Illuminating the Problem: Bioluminescence

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Testing bioluminescent dinoflagellates to detect pollution was chosen as the experiment because bioluminescent dinoflagellates were recently an interest. After researching and finding a limited account for the use of bioluminescence, the question of what the dinoflagellates could be used for arose. More research ensued, and a source was found claiming that the health of the dinoflagellates may be connected to the brightness of their luminescence. From this information, the idea to test the brightness of bioluminescent dinoflagellates in varying levels of oil arose. The hypothesis for the experiment is if an increasing amount of crude oil is placed into three different groups, each containing three containers of dinoflagellates, then the amount of light given off by the dinoflagellates will decrease for every increase in crude oil. To perform the experiment, all materials were gathered and the custom shake table was built. Then, after being poured into the Erlenmeyer flasks with the growth medium, the dinoflagellates were placed into a room under a 24-hour light cycle. Varying levels of crude oil were poured into the Erlenmeyer flasks and the light from the dinoflagellates on the shake table was tested for four nights. The expected result of the experiment was that after four days, the light from the dinoflagellates with the greatest amount of crude oil would decrease the most. The results of the experiment were that the dinoflagellates in no oil continued to thrive, while the health of the dinoflagellates in oil decreased. The conclusion was that the results agreed with the hypothesis, and that the health of the dinoflagellates decreased more rapidly for those in more oil.

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