non-fatal diseases such as birth defects, cataracts, mental retardation in young children, keloids, and others.

Depending on the height of the detonation, radioactive fallout will descend on the area after the explosion and travel large distances on the winds created by the blast and firestorms. Areas far away from the detonation could be subject to higher levels of radioactivity, leading to casualties and radiation sickness.

**Emergency relief efforts**
Health professional staff, hospitals, and other health care resources are concentrated in urban centres, and would likely be disproportionately affected by a nuclear weapons attack. Even if they weren’t destroyed, no city has the resources to treat the massive casualties caused by a nuclear explosion. No hospital stocks enough blood to transfuse the radiation victims, or has enough burn units to deal with those managing to survive the fireball.

In Hiroshima, of 300 doctors known to be working in the city at the time of the nuclear bomb, 270 were reported dead, 1654 of the 1780 nurses were dead, and of 140 pharmacists 112 were dead; 42 of 45 hospitals were non-functional. Even in the most resource-rich settings, there is a wide gulf between the potential casualties of a single relatively small nuclear explosion and the health care resources available to respond to its aftermath.

UN Agencies have found that there is no way to adequately prepare for such a disaster. There is no way to mitigate and save lives or do much more than bury the dead once the risk of calamitous fallout decreases enough to get close to affected areas.
**Nuclear weapons are becoming prohibited under international law.**


Based on the consequences of any use of nuclear weapons, this treaty outlaws the use, threat to use, possession and development of nuclear weapons. It strengthens the norm against nuclear weapons, delegitimizes the possession of these weapons, and discourages their spread.

States will gather in New York on 20th September 2017 to sign the Treaty.

This will be a high-level event when the UN Secretary-General, the President of the General Assembly, the President of the International Committee of the Red Cross and Red Crescent, the International Campaign to Abolish Nuclear Weapons and many heads of states and foreign ministers will gather to reinforce their rejection of nuclear weapons as legitimate means of warfare.

The Treaty will send a strong signal to countries like North Korea and the United States that preparations for and threats to use nuclear weapons is unacceptable behavior.

**About ICAN**

ICAN is a global coalition of non-governmental organisations working on humanitarian and environmental issues. The campaign has been the leading non-governmental organization in the three international conferences on the humanitarian impact of nuclear weapons and the negotiations of the Treaty on the Prohibition on Nuclear Weapons.

ICAN has a number of experts on the impact of a nuclear weapons detonation, including health professionals, emergency relief professionals and survivors of Hiroshima and Nagasaki.

Contact press@icanw.org or +41 78 613 04 72 for interview possibilities.