|  |
| --- |
| The Journey of Food |
|  |
| Ground: Planted; Born; Hatched; Laid |
| Harvesting: Picked; Milked; Caught; Slaughtered; |
| Processing: Preserved; Processed; Packaged; Mixed with other Foods;  Cooked; Frozen; |
| Distribution: Where did it come from and how? |
| How was it prepared? |
| Food on table: |

|  |
| --- |
| The Journey of Milk |
| http://moo2you.ca/images/cowBarn.png Environment:  Dairy cows need clean, well-ventilated (get clean and fresh air) buildings called barns in which to live. Barns provide comfortable shelter for cows. Barns are also built to make it easier for farmers to care for their cows. A barn is carefully planned so that dairy cows are kept comfortable, clean, and safe. Barns are cleaned daily to ensure a healthy environment. |
| http://moo2you.ca/images/cowTags.png ID tags:  Dairy cows have their ears pierced with identification tags. Each cow has a different number that allows the dairy farmer to track her activities, sometimes with a computer. The tag also allows the farmer to keep track of how much milk the cow produces.  http://moo2you.ca/images/lastStraw.pngBedding:  Stalls in barns are used for comfortable cow beds! The stalls are filled with straw, shavings, sand, or an air-filled mat is used. This bedding is changed regularly to make sure that cows are clean and comfortable.  http://moo2you.ca/images/cowsEating.png  Diet:  A cow's diet consists of food that amounts to 75 000 calories per day,  73 000 more calories than an adult human eats. Dairy cows also drink about 60 to 150 liters of water a day. Compare this to a bathtub, which holds about 100 liters.  Healthy Cows:  Farmers feed their cows a healthy, well-balanced diet to ensure the production of high quality milk. Cows are given fresh bedding every day to ensure cleanliness. Farmers and veterinarians regularly check the herd for health, the volume of milk produced, the amount of feed eaten, and the overall appearance of the cows.  Before milking, the cow's teats are washed with a disinfectant solution. The milking process uses sanitized milking machines that take the milk from the cow, send it through a sterile pipeline, and filter it into a large refrigerated holding tank that quickly cools the milk to 4°C. Each batch of milk from each producer is tested for a number of milk quality factors like antibiotic inhibitors, protein, and fat content. **Inhibitors** are substances (other than bacteria) that do not naturally occur in milk. They inhibit the growth of both good and bad bacteria in milk. If inhibitors are detected, it could mean the cow was on antibiotics. The use of milk from a cow on antibiotics is prohibited in Canada.  **How long does it take for cows to turn green grass into milk?**  It takes about 50 to 70 hours for cows to turn grass into milk. |
|  |
| Distribution:  A **milk hauler** is a person. Milk haulers pick up milk in a milk truck every two days and transport it to a dairy processing plant. The trailer tanks on the trucks are stainless steel and insulated to keep the milk cold. Each milk hauler is a licensed milk grader, which means they have learned about and follow the rules and regulations that make sure milk is handled safely. They must follow strict schedules to make sure that milk is delivered promptly to the plant. A milk hauler often picks up milk from several farms and takes a full load to the dairy processing plant. |
| **So what is milk and dairy processing and how is it done?**  Milk and dairy processing is the **conversion**, or processing, of raw milk (fresh from the cow) into a number of different products. This processing is done at a dairy plant, where skilled workers and special equipment make sure that milk and other dairy products are safe, nutritious, and delicious. **Micro-filtration** is the latest way to purify milk. This process uses a membrane strainer to filter most of the harmful bacteria out of milk and is used in addition to pasteurization.  http://moo2you.ca/images/homoPic.png  Milk is homogenized to keep the milk fat (cream) from separating and floating to the top. This process breaks up the milk fat globules into very small particles. When the milk fat particles are this tiny, they stay evenly mixed, making the milk smooth and creamy.  **How does the shelf life for milk change when different processing techniques are used?**  **HTST** (**H**igh **T**emperature, **S**hort **T**ime) processed milk will last for about three weeks in the refrigerator when stored properly at 4°C. **UHT** (**U**ltra **H**igh **T**emperature) processed milk can be stored at room temperature in sealed Tetra Paks for up to six months, but must be refrigerated after opening. Once open, UHT milk will last up to two weeks in the refrigerator.  **Why does milk get grades?**  A **milk grader** is a person who takes milk samples, which are tested in a provincial laboratory. A milk grader also does instant quality tests to check the colour and odour of the milk. The amount of milk in the bulk tank is recorded. Milk that does not meet quality requirements is destroyed.  Milk provides 16 essential nutrients for health: protein, vitamin D, vitamin A, calcium, potassium, phosphorus, zinc, magnesium, selenium, and seven B vitamins. Milk contains water, so it helps keep you hydrated. |
| Moo2You: The Journey of Milk  <http://moo2you.ca/move.html> |

[New York Times](http://www.nytimes.com/)

F.D.A and Dairy Industry Spar Over Testing of Milk



The Food and Drug Administration is concerned that antibiotics might be contaminating the milk of American dairy cows.

By [WILLIAM NEUMAN](http://topics.nytimes.com/top/reference/timestopics/people/n/william_neuman/index.html?inline=nyt-per)

Published: January 25, 2011

Each year, federal inspectors find illegal levels of [antibiotics](http://topics.nytimes.com/top/news/health/diseasesconditionsandhealthtopics/antibiotics/index.html?inline=nyt-classifier) in hundreds of older dairy cows bound for the slaughterhouse. Concerned that those antibiotics might also be contaminating the milk Americans drink, the [Food and Drug Administration](http://topics.nytimes.com/top/reference/timestopics/organizations/f/food_and_drug_administration/index.html?inline=nyt-org) intended to begin tests this month on the milk from farms that had repeatedly sold cows tainted by drug residue.

But the testing plan met with fierce protest from the dairy industry, which said that it could force farmers to needlessly dump millions of gallons of milk while they waited for test results. Industry officials and state regulators said the testing program was poorly conceived and could lead to costly recalls that could be avoided with a better plan for testing.

In response, the F.D.A. postponed the testing, and now the two sides are sparring over how much danger the antibiotics pose and the best way to ensure that the drugs do not end up in the milk supply.

“What has been served up, up to this point, by Food and Drug has been potentially very damaging to innocent dairy farmers,” said John J. Wilson, a senior vice president for Dairy Farmers of America, the nation’s largest dairy cooperative. He said that that the nation’s milk was safe and that there was little reason to think that the slaughterhouse findings would be replicated in tests of the milk supply.

But [food safety](http://topics.nytimes.com/top/reference/timestopics/subjects/f/food_safety/index.html?inline=nyt-classifier) advocates said that the F.D.A.’s preliminary findings raised issues about the possible overuse of antibiotics in livestock, which many fear could undermine the effectiveness of drugs to combat human illnesses.

“Consumers certainly don’t want to be taking small amounts of drugs every time they drink milk,” said Caroline Smith DeWaal, food safety director of the [Center for Science in the Public Interest](http://topics.nytimes.com/top/reference/timestopics/organizations/c/center_for_science_in_the_public_interest/index.html?inline=nyt-org), an advocacy group. “They want products that are appropriately managed to ensure those drug residues aren’t there, and the dairy farmer is the one who can control that.”

The F.D.A. said that it would confer with the industry before deciding how to proceed. “The agency remains committed to gathering the information necessary to address its concern with respect to this important potential public health issue,” it said in a statement.

The concerns of federal regulators stem from tests done by the Department of Agriculture on dairy cows sent to be slaughtered at meat plants. For years, those tests have found a small but persistent number of animals with drug residues, mostly antibiotics, that violate legal limits.

The tests found 788 dairy cows with residue violations in 2008, the most recent year for which data was available. That was a tiny fraction of the 2.6 million dairy cows slaughtered that year, but regulators say the violations are warning signs because the problem persists from year to year and some of the drugs detected are not approved for use in dairy cows.

The question for the F.D.A. is whether cows that are producing milk also have improper levels of such drugs in their bodies and whether traces of those drugs are getting into the milk.

Regulators and veterinarians say that high levels of drugs can persist in an animal’s system because of misuse of medicines on the farm.

That can include exceeding the prescribed dose or injecting a drug into muscle instead of a vein. Problems can also occur if farmers do not follow rules that require them to wait for a specified number of days after administering medication before sending an animal to slaughter or putting it into milk production.

“F.D.A. is concerned that the same poor management practices which led to the meat residues may also result in drug residues in milk,” the agency said in a document explaining its plan to the industry. In the same document, the F.D.A. said it believed that the nation’s milk supply was safe.

Today, every truckload of milk is tested for four to six antibiotics that are commonly used on dairy farms. The list includes drugs like penicillin and ampicillin, which are also prescribed for people. Each year, only a small number of truckloads are found to be “hot milk,” containing trace amounts of antibiotics. In those cases, the milk is destroyed.

But dairy farmers use many more drugs that are not regularly tested for in milk. Regulators are concerned because some of those other drugs have been showing up in the slaughterhouse testing.

Federal officials have discussed expanded testing for years. But industry executives said that it was not until last month that the F.D.A. told them it was finally going to begin.

The agency said that it planned to test milk from about 900 dairy farms that had repeatedly been caught sending cows to slaughter with illegal levels of drugs in their systems.

It said it would test for about two dozen antibiotics beyond the six that are typically tested for. The testing would also look for a painkiller and anti-inflammatory drug popular on dairy farms, called flunixin, which often shows up in the slaughterhouse testing.

The problem, from the industry’s point of view, is the lengthy time it takes for test results.

The tests currently done for antibiotics in milk take just minutes to complete. But the new tests could take a week or more to determine if the drugs were present in the milk.

Milk moves quickly onto store shelves or to factories where it is made into cheese or other products. The industry worried that, under the F.D.A. plan, by the time a load of milk was found to be contaminated, it could already be in consumers’ refrigerators, and that could lead to recalls.

One Northeast cooperative, Agri-Mark, sent a letter to its members last month instructing them to dump milk if it had been tested by the F.D.A. “Agri-Mark must ensure that all of our milk sales, cheese, butter and other products are in no danger of recall,” the letter said.

Other industry executives said that processing plants would refuse to take any milk from a farm that had been tested until the results showed it was drug-free, meaning farmers could end up dumping milk for a week or more while waiting.

The F.D.A. plan was also criticized by state officials that regulate the dairy industry.

In a sharply worded Dec. 29 letter, the top agriculture officials of 10 Northeastern states, including New York and Pennsylvania, which are both leading dairy producers, told the F.D.A. that its plan was badly flawed. Among other problems, the letter said, forcing farmers to dump large quantities of milk could create environmental problems.

The F.D.A. said it would consider the regulators’ comments as it reviewed its testing plan.

A version of this article appeared in print on January 26, 2011, on page B1 of the New York edition.

Human Effects of Growth Hormones in Cows

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Darren Hunter

Darren Hunter is an independent writer and entertainer. His articles are featured nationally, and he also is an infommercial host. He has been featured on C-Span, NPR, The Bulletin and The Big Talker to name a few. Hunter currently writes for Demand Studios. Hunter graduated from Philadelphia University.

By Darren Hunter, eHow Contributor

Studies are confirming that the artificial growth hormones used in raising cows may cause serious health problems. Some of these artificial hormones include progesterone, testosterone and melengestrol. rBGH is the most prevalent artificial substance used in cows, since cows produce up to 20% more milk when given this growth hormone.

1. Effects
   * Studies cited in the book "What's in Your Milk" by Dr. Samuel Epstein show a correlation between human consumption of cows who are given growth hormones and developmental and reproductive problems. Some scientists also now believe there is a correlation to [prostate](http://www.ehow.com/facts_5526579_human-effects-growth-hormones-cows.html) and breast cancers as well.

Environmental Concerns

* + There are also environmental concerns and subsequent health impacts to the use of growth hormones in cows. Hormones end up in manure, and ultimately in drinking water. This process can also disrupt the natural aquatic ecosystem by creating an unnatural hormonal imbalance in fish.

Antibiotic resistance

* + Other risks of the use of growth hormones such as rBST to people include future resistance to antibiotics. A study in Scientific Review by the Joint Expert Committee (SRJEC) on Food Additives links the antibiotic residue in milk production to ineffectiveness of antibiotics in humans.

Consider Organics

* + Although the FDA has yet to ban the use of growth hormones in cows, some studies have linked their use to negative health effects in humans. One way to avoid such hormones is to consume only organic food products, since growth hormones are not permitted in their production.

Read more: [Human Effects of Growth Hormones in Cows | eHow.com](http://www.ehow.com/facts_5526579_human-effects-growth-hormones-cows.html#ixzz1iuZ3SSHU) <http://www.ehow.com/facts_5526579_human-effects-growth-hormones-cows.html#ixzz1iuZ3SSHU>

http://www.globalhealingcenter.com/natural-health/dangers-of-cows-milk/

[Global Healing Center](http://www.globalhealingcenter.com/)

[**The Dangers of Drinking Cow’s Milk**](http://www.globalhealingcenter.com/natural-health/dangers-of-cows-milk/)

Category: [Health Dangers](http://www.globalhealingcenter.com/natural-health/category/health-dangers/),[Healthy Foods](http://www.globalhealingcenter.com/natural-health/category/healthy-foods/" \o "View all posts in Healthy Foods)

Author: Dr. Edward Group @ 10:51 am April 2009



Yet, due to the extreme processes that milk undergoes, as well as the high amounts of antibiotics, hormones, and genetically-modified substances that cows are continually exposed to, I can, with much certainty, say that there are real and eminent dangers associated with drinking milk from cows. All cows release toxins through their milk, as milk is a natural exit-portal for substances that the body cannot use.

**List of “Ingredients” Added to Cow’s Milk**



Here are just a few of the artificially-engineered components found in the average glass of non organic pasteurized and homogenized milk on the American dinner table:

* **A Veritable Hormone Cocktail**: including pituitary, steroid, hypothalamic, and thyroid hormones (remember most cows are extremely stressed)
* **Gastrointestinal Peptides**:  
  Nerve and epidermal growth factors, and the growth inhibitors MDGI and MAF
* **rBGH (Recombinant Bovine Growth Hormone)**: a genetically engineered hormone directly linked to breast, colon and prostrate cancer. This is injected into cows to increase milk production.[[1](http://www.preventcancer.com/press/conference/jan23_96.htm)]
* **Pus**: National averages show at least 322 million cell-counts of pus per glass![[2](http://www.milksucks.com/pus.asp)] This is well-above the human limit for pus-intake, and has been directly linked to paratuberculosis bacteria, as well as [Crohn’s disease](http://www.colon-cleanse-constipation.com/crohns-disease.html). The pus comes from infected udders on the cows known as mastitis.
* **Blood Cells**: The USDA allows up to 1.5 million white blood cells per milliliter of commonly-sold milk.[[3](http://www.ncbi.nlm.nih.gov/pubmed/11233021)] Yes, you are drinking cows blood in the milk and the USDA allows this!
* **Antibiotics**: Currently, cows are in such a state of disease and mistreatment that they are continually being injected with antibiotic medicines, and rubbed down with chemical-laden ointments to deal with their chronic infections. Currently, regulating committees only test for 4 of the 85 drugs in dairy cows. This means that the other 81 drugs in cow’s milk are coming directly into your glasses and bodies. Estimates show that 38% of milk in the U.S. is “contaminated with sulfa drugs or other antibiotics,” according to a study by the Centre for Science in the Public Interest and published in the Wall Street Journal on December 29, 1989. A study from the FDA data showed that over half of all milk was laden with traces of pharmaceuticals yet nothing has been done to control this.

**How Does This Affect the Cows?**



Furthermore, not only are people drinking in these toxins, we are also taking in the energetic effects of the life of the cow.

Studies show that many cows are infected with incredibly painful inflammatory infections such as [mastitis](http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/110902.htm). Due to over-milking, artificial hormones, bacteria and medications, cow’s udders can become chronically inflamed, thus altering the color and taste of the milk.

<http://news.discovery.com/human/egg-salmonella-bacteria.html>

THE GIST

* The FDA may have traced what caused the salmonella outbreak in millions of eggs on two Iowa farms.
* Salmonella can get into an egg from the inside out or the outside in.
* Experts advise keeping eggs in the refrigerator and cooking them well to avoid getting sick.

# [$module.bottomSection.imageAltText](http://news.discovery.com/videos/why-tell-me-why-turkey-eggs.html) How Does Salmonella Get Into Eggs?

**With more than 2,000 people sickened from salmonella-tainted eggs, we find out just how the bacteria get inside.**

On Friday the Food and Drug Administration announced they found salmonella in chicken feed that was used at two Iowa farms where tainted eggs have been traced.

An estimated 2,400 people have been sickened from the eggs and more than 550 million eggs have been recalled since early August.

Even if investigators have indeed found the salmonella source, you may wonder, how can the bacteria get inside the hard shell of an egg? Let us count the ways.

One route is through the insides of a chicken, said Kevin Keener, a food process engineer at Purdue University in West Lafayette, Ind. On average, he said, one out of every 20,000 chicken eggs contains a small amount of salmonella that is deposited into the sac by the hen.

Chickens get doses of salmonella bacteria (of which there are 2,300 kinds) from their environment, which is easily contaminated by rodents, birds and flies. These carriers deliver the bacteria to all types of farms -- regardless of whether they're conventional, organic or free-range.

Once the bacteria get in the chicken, the microorganisms thrive under ideal conditions, with internal temperatures of about 102 degrees Fahrenheit. Yet chickens harbor salmonella without any signs of illness, making it impossible to know which animals are infected.

"Literally," Keener said, "it's a needle in a haystack."

Those few contaminated eggs that come out of a hen usually contain a very low levels of bacteria, Keener said, totaling between two and five microorganisms. It takes a level of at least 100 bacteria to make a person sick.

But multiplication happens fast if the eggs aren't cooled quickly. And if there's a lapse in cleaning practices or an undetected outbreak among the chickens, the percentage of infected animals -- and tainted eggs -- can also increase rapidly.

"Salmonella doubles every 20 minutes under ideal conditions," Keener said. "When sitting there for an hour, two could become 32. At two hours, there would be 1,000 organisms. At eight hours, it would be in the range of millions. In one egg."

Even if chickens remain salmonella-free, their eggs can become contaminated from the outside in.

Every egg has about 9,000 pores that salmonella can essentially climb into from say, a bacteria-tainted belt in the processing plant or a vat of egg-cleaning liquid that isn't kept at just the right temperature and pH.

Inspectors are looking into every possibility.

"Right now, FDA investigators are performing environmental assessments of farm conditions and practices including pest and rodent controls, biosecurity plans and controls, environmental monitoring, sanitary controls and feed and laying hen sources," said FDA spokesperson Siobhan DeLancey. "The investigators are also looking at commonalities between Wright County Egg and Hillandale Farms of Iowa, Inc.," the two farms that sourced the tainted eggs.

Even as the investigation continues, experts say that eggs are safe and getting safer. The last recall came from an organic farm in California last year, but the one before that was 16 years ago, said Krista Eberle, director of food safety at the Egg Safety Center, an industry group.

In July, she added, the FDA instituted new egg safety rules that require producers to do things like more carefully clean and disinfect hen houses and get eggs into refrigerators within 36 hours after laying.

And even though 130,000 people get sick each year from salmonella in shelled eggs, Keener said, eggs are responsible for less than 1 percent of all food-borne illnesses.

Meanwhile, scientists are working on new technologies to make eggs even safer. Effective salmonella vaccines for chickens are available and already in use in Europe. And Keener's group is working on a rapid-cooling technique that uses liquid carbon dioxide to bring eggs down to 45 degrees F within five minutes. At that temperature, salmonella can't multiply.

For now, consumers can protect themselves by checking for broken eggs before buying cartons at the store, refrigerating eggs promptly and cooking eggs well. For vulnerable groups, such as the very young, the very old those with immune problems, pasteurized eggs are best.

Salmonella tends to pool in the membrane around an egg's yolk, Keener added. So if you have a sunny-side-up habit, you should probably give it up.

"Flip your eggs over," he said. "That will kill any salmonella present."

USDA Didn't Notify FDA of Conditions at Salmonella Egg Facility

Sep 10, 2010 | Parker Waichman Alonso LLP

Even though egg inspectors from the US Department of Agriculture (USDA) saw deplorable conditions at Wright County Egg of Galt, Iowa, they never notified health authorities. Wright County Egg, along with Hillandale Farms, also of Iowa, has recalled millions of shell eggs since mid-August. According to the Centers for Disease Control, at least 1,470 reported illnesses are likely to be associated with the multi-state [Salmonella outbreak](http://www.yourlawyer.com/topics/overview/wright_county_egg_salmonella_outbreak).

According to a report in The Wall Street Journal, the [USDA](http://www.usda.gov/wps/portal/usda/usdahome) and the Food & Drug Administration (FDA) have a formal understanding in which the USDA is supposed to notify the FDA of sanitary issues. If the USDA notifies the FDA that it has stopped grading eggs due to a health issue, the FDA sends inspectors to the farm, and can ask the farm to stop shipping eggs.

According to an Associated Press report, USDA employees were based next to areas where roughly 7.7 million caged hens laid eggs at the two operations. As part of an industry-paid program, the USDA egg graders were at the facilities at least 40 hours per week.

According to USDA daily sanitation reports obtained by The Wall Street Journal, egg inspectors observed bugs and overflowing trash earlier this year at Wright County Egg Plant 170. That facility produced many of the recalled eggs.

Reviews from last year and April of this year generally found conditions satisfactory, the Journal said. But in May, the marks shifted to “unsatisfactory” in several areas including some deemed “critical,” and reports filed in June and July were even worse. In spite of this, the USDA inspectors did not stop production at the facility.

The USDA said it didn’t give notice because “the conditions at the egg plant packing facilities were routine,” the Journal said. USDA officials also maintained that inspectors notified the plant manager each morning when they saw issues, and facilities were cleaned up before production began.

It isn’t clear whether the sanitation problems identified by the USDA graders had anything to do with the Salmonella contamination, the Journal said. But critics of the agency say the USDA missed an opportunity to raise an early alarm about safety that might have brought about a more timely federal response. In August, when the FDA finally inspected Wright County Egg facilities, the agency also found many unsanitary conditions including mice, maggots and manure piles as high as eight feet.

<http://www.yourlawyer.com/topics/overview/wright_county_egg_salmonella_outbreak>

SALMONELLA:

Salmonella can occur when food is improperly stored or handled and when preparers do not wash their hands or do not sanitize implements involved in meat storage. People infected with salmonella develop diarrhea, fever, and abdominal cramps within 12 to 72 hours of infection. Laboratory testing is required to determine the presence of Salmonella; additional testing can determine the specific type and which antibiotics are needed. Generally, the illness lasts a week and most people recover without treatment; however, in some, diarrhea may be so severe that hospitalization is required. In these cases, the infection may have spread from the intestines to the blood stream and other body sites. Severe cases can result in death if not treated.

Tags:

However, outbreaks of salmonellosis (an infection caused by *Salmonella* bacteria) still happen because *Salmonella* also silently infects the ovaries of healthy-looking hens, [contaminating the eggs](http://www.livescience.com/health/090603-salmonella-sugar.html) inside the chicken before the shells are even formed, according to FSIS. To curb this form of contamination, the egg industry regularly tests hens for the ovarian bacteria.

Only a small number of hens in the United States seem to be infected with *Salmonella* at any given time, according to the Centers for Disease Control and Prevention. The CDC also assures that an infected hen can lay many normal eggs while only occasionally laying an egg that's contaminated.

USDA- United States Department of Agriculture

<http://www.fsis.usda.gov/factsheets/focus_on_shell_eggs/>

**How does *Salmonella* infect eggs?**  
Bacteria can be on the outside of a shell egg. That's because the egg exits the hen's body through the same passageway as feces is excreted. That's why eggs are required to be washed at the processing plant. All USDA graded eggs and most large volume processors follow the washing step with a sanitizing rinse at the processing plant. It is also possible for eggs to become infected by *Salmonella* Enteritidis fecal contamination through the pores of the shells after they're laid. SE also can be inside an uncracked, whole egg. Contamination of eggs may be due to bacteria within the hen's reproductive tract before the shell forms around the yolk and white. SE doesn't make the hen sick.   
  
[[Back to Top](http://www.fsis.usda.gov/factsheets/focus_on_shell_eggs/#top)]  
  
**What part carries bacteria?**  
Researchers say that, if present, the SE can be in the yolk or "yellow" or the albumen (egg whites). So everyone is advised against eating raw or undercooked egg yolks and whites or products containing raw or undercooked eggs.

How Does Salmonella Get Inside Chicken Eggs?  
http://www.scienceiq.com/Images/GrayPix.gif  
  
[[](http://www.scienceiq.com/Facts/SubShowFactNew.cfm?ID=225)](http://www.scienceiq.com/Facts/SubShowFactNew.cfm?ID=225)Salmonella enteritidis is a bacterium that causes flu-like symptoms in humans. It usually enters the human body through undercooked food that we eat, such as chicken eggs. Symptoms develop 12-24 hours after the infected food has been eaten and last anywhere from 4 to 7 days. The bacterium actually lives inside infected chicken eggs and how it got there was once a mystery.

Salmonella enteritidis lives in the feces of many animals, including chickens. Because chickens sit on their eggs, even before they are collected for consumer purchases, the eggs may be subjected to the bacterium. It was found that S. enteritidis could actually penetrate the hard outer shell of the egg and live inside the yolk, where it can reproduce. After further research, it was also established that the bacterium could infect hens' ovaries, and contaminate the egg before it even developed a shell. Also, egg collectors clothing could pick up S. enteritidis from chicken feces, contaminating other chicken houses. So what are the egg producers doing to prevent human illness from the bacterium?

The egg industry has tried to eliminate S. enteritidis from its chicken houses by practicing new sanitation procedures. Also, they are testing hens for the ovarian bacterium and eliminating chicken houses infested with S. enteritidis. To ensure that you never become ill due to this bacterium, make sure to cook eggs fully before you eat them. Not all eggs contain Salmonella enteritidis, but who would want to take the chance?

**How are eggs transported safely to stores?**  
The U.S. Department of Commerce's 1990 Sanitary Food Transportation Act requires that vehicles be dedicated to transporting food only. On August 27, 1999, FSIS made effective a rule requiring:

* Shell eggs packed for consumers be stored and transported under refrigeration at an ambient (surrounding) air temperature not to exceed 45 °F;
* All packed shell eggs be labeled with a statement that refrigeration is required; and
* Any shell eggs imported into the United States, packed for consumer use, include a certification that they have been stored and transported at an ambient temperature of no greater than 45 °F.
* FDA's Egg Safety Rule requires those transporting eggs to maintain an ambient temperature of 45 °F beginning 36 hours after laying of the eggs.

UNITED STATES DEPARTMENT OF AGRICULTURE:

**What safe handling instructions are on egg cartons?**  
All packages of raw, shell eggs not treated to destroy *Salmonella* must carry the following safe handling statement:

SAFE HANDLING INSTRUCTIONS: To prevent illness from bacteria: Keep eggs refrigerated, cook eggs until yolks are firm, and cook foods containing eggs thoroughly.

[[Back to Top](http://www.fsis.usda.gov/factsheets/focus_on_shell_eggs/#top)]

**Who is working on eliminating the *Salmonella* in eggs?**  
Federal and state governments, the egg industry, and the scientific community are working together to solve the problem. Involved government agencies include: USDA's Food Safety and Inspection Service (FSIS), Agricultural Research Service (ARS), and the Animal and Plant Health Inspection Service (APHIS); the U.S. Food and Drug Administration (FDA); and State departments of agriculture.   
  
[[Back to Top](http://www.fsis.usda.gov/factsheets/focus_on_shell_eggs/#top)]  
  
**What government agencies are responsible for the safety of shell eggs?**  
Many government agencies cooperate to ensure the safety of shell eggs from farm to table.   
  
**USDA Agencies**   
  
[**Agricultural Marketing Service (AMS)**](http://www.ams.usda.gov/)

* AMS is responsible for the Shell Egg Surveillance Program to assure that eggs in the marketplace are as good as or better than U.S. Consumer Grade B quality standards. AMS conducts inspection of handlers and hatcheries four times each year to ensure conformance with these requirements. Eggs exceeding the tolerance for checks or loss must be diverted from the marketplace for further segregation or processing.
* AMS also administers a voluntary egg-quality grading program for shell eggs paid for by processing plants.
* The USDA grade mark on egg cartons means the plant processed the eggs following USDA's sanitation and good manufacturing processes.
* As of April 1998, AMS has prohibited the repackaging of eggs previously shipped for retail sale that were packed under its voluntary grading program.

[**Animal and Plant Health Inspection Service (APHIS)**](http://www.aphis.usda.gov/)

* APHIS conducts activities to reduce the risk of disease in flocks of laying hens.
* APHIS administers the voluntary National Poultry Improvement Plan (NPIP), which certifies that poultry breeding stock and hatcheries are free from certain diseases. Participation is necessary for producers that ship interstate or internationally.

[**Food Safety and Inspection Service (FSIS)**](http://www.fsis.usda.gov/Home/index.asp)

* FSIS is responsible for the import of eggs destined for further processing and for assuring that imported shell eggs destined for the retail market are transported under refrigerated conditions.
* FSIS verifies shell eggs packed for the consumer are labeled "Keep Refrigerated" and stored and transported under refrigeration and ambient temperature of no greater than 45 °F.
* USDA also educates consumers about the safe handling of eggs. FSIS has developed several English and Spanish publications on egg safety and uses a variety of networks (such as the USDA Meat and Poultry Hotline, "Ask Karen,", "Pregúntele a Karen," Podcasts, Twitter, blogs, and USDA cooperative extension agents) to get this information to consumers.

[**Agricultural Research Service (ARS)**](http://www.ars.usda.gov/)

* USDA also carries out food safety research through ARS and through a program administered by USDA's National Institute of Food and Agriculture (NIFA).
* In 2005, ARS established the Egg Safety and Quality Research Unit at the Russell Research Center in Athens, GA, to expand egg safety and egg processing research. A 2006-2011 five-year project is addressing issues of concern for the shell egg and egg products industry, regulatory personnel, allied industry and consumers.

[**National Agricultural Statistics Service (NASS)**](http://www.nass.usda.gov/)

* USDA collects processing and distribution information for the economic analysis of the egg products industry through NASS.

**Other Government Agencies**  
  
**FSIS/FDA Cooperation**

* FSIS and the FDA share authority for egg safety and are working together toward solving the problem of SE in eggs.
* FSIS and FDA are working to strengthen the Food Code and to encourage its adoption by States and local jurisdictions.

[**U.S. Food and Drug Administration**](http://www.fda.gov/Food/default.htm)

* The Egg Safety Rule went into effect July 9, 2010 for egg producers with 50,000 or more laying hens. Under the requirements of this rule, egg producers are required to implement safety standards to control risks associated with pests, rodents, and other hazards; to purchase chicks and hens from suppliers who control for *Salmonella* in their flocks; and to satisfy testing, cleaning, and refrigeration provisions to prevent SE.
* These facilities must register with FDA and are required to maintain written plans summarizing their safety practices.
* Under this new rule, FDA will inspect more than 600 farms over the next 14 months (through 2011) to ensure that producers are complying with the new provisions of the Egg Safety Rule.

[**State Agriculture Departments**](http://www.fsis.usda.gov/FSIS_Recalls/State_Departments_of_Public_Health/index.asp)

* State agriculture departments monitor for compliance of the official U.S. standards, grades, and weight classes by egg packers who do not use the USDA/AMS shell egg grading service.

[**State and Local Health Departments**](http://www.fsis.usda.gov/FSIS_Recalls/State_Departments_of_Public_Health/index.asp)

* State and local health departments monitor retail food and foodservice establishments for compliance with state and local health department requirements.
* State and local health departments, in cooperation with FDA, monitor safe handling and good manufacturing practices in shell egg processing plants that do not use the USDA shell egg grading service.