

Coughs and sneezes spread diseases?

The practical activities based around SCN1-13a could involve an investigation into how far a sneeze can spread and also investigate the relationship between the height of the person sneezing and the spread of droplets in the sneeze. Droplets from the lungs, expelled via a sneeze, can contain microbes that cause disease. One of the symptoms of a disease might be coughing and sneezing. Learners will be aware from the glitter spread activity that the transmission of microbes can occur through contact with hard surfaces or via touch. Further research will reveal that some microbes can stay alive on hands for a number of hours. It is important to remember that colds and flu are spread by touch as well as by coughing and sneezing.

This simple investigation into sneezes uses a small spray pump bottle, food colouring and a white paper table cover.

Food colouring is placed into the spray pump bottle. The food colouring is used to allow a visual check of the spread of the droplets in the “sneeze” onto the white paper.

The pump is placed on the floor and pressed three times to represent the sneeze (the bottle remains in a fixed position). The spread is examined and possibly photographed (figure 1).

A clean white table cover is placed under the pump in the same position and the pump is now raised 25cm (the height could be decided upon by the learners, but should not involve climbing onto chairs or furniture). The pump is pressed three times again. Have the droplets in the sneeze spread further this time?

This can be repeated for a height of 50cm, 75cm and 1m and results compared. Careful examination is needed as the droplets may appear faint as they spread out further. This activity could be conducted outside but the wind may affect the results. Does the height of the person sneezing affect the way the droplets spread?

This provides a visual indication of how far droplets in a sneeze can spread and reinforces the need to catch the droplets using a tissue (NHS catch in, bin it, kill it campaign) or to wash hands if they are sneezed onto. This might be a good point to discuss other occasions when washing hands is recommended. What advice could the learners now share with others?



Figure 1: Spread of “sneeze” droplets demonstrated using red food colouring

The spray pump should be clean and not have previously contained any chemicals or hazardous substances.

Take care not to allow the food colouring to be sprayed directly at anybody.

Food colouring may stain fabric, clothing, floors and desks so ensure suitable materials are used to protect surfaces/clothing.