

Missouri Department of Health and Senior Services

Presents

Show Me Food Safety

**Division of Community and Public Health
Section for Environmental Public Health
Bureau of Environmental Health Services
Food Safety Program**

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www.health.mo.gov/FoodSafety**



IDENTIFYING COMMON FOOD BORNE ILLNESSES (FBI)

Causative Pathogen	Incubation Time	Length of Illness	Common Symptoms	Foods Involved/Sources	Prevention
<i>Bacillus cerus</i>	1-16 hours	6-24 hours	nausea, vomiting, cramping, diarrhea	rice and rice dishes, vegetables, sauces	Cook to proper temp. Reheat quickly. Cool foods rapidly.
<i>Campylobacter</i>	2-5 days	1-4 days	cramping, fever, diarrhea, nausea, headache, vomiting	unpasteurized dairy, poultry and meats, infected food handler	Thoroughly cook all foods. Use only pasteurized dairy products. Proper hand washing.
<i>Clostridium perfringens</i>	8-24 hours	24-36 hours	abdominal cramping, diarrhea, nausea	meats, poultry, gravy, beans, stews, foods cooked slowly	Cook and reheat foods to proper temp. Cook in small batches. Cool foods rapidly.
<i>Shiga Toxin-Producing E. coli</i>	12-72 hours	1-4 days	diarrhea-often bloody, severe cramping, nausea, vomiting, fever	raw and undercooked ground meats (esp. ground beef)	Thoroughly cook ground meats. Avoid cross-contamination.
Hepatitis A	10-50 days	1-2 weeks; Severe cases may last several months	mild symptoms, then sudden onset of fever, general discomfort, fatigue, headache, nausea, loss of appetite, vomiting, abdominal pain, and jaundice after several days	water, ice, shellfish, salads, cold cuts, sandwiches, fruits, fruit juices, milk, milk products, vegetables, any food that will not receive a further heat treatment	Obtain shellfish from approved sources. Prevent cross-contamination from hands. Ensure food handlers practice good hand washing and no bare hand contact.
<i>Listeria monocytogenes</i>	1 day-60 days	Indefinite, depends on treatment, severe	nausea, vomiting, fever, chills, headache, severe: meningitis, miscarriages, death	unpasteurized dairy, cheese, fruits & vegetables, deli meats, seafood, poultry	Use only pasteurized dairy products. Cook properly. Hold refrigerated for limited time.
<i>Norovirus</i>	24-48 hours Virus	1-2 days	cramping, diarrhea, nausea, vomiting, headache, fever	raw fruit, raw vegetables, prepared salads, raw shellfish	Thoroughly cook foods. Wash hands. Use certified shellfish. No bare hand contact.
<i>(Staph) Staphylococcus aureus</i>	1-7 hours	1-2 days	onset abrupt and often severe, nausea, vomiting, cramping, sometimes diarrhea	ready-to-eat foods, i.e. sandwiches, salads, ham and other meats, potato salads, custards, warmed-over foods; often from infected foodhandlers-cuts, throat, nose and acne	Practice good hand washing and hygiene. Avoid contamination. Reduce bare hand contact with foods. Exclude foodhandlers with cuts and lesions. Rapidly cool foods.
<i>Salmonella</i>	6-72 hours	4-7days	abdominal cramping, headache, nausea, diarrhea, fever, sometimes vomiting	undercooked or raw meats, poultry and shell eggs, poultry and egg salads, egg custards and sauces, protein foods, pets and infected handlers	Avoid cross-contamination. Cool and refrigerate foods immediately. Cook meats/poultry thoroughly. Practice good hand washing.
<i>Shigella</i>	12 hours-7 days	4-7 days, depends on treatment	diarrhea-often bloody, cramping, fever, nausea, sometimes vomiting	ready-to-eat foods associated with bare hand contact (salads, sandwiches, etc.) Source: humans (feces) and flies	Practice good hand washing after using toilet. Use approved water and foods. Control flies. No bare hand contact.

FOOD SAFETY RISK FACTORS

Risk factors are those practices or procedures that pose the greatest potential for food borne illness. Risk factors are determined by the Centers for Disease Control and Prevention and the U.S. Food and Drug Administration.

FOOD SOURCE:

- Food from unapproved or uninspected source
- Unsound condition of food, adulterated food
- Shellfish records not maintained properly



INADEQUATE COOKING:

- Improper cooking temperatures
- Improper reheating temperatures



IMPROPER HOLDING:

- Unsafe cooking
- Lack of date marking
- Improper cold/hot holding temperatures

CONTAMINATION:

- Raw meats not separated from ready-to-eat foods
- Species not separated
- Equipment not properly cleaned and sanitized

POOR EMPLOYEE HYGIENE:

- Lack of appropriate hand washing
- Bare-hand contact with ready-to-eat foods
- Ill food workers
- Employees eating, drinking or using tobacco outside of designated areas
- Inadequate hand sink
- Lack of soap or paper towels

ENVIRONMENTAL CONTAMINATION:

- Improperly storing, labeling, or using chemicals
- Presence of insects or rodents
- Lack of potable water
- Improper sewage disposal



Risk Factors Pose Potential for Foodborne Illness

OBSERVE GOOD HYGIENE



Does Mr. Yucky work in your kitchen?

- Wash hands only in the hand sink-- not in the dishwashing, food preparation or mop sinks
- Ill employees can cause food borne illness (FBI). Norovirus and other highly pathogenic organisms can be easily spread by ill food handlers person-to-person (via the fecal-oral route) or through contaminated airborne droplets, food, water and environmental surfaces. Enforce sick leave policy or reassign duties.
- Eat, drink or use any form of tobacco only in designated areas away from food production
- Do not use a common cloth towel or apron for hand wiping

- No bare-hand contact with ready-to-eat food!
- Wear nails short, clean and unpolished
- Restrict rings to plain bands
- Cover open cuts and burns with finger cots, bandages, or single-use gloves
- Follow single-use glove guidelines



Good Hygiene is the Responsibility of All Food Workers and Management

FOOD SAFETY IS IN YOUR HANDS



**Hand washing is
Important in
Preventing
Foodborne Illness**

Food Workers and Management

- **Wash hands FREQUENTLY and EFFECTIVELY**
Ten (10) to fifteen (15) second friction wash; adequate soap; warm water; use paper towel to dry
- **Keep hand sinks accessible *AT ALL TIMES***
- **Wash hands *BEFORE ENGAGING IN FOOD PREPARATION*,**

Wash Hands After:

Smoking,
eating or
drinking



Handling raw
food of animal
origin



Cleaning or
handling
garbage



Using a tissue



Going to the
restroom



Improper Handwashing or No Handwashing Causes 33% of all Food borne Illness

NO BARE-HAND CONTACT

When handling ready-to-eat foods, food workers may use:

- Deli tissue
- Spatulas
- Tongs
- Forks
- Dispensing equipment
- Single-use gloves



Bare hand contact with ready-to-eat food is prohibited.



Single-Use Glove Guidelines

- Gloves do not replace the need for good hand washing practices
- Wash hands before putting on gloves
- Put on gloves only when you are ready to handle ready-to-eat food

- Use gloves for only one task, such as ready-to-eat foods, then discard
- If you are interrupted during food preparation, remove gloves
- Wash your hands and use clean gloves when you resume food preparation
- Dispose of gloves as soon as you remove them
- Single-use gloves should not be used around heat or hot fats
- Gloves are susceptible to contamination, so discard when soiled or damaged
- Fabric or reusable gloves may not be used with ready-to-eat food
- Avoid single-use gloves made of natural rubber latex

A Ready-To-Eat Food is Any Food That Can be Consumed Without Further Preparation

ILL FOODWORKERS



Restriction

Symptoms:

- Diarrhea
- Vomiting
- Fever
- Jaundice
- Sore throat w/fever
- Infected wound (*i.e. cut, lesion or boil*)
- Contact with “Confirmed Big 5”

Exclusion

Confirmed Big 5:

- *Salmonella typhi*
- *Shigella*
- *Shiga Toxin-Producing E. coli*
- Hepatitis A
- Norovirus



Food borne Illness Is Not a Menu Item

POTENTIALLY HAZARDOUS FOODS

What are potentially hazardous foods?

A potentially hazardous food is any food or food ingredient (natural or synthetic) capable of supporting rapid growth of microorganisms.



● MEAT ● DAIRY

Cooked or raw animal (protein) products, such as meats, poultry, dairy, milk, cheese, fish and seafood

● STARCH

Heat-treated vegetables and starches, such as cooked rice, beans, potatoes and pasta



● SPROUTS ● MELONS ● CUT LEAFY GREENS ● CUT TOMATOES

Tofu, raw seed sprouts, cut melons, cut leafy greens, garlic in oil, cut tomatoes, etc.



CROSS-CONTAMINATION

Avoid the Risk

Storing food properly in the refrigeration unit will prevent cross-contamination that can lead to foodborne illness.

Store cooked and ready-to-eat foods above raw protein foods.



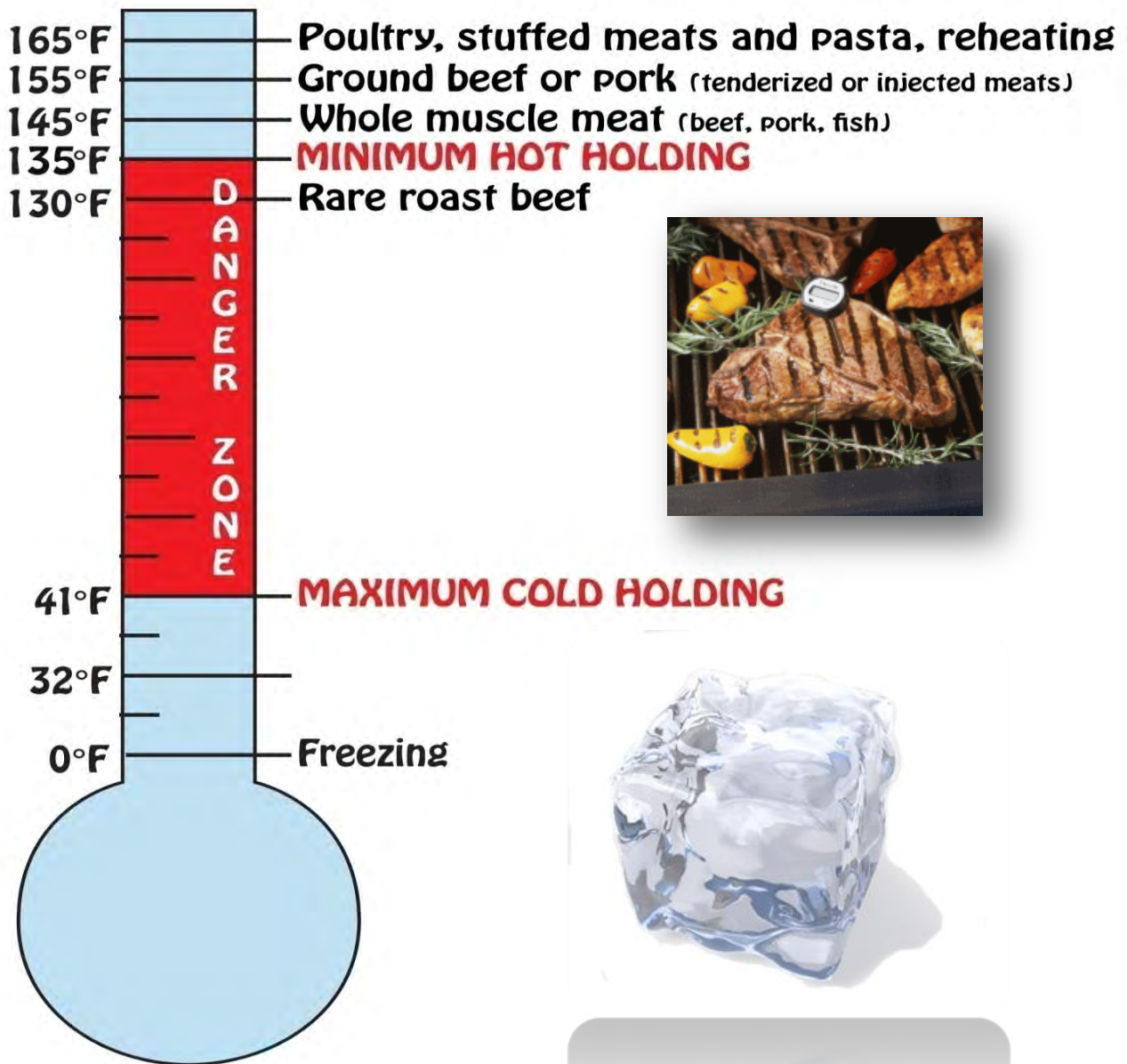
Store raw/uncooked protein foods on lowest shelves away from ready- to-eat foods.

**Hint: store raw foods according to cooking temperatures;
poultry below ground meats,
ground meats below whole muscle meats, eggs and fish.**



Store Raw Meats, Poultry, Seafood, etc, on Lower Shelves

FOOD PREPARATION CRITICAL TEMPERATURE



Minimum Hot Holding Temperature is 135°F • Maximum Cold Holding Temperature is 41°F

Foods cooked to temperatures above 135 degrees F. are held at appropriate temperature at least 15 seconds; rare roast beef must be cooked to 130 degrees F. and held at that temperature for at least 121 minutes.

SAFELY HOLD HOT and COLD FOODS

Cold Foods Must be Maintained at an Internal Temperature of 41°F or Below

- Date mark foods appropriately
- Cover foods after completely cooled
- Cover foods to maintain cold holding temperature
- Keep refrigeration doors closed when possible



Maintain Hot Foods at an Internal Temperature of 135°F or Above

- Use proper equipment for hot holding
- Stir frequently to distribute the temperature
- Cover foods to maintain temperature longer

Proper Holding Temperatures Must be Maintained During Transportation

COOLING COOKED FOODS

**Cooked foods shall be cooled
from 135°F to 70°F within 2
hours , and**

To accomplish proper cooling begin by cutting large items into smaller pieces or dividing large batches into smaller ones and utilize an alternate method that will quickly cool the food.

- Place foods in shallow pans,
- Use rapid cooling equipment, such as blast chillers,
- Place the food container in an ice water bath,



**Within a total of 6 hours to 41°F
or less.**



- Use containers that facilitate heat transfer,
- Add ice as an ingredient,
- Stir frequently to distribute the temperature,
- Place in cooling or cold holding equipment,
- Cover foods loosely until cool.

Images obtained at Health Media Lab -
http://www.healthmedialab.com/html/foodsafety/cooling_en.html

NON-CONTINUOUS COOKING of RAW ANIMAL FOODS



According to an approved written plan raw animal foods that are cooked using a non-continuous cooking process shall be:

- 1. Initially heated for a period of 60 minutes or less**
- 2. Properly cooled**
- 3. Held cold or frozen**
- 4. Before sale or service, reheat to 165 degrees F.**
- 5. Cool properly if not held hot, served immediately or held using time as a public health control according to an approved plan.**

REHEAT FOODS QUICKLY and SAFELY

Key Elements:

- Reheat previously cooled foods to an internal temperature of 165°F or above
- Rapid reheating is required (2 hours or less)
- Stir foods frequently to distribute the heat
- Measure the internal temperature with a thermometer
- After reaching 165°F, the food must be held hot at 135°F or above



Reheating Methods:

- Direct heat (stove top) is best... may also use steam cookers, ovens and microwave if reheating achieves 165°F within 2 hours
- Reheating in steam tables and crock pots is unsafe and is discouraged

Do Not Mix New/Fresh Food With Leftover Items

DATE MARKING

Food Must Be Date Marked If It Is:

- Prepared on-site, refrigerated, and held for more than 24 hours
- Potentially hazardous
- Ready-to-eat



Mark With the Date To Be Consumed By or Discarded:

- Food can be held for 7 days in adequate refrigeration (41 F or less). Day of preparation or day commercially processed food is opened counts as “day one.” See section 3-501.17 for additional information.

If Potentially Hazardous, Ready-To-Eat Food is Frozen:

- Mark that it is to be consumed within 24 hours of removal from freezer,

Or

- When food is removed from the freezer, mark with a “consume by” date that is seven days minus the length of time food was refrigerated before being frozen.

Potentially Hazardous, that Do Not Need Date Marking

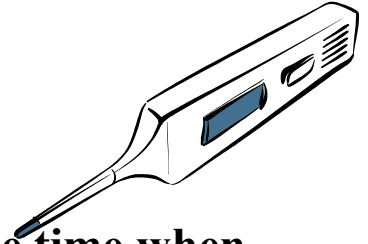
- | | |
|---------------------------|----------------------------|
| • Deli salad | • Shelf stable, dry |
| • Hard cheese | fermented sausages |
| • Semi-soft cheese | • Shelf stable, salt cured |
| • Cultured dairy products | products |

When in Doubt, Throw it Out

TIME AS A PUBLIC HEALTH CONTROL

Time without temperature control may be used for a working supply of potentially hazardous foods if the person-in-charge or their designee:

- **Develops and follows a written procedure**
- **Marks or identifies the foods to indicate the time when removed from temperature control**
- **Monitors the food temperature, so that:**
 - **Food with an initial internal temperature of 41°F or less or 135°F or more, when removed from temperature control is not kept for more than 4 hours, or**
 - **Food with an internal temperature of 41°F where the internal temperature doesn't exceed 70°F is not kept for more than 6 hours**
- **Assures that when time has expired, the food is served or discarded**



Hold All Potentially Hazardous Foods at the Proper Temperature for the Proper Time

4 WAYS TO THAW FOOD SAFELY



In a cooler or refrigerator at 41°F or less



In cold (70°F) running water



During the cooking process, continuous cooking with no interruption

By microwaving as the first step in a continuous cooking process



Never Thaw Foods at Room Temperature

Thawed Portions on the Outside Will Support Bacterial Growth and Can Result in an Unsafe Product

MAINTAIN A SAFE FOOD BAR

Hold all potentially hazardous food at safe temperatures

Hot foods 135°F or above

Cold foods 41°F or below

- Take food temperatures every 2-3 hours.
- If food is in the temperature danger zone, take immediate corrective action. (*REHEAT, QUICK CHILL or DISCARD*)
- Stir foods frequently to distribute temperature.
- Rotate foods--do not add fresh food to old. (*"First In, First Out"*)
- Trained food employees must monitor self-service food bars.
- Post signs that remind customers to use clean plates and bowls for return trips to the food bar.
- Protect food from contamination.
- Provide proper serving utensils and sneeze guards.



Hot Holding



Cold Holding

Hold All Potentially Hazardous Foods at the Proper Temperature

CONSUMER ADVISORY

What should a consumer advisory look like?



Menus

Table
Tents



Brochures

DISCLOSURE: Written indication as to which items are raw or undercooked, can be ordered raw or undercooked, or that contain an ingredient that is raw or undercooked.

REMINDER: A written statement concerning the health risk of consuming raw or undercooked animal foods or unpasteurized juices of fruits or vegetables.

Bacon Wrapped Filet*

Tender fire-grilled filet wrapped in bacon. 9 oz. \$23.49

Flo's Filet® & LongHorn Salmon*

7 oz. \$25.99

White Cheddar & Bacon Stuffed Filet*

A tender Flo's Filet stuffed with aged white cheddar and hickory-smoked bacon, served over a savory brown herb sauce. 7 oz. \$19.99

Sirloin* & Redrock Grilled Shrimp

6 oz. \$16.99

or 7 oz. Flo's Filet* \$23.49

RARE: Cool, red center **MEDIUM RARE:** Warm red center, with a hint of pink **MEDIUM:** Warm pink center
MEDIUM-WELL: Some pink in center **WELL:** No Pink, cooked all the way through

*Cooked to order. Consuming raw or undercooked meats, poultry, seafood, shellfish or eggs may increase your risk of foodborne illness, especially if you have certain medical conditions.

The Advisory Must Disclose the Risky Foods and Remind the Consumer of the Risk

CLEANING and SANITIZING

Manual Warewashing Steps:

1. **Wash:**
 - Clean and sanitize sinks and drain boards.
 - Use clean, hot, soapy water.
2. **Rinse:**
 - Use clean hot water.
3. **Sanitize:**
 - Use 50-200 ppm chlorine -- mix with cool water; or
 - 200 ppm quaternary ammonia -- mix with 75°F water;
 - Immersion time -- 10 seconds; and
 - Use appropriate test strips to check concentration.
4. **Air Dry**



(1) Wash (2) Rinse (3) Sanitize

Mechanical Dish Machines *

HIGH TEMPERATURE:

1. **Wash Temperature:**
 - Single-tank, stationary rack, dual temperature machine -- 150°F
 - Single-tank, conveyor machine -- 160°F
2. **Hot Water Sanitization:**
 - 180°F at manifold
 - 160°F at plate/utensil level

LOW (COOL) TEMPERATURE:

1. Chemical sanitization required
2. Water temperatures according to manufacturer
3. Chemicals must be auto-dispensed into final rinse water and checked daily

*** A visual or audible low level indicator must be provided for detergent and sanitizer.**

Making 100PPM Chlorine Solution is as Easy as 1-2-3 (1 Ounce Bleach to 3 Gallons Water)

A SAFE and CLEAN FACILITY

Insect and Rodent Control (cockroaches, flies, mice, rats, etc.)

Insects and rodents carry disease and can contaminate food and food-contact surfaces. Take steps to minimize their presence.



- Protect outer openings by keeping outer doors closed, repair screens, maintain tight-fitting doors and openings, and use air curtains.
- Eliminate harborage conditions.
- Exterminate regularly.

TOXIC MATERIALS

These Items Can Be Poisonous or Toxic If Ingested

- Detergents
- Sanitizers
- Polishes and cleaners
- Insecticides
- Rodenticides
- First aid supplies and personal medication



NEVER store chemicals ABOVE food or on food work surfaces. ALWAYS store BELOW food.

Storing, Labeling and Using

- Store toxic materials separately from foods and food-contact surfaces.
- Never store above foods or food-contact surfaces.
- Label all toxins.
- Use only approved chemicals in food areas.

Incorrect



Correct

Take Steps to Minimize the Presence of Insects and Rodents

CORRECTIVE ACTIONS

Risk Factor	Corrective Action
Approved source/sound condition <ul style="list-style-type: none"> • Food from unapproved source/unsound condition 	<ul style="list-style-type: none"> • Discard/reject/return
Hand washing <ul style="list-style-type: none"> • Food employee observed not washing hands at appropriate time 	<ul style="list-style-type: none"> • Employee should be instructed when and where to wash hands
Cold holding <ul style="list-style-type: none"> • Potentially hazardous food held above 41°F MORE than 4 hours • Potentially hazardous food held above 41°F LESS than 4 hours 	<ul style="list-style-type: none"> • Discard • Use immediately or cool rapidly
Cooking <ul style="list-style-type: none"> • Potentially hazardous food is undercooked 	<ul style="list-style-type: none"> • Continue cooking to proper temperature
Hot holding <ul style="list-style-type: none"> • Potentially hazardous food held below 135°F MORE than 4 hours • Potentially hazardous food held below 135°F LESS than 4 hours 	<ul style="list-style-type: none"> • Discard • Rapidly reheat to 165°F in LESS than 2 hours or discard
Two-stage cooling process <ul style="list-style-type: none"> • Potentially hazardous food cooled from 135°F to 70°F in MORE than 2 hours • Potentially hazardous food cooled from 70°F to 41°F in MORE than 4 hours 	<ul style="list-style-type: none"> • Use alternate cooling method • Use alternate cooling method or discard. Discard if total cooling time is more than 6 hours
Reheating <ul style="list-style-type: none"> • Potentially hazardous food is improperly reheated 	<ul style="list-style-type: none"> • Use direct reheating method to achieve 165°F within two hours or discard

Food Safety is YOUR Responsibility

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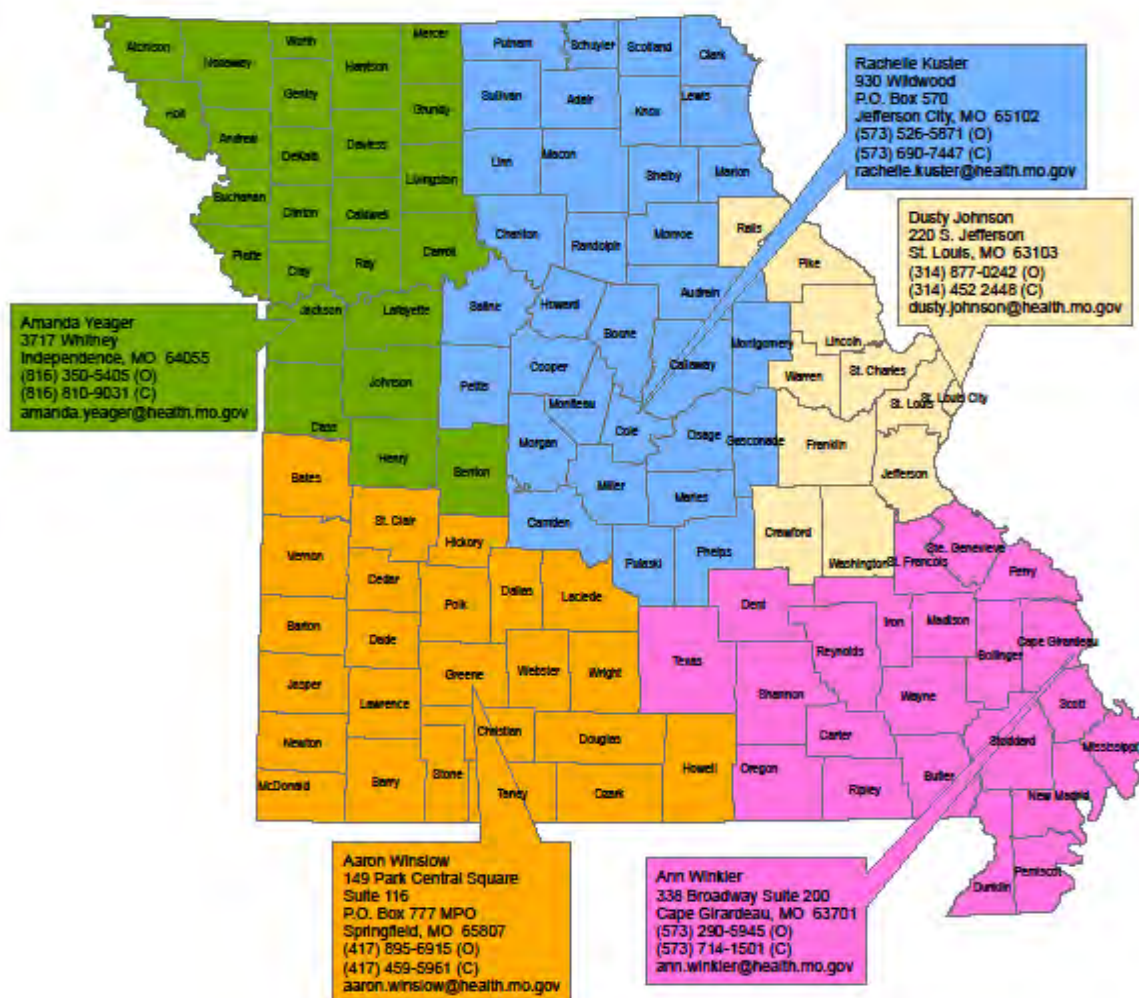
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Technical Assistance

Department of Health and Senior Services Bureau of Environmental Health Services EPHS V Regional Assignments



NOTE: Bureau of Environmental Health Services
central office phone number is (573) 751-8095

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