

# WORKSHEET 26

## Activity - Colours of the sky

Print and copy this worksheet for use in the classroom.

### Purpose

To create a colour beam.

### Equipment

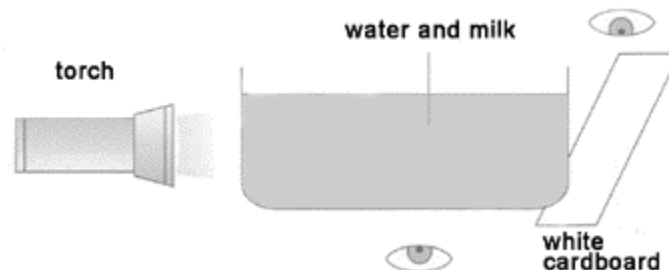
- Clear Glass 2 litre bottle or container.
- Powerful torch or projector.
- Milk (powdered milk will work well too)
- White cardboard.

### Safety

Never look directly at the beam from the projector. Use a white card to view the light passing through the tank.

### Procedure

1. Fill the bottle with water.
2. Illuminate the bottle with the torch or projector.
3. Add milk a small amount at a time, gently stirring the mixture until you just observe from the far end of the container a beam shining through the liquid.
4. Look at the light beam from the end of the container and then from the middle.
5. A card placed in front of the light at the end of the tank may help students see the colour. The room should be darkened.



### Questions

1. What colour does the light beam appear to be when viewed from the end of the tank?

2. What colour is the light when viewed from the side of the tank?

3. From your observations, can you suggest why the sky is blue?

4. Why is the sky a red-orange colour at sunset and sunrise?

### **Explanation**

From the side of the tank the beam looks bluish-white and from the end it looks yellow-orange.

The sun produces white light, which is made up of all colours; red, orange, yellow, green, blue, indigo and violet. Light is a wave and each of these colours has a different frequency and therefore a different wavelength of light.

When light collides with gases in the earth's atmosphere the light is scattered. Blue light has a short wavelength and scatters more than red light. The light reaching our eyes from the sky is blue. At sunrise and sunset, sunlight passes through far more air before reaching us. As the blue light has been lost through scattering, what we see is white light minus the blue; that is, red light.

### **Extension Activities**

Move your eyes along the container. Do you notice a gradual colour change?

Try the activity using a piece of cardboard with a hole punched in it to produce a sharper light beam.

Investigate the effect of placing a polarising film in the light path.

Find out what happens to ultraviolet light from the sun.

### **Fact File**

Seen from the side in a darkened room, the light beam from a projector appears blue, because of the smoke and dust in air scattering the light.