# NUCLEAR WAR SURVIVAL PRIMER
## Don't Be So Quick To Kiss It Goodbye

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For decades the American public has been encouraged by the popular media and agents of disinformation that nuclear war would result in total annihilation of the country and misery for the few survivors. While it certainly would be a terrible catastrophe, given the current proliferation of nuclear missiles and the unaccountability of numerous tactical nuclear weapons, as realists we observe that nuclear attack is not unthinkable, but probable.

But the truth is not in the immense destructive potential of nuclear weapons, but the fact that nuclear attack is survivable by most people with a minimum of knowledge and preparedness. If you can avoid being at ground zero, you have an excellent chance, and almost inevitably will survive at least for the short term even if you do nothing. In the aftermath of nuclear exchange most will not die of the detonations or even residual radiation, but of fear, exposure to the elements, disease, injury and hunger.

Given the nuclear threat, the militia must be concerned from two perspectives: family and personal protection, and operational integrity. If confronted by the horror of nuclear attack, our task is to avoid being paralyzed by fear. We must remain capable of effective and calculated response necessary to guarantee not only our short and long term survival, but our ability to work, and effectively function in the aftermath.

The most important thing to remember is that there's no such thing as doomsday. The shock of seeing a mushroom cloud, the sudden flash of a thermonuclear pulse, or a news report that borders on hysteria news is not the signal to bend over and kiss it goodbye, although many will be unable to cope with the fear, terror and emotional paralysis accompanying such an event. For us it means it's time for self-defense. Here's what you might expect.

First, you may not even know the nation is under attack; there may be no direct warning. Public warnings may be 20 minutes maximum, if at all. Tactical submarine strikes from coastal waters may occur in less than 7 minutes from launch and arrive at several major cities/military targets within seconds of each other. Terrorist strikes, perhaps more limited in areal extent due to size limitations of portable weapons (perhaps up to 0.5 kT), may occur with no warning.

The affects of nuclear weapons include blast, thermal radiation (heat), and an initial nuclear pulse (radiation) and EMP (electromagnetic) pulse. These affects are directly proportional to the yield, or size, of the weapon, the height at which the detonation takes place above the ground and the type of weapon. An air burst generates little residual radiation (fallout) but puts nearly all its shock energy into air blast. The thermal and initial radiation travel considerable distances, particularly in clear weather. In a surface burst the earth will absorb much of the initial radiation and shock energy thereby reducing its affect at distance from the blast, but more of the earths' surface will be pulverized and thrown up as radioactive particles.

All nuclear weapons emit electromagnetic pulses (EMP) which can cause severe damage to unprotected electronic devices (Ex. radios, microwave systems, electronic ignitions, and electronic devices which are part of, or connected to, telephone or other cable systems). For most tactical (battlefield) nuclear weapons, the EMP effects would be relatively short range and the physical damage from the blast wave or thermal radiation would be more immediate

and significant.

[It is ironic that nuclear weapons are classified as "weapons of mass destruction" right along with semi-automatic rifles. Is it little wonder how easy it is for our priorities and emotional response can be manipulated by the intentional misuse of words and definitions?]

Most of us tend to contemplate the nuclear threat in terms of a surprise attack on major cities, industrial centers and "hard" targets by ICBM weapons of 1-20 megaton size. The 16.5 mile and 5.1 mile radius for major blast damage respectively from an air burst from such weapons is sobering and significant. More common however, might be the use of tactical weapons (nuclear capable artillery, aircraft, missiles, rockets, etc.) in the 0.5 to 10 kiloton range. It is important to note that the blast damage from nuclear weapons is not in direct proportion to size. An increase in explosive power by a factor of 10 results in only a doubling of the radius of damage.

Most manuals provide a description on how to protect against three primary hazards: blast, heat and radiation. We need to also consider psychological and secondary affects.

Blast:

A fraction of a second after a nuclear detonation a high-pressure wave, or blast, moves outward from the fireball at several hundred miles per hour. The characteristic "mushroom-shaped cloud" can rise to 40,000 feet in 5-8 seconds. The blast, or "overpressure" wave associated with the detonation causes most of the damage and injuries associated with the explosion. Individuals and materials can be thrown at hurricane speeds. The overpressure from a one megaton explosion can collapse houses to 5.5 miles and lungs at 2.2 miles. The best protection from blast affects is a combination of distance and shielding. If caught in open areas, there is little time to run for shelter, take cover where you are and do it immediately. Good protection can be found in below-ground shelters such as a foxhole, manhole, storm inlet, or against a subsurface basement wall. Field expedient shelter may be found in a culvert, ditch, depression, behind a concrete structure or even a small hill. Lie face down, head toward the blast, shield the eyes or exposed skin for at least two minutes to allow time for the worst winds to pass before seeking better shelter. Count the seconds from the flash to the sound of detonation to determine your approximate distance from the blast.

Heat:

In less than one millionth of a second from a nuclear detonation great amounts of heat are released leading to the formation of a hot and highly luminous spherical mass of air and gas residues known as the fireball. The fireball of a one megaton weapon would be brighter than the sun at 50 miles away. The temperature and brightness of the fireball does not vary greatly with the size of the weapon. But the heat is sufficient to ignite combustible materials including buildings, forests and debris. The degree of heat damage is dependent on distance, weather and terrain but can be expected to extend from 5-8 miles from a one megaton burst. Protection from the affects of heat are essentially the same as for blast. Take cover, close your eyes, cover exposed skin where possible and remain down until the blast/heat wave has passed and debris has stopped falling. After the blast prepare to fight fires.

Thermonuclear Pulse:

Tremendous amounts of light and radiation are released for the first 5-45 seconds (20 megaton) after a nuclear detonation. Consisting primarily of neutrons and gamma rays (similar to x-rays), the radiation emitted from the detonation can have serious, fatal or incapacitating affects on individuals.

Radiation effects are potentially the most serious of those associated with nuclear detonation. The major problem is from the initial radiation which results when an unprotected individual receives a lethal or incapacitating dose of radiation before he can take protective action. Those receiving a potentially lethal dose will usually show symptoms of radiation sickness within two hours and die within one to two weeks. Shock and coma are early symptoms of a lethal dose (approximately 650 rads); at lower dose levels an individual may experience deterioration of physical performance, mental disorientation, vomiting, diarrhea, nausea, lethargy and depression (150+ rads).

Of lesser importance are dangers from light and flashburns caused by the thermonuclear pulse. The intense light associated with the pulse can cause temporary (a few seconds to several days) or permanent (if a person is looking directly at the fireball at the moment of detonation), blindness. The retinal spot burn (scar) received may result in focusing problems, but permanent affects should be minimal. Flashburns to unprotected skin from the pulse can occur to an estimated 1.5 miles from a 10 kiloton weapon and 20 miles from a 10 megaton weapon. Flash burns caused by thermal radiation are identical to skin burns caused by any heat or fire regardless of its source and first aid measures would be comparable.

While clothing, including head protection, will provide some protection against thermal heat and light, protection against initial thermonuclear radiation consists of distance and/or protection by a substantial barrier (mass) emphasizing the need to promptly heed warnings of impending attack. Defensive measures for the militia would include digging in. Holes including individual foxholes to improved defensive positions (bunkers) offer excellent protection from heat, blast and radiation. In general, the deeper or better protected by earth mass the better. As before, culverts, storm drains, manholes and deep basements offer temporary protection to the degree they are protected from fire effects and provide sufficient mass. Immediate field actions are the same as described for blast effects; seek immediate cover. Subsequent actions should include efforts to determine or provide for fallout protection or evacuation.

<u>Electromagnetic Pulse (EMP):</u>

An electromagnetic pulse (EMP) is a large impulsive electromagnetic wave generated from the release of high energy photons (gamma radiation) from a nuclear explosion which interact with atmospheric molecules, or directly in systems, to produce electrons. The large lectromagnetic pulses created by a nuclear burst are line of sight, or elevation dependent. For example, a 10 megaton blast at 62 miles elevation could create and EMP effect over 1/3 of the United States.

These pulses, or waves, induce strong electrical surges or transient currents of up to 50 KV/M horizontally and 20 KV/M vertically in all unprotected electrical lines and circuits. These currents are extremely large and fast, reaching a peak voltage in 10/billionths of a second (10 nanoseconds) over a duration of 1 millionth of a second (1 microsecond) within a frequency range of 10-100 kHz to 100 MHz.

COMPARATIVE TIME

Eyeblink 1/10 second
Lightning 1/1000 second
EMP 10 nanoseconds

EMP induces large currents into all wires, cables and electronic components in the affected area. It will knock out radio communications for minutes to hours, burn out sensitive electronic circuits, and interfere with telephone and electrical systems. Current will be induced in ANY conductor including antennas, feed cables, guy wires, metal towers, piping, conduit, computers, radar, electrical wiring, rebar, corrugated metal roofing, fencing, railroad tracks and metal car and airplane bodies. While individuals may receive a shock if touching an exposed metal conductor during an EMP burst, the threat to people is minimal. However, ANY unprotected electronic equipment can be disrupted or damaged by EMP.

EMP produces almost instantaneous and generally permanent damage to sensitive electronic components. Household circuit breakers offer no protection against EMP, however there are a variety of active and passive defensive actions that may be taken to protect electronic equipment which are usually most effective when used in combination.

Passive protection consists essentially of electrical isolation. Disconnection from antennas, power cords and cables is essential. Placing equipment in Faraday cages or grounded metal cabinets (partial protection may be available in refrigerators, washing machines, etc. to the extent that the metal offers few or no gaps in the encasement) and using non-metallic guy lines and structural parts for radio, satellite, and related equipment are beneficial. Active methods of protection include the use of gas gap discharge tubes (fair to good) and MOV (metal oxide varistors, better) for transient current suppression. Note that the surge arrestors commonly sold for use with computers and sensitive electronic equipment will generally not offer sufficient protection.

Other alternatives include the use of more highly EMP resistant tube type radio equipment, or the use of battery powered equipment with short internal or detachable antennas.

Relatively few of the 2000+ civilian broadcast radio stations are EMP protected. Disruptions to the ionosphere may persist for some time depending on the nature of the nuclear conflict. Amateur radio stations may be operable although likely banned for national security.

Residual Radiation (Fallout):

Residual radiation, or radioactive fallout, is one of the primary hazards of detonations in which the fireball forms on or near the earth. Fallout is produced when material from the earth is drawn into the fireball, vaporized and combined with radioactive material and condensed into particles which fall back to earth. The larger particles which fall to earth quickly after the blast exhibit very high levels of radiation in the vicinity of ground zero. Small particles may be carried many miles down wind before they settle to the earth.

Residual alpha, beta and gamma emitting radioactive isotopes (Iodine 131, Sr90, Ba140, Cs137, etc.) created in the fireball can result in radiation burns and severe, if not lethal, damage to tissue. Some protection from Iodine 131, a gas which damages the thyroid gland, can be prevented by the use of potassium iodide tablets. Alpha radiation is stopped by clothing and the skin and is not harmful unless breathed into the lungs or ingested. But our primary concern is with beta and gamma emitters.

Beta radiation is much more penetrating than alpha radiation and may cause skin burns or seriously damage internal organs if eaten or inhaled. Beta particles generally exhibit rapid initial decay and are therefore less important. If exposed, prompt removal of clothing and thorough washing, particularly of hair, are essential to avoid external burns and inadvertent ingestion.

Gamma radiation is the most damaging of the three because it penetrates the entire body. Nerve cells are not directly stimulated by nuclear radiation so you cannot feel the onset of radiation damage. An important secondary affect of radiation exposure is transient immune depression. Radiation impairs the body's immune system and makes the body more susceptible to diseases and infections.

Radioactive decay begins immediately after detonation but depending on the isotope, lethal radiation may persist for hours, days or years following the detonation. There are no first aid procedures which will help a person who has been exposed to radiation other than making them as comfortable as possible. If the radiation dose was small, the body will generally replace the damaged cells and symptoms will go away without recurrence.

Defensive measures from residual radioactivity are relatively simple but must be implemented thoroughly and in detail if they are to be effective. The primary defensive measures against residual radiation consists of sheltering in place and in prepared shelters. Creative construction and use of field expedient shelters can provide effective protection against blast as well as radiation from fallout. The highest radioactivity from fallout will be immediately downwind from ground burst which may equal or exceed 10,000 roentgens per hour (R/Hr.). Below ground shelters offer a protection factor of 100-1000 which means that at a minimum the radiation penetrating the shelter will be at least 100x below the outside radiation levels. This level of protection requires the placement of at least three (3') feet of dirt or equivalent mass between you and the radiation source to absorb gamma radiation.

PROTECTION FACTORS (PF)

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| PF 1 = | Outside unprotected |
| PF 2 = | Inside house, unprotected |
| PF 5-10 = | Inside improved house; crawlspace |
| PF 40 = | Improved building; basement |
| PF 100-1000 = | Below ground shelters |

The good news is that the radiation intensity of fallout decreases quickly, i.e., by a factor of 10 for time multiples of 7 (The seven-ten rule). Therefore, in-place sheltering of 3 to 7 days can provide effective protection even under serious fallout conditions.

In bunkers, basements, and even foxholes and similar structures protection is achieved by a combination of mass and sealing out radioactive dust and debris. Every effort must be made to close off hatches, doors, windows and other openings to keep radioactive dust out. Individuals should remain protected until fallout has stopped or sufficient time has elapsed to attenuate radiation levels. Civilians or those in the militia not equipped with radiation counters might find the construction of inexpensive field expedient radiation counters a useful exercise.

Perhaps the most cost and time effective field expedient shelters are the trench or foxhole. A simple trench, up to about four feet wide and of indeterminate length, covered with three or

more feet of soil (perhaps even in combination with a vehicle to save time) will provide substantial blast protection through earth arching and radiation attenuation through earth mass. If possible include at least one right angle in your entrance. A couple of shovels, some plastic sheeting and some means of structural support are the basic ingredients of a field expedient shelter.

If limited exposure to fallout particles cannot be avoided, the use of a respirator, equipped with a standard HEPA (High Efficiency Particulate Air) filter (or NATO equivalent), in combination with removable outer clothing, can provide a basic low level radiation protection. Note however that a HEPA filter would be sufficient to prevent inhalation of radioactive isotope particulates but cannot protect one from the penetrating affects of gamma radiation. Respirators offer limited protection. Users should understand their limitations before relying on their use.

Some key points and general considerations are as follows:

1. Be careful to remove all fallout particles and prevent fine dust from entering the shelter. Good personal hygiene is essential; remove dust from hair, under nails, in cuts or wounds whenever possible.

2. Food and water in sealed containers will not become radioactive. Once the container is cleaned the food remains safe for consumption even if exposed to high levels of radiation. Similarly, garden vegetables would be safe to eat if properly cleaned of fine particles.

3. Water does not become radioactive upon exposure to radiation. However, care must be used to filter suspended fine particulates which may remain dangerous possibly long after fallout has ended.

4. Nuclear winter is a myth; radiation sickness is NOT contagious.

5. Persons not engaged in essential activity, particularly children and the elderly, should remain under cover as much as possible before, during and after nuclear attack to minimize radiation exposure.

6. The same preparations you are already making for emergency events are largely applicable to survival during and after nuclear attack.

<u>Psychological Defense:</u>

Nuclear attack may be accompanied by brilliant flashes, thunder and ground shaking, strange green and purple clouds which may turn day into night and widespread fires. Those remote from a nuclear blast might only recognize its symptoms in the failing power and phone systems, and absence of TV and radio stations. Regardless, wherever you are the mental shock accompanying the realization of the event will likely be profound.

Regardless of whether you may want to survive in a post-nuclear war, if you can avoid being at or very near ground zero your chances of surviving a nuclear attack are very good. Then what? Will you succumb to apathy or irrational terror and become physically or mentally incapable of survival, or will you endure?

A basic knowledge of what to expect and how physically cope with the hazards associated with a nuclear detonation, combined with measured preparation, greatly increases our potential for long term survival. Performing the hard work necessary for survival is also one of the best ways to help cope with the fears and uncertainties associated with war. However, to perform effective work it helps to know what needs to be done.

A little knowledge can go a long way. Do you have the emotional preparedness to help yourself and others to be survivors? Are you willing and sufficiently disciplined to put away a minimum of essential materials and learn the basics of sheltering to make survival possible?

Conclusion:

Nuclear war, perhaps second only to the use of biologic agents, is uniquely suited to international manipulation of population, governments and their economies. Nuclear weapons are not simply destructive weapons but weapons of terror. With pending economic collapse and growing political demands for greater command and control history reflects that war often accompanies economic dislocation and/or political disenfranchisement. Given history's precedent, would a sane man simply ignore the possibility of nuclear attack when preparation is so simple?

Knowledge is the most precious commodity in time of crisis. You can obtain additional information and/or a list of references on request from the NCCM Public Affairs Office.

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