

Seth Young
Microbe Blaster for a Crude Oil Disaster

The purpose of my project was to see if the temperature of crude oil affects the growth rate of oil degrading microbes. This would help determine whether the rate to decompose crude oil from a biohazard to non-toxic substances could be influenced by temperature. This investigation involved a pre-experiment to verify the viability for growing microbes in crude oil. In the pre-experiments, using growth broth, the commercial remediation product (BioAabsorb) grew a minimum of two species of microbes from the genus of Pseudomonas and Arthrobacter sp. Only one microbe grew in the crude oil environment which was the Arthrobacter sp. The main experiment involved placing 50mL of crude oil into 10 beakers. I placed a small amount of the BioAabsorb product into each beaker. I set five beakers at 7 degrees Celsius into a refrigerator. I held the remaining five at room temperature which was 25 degrees Celsius. Every twenty-four hours I would take small amounts of the crude oil and grow them in an agar plate to determine colony density. The data collected did not support the original hypothesis. The average colony count of the microbes in the cold temperature samples was higher than the warm temperature counts even with the addition of random error.

I concluded oil degrading microbes are diverse and specialized. The Arthrobacter sp. microbe can be used to degrade pure crude oil and enjoys a cold environment. This microbe is therefore ideal for crude oil land spills (i.e. the Denver oil spill) even in the winter season. I concluded oil degrading microbes are diverse and specialized. The Arthrobacter sp. microbe can be used to degrade pure crude oil and enjoys a cold environment. This microbe is therefore ideal for crude oil land spills (e.g. the Denver oil spill) even in the winter season.