

**GAO**

Report to the Ranking Member,  
Committee on Education and the  
Workforce, House of Representatives

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May 2011

# SCHOOL MEAL PROGRAMS

More Systematic  
Development of  
Specifications Could  
Improve the Safety of  
Foods Purchased  
through USDA's  
Commodity Program



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## Why GAO Did This Study

Through its commodity program, the U.S. Department of Agriculture (USDA) provides commodity foods at no cost to schools taking part in the national school meals programs. Commodities include raw ground beef, cheese, poultry, and fresh produce. Like federal food safety agencies, the commodity program has taken steps designed to reduce microbial contamination that can result in severe illness.

GAO was asked to review (1) the extent to which the program's purchasing specifications related to microbial contamination differ from federal regulations, (2) the extent to which specifications for raw ground beef differ from those imposed by some other large purchasers, and (3) examples of schools' practices to help ensure that food is not contaminated. GAO compared the program's purchasing specifications to federal regulations for food sold commercially, gathered information from seven large purchasers of ground beef, and interviewed officials in 18 school districts in five states, selected in part because of their purchasing practices.

## What GAO Recommends

GAO recommends, among other things, that USDA strengthen its oversight of food purchased by its commodity program, by establishing a more systematic and transparent process to determine whether additional specifications should be developed related to microbial contamination. USDA generally agreed with GAO's recommendations and provided technical comments.

View [GAO-11-376](#) or key components. For more information, contact Lisa Shames at (202) 512-3841 or [shamesl@gao.gov](mailto:shamesl@gao.gov).

# SCHOOL MEAL PROGRAMS

## More Systematic Development of Specifications Could Improve the Safety of Foods Purchased through USDA's Commodity Program

### What GAO Found

For 7 of the approximately 180 commodity foods offered to schools, USDA's commodity program has established purchasing specifications with respect to microbial contamination that are more stringent than the federal regulations for the same foods in the commercial marketplace. For example, the commodity program will not purchase ground beef that tests positive for *Salmonella* bacteria, while federal regulations for commercially available ground beef tolerate the presence of a certain amount of *Salmonella*. Program officials told GAO that more-stringent specifications are needed for certain foods they purchase because they go to populations, such as very young children, at a higher risk for serious complications from foodborne illnesses. However, the program has not developed more-stringent specifications for some pathogens and foods that have been associated with foodborne illness, such as raw, whole chickens cut into eight pieces that the program provides to schools. Program officials told GAO they selected products for more-stringent specifications based on their views of the safety risk associated with different types of food; developed these specifications through informal consultation with a variety of groups; and did not document the process they used.

The commodity program's purchasing specifications related to microbial contamination for raw ground beef at various processing stages are generally similar to those of some other large purchasers. The specifications used by both the commodity program and these large purchasers are more stringent than federal regulations. USDA's commodity program has several purchasing specifications related to microbial contamination for raw ground beef production, process oversight, and testing. For example, the program requires beef suppliers to take actions to reduce the level of pathogens at least twice while beef carcasses are processed. Some large purchasers of raw ground beef have purchasing specifications similar to the commodity program, although they differ in certain details. For example, of the seven large purchasers that GAO interviewed, five said they require their beef suppliers to take between two and seven actions to reduce pathogen levels on beef carcasses.

While all school districts must follow certain food safety practices to participate in federally funded school meal programs, school districts that GAO interviewed have also implemented a number of additional food safety practices. Federal regulations require school districts to develop written food safety plans and to obtain food safety inspections of their schools, among other things. In addition, some of the school districts GAO interviewed have established purchasing specifications related to microbial contamination or food safety for food they purchase in the commercial marketplace, among other things. Nevertheless, few of the district officials GAO interviewed were aware that the commodity program's purchasing specifications for seven products are more stringent than federal regulatory requirements. Officials from half of the districts GAO interviewed said that greater knowledge of these differences would affect their future purchasing decisions by enabling them to make more informed choices.

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## **Abbreviations**

CDC	Centers for Disease Control and Prevention
DOD	Department of Defense
FDA	Food and Drug Administration
HHS	Department of Health and Human Services
USDA	U.S. Department of Agriculture

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United States Government Accountability Office  
Washington, DC 20548

May 3, 2011

The Honorable George Miller  
Ranking Member  
Committee on Education and the Workforce  
House of Representatives

Dear Mr. Miller:

The National School Lunch and School Breakfast Programs are federally assisted programs that provide low-cost or free meals to more than 30 million children each school day in over 100,000 schools nationwide. Schools taking part in the programs receive cash subsidies and food provided at no cost, known as “commodities,” from the U.S. Department of Agriculture (USDA). In recent years, USDA’s commodity program has purchased over \$1 billion worth of about 180 commodities annually, including raw ground beef, poultry, and mozzarella cheese, and offered them to schools. In addition, under an agreement between USDA and the Department of Defense (DOD), schools may choose to receive fresh produce, such as apples, lettuce, and baby carrots, purchased by DOD for the commodity program. All told, food provided at no cost by the commodity program provides about 15 to 20 percent of the food served in schools, while the remaining 80 to 85 percent is purchased directly by schools in the commercial marketplace. Like the rest of the nation’s food supply, the food served in schools is generally safe, although vulnerable to microbial contamination that can result in illnesses, ranging from relatively mild to life-threatening or even fatal conditions.

USDA and the Food and Drug Administration (FDA) both have federal regulatory and oversight responsibilities to, among other things, help ensure the food industry’s compliance with preventive measures designed to reduce or eliminate foodborne, disease-causing organisms, known as pathogens. Agencies within USDA regulate the production of meat, poultry, and processed egg products, and FDA issues regulations to ensure the safety of all other foods, including fruits, vegetables, milk, and whole-shell eggs. Virtually all food for sale in the commercial marketplace is subject to federal regulation and oversight, including testing for pathogens by federal inspectors and setting limits on the levels of pathogens detectable in certain foods.

In addition, the commodity program, as the purchaser of the food that USDA provides at no cost to schools, has established purchasing

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specifications for each of the commodities it buys. Some of these specifications are designed to prevent harmful pathogens and limit the allowable level of certain bacteria that indicate poor sanitary handling or preparation conditions in specific commodities. These specifications apply to foods that are commonly provided to schools. Many of these same foods have also been associated with foodborne illness, such as raw ground beef. In addition, large purchasers of food, such as grocery store and restaurant chains, may include in contracts with their suppliers specifications designed to prevent, reduce, or eliminate microbial contamination.

In light of the potential for microbial contamination of food served in schools, you asked us to examine the standards and procedures that exist to ensure the safety of food in school meal programs. Accordingly, our objectives were to examine (1) the extent to which federal purchasing specifications related to microbial contamination for food in the commodity program differ from federal regulations for the same foods available in the commercial marketplace; (2) the extent to which the commodity program's purchasing specifications related to microbial contamination for raw ground beef differ from those imposed by some large federal and private-sector purchasers; and (3) examples of standards and practices that exist at the state and school district level to help ensure that food procured by schools is safe.

To address these objectives, we obtained documentation of USDA's purchasing specifications related to microbial contamination for food in the commodity program, discussed these specifications with federal officials, as well as with knowledgeable groups and individuals—including representatives of industry associations and consumer groups—and compared the specifications with federal regulations for food sold in the commercial marketplace. We also compared the commodity program's purchasing specifications for raw ground beef to information we gathered on the raw ground beef specifications used by a nonprobability sample of six large private-sector purchasers—including grocery store chains and quick-service restaurants—and one large federal purchaser, and analyzed the findings of a study of USDA's specifications. In addition, we visited and held telephone conferences with a nonprobability sample of officials in five states and 18 school districts selected because of their size; indications of a prior experience with foodborne illnesses; or other factors, including use of a food service management company and participation in a food-buying cooperative. The results from these states and districts cannot be generalized to other states and districts. Appendix I

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provides a more detailed description of our objectives, scope, and methodology.

We conducted this performance audit from February 2010 to May 2011, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

According to USDA, the National School Lunch Program and the National School Breakfast Program share the goals of improving children's nutrition, increasing lower-income children's access to nutritious meals, and supporting the agricultural economy. USDA's commodity program contracts for the purchase of food for these programs with manufacturers that it selects through a competitive bidding process. At the state level, state education departments typically administer the meals programs and forward the commodity selections of individual schools to USDA's commodity program, which purchases and distributes the food selected by schools. In 2009, schools most commonly ordered chicken, mozzarella cheese, potatoes, and ground beef items purchased by the commodity program, in addition to fresh produce purchased for the commodity program by DOD in conjunction with DOD's large-scale efforts to supply fresh produce to its troops. Overall, USDA provides about 15 to 20 percent of the food served in school meals. Schools purchase the remainder independently using their own procurement practices, either purchasing foods directly from manufacturers or distributors or contracting with food service management companies that procure the food for them.

Three agencies within USDA are primarily responsible for the planning, purchase, allocation, and distribution of commodities to states and school districts: the Food and Nutrition Service, the Agricultural Marketing Service, and the Farm Service Agency (referred to collectively in this report as USDA's commodity program). In addition to administering the National School Lunch Program and the National School Breakfast Program, the Food and Nutrition Service has overall authority to administer USDA's commodity program and coordinate all commodity orders submitted by states. The Agricultural Marketing Service purchases meats, poultry, seafood, fruits, and vegetables; while the Farm Service Agency purchases dairy products, grains, peanut products, and other items.

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Virtually all food for sale in the United States must comply with federal food safety laws and regulations. Federal efforts for ensuring food safety include focusing on preventing or reducing contamination by bacterial pathogens such as *E. coli* O157:H7, a toxin-producing strain of the intestinal bacterium *E. coli*; *Salmonella*; and *Campylobacter*; and monitoring levels of other bacteria, such as generic *E. coli* and fecal coliforms, which indicate the extent to which food was produced under sanitary conditions. USDA, through its Food Safety and Inspection Service (referred to throughout this report as USDA's meat and poultry regulatory program), is responsible for ensuring the safety of meat, poultry, and processed egg products, and FDA is responsible for ensuring the safety of virtually all other food products, including grains, nuts, and produce. GAO has reported that federal oversight of food safety remains fragmented in several areas, and that this fragmentation has caused inconsistent oversight, ineffective coordination, and inefficient use of resources.<sup>1</sup> Existing statutes give these agencies different regulatory and enforcement authorities. For example, food products under USDA's jurisdiction must generally be inspected and approved as meeting federal standards before being sold to the public. Under current law, thousands of regulatory inspectors of meat and poultry are to maintain continuous inspection at slaughter facilities and examine all slaughtered meat and poultry carcasses. They also visit other meat- and poultry-processing facilities at least once each operating day. FDA is responsible for ensuring that all foods it regulates are safe, wholesome, and properly labeled. To carry out its responsibilities, FDA has authority to, among other things, conduct examinations and investigations and inspect food facilities. But unlike foods regulated by USDA, food products under FDA's jurisdiction may be marketed without FDA's prior approval. For fresh cut fruits and vegetables, FDA has issued guidance, which food manufacturers may voluntarily use to minimize microbial contamination. FDA has also established regulations that serve as the minimum sanitary and processing requirements and may take enforcement actions against firms that do not comply with these requirements. Under the FDA Food Safety Modernization Act, the agency is required to promulgate regulations for produce safety that would establish science-based minimum standards for the safe production and harvesting of certain raw fruits and vegetables for which FDA determines such standards could minimize the risk of serious adverse health consequences or death.

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<sup>1</sup>GAO, *High-Risk Series: An Update*, [GAO-11-278](#) (Washington, D.C.: February 2011).

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While food may be contaminated by many different bacteria, viruses, parasites, toxins, and chemicals, this report focuses on disease-causing, or pathogenic, bacteria. Contamination may take place during any of the many steps in growing, processing, storing, and preparing foods. Some potentially life-threatening pathogens live in soil, water, or the intestinal tracts of healthy birds, domestic animals, and wildlife. As a result, produce may become contaminated if irrigated with tainted water, and the carcasses of livestock and poultry may become contaminated during slaughter if they come into contact with small amounts of intestinal contents. Foods that mingle the products of many individual animals—such as bulk raw milk, pooled raw eggs, or raw ground beef—are particularly susceptible, because a pathogen from any one of the animals may contaminate the entire batch. A single hamburger, for example, may contain meat from hundreds of animals. Pathogens can also be introduced later in the process—such as after cooking, but before packaging—or by unsanitary conditions—including contact with infected food handlers or contact with contaminated equipment or surfaces. Still, pathogens are generally destroyed when foods are properly cooked. In addition, the presence of pathogens can be greatly reduced by subjecting food to ionizing radiation, known as food irradiation. On the basis of extensive scientific studies and the opinions of experts, we reported in 2000 that the benefits of food irradiation outweigh the risks.<sup>2</sup>

According to the Centers for Disease Control and Prevention (CDC), foodborne disease is a major cause of illness and death in the United States. CDC routinely gathers information from local and state health departments and laboratories and reports information about a range of foodborne illnesses and the foods with which they are associated. In 2011, CDC estimated that approximately 48 million people become sick, 128,000 are hospitalized, and 3,000 die each year from foodborne diseases.<sup>3</sup> CDC attributed about 90 percent of the illnesses, hospitalizations, and deaths

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<sup>2</sup>GAO, *Food Irradiation: Available Research Indicates That Benefits Outweigh Risks*, [GAO/RCED-00-217](#) (Washington, D.C.: Aug. 24, 2000). For more information, see GAO, *Food Irradiation: FDA Could Improve Its Documentation and Communication of Key Decisions on Food Irradiation Petitions*, [GAO-10-309R](#) (Washington, D.C.: Feb. 16, 2010).

<sup>3</sup>CDC's 2011 estimates of foodborne illnesses are lower than the estimates it published in 1999 because of differences in data sources and methods, not a real decline in the rate of illness, according to its January 2011 reports. CDC based its most recent estimates on a number of sources—including its Foodborne Disease Outbreak Surveillance System, National Notifiable Disease Surveillance System, and Foodborne Diseases Active Surveillance Network—and adjusted the data for, among other things, underreporting, under-diagnosis, and geographical coverage.

having a known cause to eight pathogens, including four bacteria—*Salmonella*, *Campylobacter*, *E. coli* O157:H7, and *Listeria monocytogenes*—that are included in USDA’s regulatory oversight of meat and poultry and in the purchasing specifications of USDA’s commodity program (see table 1). The four other pathogens are norovirus, *Clostridium perfringens*, and *Staphylococcus aureus*—which are most often spread by improper food handling or contamination by infected food handlers—and *Toxoplasma gondii*, a parasite commonly found in people and the environment that typically does not result in illness. The commodity program requires testing for *Staphylococcus aureus* as an indicator of poor sanitary handling or preparation conditions in raw ground beef, diced cooked chicken, and baby carrots.

**Table 1: Pathogens Responsible for Most Foodborne Illnesses with a Known Bacterial Cause That Are Also in USDA’s Regulatory Oversight and Purchasing Specifications**

Bacterial pathogen	Source	Affected population and symptoms	Associated foods
<i>Salmonella</i> species	A group of bacteria that live in various animals, especially poultry and swine. Environmental sources of the organism include water, soil, animal feces, raw meats, and raw poultry.	Can be life-threatening in vulnerable individuals, including infants, the elderly, and those with compromised immune systems. Symptoms include fever, diarrhea, and abdominal cramps.	Undercooked eggs, poultry, or meat, and unpasteurized dairy products.
<i>Campylobacter</i>	A group of bacteria that live in the intestines of healthy birds, including poultry, and other animals.	Can be life-threatening among immune-compromised individuals, although most people recover fully. Children under 5 years of age and young adults (ages 15 to 29) are more frequently afflicted than other age groups. Symptoms include diarrhea, abdominal pain, and fever.	Undercooked meat, poultry, and unpasteurized milk, or food contaminated with juices from raw or undercooked meat or poultry.
<i>E. coli</i> O157:H7	A strain of a group of bacteria that inhabits the guts of ruminant animals (such as cattle) without making them sick. One of several strains of <i>E. coli</i> that emit a toxin in humans that, in about 3 to 5 percent of infections, can cause a severe kidney disease.	Young children and the elderly develop severe illness more than others. Can produce severe bloody diarrhea, profuse bleeding, kidney failure, seizures, coma, and death.	Food or water contaminated with microscopic amounts of feces from cattle or other animals. Outbreaks have been linked to undercooked ground beef, dairy products, and produce.
<i>Listeria monocytogenes</i>	A group of bacteria found in the environment, such as in soil and water, which animals can carry without appearing ill. It has been found in at least 37 species of mammals, at least 17 species of birds, and some species of fish and shellfish.	Pregnant women, newborns, the elderly, and those with compromised immune systems are most at risk. Can lead to fever, nausea, diarrhea, miscarriage, stillbirth, and death.	Contaminated raw foods, like uncooked meats, vegetables, unpasteurized milk, or ready-to-eat hot dogs or deli meats that are contaminated after cooking but before packaging. The bacteria’s ability to grow at cold temperatures allows them to grow in refrigerated foods.

Source: GAO analysis of CDC, FDA, and USDA information.

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Information reported to CDC shows hundreds of instances of foodborne outbreaks affecting children in schools during a recent 10-year period. An outbreak occurs when two or more similar illnesses result from the consumption of a common food. According to CDC documents, many clusters of illnesses are not investigated or reported to CDC because of, among other reasons, competing priorities at state and local health agencies, and because only a small proportion of all foodborne illnesses reported each year are identified as associated with outbreaks. Nevertheless, based on CDC's outbreak data for the 10 years from 1999 through 2008 (the most recent year for which data are available), we identified 478 foodborne outbreaks, affecting at least 10,770 children, that were associated with schools. Although these outbreaks were associated with foods prepared or consumed at schools, they do not all relate to food served as part of school meal programs. For example, the implicated food may have been prepared at home and consumed at school as part of an event. Nevertheless, the number of outbreaks associated with schools represents about 4 percent of the approximately 12,000 foodborne outbreaks reported to CDC during that period by state and local public health agencies. As with foodborne disease outbreaks generally, most outbreaks associated with schools could not be attributed to a single contaminated ingredient, and many outbreaks' association with a pathogen could not be confirmed by a laboratory. We found that *Salmonella* was among the most common bacterial pathogens identified as causing outbreaks associated with schools. Moreover, when outbreaks associated with schools could be linked to a specific food, they were most commonly associated with contaminated ingredients such as poultry, fruits, grain and bean products, dairy, beef, leafy vegetables, and pork.<sup>4</sup>

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<sup>4</sup>For more information on the risks to school children posed by recalled foods, see GAO, *School Meal Programs: Changes to Federal Agencies' Procedures Could Reduce the Risk of School Children Consuming Recalled Foods*, [GAO-09-649](#) (Washington, D.C.: Aug. 20, 2009).

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## Federal Purchasing Specifications for Seven Foods in the Commodity Program Are More Stringent Than Federal Regulations for Those Foods in the Commercial Marketplace

For seven of the foods it purchases, the commodity program's specifications related to microbial contamination are more stringent than federal regulations for those foods in the commercial marketplace. Nevertheless, the program's more-stringent purchasing specifications may not apply to all foods and pathogens of concern.

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## For Seven Foods, the Commodity Program's Specifications Related to Microbial Contamination Are More Stringent Than Federal Regulations for Those Foods in the Commercial Marketplace

For 7 of the approximately 180 commodity foods offered to schools, USDA's commodity program has established purchasing specifications with respect to microbial contamination that are more stringent than the federal regulations for the same foods available in the commercial marketplace. For example, the commodity program will not purchase raw ground beef that tests positive for *Salmonella*. On the other hand, USDA regulations for commercially available raw ground beef tolerate the presence of a certain amount of *Salmonella*. Specifically, a facility meets regulatory performance standards if, on the basis of USDA's regulatory inspections, 7.5 percent or less of raw ground beef samples the agency collects test positive for *Salmonella*. In addition, while the commodity program rejects all raw boneless or ground beef that tests positive for *E. coli* O157:H7, USDA regulations allow such beef to enter commerce if it is first cooked. Moreover, the commodity program, through its purchasing specifications, rejects ground turkey and diced cooked chicken if microbial testing reveals levels of certain bacteria, which indicate deficiencies in sanitation during production of these foods, are above established limits. Federal regulations, on the other hand, do not require that these same foods destined for the commercial marketplace be tested for these organisms. Table 2 lists the seven foods for which the commodity program's purchasing specifications related to microbial contamination are more stringent than federal regulations.

**Table 2: Seven Commodity Program Foods with Purchasing Specifications Related to Microbial Contamination That Are More Stringent Than Federal Regulations**

Commodity program food (form to which specifications apply)	Product examples	Commodity purchasing specifications	Regulatory requirements for the commercial marketplace
Boneless beef (raw)	Raw beef trimmings used to make ground beef	<i>E. coli</i> O157:H7 and <i>Salmonella</i> : raw boneless beef rejected when results are positive. Bacteria that may indicate unsanitary conditions: raw boneless beef rejected when results exceed certain limits.	<i>E. coli</i> O157:H7: raw boneless beef intended for grinding that tests positive must be treated to destroy the pathogen (for example, cooked) before entering commerce or destroyed.
Ground beef (raw)	Forty-pound cartons of frozen raw ground beef	<i>E. coli</i> O157:H7 and <i>Salmonella</i> : raw ground beef rejected when results are positive. <i>Staphylococcus aureus</i> and other bacteria that may indicate unsanitary conditions: raw ground beef rejected when results exceed certain limits.	<i>E. coli</i> O157:H7: raw ground beef that tests positive must be treated to destroy the pathogen (for example, cooked) before entering commerce or destroyed.
Diced chicken (cooked)	Chicken that has been cooked, diced, and frozen in plastic bags	<i>Listeria monocytogenes</i> and <i>Salmonella</i> : cooked diced chicken rejected when results are positive. <i>Staphylococcus aureus</i> and other bacteria that may indicate unsanitary conditions: cooked diced chicken rejected when results exceed certain limits.	<i>Listeria monocytogenes</i> : ready to eat food products, such as cooked diced chicken, that test positive cannot enter commerce.
Ground turkey (raw)	Raw ground turkey is processed into precooked taco filling	Bacteria that may indicate unsanitary conditions: ground turkey rejected when results exceed certain limits.	No established regulatory requirements for ground poultry.
Liquid eggs (pasteurized)	Liquid eggs to processors in 48,000-pound tankers and to schools in 5-pound or 30-pound frozen cartons	<i>Salmonella</i> : liquid eggs rejected when results are positive. Bacteria that may indicate unsanitary conditions: liquid eggs rejected when results exceed certain limits.	<i>Salmonella</i> : liquid egg products must be treated to inactivate this pathogen or used under strict requirements.

Commodity program food (form to which specifications apply)	Product examples	Commodity purchasing specifications	Regulatory requirements for the commercial marketplace
Sliced apples (raw and sliced)	Sliced, raw apples in small bags as individual servings	<i>E. coli</i> O157:H7, <i>Listeria monocytogenes</i> , <i>Salmonella</i> , or <i>Shigella</i> : sliced apples rejected when results are positive.  Bacteria that may indicate unsanitary conditions: sliced apples rejected when results exceed certain limits.	No required testing before product enters commerce.
Baby carrots (raw)	Raw baby carrots in small bags as individual servings	<i>Listeria monocytogenes</i> , <i>Salmonella</i> , <i>Staphylococcus aureus</i> , and other bacteria that may indicate unsanitary conditions: testing required but no limits set.	No required testing before product enters commerce.

Source: GAO analysis of USDA and FDA information.

Officials of USDA’s commodity program told us that more-stringent standards are needed for certain foods in the commodity program because commodity foods go to school-age children as well as populations, such as very young children, who are considered at a higher risk than the general population for serious complications from foodborne illnesses. For the remainder of the 180 commodity foods, the purchasing program requires that suppliers meet existing federal regulations for food in the commercial marketplace. For example, all ready-to-eat meat and poultry must adhere to federal regulatory limits for *Listeria monocytogenes*.

Commodity program officials told us they selected products for more-stringent specifications on the basis of their views of the safety risk associated with different types of food. For example, in their view, raw meat products that are ground present a higher risk than other meat products because they include meat from the surface of carcasses that, if contaminated, could spread contamination throughout a large volume of finished raw ground product. Similarly, one contaminated egg could spread contamination through a large batch of liquid eggs. Also, program officials said that cooked diced chicken requires additional microbial testing because it is handled after cooking and before packaging.

While officials of USDA’s commodity program told us they consult with a variety of groups and individuals in developing purchasing specifications related to microbial contamination, they did not document these informal consultations. For example, commodity program officials said some purchasing specifications, such as those for raw ground beef, were based in part on consultations with industry representatives and other agencies

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within USDA, while other purchasing specifications were based on information that has been gathered over time through informal consultation with internal and external food safety experts. Commodity program officials also stated that they consult with USDA's meat and poultry regulatory program and food safety experts as they change purchasing specifications. In addition, commodity program officials stated that, each year, USDA's meat and poultry regulatory program and one of USDA's research agencies review the purchasing specifications for some of the meat, poultry, and liquid egg products to ensure that the specifications meet minimum regulatory requirements. Nevertheless, commodity program officials told us they did not maintain documentation regarding the process by which they developed their purchasing specifications for the seven products that have more-stringent specifications related to microbial contamination. In addition, we have previously reported that when agencies relied on informal coordination mechanisms and relationships with individual officials to ensure effective collaboration, the efforts may not continue once personnel move to their next assignments.<sup>5</sup>

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### The Commodity Program's More-Stringent Purchasing Specifications Do Not Apply to All Foods and Pathogens of Concern

While USDA's commodity program has more-stringent purchasing specifications related to microbial contamination for seven products, it has not developed more-stringent specifications for some commodities it provides to schools that have been associated with foodborne illness and outbreaks. For example, according to data collected by CDC, poultry is among the most common foods associated with foodborne illnesses and outbreaks and has been associated with bacterial pathogens such as *Salmonella*, *Campylobacter*, and *Clostridium perfringens*. While most of the poultry items the commodity program provides to schools are precooked, the program does provide raw, whole chickens cut into eight pieces to schools. Despite food safety concerns about this product, however, the commodity program does not have more-stringent purchasing specifications related to testing and sampling for microbial contamination for it, as it does for other foods that present food safety risks. Nevertheless, according to program officials, other specifications for this product—such as holding it within certain temperatures and processing it within 7 calendar days after slaughter—are designed to control microbial contamination.

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<sup>5</sup>GAO, *National Security: Key Challenges and Solutions to Strengthen Interagency Collaboration*, GAO-10-822T (Washington, D.C.: June 9, 2010).

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In addition, USDA's commodity program has more-stringent purchasing specifications for one of the ready-to-eat meat and poultry products it provides to schools—diced cooked chicken—but not for others. The commodity program provides schools several ready-to-eat meat and poultry products, including cubed ham and smoked turkey breasts. These products, like all ready-to-eat meat and poultry products, must not test positive for *Listeria monocytogenes*, in accordance with federal regulatory requirements. The commodity program, in its purchasing specifications, does not require testing for any additional pathogens or other bacteria for these food products, as it does for the cooked diced chicken it purchases. Program officials explained that they believe most of the ready-to-eat meat and poultry products they purchase present less of a contamination risk because they are placed in sterile sealed packages for cooking and shipping, but others have raised concerns about these types of products. For example, representatives of a large food distributor we interviewed stated that ready-to-eat meat and poultry products are their biggest food safety concern after raw meat and poultry. One food industry safety expert told us he thought that all of the commodity program's ready-to-eat meat products should have more-stringent specifications related to microbial contamination. One large urban school district we interviewed required its commercial suppliers to test all ready-to-eat meat and poultry products for a variety of pathogens and other bacteria, including *Clostridium perfringens*, *Shigella*, and *Staphylococcus aureus*, in addition to *Salmonella* and *Listeria monocytogenes*. Finally, according to active surveillance conducted by CDC, the incidence of *Listeria monocytogenes* in 2009 was at its highest rate since 1999.

Similarly, USDA's commodity program has more-stringent purchasing specifications related to microbial contamination for some of the fresh produce items it provides to schools but not others that have been associated with foodborne illness and outbreaks. Currently, the commodity program applies purchasing specifications related to microbial contamination to minimally processed fresh produce items—sliced apples and baby carrots—but not to other fresh produce items.<sup>6</sup> However, these two commodities are only offered on a trial basis to a limited number of schools. Most of the fresh produce—including most of the minimally processed items such as sliced apples and baby carrots—that schools

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<sup>6</sup>For more information on the need for enhanced oversight of high-risk fresh produce, see GAO, *Food Safety: Improvements Needed in FDA Oversight of Fresh Produce*, [GAO-08-1047](#) (Washington, D.C.: Sept. 26, 2008).

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obtain through the commodity program is purchased by DOD. The agreement between the commodity program and DOD does not require DOD to use the same purchasing specifications related to microbial testing that the commodity program uses for the produce it purchases. DOD officials told us the agency relies on federal regulations to ensure food safety but may occasionally test fresh produce items for microbial contamination. In contrast, the commodity program requires its suppliers to test for pathogens and other bacteria on an ongoing basis. Therefore, baby carrots and sliced apples purchased by the commodity program undergo more-stringent microbial testing than the baby carrots and sliced apples purchased for schools by DOD. Because commodity program specifications are more stringent than DOD specifications for these products, the commodity program initiated conversations with DOD officials in 2010 to explore having DOD use the more-stringent standards, according to commodity program officials.

DOD purchases most of the other fresh produce distributed to schools in the commodity program and relies on current federal regulations that do not require microbial testing for produce in the commercial marketplace. DOD officials told us they do not have any more-stringent purchasing specifications related to microbial contamination for any of these produce items. While the commodity program purchases and distributes to schools a few fresh produce items—whole apples, oranges, pears, and potatoes—in addition to baby carrots and sliced apples, DOD purchases and distributes to schools several times the amount of fresh and minimally processed produce purchased by the commodity program and a wider variety of produce items, including grapes, lettuce, celery, broccoli, and spinach. In recent years, many foodborne disease outbreaks and illnesses have been associated with fresh produce, including items like those that DOD purchases for schools. For example, in 2006, bagged spinach contaminated with *E. coli* O157:H7 sickened an estimated 238 people, killed 5 people, and cost the industry an estimated \$80 million in lost sales. As a result, the company most closely linked to this outbreak now routinely tests its spinach and other leafy greens for *E. coli* O157:H7. While DOD did not purchase this contaminated bagged spinach item or distribute it through the commodity program, according to DOD and USDA officials, DOD does purchase other bagged spinach products and provides them to schools. In addition, in the past year, chopped celery contaminated with *Listeria monocytogenes* was linked to an outbreak in one state that resulted in 5 deaths, and alfalfa sprouts contaminated with *Salmonella* sickened an estimated 140 people in 26 states and the District of Columbia. Officials we interviewed in a midsize urban school district said they do not serve what they called “high-risk” raw produce items,

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such as spinach and bean sprouts, because children are at a higher risk of complications from foodborne illness.

Recently recognized pathogens have been associated with a variety of foods, including meat and fresh produce, that are not addressed either by the commodity program's purchasing specifications or by federal regulations. Specifically, public health officials have shown that at least six strains of *E. coli* other than *E. coli* O157:H7 produce the same potentially deadly toxins and life-threatening illness. CDC has estimated that these strains cause approximately 113,000 illnesses and 300 hospitalizations annually in the United States. Outbreaks associated with these six strains of *E. coli* have involved lettuce, raw ground beef, and berries, among other foods, according to CDC. For example, in 2010, two students in New York state developed a disease with complications, such as kidney failure and anemia, after consuming romaine lettuce contaminated with one of these strains, which the school district purchased commercially. Officials in this district told us that, as a result of the outbreak, the district reduced the amount of lettuce it served and stopped purchasing the particular bagged lettuce product associated with the outbreak.

Although USDA's commodity program has not developed any purchasing specifications related to microbial contamination to address the risks from these non-O157 strains of *E. coli*, federal regulatory agencies have considered taking action to address them, and some food companies have begun to test their products for these strains. In October 2007, USDA, FDA, and CDC cosponsored a public meeting to consider the public health significance of non-O157 *E. coli* in the U.S. food supply. As of February 2011, USDA's meat and poultry regulatory program is considering conducting routine testing for the presence of six non-O157 strains of *E. coli* in certain raw beef products. In addition, some companies in the food industry have developed their own tests and are currently using these methods to determine whether the food they produce is contaminated with strains of non-O157 *E. coli*. For example, we visited one produce company that routinely tests its leafy greens for these strains. In addition, USDA's meat and poultry regulatory program has collaborated with industry to develop tests that could rapidly detect six such strains in raw ground beef. As of February 2011, officials for USDA's meat and poultry regulatory program said that the department had developed standardized tests to detect all six strains.

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## The Commodity Program's Specifications for Raw Ground Beef Are Generally Similar to Those of Some Other Large Purchasers

While virtually all food for sale in the commercial marketplace must meet federal regulatory requirements, federal agencies and others may apply more-stringent purchasing specifications in the contracts they use to purchase food. USDA's commodity program has several purchasing specifications related to microbial contamination for raw ground beef production, process oversight, and testing. Like the commodity program, some other large purchasers of raw ground beef that we interviewed have purchasing specifications in similar areas, although the specifications differ in certain details. In response to a request from the commodity program, the National Research Council found that the scientific basis for the program's purchasing specifications for raw ground beef, which were revised in 2010, is unclear.

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## The Commodity Program Has Purchasing Specifications Related to Microbial Contamination for Raw Ground Beef Production, Process Oversight, and Testing

The purchasing specifications for raw ground beef set by USDA's commodity program in 2010, which are more stringent than federal regulatory requirements for foods in the commercial marketplace, are designed to prevent, reduce, or eliminate microbial contamination through (1) steps taken when cattle are slaughtered, (2) oversight of the suppliers' slaughter and grinding processes, and (3) microbial testing of the raw ground beef at different points in the production process from slaughter through grinding. The commodity program's purchasing specifications include the following:

- *Steps when cattle are slaughtered:* The slaughter processes used by beef suppliers must include at least two actions—known as antimicrobial interventions—designed to reduce the level of pathogens on the beef carcasses. One of these interventions must occur at a critical point in the production process where such interventions are likely to effectively reduce pathogen levels. For example, beef suppliers may use interventions to control contamination of the carcass from the hide during skinning or from the gastrointestinal tract during evisceration, or to control the growth of pathogens when the carcass is chilled or when the finished product is stored. Suppliers may use such interventions as organic acids, hot water, or steam applied to the carcass; physical actions; or a combination of interventions in sequence. For example, a slaughter facility might combine a physical intervention, such as trimming away visible contamination on the carcass with a knife, with other antimicrobial interventions, such as spraying the carcass with very hot water, to improve the microbial safety of the beef carcass after slaughter, skinning, and evisceration. In addition, beef suppliers must validate—either through existing agency guidance or studies they conduct—that the interventions

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they use reduce the level of harmful pathogens on carcasses by at least 99.9 percent.

- *Oversight of suppliers' slaughter and grinding processes:* Before purchasing raw ground beef from a supplier, commodity program officials visit the supplier's facilities to evaluate, among other things, its quality control programs, equipment, and documentation that the supplier's product complies with the program's specifications. After purchases have begun, commodity program officials periodically inspect the supplier's facilities, processes, and documentation at a frequency dictated by the size of the purchases. For example, these inspections occur monthly for suppliers with multiple, ongoing contracts, and they occur at least once during each contract period for suppliers with intermittent contracts. If deficiencies are discovered, these inspections may occur more often. Finally, when raw ground beef is being produced, commodity program officials must be present to monitor the supplier's performance, verify compliance with the program's specifications, and obtain samples of raw ground beef for microbial testing, among other things.
- *Microbial testing of raw ground beef at different points during production:* Beef suppliers must send samples of raw boneless beef before and after it is ground to a laboratory, accredited by the commodity program, where the samples are tested for the full range of microbes detailed in the commodity program's purchasing specifications. Under the current specifications, samples must be taken from each 2,000-pound lot of raw boneless beef to be ground and each 10,000-pound lot of finished raw ground beef. Samples of finished raw ground beef are selected at 15-minute intervals during grinding. Suppliers may not distribute the raw ground beef to schools until the test results are known. In the event that test results reveal the presence of *Salmonella* or *E. coli* O157:H7, the supplier must notify both the commodity program and USDA's meat and poultry regulatory program. The commodity program rejects raw ground beef contaminated with these two pathogens. The commodity program uses test results of other bacteria to help ensure that the raw ground beef it distributes to schools is produced under sanitary conditions. If the levels of these bacteria exceed certain thresholds, the commodity program rejects the affected lot of raw boneless beef or ground beef. Suppliers that fail to maintain sanitary conditions are barred from producing raw boneless beef or ground beef for the commodity program until they take corrective action to restore sanitary conditions.

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## Some Other Large Purchasers of Raw Ground Beef Have Similar, More-Stringent, Purchasing Specifications, Although Certain Details Differ

The seven large purchasers of raw ground beef we interviewed (six large private-sector purchasers—including grocery store chains and quick-service restaurants—and one large federal purchaser) relied on purchasing specifications related to microbial contamination for raw ground beef production, process oversight, and testing that were the same or substantially similar to those used by USDA’s commodity program, with variation in such things as the number or placement of required antimicrobial interventions designed to reduce microbial contamination. The specifications used by these purchasers, like those used by the commodity program, call for more-stringent testing for microbial contamination than do federal regulations for the same foods in the commercial marketplace. Officials at a meatpacking plant we visited said that both the commodity program’s specifications and those of its large, private-sector customers include high standards with only slight differences. In addition, two large purchasers pointed out that specifications may vary depending on the intended use of the raw ground beef. For example, a quick-service restaurant chain that maintains strict control over its cooking processes may have specifications that differ from those of the commodity program and grocery store chains, which have no control over how the raw ground beef they purchase is cooked. The purchasing specifications shared by the seven purchasers we interviewed are generally as follows:

- *Steps when cattle are slaughtered:* All but two of the large purchasers told us they require suppliers to apply interventions on beef carcasses to reduce the level of pathogens and other bacteria, as the commodity program does. These purchasing specifications are more stringent than federal regulatory requirements. The specifications used by these purchasers differ in terms of the number of interventions to apply, where in the production process to apply the interventions, and the target level for the reduction of pathogens.
  - Number of interventions: Although three of these purchasers, like the commodity program, require two interventions, one required three, one required seven, and another purchaser did not dictate the number of interventions, as long as its suppliers achieved a given reduction in the levels of pathogens.
  - Where to apply interventions: Some of these purchasers specify where interventions should be applied. For example, like the commodity program, one purchaser requires that at least one intervention be applied at a critical point in the production process where such interventions are likely to effectively reduce pathogen levels. Another

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purchaser stipulates that both interventions it requires be applied at such critical points.

- Target levels for pathogen reduction: Specifications for the level of pathogen reduction ranged from removing 99 percent of pathogens to removing 99.9 percent. One purchaser did not specify a target for reduction of pathogens but requires its boneless beef suppliers to demonstrate that their processes will reduce *E. coli* O157:H7 to nondetectable levels.

The purchaser that did not include additional measures to reduce the level of pathogens and other bacteria on beef carcasses in its purchasing specifications told us it relied on federal regulatory requirements that were designed to ensure the safety of raw ground beef. This purchaser also said, however, that some of its suppliers may apply interventions or other measures that are more stringent than federal regulations as part of their routine business practices.

- *Oversight of suppliers' slaughter and grinding processes:* All the purchasers we interviewed use one or more of the following measures to oversee the performance of their raw boneless beef and ground beef suppliers: initial approval of suppliers, periodic inspections, and on-site presence during grinding. But they differ in their specifications for who must conduct the inspections and how frequently the inspections must occur as follows:
  - Like the commodity program, most of the purchasers require initial approval of potential suppliers and purchase raw boneless and ground beef only from approved suppliers. For example, one purchaser said it requires that both its suppliers and grinders certify that they can meet its quality specifications before contracting with them.
  - All of the purchasers told us they require periodic inspections of their beef suppliers or grinders; most use both their own employees and third parties to conduct these inspections. For example, one purchaser uses its own employees and those of its grinders to inspect its suppliers of boneless beef at least once annually. This purchaser also requires both its raw boneless beef and its raw ground beef suppliers to undergo at least one annual audit by a third party.

One purchaser had its own employees on site when its beef was being ground—as the commodity program does—because all its raw ground beef is produced either at a large company-owned facility or in its own stores.

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- *Microbial testing of raw ground beef at different points during production:* Most of the purchasers we interviewed told us they require their suppliers to sample beef before and after it is ground, to test these samples for pathogens, and to meet specified thresholds related to those pathogens. Their specifications differed, however, in terms of how they sampled raw boneless beef and ground beef and the microbial testing they require as follows:
    - One purchaser said it requires that samples be gathered twice from each 2,000-pound lot of boneless beef, once before it leaves the meatpacking plant, and once when the lots arrive at the grinder. Another purchaser, like the commodity program, required samples of finished raw ground beef to be taken every 15 minutes during grinding, and one required samples to be taken about every 9 minutes.
    - Like the commodity program, most of these purchasers require that their suppliers retain control of the raw ground beef until the test results are known. These purchasers reject raw boneless or ground beef contaminated with *E. coli* O157:H7. One purchaser also requires suppliers to test boneless beef for pathogens that indicate whether it was produced under sanitary conditions. This purchaser said it used the results of such tests, along with other information, to evaluate the performance of its suppliers, as the commodity program does.

The one purchaser that had not developed specifications for the sampling and testing of raw boneless or ground beef relied on federal regulatory requirements, which include limits for *E. coli* O157:H7 and *Salmonella*. While it lacked such specifications for its suppliers, this purchaser may occasionally test its raw ground beef for microbial contamination.

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## The Scientific Basis for the Commodity Program's Revised Purchasing Specifications for Raw Ground Beef Is Unclear

In 2010, an expert committee convened by the National Research Council at the request of USDA's commodity program found that the scientific basis of the program's 2010 revisions to its purchasing specifications for raw ground beef is unclear.<sup>7</sup> In its report, the committee noted that some specifications were based on industry practices, but it could not determine the scientific basis of the industry practices. Further, it noted that other specifications appeared to have been based on information gathered

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<sup>7</sup>National Research Council, *An Evaluation of the Food Safety Requirements of the Federal Purchase Ground Beef Program* (Washington, D.C.: National Academies Press, 2010).

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through informal, ad hoc expert consultation, a method the committee deemed to be the least preferred form of evidence for developing specifications. Nevertheless, the committee found that a lack of reported outbreaks in recent years caused by either *Salmonella* or *E. coli* O157:H7 associated with raw ground beef purchased by the commodity program strongly suggested that the program's purchasing specifications have been protective of public health. The committee did, however, recommend that the commodity program develop a systematic, transparent, and auditable system for modifying, reviewing, updating, and justifying science-based purchasing specifications for raw ground beef.

The committee was also asked by USDA to compare the commodity program's purchasing specifications to those used by other large purchasers of raw ground beef. Accordingly, the committee reviewed the purchasing specifications for raw ground beef used by 24 large corporate purchasers and found considerable variation with regard to acceptable levels of microbes. Specifically, the committee found substantial differences among the 24 purchasers in their criteria for bacteria that indicate the extent to which production conditions are sanitary, such as generic *E. coli*, as well as for *Salmonella*, *Listeria monocytogenes*, and *E. coli* O157:H7. The committee attributed the variations, in part, to the intended use of the raw ground beef. For example, specifications for raw ground beef distributed in frozen form may need to differ from purchasing specifications designed to improve the shelf life of fresh ground beef. According to its report, because the committee lacked information on the scientific basis for the corporate purchasing specifications, it could not directly compare the commodity program's specifications with those of the corporate purchasers. The commodity program revised its purchasing specifications for raw ground beef in 2010 in response to concerns expressed in the media that the program's existing specifications were not as stringent as those of large-scale purchasers of raw ground beef in the corporate sector, such as quick-service restaurants.

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## School Districts Have Adopted a Variety of Food Safety Practices to Help Ensure That Food Served in Schools Is Safe

While all school districts must follow certain food safety practices to participate in federally funded school meal programs, school districts we interviewed have also implemented a number of additional food safety practices. For example, some of these school districts have established purchasing specifications related to microbial contamination and have limited the kinds of foods purchased because of food safety concerns related to staff training and the adequacy of their facilities.

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## School Districts Must Follow Certain Food Safety Practices to Participate in Federally Funded School Meal Programs

To participate in federally funded school meal programs, federal regulations require all school districts to, among other things, develop written food safety plans and obtain food safety inspections of their schools. Specifically, each school district must implement a food safety plan that complies with USDA regulations. USDA publishes guidance to help schools develop plans that identify and mitigate food safety hazards related to preparing, storing, and serving school meals. These plans address such things as employee hand washing, proper heating and cooling methods, documentation of food temperatures, quality assurance steps, corrective actions, and record keeping. During reviews occurring every 5 years, state officials, in collaboration with USDA regional officials, are responsible for verifying school districts' compliance with this requirement. Nevertheless, although they believe compliance is high, USDA officials said that information on compliance with this requirement is not collected at the national level, although it is collected at the state level. These officials added that USDA and state officials work with school districts not in compliance to correct any deficiencies. All 18 school districts we interviewed provided us documentation of their food safety plans. (For a list of the school districts in our sample, see app. I.)

In addition, to help schools identify and correct immediate or persistent food safety problems, schools in each district must be inspected by relevant state or local health officials at least twice during each school year. According to the most recent data available from USDA, about 77 percent of schools in the United States met or exceeded this requirement during the 2009-2010 school year. The percentage of schools that meet the requirement for two inspections annually has increased from about 58 percent since the 2005-2006 school year, when two inspections were first required. Nevertheless, according to USDA data, about one in five schools still do not meet the requirement. Although USDA officials reported that they stress the importance of the inspections and encourage states to provide them, schools that do not meet the requirement are not penalized.

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In three of the school districts in our sample, all schools had received the required two inspections during the 2009-2010 school year; the level of compliance with the requirement varied among the other school districts. Overall, 60 percent of the schools in the 18 school districts in our sample received two or more inspections during the 2009-2010 school year. However, in one large urban school district, fewer than 1 percent of the schools received two inspections. When that district is excluded from the calculation, 77 percent of schools in the remaining 17 districts met or exceeded the requirement for two annual inspections.

According to USDA data, reasons cited by schools for not meeting the requirement include insufficient staff or funding resources at state and local health departments to conduct the inspections, the need for these departments to conduct higher priority work, and the lack of inspectors in small towns and rural areas. Although a few of the school districts we interviewed mentioned reasons similar to these, officials in nine districts we interviewed pointed to two additional issues. First, in five of the districts, at least some of the schools that did not receive two inspections were sites without kitchens, where food is delivered from kitchens at other schools. Such sites had no kitchen facilities for the local health department to inspect. According to USDA officials, the agency reminds states each year that inspections are required for food preparation and service areas in schools. Despite these reminders, we found that state officials take different approaches to these sites in their annual reporting of school inspections to USDA. For example, officials for one state include such sites as not receiving required inspections, while another state exempts these schools from inspections and does not include them in its annual report to USDA. While federal regulations state that schools must obtain a minimum of two food safety inspections during each school year, they do not make a distinction between schools with or without kitchen facilities. Furthermore, USDA has not issued guidance to states and school districts that specifically addresses whether sites that do not prepare food are subject to the inspection requirement and whether states may exempt from inspections schools that do not prepare food. Second, seven school districts we interviewed, including three of the ones that did not receive inspections at some sites that lacked kitchens, said that they had to pay local health departments for inspections, which takes funds away from other parts of districts' food service budgets. Officials in one of these districts said that, although their schools are entitled to receive one inspection per year free of charge, the district would have to pay the county for a second inspection; as a result, most of the schools in this district had received only one inspection. Fees paid by school districts for the two annual inspections ranged from \$75 to \$618 per school site.

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Officials in one large urban district estimated they spent approximately \$65,000 on inspection fees in the 2009-2010 school year.

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### School Districts Have Also Implemented a Number of Additional Practices Related to Food Safety

In addition to the steps school districts take to meet federal requirements, all of the school districts we contacted had implemented other steps to help ensure the safety of the meals they served. These steps include establishing purchasing specifications related to microbial contamination and food safety, considering food safety in deciding which foods to order, and other practices related to inspections and use of technology. We selected our nonprobability sample of 18 school districts to include districts more likely to have developed purchasing specifications and other food safety practices because of their size, prior experience with foodborne illnesses, and other factors.

### While Several School Districts Have Established Purchasing Specifications Related to Microbial Contamination, Some Are Not Aware of More-Stringent Commodity Program Specifications for Some Foods

Several of the school districts in our sample have established their own microbial purchasing specifications for the food items they purchase in the commercial marketplace that are more stringent than current federal regulatory requirements. Overall, 10 of the 18 school districts we interviewed had developed purchasing specifications related to microbial contamination or, more generally, food safety. These districts included 6 large urban school districts and 4 smaller urban and suburban districts; 2 of these districts participate in food-buying cooperatives with other districts. Five districts' purchasing specifications identified specific pathogens that the districts ask their suppliers to test their food for, along with acceptable limits of each. For example, 1 large urban school district requires that all frozen fully cooked meat and poultry and all ready-to-eat meat and poultry products it buys commercially be tested for certain pathogens, including *Clostridium perfringens*, *Listeria*, *Salmonella*, *Shigella*, and *Staphylococcus aureus*. The district rejects any products that exceed its thresholds for the presence of these and other microbes. The other 5 school districts have implemented purchasing specifications related more broadly to food safety. For example, 4 of these districts' specifications require their suppliers to have in place plans designed to reduce or eliminate microbial contamination. In addition, 5 of these 10 districts' purchasing specifications described the districts' right to send suppliers' products for additional microbial testing, although these clauses often listed neither specific pathogens to be tested for nor thresholds.

Despite some districts having taken such additional steps, none of the state officials and few of the district officials we interviewed were aware that, for seven products, the commodity program's purchasing specifications related to microbial contamination are more stringent than

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federal regulatory requirements for the same foods in the commercial marketplace. Among the officials in the four school districts that had some awareness of these differences, officials in two districts said they learned of the differences through media stories about the commodity program's specifications for raw ground beef. Officials in nine of the school districts we interviewed said that greater knowledge of these differences might affect their future purchasing decisions. More specifically, they said that they could use this knowledge to make more informed choices about which foods to purchase from the commodity program and which to purchase from the commercial marketplace. For example, one district official said the information would have an impact, although it would have to be presented in context and in a way that district officials could easily understand it. In 2003, we recommended that USDA's commodity program highlight on its Web page the more-stringent product safety specifications it uses when purchasing foods it provides to schools, since this would help schools ensure that the food they purchase is safe.<sup>8</sup> USDA has not implemented this recommendation. While USDA has set up a Web site that includes links to online copies of the commodity program's purchasing specifications and related documents, USDA has not made clear that its purchasing specifications related to microbial contamination for seven commodity foods are more stringent than federal regulatory requirements for the same foods in the commercial marketplace.

Food Safety Concerns Related to Staff and Facilities Limit the Kinds of Foods Some Districts Purchase

Although factors such as cost, nutrition, and quality also influence their purchasing decisions, officials for several school districts we interviewed limit the kinds of meat and produce they buy because of concerns about microbial contamination and food safety, including concerns about their own staff's training and the adequacy of their facilities. Specifically, 9 of the 18 school districts in our sample have discontinued buying raw meat—such as ground beef, chicken, or turkey—for their school meals. Each of these districts said they purchase only precooked or processed meat products, whether through the commodity program or in the commercial marketplace. For example, 3 large urban school districts do not purchase raw meat because they cannot ensure that the kitchen staff at the many sites in their districts can handle raw meat safely and cook it to an internal temperature that would kill pathogens. All of the school districts we interviewed reported that they trained food service staff on food safety.

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<sup>8</sup>GAO, *School Meal Programs: Few Instances of Foodborne Outbreaks Reported, but Opportunities Exist to Enhance Outbreak Data and Food Safety Practices*, GAO-03-530 (Washington, D.C.: May 9, 2003).

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Nevertheless, officials in 8 of the 9 districts that no longer purchase raw meat attributed that decision, at least in part, to concerns about their staff, including staff turnover and qualifications. In addition to factors related to staff, officials in 5 districts cited concerns about the adequacy of kitchen facilities as a reason to eliminate the purchase of raw meat. For example, officials in a large urban district said that some of its schools were over 100 years old and therefore lacked modern cooking facilities; in some of its schools, the “kitchen” may be an old ball closet with ovens in it. Without adequate staff and facilities, officials in these districts said it was safer to purchase cooked or processed meat.

Although half the districts we interviewed do not buy raw meat, the other half do. Officials in many of these nine school districts told us they buy raw meat because it costs less than precooked products, and their staff and facilities are adequate and able to handle it. For example, the director of one midsize urban school district’s food service department indicated that the district has tended to buy more raw meat in recent years, because it is less expensive than precooked products, and the district has the facilities to cook and cool these products safely. While these nine districts buy raw meat, four of them limit its handling in some way, such as handling it only in a small number of appropriately equipped facilities. For example, one small urban school district receives raw ground beef at only one of its kitchen facilities, where it is cooked in one location in that kitchen by two staff members who have been specifically trained to handle and prepare it safely.

Moreover, we found that about 30 percent (39 million pounds) of all ground beef sent to schools by USDA’s commodity program in the 2009-2010 school year was uncooked. Schools in every state that receives food from the commodity program received this raw ground beef. The remainder of the ground beef from the commodity program was cooked before being sent to schools. In addition, none of the school districts we contacted reported purchasing irradiated food, such as ground beef. Largely, school officials said they did not buy irradiated food because parents did not want it served to their children. Officials of USDA’s commodity program said that, while the program continues to offer irradiated beef products, school districts have not ordered any such products in several years. We have reported that irradiation kills 99.9 percent of the pathogens on food.<sup>9</sup>

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<sup>9</sup>[GAO/RCED-00-217](#). For more information, see [GAO-10-309R](#).

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Many of the officials in the school districts we interviewed raised concerns about the safety of fresh produce that, in some cases, were similar to those raised about raw meat. While all 18 of the districts in our sample reported buying fresh produce, officials in 12 districts raised concerns about its safety. For example, 1 suburban school district stopped purchasing bagged lettuce after some of its students were sickened by it in 2010 during a multistate outbreak of foodborne illness. While the district now purchases heads of lettuce and has its own staff wash and chop it, its food service director acknowledged that the lettuce is now vulnerable to mishandling by the district's own staff. Officials in another school district said that handling fresh produce safely is a concern because of difficulty maintaining it at or below 41 degrees in its facilities. These officials said that if the district cannot maintain produce at a safe temperature, it might have to throw away any leftover salad, which could make fresh salads too expensive to serve. Nevertheless, 8 of the school districts in our sample indicated that the recent trend in their district has been toward buying more fresh produce. For example, 1 large urban school district indicated that it was expanding its purchases of fresh produce and the number of salad bars in its schools. In addition, 10 of the school districts we interviewed said they obtained at least some produce through the commodity program from DOD. While the remaining 8 school districts said they purchase all of their fresh produce in the commercial marketplace, none attributed this practice to concerns about the safety of produce from DOD.

### School Districts Also Employ a Number of Other Practices to Help Ensure Food Safety

In addition to establishing purchasing specifications related to microbial contamination and limiting the kinds of foods they purchase, school districts employ a variety of other practices to help ensure the safety of the food they purchase, including:

- *Internal inspections:* Ten school districts reported that the district's own officials, usually managers, inspect individual schools' kitchen facilities on a periodic basis. For example, one large urban district reported that its officials had been trained by county health inspectors to conduct kitchen inspections, and these officials did so throughout the district.
- *Visiting vendors' facilities:* Ten school districts reported that the districts' own officials visited food vendors' facilities before or during contract periods to learn more about the vendors' food safety procedures, among other things. For example, one district's food service director reported visiting the facilities of two of its suppliers, which helped the director understand the vendors' food production processes and their standards.

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- *Technological procedures:* Two school districts reported using technology to help monitor or improve food safety in school kitchens. For example, officials in one district centrally monitored the temperatures in all of the district's walk-in freezers and coolers, as well as the temperature of food as it was being prepared in the district's kitchens.

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## Conclusions

For seven of the commodity foods it provides to schools, USDA's commodity program has developed purchasing specifications related to microbial contamination that are more stringent than USDA's and FDA's regulatory requirements for these same foods in the commercial marketplace. The commodity program has developed such specifications because it serves populations at increased risk of foodborne illnesses and their more serious complications. Nevertheless, questions remain regarding whether the program has identified the foods and pathogens that present the highest risks to the populations the program serves. Recent outbreaks involving, among other things, various fresh produce items and non-O157 strains of toxin-producing *E. coli*, have revealed risks not addressed by the commodity program's specifications. More broadly, questions remain regarding whether the process by which the commodity program develops these specifications is sufficiently systematic and transparent. Program officials told us they selected products for more-stringent specifications for the seven commodity foods based on their views of the safety risk associated with different types of food; that they developed these specifications through informal consultation with a variety of groups and individuals; and that they did not document this process. Moreover, although the commodity program undertook a very public revision of its purchasing specifications for ground beef in 2010, a committee of the National Research Council found that the new specifications were developed through informal, ad hoc consultations and that their scientific basis was unclear. Development of specifications for foods offered by the program other than ground beef have not undergone a similar level of review. In addition, although all 18 of the school districts we interviewed considered food safety as part of their purchasing decisions, few were aware of the commodity program's more-stringent specifications related to microbial contamination for the seven foods. As a result, district officials lack information that could help them make more informed decisions about whether to purchase food from the commodity program or the commercial marketplace. Furthermore, without more specific guidance from the commodity program as to how states and school districts should count schools that do not obtain required health inspections because they do not prepare food on site, the program may not

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have accurate information on the extent to which kitchens that prepare school meals meet state and local food safety requirements.

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## Recommendations for Executive Action

To strengthen USDA's oversight of the safety of food purchased by its commodity program and served in federal school meal programs, we recommend that the Secretary of Agriculture instruct the commodity program to take the following three actions:

- develop a systematic and transparent process to determine whether foods offered by the program require more-stringent specifications related to microbial contamination, including steps to: identify pathogens, strains of pathogens, or other foods that merit more-stringent specifications; document the scientific basis used to develop the specifications; and review the specifications on a periodic basis;
- share information with school districts in a more explicit form regarding the foods covered by more-stringent purchasing specifications related to microbial contamination to enable districts to make more informed choices; and
- issue more specific guidance to states and school districts regarding the applicability of the regulatory requirement for food safety inspections to schools that do not prepare food.

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## Agency Comments and Our Evaluation

We provided a draft of this report to USDA, the Department of Health and Human Services (HHS), and DOD for review and comment. The departments did not provide official written comments to include in our report. However, in an e-mail received April 7, 2011, the USDA liaison stated that USDA generally agreed with all of our recommendations. USDA and HHS also provided technical comments. We incorporated these technical comments into the report, as appropriate. DOD did not have any comments on the report.

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We are sending copies of this report to the appropriate congressional committees; the Secretaries of Agriculture, Defense, and Health and Human Services; and other interested parties. In addition, this report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

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If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or [shamesl@gao.gov](mailto:shamesl@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix II.

Sincerely yours,

A handwritten signature in black ink that reads "Lisa Shames". The signature is written in a cursive style with a long horizontal flourish at the end.

Lisa Shames  
Director, Natural Resources  
and Environment

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# Appendix I: Objectives, Scope, and Methodology

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The overall objective of this review was to assess the U.S. Department of Agriculture's (USDA) standards and procedures to ensure the safety of food in school meal programs. Specifically, we assessed (1) the extent to which federal purchasing specifications related to microbial contamination for food in the commodity program differ from federal regulations for the same foods available in the commercial marketplace; (2) the extent to which the commodity program's purchasing specifications related to microbial contamination for raw ground beef differ from those imposed by large federal and private-sector purchasers; and (3) examples of standards and practices that exist at the state and school district level to help ensure that food procured by schools is not contaminated by pathogens.

To address the extent to which federal purchasing specifications related to microbial contamination for food in the commodity program differ from federal regulations for the same foods available in the commercial marketplace, we reviewed applicable laws and regulations. We also interviewed officials in both USDA's commodity program and its meat and poultry regulatory program, and gathered documentation related to purchasing specifications and regulatory requirements. To determine the purchasing specifications applied by the Department of Defense (DOD) to the fresh produce it purchases for distribution to school districts through the commodity program, we interviewed DOD officials and gathered related documentation. We also gathered information on regulatory requirements for fresh produce and other foods not regulated by USDA through discussions with officials from the Food and Drug Administration (FDA). FDA officials also provided us related documentation, including agency guidance for good agricultural, manufacturing, and handling practices. We then compared the purchasing specifications used by the commodity program and by DOD with federal regulatory requirements for food sold in the commercial marketplace. In addition, we discussed these specifications and regulatory requirements with knowledgeable groups and individuals—including representatives of industry associations and consumer groups. To learn more about the extent to which outbreaks of foodborne illness are associated with schools, we analyzed information from the Centers for Disease Control and Prevention's (CDC) Foodborne Disease Outbreak Surveillance System, which collects information reported to CDC by state and local health departments on outbreaks of foodborne illness. Because this information system relies on voluntarily reported outbreaks, and reporting varies greatly across states, it is not an adequate way to determine the total number of foodborne illnesses or the actual extent of outbreaks associated with schools. CDC defines such an outbreak as two or more similar illnesses that result from the consumption

of a common food. We took a number of steps to assess the reliability of this data, including interviewing CDC officials regarding how the data are collected and entered, as well as electronic testing of the data. As a result of these steps, we determined that the data were sufficiently reliable for the purposes of our review.

To assess the extent to which the commodity program's purchasing specifications related to microbial contamination for raw ground beef differ from those imposed by other large federal and private-sector purchasers, we analyzed the commodity program's purchasing specifications for raw boneless beef and ground beef. We also conducted site visits to three beef slaughter and processing facilities to gather information on the slaughter and grinding process for ground beef, as well as on these suppliers' perspectives on the differences in the specifications used by the commodity program and private-sector purchasers. To gather information on the specifications used by other large purchasers of raw ground beef, we selected a nonprobability sample of private-sector companies based on input from interviews with federal officials, industry representatives, and consumer advocates. Our sample included two quick-service restaurant chains, two chains of food retailers, one food distributor, and one food service management company. We also selected DOD as a large federal purchaser of ground beef. We interviewed officials from each of these purchasers and gathered documentation regarding their purchasing specifications for boneless beef and ground beef. In some cases, officials for private-sector companies declined to provide detailed information on one or more aspects of their specifications. We then compared the specifications related to microbial contamination of these seven large purchasers with those of the commodity program. Specifically, we compared purchasers' specifications related to the slaughter process, their oversight of beef suppliers and grinders, and their microbial testing practices. Additionally, to gather information on the scientific basis of the commodity program's purchasing specifications for ground beef, we reviewed the findings of a National Research Council report issued in November 2010.<sup>1</sup>

To identify examples of standards and practices used at the state and school district level to help ensure that food procured by schools is not

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<sup>1</sup>National Research Council, *An Evaluation of the Food Safety Requirements of the Federal Purchase Ground Beef Program* (Washington, D.C.: National Academies Press, 2010).

contaminated by pathogens, we selected a nonprobability sample of five states and 18 school districts to review. We selected this nonprobability sample of school districts to include districts more likely to have developed purchasing specifications and other food safety practices, based on input from state and school district officials. To select this sample, we searched media reports of foodborne outbreaks involving schools in selected states over the past 10 years. We also considered factors such as geographic dispersion and differences in the state agency responsible for the commodity program. Based on these and other factors, we selected five states: California, Nebraska, New York, Texas, and Virginia. We then selected a nonprobability sample of school districts in each state. In addition to input from state officials, we considered each district's size, indications of a prior experience with foodborne illnesses, and other factors, including whether a district used a food service management company or participated in a food-buying cooperative. We either visited or interviewed by phone officials in 18 school districts across the five states, including three that had been tied to foodborne outbreaks by media reports, four that were operated by or consulted with food service management companies, and six that participated in food-buying cooperatives. We selected school districts for the following localities: in California, Berkeley, Burbank, Los Angeles, San Diego, San Jose, San Marcos, Solana Beach, and Vallejo; in Nebraska, Elkhorn, Lincoln, and Omaha; in New York, Dix Hills, New York, and Wappingers Falls; in Texas, Dallas and Houston; and in Virginia, Alexandria and Arlington. We also gathered documentation from these states and school districts, including copies of food safety plans and purchasing specifications, among other things. We used the interviews and documentation to identify food safety practices used by school districts, including the extent to which their activities were consistent with federal regulatory requirements and practices the districts themselves had developed. The results from these states and districts cannot be generalized to other states and districts.

We conducted this performance audit between February 2010 and May 2011, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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# Appendix II: GAO Contact and Staff Acknowledgments

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## GAO Contact

Lisa Shames (202) 512-3841 or [shamesl@gao.gov](mailto:shamesl@gao.gov)

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## Staff Acknowledgments

In addition to the individual named above, Cheryl A. Williams, Assistant Director; Kevin Bray; Ellen Chu; G. Michael Mikota; Justin L. Monroe; Nico Sloss; and Amy Ward-Meier made key contributions to this report. Also contributing to this report were Mitchell Karpman and Anne Rhodes-Kline.

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