

# Oil Spill Bioremediation Lab

Evaluated by Carrie Bidwell (Clay High School)



## Product Information

- **Oil Spill Bioremediation Kit**
- Carolina Supply
- \$89.25
- **This lab would be useful in either an Ecology unit or as an introduction to scientific method. I would also utilize this lab as a focal point in a cross-curricular unit with the Social Studies teacher in regards to the Gulf Coast oil spill.**

## **Materials Provided**

- 1 bottle of tetrazolium indicator, 0.02%
  - Chemical indicator that will turn from clear to pink when reduced
- 1 bottle of oil
- 1 container of Rid-X Septic System Treatment
- 1 sheet of labels
- 64 culture tubes with caps
- 81 plastic pipettes

## Materials Needed but not provided

- Test tube racks
- At least 64 mL of distilled water
- 140 mL warm tap water
- Funnel
- 20 x 20 Cheese cloth

## Objectives

- Students will learn about the environmental quality of ocean water
- Students will learn about sources of ocean oil pollution and the effects of oil on marine ecosystems
- Students will learn about oil-degrading microbes, how they break down petroleum, and how they can be used in bioremediation of marine oil spills.

## Teacher Tips

- The activities in this kit are intended to simulate how oil-degrading microbes can be used to break down petroleum after oceanic oil spills.
- The activities are NOT a direct representation of marine oil spill bioremediation.
- The oil in this kit is a household cooking oil. A microbial suspension will be prepared by mixing Rid-X Septic System Treatment powder and warm tap water and then filtering the mixture through cheesecloth. Rid-X powder contains bacteria, enzymes, micronutrients, and inert ingredients.
- The microbial suspension can be made overnight and does not necessarily need to be filtered with a cheesecloth as the suspension very clearly separates.

## Instructions

- You will be given four culture tubes. You will conduct two controlled experiments in these tubes to test for the breakdown of oil by a suspension of oil-degrading microbes. In Experiment A, oil will be treated with oil-degrading microbes (experimental condition) and without oil-degrading microbes (control condition) in the presence of tetrazolium chemical indicator. A change in the color of the indicator over time signifies chemical breakdown of the oil. Experiment B will be set up in the same manner as Experiment A, but without the chemical indicator. This will allow for observations of visible changes in the composition of the oil over time without visual interference from the colored chemical indicator

## Teacher Observations

This lab was a simple, inexpensive, and low maintenance lab. The tetrazolium chemical indicator changed to a very vibrant red color. The test tube with the bacteria and no indicator also displayed positive results. The lab suggests allowing the lab to process 1-3 days, however, better results were obtained when the experiment was allowed to continue 5-7 days.