

Water Pollution with Nail Polish

(UK and Italy)

Background

A joint project, named 'Beyond Water', between a primary school and secondary school.

The project focus was not to explain water but use water to provoke students' interests in all the scientific laws they connect.

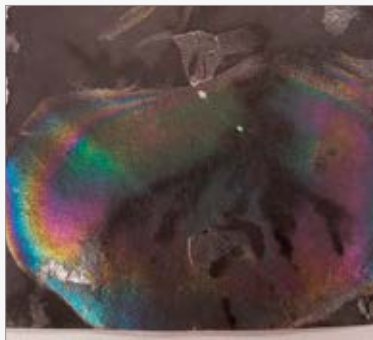
Here we will use the visual effect of drops of nail polish on water, to imagine the effect of a larger scale oil spillage/pollution of water and its possible effect on habitats and species.

You will need:

- ✓ A sheet of black card cut into rectangular pieces
- ✓ Bottle of clear nail varnish (other nail varnishes will work but will leave a colour stain on the card)
- ✓ Water in a shallow dish

Follow these steps:

1. Fill the shallow bowl with water.
2. Cut off a large piece of the black card.
3. Place card in water and submerge, holding card down at edges with finger tips.
4. Add 1 drop of nail polish to the water.



5. Observe the colours that appear and the depth of the colours in the water.
6. Slowly lift the black card out of the water (here the coloured part of the water will move).
7. Aim to catch the coloured area of the water onto the black card.
8. Set aside the card to dry.

So what happened?

The nail polish disperses across the surface of the water. Light is reflected from the film of nail polish floating on the water. It will be a spectrum of colours, as seen in the images. The colourful interference pattern is seen when light is reflected from the top and bottom boundaries of the nail polish. Similar to an oil film on water.

You may also notice that the colours on the black paper change when you tilt the paper back and forth. This happens

because light hits the paper at different angles as you tilt it.

What next?

The result you see on the card is only the effect of one drop of nail polish. What would the effect be on a larger scale? Discuss pollution of waters, how the nail polish being present in the water may affect the habitats and species that are present.

Extension: Repeat the above steps and use 2 drops of nail polish, then 3 drops etc. This could also be repeated throughout the class with each group of students adding different amount of drops of nail polish and the colour difference can be observed and discussed.

