



(3) RURAL CIVIL DEFENSE

TIP SHEET



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RURAL AREAS AND NUCLEAR ATTACK

In the event of nuclear attack on the U. S., the likely target areas would cover an estimated 7 percent of the total land area. The remaining 93 percent, with more than 90 million population, probably would need protection only from radioactive fallout.

Rural residents would mainly be concerned with two things; personal survival and producing and maintaining a food supply. How well a farmer meets these concerns will depend a lot on how well he understands the hazards of radioactive fallout and how well he meets them with the facilities he has available.

Fallout is created when a bomb explodes close to the ground. Tons of earth and other materials are lifted and carried aloft into the mushroom cloud, where they mix with radioactive debris from the bomb. This becomes radioactive dust. It is carried by upper winds until it settles back to earth.

Probably 50 percent of the fallout would occur within the first 12 hours; the rest would descend more gradually unless washed out by rain. Most of these radioactive elements lose their strength quickly. Generally, for each seven-fold increase in time, the radiation decays by a factor of ten. For example, if there is a radiation rate of 1,000 roentgens per hour (r/hr) at 1 hour after the explosion, it will decay to a rate of 100 r/hr in 7 hours and be down to 10 r/hr in 49 hours.

TYPES OF FALLOUT

Gamma rays and beta particles are the most important types of radiation in fallout. Gamma rays, the greatest immediate danger, are electromagnetic energy, just as light, radio waves and X-rays. They are very penetrating.

Gamma rays cause serious injury to living tissue by damage or destruction of the body's cells. Unless the damage is too severe, the body is repaired in time, much as a burn heals. Man and animals can be protected only by remaining under shielding materials dense enough to absorb the radiation until its density decays to a safe level. Usually this is only a matter of hours or at most a few days. Gamma rays do no damage to food or water.

Beta radiation is not very penetrating; ordinary clothes would serve as protection. But beta radiation can cause bad skin burns and if eaten would seriously injure internal organs of man or livestock. Some of the long-lived beta isotopes could become a food hazard, requiring decontamination, if large quantities settled on soil and crops.

Best protection from beta radiation is to avoid contact with radioactive dust by keeping it out of food and water. If food and water become contaminated with fallout, they must be decontaminated before used. Fresh fallout deposits only a surface contamination that can be washed or brushed off.

If you are covered with radioactive dust, remove the contaminated clothing, wash the exposed areas of your body--particularly your hands and hair--with soap and water and put on clean clothes. This would decontaminate you and prevent the beta dust from getting on others.

No matter how much radiation you may be exposed to as the result of fallout, you yourself will never become radioactive. Even if you become ill, no one else can catch radiation or radiation sickness from you. But it's common sense to avoid fallout dust and stay well.

WORDS TO KNOW

A-BOMB AND H-BOMB. Popular terms for what correctly are called nuclear weapons. An atomic or A-bomb explodes through the fission (splitting) of atomic nuclei. A hydrogen or H-bomb is called a thermo-nuclear weapon because tremendous heat is needed to start the fusion process.

EARLY FALLOUT. The fallout that returns to earth during the first day. The radioactivity of such fallout decreases rather rapidly at first, and more slowly as time passes.

FALLOUT. The radioactive debris of a nuclear explosion which eventually falls to earth in particles. The amount of fallout is much greater if a weapon explodes on or near the surface than if it explodes high in the air. Large amounts of earth are drawn up by the fireball. High in the sky, radioactive elements are incorporated into the earth particles which are scattered by winds and in time fall to the ground.

FALLOUT RADIATION. The radiation given off by fallout particles. Each particle of fallout gives off radiation as though it were a minature X-ray machine. This radiation consists chiefly of beta and gamma rays. Beta rays are dangerous only if fallout particles touch the skin or are swallowed or inhaled. Gamma rays, like X-rays are very penetrating and create the need for protective shielding.

FIREBALL. The large, swiftly expanding sphere of hot gases, producing brilliant light and intense heat, that is the first obvious sign of a nuclear explosion. After about one minute the fireball fades into the atmosphere.

GROUND ZERO. The surface point at or above which a nuclear weapon detonates.

INITIAL RADIATION. The burst of radioactive material sent out from the explosion during the first minute after detonation. Initial radiation is most deadly within about two miles of ground zero.

KILOTON. The power of nuclear weapons is measured in equivalents of the explosive energy of TNT. A one-kiloton weapon has the explosive equivalent of 1,000 tons of TNT.

MEGATON. The explosive equivalent of one million tons of TNT.

ROENTGEN. An accepted unit for measuring radiation in air, just as a calorie measures heat or a kilowatt hour measures electricity.