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Petroleum By-Products:

How many different products come from crude oil? How are these products made?

Crude oil (unrefined petroleum) is separated into parts to make different things. Once crude oil is heated and separated out, it can be used for many different purposes including making everyday products we use such as plastic, makeup, sneakers, soccer balls, toothpaste, petroleum jelly, jet fuel, gasoline, etc.

Materials:

- Different types of water based black marker (any you can find)
- Coffee filters
- Paper plates
- Pipettes
- Water cups

Procedure:

Explain to students how the black markers represent oil. The students will discover the ink in black markers can be separated into the colors that make up the black ink, just as oil can be separated and made into different products such as gasoline, jet fuel, and natural gas.

1. Have students predict the colors that make up the color black.

2. Place the filter on a paper plate.

3. Have students color in a one-inch black dot in the center of the coffee filer. (Approximately the size of a quarter).

4. Have the students put a small amount of water in the pipette and squeeze a few drops in the center of the coffee filter on top of the black dot.

5. Students should observe the colors that appear out of the black dot.

6. For additional exploration, students can perform this activity again using different water based colored markers and predict the colors they think will appear.

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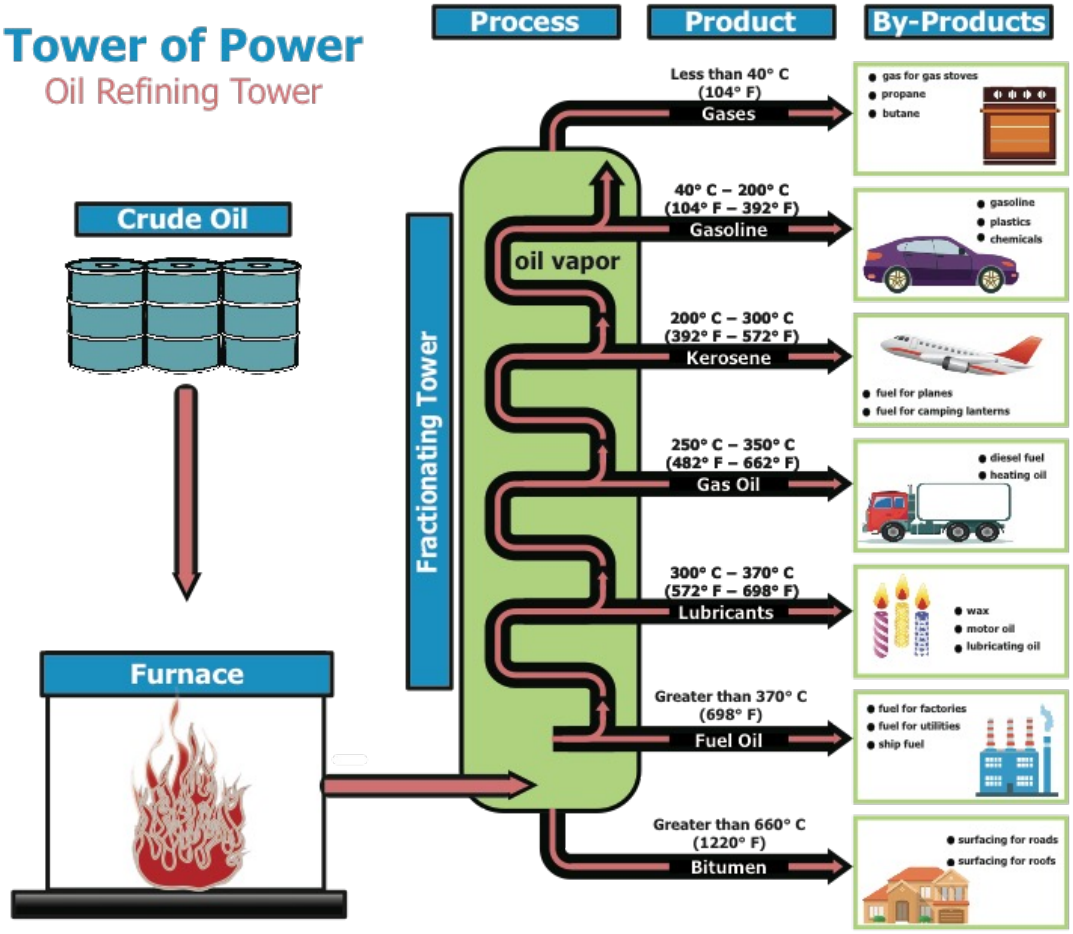
Conclusion:

The United States contains 135 refineries. Oklahoma has 5. These facilities turn out products ranging from gasoline, kerosene, jet fuel, lubricating oils, greases, waxes, plastics, rubbers and asphalt. Ask students to examine the "Oil Refining Tower" graphic below to learn more abut the products produced from crude oil.



Additional Information:

One of the first steps in refining crude oil into useful products involves a separation process called distillation. This process requires that a liquid be heated to its boiling point and the produced vapor cooled so that it condenses back to a highly purified liquid form. The distilling of water is a well-known example: water is heated to its boiling point, 212 degrees F, so that it vaporizes, the vapor is cooled, and the resulting condensed water is extremely pure. Distillation of crude oil is more complicated because of it is a mixture of hydrocarbons, each of which has its own boiling-point temperature.