



# The Knowledge Box: Making the Connection





## Knowledge Box

### Purpose:

To provide educators a forum to effectively present the petroleum industry, and to inform students of the vast *career opportunities* in the field.



## The Knowledge Box strives to *Make the connection*

- Science disciplines are often taught and/or perceived as mutually exclusive
- Secondary science is deficient in earth science concepts after 8<sup>th</sup> grade.
- Many ecology/environmental topics focus on negative impacts of industrialization, not acknowledging the positive (petroleum products, technology, increased environmental standards)

# Student misconceptions about oil and gas and the industry



- Oil is found in pools/puddles underground.
- We *drill* for gasoline.
- Major oil spills happen often.
- Spills from oil and natural gas E & P are the leading cause of oil pollution in oceans and rivers.
- Is the oil we drill for the same as the oil we cook with?



# Outside of the classroom



**Explore and Discover**

## Oil Up

Oil is both an energy source and a raw material that is used to make many of the things you use each day. Learn more about this interesting, slippery substance.



**1. A Day's Work**  
Watch what someone does at an oil well to try to see what it's like to work in the oil industry. Read a story about a day in the life of an oil worker. How do you think it's like to work in the oil industry?

**2. Puddle Puddle**  
Create a display that shows how plants and animals from millions of years ago became the oil we use today.

**3. Where in the World?**  
Design a map that shows where some major oil deposits around the world are located.

**4. Around the World**  
Pick one country where there are oil wells and explain the way it works. Find out about the people who live there. What are their customs? What languages do they speak? If you travel to that area, what would you want to see?

**5. Oil Spill**  
Create a display that shows how an oil spill is cleaned up. How do you think it's like to work in the oil industry? Read a story about a day in the life of an oil worker. How do you think it's like to work in the oil industry?

## Petroleum Products



**1. Make and Clean Up an Oil Spill**  
Oil is often pumped and shipped thousands of miles per hour. Before it reaches your home, it has to be cleaned up. Do an oil spill in a tank. Find out why it's so difficult to clean up. Try different ways of getting the oil out of the tank.

**2. Try to get it all in one place using a string.**  
• Try to clean it up with a spoon.  
• Try to clean it up with paper towels or cotton balls.

**3. How Does an Oil Spill Happen?**  
Use sand and water to build a "beach" in a big pan. Add a block of wood, rock, feather, berry fabric, leaf, or a twig to the sand. Pour vegetable oil in the water and make waves to wash the oil to your beach. What happens? Try cleaning the oil from the children's hand to activity 1 by an oil spill.

**4. Test Tosses?**  
How many times are involved in making oil, getting it out of the earth, burning it to give power to plants, making fuel, and so on?

**5. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**6. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

**7. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**8. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**9. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**10. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

**11. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**12. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**13. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

**14. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**15. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**16. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

**17. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**18. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**19. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

**20. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**21. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**22. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

**23. Oil Spill**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**24. Clean Clean**  
Visit a service station when it's not very busy. How many signs of oil or grease do you see on the ground? Ask the service station manager how he or she cleans up oil and gasoline spills. How does the person clean up the oil and grease? What does the service station do to prevent spills?

**25. It's in What?**  
If these petroleum products were used, the chance of oil spills would be reduced. In the right materials, a lot of petroleum products are used. Bring a bag for one way of which petroleum products you use and why you are using them. At the end of the week, look at your chart. What can you personally do to cut down on petroleum usage?

# Offshore Energy Center's Educational Outreach Program



## Teacher Workshops:

**KNOWLEDGE BOX**

## How does the Knowledge Box “work”?



*The Knowledge Box* is a traveling exhibit showcasing the many aspects of the oil and gas industry. Includes teacher resources, hands-on activities and interactive lessons correlated to state and National Science Standards.

## Knowledge Box Student Objectives



- Discuss the importance of petroleum in our lives
- **List several everyday objects made from petroleum**
- Communicate connections between geology, petroleum and future careers
- **Understand economic significance of the petroleum industry**
- Explain the contributions of scientists and technology in the fields of geology and petroleum
- **Analyze the effects of faulting, folding and earth's movement**
- Describe the origin of oil and natural gas
- **Evaluate the economic and environmental impact/issues of fossil fuels**
- Summarize the steps in locating, drilling and producing a well
- **Compare and contrast land and offshore drilling and production**

## Inventory of the Knowledge Box



- 5 posters with student activities
- Student “newspapers” and booklets (40) with activities
- 11 videos
- 8 industry resource books
- 9 CD-ROMs
- 10 student resource books/booklets

## Inventory of the Knowledge Box (cont.)



- 10 teacher activity/lab guides
- “Teacher Binder” with instructional activities and model descriptions
- Models of faulting and drill bit
- Oil sample(s)
- Pig
- Laptop computer (depending on location and availability)

## Current Inventory by AADE Chapter



| AADE Chapter | Number of boxes sponsored                   |
|--------------|---|
| Houston      | 10  |
| National     | 2 (currently used in Washoe County, Nevada) |
| West Coast   | 1   |
| Lafayette    | 3   |
| New Orleans  | 2+2 PENDING                                 |
| Dallas       | 2 Pending                                   |

\* Other Chapters have expressed great interest as well

## Feedback from Student Evaluations



|   | Disagree | Not Sure | Agree |
|---|----------|----------|-------|
| I learned where oil came from           | 2.6%     | 5.4%     | 92%   |
| I learned about the petroleum industry  | 4%       | 16%      | 80%   |
| I learned something new about petroleum | 4.8%     | 13.7%    | 81.5% |
| Overall I liked the Knowledge Box       | 4%       | 16%      | 80%   |

## TEACHERS TRAINED



- THE OEC HAS TRAINED OVER 250 TEACHERS IN THREE STATES OVER THE PAST THREE YEARS.
- IF EACH TEACHER HAS A CLASS OF THIRTY AND 5 CLASSES OF STUDENTS PER DAY, THEN POTENTIALLY, THIS TRANSLATES TO A POTENTIAL OUTREACH OF 37,500 STUDENT CONTACTS.

## Feedback from Teacher Evaluations

- 100% indicated the Knowledge Box effectively supplements existing science curriculum

“Great tool!! Thanks for letting us use it.”

“We hope to have the box again next year!”

As a teacher, what did you enjoy the most?

“having supplemental materials readily available”

“I will make sure I have this valuable learning tool in place at the beginning of our energy unit next year and for years to come”

## Funding for Knowledge Box

- Each Box
  - WITHOUT LAPTOP \$3300
  - WITH LAPTOP \$5000
- Travel & Time expense for OEC staff \$1000
- Teacher workshop(s)
  - Teachers must be trained through a workshop experience
  - before receiving the box (25 Teachers)
  - (less expensive if session is at their own facility) \$1500
- Upkeep (replacement of materials, courier fees, etc.)(per box) \$400-800





## SPONSORSHIPS FOR KNOWLEDGE BOX

- AADE ENVISIONS GETTING SPONSORSHIPS FOR KNOWLEDGE BOXES: FOR THIS SPONSORSHIP, YOUR COMPANY OR ORGANIZATION WOULD RECEIVE
  1. RECOGNITION ON AADE WEB SITE
  2. RECOGNITION ON KNOWLEDGE BOX ITSELF WITH A SPONSORSHIP STICKER AND LOGO
  3. KNOWLEDGE OF SUPPORTING AN EDUCATIONAL ENDEAVOR.
  4. SATISFACTION OF PROMOTING THE PROPER INFORMATION TO THE YOUNGER GENERATION ABOUT OUR OILFIELD
  5. RESULT- MORE PEOPLE INTERESTED IN ALL ASPECTS OF OUR INDUSTRY



## DONATIONS

- \$15,000 WILL PROVIDE TWO BOXES WITH PROPER TRAINING FOR YOUR AREA. THIS INCLUDES UPKEEP, COURIER FEES, AND REPLENISHING (within reason) FOR TWO YEARS.