In the 1990s, there were 361 spills of over 7 tonnes, resulting in 1,137,000 tonnes of oil lost; 73% of this amount was spilt in just 10 incidents.

In the 2000s, there were 181 spills of over 7 tonnes, resulting in 210,000 tonnes of oil lost; 44% of this amount was spilt in just 2 incidents.

Why is this a cause of worry? Apart from ravaging the aquatic ecosystem, oil spills affect the local economy as well as the health and livelihood of the local community.

A huge amount of money is spent in cleaning up oil spills. What are the different ways of cleaning up oil spills? Are these methods effective? Is there something that can be done to reduce oil spills?

Oil spills have earned such notoriety that the world cannot but take note of their effects.

Activity 1: To Understand What Happens When Oil Spills in Water: What do you think happens when oil spills in water? Do they mix or separate from each other? Let us replicate an oil spill & find out.

- **Material Required:** Bowl of clean water, vegetable oil (or any cooking oil), aluminium foil.
- **Procedure:** Shape the piece of foil into a small boat. Pour a little oil into it and gently place it in a bowl full of water. When you want to create your oil spill, tip the boat over. See how the oil contaminates the water and spreads.
- **Observations:** You will notice that the oil separates and sits on top of the water. This is because oil has a lower density than water. You will also find that the oil begins to dissipate at an almost exponential level. If you were to mimic rough waters, the oil would spread at a greater pace. The speed at which it spreads depends on how viscous the oil is. If it has a high viscosity, it will spread more slowly than if it has a low viscosity.

Hi! I am Pandit Gobar Ganesh. You will find me in Gobar Times—a magazine that tells you how your everyday life is linked to the world around you. Hooked, huh? If you want to know more about me and GobarTimes visit us at: www.gobartimes.org
Effects of an Oil Spill:
The effects of an oil spill can be devastating and affects both the economy as well as the environment. Let us see how:

Activity 2: To Understand the effect of oil on birds/marine life:
- **Material Required:** Bowl of clean water, feather, oil, rubber duck or fish or other marine life bath toy.
- **Method:** Take the bowl of clean water and gently place the rubber toy and the feather on the surface. Note how the feather repels water, allowing it to float. Now gently pour some oil into the bowl. Avoid pouring directly over the toy or feather. What happens to the toy and the feather? Record your observations. Gently swirl the water around in the jar to simulate waves. Record your observations. A nice way to do so is by taking photographs of each step of the experiment.
- **Observation:** Before swirling the water, you will observe that the oil floats on the top of the water (as seen in Activity 1) and coats the feather as well as the bottom of the rubber duck. When you simulate waves, water and the layer of oil on top of it will splash onto the feather and the rubber duck. The duck gets coated with oil while the feather sinks to the bottom of the pan because the oily feather can no longer repel water.
- **Discussion:** How do the results of this experiment apply to oil spills in real life? Do you think ocean life is affected by an oil spill? What do you think happens to animals that come to the surface to breathe, such as whale and dolphins? Do they get coated with oil as they surface? Discuss with your classmates.

Cleaning Oil Spills:
The petroleum industry undertakes several measures to reduce the likelihood of oil spills. These measures help protect both the environment and the oil companies themselves, which often lose a great deal of profit and public image in the event of a spill.

When a spill does occur, however, efforts to clean up the oil can be difficult and exhausting. Some take even years to clean up.

There are several methods currently available to clean up oil spills. These include:
Such reactive measures are imperfect, however, and these spills can still cause tremendous harm to both plants and animals. In some locations, entire populations of some species — including fish, marine mammals, and birds — have been killed. The reproductive systems of many animals can also be damaged by oil, making it that much more difficult for populations to recover. Oil is extremely difficult to clean up completely, and often takes many years to disperse naturally. Spills often make areas of water or land dangerous for people as well, and can wash up on shores, leaving an ugly, sticky mess.

Activity 3: To Understand the Complications in Cleaning Up an Oil Spill & Finding the Most Effective Method: Let us assume that the bowl of water with oil is an ocean in which an oil spill has taken place. How do you think we can ‘clean up’ the water? Try all your ideas and see if you can come up with an effective solution. Note down all your observations in the table below. Some examples have already been mentioned in the table. Continue to add to the list.

<table>
<thead>
<tr>
<th>Material Used</th>
<th>Method</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton balls</td>
<td>Soak up the oil by placing the cotton over the contaminated areas.</td>
<td>Cotton ball fibres absorb the oil from the water but also take a lot of water along with it. The number of cotton balls required to clean up that small amount of oil is staggering!</td>
</tr>
<tr>
<td>Detergent</td>
<td>Put a few drops of detergent to the oil &amp; water</td>
<td>The soap breaks it up at first, then just mixes it all together</td>
</tr>
<tr>
<td>A Ladle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper Tissue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coconut Husk</td>
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</tr>
</tbody>
</table>

Discussion: What do you think would be the hardest to clean up in the case of an oil spill – an ocean, lake, or river? Imagine the effect of millions of gallons of oil being spilled into a water body and how much effort would be required to “absorb” it all. Discuss with friends.

Ever thought of how YOU can contribute to reduction of oil spills?

Oil is a major source of energy and is used in numerous ways in our day to day activities. We use oil to fuel our cars/buses and to heat/light up our homes. It is used extensively in industries to power large machinery. Oil is used to tar roads, make plastics, used in inks, paints etc. If oil consumption is reduced, the demand on the refining and transportation of oil would also decrease, leading to reduction in oil spills. Little oil saving measures such as walking or riding a cycle for short distances and reducing electricity consumption by turning off electronic equipment when not in use add up and impact the demand for oil, which can lead to lesser spillages.

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