California Science Center

CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.)
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Science Fair Use Only

S0815

Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)
A Natural Oil Spill Clean-up Process

Division
_ Junior (6-8) _X_ Senior (9-12)

Preferred Category (See page 5 for descriptions.)
5 - Earth Sciences/ Planetary Sciences/ Physical Environments

Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.)
Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

OBJECTIVE: In our project, we wanted to find out if the microorganisms Penicillium and Pseudomonas were effective in cleaning-up oil. We hypothesised that if we used "oil hungry" microorganisms as a clean-up agent, then the oil would be degraded because it would be converted into masses of food and non-toxic living cells.
MATERIALS AND METHODS: Our materials consisted of the two microorganisms, Penicillium and Pseudomonas, refined motor and crude oil. We conducted three different experiments; the first with the oils, water, and the microorganisms; the second with the oils, water, microorganisms, and nutrient fertilizer; the third with the oils, water, microorganisms, nutrient fertilizer and sand. We placed each experiment in an incubator and observed the changes everyday for four days.
RESULTS: Our results varied slightly with each experiment. The oil degraded, but at different rates, due to the different variables of each experiment. The oil degraded faster on a liquid surface, as opposed to the sand.
CONCLUSION: We came to the conclusion that our hypothesis was correct. The microorganisms Penicillium and Psuedomonas are effective in cleaning-up oil. Our lab results showed signs of oil degredation after about two days of incubation. Our findings also concluded that the microorganisms were using the hydrocarbons as a food/energy source. The degredation process was also accelerated by the addition of the nutrient fertilizer, which acted as a matrix for the microorganisms. With oil production as a major industry in California, the usage of "oil hungry" microorganisms is a very effective way to clean-up oil spills.

Summary Statement (In one sentence, state what your project is about.)
Natural oil spill clean-up by using the microorganisms Penicillium and Pseudomonas.

Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.