

# Activity Preparation for Chapter 13

Activity/Investigation	Advance Preparation	Time Required	Other Considerations
<i>What's Going On? Spreading Germs</i> (page 247) (TR page 301)	<ul style="list-style-type: none"> <li>• Several weeks before               <ul style="list-style-type: none"> <li>– Buy or order peppermint extract.</li> </ul> </li> <li>• 1 day before               <ul style="list-style-type: none"> <li>– Gather apparatus and materials.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 20 min</li> </ul>	<ul style="list-style-type: none"> <li>• Find out if any students have allergies to peppermint extract. Consider using onion slices or lemon juice instead of peppermint extract. These items have distinctive odours that linger.</li> </ul>

# Materials Needed for Chapter 13

Activity/Investigation	Apparatus	Materials	Blackline Masters
<i>What's Going On? Spreading Germs</i> (page 247) (TR page 301)	<ul style="list-style-type: none"> <li>• medicine dropper (1 per group)</li> <li>• hand towel (1 per group)</li> </ul>	<ul style="list-style-type: none"> <li>• cotton ball (1 per group)</li> <li>• peppermint extract</li> </ul>	

# CHAPTER 13 Making Connections with Biology (page 246)

**SUGGESTED TIMING**

15 min  
20 min for What's Going On?

**MATERIALS**

- chart paper and markers

**Overall Expectations**

**BSAV.03** – analyze how personal health and safety in everyday life and in the workplace are protected through the proper use of equipment and safety practices

**Science Background**

The purpose of the introductory section is to engage students in discussion about germs in their environment and the importance of personal hygiene to prevent germs from spreading.

Washing hands and covering the mouth and nose often help prevent cold germs from spreading.

**Key Terms Teaching Strategies**

Have students complete some or all of the following activities to help them learn and remember the key terms:

- Write definitions for these terms in their Science Log. You may wish to have students keep a glossary at the back of their Science Log.
- Write a sentence that contains the two key terms.

Help students remember the key terms by posting them on a science word wall.

**Reading Icon Answer (page 246)**

1. Look for three symptoms such as runny nose, sore throat, cough, low-grade fever, and headache.

**Activity Planning Notes**

After reading the introductory paragraph, explain that germs cause illnesses such as the common cold and the flu. Use a show of hands to survey the students and find out how many of them have experienced a cold within the past month. Ask volunteers to share the symptoms of a cold. They may wish to dramatize how they felt. Then have students complete and discuss question 1 on page 246.

Consider having students do the What’s Going On? activity before reading the Case Study to provide context for the discussion that follows.

As a class, read the case study about Michelle. As a follow-up, find out from students what they already know about practices that protect their own and others’ health when they have a contagious disease such as a cold (e.g., covering the mouth and nose, washing hands often). Record their ideas on chart paper or on the chalkboard before assigning question 2.

**Accommodations**

- ESL and LD Learners could be paired with students who have stronger language skills.

This opener can be used as a lead-in to section 13.1.

**Check Your Understanding Answers (page 246)**

2. a) Accept any reasonable recommendation.  
For example:
- Wash hands often and try not to touch the nose and eyes to prevent a new infection.
  - Stay home from work or school and rest.

- b) Accept any reasonable recommendation.  
For example:
- Cover your nose and mouth with a disposable tissue when coughing or sneezing.
  - Use disposable tissues and dispose of them properly after use.
  - Wash your hands after blowing your nose.
  - Try to limit contact with others to avoid spreading a cold.
  - Do not share cups or eating utensils.

**What’s Going On? Activity (page 247)**

*Spreading Germs*

**Purpose**

- Students use a simulation to investigate how germs spread from an infected person to healthy individuals.

**Science Background**

Germs can spread through direct contact with an infected person or objects handled by an infected person. Some germs can live for up to two hours on surfaces such as doorknobs, desks, and chairs. Washing hands properly using soap and warm water helps get rid of germs before they can enter the body through the nose, mouth, or eyes.

**Advance Preparation**

WHEN TO BEGIN	WHAT TO DO
Several weeks before	• Buy or order peppermint extract.
1 day before	• Gather apparatus and materials.

APPARATUS	MATERIALS
• medicine dropper (1 per group)	• cotton ball (1 per group)
• hand towel (1 per group)	• peppermint extract

**Suggested Timing**

20 min

### Safety Precautions

- Find out if any students have allergies to peppermint extract. Assign such students to roles such as observing. If the allergy is severe, you may wish to have them leave the room for this activity.
- Caution students to keep peppermint extract away from the eyes and mouth.
- Remind students not to eat in the science lab.
- Have students clean up the work area and wash their hands thoroughly at the end of the activity.

### Activity Planning Notes

Consider using onion slices or lemon juice instead of peppermint extract. These items also have distinctive odours that linger.

Read through the directions together and make sure everyone understands what to do. As you circulate, check that students are on task and using materials appropriately.

### Accommodations

- Students who are allergic to peppermint extract could use onion or lemon extract.

#### What Did You Observe? Answers (page 247)

6. Partners should detect the essence of peppermint extract on their own hands.
7. Students should detect the essence of peppermint extract on the third member of the group.

#### Making Connections Answer (page 247)

8. Wording will vary. Germs can spread through contact with an infected person or objects handled by an infected person.

### Activity Wrap-up

- Have students complete and then discuss question 8 on page 247.

### Technology Links

- For comprehensive information on the common cold, including how colds spread and how to reduce the risk of catching a cold, go to [www.mcgrawhill.ca/books/Se9](http://www.mcgrawhill.ca/books/Se9) and follow the links to Common Cold.

### Alternative Activities

- Have students use Glo Germ™ powder to demonstrate how germs spread as people shake hands. Glo Germ™ powder and a UV light are readily available from your school science supplier. The product consists of cornstarch with a luminescent substance that shines under UV light. Or, have students sprinkle glitter (readily available in craft stores) on their hands, and then shake hands.
- Show one of the following videos:
  - *Germs*, Bill Nye, The Science Guy (Magic Lantern Communication Ltd., 1995).
  - *Inside Ralphie*, The Magic School Bus (NY Scholastic, 1995).
  - *Why Does Getting Sick Always Give You the Same Symptoms?* (Inquiring Minds 3 Science, TVO, 1999).
- Consider either reading one of the following books to the class or assigning a book to students and asking them to present a report.
  - *Achoo: The Most Interesting Book You'll Ever Read About Germs*, Trudee Romanek, Mysterious You series (Kids Can Press, 2003. Paperback ISBN: 1553374517). Reading Level: Ages 9–12.
  - *Bill Nye the Science Guy's Great Big Book of Tiny Germs*, Bill Nye, The Science Guy (Hyperion, 2005. Hardcover ISBN: 0786805439). Reading Level: Ages 9–12.
  - *Germs on Their Fingers!*, Wendy Wakefield Ferrin (Wakefield Connection, 2002. Hardcover ISBN: 0970363214). Reading Level: Ages 9–12.

# 13.1 Protecting Your Body From Disease (page 248)

## SUGGESTED TIMING

30 min

## MATERIALS

- chart paper and markers

## BLACKLINE MASTERS

BLM 13–1 Disease Word Puzzle  
BLM 13–2 Body Art Safety

## Specific Expectations

**BSA2.04** – extract and interpret information from a variety of sources

**BSA2.05** – communicate observations, interpretation of results, and information through appropriate formats

**BSA3.01** – analyze how specific equipment and safe practices are used to protect personal health and safety at home and in the workplace

## Science Background

**Pathogens:** Bacteria are unicellular organisms that can be seen only with a microscope. They live and breed in warm, moist environments, grow quickly, and cause infection. Bacterial infections can usually be treated with an antibiotic. Diseases caused by bacteria include strep throat, gingivitis, *E. coli*, botulism, salmonellosis, staph food poisoning, and anthrax.

Viruses are smaller than bacteria and cannot be seen with a microscope. They grow inside the body and produce toxins that can cause rashes, aches, and fevers. Viruses cannot be killed with antibiotics. Diseases caused by viruses include the common cold, chicken pox, influenza (e.g., avian flu), HIV/AIDS, polio, SARS, and West Nile virus.

**Avian Flu:** Avian flu is caused by avian influenza (bird flu) viruses, which occur naturally in birds. Wild birds carry the viruses in their intestines, but are not affected by them. However, when these viruses infect domestic birds such as chickens, ducks, and turkeys, the birds may become sick and even die. The influenza virus is found in the saliva, nasal secretions, and feces of infected birds. The virus can be spread through direct contact or contact with contaminated surfaces.

In rare cases, the avian influenza infects humans, usually from contact with infected poultry or surfaces contaminated with the secretions or excretions of infected birds. Symptoms of avian flu in humans range from sore throat, fever, and tired muscles to eye infections, pneumonia, and respiratory problems. Currently, scientists and doctors are working to develop effective treatments for different strains of the avian flu virus.

**HIV:** The HIV causes AIDS. The virus flows through the blood of an infected person. People get HIV through sexual intercourse, sharing needles, getting a transfusion of infected blood, or moving through the birth canal of an infected mother.

**SARS:** SARS is an acronym for severe acute respiratory syndrome. It is caused by a virus that is easily spread by droplets sent into the air when a person sneezes or coughs. The virus enters the body when these droplets land on the mouth, nose, or eyes. The virus can also be spread by contacting a contaminated object and then touching the mouth, nose, or eyes. Symptoms of SARS include high fever, headache, muscle ache, and, in some cases, a dry cough and pneumonia.

**West Nile:** West Nile disease is caused by a virus usually found in infected birds. Mosquitoes become carriers of the virus after they feed on infected birds. Infected mosquitoes then spread the virus to humans they bite. The West Nile virus affects the central nervous system. Some people who are infected do not show any symptoms. For other people, symptoms range from mild (e.g., fever, headache, nausea) to serious (e.g., high fever, disorientation, tremors, muscle weakness). The best way to avoid infection is to prevent mosquito bites (e.g., make sure door and window screens fit tightly and have no holes; minimize time spent outdoors when mosquitoes are most active, at dawn or dusk; wear light-coloured clothing, long-sleeved tops, long pants, and socks when outdoors, or consider screen mesh clothing; use an insect repellent containing DEET or other repellents approved by Health Canada) and eliminate mosquito breeding sites.

**Other Pathogens:** Protists are microscopic organisms that can cause diseases such as giardia, malaria, and sleeping sickness.

Fungi are plant-like organisms that cannot make their own food. Fungi include unicellular organisms such as yeast and multicellular organisms such as moulds. There are two main types of fungal disease: those that live on the skin of the host and those that enter the body and do damage to internal tissues and organs. For example, coccidioidomycosis is caused by a fungus that is inhaled and results in lesions on the lungs. Diseases caused by fungi include ringworm, athlete's foot, coccidioidomycosis or valley fever, and sporotrichosis.

**Importance of Hand Washing:** The American Society for Microbiology provides information that can be used for a discussion about hand washing and the spread of disease.

- Hand washing removes 60 to 70 percent of bacteria from your hands, but only if you wash your hands for 20 to 30 seconds.
- In one study, only 66 percent of people actually washed their hands after using a toilet; however, 95 percent of the people interviewed *said* that they had washed their hands.
- Fewer men today wash their hands after using the toilet than they did five years ago.
- Only 45 percent of adults know that they should wash their hands after touching an animal.
- Only 30 percent of adults know to wash their hands after they cough or sneeze.
- Restaurant workers can transfer *E. coli* bacteria to food if they do not wash their hands after using the toilet.
- Fingernails are a critical and often overlooked area for washing. A nail brush is the best tool for cleaning this area.

- If people wash their hands properly, antibacterial soaps are not necessary. Research suggests that using these soaps increases the risk that bacteria become resistant to the ingredients in the soap. To reduce the increase in antibiotic-resistant bacteria, the public should therefore avoid using antibacterial soaps unless they are necessary to treat an acute infection.

**Body Art Safety:** There are health concerns about body piercing because the equipment and tools used in piercing may get contaminated with blood or body fluids carrying diseases such as Hepatitis B, Hepatitis C, and HIV. Equipment and tools need to be disinfected after each client. Using equipment and instruments properly and following safety precautions protects workers and clients.

## Key Terms Teaching Strategies

Have students complete some or all of the following activities to help them learn and remember the key terms:

- Write definitions for these terms in their Science Log. You may wish to have students keep a glossary at the back of their Science Log.
- Write a paragraph that contains the key terms.
- Complete **BLM 13–1 Disease Word Puzzle**.

Help students remember the key terms by posting them on a science word wall.

### Reading Icon Answers (page 248)

1. Students should highlight communicable diseases and non-communicable diseases.
2. Students should highlight bacteria, viruses, protists, and fungi.

### Reading Icon Answer (page 249)

3. Students should highlight contact, water, air, and food.

## Activity Planning Notes

After reading and discussing the information on pages 248 and 249 as a class, have students complete and then discuss the questions. Alternatively, consider addressing the questions as a class activity.

Use chart paper and help students develop a checklist of safe practices for question 4 on page 249. Safe practices might include the following:

- Avoid standing or sitting too close to people who are coughing or sneezing.
- Avoid direct contact with things touched by people who are sick (e.g., light switches, doorknobs). To avoid getting sick from this type of contact, wash hands often.
- Avoid contact with the nose, mouth, eyes, or hands of someone sick with a cold or the flu.
- Avoid touching your own mouth, nose, and eyes with unwashed hands.
- Avoid sharing drinking and eating utensils.

**Accommodations**

- ESL and LD Learners could be paired with students who have stronger language skills.

Use points provided by the American Society for Microbiology to discuss the importance of hand washing.

**Check Your Understanding Answer (page 249)**

4. Checklists will vary. Students should provide at least one example from each method of transmission: contact, air, water, and food. For example:
- Contact — Wash hands thoroughly with soap and water after using the toilet and before handling food.
  - Air — Stay away from people who are ill.
  - Water — Do not drink or swim in polluted water.
  - Food — Prepare, cook, and store food properly.

**Making Connections Answers (page 249)**

5. **a)** Answers will vary. Students should identify at least one action. For example:
- standing close to people who are coughing or sneezing
  - making direct contact with things touched by people who are sick (e.g., light switches, door knobs)
- b)** Accept any reasonable suggestions. For example:
- Avoid standing or sitting too close to people who are coughing or sneezing.
  - Avoid direct contact with things touched by people who are sick (e.g., light switches, doorknobs). Avoid getting sick from this type of contact by washing hands often.
  - Avoid contact with the nose, mouth, or eyes of someone sick with a cold or the flu.

**Ongoing Assessment**

- Use the checklist developed for question 4 on page 249 to assess students' knowledge of practices that reduce the risk of getting sick.

**Technology Links**

- For more information on body art safety procedures, go to [www.mcgrawhill.ca/books/Se9](http://www.mcgrawhill.ca/books/Se9) and follow the links to Body Art Safety.

**Alternative Activities**

- Have students use microviewers and prepared slides of the four types of pathogens, and sketch an example of each one.
- Show one of the following videos:
  - *Fighting Disease! Part 3: Body Story: The Flu* (Discovery Communications, Inc., 2004. #728436). The film travels inside the body of a victim involved in the cellular war between the immune system and the influenza virus.
  - *Rising Threat of Infectious Diseases* (Human Relations Media, USA. #74252-00). The video examines diseases caused by bacteria and viruses.
  - *Viruses: The Deadly Enemy* (HRM and VEA, 1997. #74251-00). The video shows the structure of viruses and how they kill healthy cells, and describes the diseases they cause.
- Show the film *Outbreak*, in which measures are taken to contain an epidemic of a deadly virus (Time-Warner Entertainment Company, 1995. ASIN: 0790740265).
- Invite a nurse or a health-care provider to discuss factors that contribute to the spread of a disease such as flu and ways to prevent it from spreading.
- Have students do research and present their findings about the safety precautions they should take before getting a tattoo or body piercing. Provide students with **BLM 13–2 Body Art Safety** to help them.



# Unit C Task: Choose an Activity (page 250)

## SUGGESTED TIMING

60–75 min (includes introducing the task, students choosing an activity, directing students to references in the student book, and brainstorming)

75 min for Science and Literacy Link (includes research time)

## MATERIALS

- chart paper and markers
- soap and water for hand washing
- Glo Germ™ oil
- ultraviolet (UV) lamp

## BLACKLINE MASTERS

- BLM C–1 Build a Model Rubric
- BLM C–2 Write a Play or a Story Rubric
- BLM C–3 Design a Poster Rubric
- BLM C–4 How Well Do You Wash Your Hands?
- BLM C–5 Protecting Health after a Disaster Communication Rubric
- Assessment Master 16 Oral Presentation Rubric

## Specific Expectations

**BSA1.01** – describe the basic life-sustaining processes of organisms, including single-celled and complex organisms, using appropriate scientific vocabulary

**BSA1.02** – relate structures involved in life-sustaining processes to their function

**BSA1.03** – outline how a complex organism functions through the basic interactions between organ systems

**BSA2.04** – extract and interpret information from a variety of sources

**BSA2.05** – communicate observations, interpretation of results, and information through appropriate formats

**BSA3.01** – analyze how specific equipment and safe practices are used to protect personal health and safety at home and in the workplace

**BSA3.02** – examine case studies of common workplace environments to develop a checklist of safety practices necessary to sustain systems and processes critical to life

**SIL1.01** – describe how the procedures, skills, and tools employed in different areas of science are also evident in daily life

**SIL2.06** – communicate plans, observations, and results using a variety of oral, written, and graphic representations, and including the use of SI units, where appropriate

**SIL3.03** – demonstrate an understanding of how problem-solving and decision-making activities in the workplace use scientific process skills

## Activity Planning Notes

As a class, read the list of activities. Explain that each student needs to choose one activity.

Consider having students sign up for an activity to ensure that all activities are represented. Using chart paper, list the choices and leave space for students to sign up. You may need to limit registration depending on popularity. In this way, there will be fewer duplicate projects, and when students present their projects, the unit review will be comprehensive.

After students sign up for an activity, have them complete question 1 on page 250.

Have students read the instructions for the activity they chose. Encourage discussion to make sure they understand what to do.

### Accommodations

- Use the voice balloons to provide ideas for students who may not be able to think of a project.
- ESL and LD Learners could be paired with students who have stronger language skills. Alternatively, allow students who have difficulty writing to record their information on audio tape, on videotape, or in a drawing.
- If you have access to a computer lab, you may wish to have students use clip art and graphics software packages to create their poster. The zoom feature on most photocopiers can be used to enlarge the image to poster size.

### Summative Assessment

- Use **BLM C-1 Build a Model Rubric**, **BLM C-2 Write a Play or a Story Rubric**, and **BLM C-3 Design a Poster Rubric** to assist you in assessing student work on the task.

Point out the relevant sections of the student resource for each activity. Consider giving students more time to brainstorm the information and materials they need in order to complete the task.

Depending on the time provided for students to work on the task during class, students may need to do some work at home. For example, they could expect to gather the materials they need at home. Assign a reasonable due date for completing the task.

**Build a Model:** The following suggestions may assist you in coaching students who choose this option.

- **Human circulatory system:** Note that the model in the student resource doesn't show how the heart works. Consider brainstorming how to improve the model (e.g., building a clay model that shows the chambers and using plastic tubing to show the flow of blood through it).
- **Human digestive system:** Students can build the model using common items (e.g., tubes, sponges, balloons, papier-mâché, modelling clay) and linking them together. They can arrange the digestive parts on poster board.
- **Frog systems:** Students might add food colouring to the clay in order to distinguish the three systems.

**Write a Play or Story:** Consider brainstorming or providing a list of topics to help students make a choice. Ideas include the journey a red blood cell takes around the body as it carries food, oxygen, wastes, and carbon dioxide; and how a cold virus infects all the members of a family except for one.

**Design a Poster:** Consider providing a list of diseases to research such as strep throat, gingivitis, influenza (e.g., avian flu), chicken pox, measles, HIV/AIDS, athlete's foot, West Nile, SARS, black mould, lice, meningitis.

You might use the information on the rubric for each activity to help you review the criteria for successful completion.

Consider using the following blackline masters:

- **BLM C-1 Build a Model Rubric**
- **BLM C-2 Write a Play or a Story Rubric**
- **BLM C-3 Design a Poster Rubric**

### Science and Literacy Link (pages 254–255)

You may wish to do this activity before students start working on their projects. Alternatively, it could be done afterward. Encourage students who have already made a poster to choose another method of demonstrating what they know about proper hand washing.

Introduce the topic by brainstorming a list of natural disasters (e.g., drought, flood, hurricane, landslide, tornado, tsunami, volcano). Ask students to name natural disasters that have occurred (e.g., earthquake and tsunami in South Asia, Hurricane Katrina in Louisiana). Try to tie the activity to a recent disaster that may be familiar to students. Invite students to share what they already know about health risks after a natural disaster. Depending on your class, you may have students who have experienced such things and can provide first-hand information.

Tell them to highlight information about health risks after a disaster as you read the article on page 254 together. Have students complete and then discuss question 2.

Discuss how students might research hand washing (e.g., books, Internet, interviews). In advance, gather text references and book the computer lab. Allow time for students to do research before writing a summary of the main points for question 3 on page 255. Have students decide how to present their findings. Refer students who are making a poster to the tips on page 253. Display the completed posters in the classroom.

Provide students who are doing a hand-washing demonstration with soap and water, Glo Germ™ oil, an ultraviolet lamp, and a copy of **BLM C-4 How Well Do You Wash Your Hands?** to help them plan their presentation. Students might do the demonstration using a sink in the lab. Students apply two or three drops of Glo Germ™ oil to their hands. Then they wash their hands as they would normally. Using a UV light, they check whether or not they have removed all of the Glo Germ™ oil. The oil simulates pathogens that may be left on their skin. You might demonstrate how to use the oil and the UV light.

Alternatively, have students use red watercolour paint on their hands, wash their hands, and then examine their fingers and fingernails, and any cracks on their hands, to see how much paint has been missed.

Review the tips on the blackline master about how to do the demonstration. Remind students that people learn better by doing, rather than listening.

Prepare students to answer question 4 on page 255 by discussing how experts use scientific process skills (e.g., sampling, researching, recording) to solve problems and make decisions after a disaster. As a class, develop a working definition for each of the following terms:

- sampling (e.g., taking a part of something and testing it as evidence of what the rest is like),
- researching (e.g., checking for facts), and
- recording (e.g., keeping records for future use).

Direct students to complete the following steps:

- Choose an expert.

#### Accommodations

- ESL and LD Learners could be paired with students who have stronger language skills.
- If you have access to a computer lab, you may wish to have students use clip art and graphics software packages to create their poster. The zoom feature on most photocopiers can be used to enlarge the image to poster size.
- There are a number of steps in the Making Connections activity on page 255. Some students may need additional reinforcement to process the information and the instructions. Pair students who need assistance with reading or writing with a student who can help.

#### Ongoing Assessment

- Use **BLM C-5 Protecting Health after a Disaster Communication Rubric** as a formative assessment. Provide feedback to students about their strengths and weaknesses, and what they need to improve on.
- If students did not do very well on the project for their task, you may wish to give them a second opportunity for assessment and use either **BLM C-3 Design a Poster Rubric** or **Assessment Master 16 Oral Presentation Rubric**.

**Technology Links**

- For more information on proper hand washing, go to [www.mcgrawhill.ca/books/Se9](http://www.mcgrawhill.ca/books/Se9) and follow the links to Proper Hand Washing.

- Research the job of the expert. What are the responsibilities of the job? What problems might the expert have to deal with when there has been a disaster?
- Think about what actions could prevent or solve the problems.
- Write an example of how the expert uses each skill to solve problems and make decisions.

You might choose an expert and model what students are to do, before they complete and then discuss the question.

**Reading Icon Answer (page 254)**

1. The information highlighted will vary but may include sewage, toxic chemicals, water containing bacteria, gastrointestinal and respiratory illnesses, cancer, mould, asthma, and allergies.

**Check Your Understanding Answers (page 254)**

2. b) bacteria in flood water; respiratory illnesses  
 c) toxic chemicals; cancer  
 d) overcrowding; gastrointestinal illnesses  
 e) moulds; asthma and allergies

**Making Connections Answers (page 255)**

3. a) Look for the following points:
  - Wet hands with warm water.
  - Apply soap.
  - Rub hands vigorously for 15 to 20 seconds. Scrub backs of hands, between fingers, thumbs, and under fingernails.
  - Rinse thoroughly.
  - Dry hands with a paper towel, hand dryer, or, if at home, with a clean towel.
 b) Check that students include the main points about washing hands properly.
4. b) Answers will vary depending on the expert chosen. Accept any reasonable and accurate answer. The following table provides sample answers.

	<b>Water Quality</b>	<b>Food Safety</b>	<b>Public Health</b>	<b>Buildings</b>	<b>Environment</b>
Sampling	• tests water for bacteria	• tests for bacteria that cause food poisoning	• monitors communicable diseases	• tests buildings for moulds	• tests water for toxic chemicals
Researching	• checks bacterial count against maximum levels allowed • if there's a risk, communicates action plan to public	• checks info about keeping food safe • communicates action plan to public	• checks for diseases that pose risks to human health • if there's a risk, communicates action plan	• checks info about killing moulds • if there's a risk, communicates actions plan to public	• checks against known carcinogens • if there's a risk, communicates actions plan to public
Recording	• keeps accurate records	• keeps accurate records	• keeps accurate records	• keeps accurate records	• keeps accurate records