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# Meat & Poultry Safety

*Questions and Answers  
About Chemical  
Residues*





**I**n the nineteenth century, Americans enjoyed baked chicken and roast beef from food animals raised on their own farm or a neighbor's. Today, consumers can choose from a much wider range of inexpensive, nutritious products — from fresh poultry to precooked refrigerated dinners. They can also make healthier choices, because animals are bred leaner and fat is routinely trimmed.

The modern consumer has one more advantage not available in the “good old days”: Meat and poultry products sold to American consumers are produced under one of the world's most intensive food regulation systems. In 1906, the U.S. Department of Agriculture (USDA) first began a small meat inspection program to detect diseased animals, spoiled meat, and fraudulent practices.

Today, the 7,700 dedicated inspectors of USDA's Food Safety and Inspection Service (FSIS) carry out the daily inspection mission in 6,600 U.S. meat and poultry plants that sell their products across State or national borders. FSIS inspectors examine animals at slaughter for disease and other abnormalities, and oversee plant effectiveness during food processing and packaging. Specially trained import inspectors also examine imported products, which must be produced under equally strong foreign inspection systems.

In both cases, the FSIS mission is to assure consumers of safe, wholesome, and accurately labeled meat and poultry products.

For foods other than meat and poultry, other Federal, State and local health agencies carry out inspection programs that call for visiting plants and retail establishments on a regular basis. However, the meat and poultry inspection program, requiring continuous inspection during slaughter and daily oversight during processing, is unique. American

consumers have made it clear that they support tough, “everyday” inspection of meat and poultry products. So, FSIS works continuously to strengthen its programs to deal with today’s public health issues on the basis of sound science.

FSIS also stresses open communication about food safety and public concerns. One of those concerns is chemical residues in food.

## What is a residue?

A residue is something left behind after a process has been completed. For example, FSIS is concerned with preventing illegal levels of residues that can remain in fat, internal organs, or other tissues after food animals have been treated with



veterinary drugs to cure or prevent disease or to promote health. Chemical residues are unintended leftovers, not direct food additives approved for a specific purpose. Illegal residues are usually preventable.

## **W**hy are agricultural chemicals used, if they can leave residues?

Vaccines, antibiotics, and other animal drugs have helped improve animal health. Pesticides have enabled greater production of wholesome, appealing food; they have also controlled pests that in former years would have destroyed an entire season's worth of crops. In the postwar period when U.S. farmers and animal producers began to use agricultural chemicals, we didn't fully comprehend their risks. Now, some believe we are in danger of forgetting their benefits.

## **W**hat are "illegal levels" of residues?

Any amount greater than the legal limit. Legal limits for residues are expressed in terms of parts per million or parts per billion — equivalent to a few drops of water in an Olympic-sized swimming pool. Limits are set with a margin of safety usually at least 100 times stricter than the level at which health effects can be observed. Violations detected by FSIS are usually only slightly above legal limits — barely measurable differences.

Over the last 20 years, the violation rate for residues detected in FSIS testing programs has dropped dramatically, moving ever closer to zero. Only about 3 of every 1,000 samples routinely tested for residues exceed the legal limit. Almost all violations detected in routine testing are illegal

levels of approved animal drugs, particularly sulfa and antibiotic compounds that act against bacteria. In a recent year, only 2 pesticide violations were detected during routine testing.

## **Who is responsible for protecting Americans from illegal residues in food?**

Everyone in the food chain from farm to market has the responsibility to prevent illegal residues.

- Farmers need to use pesticides according to label directions, and as part of a careful farm management system.

- Veterinarians should follow FDA label directions for animal drugs, whether the drugs are given orally or injected. They must advise their clients on the need to keep the animals from market for the FDA-prescribed withdrawal period, until the drugs have had time to work their way through the animal's system. Many violations are due to misuse of animal drugs.

- Animal producers should use over-the-counter preparations carefully. They should follow their veterinarian's advice and keep animals from market until animal drugs have had time to work their way through the animal's system. They should buy animal feed only from reputable sources who keep good records. Several years ago, a contamination incident that required the testing of thousands of animals to protect the public was traced to contaminated animal feed.

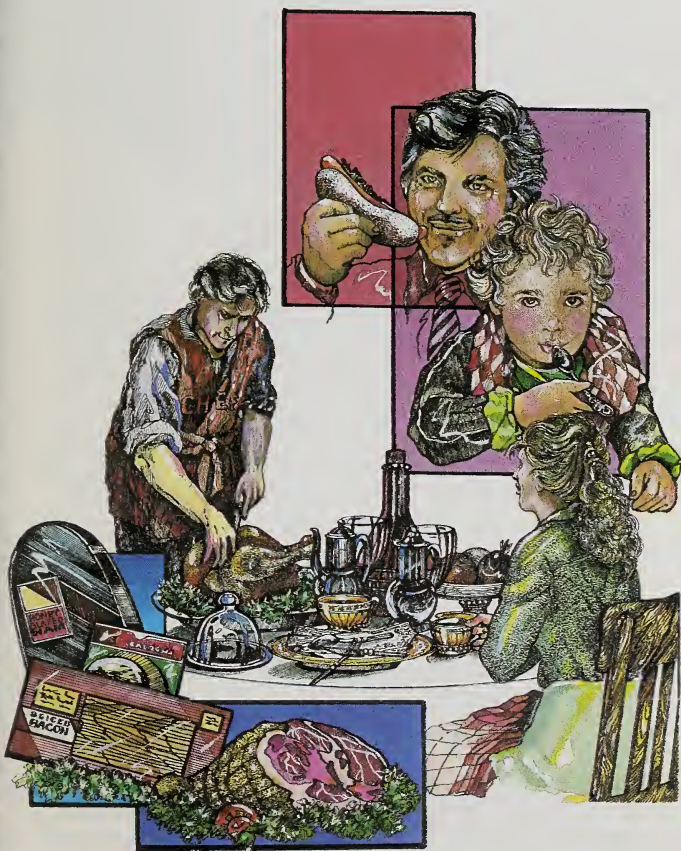
- Meat and poultry plants should not buy animals for slaughter if they suspect residue violations.



- Trade associations should help educate their members about prevention techniques and should alert their members when residue problems occur.

## What does the Government do to protect consumers?

Americans have the right to safe food that does not contain illegal residues of pesticides or animal drugs. Several Federal and State agencies cooperate in residue enforcement, testing, and education. FSIS, responsible for regulating the meat and poultry



industry, works with the following groups in its National Residue Program:

- The Environmental Protection Agency (EPA) registers pesticides and sets legal limits for pesticide residues in food.

- The Food and Drug Administration (FDA) approves animal drugs, sets legal limits for animal drug residues in food, regulates commercial animal feed, and estimates consumer exposure to residues by analyzing “marketbaskets” of food purchased around the country.

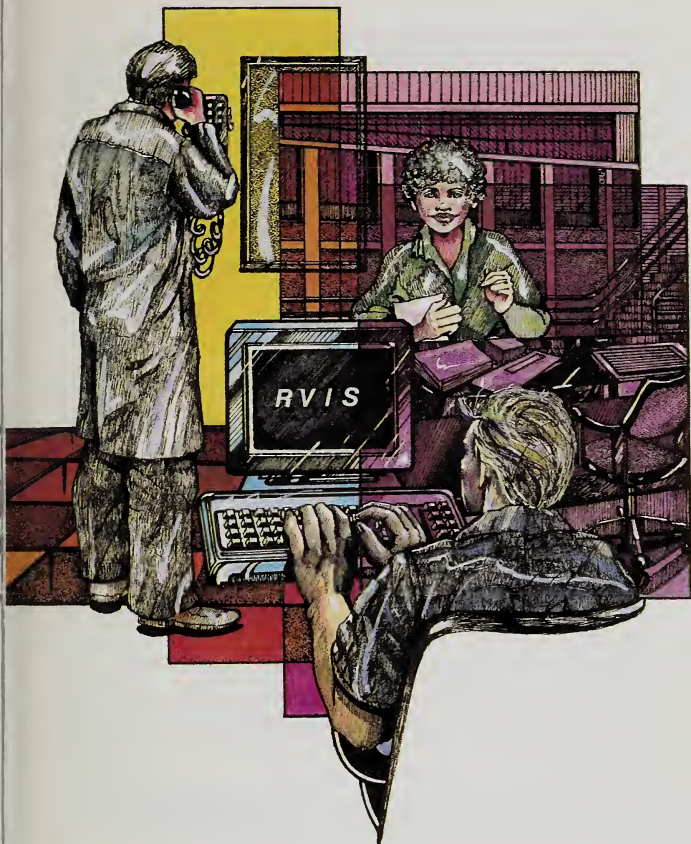
- The USDA Extension Service teaches farmers and animal producers how to properly use approved drugs and chemicals, and can answer consumer questions regarding their use.

## **W**hat is the FSIS National Residue Program?

Since 1969, FSIS has carried out this program, which began as a “spot-testing” program when safety concerns were raised about pesticides such as DDT. Since that time, many chlorinated hydrocarbon pesticides such as DDT have been banned, and the testing program has greatly expanded, with a greater emphasis on animal drugs.

In 1979, FSIS had tests for only 66 compounds; today, FSIS inspectors and laboratory technicians use tests that detect more than 130 animal drugs and pesticides. Each year, the Agency reevaluates chemicals for residue testing, focusing on those that are most toxic to humans and most likely to be present in the environment.

Each year, FSIS collects about 1.5 million test results on 450,000 meat and poultry samples from



U.S. plants. Inspectors take random samples for testing according to a plan designed by statisticians to provide nationwide information. Inspectors also take samples for testing when they suspect a residue problem; for instance, an apparent injection mark on the wrong part of the animal carcass. Finally, the possibility of widespread contamination may trigger intensive regional or national testing to determine the nature of the problem and protect consumers. FSIS works with FDA and EPA on enforcement actions consistent with the laws under which the three agencies carry out their work.

• **Science and Residue Safety.** In the last 10 years, FSIS has modernized all of its programs, including the National Residue Program.

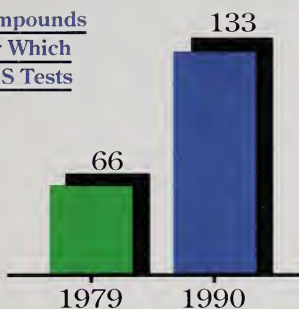
• **Rapid tests.** The Agency has gradually armed its inspectors with inplant rapid tests to screen for residues of sulfa compounds and antibiotics in urine or kidney tissue. The tests on urine can also be used by animal producers, meat and poultry plants, and anyone who handles animals. Laboratory tests provide solid results, but they also require days or weeks to process. Rapid inplant tests have strengthened the Agency's ability to offer *practical* food protection. Results are available to inspectors almost immediately, enabling FSIS to determine that:

- meat or poultry can be marketed;
- it should be kept out of the marketplace on the basis of rapid test results; or
- more animals need to be tested, or laboratory confirmation is necessary, in order to determine if meat or poultry is adulterated with illegal residues.

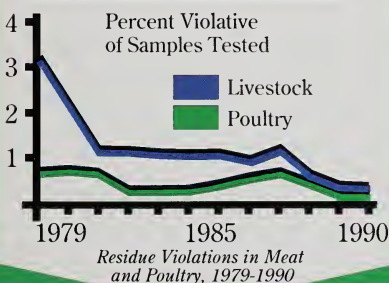
• **Computers.** Since 1988, information about each violation detected has been promptly entered into a computerized data base instantly accessible by FSIS regional offices and FDA district offices. The Residue Violation Information System (RVIS) helps both agencies identify potential contamination problems promptly, so that necessary investigations can be initiated more quickly than in the past. The system also helps trace violations back to their source, where education or enforcement can prevent future problems. RVIS also deters persons from marketing violative animals by simply taking them to a different plant or using a different farm name.

• **People.** FSIS uses scientific tools in the preventive National Residue Program. However, these

Compounds  
For Which  
FSIS Tests



Decline in Residue Violations  
in Meat and Poultry, 1979-1990



tools are useless unless they are applied with good judgment. That is why the veterinarians, food inspectors, and other FSIS personnel will always play a key role in protecting the public from illegal residues.

## Are residues a public health hazard?

The experts believe residues are a public health *concern* rather than an acute health risk.

As explained above, safety factors are built into residue limits, and when violations occur, they are typically only slightly higher than those limits.

Also, surveys of typical “marketbaskets” of food do not show residue levels that concern public health authorities.

Farm and industrial accidents that directly expose people to pesticides and other chemicals are more likely to cause more serious health problems than are residues in food. Most experts also agree that bacteria and other microorganisms in food are a more serious “food” health issue than chemical residues. Many Americans understand the importance of dietary choices in preventing cancer and other health problems, but still have questions about chemical residues.

Over the past 20 years, FSIS has tested millions of animals for illegal residues, and in contamination incidents has tested thousands of animals within a few weeks. In all of that testing, not a single case of harm to human health has been documented due to illegal residues.

However, FSIS takes every residue violation quite seriously, first to be sure it does not represent a larger problem. Also, science has not confirmed the safety of long-term, chronic consumption of even very low levels of residues in a variety of foods. Finally, people can develop allergies or sensitivities to any substance, including foods, pollens, metals, certain pesticides, and prescription drugs. For these reasons, the FSIS National Residue Program focuses on preventing illegal residues in the first place.

## **W**ouldn't the residue problem end if agricultural chemicals were banned?

Probably not. Without a comprehensive registration and control system for safe agricultural chemicals, people may resort to illegal use — which is more likely to involve carelessness and thus illegal residues.



For example, the growth-promoting hormones approved for use in the United States have been prohibited elsewhere, despite clear international consensus on the safety of these compounds. In some countries that have banned the hormones, some producers have used them illegally. Controlling residues under a “prohibition” system would require tremendous amounts of government resources, and could actually increase the public health risk.

Public concern has also generated change in the way agricultural chemicals are controlled, toward a

stricter standard of safety. In the past, by default the burden of proving harm often fell to the government. Manufacturers of new chemicals must prove safety, and government reviews of older chemicals are eliminating pesticides that don't satisfy today's safety standards.

## **W**hat can consumers do to reduce exposure to residues that could be present in meat and poultry?

- Trim the fat from meat. If residues are present, they are likely to be concentrated in fat.
- Eat only small amounts of kidneys, livers, and other organ meats. Certain residues concentrate in these organs.
- Eat a moderate, balanced diet, with plenty of variety. Include lean meat, poultry, fish, eggs, and other protein sources.

## **W**hat can consumers do to reduce "food fear"?

Learn more about how food is produced and regulated, and choose wisely at the grocery store on the basis of information, not fear. Following are some sources of food safety information.

### **Pesticide registration and pesticide residue limits:**

- Environmental Protection Agency  
Public Information Center,  
401 M Street SW, Washington, DC 20460;  
(202) 475-7755. Ask for *A Citizen's Guide to Pesticides*.



**Animal drug registration, residue limits for animal drugs, animal feed, marketbasket surveys:**

- Food and Drug Administration Consumer Affairs Officers. (For the FDA office nearest you, consult the Government listings in your local phone directory under U.S. Government, Department of Health and Human Services.)

For FDA publications, write the Food and Drug Administration, HFE-88, Rockville, MD 20857.

**Practical food handling information to prevent foodborne illness:**

- Tollfree USDA Meat and Poultry Hotline, 1-800-535-4555; (202) 720-3333 in the Washington, DC, area.

**Meat and poultry inspection, FSIS residue program:**

- FSIS Information and Legislative Affairs, Room 327-E Administration Bldg., Washington, DC 20250; (202) 720-7943.

**The basis of good agricultural practices:**

- USDA Extension Service County offices. In the phone book under county government.
- State departments of agriculture and health.

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