KEEP THESE BAD BUGS OUT OF OUR SCHOOLS!
A Fact Sheet on Foodborne Hazards

Foodborne hazards include numerous types of bacteria, viruses, parasites, and chemical toxins. Although each of the hazards has different symptoms, there are several common ones. In general, the symptoms of foodborne illness include nausea, vomiting, abdominal cramps, and diarrhea.

Hazards Likely Linked to Improper Holding Temperatures After Cooking

Bacillus cereus. *B. cereus* is a bacteria which produces a toxin in food when food is not either kept hot or refrigerated after cooking. Once in foods, this toxin is not eliminated by cooking or reheating. Common foods associated with *B. cereus* include multi-ingredient foods, such as rice and pasta dishes, which are typically held at warm temperatures after cooking. *B. cereus* causes an estimated 27,000 foodborne illnesses annually in the United States.

Clostridium perfringens. *C. perfringens* is another bacteria which produces a heat-resistant toxin in foods that are prepared well in advance of serving, and not held at adequate holding temperatures. The foods most frequently linked to *C. perfringens* illnesses include beef, chicken, turkey, and pork. Each year, an estimated 249,000 foodborne illnesses in the United States are due to *C. perfringens*.

Staphylococcus aureus. *S. aureus* is a bacteria found everywhere in the environment. Food may become contaminated through frequent handling, with *S. aureus* producing a toxin that can withstand boiling, freezing, dehydration, and irradiation. Once food is contaminated with *S. aureus*, it cannot be decontaminated. Meats and meat products, poultry, baked goods, cheese, eggs, fish, pasta, and produce have all been linked to *S. aureus* foodborne illnesses. *S. aureus* causes an estimated 185,000 foodborne illnesses annually in the United States.

Hazards Likely Linked to Infected Food Handlers

Hepatitis A. Hepatitis A is a virus usually spread from person-to-person. Foodborne Hepatitis A can occur when an infected food handler uses bare hands to prepare food, especially after failing to properly wash the hands. Another cause is contamination of shellfish beds with human waste. Foods associated with Hepatitis A illnesses include shellfish and produce. The 2003 Chi Chi's restaurant outbreak which sickened over 500 people was due to Hepatitis A contamination of green onions. An estimated 4,000 foodborne illnesses occur each year in the United States due to Hepatitis A.

Norovirus. Norovirus is one of the most common viral foodborne pathogens, and is estimated to account for almost half of all foodborne illness outbreaks. Food becomes contaminated when people infected with Norovirus handle or prepare food. Foods associated with Norovirus include fresh salads, fruits, raw shellfish, eggs and bakery items. An estimated 9.2 million cases of foodborne illness are due to Norovirus annually in the United States.

Shigella sonnei. Infected food handlers are considered to be the primary vehicles of transmission for *S. sonnei* because the principal carriers are humans. Raw produce, multi-ingredient salads, and dairy items are all foods that have been linked to *S. sonnei*. *Shigella* species cause an estimated 90,000 foodborne illnesses annually in the United States.

Hazards Likely Linked to Cold Chain & Cooking Failures or Cross-Contamination

***Escherichia coli* O157:H7.** *E. coli* O157:H7 is one of the most hazardous strains of *Escherichia* bacteria which can lead to hemolytic uremic syndrome, a condition that destroys red blood cells and causes acute kidney failure. *E. coli* O157:H7 live in the intestines of cattle, leading to contaminated raw meat which, if not cooked adequately, can result in foodborne illness. Hamburgers are the most common food vehicle for *E. coli* O157:H7 transmission. Other food vehicles for *E. coli* O157:H7 include sprouts, unpasteurized fruit juices, and milk contaminated at some other point along the production chain through cross-contamination.

***Salmonella* spp.** *Salmonella* bacteria live in the intestinal tracts of animals, birds, and humans. One of the most frequent causes of foodborne illness, *Salmonella* species account for an estimated 1.3 million foodborne illnesses and 500 deaths annually in the United States. Illness typically occurs through the consumption of contaminated foods, such as poultry, eggs, beef, milk, and fruits and vegetables, however, adequate cooking kills most *Salmonella*. Contamination of non-meat foods may occur in the kitchen through cross-contamination.