



Making plastics

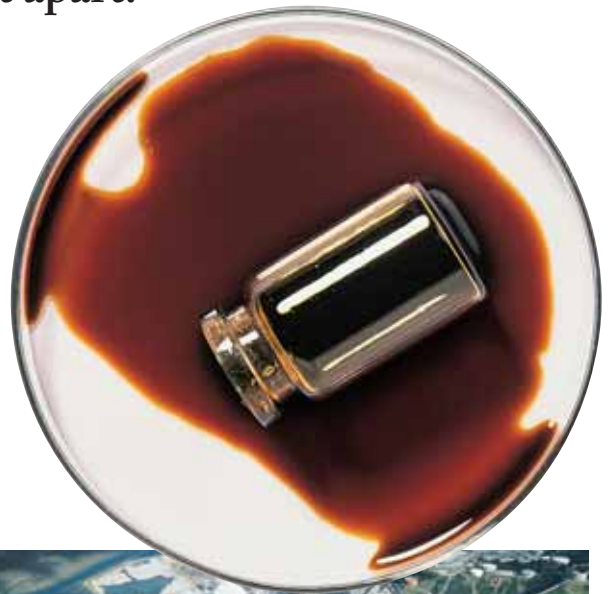
Plastics usually start off as brown crude oil. To get plastics from oil, the oil has to be split apart.

Ever wondered what goes on among all of the pipes and towers of an oil refinery? The answer is that most of the towers are designed to separate the parts of the oil by boiling it to make new materials (Picture 1).

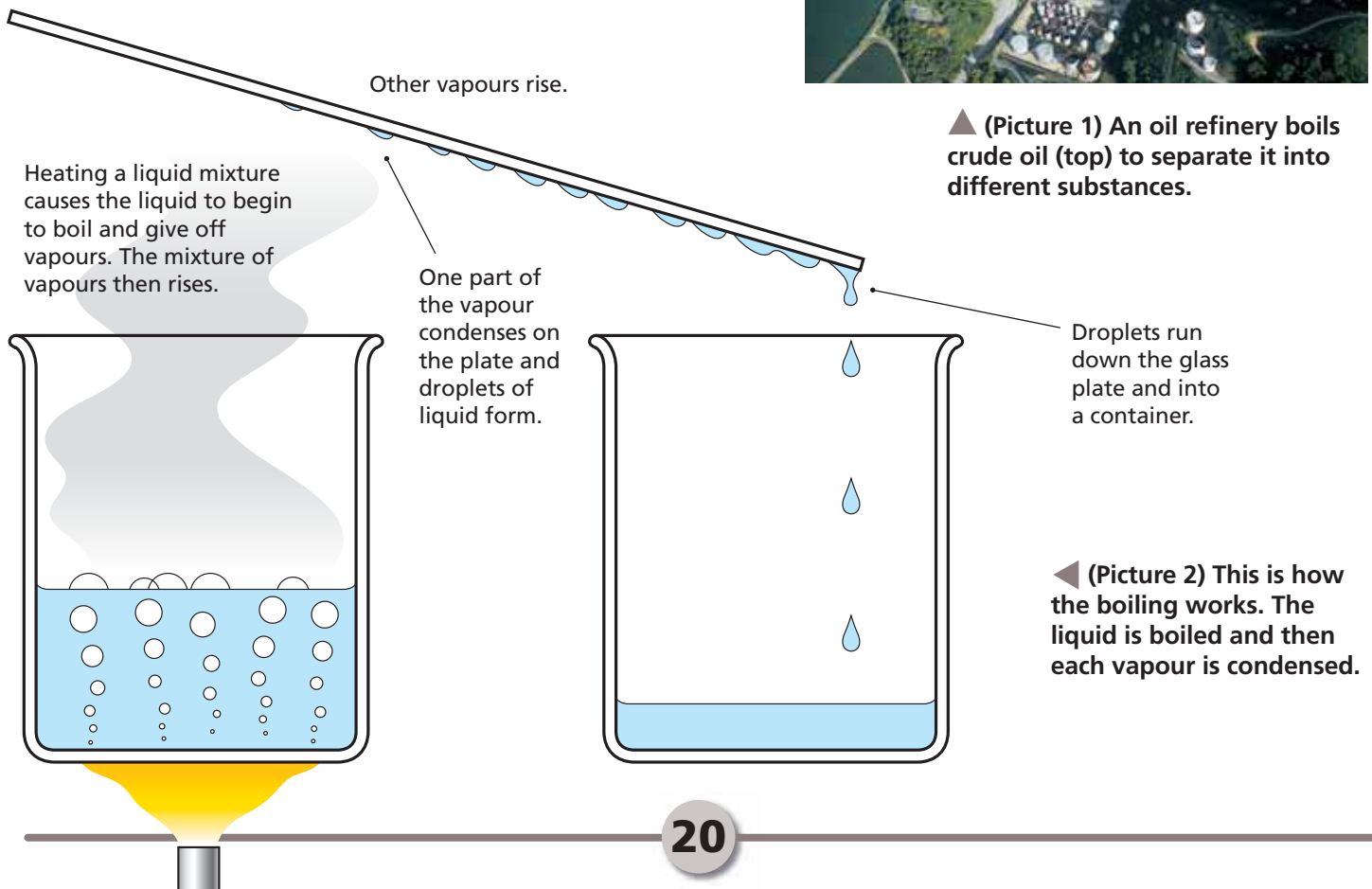
Oil is a mixture

When oil comes out of the ground it is a brown liquid. It is not just one substance, but a mixture of many substances. To get the substances to separate, they need to be heated.

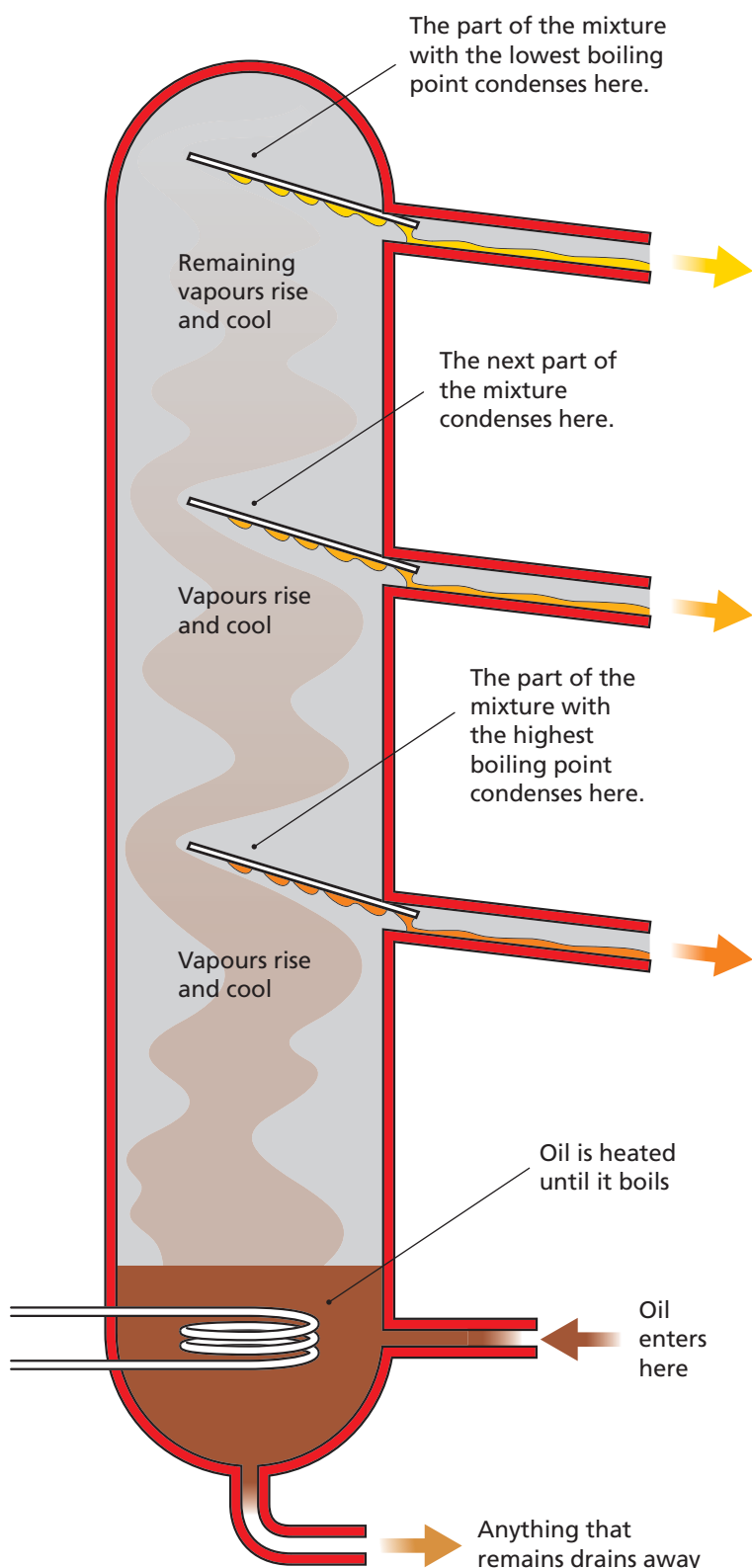
When you heat a mixture, it boils and the substances turn into gases. Each substance has its own **BOILING POINT**, so all you have to do



▲ (Picture 1) An oil refinery boils crude oil (top) to separate it into different substances.



▼ (Picture 3) The tower for separating oil has plates at many levels, placed at just the right heights to allow the separate parts of the oil to condense.



▲► (Picture 4) Common plastics polythene (above) and polystyrene (right).



is to let the gases cool (Picture 2) and they will **CONDENSE** into liquids again. If you do this in a tall tower (Picture 3), then the temperature will be highest at the bottom and lowest at the top. So the substance that boils at the lowest temperature will condense at the top of the tower, while the liquid that boils at the highest temperature will condense near the bottom of the tower. Then it is simply a matter of collecting the liquids as they condense. Many of these liquids can be used to make plastics.

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Plastics are made by making millions of particles join up into long chains. This is an irreversible change.

A huge number of plastics can be made by arranging for the particles to join up in different ways. What happens depends on which material is used as a supply of particles. Common plastics include polythene, vinyl (PVC) and polystyrene (Picture 4).

Summary

- Plastics are made from crude oil.
- Plastics are made by getting materials in the oil to recombine into long chains.