



Proper Patties



Curriculum Connections

Students will:

- identify the factors that affect health and explain the relationships among personal habits, lifestyle choices and human health;
- identify issues related to the safe handling of food;
- identify micro-organisms, their role in food spoilage and other effects;
- know the natural habitats, and human-made habitats of micro-organisms;
- be aware of the widespread distribution of micro-organisms;
- analyse the beneficial and harmful effects of micro-organisms on other organisms;
- identify factors that enhance or inhibit the growth of micro-organisms (with application to food);
- recognize the need for safety standards to prevent the spread of disease through food;
- identify the role of the individual in ensuring safe food supplies;
- apply safe food-handling concepts to the selection, preparation and handling of food materials;
- identify methods for the handling and processing of food, their problems and benefits;
- understand the need for personal and public decision-making regarding the safe handling of food;
- recognize the need for safety standards to prevent the spread of illness through food;
- demonstrate responsibility through personal actions and as a member of a group;
- work collaboratively to carry out science-related activities and communicate ideas, procedures and results.



Students learn by sharing results of experimentation, evaluating implications of their observations, and drawing conclusions about food safety. This interactive experiment focuses on the key message of COOK.

Materials Needed

- 125 g of fresh, lean ground beef; food thermometer; access to a toaster oven with a broiler and broiler tray (or an electric frypan); a pot holder, tongs or lifter

Teacher Background Information

Health Canada recommends a minimum internal cooking temperature of 71°C for ground beef. Contact your local health authority for further information. Proper cooking is the only way to make sure harmful bacteria that might be present have been killed. The colour of the meat is not a reliable indicator the meat has reached a temperature high enough to destroy harmful bacteria, such as *E. coli* 0157:H7.

Food safety experts agree that foods are properly cooked when they are heated for a long enough time, at a high enough temperatures to kill the harmful bacteria that cause foodborne illness. Please refer to Appendix 3 - Food Thermometer for more information on how to correctly use a food thermometer and for the Danger Zone chart.

Courtesy of the Canadian Partnership for Consumer Food Safety Education
www.canfightbac.org

NOTE: Exercise caution when using cooking appliances, bleach solutions, hot water, and food thermometers. Read and follow the manufacturer's directions for use and cleaning of food thermometers.

Teaching/Learning Strategies

Work in small groups of three to five students. Encourage students to hypothesize and predict the outcome. These steps outline the procedure for the experiment. Students record their findings on the student response form.

Students make a round, thick (2-3 cm) hamburger patty. They record their observations about the patty and measure and record the temperature of the patty 1 cm from the edge. Take the meat's temperature by inserting the food thermometer sideways into the centre of the patty. Students should wash hands and all utensils that were in contact with the raw meat including the thermometer.

Place the patty on the toaster oven broiling tray. Place the tray in the toaster oven and turn the dial to broil. When the burger looks cooked on one side, turn it over to cook the other side. When this side looks cooked, remove the patty from the oven. Have the students take the patty temperature as directed above and record. This must be done quickly so the patty doesn't lose its heat!

CAUTION: Do not let the thermometer touch the cooking surface.

If the temperature reading is less than 71°C, place the patty back in the oven and then take the meat's temperature every two to three minutes until the temperature is 71°C in the centre. Students record temperature readings on the chart each time.

Cut open the patty and observe the inside.

A class sharing time following the experiment would be beneficial for students to review their findings and to consolidate their learning.

Assessment and Evaluation Suggestions

Students complete a reflection journal on what they have learned and what future actions they will undertake.

Extension Activities

Students learn to use a food thermometer properly and research the different types of food thermometers available.

Students research safe cooking temperatures for eggs, meat, poultry and seafood.

Students research what foodborne illness you might get if the beef hamburger or chicken are not cooked to proper temperatures and find an example in news stories of people contracting illnesses from eating undercooked hamburger or chicken.

Contact food handlers to ask about their cleaning practices regarding cutting boards and other food preparation surfaces.



Proper Patties - Hot Stuff

Question: How can you tell when a hamburger patty is cooked to a safe temperature?

Our Hypothesis _____

Materials Needed

- 125 g fresh, lean ground beef
- food thermometer
- access to a toaster oven with a broiler and broiler tray (or an electric frypan)
- a pot holder, tongs or lifter

Procedure:

Note: Use caution when using cooking appliances.

1. Form one round, thick (2-3 cm) hamburger patty. Use soap and hot water, then use a bleach solution (5 mL household bleach to 750 mL water) on surfaces, rinse with hot water and dry with clean cloth before using.
2. Take the temperature of the meat (1 cm from the edge) by inserting the food thermometer sideways into the centre of the patty. Record your temperature reading on the chart.
3. Place the patty on the toaster oven broiling tray. Place the tray in the toaster oven and turn the dial to broil.
4. When the burger looks cooked on one side, have your teacher turn it over to cook the other side. When this side looks cooked, remove the patty from the oven. Take the patty temperature as directed above. CAUTION: Do not let the thermometer touch the cook surface. This must be done quickly so the patty doesn't lose its heat! Record your temperature readings on the chart. Record your observations of the appearance of the meat patty as well.
5. If the temperature reading is less than 71°C, place the patty back in the oven and then take the meat's temperature every two to three minutes until the temperature is 71°C in the centre. Record your temperature readings on the chart each time. Record your observations of the appearance of the meat patty as well.
6. Cut open the patty and observe the inside.
7. Wash hands and all utensils that were in contact with the raw meat.

Record your observations. (see next page)

Hamburger Temperature Reading Chart

	Raw	Test 1 (looks cooked outside)	Test 2 [time]	Test 3 [time]	Done safe to eat
1 cm from edge					71°C
centre of patty					71°C
difference					

Observations of Hamburger Appearance

Test 1 - before cooking began

the inside of the patty looked: _____

the outside of the patty looked: _____

Last Test - when meat safe to eat

the inside of the patty looked: _____

the outside of the patty looked: _____



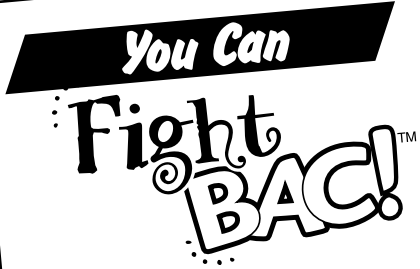
The best way to tell if the hamburger is done and safe to eat is to: _____

It is important to wash the thermometer after each use because: _____

At what temperature is meat safe to eat? _____

If hamburger is not cooked to 71°C this is what could happen: _____

Does the colour of meat tell you whether it is cooked enough to be safe to eat? _____



Remind your family members to...

- Wash their hands after handling raw meat, poultry or seafood;
- Purchase a food thermometer and use it regularly! Show them how to use it with caution when testing temperatures on thin items-it should never touch the cooking surface!
- Wash the thermometer with soap and hot water each time it is used. Read the thermometer instructions for further details.



Yeast Balloon Blow-Up



Students learn by sharing results of experimentation, evaluating implications of their observations, and drawing conclusions about food safety. This interactive experiment focuses on the key message of CHILL.

Materials Needed

- 2 balloons
- 3 - 500 mL beakers, 2 - 250 mL flasks or small clear glass or plastic bottles with small openings
- three containers of water at different temperatures - room-temperature (21°C), warm (43°C to 49°C) and ice-water (below 4°C)
- food thermometer to measure the temperature of the water
- 50 mL of sugar
- 1 package of dry yeast

Courtesy of the Canadian Partnership for Consumer Food Safety Education
www.canfightbac.org

Curriculum Connections

- identify the factors that affect health and explain the relationships among personal habits, lifestyle choices and human health;
- identify issues related to the safe handling of food;
- understand the processes responsible for the maintenance of an organism's life;
- identify micro-organisms, their role in food spoilage and other effects;
- know the natural habitats, and human-made habitats of micro-organisms;
- analyse the beneficial and harmful effects of micro-organisms on other organisms;
- identify factors that enhance or inhibit the growth of micro-organisms (with application to food);
- apply safe food-handling concepts to the selection, preparation and handling of food materials;
- identify the use of micro-organisms in food productions (e.g., yeast, bacterial cultures);
- identify methods for the handling and processing of food, their problems and benefits;
- understand the need for personal and public decision-making regarding the safe handling of food;
- recognize the need for safety standards to prevent the spread of illness through food;
- demonstrate responsibility through personal actions and as a member of a group
- work collaboratively to carry out science-related activities and communicate ideas, procedures and results.

Teacher Background Information

Yeast is a good microorganism and can show how bacteria can multiply. It has growth properties that are similar to bacteria. The yeast solution placed in the cold water bath simulates what happens to bacteria when it is refrigerated. Bacteria grows considerably slower in the refrigerator.

The yeast solution in the warm water bath simulates what happens to bacteria when left out, particularly in a warm place. This yeast will thrive within the Danger Zone (see Appendix 3) and will grow. The danger zone is 4°C to 60°C. As the yeast grows it bubbles, creates gas and causes the balloon to inflate.

Bacteria also thrives on a certain quantity sugar; the sugar solution makes the growth more rapid.

Take advantage of this opportunity to talk about "good bacteria" with your students. Note that if too much sugar is added, it will decrease water activity and it will inhibit the growth of microorganisms.

Explain the term "perishable" to describe foods on which bacteria could grow if not stored properly - like dairy products, meat or vegetables.

The temperature of the water in a shallow container will cool more quickly than in a large or deep container. It is important to store leftovers in shallow containers in the refrigerator for quickest cooling.

If food is left in the Danger Zone - temperatures of 4°C to 60°C, bacteria will multiply more quickly.

Refrigerate foods quickly because cold temperatures keep harmful bacteria from growing and multiplying. So, set your refrigerator no higher than 4°C and the freezer at -18°C. Check these temperatures occasionally with an appliance thermometer.

Here's how to *FightBAC!*TM

Refrigerate or freeze perishables, prepared foods and leftovers within two hours or sooner.

Never defrost food at room temperature. Thaw food in the refrigerator, under cold running water or in the microwave. Marinate foods in the refrigerator.

Divide large amounts of leftovers into small, shallow containers for quick cooling in the refrigerator.

Don't pack the refrigerator, cool air must circulate.

Teaching/learning Strategies

Work in small groups of three to five students.

Encourage students to hypothesize and predict what the outcome will be. They will follow the steps outlined in the procedure of the experiment using observation techniques and recording their findings.

Fill the mixing beaker with 500 mL of room-temperature water. (Room temperature is about 21°C) and measure the temperature of the water. Then, students will dissolve the sugar in the room-temperature water and add yeast to the sugar/water solution and stir gently to dissolve.

Instruct students (or you can do this part yourself) to pour half the solution into each flask and stretch the balloon openings to fit over the openings of the flasks. Place one flask in each of the other two beakers.

Add warm water (about 43°C to 49°C) to the beaker labelled - Warm Water Bath - just enough to cover the yeast mixture in the flask.

Add ice water (below 4°C) to the Ice Water Bath beaker - just enough to cover the yeast mixture in the flask.

Student will observe the differences in the balloons.

A class-sharing time following the experiment would be beneficial for students to review their findings and to consolidate their learning.

Assessment and Evaluation Suggestions

Students evaluate why it's so important to avoid bacterial growth in food and create a "Best Practices" list for the refrigerator. They can take apply their learning at home with recommendations to family members on:

How to store leftovers in the fridge in future;

How to pack a picnic lunch to ensure safe food;

How to defrost food in the future.

Extension Activities

Not all bacteria are bad! Students research good bacteria and bring in three kinds of food or pictures of food that have good bacteria (like yogurt or cheddar cheese).

Research the purpose of good bacteria in food. Encourage them to use a variety of sources: Internet, library, public health inspector, health nurse, etc.

Students retrieve information from the Food Safety Survey - Conduct a Fridge Exam.

How are leftovers stored in their home?

Discuss the types of containers used to store leftovers in their fridge.

Does the shape of a container affect the rate at which cooling takes place?

Students pack two lunches in the morning with some cold food items (like pasta salad, a cheese sandwich or yogurt). They use a cold pack in **one** lunch bag. Test each food's temperatures at 1-hour intervals to see if any of the foods are in the "danger zone." Make a bar chart of the food's temperatures to show the difference between the two lunches, plotting the temperatures taken at each interval. Students then explain the significance of this information! Do not eat the lunch without the cold pack.

Yeast Balloon Blow Up

Question: Can chilling food help stop the growth of bacteria?

Our Class Hypothesis _____

Materials Needed

- 2 balloons
- 3 - 500 mL beakers, 2 - 250 mL flasks or small clear glass or plastic bottles with small openings
- three containers of water at different temperatures - room-temperature (21°C), warm (43°C to 49°C) and ice-water (below 4°C)
- food thermometer to measure the temperature of the water
- 50 mL of sugar
- 1 package of dry yeast

Getting Ready

Fill the two balloons with air to stretch them; then deflate.

Label the beakers: #1 - Mixing Beaker, #2 - Warm Water Bath, #3 - Ice Water Bath

Procedure

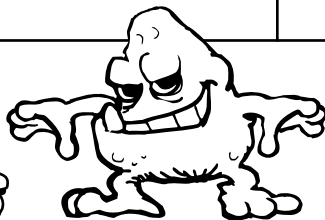
1. Fill the Mixing Beaker #1 with 500 mL of room-temperature water. (Room temperature is about 21°C); use your thermometer to measure the temperature of the water.
2. Dissolve the sugar in the room-temperature water. Add yeast to the sugar/water solution and stir gently to dissolve.
3. Pour half the solution into each flask. Carefully stretch the balloon openings to fit over the openings of the flasks and place one flask in each of the other two beakers.
4. Put warm water (about 43°C to 49°C) into beaker #2 - just enough to cover the yeast mixture in the flask.
5. Put ice water (below 4°C) into beaker #3 - just enough to cover the yeast mixture in the flask.

Observations:

Observe and record what happens in the chart below

	the yeast in the warm water bath	the yeast in the ice water bath
After 5 minutes		
After 30 minutes		
After 60 minutes		

Our
Conclusions



What effect did the cold temperature of the ice water have on the yeast? _____

How do yeast and bacteria act the same? _____

If the yeast in the warm water bath was dangerous instead of good yeast what could you say the warm environment does? _____

If the yeast in the ice water bath was dangerous bacteria instead of good yeast, what could you say the cold environment does? _____

What would happen if you put a sample of the yeast /sugar solution in the refrigerator? _____

You Can
Fight
BAC![™]

Remind family members to...

- Refrigerate or freeze perishables, prepared foods and leftovers within two hours or sooner.
- Never defrost food at room temperature. Thaw food in the refrigerator, under cold running water or in the microwave.
- Allow cool air to circulate in the refrigerator by not packing it too full.



ACTIVITY 7



Students apply their food safety knowledge to a "real life" picnic scenario.

Materials Needed

- copies of the student reading - *Perils at the Picnic* and the student response form - *Cracking the Case*.

Courtesy of the Canadian Partnership for Consumer Food Safety Education
www.canfightbac.org

Foodborne Illness

Curriculum Connections

Students will:

- identify the factors that affect health and explain the relationships among personal habits, lifestyle choices and human health;
- identify issues related to the safe handling of food;
- be aware of the widespread distribution of micro-organisms;
- analyse the beneficial and harmful effects of micro-organisms on other organisms;
- identify practical difficulties in the management of food supplies;
- recognize the need for safety standards to prevent the spread of illness through food;
- identify the role of the individual in ensuring safe food supplies;
- apply safe food-handling concepts to the selection, preparation and handling of food materials;
- identify methods for the handling and processing of food, their problems and benefits;
- understand the need for personal and public decision-making regarding the safe handling of food.

Teacher Background Information

Get your students on the Foodborne Illness detection team with this inquiry-based investigation! This activity makes an excellent "culminating" assessment exercise, allowing students to process what they have learned about each of the four key messages and apply their knowledge and skills in the investigation of a "crime scene" involving a potential foodborne illness.

Teaching/Learning Strategies

Photocopy and distribute copies of the reading - *Perils at the Picnic* and the student response form - *Cracking the Case*. Students can complete the response form individually, with a partner or in small groups.

After the forms are completed and collected, a class discussion time would be beneficial for students to review their understandings and to consolidate their learning.

Assessment and Evaluation Suggestions

Assess the completed student response forms for application to the four messages contained in the *FightBAC!*TM program

Students rewrite the picnic scenario as "The Perfect Picnic," with proper food handling, storage and preparation practices as an application of their learning.

Extension Activities

Students develop and perform skits of the incident. Group one presents the "mistakes," the action stops or is "rewound," and group two presents the correct approach. Encourage them to incorporate dialogue between the characters and to create their own costumes and props.

Perils at the Picnic

[student reading]

Calling all detectives! The Detection Team has learned of a possible foodborne illness incident in progress! As a detective, you must investigate the facts and give your “expert” conclusions. Since you are now an “expert,” you can *FightBAC!*™ for food safety!

It was a Saturday morning in early summer . . .

1

Tom gets a call from his friends to meet them in the park down the street to play ball. They tell him to bring food for a picnic lunch, so they can stay all day. One of his buddies, Nicki, is bringing her older brother along to help with the barbecue. The group can't wait to get to the park early so they can start playing before it gets too hot!

2

Tom looks in the refrigerator and finds some potato salad his mom made during the week. He also finds some cold cuts, leftover turkey, cheese, a tomato, an apple and some grapes in a drawer. He wraps the meat and cheese in plastic wrap and packs them in a big paper bag with some paper plates, bread, the fruit and tomato and a knife and fork. Just before he leaves, he checks the freezer and finds three hamburger patties wrapped in plastic - he throws them in the bag, too.

3

As Tom runs out the door, he tosses his baseball and glove in the bag and grabs his bat. When he gets to the park, several of his friends are already there. Nicki's older brother, Stephane, is setting up a grill for cooking hamburgers.

4

Tom and his friends claim the last picnic table - a great spot in the sun! Tom grabs his baseball and glove out of the food bag and leaves the bag on top of the table - this way the hamburger will be thawed enough to cook by lunchtime!

5

When it's time to break for lunch, Tom's friends go to find a washroom to wash up while Tom unpacks the picnic food. The hamburgers are dripping on the outside, but still frozen on the inside and stuck together! So Tom sets them on a paper plate and uses the knife and fork he brought to pry them apart. When they're almost apart, he uses his fingers to separate them the rest of the way and then leaves them on the plate so they can thaw a bit more before he takes them over to the grill.

6

Tom then sets the cheese and the tomato on the plate and slices them to use on top of the burgers. That way everything will be ready to put on top of the burgers!

7

When the other kids return, they brush off the surface of the picnic table with their hands and lay the bread out to make a couple of sandwiches from the cold cuts, cheese, and turkey. Nicki's brother starts grilling the burgers.

8

Once the burgers have turned brown on the outside, Tom and his friends add cheese to the top of the burgers. Stephane says he wants to cook them a bit more, but they insist that they love to eat them rare.

9

Retrieving the fork Tom used to separate the frozen burgers, they serve themselves some potato salad. Using the knife, they cut up the apple, which had been sitting on top of the picnic table and share it along with the grapes, which had also been sitting out on the top of the picnic table.

CRACKING THE CASE

[Student Response Form]

1. What food safety mistakes did Tom make ...

at home? _____
at the park before they played ball? _____
while getting the food ready? _____
while he and his friends were eating? _____

2. What questions do you have for Tom and his friends ...

about what they did? _____
about the food they were eating? _____

3. Does it matter . . . (and explain why ...)

how long Tom and his friends played ball? _____
that Tom didn't go to the washroom to wash up with his friends? _____
that they chose a table in the sun? _____
that the hamburgers were dripping on the outside but still frozen on the inside? _____

that they ate their hamburgers rare? _____

4. What might happen to Tom and his friends? _____



ACTIVITY 8



Students will critique the food safety poster provided with this resource and create their own versions to depict individual food safety messages based on the four key areas.

Materials Needed

- a copy of the *You Can FightBAC!*TM poster
- a black and white copy of the poster and the four main messages for each student
- art supplies: poster boards, markers, paints, glue, etc.,
- (optional) - computer draw and paint programs, access to a computer lab

Courtesy of the Canadian Partnership for Consumer Food Safety Education
www.canfightbac.org

You Can *FightBAC!*TM For Food Safety Poster Projects

Curriculum Connections

Students will:

- interpret findings from investigations using appropriate methods;
- identify the factors that affect health and explain the relationships among personal habits, lifestyle choices and human health;
- identify issues related to the safe handling of food;
- recognize the need for safety standards to prevent the spread of disease through food;
- identify the role of the individual in ensuring safe food supplies;
- apply safe food-handling concepts to the selection, preparation and handling of food materials;
- identify methods for the handling and processing of food, their problems and benefits;
- understand the need for personal and public decision-making regarding the safe handling of food;
- recognize the need for safety standards to prevent the spread of illness through food;
- create a simple media poster incorporating basic techniques to convey a message in print;
- demonstrate responsibility through personal actions and as a member of a group.

Teacher Background Information

Information campaigns use a variety of media products to inform their audience. Posters are effective ways to persuade or teach people about new or important topic. An effective poster needs a clear message and strong visual appeal to grab the attention of a large audience. The message must be expressed in few words that can be easily remembered.

Such catchy slogans as "Spread the word . . . not the germs!", "I'm going to wash my hands of you, Bacteria", "Chill out! use a cold pack!" can really help to emphasize the message. Students will critique the *You Can FightBAC!*TM Poster by evaluating the effectiveness of the visual aspects and the written text. Students will then design their own food safety posters to post in key places around the school and in the community to spread the word on food safety. Suggestions for poster topics for each of the four key messages are provided at the end of this lesson. These can be distributed to students or chosen by a draw. Students could also be given the choice of developing an original idea or food safety concept.

Teaching/Learning Strategies

Students will review the *You Can FightBAC!*TM Poster and the depictions of the four key food safety action messages. Their review should focus on the appeal of the poster, the individual components such as the artwork, the captions and the layout.

Students will then create food safety posters highlighting one of the specific actions to take to ensure safe food. Students can use a wide variety of art supplies or can produce their visuals and titles with a draw or paint program on the computer. Students can also access the www.canfightbac.org website to download and print out the BAC!™ character.

The following outline will help students to create their own food safety poster

- Choose a topic and the gather facts.
- Think about the best way to illustrate the idea.
- Creating a draft on paper.
- Show your work to a friend to get feedback, new ideas.
- Copy the plan onto a poster board - use all the space available and put your title in big letters
- Check your spelling and facts.
- Colour and complete your poster.

The posters can be used in a school-wide food safety campaign, posted in the hallways or near the lunchroom. CLEAN posters can go on bathroom doors or walls by the sink. The posters can also be used in community-based activities.

Assessment and Evaluation Suggestions

Use the Food Safety Poster rubric following this lesson. Teachers are encouraged to share this rubric with students before they begin the poster creating activity.

Extension Activities

Students post a copy of the You Can *Fight*BAC!™ poster on the refrigerator at home.

Students can create food safety refrigerator magnets based on the four key messages to post on the refrigerator at home to reinforce food safety.

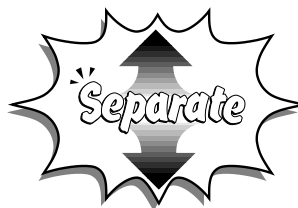
Food Safety Poster Rubric

	Level 1	Level 2	Level 3	Level 4
Visual presentation	uses few or no visuals overall poster lacks visual appeal little or no connection between text and visuals	uses some visuals overall poster offers limited visual appeal simple connection between text and visuals	uses visuals that are well planned and well chosen overall poster has some visual appeal visuals well connected to text	uses visuals effectively and creatively overall poster is very visually innovative connections between text and visuals
Clarity and understanding of concept	message is unclear no captions or slogans	message somewhat unorganized limited use of captions and slogans	simple and clear message clear and well-organized captions and slogans	original presentation of clear message very clear and effective captions and slogan



Wash hands and surfaces often

- Wash hands, utensils and surfaces with soap and hot water before and after food preparation and especially after preparing raw meat, poultry, eggs or seafood to protect adequately against bacteria. Then use a bleach solution (5 mL household bleach to 750 mL water) on utensils and surfaces, rinse with hot water and dry with a clean cloth before using.
- Remember to wash your hands after using the bathroom, changing diapers or handling pets.
- Use plastic or other non-porous cutting boards. These boards should be washed in the dishwasher - or washed with soap and hot water, then use a bleach solution, as directed above.
- Consider using paper towels to clean up kitchen surfaces. If you use cloth towels, wash them often in the hot water cycle of your washing machine.



Don't cross-contaminate

- Separate raw meat, poultry and seafood from other foods in your grocery shopping cart, shopping bags and in your refrigerator.
- If possible, use a different cutting board for raw meat products.
- Always wash hands, cutting boards, dishes and utensils with soap and hot water after they come in contact with raw meat, poultry egg or seafood and then use a bleach solution, as directed above.
- Never place any food on a plate which previously held raw meat, poultry, egg or seafood.



Cook to proper temperatures

- Use a clean thermometer, which measures the internal temperature of foods, to make sure meat, poultry, casseroles and other foods are cooked to their proper temperatures.
- Cook ground beef, where bacteria can spread during processing, to a minimum internal temperature of 71°C. If a thermometer is not available, do not eat ground beef that is still pink inside.



Refrigerate promptly

- Refrigerate or freeze perishables, prepared foods and leftovers within two hours or sooner.
- Never defrost food at room temperature. Thaw food in the refrigerator, under cold running water or in the microwave. Marinate foods in the refrigerator.
- Divide large amounts of leftovers into small, shallow containers for quick cooling in the refrigerator.
- Don't pack the refrigerator. Cool air must circulate to keep food safe.
- Set your refrigerator no higher than 4°C and the freezer unit at -18°C. Check these temperatures occasionally with an appliance thermometer.



Food Safety Poster Projects

Look closely at the food safety poster. Note the visuals, titles, captions, layout, and colour choices.

What does each photo or illustration contribute to the poster? _____

Would the poster be as appealing without these visuals? Why or why not? _____

What other illustrations or photos would you have added? Why? _____

How do the titles enhance the poster? _____

How are layout and the colours used to make the poster more attractive? _____

Media productions (like posters) have an audience in mind. Who is the audience for this poster?



Rate the overall effectiveness of the poster based on its ability to get attention and sharing its message.

Poor 1 2 3 4 Very good

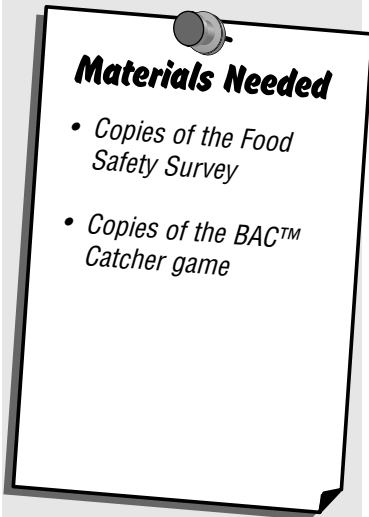


Spreading the News ... Not the Germs

At Home, At School, In the Community



Students will do three activities to consolidate their food safety learning - one for home, one for school, one for the community.



Courtesy of the Canadian Partnership for Consumer Food Safety Education
www.canfightbac.org

Curriculum Connections

Students will:

- identify the factors that affect health and explain the relationships among personal habits, lifestyle choices and human health;
- identify issues related to the safe handling of food;
- understand the need for personal and public decision-making regarding the safe handling of food;
- recognize the need for safety standards to prevent the spread of illness through food;
- demonstrate responsibility through personal actions and as a member of a group;
- communicate information on the topic using appropriate vocabulary, expressing ideas and opinions concisely and clearly to a variety of audiences.

Teacher Background Information

Students love sharing their knowledge with friends and family, and "teaching" younger students. Students will choose an activity to share with younger students in the school, an activity to do at home with family members and one activity to be done in the local community.

Teaching/learning Strategies

Students are encouraged to choose one of these activities or devise their own activities to share their understanding about food safety issues.

At Home

- Food Safety Survey
- Repeat the Food Safety Survey with family members as a "post unit" assessment and compare the results with the first survey.

Then and Now

- Talk to parents and grandparents about how food was stored when they were growing up and contrast it with how food is stored today. Students can research food safety practices from long ago such as the use of drying and salting for a long sea voyage, first use of thermometers in determining safe food temperatures, the invention of pasteurization, irradiation.

Reaching Out to Other Classrooms and Grades

- Declare Food Safety Month!
- Students write fun "copy" for morning announcements giving basic food safety messages including a "tip of the day" for example reminding all students to wash their hands before eating lunch, encouraging them to clean their desks before eating, reviewing the storage containers used for their lunches, etc. Some changes in classroom and school practices may need to be addressed with teachers, administrators and the custodian.
- Students can compose a rap song or chant using the basic messages of food safety to share at a school assembly. Students list all the vocabulary words they can think of for each key message along with words that rhyme. They can create one verse for each key message. They can perform it with percussion or rhythm instruments.
- Students can write a play or present the skit, *Perils At the Picnic*, at the assembly.
- The food safety posters created by the students can be posted in the hallways throughout the school. Classes could circulate through the area and students can explain the importance of their food safety tip.

FightBAC!TM Food Safety Buddies

- Write a short adventure story from the point of view of the bacteria - featuring their efforts to stay alive and multiply! Include several food safety mistakes that help bacteria multiply and several good food safety habits that keep bacteria from multiplying! Illustrate the stories with a logo (like BAC!TM) and share stories with students in another class.
- Distribute one copy of Appendix #2 The Student BAC!TM Catcher. Prepare a personal version of the BAC!TM Catcher, a new look at an age-old favorite game. Suggestions for the questions and answers are provided to get started, but students can add their own ideas!, Play the BAC!TM Catcher game and review the four key messages with food safety buddies.

Spreading the Message Outside the School

Restaurant Safety

- Generate a list of local restaurants. Compose a letter letting the restaurants know the class is studying food safety and wants to learn more about how to keep food safe. Include a copy of the food safety poster. Invite a local restaurant manager to visit the class and talk more about the food safety rules that restaurants follow. Prepare questions in advance and follow up with an interview and report back to the class.

A Supermarket Field Trip

- Arrange a class trip to a local supermarket by contacting the store manager. Check to see if food thermometers are sold and what types are available. Ask questions of the manager about the procedures the store must follow to keep food safe. Ask permission to post the food safety posters (developed by the students) in the store and staff an information booth on a Saturday morning to share with store customers.

Helping the Elderly or Home-bound

- Prepare bookmarks or little refrigerator magnets as food safety reminders for Meals on Wheels, and other Seniors' food programs that reach out to those with special needs.
- Plan a food safety presentation using the food safety posters (developed by the students) to introduce the four key messages to a local seniors residence (one where seniors prepare their own meals).

Assessment and Evaluation Suggestions

Review the individual student BAC!TM Catchers for knowledge about food safety.

Students complete a personal reflection on what they have learned throughout the You Can *FightBAC!*TM food safety program.

Appendix 1 - Video Script - You Can FightBAC!™ For Food Safety

Scene One: Opening

That's BAC!™ the mascot for the *FightBAC!™* Program. By the time this video is over, you will have learned to fight BAC!™.

Title: You Can *FightBAC!™* For Food Safety comes into frame.

Scene Two: Key Messages

What you are about to see may surprise you. Nasty bacteria are lurking everywhere. Watch out for bacteria and clues to help you fight BAC!™ So let's move along. Meet François... Brittany... Jeremy... Michelle... and Celess. They are planning a birthday party. There's lots of work in preparing for this bash! We are going to zero in on the most important part of a party...next to the presents...the FOOD. This gang is going to take us through all the steps starting with the shopping. Once we are back in the kitchen you will discover more about the four key steps to food safety...Clean...Separate...Chill and Cook.

CLEAN	wash hands and surfaces often!
SEPARATE	don't cross contaminate!
CHILL	refrigerate promptly!
COOK	cook to proper temperatures!

Now let's go shopping!

Scene Three: Shopping

Check this out. It's a good idea to start with the dry goods, you know the crackers, canned food and pasta. Cans of soup and packages of pasta are neat and clean and stacked carefully on the shelves. Pay attention to how the grocer stores the fresh fruits and vegetables. See how the meat and cheese are well wrapped? Look at how the milk is kept cold in the refrigerator too. Pick up your refrigerated and frozen items like fresh meat, cheese and ice cream last. The raw meat is kept together in one bag while the veggies are bagged separately. These kids know how to Fight BAC!™ by keeping the fresh meat separate from the veggies, cheese and bread. While at the checkout counter see how the food is bagged to go home. You can do this too!

Scene Four: Food Preparation

Clean...Separate...Chill and Cook.

With everyone back from the grocery store, the fun begins as they put the groceries away. BAC!™ likes warm temperatures, so fight BAC!™ by putting groceries away as quickly as possible. It's also a good idea to store fresh meat separately from the other foods. Next, everybody washes his or her hands. It's important to keep your hands clean all of the time, especially before starting to prepare foods, after

handling raw meats and before you start eating. Wash your hands with soap and hot water for 20 seconds. Use paper towels or a clean towel to dry your hands.

It's important to wash hands and surfaces often! Wow! This kitchen is already clean (sparkling stars) thanks to François' Mom and Dad who cleaned up while everyone was at the grocery store. The counters, the cutting boards and sinks are sparkling clean. So the friends are ready to go!

Everyone has a part to play in the party. While Celess and Jeremy are setting the table, Michelle and Brittany cut up the veggies. And later François and Brittany prepare the beef burgers. Notice how the veggies are prepared separately from the hamburgers to prevent cross-contamination.

Even though everyone's hungry it's important to wait until the beef burgers are cooked properly. The best way to make sure that the hamburgers are cooked properly is to use a food thermometer. Health Canada recommends a minimum internal cooking temperature of 71°C for ground beef. Mmmmm smells delicious!! One more step before they dig in. Make sure the burgers go onto a clean plate. Hey, we just covered the 4 key steps to fighting BAC!™:

CLEAN	wash hands and surfaces often
SEPARATE	don't cross contaminate
CHILL	refrigerated promptly
COOK	cook to proper temperatures

GOOD POINT FOR A BREAK TO RECAP THE VIDEO

Scene Five: QUIZ!

A birthday party should be full of surprises, so let's do a QUIZ! I'll ask the question, you have 5 seconds to think about it. Then an expert will reveal the right answer. Are you ready?

CLEAN	How do you get rid of bacteria on your hands and cutting board?
SEPARATE	How do you keep raw meat juices from dripping on your veggies?
CHILL	What is the best way to store perishables such as milk or meat?
COOK	How do you kill bacteria in raw meat?

(Expert answers.)

So how did you do? It's a lot of common sense, good preparation, and cooperation with everybody. It's easy!! Clean, Separate, Chill and Cook!

Scene Six: Closing

So there it is...You Can *FightBAC!™* for Food Safety. If you would like more information about food safety, please check out www.canfightbac.org

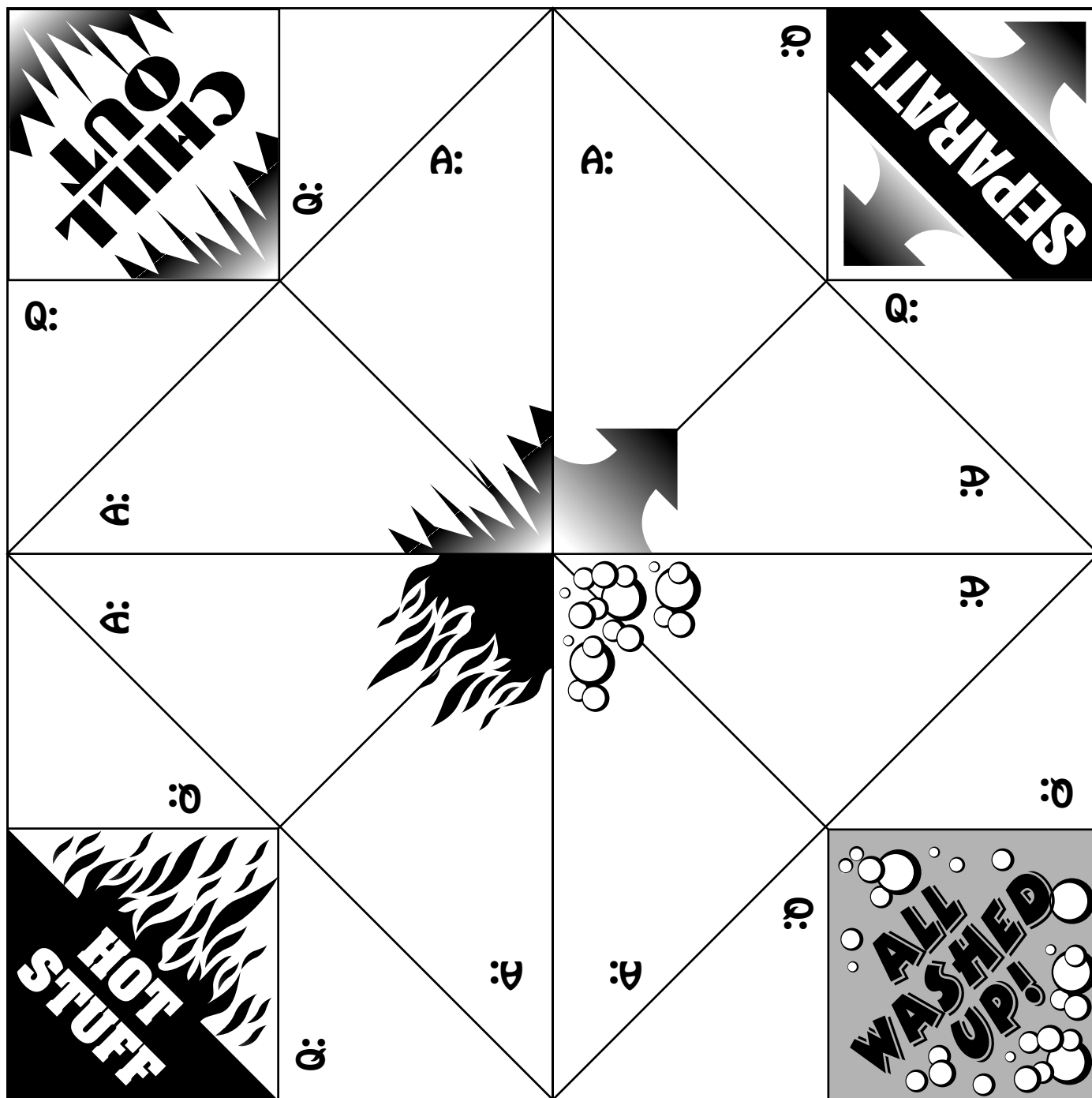
Appendix 2 - BAC™ Catcher Game

Student Directions

Choose from these food safety questions and answers and write them in the Questions & Answers triangles on your BAC!™ Catcher. You need two for each key message - Clean, Separate, Cook, and Chill. Or invent and write some of your own questions and answers from what you have learned in this unit.

Folding instructions

1. Cut out along the dotted lines.
2. Place the BAC!™ Catcher facedown. Fold two corners together to form a triangle. Crease and unfold. Now fold the other two corners together; crease and unfold.
3. Fold each corner to the center point.
4. Turn the folded paper over and fold each corner into the center.
5. Fold the square in half. Unfold it and fold it in half the other way.
6. Using both hands, place your thumbs and index fingers under the flaps.



Food Safety Questions and Answers:

Clean All Washed Up!

Q What do you get when you mix 10 live fingers, warm water and soap?

A Clean hands!

Q Knock knock. Who's there? Get back. Get back who?

A Get bacteria off your counters! Clean them before preparing food!

Separate

Q Why did the chicken cross the road?

A To stay away from the vegetables on the cutting board. He didn't want to contaminate them!

Q What do you get when you cross a tomato with raw meat?

A Cross-contamination! Yuck - don't do it!

Cook Hot Stuff!

Q Knock, knock. Who's there? Temper. Temper who?

A Temperature counts! Cook your burgers thoroughly until you see clear juices.

Q What do you get when you mix a "zap", a "rotate" and "time"?

A Food that's been microwaved the right way!

Chill Chill Out!

Q Why did the milk like to hang out in the refrigerator?

A Because it was cool!

Q What's the difference between a cold pack and a confused bank teller?

A One keeps the food in the lunchbox safe, the other keeps the lunchbox in the safe!

Once you have finished writing the food safety questions and answers follow these instructions to make your BAC!™ Catcher

You Can *FightBac!*™ Catcher Game Student Response Form

How to play

This game is for two players. Ask the other player to pick one of the printed squares - for example, "Hot Stuff." Open and close the BAC!™ Catcher in an alternating direction for each letter of the phrase H O T S T U F F (eight times).

Ask the question closest to the phrase chosen and let the other player answer. Lift the flap to find the answer.

Now give the BAC!™ Catcher to the other player. It's your turn to answer.

Alternate asking and answering until all the questions are answered . . . everyone wins by learning about FOOD SAFETY.

Have Fun Fighting BAC!™

Appendix 3 - Food Thermometers

Why use a food thermometer?

to prevent food borne illness ...

- using food thermometers is the only reliable way to make sure that food is cooked to safe temperatures;
- to be safe, foods must be cooked to an internal temperature high enough to destroy any harmful bacteria that may be in the food;
- colour is not a reliable indication that food has been properly cooked; for example a hamburger may turn brown on the inside before it has been cooked to a safe temperature; if the thermometer registers a minimum internal temperature of 71°C, the hamburger is safe to eat regardless of the colour.

to hold foods at a safe temperature ...

- use a food thermometer to check that foods are held at safe temperatures until they are served;
- keep hot foods HOT - above 60°C;
- keep cold foods COLD - below 4°C;
- DO NOT keep foods in the Danger Zone, between 4°C to 60°C.

to prevent foods from overcooking ...

- using a food thermometer takes the guess-work out of cooking; simply use the thermometer to check if the proper temperature has been reached.

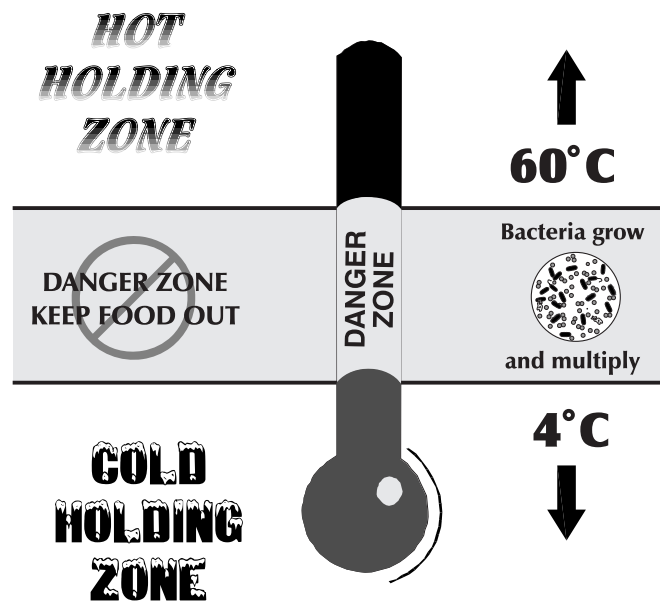
What are the different types of food thermometers?

There are several different types of food thermometers including: dial oven-safe, digital instant-read, fork, dial instant-read, thermocouple, disposable temperature indicators (single use) and pop-up. Each type of thermometer varies in its usage, so be sure to read the manufacturer's instructions.

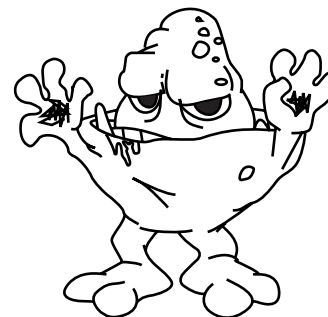
Look at

www.fsis.usda.gov/OA/thermy/ktherms.htm for kitchen thermometer illustrations. Keep in mind that this is an American site and some information may not be applicable to Canada.

Safe Food Temperatures



Source: The Regional Municipality of Halton, Health Department



Appendix 4 - Curriculum Connections for grades 4 - 7

The Methods of Science

- demonstrate appropriate scientific inquiry skills when seeking answers to questions
- design a scientific experiment (including apparatus, materials, safety considerations, and correct steps of the experiment)
- recognize the importance of observation and measurement
- identify relevant variables in an experiment
- identify and test a prediction
- correctly state a hypothesis
- draw reasonable conclusions from experiments, based on evidence
- compare ways of solving problems and finding explanations
- interpret findings from investigations using appropriate methods

Food and Micro-organisms

- identify the factors that affect health and explain the relationships among personal habits, lifestyle choices and human health
- identify issues related to the safe handling of food
- understand the processes responsible for the maintenance of an organism's life
- identify micro-organisms, their role in food spoilage and other effects
- know the natural habitats, and human-made habitats of micro-organisms
- be aware of the widespread distribution of micro-organisms
- analyse the beneficial and harmful effects of micro-organisms on other organisms
- describe the human body's various defences against harmful micro-organisms
- identify factors that enhance or inhibit the growth of micro-organisms (with application to food)
- identify and describe diseases that may occur from poor cleanliness or improper food handling
- identify practical difficulties in the management of food supplies

- recognize the need for safety standards to prevent the spread of illness through food
- group foods by their susceptibility to micro-organisms
- identify the role of the individual in ensuring safe food supplies
- apply safe food-handling concepts to the selection, preparation and handling of food materials
- identify the use of micro-organisms in food productions (e.g., yeast, bacterial cultures)
- identify methods for the handling and processing of food, their problems and benefits
- evaluate legislated food standards, inspection and monitoring systems

Applying scientific knowledge

- relate scientific knowledge and technology to the maintenance of a healthy food supply
- recognize the various perspectives which may need to be considered in decisions regarding the setting and enforcement of food safety standards
- understand the need for personal and public decision-making regarding the safe handling of food;
- recognize the need for safety standards to prevent the spread of disease through food

Collaborative Learning Skills

- demonstrate responsibility through personal actions and as a member of a group
- work collaboratively to carry out science-related activities and communicate ideas, procedures and results

What is the Canadian Partnership for Consumer Food Safety Education?

The Canadian Partnership for Consumer Food Safety Education, formed in December 1997, is a coalition of industry, consumer, government, health and environmental organizations that joined together to present a unified front in the fight against foodborne illness. The goal of the Partnership is to contribute to the reduction of microbial foodborne illness in Canada by increasing consumer awareness of what they can do to protect against these illnesses, specifically through the use of safe food handling practices. The 60-plus member coalition has been working through the *FightBAC!*[™] campaign, launched in November 1998, to improve consumer understanding of foodborne illness and the measures that can be taken to decrease the risks of the illness.

Although Canada's food supply is one of the safest in the world, fighting foodborne illness is a major challenge. Health Canada estimates that there are approximately 2 million cases of foodborne illness in Canada each year, with an estimated cost to Canadian health services, industry, and society of more than \$1 billion annually.

Everyone has a role to play in Canada's food safety system - from the farmer who produces the food, to industry processors, government inspectors and consumers who prepare food for their families.

Partnership Members as of March 31, 2001:

Level I Partners

Agriculture and Agri-Food Canada
Beef Information Centre*
Canadian Council of Grocery Distributors*
Canadian Egg Marketing Agency*
Canadian Food Inspection Agency *
Canadian Meat Council*
Canadian Poultry & Egg Processors Council*
Canadian Produce Marketing Association*
Chicken Farmers of Canada*
Health Canada*

Level II Partners

British Columbia Ministry of Health
Canada Pork*
Canadian Turkey Marketing Agency*
Dairy Farmers of Canada*

Level III Partners

Canadian Federation of Independent Grocers*
Canadian Institute of Public Health
Inspectors/Association of Supervisory Public Health
Inspectors of Ontario
Canadian Meat Science Association

Capital Health Authority (Alberta)
Crop Protection Institute of Canada*
Environmental Health Foundation of Canada*
Further Poultry Processors Association of Canada*
Kidney Foundation of Canada*
National Institute of Nutrition
Newfoundland & Labrador Department of Health &
Community Services
Ontario Independent Meat Packers & Processors
Ontario Ministry of Health
Province of Manitoba
Soap & Detergent Association of Canada
Vancouver/Richmond Health Board*

Level IV Partners

Alberta Agriculture, Food and Rural Development
Alberta Home Economics Association Food Safety
Infoline
Alberta Environmental Health
Association des manufacturiers de produit alimentaires
du Québec
Association of Supervisory Public Health Inspectors of
Ontario
Boundary Health Unit (BC)
Canadian Federation of Agriculture*
Canadian Home Economics Association*

Canadian Pork Council
 Consumers Association of Canada*
 Eastern Ontario Health Unit
 Environmental Health Services-Queen's Region
 Health (PEI)
 FarmFolk/CityFolk Society
 Federal/Provincial/Territorial Committee on Food
 Safety*
 Guelph Food Technology Centre
 Ministère d'agriculture des pêcheries et de
 l'alimentation du Québec
 National Dairy Council of Canada
 New Brunswick Public Health
 Northern Lights Regional Health Authority (AB)
 Nova Scotia Department of Agriculture
 Northwest Territories Department of Health
 Ontario Farm Women's Network
 Ontario Ministry of Agriculture, Food & Rural Affairs*
 Ontario Provincial Food Service Health Promotion
 Program
 Ontario Public Health Association
 Palliser Health Authority (AB)
 Peace River Health Region (AB)
 Prime Restaurants Group Inc
 Regional Municipality of Halton
 Regional Municipality of Waterloo Community Health
 Department
 Region of Peel Health Department
 Saskatchewan Health
 South Fraser Health Region
 Wellington-Dufferin-Guelph Health Unit (ON)
 Yukon Health & Social Services

*Founding Member

International Affiliate

United States Partnership for Food Safety
 Education

Resources

Print

Food Safety Can Be Fun! OAFE

Web Sites

Canadian FightBAC!™ website
www.canfightbac.org/english/ccentre/factsheets/causeoffoodborn.shtml

Canadian Food Inspection Agency's food facts

http://www.cfia_acia.agr.ca/english/corpaffr/food-facts/fftoce.shtml

U.S. Partnership for Food Safety Education

http://www.fightbac.org/fbi/10_least.htm

U.S. Food and Drug Administration

<http://vm.cfsan.fda.gov/~mow/intro.html>

bacterial cells <http://www.cellsalive.com>

U.S. Food Safety Government Site

<http://www.foodsafety.gov>

General Microbiology

http://commtechlab.msu.edu/sites/dlc_me/zoo/index.html

U.S. Food Safety and Inspection Service

www.fsis.usda.gov/OA/thermy/ktherms.htm

FightBAC™ Evaluation

By completing this form and returning it as indicated below, you will assist the Partnership with its mission to provide consumers with the knowledge they need to keep themselves and their families safe from foodborne illness.

1. In general, did you find the *FightBAC!*™ project for grades 4 - 7 useful? YES ___ NO ___
2. Do you feel that this *FightBac!*™ project, including the video and educational materials, helped your students to:
 - 2.1 understand the four key messages of food safety YES ___ NO ___
 - 2.2 understand the science associated with food safety YES ___ NO ___
 - 2.3 reinforce/apply skills in language and the arts YES ___ NO ___
3. How useful were each of the following components of the project "package" (1 = low useability 4 = high useability)

3.1 The Teacher's Guide (in general)	1	2	3	4
3.2 The teacher background information for each activity	1	2	3	4
3.3 The activity instructions (teaching/learning strategies)	1	2	3	4
3.4 Assessment and Evaluation suggestions	1	2	3	4
3.5 The reproducible student materials	1	2	3	4
3.6 The video component of the project	1	2	3	4
3.7 The poster component of the project	1	2	3	4
3.8 The "packaging" (loose-leaf, in plastic bag)	1	2	3	4
4. Did the students enjoy the student activities in the project? YES ___ NO ___
5. Did the project have an impact beyond the classroom (e.g., in the rest of the school, with student families, in the community) YES ___ NO ___
6. How did you learn about the *FightBAC!*™ project?

7. What changes could be made to future versions of this project that could enhance its useability?

8. Please include comments about this *FightBAC!*™ project for the Partnership members; these comments will be useful in evaluating the project and planning for future projects related to food safety.

Please return this form ...

by fax to - (613) 952-6400

by mail to - Canadian Partnership for Consumer Food Safety Education
ATTN: Grade 4 to 7 Evaluation Form
75 Albert Street, Suite 1101
Ottawa, ON K1P 5E7





CANADIAN PARTNERSHIP FOR
CONSUMER FOOD SAFETY EDUCATION
PARTENARIAT CANADIEN POUR
LA SALUBRITÉ DES ALIMENTS

