Name: _____ **Date:** _____

Chemistry *~ Ms. Hart* **Class:** Anions or Cations

THE URBAN ASSEMBLY SCHOOL FOR CRIMINAL JUSTICE

In-Class Argumentative Writing: Oil Spills

Directions: Read and annotate each of the articles below!

Article 1: The Gulf Oil Spill by The Ocean Portal Team

Modfied from: http://ocean.si.edu/gulf-oil-spill

The Gulf oil spill is recognized as the worst oil spill in U.S. history. Within days of the April 20, 2010 explosion and sinking of the Deepwater Horizon oil rig in the Gulf of Mexico that killed 11 people, remote underwater cameras revealed the BP pipe was leaking oil and gas on the ocean floor about 42 miles off the coast of Louisiana. By the time the well was capped on July 15, 2010 (87 days later), an estimated 4.9 million barrels of oil had leaked into the Gulf.

Immediately after the explosion, workers from BP and many government agencies tried to control the spread of the oil to beaches and other coastal ecosystems using floating booms to contain surface oil and chemical oil dispersants to break it down underwater. Additionally, numerous scientists and researchers descended upon the Gulf region to gather data. Researchers are still trying to understand the spill and its impact on marine life, the Gulf coast, and human communities. Three years later, the Gulf is still not oil free.

Main idea of the article is:

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Article 2: Oil Impacts by the National Oceanic and Atmospheric Adminstration

Modified from: http://oceanservice.noaa.gov/facts/oilimpacts.html

Oil spills can be very harmful to marine birds and mammals as well as fish and shellfish

Oil destroys the insulating ability of fur-bearing mammals, such as sea otters, and the water-repelling abilities of a bird's feathers, thus exposing these creatures to the harsh elements. Without the ability to repel water and insulate from the cold water, birds and mammals will die from hypothermia. Many birds and animals also swallow oil when they try to clean themselves, which can poison them.

Fish and shellfish may not be exposed immediately, but can come into contact with oil if it is in the water column- this occurs when the oil breakdown from the surface and dissolves in the water as the water becomes deeper. When exposed to oil, adult fish may experience less growth, bigger livers, changes in heart and breathing rates, fin erosion, and reproduction impairment. Oil also has effects on eggs survival.

Main idea of the article is:

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Article 3: Chemical Dispersants
Modified from: http://www.livescience.com/25159-oil-dispersant-increases-toxicity.html
http://cen.acs.org/articles/91/web/2013/02/Oil-Dispersants-Used-During-Gulf.html

Dispersants break up oil into tiny droplets, breaking down the intermolecular forces that hold the molecules together, so bacteria and chemical processes can break it down it more quickly.

For microscopic animals living in the Gulf, even worse than the toxic oil released during the 2010 Deepwater Horizon disaster may be the very oil dispersants used to clean it up, a new study finds.

BP used two dispersants called Corexit 9500A and Corexit 9527A. These products are significantly more toxic and less effective than other available EPA-approved dispersants. Studies have shown that the mixture of oil and these two chemicals becomes 52 times more toxic than just the oil alone, according to a study published online this week in the journal Environmental Pollution.

The dispersant makes the oil more deadly by decreasing the size of the droplets, making it more "bio-available" to small organisms, said Ian MacDonald, a researcher at Florida State University. "The effect is specifically a toxic synergy — the sum is worse than the parts," said MacDonald.

Of 18 dispersants whose use EPA has approved, 12 were found to be more effective on southern Louisiana crude than Corexit, EPA data show. Two of the 12 were found to be 100 percent effective on Gulf of Mexico crude and would work quickly to break down oil, while the two Corexit products rated 56 percent and 63 percent effective, respectively.

Main idea of the article is:

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Article 4: Statements and counterarguments connected to use of dispersants
Modified from: http://documents.plant.wur.nl/imares/dispersants/08sintef.pdf
Mechanical recovery: www.epa.gov/oem/docs/oil/edu/oilspill_book/chap2.pdf

Criticism	**Counter-Argument**
The best method of protecting the environment is to immediately pick up all the spilled oil from the sea. The use of dispersants it the wrong approach to oil spill response.	Mechanical containment has major limitations. We know that dispersants will react chemically with the oil, but often booms or skimmer are ineffective.
Dispersants push the oil into the environment, rather than removing it from the environment, and this must be a bad strategy.	Dispersants quickly bring the oil level to a very low concentration (much smaller pieces) decreasing the risk of harm to animals, compared to letting the oil continue to spread.

Dispersants are only used to hide the oil pollution, to remove it from view, but the oil will cause unseen harm	Dispersants are not trying to hide the oil. They are just trying to minimize the damage.
Addition of toxic chemicals to an already polluted environment will poison marine life.	Most dispersants are less toxic than the oil they are used to disperse.
Dispersants are an unreliable method because they do not always work. Mechanical recovery or the use of barriers called booms should be used instead. These booms stop the spread of oil at which time a skimmer can be used pick up the oil	Both dispersants and mechanical recovery methods have limitations, but we know that dispersants act quicker.

YOUR TASK:

You are a top scientists working for the government. BP, a major oil company, is concerned that one of their old pipes will burst. Use the articles you read above and write a letter to Congress arguing whether or not the United States should use oil dispersants in the case of a future spill. Make this a compelling argument **explaining why it is so important to develop this plan**. Fully explain yourself by **describing what kind of chemical compound oil is** and **how it is affected by the dispersants.** Use MLA in-text citations to indicate where your information is from. Example "According to Article 1…" (website). Be sure to follow traits 1-3 on the rubric below. Attach your paper to this document.

New York City Performance Assessment Common Rubric							
Grades 9-10	**Level 4 Exceeding…Standards**	**3.5**	**Level 3 Meeting…Standards**	**2.5**	**Level 2 Approaching...**	**1.5**	**Level 1 Attempting…**
Trait 1: Focus: Position (CCLSW.1)	Establishes a precise and credible position, **grounded in evidence and reasoning**.		Establishes a **precise and credible position…responds appropriately to the prompt.**		**States** a position **but does not completely address the prompt**.		**Position is unclear**. **credible position that responds appropriately to the prompt.**
Trait 2: *Elaboration* (CCLS W.1)	Provides **detailed** explanations of **the most important** claim(s), reasons and evidence that support and develop the position.		Position is **explained** with claim(s), reasons and evidence.		Position is **minimally developed** with **little explanation** of claim(s), reasons and evidence.		Position is **unsupported** with little or no use of claim(s), reasons, or evidence.
Trait 3: *Textual Analysis* (CCLSR.1)	**Analyzes** both explicit and inferred ideas/ information. Interpretation of the author's meaning and purpose; **Consistently refers to sources** when appropriate		Analyzes explicit ideas/information from texts and interprets the author's meaning and purpose; Refers to sources when appropriate.		Summarizes explicit ideas/information from texts; Refers to sources rarely.		**Restates** explicit ideas/information from texts; **Does not refer** to or cite sources**.**

Grade: