



Spread of Infection: Respiratory Hygiene

In this fun experiment students learn how easily microbes can be spread through coughs and sneezes and recreate a giant sneeze.

Curriculum Links

Science

Working scientifically; Living things and their habitats; Animals, including humans

PSHE/RSHE

Health and prevention

English

Reading and comprehension,
Spoken language

Mathematics

Comparing measurements

Key Words

Bacteria, Hygiene, Infection,
Transmission, Sneeze, Cough,
Hand washing

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[e-bug.eu/eng/KS2/lesson/
Respiratory-Hygiene](http://e-bug.eu/eng/KS2/lesson/Respiratory-Hygiene)

Learning Outcomes

All students will:

- Understand that infection can spread through coughs and sneezes.
- Understand that covering your mouth and nose with a tissue or your sleeve (not your hands) when you cough, or sneeze helps prevent the spread of infection.
- Understand that coughing and sneezing in your hand can still spread infection.

Resources Required

Main activity: Super Sneeze

Per Student

- A copy of SW1

Per Group

- Long roll of paper such as wallpaper
- Measuring tape or 2m ruler
- Pump action spray bottle/s
- Food colouring (a few different colours)
- Disposable plastic/vinyl gloves
- Kitchen roll
- Cardboard
- Jelly (optional)

Optional Activity: Super Slimy Snot Activity

Per group

- Copy of SH1

Extension Activity 1: Poster

Per group

- A4 paper
- Colouring pens/pencils

Extension Activity 2: Respiratory Hygiene Quiz

Per group

- Copy of SW2

Extension Activity 3: Fill in the Blank

Per student

- Copy of SW3

Advance Preparation

1. To expand on this experiment from KS1 take the runway to the playground. Create a runway by placing 3-4 desks in a row and covering them with white paper (lining wallpaper is an inexpensive alternative).
2. Fill one spray bottle per group with water and food colouring. A colour for each group makes the activity more exciting.
3. Create a large cut out hand from cardboard for each group with a longer arm section for holding or alternatively cover a student's hand with a disposable glove.
4. Create a large tissue from a section of kitchen roll.
5. Optional: add snot to the experiment, make your own snot following SH1, or alternatively use jelly.

Health and Safety

Students may require aprons and gloves.

Ensure that the food colouring is diluted to avoid staining.

Ensure that all spray bottles have been thoroughly cleaned and rinsed prior to use.

Students may need to wear safety goggles.

Supporting Materials

SH1 - Super Slimy Snot Activity

Super Slimy Snot Activity

Make your own snot
Sticky, slimy snot in our noses traps microbes. This helps to stop bad microbes getting into our bodies and making us poorly. Ask an adult to help you make your own snot using the recipe below.

To make your own snot, you will need:

INGREDIENTS

- PVA Glue
- Baking soda
- Contact lens solution
- Water
- A disposable cup
- A plastic spoon or stirrer

SH1 Super Slimy Snot

SW1 - Super Sneeze Recording Sheet

Super Sneezes

1. What do you think will happen when you put the hand over the mouth to sneeze? Make a prediction.
2. What do you think will happen when you put the tissue over the mouth to sneeze? Make a prediction.

My Observations

How far did your sneeze travel?

		Student 1	Student 2	Student 3	Student 4	Student 5
Sneeze	Length (cm)					
	Width (cm)					
Sneeze with hand	Length (cm)					

SW1 Super Sneeze Recording Sheet

SW2 - Respiratory Hygiene Quiz

Quiz: Respiratory Hygiene

Please tick as many answers as appropriate

How can you spread microbes to others? (3 points)

- Touching
- Sleeping
- Sneezing
- Coughing

The best way to stop microbes from spreading is: (2 points)

- To use your hand to cover your sneeze
- To use a tissue to cover your sneeze
- To use a sleeve if you haven't got a tissue
- To drink plenty of fluids

SW2 Respiratory Hygiene Quiz

SW3 - Respiratory Hygiene Fill in the Blanks Worksheet

Complete the sentences below using the key words

..... can spread from person to person through the air, through person-to-person contact (touching hands, hugging, kissing) or by touching contaminated surfaces.

Colds and flus are the most common type of infection in the classroom and among the most

Common of a respiratory infection can include sore throat and sometimes a

SW3 Respiratory Hygiene Fill in the Blanks Worksheet

Modifications

If there is an outbreak of infection and mask wearing is recommended, you can include a step to show how a mask can block the microbes from a sneeze/ cough.

Always include a tissue as a step and re-enforce the message to catch it, bin it, kill it and wash hands afterwards.



Lesson plan



☰ Introduction

1. Begin the lesson by explaining to the students that they are going to learn how germs (microbes) can be passed from person to person through coughing and sneezing. Ask students what they think people mean when they say 'You gave me the cold' or 'I caught the flu from you'.
2. Remind the students that, although infections can spread from person to person, there are usually a few different ways that we could have been exposed to the germs that caused it. It is usually impossible to know who we caught the infection from and it is important that we all take responsibility for preventing the spread of these germs by properly covering coughs/sneezes, good hand washing and not touching our eyes and face with unwashed hands.
3. Explain to students that the germs that cause some diseases are so small that they can travel through the air in water droplets when people cough or sneeze. If you are doing activity two where you make snot, it is useful to refer to that here.
4. Explain that the diseases spread in this way range from the common cold to rarer or more serious infections such as tuberculosis (TB).
5. Continue to discuss the cold and flu, explaining that they are caused by viruses and not bacteria. Explain that it is very important for everyone's health that people cover their mouth and nose with a tissue when they cough and sneeze, or to sneeze into the crook of their elbow if they do not have a tissue. The spread of infection can be reduced through good respiratory hygiene.

Discussion

Discuss with students the outcome of their results. Ask them to look at the hand or glove and notice that the spray 'microbes' are still on it.

Discuss with students why you may want to sneeze into the crook of your elbow or sleeve if no tissue is available.

As was observed from the activity, microbes can still be passed from person to person through touch if we cover our coughs and sneezes with our hands. Recent guidance recommends we sneeze or cough into the crook of our elbow because we are less likely to transmit harmful microbes to other people by doing this.

Show them that when they place the hand on the paper, sprayed side down, the microbes transfer to the paper. Explain that sneezing in your hand can spread the microbes to things that we touch, so it is better to sneeze into the tissue and then throw it away and wash your hands or use hand sanitiser as soon as possible, or into your sleeve/crook of your elbow if you have no tissue.

If using the options to wear a mask, you can discuss with the students why we may be asked to wear a mask when there is an outbreak of respiratory infection.



Main Activity: Super Sneeze

- 1 Predict how far you think the sneeze will travel
- 2 Draw a picture of yourself on a sticky note and place at your predicted spot on the runway
- 3 Spray the bottle from end of runway
- 4 Measure the distance
- 5 Spray the bottle with hand/glove over nozzle
- 6 Repeat step 5 with kitchen roll over nozzle



Main Activity: Super Sneeze

1. Divide the class into groups of 4-5 students.
2. Each group should be provided with the runway, a spray bottle, a measuring tape or ruler, a giant hand or glove and a giant tissue. Provide each student with an SW1 recording sheet. Ensure they have read and understood the instructions before starting the activity.
3. To demonstrate the distance a cough sneeze and thus the microbes in the cough/sneeze can travel, students should take turns holding the bottle at the end of the runway and simulate a cough/sneeze by squeezing the trigger once over the paper. Before 'coughing/sneezing' (squeezing the trigger) students should predict how far and wide the sneeze will go and fill this in on their results sheet (SW1). They can also write their name on a sticky note before each 'sneeze' and place it on the runway to see whose prediction was the closest. After 'sneezing' students should measure and record how far and how wide each student's sneeze spreads and fill this on their results sheet..
4. The next step is to observe what happens when we put our hand over our mouth when we sneeze; the microbes stay on our hands and can spread to anything we touch. One student in each group should be the 'sneezer' and the second student should hold the giant or gloved hand about 2-5cm away from the spray bottle. Students should fill both predicted and actual outcomes on their results sheet.
5. Finally, we want to observe what happens when we cover our mouth with a tissue during sneezing. Ask a different student in each group to be the 'sneezer' and ask another student to hold the tissue directly in front of the spray nozzle. Students in the group should fill in both predicted and actual outcomes on SW1 and draw a graph of the results.

Optional Activity: Super Slimy Snot

The super sneeze activity demonstrates when you sneeze small microbes can travel far. To expand on this experiment, you may wish to show that large droplets and snot are also expelled during a sneeze.

Did you know that the human body produces 1-1.5 litres of snot a day? This can increase when we have a respiratory infection. To help students learn about snot and foster discussion about the microbes it contains, you can make your own using the recipe – Super Slimy Snot (SH1). Alternatively, you can use jelly.

Students can feel the texture and play with the snot. Explain to students that the gooey snot is heavier than the smaller microbes and won't travel as far down the runway.

Extension Activities

Hand Hygiene Poster Design

Ask students to design a poster showcasing good respiratory hygiene messages such as 'catch it, bin it, kill it' or 'cover your sneezes, dispose of tissues and regularly wash your hands'. This activity can be combined with the end of lesson learning consolidation.

Respiratory Hygiene Quiz

SW2 is a fun consolidation quiz. Allocate students to groups of 3 or 4 and provide one quiz sheet per team. The team with the most points wins. Answers are available on the e-Bug website.

Fill in the Blanks

Provide students with SW3 and ask them to fill in the blanks using the correct words provided. Students can complete this activity individually in the classroom or as homework.

Learning Consolidation

At the end of the lesson, ask the class to create some simple rules or messages to reduce the spread of coughs, colds and flu in their school, for example:

- Coughs and sneezes spread diseases.
- Catch it, bin it, kill it.
- Cover my coughs and sneezes with a tissue or cough/sneeze into the crook of my elbow (not my hand).
- Wash my hands after a cough or a sneeze or use hand sanitiser.





Super Slimy Snot Activity

Make your own snot

Sticky, slimy snot in our noses traps microbes. This helps to stop bad microbes getting into our bodies and making us poorly. Ask an adult to help you make your own snot using the recipe below.

To make your own snot, you will need:

INGREDIENTS

- PVA Glue
- Baking soda
- Contact lens solution
- Green food colouring
(you will find this in the baking aisle of the supermarket)
- Water
- A disposable cup
- A plastic spoon or stirrer
- Rubber gloves
- Eco friendly glitter (optional)

Method

1. Put the gloves on. To a cup, add a few pinches of baking soda for every 30g of glue (around 1tsp per bottle of glue). Stir to mix the baking soda and glue.
2. Once the baking soda is fully incorporated, add a few drops of green food colouring and glitter (optional). Stir to Mix.
3. Then add water to change the consistency of the slime as preferred.
4. Finally, add the contact lens solution and stir until the glue isn't sticky anymore.

You can play with the snot, but do not eat it

Wash your hands when you have finished playing with the snot. It will last a few days if you keep it wrapped up in cling film.





Super Sneezes

1 What do you think will happen when you put the hand over the mouth to sneeze?
Make a prediction.

2 What do you think will happen when you put the tissue over the mouth to sneeze?
Make a prediction.

My Observations

How far did your sneeze travel?

		Student 1	Student 2	Student 3	Student 4	Student 5
Sneeze	Length (cm)					
	Width (cm)					
Sneeze with hand	Length (cm)					
	Width (cm)					
Sneeze with tissue	Length (cm)					
	Width (cm)					

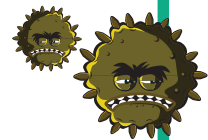
3 What actually happened when the hand was over the mouth to sneeze?
(Where and how far did the sneeze travel?)

4 What actually happened when the tissue was over the mouth to sneeze? (Where and how far did the sneeze travel?)

My Conclusions

1 Why is hand hygiene important after coughing and sneezing?

2 What can we do to stop germs spreading from person to person?





Quiz: Respiratory Hygiene

Please tick as many answers as appropriate

How can you spread microbes to others?
(3 points)

- Touching
- Sleeping
- Sneezing
- Coughing

The best way to stop microbes from spreading is: (2 points)

- To use your hand to cover your sneeze
- To use a tissue to cover your sneeze
- To use a sleeve if you haven't got a tissue
- To drink plenty of fluids

After we sneeze into our hands, we should: (2 points)

- Wash our hands
- Dry our hands on our clothes
- Take antibiotics
- None of the above is necessary

What should you do with a tissue after sneezing into it? (1 point)

- Put it in your pocket for next time
- Put it straight in the bin
- Put it up your sleeve for next time
- Any of the above

If you do not have a tissue available, the best option from the following is to sneeze:
(1 point)

- Into your hands
- Into your sleeve
- Into an empty space
- Onto your desk

What might happen if we don't wash our hands after sneezing into them?
(1 point)

- Nothing
- Transfer harmful microbes to other people
- Help protect our microbes





Complete the sentences below using the key words

_____ can spread from person to person through the air, through person-to-person contact (touching hands, hugging, kissing) or by touching contaminated surfaces.

Colds and flus are the most common type of infection in the classroom and among the most _____.

Common _____ of a respiratory infection can include _____, sore throat, _____, and sometimes a runny or blocked nose.

We can prevent microbes being transmitted from person to person by covering our _____ and _____ with a tissue and throwing away the tissue immediately.

We should always wash our hands with soap and water, or _____ if soap and water are not available, immediately after throwing away the tissue.

Although there are many _____ microbes that can make us ill, we can prevent some infections by getting _____.

Key words:

headaches, hand sanitiser, fever, vaccinations, symptoms, microbes, sneezes, coughs, harmful, contagious

