



CRUDE: THE POWER OF OIL

It is a substance that touches nearly every aspect of our lives, and yet many of us know virtually nothing about the history of this vital resource. From our food to our cars to our clothing, crude oil contributes to the viability of an overwhelming majority of the products and vehicles that we rely on each day. It is an energy source unrivaled in its efficiency and power – and is the driving force behind modern industries and economies. Yet some of the most knowledgeable experts predict that we have already passed peak production of this indispensable natural resource. While the world is growing increasingly dependent on oil and its by-products, the supply is becoming more limited each day.

Crude traces the history of oil through the centuries, highlighting key milestones in the development of this powerful fuel. Bringing the story up to the present day, this documentary examines the effects of oil dependency on our climate. Experts argue that because of the burning of crude oil, carbon emission has reached dangerous levels in the 21st century – and it continues to rise.

The result of this process is a dramatic increase of greenhouse gases in our atmosphere, which leads to an uptick in global temperatures that could threaten the stability of our climate. After retracing the transformation of this important fuel over time, *Crude* goes on to highlight some of the implications of our global reliance on oil and its influence on world politics. This program gives students an excellent opportunity to learn more about the history of crude oil and its significance in their lives today.



Curriculum links

Crude is appropriate for high school students studying History, Science, Current Events, Economics, Political Science, Technology, and Social Studies. *Crude* fulfills standards as outlined by the National Council for History Education including: (1) Civilization, cultural diffusion, and innovation; and (2) Human interaction with the environment.

Vocabulary

Using the dictionary at www.merriamwebster.com, an Internet resource such as www.history.com, or an encyclopedia, students should define or explain the significance of the following terms:

anoxic	greenhouse gas	proliferate	stagnant
equilibrium	noxious	refinery	stagnation
fossil fuels	phytoplankton	replete	volcanism

Discussion questions

1. Where does oil come from? What is the basic material that makes up this vital substance?
2. What role does carbon play in the creation of crude oil? What is unique about this essential element?
3. How do phytoplankton and bacteria in nutrient-rich water contribute to the formation of oil beneath the ocean floor?
4. How does the energy in carbon-rich shale transfer into crude? Where does this process take place?
5. Why is oil so incredibly valuable as an energy source? What is exceptional about its energy density?
6. How much oil does the average American use each day? How is this consumption broken down?
7. What is the largest oil field on earth? Where is it located? How did the discovery of the Gwar reservoir affect the global demand for oil?
8. When did the U.S. oil supply peak? When is the global oil supply predicted to peak? What does this mean for the cost of oil?
9. What do fossilized ginkgo plants tell us about the carbon dioxide levels of the Jurassic period? What did this super-greenhouse world look like?
10. What do you think are the most important global repercussions of oil use? Based on what you learned in this program, do you think oil use needs to substantially change? Why or why not?

Extended activities

1. Crude oil is derived over millions of years from a long and complex process. Based on what you've learned from watching *Crude*, write a concise, step-by-step timeline or flow chart for the evolution of oil, beginning with a description of the prehistoric, atmospheric, and oceanic conditions, and ending with a modern use of this vital energy source. Be sure to include the materials and processes that shape the production of crude oil.
2. *Crude* suggests that we may face a dangerous future if carbon emissions do not decline and if oil dependency continues at the current rate. Do you agree or disagree with this interpretation? In an editorial or letter to the editor, make your own argument about the use of crude oil and its implications for society.
3. *Crude* follows the incredible journey of a single carbon atom from the Jurassic period through to modern day. Use your imagination and write a 1-2 page creative story about a different carbon atom's journey, beginning in prehistoric times and ending in the present. Describe the form carbon takes at 5-10 stages throughout these miraculous transformations – and make sure to include its time spent bound up as an essential component of crude, and ultimately the form it takes in an oil by-product today.

Websites & books

WEBSITES

The Energy Information Administration's description of how oil is formed, where it is located, and how it is refined: www.eia.doe.gov/kids/energyfacts/sources/non-renewable/oil.html

The Energy Institute details the basics of crude oil: <http://resources.schoolscience.co.uk/ExxonMobil/infobank/4/2/index.htm?crude.html>

The Northeast Sustainable Energy Association's site on alternative energy sources: www.nesea.org/energy/info/

BOOKS

Deffeyes, Kenneth S. *Beyond Oil: The View from Hubbert's Peak* (Hill and Wang, 2005).

Roberts, Paul. *The End of Oil: On the Edge of a Perilous New World* (Mariner Books, 2005).

Shah, Sonia. *Crude: The Story of Oil* (Seven Stories Press, 2006).

Yergin, Daniel. *The Prize: The Epic Quest for Oil, Money & Power* (Free Press, 1993).

