

# Clean Hands Knock Out Germs!



Healthy Actions • Community  
Knowledge • Science

Why Handwashing Prevents Disease and How to Wash Hands Effectively

FOR GRADES  
K-2 3-5 6-8

## OVERVIEW

Washing hands correctly kills germs that cause disease. This lesson explains why washing hands is important and how to clean hands correctly.

## LEARNING OBJECTIVE

Students will describe why washing hands is important, explain the proper way to wash their hands, and compare washing hands with soap with the use of hand sanitizer.

## SCIENCE, HEALTH AND MATH SKILLS

- Observing
- Communicating
- Identifying and practicing personal health habits

## NGSS SCIENCE AND ENGINEERING PRACTICES

- Engaging in argument from evidence

## TIME

- Set Up: 5 minutes
- Activity: Two 45-minute classes

## MATERIALS FOR SCIENCE INVESTIGATION

- Clean Hands Knock Out Germs! Slide Deck ([www.bioedonline.org](http://www.bioedonline.org))
- Extensions for Clean Hands Knock Out Germs! (included at the end of the activity description, below)

## SET UP AND TEACHING TIPS

This lesson, including the Clean Hands Knock Out Germs! slides, can be used as an interactive activity, with the teacher leading discussion through open-ended questions. The teacher may ask for oral responses, have students answer in journals or provide written responses as homework.

Alternatively, the lesson can be assigned for asynchronous student viewing, along with suggestions to extend or assess understanding (see Extensions for Clean Hands Knock Out Germs!, below).

Note: Extension activities are included for various grades to provide opportunities for students to apply what they have learned and, if needed, create a product for assessment.

## PROCEDURE

### ENGAGE

1. Begin by asking, *What can you do to protect yourself from infections?* Accept all answers. Mention that

handwashing is one strategy to reduce the spread of diseases. Ask, *How many of you washed your hands today? When?* [Responses may include before eating, after using the bathroom, etc.] Follow up with additional questions as appropriate to guide the discussion. For example, if someone mentions before eating, ask, *Why is washing your hands before eating important?* [When you eat without washing your hands, microbes on your fingers can be transferred to your mouth. This can lead to illnesses.

2. Explain that in this lesson, we will explore why washing hands is important, especially during the COVID-19 pandemic when so many people are becoming ill.

## EXPLORE AND EXPLAIN

3. Use the accompanying slides to guide a discussion about the importance of handwashing for disease prevention. If students raise a question for which you do not have an answer, use it as an opportunity for them to do research on the Centers for Disease Control and Prevention (CDC) website ([www.cdc.gov](http://www.cdc.gov)).

### SLIDE 2

**Clean Hands Knock Out Germs!**

**What is a germ?**  
The word, "germ" is used to describe microbes that cause disease.  
Microbes are tiny organisms (or microorganisms) that cannot be seen with the naked eye.

**Viruses are the tiniest kind of microbe.**  
Viruses are so tiny that billions of viruses could fit on the tip of a pencil.

**The disease called COVID-19 is caused by a type of virus called coronavirus.**

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#### *What's a germ?*

Check for understanding about microbes. Microbes are tiny organisms that can live in the air, water, soil and the human body. Microbes, which are also called microorganisms, are too small to be seen by the naked eye.

Continue by discussing the rest of the slide. Depending on the ages of your students, you may want to point out that COVID-19 is a simple acronym — in which CO stands for "corona," VI for "virus," and D for "disease." The 19 indicates that the first outbreak of this previously unknown viral infection occurred in 2019.

### SLIDE 3

**2. Why is handwashing so important?**



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Ask students for ideas about why handwashing is important. Allow time for a discussion of ideas, and accept all responses without correcting. Students will have a chance to refine their ideas later.

### SLIDE 4

**3. Good handwashing ALWAYS is important!**

- Coughing, sneezing, using the bathroom or even wiping your nose can leave germs on your hands!
- Washing with soap and water removes germs from your hands.
- Using a tissue to catch a sneeze or cough helps contain the spread of the droplets that you expel.
- But after properly disposing of the tissue, you must wash your hands.

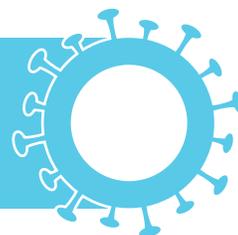


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#### *When you cough or sneeze, what do you do to prevent the spread of germs?*

Make certain that students mention the importance of covering a cough or sneeze with a tissue (which should be thrown away after use) or the inside of the elbow. These actions should be followed by hand washing.

COVID-19 is a simple acronym... CO stands for "corona," VI for "virus," and D for "disease." The 19 indicates that the first outbreak of this previously unknown viral infection occurred in 2019.



## SLIDE 5



4. What are other ways that germs can be spread?

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*What are some of the ways that we spread germs?*

Allow time for discussion. Use the next few slides to discuss students' ideas further.

## SLIDE 6-8



5. Not washing hands after using the bathroom! Feces (poop) from using the toilet or changing diapers can contain trillions of germs in just one really small particle!

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As you move through the slides, which illustrate different ways in which we can spread microbes on our hands, pause often to check understanding or to encourage discussion with guiding questions.

- Germs from unwashed hands can get into or onto foods and drinks when they are being prepared or served.
- Germs from unwashed hands can be transferred to surfaces or objects that are touched, like handrails, computer keyboards or doorknobs.
- A single gram of human feces (“poop”) contains up to one trillion germs. So washing hands with soap after using the bathroom or changing a diaper is important.

## SLIDE 9



8. Touching your face or other people with hands that are not clean.

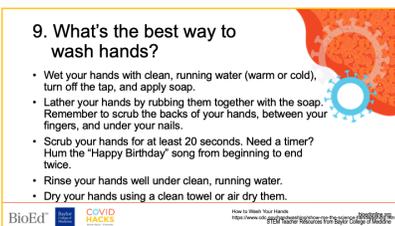
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Take time to explain that touching your face (eyes, mouth, nose) allows germs to enter your body. Touching others (shaking hands, holding hands, etc.) or surfaces spreads germs from one person to another.

*How do you know if other persons are keeping their hands clean?*

Emphasize that we usually don't know if others have washed their own hands. So it's important to wash our own hands frequently.

## SLIDE 10



9. What's the best way to wash hands?

- Wet your hands with clean, running water (warm or cold), turn off the tap, and apply soap.
- Lather your hands by rubbing them together with the soap. Remember to scrub the backs of your hands, between your fingers, and under your nails.
- Scrub your hands for at least 20 seconds. Need a timer? Hum the “Happy Birthday” song from beginning to end twice.
- Rinse your hands well under clean, running water.
- Dry your hands using a clean towel or air dry them.

How to Wash Your Hands  
https://www.youtube.com/watch?v=E\_PWe0TPl\_ko

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Read or have students read out loud the steps for good handwashing.

## SLIDE 11



10. Watch this video on how to wash hands.

Baylor College of Medicine  
[https://www.youtube.com/watch?v=E\\_PWe0TPl\\_ko](https://www.youtube.com/watch?v=E_PWe0TPl_ko)

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Watch the video linked in the slide, pausing as needed to emphasize key points or answer questions.

## SLIDE 12

### 11. But what about using hand sanitizer?

- Hand sanitizer can be used when soap and water are not available.
- The hand sanitizer must contain at least 60% alcohol
- Just remember that sanitizers won't get rid of all types of germs or dirt. Hand sanitizer with more than 60% alcohol will kill coronavirus, but it's not completely effective with all germs
- As with soap, be sure to rub the sanitizer all over your hands, fingers, and under the nails until your hands are dry. This will take about 20 seconds.

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Students may have questions about why or when to use hand sanitizers. Read or have students read out loud the guidelines on the slide.

*When might it be better to use hand sanitizer instead of soap and water?*

Remind students that soap and water is preferable to hand sanitizer, whenever possible. If needed, provide the following additional information.

- Instant hand sanitizer with >60% alcohol does kill coronavirus and most germs effectively. However, it's not as effective as washing with soap and water for some disease causing microbes like norovirus.
- Instant hand sanitizer is not as effective as soap and water at removing germs or chemicals from hands that are heavily soiled with a lot of dirt or materials that are greasy or sticky.

## SLIDE 13

### 12. Three ways to stop the spread!

During the COVID-19 pandemic we have three ways to stop the spread of the virus!

- Washing hands.
- Physical distancing (this is also called "social distancing").
- Wearing a face covering!

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Tell students that washing hands is just one of three things we can all do to stop the spread of the COVID virus. Remind them that we all have to do three things together! Wear a face covering. Wash your hands. Watch your distance from others.

## EXTEND AND EVALUATE

4. Depending on the grade level(s) you teach, use one or more of the activities below for students to complete on their own, to extend the lesson, or as an assessment tool to check for understanding.

### GRADES K-2: WRITE YOUR OWN HANDWASHING SONG

Even though you cannot see them, germs come in many different shapes, sizes and colors. Trace your hand on a piece of paper. Now imagine you have a microscope. Can you draw what you think the germs on your hand might look like?

### GRADES 3-5: WRITE YOUR OWN HANDWASHING SONG

The Centers for Disease Control and Prevention (CDC) recommends that people wash their hands for 20 seconds (the amount of time it takes to sing the "Happy Birthday" song twice). Can you write your own song or poem that takes 20 seconds to complete (or can be repeated to last 20 seconds)?

### GRADES 3-5, 6-8: CREATE A PUBLIC SERVICE ANNOUNCEMENT

Public Service Announcements (PSAs) are used to inform people about important programs, services, or issues. Many PSAs have been created to raise awareness of best practices during the COVID-19 pandemic. For example, think about PSAs with athletes promoting mask wearing. Can you create a PSA poster to promote handwashing, either at home or at school?

- Use factual information from the slideshow you have seen.
- Make the PSA original (your own work). It should be creative and appealing to catch the attention of others!
- Follow any other instructions your teacher gives.

### GRADES K-2, 3-5, 6-8: HOW MANY TIMES DOES SOMEONE TOUCH HER OR HIS FACE?

The Centers for Disease Control and Prevention (CDC) stresses the importance of not touching your face (eyes, nose, mouth) because this is how germs, including coronavirus, enter your body.

- Next time you are on a video call, or at home with someone in your family, keep track of how many times they touch their faces with their hands.
- Don't tell them you are watching for this, but keep a tally of how many times it happens.
- Do some people touch their faces more than others? How many times do you touch your face?

# THE SCIENCE

Microbes, or “germs” that make people sick, come from many sources. They can end up on your hands in many ways, including:

- Feces (poop) from animals or people (after they have used the toilet or changed diapers);
- Coughing or sneezing into your hands;
- Touching surfaces (door handles, etc.) that others also touch without clean hands; and
- Handling raw meat or pet food and pet treats.

Washing your hands often, especially after any of these activities, always is important to limit the spread of illness and infections to others. During the COVID-19 pandemic, correct and frequent handwashing is especially critical to reduce the spread of the coronavirus!

Respiratory droplets from a person infected with SARS-CoV-2 (coronavirus) can land on surfaces and objects. So, it is possible that a person could get COVID-19 by touching something that has the virus on it and then touching their own mouth, nose or eyes. Available data indicate that this mode of transmission is less common than transmission of the virus through the air.

Microbes are the most prevalent organisms on our planet, both in mass and number. They comprise a diverse group, including bacteria, microscopic algae, yeast cells, and even protozoa. Most biologists also consider viruses to be microbes, even though according to many definitions, viruses are not true “living” organisms.

## ■ RESOURCES

- Centers for Disease Control and Prevention (CDC). Why Wash Your Hands?.  
<https://www.cdc.gov/handwashing/why-handwashing.html>.
- Centers for Disease Control and Prevention (CDC). When and How to Wash Your Hands.  
<https://www.cdc.gov/handwashing/when-how-handwashing.html>.
- Centers for Disease Control and Prevention (CDC). How It Spreads.  
<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>.

## COVID HEALTHY ACTIONS, COMMUNITY KNOWLEDGE AND SCIENCE

### ■ A SCIENCE-BASED CURRICULUM FOR THE COVID-19 PANDEMIC

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