

CANADIAN NETWORK TO ABOLISH NUCLEAR WEAPONS

WHAT A NUCLEAR BOMB WOULD DO

The detonation of a single nuclear bomb or "warhead" would cause a local disaster on a scale that few people in the world have seen and survived. This leaflet does not describe the effects of a nuclear war. In that case many nuclear bombs would be exploded. No help would come to the survivors, ever. It would be the end of civilization in the countries concerned, and perhaps over the whole world. As well as destruction of all big cities, there would be terrible damage to the environment and ecology from the smoke and fumes of the fires. Radioactive fallout would leave whole continents radioactive for centuries.

What follows is a description of the effects of a single burst, such as might happen by an accidental or unauthorized launch of a ballistic missile, or a bomb exploded by a terrorist organization.

The two atomic bombs that destroyed Hiroshima and Nagasaki in August 1945 were in the ten- to twenty-kiloton range. (A kiloton is the equivalent of a thousand tons of high explosive.) Modern hydrogen bombs vary from 10 to 100 times that explosive power. During the Cold War they were aimed at cities and set to explode high up in the air, to do maximum damage to people and buildings.

Flash and fireball The first effect of a megaton bomb explosion in the air is an intense flash of light, as quick as a lightning flash but a thousand times as bright. It is accompanied by a powerful pulse of heat radiation, sufficient to set fire to light combustible material out to a distance of fourteen km., and to paint or wood at half that distance.

Immediately after the flash, a "fireball" forms in the air and rises for several seconds, blindingly bright and radiating much heat. On a clear day or night, people up to eighty km. away who happened to be facing that way, or who turned their eyes to look where the flash came from, would be temporarily or permanently blinded.

Within ten km. of "ground zero" (which is the point directly under the explosion) all parts of the body exposed to the flash would be burned deeply into the flesh. At greater distances, out to fifteen km. at least, the flash would cause superficial burns. Clothing that caught fire would cause many more burns.

Blast Starting at the same instant but travelling more slowly (like the sound of thunder following a lightning flash) comes an enormously powerful blast wave. It would destroy even reinforced concrete buildings for a radius of two km., and ordinary brick or timber frame houses out to eight km. Major damage to houses would extend out to fourteen km., and windows would be broken at twenty or thirty km. People at a distance, if they realized what had happened when they saw the flash, would have a few seconds to lie down, or even to dive into a ditch or hollow, before the blast hit.

Within three km. almost everyone would be killed, either directly by the blast or by collapsing or flying masonry. Within eight km. about fifty per cent of people would be killed.

Immediately following the blast wave would be hurricane force winds, first outwards from the explosion, and later inwards to replace the air that went out. Within four km., the wind would be of tornado force, six hundred km./hr., sufficient to drive straws into wooden utility poles or glass splinters into people. People in the open would be picked up and hurled into any object strong enough to be still standing.

Firestorm Many fires would be started by the first flash. Burst fuel tanks, gas mains, and collapsed buildings would provide more fuel. Multiple fires can coalesce and cause a "firestorm" -- a big enough fire to form its own wind, blowing inwards from all sides. The temperature even in basements and bomb shelters rises above lethal levels, and all available oxygen is used by the fire. The wind blowing inwards is of gale force, so that even strong uninjured people would have difficulty walking or trying to run outwards away from the fire.

Delayed Radiation ("fallout") A nuclear explosion, as well as giving off a great pulse of radiation at the time, leaves everything in the vicinity radioactive. In the case of an "air-burst" as just described, most of the radioactive products are gaseous, or completely vaporized, and rise with the fireball to come down slowly over a wide area. There might be a rainstorm containing radioactivity, as there was at Hiroshima. The rubble within a few kilometres

of ground zero would also be radioactive. This would hamper rescue efforts and affect the few survivors from the central area.

In any nuclear bomb explosion a lot of the original fissile material (plutonium or uranium-235) in the bomb does not get destroyed. This would result in widespread contamination, increasing the risk of cancer for anyone who survived ten to twenty years, or who came later to live in the area.

Injuries and Deaths In the bombed city about one third of the people would be killed instantly or fatally injured, one third would be seriously injured, and the rest uninjured or only slightly injured. Injuries would be due to burns from the flash and from fires, crushing and asphyxia by falling masonry, the impact of heavy flying objects and flying glass splinters, and by being hurled through the air; as well as the direct effects of blast and radiation on the human body.

Most of the injured and burned people would die where they lay, after hours or days of suffering, or be burnt to death trying to crawl away from the fires. They would receive no care or help at all, not even an aspirin tablet or a drink of water. No rescue services within the area of major structural damage would be able to function. All down-town hospitals would be destroyed, and there would be no water, electricity, or telephone communication. Those survivors who managed to reach a hospital in the suburbs would find it completely overloaded and lacking essential services and supplies.

A Ground Burst If a megaton bomb exploded at ground level instead of high above the city, the main difference would be an enormous crater four hundred metres across and seventy metres deep. All the dirt, rock, or masonry excavated would be made into radioactive dust and small debris. The larger particles would quickly descend in the immediate vicinity, and the finer particles and dust would descend in minutes or hours, mainly downwind from the site of the explosion. The radiation dose to people exposed to this fallout would be lethal to anyone in the open or in a frame house for several hundred kilometres downwind.

The area of blast damage would be smaller by perhaps a half, compared with an air-burst, but the bomb would cause a local earthquake that would add damage to buildings.

A nuclear bomb that a terrorist organization could make, probably in the 1- to 10-kiloton range, exploded near ground level, would cause much smaller areas of blast, heat, and burn damage. The numbers of immediately killed and severely injured people would be counted in thousands, not hundreds of thousands. The bomb would vaporize all people and buildings in the immediate vicinity, and make a crater that might be as much as one hundred metres in diameter. Fallout would make the area dangerous to live in for many years.

If the bomb were exploded in a ship in the harbour, there would be a crater in the harbour floor and a tidal wave. The outstanding feature would be a radioactive downpour because much of the water in the harbour would be made radioactive and thrown high into the air as fine and coarse spray.

THE ONLY WAY TO PREVENT THESE THINGS EVER HAPPENING IS TO ELIMINATE ALL NUCLEAR WEAPONS FROM THE WORLD

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