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# Your Livestock Can Survive **FALLOUT** from **NUCLEAR ATTACK**



PA-516

U.S. DEPARTMENT OF AGRICULTURE

## FACTS ABOUT FALLOUT

*What fallout is.*—Fallout is radioactive material, produced by a nuclear explosion, that falls to earth from the upper air. The coarse particles of this material fall close to the point of the explosion. The fine particles may drift downwind for many miles—some for hundreds of miles—before settling to earth. Fallout is odorless; it may be as fine as dust or invisible.

*What fallout does.*—Particles of radioactive fallout emit radiation (similar to X-rays) that can change, damage, or destroy living cells. If an area were to be highly contaminated by fallout from massive nuclear attack, the radiation could injure or kill human beings and animals. Such fallout could contaminate food, water, buildings, yards, fields, and crops, and make them unsafe for varying periods of time.

*Duration of danger.*—The greatest hazard from radiation would exist during the first few days following a heavy deposit of fallout. The hazard would lessen with the passage of time, as radioactive materials decayed and the intensity of radiation decreased. Local civil defense authorities would make every effort to let you know when it is safe\* to come out of shelter and resume your activities.

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\*“Safe” as used in this publication means that, based on all presently available research, the object described does not contain sufficient radioactivity to cause serious external or internal radiation damage to humans or animals.

# Your Livestock Can Survive FALLOUT from NUCLEAR ATTACK



If we were attacked with nuclear weapons, the economy of the Nation might depend on the ability of you, the American farmer, to maintain farm production.

There have been confusing statements to the effect that the radioactive contamination from an all-out nuclear attack would make it impossible for the farmer to continue the production of food. *Such statements are false.* There are definite, practical measures you can take to protect your livestock, feed, soil, water, and crops—and insure your ability to continue the important job of producing the Nation's food.

One of the problems you might face is *radioactive fallout*. This publication discusses radioactive-contamination conditions that may occur as a result of heavy fallout from *massive nuclear attack*. The information given here is *not related in any way* to conditions that result from distant, controlled *testing* of nuclear devices.

## Animals

In nuclear warfare, massive fallout from a nearby nuclear explosion could emit radiation that would injure or kill exposed cattle,

sheep, horses, pigs, and other farm animals.

Where fresh fallout is heavy, the main danger to animals is external radiation from fallout particles lying on the ground and roof surfaces. If animals are not exposed to lethal amounts of this external radiation, they usually will not receive enough radiation to cause critical injury or death from skin contamination, or from internal injury caused by drinking contaminated water or eating contaminated feed.

For animals, as for humans, shelter is the best protection against fallout. It is generally impractical to remove animals from fallout areas. Therefore, shelter facilities should be kept in readiness, and an adequate supply of feed and water should be at hand.

A good animal shelter is a two-story, basement-type barn with a hay-filled loft. This type will reduce radiation exposure as much as 80 percent. Next best is the same type of barn without basement. Concrete buildings give better protection than wooden buildings. However, a good, tight, wooden barn would reduce the radiation dose by about one-half. Even a shed without sides would give some protection.

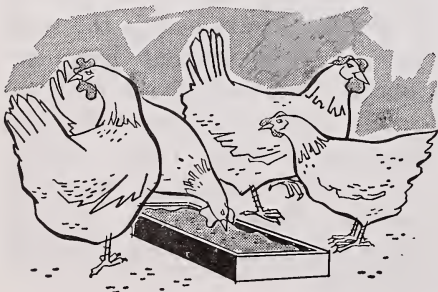
If pastures are only lightly contaminated, livestock may be released from shelter and allowed to graze within a few weeks after fallout; the time depends on the degree of contamination. However, *milking cows should be kept confined and be given uncontaminated feed and water to prevent contaminating milk until local authorities tell you it is safe to release them.*

## Poultry

Poultry are more resistant to radiation exposure than are other species of livestock. Also, most poultry are reared under shelter or are provided with available shelter. Consequently, poultry should have a greater chance of survival than other livestock.

Most poultry are raised on commercially prepared or packaged grains or feeds, and these materials are necessarily stored under some form of shelter. Thus, poultry feeds are the least likely to be contaminated by radioactive matter.

Because of these facts, poultry appear to be an important source of relatively high-quality protein for the farmer and his household following a nuclear attack.



## Feed

To protect feed, place a cover over it. Fresh fallout is like coarse dust; a cover will prevent it from coming in contact or mixing with the feed.

Grain stored in a permanent bin, and ensilage in a covered silo, are provided with adequate protection; they can be used as soon as it is safe for you to get to them following fallout.

A haystack in an open field can be protected with a tarpaulin or similar covering. The fallout will lodge on the tarpaulin and can be removed with it. The hay could be used immediately.

Many unprotected materials, such as uncovered haystacks and piles of farm produce, may be safely used as food and feed if the contaminated outer parts are removed.

If you find it necessary to put animals on contaminated pastures, provide the animals with supplementary uncontaminated feed. *If possible, avoid putting milking cows on pasture contaminated with fresh fallout.*

## Water

Water from covered sources, such as springs and wells, usually would be free from contamination even in heavy fallout areas; it should be safe for use by man and animals.

Water stored outside of shelter—such as in stock water troughs—should be covered with any material that will keep out dust.

Farm ponds, lakes, and creeks would be practically impossible to protect. However, their water

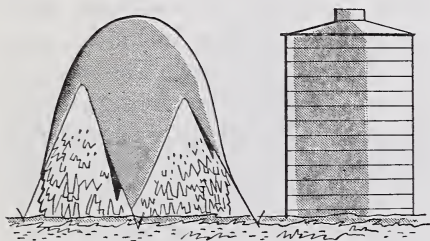
might be used a few days after fallout if it is urgently needed. Restrict the use of water from these sources; use the protected water first.

The boiling of water contaminated with radioactive particles will not make it safe. Distillation, however, will remove almost all of the radioactive material.

## WHAT TO DO

### Now

- Provide places of shelter for your farm animals and poultry. A number of farm facilities can be adapted to serve as effective shelters. For example, trench silos can be converted to livestock shelters by constructing roofs over them and covering the roofs with earth.



- Plan an efficient procedure for getting the livestock quickly under shelter if you should receive fallout warning. Discuss this procedure with your family and helpers. Work out a checklist, as a reminder of emergency tasks.

- Place your silage pits and haystacks in or near buildings close to the shelters; cover them with tarpaulins. Place protected feed and water in or near the shelters. Provide self-feeders or racks filled with adequate feed to carry animals and poultry over the critical period.

- Protect as large a water reserve as possible. See that your well is clean and covered. Put rainwater

barrels and other containers near shelters and other buildings; fill them regularly, and keep them covered.

- Provide an auxiliary generator to assure electric power in event the commercial power is shut off. Keep batteries and tractor fuel within easy reach.

- Store your feed and grain in weatherproof buildings.

### If You Receive Sufficient Fallout Warning . . .

- Complete your emergency tasks before fallout begins. Do not expose yourself, family, or helpers to fallout.

- Bring animals and poultry into shelter as quickly as possible. Keep them there at least 24 hours—or until you are notified they should be released.



- Give milking cows the most protected places in the shelters; this is for the protection of both cows and milkers. If you can, milk

the cows before fallout begins. Put cows and suckling calves together; the calves can suckle and reduce the discomfort of full udders. Give your most valuable breeding stock the next most protected places in the shelters; give other animals the shelter that remains.

- If there are some animals you cannot place in a barn or under a roof, try to place them in a yard near farm buildings. If this cannot be done, confine them to as small a space as possible.

- Make sure the feed and water in the shelters is covered. Reduce feeding to the minimum required for sustenance.

- If the amount of feed you can protect is limited, reserve it for the milking cows. The milk can be used by you and your household. It would be much better to keep the other animals alive on contaminated feed and water than to let them die from starvation.

- Cover with tarpaulins or other available material any harvested feed that may be stored in the open.

- If time permits, move your

farm machinery and equipment indoors, or store them near the farmhouse and keep them covered.

### **If Fallout Warning Gives You Little Time . . .**

- Complete as many of your emergency tasks as you can before fallout begins.

- During and after fallout, remain in your shelter until you are notified by civil defense authorities that it is safe to go outside.

- If your animals have been directly exposed to fallout, wash them off thoroughly as soon as it is safe for you to stay outside for a limited time. During the washing, wear protective clothing including rubber shoes and gloves. The removal of radioactive fallout from the hides of animals is difficult, and attempts may be ineffective in some cases. However, it will help to reduce the radiation exposure of both the animals and caretakers or milkers. After washing the animals, take them into the barn or other available shelter.

### **MONITORING DEVICES**

If fallout occurs in your area following a nuclear attack, you will be informed on the general hazards by local Civil Defense authorities. These authorities can now give you information regarding monitoring devices that you may purchase to measure radiation levels of various parts of your property and of equipment. The proper monitoring device would indicate the areas where radiation levels are too high for you to be safely exposed to them.

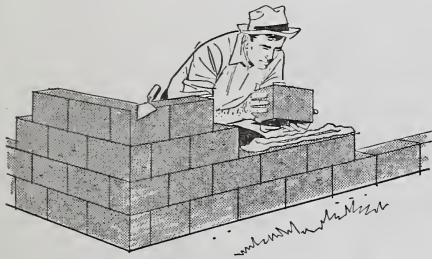


## FAMILY

### FALLOUT PROTECTION



*In the event of enemy attack, first provide for your own safety and that of your family and neighbors. To do this, you may not be able, at first, to take care of your livestock, your crops, and your land.*



Your best protection from fallout is a specially constructed shelter. Designs of eight types of family fallout shelters, including "do-it-yourself" types, are presented in a publication titled "Family Shelter Designs", H-7, available from your local civil defense office, or by mail from Office of Civil Defense, Department of Defense, Washington 25, D.C.

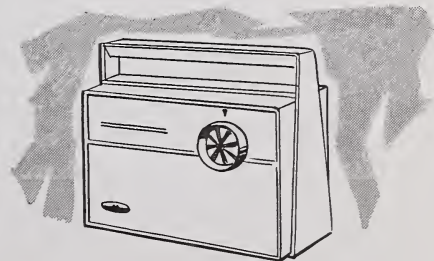
If there is a civil defense emergency and you have not yet built a special shelter, go to the safest place you have. This may be a cyclone cellar, a root cellar, or a corner

of your basement. Shield doors, windows, and other openings with dense materials such as concrete blocks, bricks, or sandbags if you have them.

If you do not have an underground refuge, stay indoors. Covering the floor above with sandbags or loose soil would be helpful. Shield yourself with as much dense material as possible.

Local civil defense authorities will make every effort to let you know when it is safe to come out of shelter. Emergency information will be disseminated to the public in every possible way, including your radio.

For additional information on family protection from the effects of nuclear fallout, contact your local civil defense office or the Office of Civil Defense, Department of Defense, Washington 25, D.C.



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