

Oil Budget Q&A 8.4.10

- 1. How long does it take for dispersed oil to biodegrade? Is there an approximate length of time or a range?**

We don't yet have a figure for biodegradation rates of this oil in the Gulf. Biodegradation speed varies greatly depending on oil type and water conditions. NOAA NSF and DOE are actively studying this important question to studying, and we hope to have results soon.

- 2. Have the data already been peer-reviewed, or are they going to be peer-reviewed? Also, did outside scientists help with the calculations?**

The Oil Budget Calculator was developed by a team at the US Geological Survey (USGS) in the Department of the Interior (DOI) and the National Oceanic and Atmospheric Administration (NOAA). The tool was created by the USGS in collaboration with US Coast Guard, NOAA and NIST.

A number of outside scientists reviewed the calculation methodologies. The names of scientists on the teams and those reviewing the calculations are all listed at the end of the document.

- 3. With all the ships and dispersants and the skimming and the burning, why did 67 percent of the oil in this incident elude your efforts, winding up in the Gulf?**

25% of the oil evaporated, and 16% of it dispersed naturally, so 41% was not even available to be skimmed or burned. The response efforts targeted the remaining 59% of the oil, and addressed more than half of that between burning, skimming, direct recovery and chemical dispersion.

Skimming and burning are not effective when oil is on the surface in thin layers, so some of the oil could not be effectively removed.

- 4. You say the federal effort has had a significant impact, but what's the precedent? How can you say that if there's nothing to compare it to? Why is 33 percent a positive number? Why not 50 percent? See answer above.**

It is hard to give a direct comparison, as each spill is unique. Because this is spill originated more than a mile below the surface, and further from the shore, the impacts have been different.

- 5. Chemical dispersants were only responsible for eliminating 8 percent of the oil, according to the oil budget report. If that's so, why did the federal government allow BP to use such unprecedented amounts of an ineffective toxic chemical, the effects of which have hardly been tested on the natural environment and certainly not in these amounts?**

It is important to note that 8% of the spilled oil represents over 400,000 barrels of oil, oil that might otherwise have washed up on beaches and marshes. For context, 400,000 barrels is slightly more than 1 ½ Exxon Valdez spills – not an insignificant amount.

Chemical dispersion breaks the oil up into small droplets to keep it from coming ashore in large surface slicks and makes it more readily available for biodegradation.

EPA continues to conduct testing to understand the toxicity of dispersants to marine life, and has recently released its second report about that subject.

Dispersant was one of many response techniques employed to combat this environmental disaster, and as we have said all along, was a question of environmental trade-offs.

6. Using the oil budget report as a guide, given the effectiveness of the various mitigation efforts, how should the federal government have changed its response efforts?

What this report shows is where the oil ended up. We can see that the very aggressive and coordinated response by the Federal Government and Unified Command to a spill of unprecedented scope were successful in completely removing 25% of the oil and dispersing another 8%. We have also been fortunate that mother nature has helped as well, with natural dispersion, evaporation and dissolution accounting for a significant portion of the oil.

NOAA and the Federal Government remain vigilant -- we continue to monitor shoreline areas where tar balls may still come ashore, and we continue to collect data and do research to quantify the concentrations and location of subsurface oil, and better understand the long term impacts of this spill.

7. How long will the oil be present and visible in the Gulf –

There is very little visible oil left in Gulf waters. At this point there are small amounts of residual oil on or just below the surface as light sheen or weathered tar balls. There is also some oil in the subsurface, at depth, in dilute amounts that is undergoing natural biodegradation.

8. What impact, if any, will this report have in determining BP's financial liability for this spill?

This report has no impact on BP's financial liability for this spill. They are still required to restore for all damages to natural resources (NRDA) and they can be fined based on the volume released as outlined in the Clean Water Act. As we have said all along we will hold BP fully accountable for the damage they have done.

9. Where is the remaining oil?

The remaining oil is found in two categories, residual oil and dispersed oil, which combined account for half (50%) of the total release of oil from the spill.

The residual amount, just over one quarter (26%), is either on or just below the surface as light sheen and weathered tar balls, has washed ashore or been collected from the shore, is buried in sand and sediments, or has been biodegraded.

The dispersed amount contains both oil dispersed naturally through the water column, which we estimate to be 16% and chemically dispersed, which we estimate to be 8% broken up by the application of chemical dispersants on and below the surface.

For the purpose of this analysis, 'dispersed oil' is defined as droplets that are less than 100 microns – about the diameter of a human hair. Oil droplets that are this small are neutrally buoyant and thus remain in the water column where they then begin to biodegrade

Dispersion increases the likelihood that the oil will be biodegraded, both in the water column and at the surface.

Dispersed and residual oil remain in the system and until they degrade through a number of natural processes. Early indications are that the oil is degrading quickly.

It is well known that bacteria that break down the dispersed and weathered surface oil are abundant in the Gulf of Mexico in large part because of the warm water, the favorable nutrient and oxygen levels, and the fact that oil enters the Gulf of Mexico through natural seeps regularly.

10. Is there oil on the seafloor?

There is not oil on the deep sea floor. Oil that is beneath the surface, as far as we can determine, is primarily in the water column itself not sitting on the sea floor.

In some of the near shore areas there are reports of tar balls or tar mats essentially lying on the sea floor; this can occur in cases where the tar balls have come ashore onto beaches and have picked up sand or other material, then washed back out in the surf. The sand and sediment causes them to sink and stay on the bottom, but this oil remains close to the shore, not in the deeper portions of the Gulf.

11. Do you believe this is the worst environmental disaster?

The sheer volume of oil that was released sets this disaster apart. 4.9 million barrels released will undoubtedly have significant impacts.

We've seen some of those impacts play out in obvious ways because they're at the surface. What we have yet to determine is the full impact that the oil will have beneath the surface.

And we have a very aggressive research effort underway to determine exactly that. As we mention in this report, the oil that is beneath the surface appears to be being biodegraded relatively quickly, so that is positive.

There is still likely a significant amount of oil out there simply because there was so much released. So this is an area where it will take time to evaluate exactly what the impact is both short term and long term and that underscores the importance of having this very aggressive monitoring and research effort underway to help us actually better understand the situation and learn from this.

12. A recent JAG report said that you found oil subsurface in the 4-7 ppm range. Is that still the case?

That is the range for the dataset in the most recent JAG report. Our first report found concentrations of 1-2 parts per million based on chemical analysis of water samples. The second report used fluorometric data and based on calibrations of fluorometers, indicated a likely concentration of 4-7 ppm or less in the sampled areas. There are variations depending on the methods used to analyze subsurface oil concentrations. The Joint Analytical Group will soon release chemical analytical data from the research missions that will add to our understanding of the overall picture of where oil is below the surface.

The main point here is that the oil that is subsurface is, as far as we can tell, in very small droplets, microscopic droplets and in very, very dilute concentrations falling off very steeply as one goes away from the well site.

Dilute does not mean benign, but it is in very small concentrations and we continue to measure where it is and track it and try to understand its impact.