BP OIL SPILL ENVIRONMENTAL TRAGEDY WEBQUEST



Introduction:

Several things happen that tend to serve as benchmarks in our lives. Some of your grandparents may remember when JFK was assassinated or when man walked on the moon for the first time. Many of you remember the events of September 11, 2001. April of 2010 saw an event that will unfortunately be one of those negative impact events that mark this era and your lives. The explosion and sinking of the off-shore oil rig Deepwater Horizon killed 11 and injured some others, which was tragic enough. However, the escape of many thousands of barrels of oil each day for months has created an environmental oil spill disaster that is unprecedented in this country, and maybe the world. Not only will wildlife be drastically affected for many generations to come, but the way of life and even health of many hundreds of thousands of people will come into play.

Tasks:

In class we used the PowerPoint presentation to briefly discuss the BP tragedy. Over the next few days you will use the Internet to explore further and learn more about the Deepwater Horizon Oil Spill that occurred in the Gulf Of Mexico. You will have some class time, but you will need to use out of class time as well. You will use the questions and information from provided Web links to guide your exploration to come up with responses to the questions. When completed, you will submit the completed assignment in my drop box on the district server. Be sure to title your document correctly with the format of period#_BP_Lastname_For example, if you are in 2nd period and your last names is Winston, you will submit your assignment as 2_BP_Winston

Procedure:

Complete the responses where required using the Web links provided. Some responses can be directly found in the sites, while some responses will require you to synthesize or create the response by applying information found on several sites. If you do not have Internet access to work on the assignment out of class time, you may want to download some of the Web pages to your computer while you are at school. When completed, submit your work document with the correct name (see above) by the designated due date and time.

Evaluation:

Your assignment, completed on time, will be evaluated where you and your partner will then receive a grade.

BP OIL SPILL ENVIRONMENTAL TRAGEDY WEBQUEST Questions and Exploration Guide

TYPE YOUR RESPONSED AFTER EACH QUESTION USING <u>**RED**</u> FONT. Use as much space as you need to completely answer the questions. Some answers will be several sentences or even longer. The next question will move down as you type to allow for space.

Use the following link to answer the first Webquest questions. http://www.huffingtonpost.com/2010/05/08/bubble-of-methane-trigger n 568842.html

- 1. Under the high pressure found under the ocean floor, what form is methane found in?
- 2. We often feel a very uneasy pain in our ears while in a plane as it rises. This is due to the imbalance of air pressure inside and outside the ear drums. When the plane starts to rise it is going from an area of high pressure where your ears are accustomed to, to an area of low pressure. As the inside pressure of your ears increases with altitude compared to your surroundings, the air inside increases in volume which strains your eardrums. Therefore it is necessary to swallow hard in order to clear passage for the opening tube located in your throat, allowing the excess pressure to escape. This is an example of one of the gas laws and is called Boyle's Law. It states that if temperature remains constant, as pressure decreases, the volume of a gas increases. This happens under water as well. We've all seen movies showing scuba divers breathing under water and bubbles growing as they rise to the surface. We know that the deeper we go in the sea, more the pressure. Therefore as the bubbles rise to the surface the pressure decreases and accordingly the volume increases. What does Boyle's Law have to do with the explosion of the Deepwater Horizon rig? Explain.

For further exploration of Boyle's Law, go to http://www.grc.nasa.gov/WWW/K-12/airplane/boyle.html

- 3. Note in the still diagrams that as the volume decreased, the pressure went from 1.00 up to what figure?
- 4. In the animation, what does the pressure go up to when volume decreased?

BP tried several things to stop the flow of oil into the Gulf. The overall goal was to drill relief wells to begin pumping oil out of the underground reserve and to be able to pump material into the damaged well to plug it from the bottom. However, that is a long process and they needed to try to stop the pouring oil into the Gulf on a temporary basis. They tried different things for two months before having success getting a tighter fitting cap on that held against the pressure.

For study on the attempts to stop the flow of leaking oil into the Gulf, use the following links:

General overview of the attempts:

http://en.wikipedia.org/wiki/Deepwater Horizon oil spill#Efforts to stem the flow of oil Day-By-Day Timeline of the BP Oil Spill: http://www.guardian.co.uk/environment/2010/jun/29/bp-oil-spill-timeline-deepwater-horizon

Specific attempts:

BP unable to attach and turn off valves on 3 leaks: http://www.guardian.co.uk/environment/2010/may/05/bp-stems-oil-leak-deepwater-horizon May 4 article "Containment Box Attempt": http://www.startribune.com/nation/92851729.html?elr=KArksDyycyUtyycyUiD3aPc: Yyc:aUU May 9 article "Containment Box Fails" http://www.examiner.com/x-40861-SF-Top-News-Examiner~y2010m5d9-Top-News-BP-containment-boxsuffers-setback-ice-crystals-photos-video May 9 article "Smaller Containment Box": http://cbs4.com/national/oil.rig.explosion.2.1683516.html May 26 article: "Top Kill Attempt": http://coastguard.dodlive.mil/index.php/2010/05/bp-attempts-top-kill-to-stop-oil-leak/ May 31 article "Top Kill Fails": http://www.dailytech.com/BP+Top+Kill+Effort+Fails+to+Stop+Gulf+Oil+Leak/article18565.htm June 1 article "Cut and Cap" procedure: http://www.examiner.com/x-27431-World-News-Examiner~y2010m6d1-BP-oil-spill-BP-attempts-riskycut-and-cap-procedure July 13 article "Leak capped": http://www.guardian.co.uk/environment/2010/jul/13/bp-oil-spill-containment-cap Long-term / permanent solution to the leak – Relief wells: http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7061778 Aug. 2 CBS News video: Static Well (part 1 of the CBS video – Part 2 on "static kill" used below): http://www.cbsnews.com/video/watch/?id=6734891n&utm_source=feedburner&utm_medium=feed&utm_

campaign=Feed%3A+CBSNewsVideoUS+(CBSNews.com%C2%A0Video%3A+US)

- 5. After not being able to use robots to stop the leaking oil, BP attempted to use a containment box. Explain what this was and why it did not work.
- 6. Explain what the "Top Kill" attempt that also did not work was.
- 7. Explain how the relief wells are going to be the solution to the oil leak and damaged well. What is the purpose(s) of them and how will they help?
- 8. What is a "Static Kill" and how is it different than the "Top Kill" method?

One of the topics that hasn't had as much of the news headlines is the use of dispersants to combat the oil that is in Gulf.

The following links will guide you through your exploration of dispersants.

YouTube video on oil and dispersants: http://www.youtube.com/watch?v=SzaznBkT0ic

CBS News Video (Part 2 of the video link from above):

http://www.cbsnews.com/video/watch/?id=6734891n&utm_source=feedburner&utm_medium=feed&utm campaign=Feed%3A+CBSNewsVideoUS+(CBSNews.com%C2%A0Video%3A+US) Standoff over dispersants: http://www.nytimes.com/2010/05/25/science/earth/25disperse.html?ref=usll/cleanup.html Dispersants: what they do and what they might do: http://www.propublica.org/article/bp-gulf-oil-spill-dispersants-0430 Dispersants getting into the food chain: http://www.huffingtonpost.com/2010/07/29/scientists-find-evidence_n_664298.html http://www.bnet.com/blog/food-industry/gulf-oil-spill-how-bp-8217s-dispersants-may-contaminateseafood-for-years/932 Excessive use of dispersants? http://www.washingtonpost.com/wp-dyn/content/article/2010/07/31/AR2010073102381.html http://www.csmonitor.com/Environment/2010/0801/New-Gulf-oil-spill-mystery-How-much-dispersantdid-BP-use

- 9. By watching the YouTube video and reading the articles, what are dispersants and why are they used on oil spills?
- 10. Write a paragraph explaining the environmental concerns associated with dispersants? (you might need to look at a few different articles to get all the information to completely answer that)
- 11. What proof is there that the dispersants are finding their way into the food chain? And – Why is that a concern to us?
- 12. Briefly explain the controversy around how much dispersant was used by BP on the Gulf oil spill.

Cleanup of the oil that is already in the ocean is done in various ways. Over time the Earth will clean itself, but it will take a long time and some ecosystems may never fully recover to the way they were. BP hired several boats to help skim and boom with absorbent materials the oil from the water. Dispersants are also used. There are bacteria in the oceans who also help break down the oil.

Oil degrading bacteria: (scroll down to that section) <u>http://www.cleveland.com/nation/index.ssf/2010/07/gulf_oil_spill_cleanup_complic.html</u> Bacteria help clean up the Gulf: <u>http://www.newscientist.com/article/dn18971-bacteria-help-to-clean-up-deepwater-horizon-spill.html</u> About Oil-Eating Bacteria <u>http://scienceblogs.com/oscillator/2010/06/oil_eating_bacteria.php</u>

- 13. Explain why bacteria are useful in fighting oil spills? And why is the Gulf finding bacteria to be more helpful than it was for the *Exxon Valdez* oil spill.
- 14. What are the issues of debate about genetically engineered bacteria?

Oil spill containment boom http://en.wikipedia.org/wiki/Containment_boom Oil spill boom failures

http://www.csmonitor.com/USA/2010/0611/Containment-boom-effort-comes-up-short-in-BP-oil-spill

- 15. Briefly explain what a containment boom is.
- 16. While the containment booms may have helped keep some of the oil from reaching some of the coast, there were issues to the effectiveness of the booms. Why is that?

How they burn the oil off the water: CNN Video: http://news.blogs.cnn.com/2010/06/17/velshi-remarkable-smoke-flames-during-gulf-oil-burns/ Burning oil and concerns http://paghingdrgupta.blogs.cnn.com/2010/06/17/should-you-worry-about-burning-theoil-spill/

- 17. Give a brief explanation of how they burn the oil off the surface of the ocean.
- 18. What are some concerns associated with the burning of oil?

General oil spill information that may be helpful. http://www.absorbentsonline.com/oilspillbasics.htm Delicate wetlands: http://www.guardian.co.uk/environment/2010/may/21/bp-oil-spill-wetlands-louisiana Oil-soaked birds: http://www.cnn.com/2010/US/06/10/oiled.birds.rescue/index.html Oil-soaked mammals: http://www.marinemammalcenter.org/what-we-do/rescue/oil-spill-response.html

- 19. What damage does oil cause to birds? What type of birds have been effected?
- 20. What type of damage does oil do to mammals? Name some mammals that have been affected.
- 21. How are wildlife cleaned after covered in oil?

Difficulty determining the ecological damage:

http://www.washingtonpost.com/wp-dyn/content/article/2010/07/04/AR2010070403990.html

22. This is a 2-page article that you are to read. Highlight or take some notes on the main ideas. Then, below, summarize the article and explain the points it makes as to why it is hard to determine the ecological damage from the BP Gulf oil spill.

Dead Zone / Oil Spill – Double Whammy or will the spill actually make things better?

http://environmentalism.suite101.com/article.cfm/gulf-oil-spill--gulf-dead-zone--double-environmentaldisaster

23. Every year there is a dead zone that is created near the coast that is the size of New Jersey. It happens when fertilizer from fields flows down the Mississippi River to the Gulf. It causes an algal bloom. When all the abundance of algae dies, the bacteria that decays it uses up so much oxygen that life can't exist in the waters. But, the oil spill and dispersants may change that this year. Will that be good or bad? Maybe we won't know yet. Briefly summarize the short article below.

Caution required to clean up the Gulf:

http://www.eurekalert.org/pub_releases/2010-05/dbnl-crf050410.php

- 24. Here is a twist to the Gulf spill many people don't realize could be an issue. What are some issues to consider during the Gulf cleanup?
- 25. Application: How does our lifestyle and way of life contribute to oil spills? (Note: there is no article provided that directly answers this. You need to take info that you have gathered in this exercise, as well as your own knowledge and experiences. Analyze that info and construct a response, giving examples to support your view.)
- 26. Extra Credit Essay: Imagine that a train derailed on tracks in Minnesota. Several oil tanker cars ruptured and dumped many thousands of gallons of oil into the Mississippi River. The local and Federal government both want to use large amounts of the dispersant Corexit to try to break the oil down quickly before it damages critical ecosystems and water supplies elsewhere in Minnesota, Iowa, Missouri and Illinois. It has been determined that by the time the river flows south of Illinois and Missouri the concentrations of oil will be so small it won't be an issue. However, the mentioned states will likely suffer ecological damage as well as contamination to water supplies that rely on the river if the oil is just left alone. You have been asked by the "Quad Cities First" commission to guide them in their discussions with the government. They will take your suggestion as to whether or not high quantities of the dispersant should be used or if instead you have other ideas. Explain your point of view and support it with data or other information that you have found.