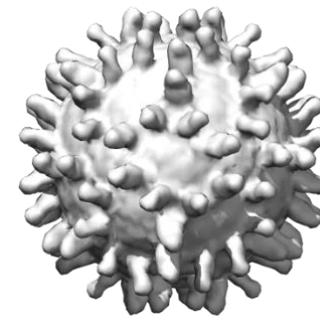




# DIY Air Force Activities: Infectious Incident



## Materials:

- flour
- baking soda
- white vinegar
- 2 teaspoons
- 8-10 small cups or portion cups
- an assistant
- soup spoon
- mask
- measuring tape
- pen and paper

Viruses and bacteria are so small they cannot be seen without a powerful microscope, but they can cause big problems! Exposure can lead to everything from a common cold to more serious illnesses. Luckily we have ways we can protect ourselves! Washing our hands, wearing a mask in public, and maintaining a good social distance can all help us prevent the spread of these organisms! The following experiments will let you explore how illness can spread, as well as the effectiveness of wearing masks!

Directions: This experiment simulates a sick person at a party.

1. In 1 cup, add 1 teaspoon baking soda and 1 teaspoon flour. Mix well, and then sprinkle a small amount of flour on top. In the remaining cups, add 2 teaspoons of flour.
2. Mix the cups up so you don't know which is "infected," then pair the cups (see image on back).
3. Using two teaspoons take a scoop from each cup in a pair and exchange it with its partner. Repeat this for all pairs.
4. Mix the cups up.
5. Pair the cups up again, and repeat step 3. Then repeat steps 4 and 5 at least 5 times.
6. Line the cups up again.
7. Add 1-2 teaspoons of white vinegar to each cup. What do you observe??

The vinegar reacts with the baking soda, creating carbon dioxide which we observe as bubbles. This means that the cups that bubble have been "infected" with baking soda! How many of your cups were infected at the "party"? Were you surprised by your results? Record your thoughts and observations. You can repeat this experiment with more cups, different amounts of baking soda in the initial "infected" cup (simulates viral load: how much of a virus has built up in our system), and with more or less switches (level of contact). Remember to only change one factor at a time! This experiment shows us how easily an illness can spread through a group, and why it's important to stay home if we are sick!

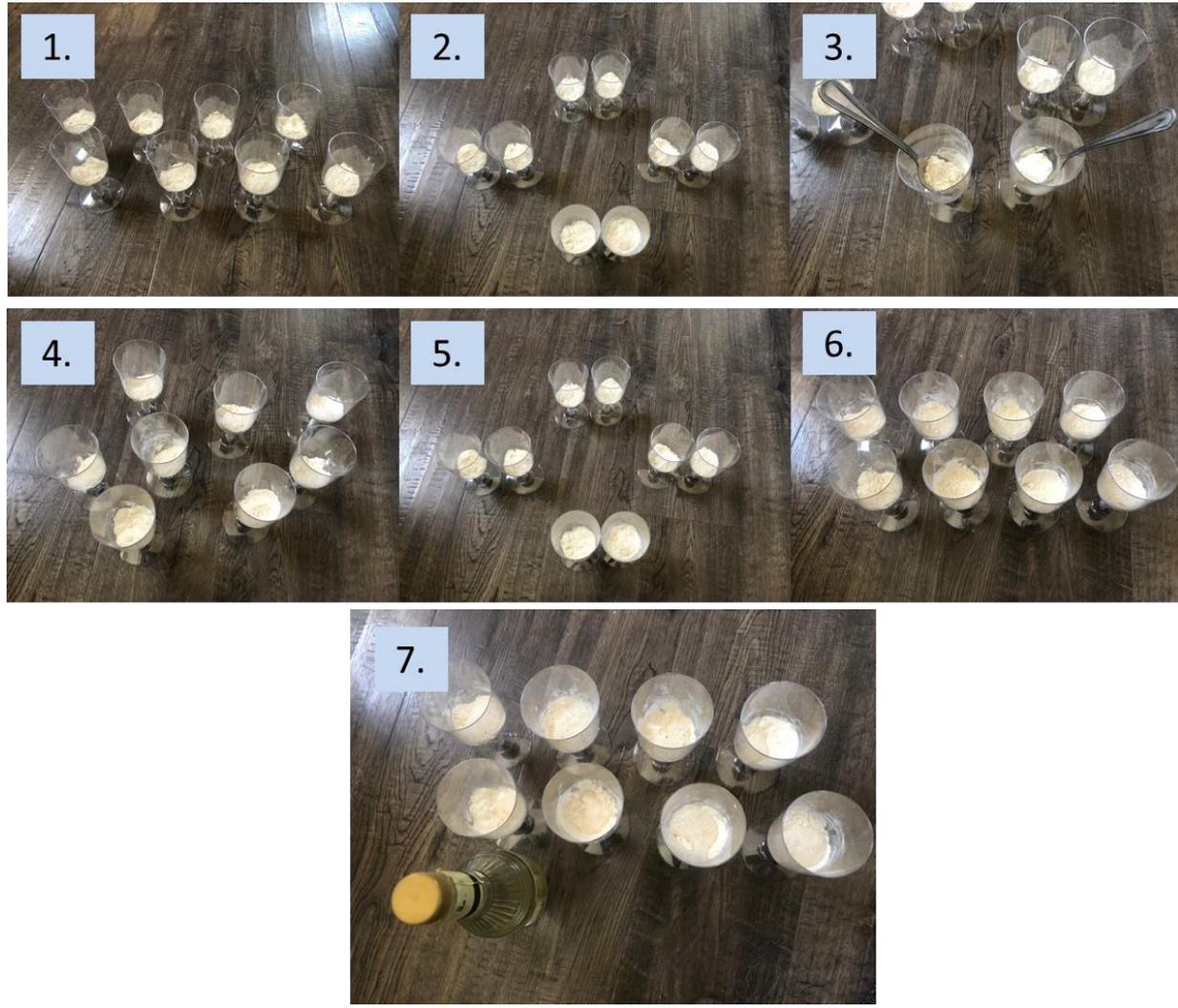
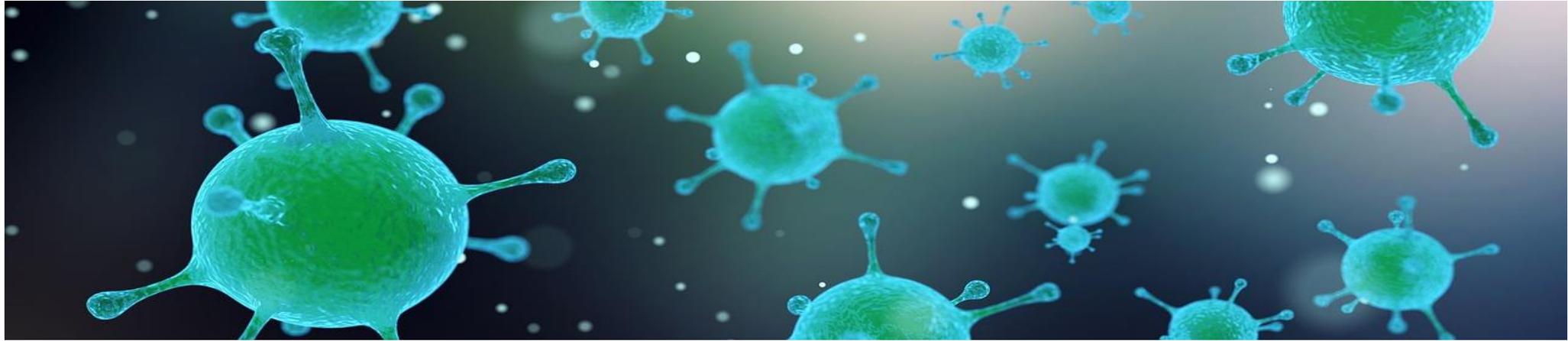


<https://www.cdc.gov/handwashing/stickers.html>

## Air Force Associations:

Scientists at the Air Force Research Labs at Wright Patterson Air Force Base in Dayton Ohio are working hard to develop new testing for infectious diseases. When a new disease emerges, they are at the front lines of the battle to contain it. They keep close surveillance on the spread of disease, and share data with other organizations in an effort to advance science. These scientists have backgrounds in microbiology, chemistry, biology, and public health.





**Bonus experiment:** Place some flour on a spoon. Go outside on the pavement or driveway and draw a line on the ground with chalk or tape (or use a line in the pavement). Blow as hard as you can on the spoon. Watch the powder disperse in the air. Note how it spreads and how far it appears to travel! You will also notice some on the ground, how far did the concentrated chunks go? Measure this distance! What happens when you repeat this experiment with the mask on?? You can learn more about diseases and transmission by visiting the CDC website.