

Oil Spill Solutions



Student Worksheet: Engineer Your Own Oil Spill Solution

You are an environmental engineer who has been given the challenge of first containing, and then cleaning up an oil spill. You may use any combination of materials available to you, but you will have to come up with a strategy to remove as much oil as possible.

◆ Planning Stage

Define the problem you need to solve. Then develop a plan for your containment system. Next develop a plan for cleaning up the oil you have contained. You may have to consider stages or steps you might take and determine which order you will execute different steps. Write a description of your containment and clean-up systems in the boxes below. Draw a sketch of what you plan to do. Be sure to indicate the materials you anticipate using.

Containment System	Clean-up System
<p>Materials Required:</p>	<p>Materials Required:</p>

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Student Worksheet (continued):

◆ Preparation Phase

Gather all the materials you plan to use and consider how you will use them and what steps might need to be taken.

◆ Testing Phase

Create an "oil spill" using a cup of cooking oil or motor oil in a dishpan size container of water. See which procedures worked best -- it may be that certain parts of a procedure worked better than others. Take pictures of your system and process and self-evaluate using the scale below



Water is completely clear of all oil	About a quarter of the oil remains	About half of the oil remains	About three quarters of the oil remains	No change, water is as oily as at the beginning of the challenge
0	1	2	3	4

◆ Evaluation Phase

Evaluate your results, complete the evaluation worksheet, and email your findings to Mrs. Orcutt sharon.orcutt@wacoisd.org

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Student Evaluation Sheet

1. Did you succeed in removing all the oil from the "oil spill?"
2. If your system failed, what do you think went wrong?
3. Describe a real-life system that you researched and that you thought worked well. What did you do differently?
4. What were your decisions on engineering trade-offs? What goals or priorities for your system did you put above others?
5. Did you decide to revise your plan while actually doing the containment or clean-up? Why? How?
6. Why might environmental engineers change their planned approach to an oil spill clean-up once they arrived on the site? Do you think it is common that professionals change their plans while on the job?

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Student Evaluation Form (continued):

7. If you had to do it all over again, how would you have improved your containment system? Why?

8. If you had to do it all over again, how would you have improved your clean-up system? Why?

9. Do you think that experience with prior oil spills would make a team of engineers more able to address the next unexpected one?

10. Now that you have learned about the different trade-offs engineers must factor into a product or system, if you were designing a new rail-based oil transportation system, what considerations would you have to balance in your new design (consider costs, environmental issues, public health, speed of transport)?

11. What other materials do you think would have helped speed up your containment or clean-up?