



# RURAL CIVIL DEFENSE

## TIP SHEET



MN 2000 RCDS 2

Number 2.

April, 1962

### RADIATION HAZARDS AND PROTECTION FOR HUMANS AND LIVESTOCK

Radioactivity from nuclear fallout creates two kinds of hazards to living creatures which are of special concern to farmers.

\* External radiation is caused by radioactive sources outside the body.

\* Internal radiation is caused largely by eating or drinking contaminated food, water, or feed.

Both kinds of radiation are important to agriculture: (1) as a potential hazard to farm people and their livestock, and (2) as a source of danger to consumers of agricultural food products. No one knows where bombs might explode or where winds might carry fallout. And, farmers everywhere have a responsibility to do everything possible to protect their families and livestock.

External radiation comes from fresh radioactive dust containing gamma rays. Gamma rays are very penetrating and cause serious injury to living cells. The only protection from them is shielding placed between people or animals and the fallout dust which is the source of radiation. For that reason, your family and livestock should be protected in the safest places available.

Internal radiation comes from the beta particles in fallout dust which contaminate food and water. Protection consists of providing adequate cover for food, water, and feed to prevent fallout dust from contaminating these materials.

Time to prepare--Farmers who receive the warning would have some time to get their stock under shelter and to cover their critical supplies. Even close to the explosion, fallout probably would not arrive for half an hour or more. Other places within the fallout area but further away from the explosion would not receive fallout for several hours. By advance planning and fast action in emergency, a farmer can do much to protect his family and livestock from radiation hazards.

If attack comes, as much as 75 percent of our land area might temporarily be blanketed by hazardous radiation. After 48 hours it might be dangerous in about 25 percent of the country. About 7 percent of the nation might remain radioactive for much longer.

Kinds of protection--Everyone has some protection.

\* The lapse of time is a natural protection because of the decay factor of radioactivity. The longer it takes fallout to reach an area, the less radioactive it is.

\* Distance is also a natural protection because radiation exposure is less the farther away a person is from the source. In a fallout area, if you are inside, stay toward the center of the building and away from the outside walls. A person in a barn with fallout on the roof 20 feet overhead would get less radiation from above than he would inside a shed or house with a similar roof top only 5 feet overhead.

\* Shielding, the most important protection, comes from shelter. Inside a house the radiation will be only 50 percent of what it is outside. In a basement away from the windows, about 10 percent or less of the outside radiation could penetrate. But if the outside rate is very high, even 10 percent might be too dangerous.

Existing shelter areas can be improved by adding more shielding with sandbags, concrete blocks, or other materials. The denser the shielding material, the less the thickness required. Equal protection is offered by 2 1/2 inches of lead, 7 inches of steel, 24 inches of concrete, 36 inches of earth, 50 inches of water, or 90 inches of wood.

Shelter possibilities--In every community certain buildings such as basements of schools, churches or stores provide substantial shelter possibilities. Most of these buildings are being surveyed and some will be offered for use as public fallout shelters.

In rural areas most persons will prefer to have their own home shelters. Farmers who live far from town probably will want to provide shelter on their farms for protection of their families and employees.

For rural shelters--Of special interest to rural people is that an underground shelter covered with at least 3 feet of earth would reduce the radiation to about 1/5,000 of the radiation rate outside. Such a shelter would need a simple, baffled entryway plus a regular door or hatchway. Air comes in through vents. Low-level lighting may be provided by a 150-milliamper flash light bulb wired to a four-cell hotshot battery. Water and food for family use and essential equipment, such as cots, must be available.

An inexpensive do-it-yourself shelter can be used as a storm shelter or root cellar. And it is always ready in an emergency to protect families both from

the effects of radiation sickness and from possible death.

Livestock protection--The best shelter for animals is a two-story basement barn with a hay-filled loft. A good, tight barn would reduce radiation by about one-half.

Give milk cows the most protected place in the middle of the barn; this will best shield them and also be safer for the milkers. If you can, milk the cows before fallout occurs; you may not get to them again for a day or two. Reduce the amounts of water and concentrated feed. If practicable, put cows and calves together so the calves can suckle and relieve the discomfort of full udders.

Place other breeding stock in the best available shelters and fill other farm buildings with less valuable animals. Even a shed without sides gives some protection. Livestock of about equal value should be loose housed. Animals confined in stalls near doors and low windows have far less protection than those in the most protected areas of the building.

How long to shield livestock--Keep livestock under cover at least during the first critical period of 24 to 48 hours and longer if possible. If there are too few buildings to house all the stock, put other animals in a yard, near farm buildings, or even in a tree-sheltered field. But, make every effort to keep them off contaminated feed.

Livestock feeding--Provide livestock with clean food and water. Store a 2-week supply, either under roof or covered with tarapaulins or other materials. If only a limited reserve of clean feed is available, use it for milk cows and other breeding animals. Rations may be reduced to the minimum needed for subsistence. But, it would be better to keep animals alive on contaminated feed and water than to let them die of starvation; they might recover from effects of the contamination.