Speed of Smell

On SCOPE's Air episode, Dr Rob visited Oakleigh State School in search of popcorn. While he was there, he got some of the students to help him find the speed of smell.

Here's how you can do it:

What you need:

3 or 4 different smells (we used Popcorn, Sardines, Eucalyptus Oil and disinfectant, but you could try coffee, nail polish remover, oranges, anything that has a distinct smell really)
A group of people
Stop watch
Measuring tape
Record keepers and a computer (if you want to compile your results)

What to do:

Setting up the Test Zone

1. Decide where the smells will be released from (Smell HQ).
2. Use the tape to measure out an arc that is 1 m from Smell HQ. Then an arc that is 2m away, then 3m then 4m then 5m.
3. Try and make the air in the test zone as still as possible (shut windows, turn off fans)
4. Scatter your test noses (and their owners) around the 5 arcs you have measured.

Releasing the Smell

1. Ask everyone the turn around, so they don't know when the smell is released, and to raise their hand when they smell the smell.
2. Release the smell, and start a stop watch.
3. Have a spotter or two call to the time keeper when hands go up, so the times can be written down. Note the time and the distance (eg. 3m, 58 seconds)

The results

1. Best way to collate the results is to average the time it took to reach all the people at a certain distance.
2. If someone didn't smell it at all, probably better not to include any number, as maybe they can't smell that smell.

What's happening?

Objects smell because they give off volatile molecules. These molecules diffuse into the surrounding air, and once airborne, they can travel into our noses where receptors send a message to our brain about what the smell is!

In our version of the experiment the sardines were the slowest smell, some people didn't even smell them at all; the eucalyptus and antiseptic a bit quicker; and the clear winner was the popcorn which everyone smelt in less than a minute.

One of the reasons the popcorn may have been the quickest is the fact that it is heated up. The moisture that evaporates off the hot popcorn would carry the volatile molecules into the air really quickly for everyone to smell.