



# Healthy Anchorage Indicators Report

Healthy Anchorage Indicators Project: helping Anchorage to measure its health and quality of life



Municipality of Anchorage

Department of Health and Human Services

Community Health Promotion

This project is an outgrowth of the Anchorage Healthy Futures Project

Number 11, March 1999



*Featured Indicator*

## Foodborne Illness

*In 1983, as many as 56 persons became ill after eating at a restaurant—seven were hospitalized, including a 17 month-old child . . . In 1988, more than 100 persons became infected with hepatitis A due to the contamination of a Slush Puppy product . . . In 1990, 31 guests of a wedding reception became ill from catered food . . . In 1995, 68 people became ill after eating at a catered picnic . . .*

—Cases of foodborne illness in Anchorage

**Foodborne Illness:** A disease that is carried or transmitted to humans by food containing harmful substances.<sup>1</sup>

**Pathogens:** Germs that cause disease.

**At Risk Group:** Elderly, young children, pregnant women, and others (see box on p.2).

Visit HAI's Website  
[www.indicators.ak.org](http://www.indicators.ak.org)

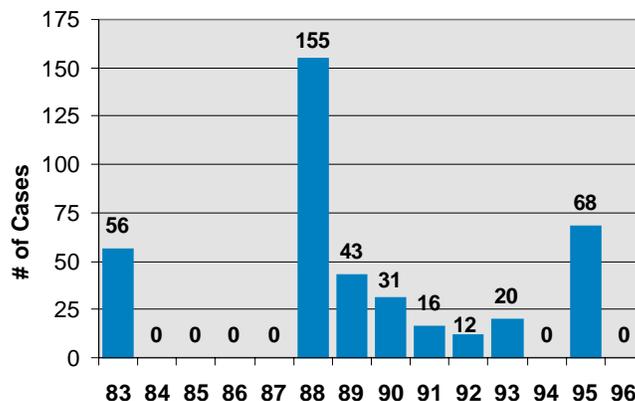
## Foodborne Illness in Anchorage

The true number of cases of foodborne illness in Anchorage is unknown, since most people do not identify or report foodborne illness. Cases of reported foodborne illness are tracked by the Anchorage Department of Health and Human Services. The State of Alaska reports confirmed foodborne outbreaks to the Centers for Disease Control and Prevention (CDC).

What is known is, as is true nationally, the incidence of foodborne illness in Anchorage is significantly higher than the data suggests—from 20 to 100 times greater.<sup>2</sup> There is no evidence to suggest that Anchorage or Alaska is different from the nation with respect to the incidence or causes of foodborne illness.

Most cases of foodborne illness in healthy adults are self-limiting and of short duration. Diarrhea, cramps and vomiting are the most common acute symptoms. Foodborne illnesses range from mild to severe and may cause death. Illness can occur from 30 minutes to 2 weeks after eating contaminated food.<sup>3</sup> This time delay before the onset of symptoms is the major reason why many people think they have the 24-hour flu, not a foodborne illness.

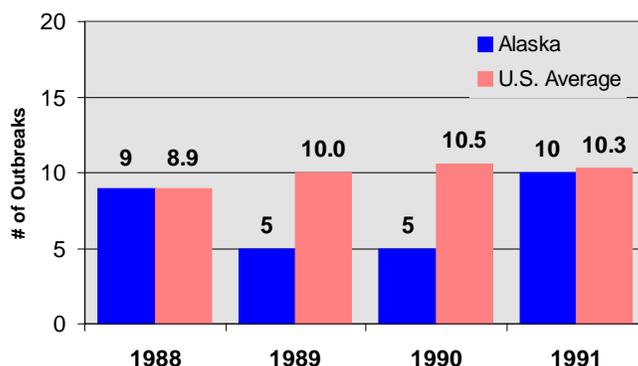
## Suspected Cases of Foodborne Illness in Anchorage



Source: Department of Health and Human Services, ESAN Program, June 1995.

Note: The high number of foodborne illnesses in 1988 was due to two outbreaks.

## Reported Foodborne-Disease Outbreaks\* in Alaska



\*An outbreak is the occurrence of at least one case of foodborne illness from ingesting a common food. Source: CDC, Morbidity and Mortality Weekly Report, "Surveillance for Foodborne-Disease Outbreaks: United States, 1988-1992," 3/22/91, 40(11):173-175.

*HAI is a data-collection project assembling indicators that describe Anchorage's health and quality of life. Periodically, HAI looks in-depth at an indicator that tells an important story about Anchorage. Together, we can use this information to improve our quality of life. If you have questions or comments please contact Margaret Gressens at 343-4655.*

### Why Should You Care?

- ◆ We buy, prepare, and eat food *every day* of our lives.
- ◆ Most people with food-borne illnesses miss a day or more of work.<sup>4</sup>
- ◆ 2% to 3% of foodborne illnesses lead to long-term complications or death.<sup>5</sup>
- ◆ People die—as many as 9,100 each year.<sup>6a</sup>
- ◆ Foodborne illnesses are becoming harder to treat.
- ◆ Newly identified germs are now causing foodborne illnesses.<sup>6b</sup>
- ◆ Foodborne illnesses cost the U.S. a minimum of \$6.2 to \$10.4 billion dollars a year in medical expenses and lost productivity.<sup>7</sup>

cause most cases go unreported. The CDC estimates that for every one reported illness, 20 to a 100 go unreported, which is the reason for the broad estimate range.<sup>12</sup>

Preventing foodborne illness has become a national priority in recent years due to new safety concerns regarding food. Demographic, consumer lifestyle, and environmental changes have affected the way Americans purchase, prepare, and store food, including those listed below:

- ◆ Emerging foodborne pathogens require new control techniques. For example, three of the four pathogens that CDC rates as the most serious sources of foodborne illness were not recognized as causes of foodborne disease 20 years ago.<sup>13</sup>
- ◆ Bacteria which cause food-borne illness have found new modes of transmission. For ex-

ample, *Salmonella enteritidis*, which once only contaminated the outside of egg shells, is now found inside many eggs, making raw and undercooked eggs unsafe to eat.<sup>14</sup>

- ◆ The food supply has become global with many different countries supplying food products to the U.S.
- ◆ The U.S trend toward smaller-sized families, a larger share of single-headed households, and more two-working parent families has resulted in:<sup>15</sup>
  - a) Families having less time for food shopping & preparation.
  - b) More children preparing food for themselves during the increasing time-span when no adult is home.
  - c) More children and young adults growing up without proper instruction on food preparation, resulting in a

### Who is Most at Risk?

- ◆ The elderly
- ◆ Young children
- ◆ Pregnant women and their fetuses
- ◆ People with suppressed immune systems, including people with AIDS and those on medication treatment for cancer, organ transplantation, or conditions like asthma
- ◆ Patients taking antibiotics or antacids
- ◆ People who have had some of their stomach or intestines surgically removed

—CDC, FDA, USDA, USEPA. *Food Safety From Farm to Table: A National Food Safety Initiative Report to the President*, May 1997.

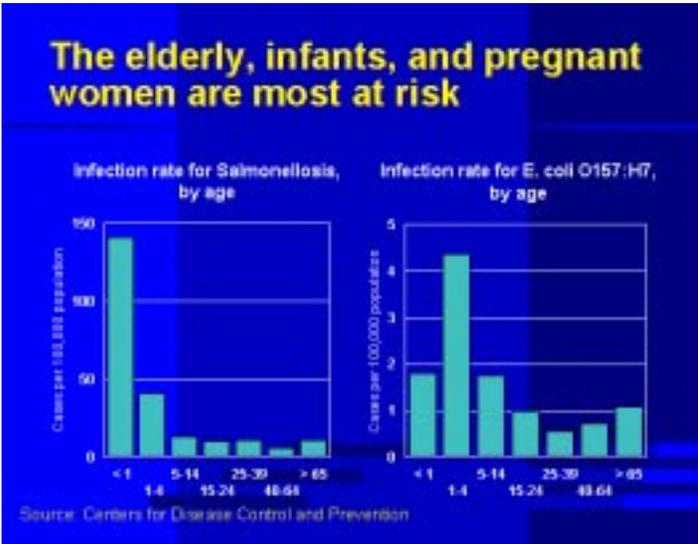
Most cases of food-related illness can be prevented if consumers recognized they play an important role in ensuring the safety of the foods they eat.<sup>8</sup>

### Foodborne Illness

America's food supply is among the safest in the world.<sup>9</sup> Even so, there are between 6.5 million and 81 million cases of foodborne illness a year.<sup>10</sup> This means that in 1998, at least 17,000 and maybe as many as 221,000 people suffered from a foodborne illness in the U.S. every day. Each year, 9,100 persons are believed to die from foodborne illnesses.<sup>11</sup>

The exact number of foodborne illnesses is difficult to know be-

Pathogen	Symptoms	Found in	Incubation Period
Campylobacter jejuni	Diarrhea, abdominal pain, vague feeling of depression or illness, fever, nausea, & vomiting	Raw and undercooked meat & poultry and raw milk & untreated water	1-10 days (usually 3-5)
Salmonella	Abdominal pain, headache, nausea, vomiting, fever, diarrhea	Raw and undercooked eggs, undercooked meat and poultry, dairy products, seafood, fruits, and vegetables	6-72 hours (usually 12-36)
E. coli 0157:H7	Diarrhea (ranging from mild and nonbloody to stools that are virtually all blood), no fever, complications and death could follow	Undercooked or raw meat, raw milk and produce, unpasteurized juices	3-8 days (usually 3-4)
Clostridium botulinum	Vertigo, visual disturbances, inability to swallow, paralysis	Improperly canned foods, herbal oils, baked potatoes, seal meat & oil, smoked salmon, fermented salmon eggs	12-72 hours
Listeria monocytogenes	Nausea, vomiting, stiff neck, intense headache, fever, chills, backache, delirium, coma, collapse, shock, and abortion in pregnant women	Unpasteurized milk & cheese, vegetables, poultry, meats, seafood	3-70 days (usually 21)
Shigella	Diarrhea, fever, chills, lassitude, dehydration	Potato, tuna, shrimp, turkey, macaroni, and other salads. Any food contaminated by hands, flies, and cross-contamination	12-96 hours (usually 24-72)
Staphylococcus aureus	Nausea, vomiting, diarrhea, dehydration	Ham, dairy products, potato salad	0.5-8 hours (usually 2-4)



generation of consumers with inadequate knowledge about how to prevent foodborne illness.

### Causes of Foodborne Illness

Foodborne illness is caused by four sources: disease-causing bacteria, viruses, parasites and toxins. They are transmitted through contaminated food, contaminated water or person-to-person contact.

causes the illness when the food is eaten, not the living germs. Other illnesses are caused by food contaminated with living germs. The germs, even if present in small numbers, have the potential to establish and multiply in the digestive tract to cause the "infection." Yet other illnesses are caused when large numbers of living germs are eaten and then die in the digestive tract, releasing toxin(s) that cause the "toxicoinfection."<sup>17</sup>

The following factors are known to contribute to foodborne illness:<sup>18</sup>

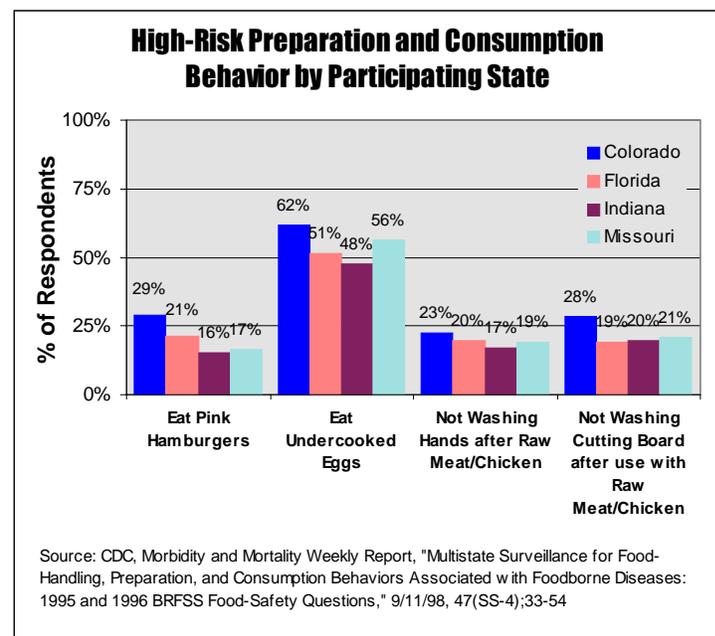
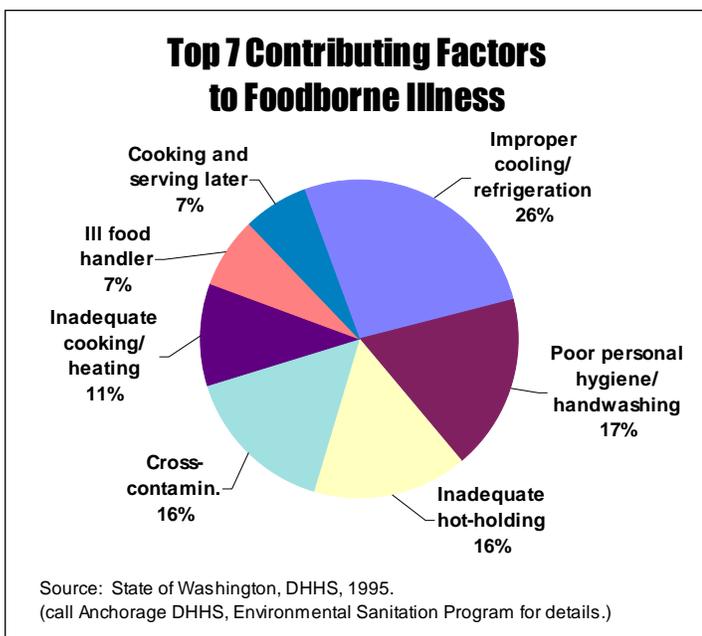
1. Improper cooling/refrigeration
2. Poor hygiene/handwashing
3. Inadequate hot-holding
4. Cross-contamination
5. Ill food handler
6. Cooking and serving later
7. Inadequate cooking/reheating

Foodborne illnesses are most likely to occur when food is cooked and then transported away from home, e.g. picnics.

d) More food being prepared and consumed away from home. Estimates are that consumers spend 43 cents of every food dollar eating out.<sup>16</sup>

At the same time, declining numbers of Americans believe food safety is their responsibility (see above chart).

Certain types of germs produce toxins as they grow in food. In this case, it is the toxin that



## Preventing Foodborne Illness

### The Role of Public Health

State, local, and federal government plays a critical role by regulating food safety. The first public health initiative to prevent foodborne illness was instituted in 1923 to control typhoid fever and infantile diarrhea due to milkborne outbreaks.<sup>19</sup> Since then, public health initiatives have expanded to *prevent* other foodborne illness.

The U.S. Department of Agriculture inspects meat, poultry, and egg processing plants, while the U.S. Food and Drug Administration oversees the safety of most other foods. State and local governments regulate food storage, transportation, processing, preparation and service facilities to verify compliance with food safety laws.

At risk groups are of special concern including children in child care centers. The Alaska Department of Environmental Conservation changed the Alaska Food Code in 1997 to include regulation of food facilities in commercial child care centers. The

### What Can You Do?

**CLEAN:** Wash hands, utensils and surfaces in hot soapy water before and after food preparation, and especially after preparing meat, poultry, eggs, or seafood. Sanitize food surfaces after they have been cleaned by swabbing with a solution made of 1T of laundry bleach and 1 gallon of water.

**SEPARATE:** Keep raw meat, poultry, eggs and seafood and their juices away from ready-to-eat foods. Never place cooked food on a plate that previously held raw meat, poultry, eggs, or seafood.



—Fight BAC! campaign, <http://www.fightbac.org/>

**COOK:** Cook food to the proper internal temperature (this varies for different cuts and types of meat and poultry) and check for doneness with a food thermometer. Cook eggs until both the yolk and white are firm.

**CHILL:** Refrigerate or freeze prepared foods and leftovers within two hours and make sure the refrigerator is set at no higher than 45°F and that the freezer unit is set at 0°F.<sup>20</sup>

Municipality is updating the local food code to bring it into compliance with the Alaska Code. If adopted, the Municipality will regulate food service in commercial child care centers. Additionally, Environmental Sanitarians will act as consultants and advocates for food service personnel

and the children they serve. Their joint efforts will surely reduce the risks associated with foodborne illness in childcare centers.

Cooking Temperatures	
Eggs & Egg Dishes	
Eggs	Cook 'til yolk & white are firm
Egg dishes	160°
Ground Meat & Meat Mixtures	
Turkey, chicken	170°
Veal, beef, lamb, pork	160°
Fresh Beef	
Rare (some bacterial risk)	140°
Medium	160°
Well Done	170°
Fresh Veal	
Medium	160°
Well Done	170°
Fresh Lamb	
Medium	160°
Well Done	170°
Fresh Pork	
Medium	160°
Well Done	170°
Poultry	
Chicken, whole	180°
Turkey, whole	180°
Poultry breasts, roasts	170°
Poultry thighs, wings	Cook until juices run clear
Stuffing (cooked alone or in bird)	165°
Duck & Goose	180°
Ham	
Fresh (raw)	160°
Pre-cooked (to reheat)	140°

## Avoid the "Danger Zone"

Bacteria multiply rapidly between 45°F and 140°F. To keep food out of this "danger zone," keep cold food cold and hot food hot.



- ◆ Store food in the refrigerator (45°F or below) or freezer (0°F or below).
- ◆ Thoroughly cook food (see Cooking Temperatures chart).
- ◆ Maintain hot cooked food at 140°F or higher.
- ◆ Reheat cooked food to 165°F.
- ◆ Check temperatures with metal-stem thermometer.

### Common Myths About Foodborne Illness<sup>21</sup>

#### Myth 1: "I'll be OK. I just have a touch of the 24-hour flu."

There is no such thing as the 24-hour flu. It is most likely food poisoning.

#### Myth 2: "Food prepared at home is safer than restaurant food."

In fact, the opposite is true. Poor home food-handling practices cause more foodborne illnesses than professionally prepared food.

#### Myth 3: "Mayonnaise is the dangerous ingredient in potato salad."

In reality, mayonnaise by itself does not support the growth of germs. However, when mayonnaise is mixed with other ingredients, a favorable environment for germ growth is created. To retard the growth of germs, immediately chill and then hold potato salad at a temperature of 45°F or less.

## In Case of Suspected Foodborne Illness?

Follow these general guidelines:

1. **Preserve the evidence.** If a portion of the suspect food is available, wrap it securely, mark “DANGER” and refrigerate it. Save all the packaging materials, such as cans or cartons. Write down the food type, the date and time consumed, and when the onset of symptoms occurred. Save any identical unopened products.
2. **Seek treatment as necessary.** If the victim is in an “at risk” group, seek medical care immediately. Likewise, if symptoms persist or are severe (such as bloody diarrhea, excessive nausea and vomiting, or high temperature).
3. **Call the Anchorage Department of Health and Human Services, Environmental Sanitation Program** 343-6509 if the suspect food was served at a large gathering, from a restaurant or other food service facility or if it is a commercial product.
4. **Call the USDA Meat and Poultry Hotline** 1-800-535-4555 if the suspect food is a USDA-inspected product and you have all the packaging.

—FDA Center for Food Safety and Applied Nutrition, *Food Safety Education*, “Foodborne Illness: What Consumers Need to Know,” 9/98.

## More Common Myths About Foodborne Illness<sup>22</sup>

**Myth 4:** “My wife says that I should be careful when I cook hamburgers. I’ve been grilling hamburgers for years and no one has gotten sick.”

A newly recognized germ, *E. coli* O157:H7, now causes illness and death. Many of these cases are traced to undercooked hamburger. Symptoms may include diarrhea (often bloody), serious complications. Ground beef should be cooked until the interior is no longer pink and the juices run clear (cook to 155°F).

**Myth 5:** “There is just a little bit of mold on top of the food. I can just scrape it off and what’s underneath is still good.”

The mold you see is the tip of the iceberg. The poisons molds can form are found under the surface. So, while you can sometimes save hard cheese and salamis and firm fruits and vegetables by cutting the mold out, most foods should be discarded. **When in doubt, throw it out.**

## When to Get Help?

Foodborne illness often involves nausea, vomiting, or diarrhea. Most cases clear up by themselves within a day or two without medical care. But if you or yours develop any of the following symptoms or the victim is in an at-risk group, you need to call the doctor:<sup>1</sup>

- **Bloody diarrhea or pus in the stool:** the classic sign of an *E. coli* O157:H7 infection. This is very serious and can lead to death, even treated patients (children) have died.
- **Headache, stiff neck, and fever:** when all three occur together, it may be a sign of a *Listeria monocytogenes* infection. Untreated, it can kill you.
- **Fever that lasts more than 24 hours:** it could signal an infection that’s not getting better. Children are more likely to develop non-threatening fevers that last more than a day.
- **Faintness, rapid heart rate, or dizziness after suddenly sitting or standing up, only when accompanied by nausea, vomiting, or diarrhea:** those are the signs of dehydration, which can lead to kidney failure.
- **Diarrhea that doesn’t let up:** it could lead to life-threatening dehydration, especially in children.
- **Weakness, numbness, or tingling, usually in the arms or legs, but sometimes around the mouth:** you may have eaten food tainted with a seafood toxin. Seek medical help immediately.
- **Headache, double-vision, dry mouth, difficulties swallowing, muscle paralysis:** these are symptoms of botulism. Respiratory failure and death could follow.

If you suspect foodborne illness, call your local health department at 343-6509 or state health department at 451-2110. That’s the only way to get it into the official count.

—Based on information provided by Schardt, David and Stephen Schmidt, Center for Science in the Public Interest, *Nutrition Action Healthletter*, 23:6, July/August 1996.

*I want to tell you about what it’s like to survive a severe attack of Salmonella, because there are too many people who have died and can’t tell you what it is like. I got Salmonella from something I ate. The most likely culprits are a chicken sandwich and an undercooked egg salad sandwich. I first got diarrhea which lasted for days and days. Then quite suddenly, the diarrhea stopped. Soon I felt as if there was a red hot brick inside me. It was the most awful thing I had ever experienced. I knew that I had to go to the hospital. And I knew that I was going to need surgery to live . . .<sup>23</sup>*

—Washington, D.C., businessman Bill Adler, Jr. almost died in 1990 after eating Salmonella-contaminated food.

The following excerpt is from the Iowa State University Extension Program's Internet website at <http://www.exnet.iastate.edu/Pages/families/fs>.

## The Consumer Control Point Kitchen

*Buy cold food last...Get it home fast!*

*Cook it well...or time will tell!*

### 1 Keep your food safe from the moment you put it in your grocery cart

- Purchase meat and poultry products last.
- Keep packages of raw meat and poultry separate from other foods.
- Consider using plastic bags to enclose individual packages of raw meat and poultry.
- Make sure meat and poultry products are refrigerated as soon as possible after purchase.
- Canned goods should be free of dents, cracks or bulging lids.

### 4 Thorough cooking will destroy harmful bacteria

- Cook food thoroughly. If harmful bacteria are present, only thorough cooking will destroy them, even then, bacterial toxins may remain.
- Use a meat thermometer to determine if your meat, poultry or casserole has reached a safe internal temperature.
- Avoid interrupted cooking. Never partially cook products to later finish them on the grill or in the oven.
- When microwaving foods, use microwave-safe containers. Cover, rotate, and allow for standing time, for thorough cooking.

*Don't wait...Refrigerate!*

*Keep hot foods hot...Cold foods cold!*

### 2 Proper storage maintains quality and prevents contamination

- At home, refrigerate or re-wrap and freeze meat, fish and poultry immediately.
- To prevent raw juices from dripping on other foods, store meat, fish and poultry in plastic bags or on a plate.
- Wash hands with soap and water for 20 seconds before and after handling raw meat, poultry or seafood products.
- Store canned goods in a cool, clean, dry place. Avoid extreme heat or cold.



### 5 Choose a serving style which will allow food to be served as quickly as possible, while maintaining desirable temperatures (below 45° and above 140°)

- Wash hands with soap and water before serving or eating food.
- Never leave potentially hazardous foods, raw or cooked, at room temperature any longer than necessary—NEVER longer than 2 hours.
- Keep hot foods above 140°F and cold foods below 45°F.

*Keep it straight...Don't cross-contaminate!*

*If in doubt...throw it out!*

### 3 Food can cause foodborne illness when conditions in the environment encourage bacterial growth

- The importance of handwashing cannot be overemphasized.
- Don't let juices from raw meat, poultry or seafood come in contact with cooked foods or foods that will be eaten raw, such as fruits or salad ingredients.
- Thaw foods in the refrigerator, never at room temperature
- When using a microwave oven to thaw food, cook it immediately after thawing.
- Always wash, rinse, and sanitize your cutting board between uses, especially after cutting up raw meat. Wash with hot soapy water. Rinse with clear clean water. Sanitize and air dry.

### 6 Safe handling of leftovers

- Wash hands before and after handling leftovers.
- Use clean utensils and surfaces.
- Divide leftovers into small units and store in shallow containers for quick cooling.
- Refrigerate within 2 hours of cooking.
- Reheat leftovers thoroughly to a temperature of 165°F. Bring soups, sauces and gravies to a rolling boil.
- The most common food handling mistake is cooling food too slowly!

## **Current Initiatives**

*Here is a sampling of some local and national initiatives working to prevent foodborne illness.*

*Also, please note the various website links on the following page. These agencies are actively involved in the prevention of foodborne illness.*

***Department of Health & Human Services Environmental Sanitation Program:*** Regulates and consults with food facility operators and workers who offer food to the public. In partnership with industry, the program strives to prevent foodborne illness by ensuring food is prepared, stored, transported, displayed, served and handled in a safe and sanitary manner. The program is also responsible for public pools and spas and permitting commercial pesticide applicators. The program:

- ◆ Conducts over 4,000 inspections of public facilities each year
- ◆ Issues over 1,400 food facility permits
- ◆ Investigates foodborne illness complaints
- ◆ Investigates complaints regarding pools, spas and other public facilities

***Partnership for Food Safety Education:*** National coalition of more than 50 industry, national, state and local governments, and consumer groups dedicated to reducing the incidence of foodborne illness by educating the public about safe food handling. In 1997, the Partnership launched its "Fight BAC" education campaign urging consumers to fight foodborne bacteria in their homes and help keep their families safe. Visit <http://www.fightbac.org>.

***Alaska Cooperative Extension:*** The Alaska Cooperative Extension in cooperation with the UAA Culinary Arts Program and the Alaska Department of Environmental Conservation offers a 16 hour National Restaurant Association ServSafe Management Certification Course twice a year. The course is taught in Anchorage and audio-conferenced to rural sites throughout the state. Those who complete the course and pass the exam meet food safety certification requirements for Anchorage and meet one of the criteria for the Facility Recognition Program currently being developed by ADEC. ACE and ADEC also offer short 4 hour food safety courses for employee training. Additional food safety programs offered by ACE in Anchorage include: Food Safety for the Occasional Quantity Cook; Food Safety in the Office Place; and Master Food Preserver Training. Contact Sheryl Stanek at 279-5582 for information.

***Anchorage Restaurant and Beverage Association:*** ARBA is a private, non-profit city-wide trade association representing nearly 100 food and beverage operations in the Greater Anchorage area. Established in 1973, ARBA has provided effective representation for its members on licensed beverage and restaurant industry issues that come before the municipal government. ARBA also sponsors the ServSafe Food Safety Certification Course developed by the The National Restaurant Association Educational Foundation. These classes teach food safety and sanitation for all levels of food service operations. For information call Joyce Richardson at (907) 274-8133.

***Alaska Statewide Restaurant Food Scores:*** Alaska Department of Environmental Conservation publishes statewide food service inspection scores. Visit [www.state.ak.us/dec/deh/sanitat/foodscor/statwide.htm](http://www.state.ak.us/dec/deh/sanitat/foodscor/statwide.htm) or call 451-2110.

***Alaska Department of Environmental Conservation:*** The Department publishes statewide food service inspection scores on the Internet. Visit [www.state.ak.us/dec/deh/sanitat/foodscor/statwide.htm](http://www.state.ak.us/dec/deh/sanitat/foodscor/statwide.htm) or call 451-2110.

***Foodborne Diseases Active Surveillance Network (FoodNet):*** A collaborative project among the Centers for Disease Control and Prevention, the seven Emerging Infections Program (EIP) sites, the U.S. Department of Agriculture (USDA), and the U.S. Food and Drug Administration (FDA) to 1) describe the epidemiology of new and emerging bacterial, parasitic, and viral foodborne pathogens; 2) estimate the frequency and severity of foodborne diseases that occur in the United States per year, and 3) determine how much foodborne illness results from eating specific foods, such as meat, poultry, and eggs.

### Contacts/Sources

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274-8133

**Sheryl Stanek**

Alaska Cooperative Extension  
279-5582

### Web Site Links

- ✓ *Alaska Department of Environmental Conservation Environmental Sanitation & Food Safety*  
<http://www.state.ak.us/dec/deh/sanitat/homesan.htm>  
Includes inspection scores and great Kid's Page with coloring books, games, and other fun activities
- ✓ *Anchorage Department of Health & Human Services Environmental Sanitation Program*  
<http://www.muni.org/health/Environ/sanity.html>
- ✓ *Fight Bac! (Partnership for Food Education Safety)*  
<http://www.fightbac.org/index.html>
- ✓ *Food Safety from Farm to Table: A National Food Safety Initiative Report to the President May 1997*  
<http://www.cdc.gov/ncidod/foodsafereport.htm>
- ✓ *FoodNet (CDC)*  
<http://www.cdc.gov/ncidod/dbmd/foodnet/foodnt498.htm>
- ✓ *Gateway to Government Food Safety Information*  
<http://www.foodsafety.gov>  
Includes the National Food Safety Database at <http://www.foodsafety.gov>
- ✓ *Healthy Anchorage Indicators Project, MOA, DHHS*  
<http://www.indicators.ak.org>  
Health and social indicators for Anchorage and Alaska
- ✓ *Iowa State University Extension Food Safety Program*  
<http://www.exnet.iastate.edu/Pages/families/fs/>

### References

<sup>1</sup> U.S. Partnership for Food Safety Education, *Foodborne Illness: A Constant Challenge*, <<http://www.fightbac.org/problem/challenge.html>>; (accessed 2/21/99)

<sup>2</sup> Schardt, David and Stephen Schmidt, Center for Science in the Public Interest, *Nutrition Action Healthletter*, 23:6, July/August 1996.

<sup>3</sup> U.S. Partnership for Food Safety Education, *Fact Sheet*, 1998, <<http://www.fightbac.org/word/index.html>> (accessed 2/21/99).

<sup>4</sup> Buzby, Jean C. & Tanya Roberts, USDA, *Food Review*, "ERS Updates U.S. Foodborne Disease Costs for Seven Pathogens," Sep-Dec '96.

<sup>5</sup> U.S. Partnership for Food Safety Education, *Foodborne Illness: A Constant Challenge*, <<http://www.fightbac.org/problem/challenge.html>>; (accessed 2/21/99).

<sup>6a</sup> Ibid.

<sup>6b</sup> Washington State University Cooperative Extension, "Causes and Sources of Foodborne Illness," <<http://cru43.cahe.wsu.edu/food/topic1.htm>>; (accessed 2/26/99).

<sup>7</sup> \*1997 dollars. Buzby, Jean C. and Tanya Roberts, USDA, *Food Review*, "ERS Updates U.S. Foodborne Disease Costs for Seven Pathogens," Sept.-Dec. 1996.

<sup>8</sup> U.S. Partnership for Food Safety Education, *Foodborne Illness: A Constant Challenge*, <<http://www.fightbac.org/problem/challenge.html>>; (accessed 2/21/99).

<sup>9</sup> U.S. Partnership for Food Safety Education, *Fact Sheet*, 1998, <<http://www.fightbac.org/word/index.html>>; (accessed 2/21/99).

<sup>10</sup> U.S. Partnership for Food Safety Education, *Foodborne Illness: A Constant Challenge*, <<http://www.fightbac.org/problem/challenge.html>>; (accessed 2/21/99).

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> American Meat Institute, *Just the Facts*, "The Problem of Foodborne Illness," <<http://www.meatami.org/fact96f.htm>> (accessed: 2/21/99).

<sup>16</sup> U.S. Partnership for Food Safety Education, *Foodborne Illness: A Constant Challenge*, <<http://www.fightbac.org/problem/challenge.html>>; (accessed 2/21/99).

<sup>17</sup> Ray, Bibek, *Fundamental Food Microbiology*, 1996, CRC Press

<sup>18</sup> U.S. Partnership for Food Safety Education, *Foodborne Illness: A Constant Challenge*, <<http://www.fightbac.org/problem/challenge.html>>; (accessed 2/21/99).

<sup>19</sup> CDC, Morbidity and Mortality Weekly Report, "Surveillance for Foodborne-Disease Outbreaks--United States, 1988-1992," 10/25/96, 45(SS-5);1-55.

<sup>20</sup> FDA Center for Food Safety and Applied Nutrition, *Food Safety Education*, "Foodborne Illness: What Consumers Need to Know," September, 1998 <<http://www.thebody.com/fda/foodborne2.html>>.

<sup>21</sup> Alaska Dept. of Environmental Conservation, "Home Food Safety," <<http://www.state.ak.us/dec/deh/sanitat/april/mythinfo.htm>> (accessed 2/28/99).

<sup>22</sup> Ibid.

<sup>23</sup> Schardt, David and Stephen Schmidt, Center for Science in the Public Interest, *Nutrition Action Healthletter*, 23:6, July/August 1996.

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