



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Anjali Tripathi	Project Number 22611
Project Title Fast Trash: Safely Speeding Up Rates of Decomposition in Models of a Landfill	
Objectives/Goals The objective of this project was to find which treatment group in landfill models had one of the fastest rates of decomposition, while releasing less amounts of gas. Abstract Methods/Materials Six treatment groups were kept at different temperatures and different liquids were added to them. Five of these test groups were: water, a 10% sugar solution, a 10% salt solution, heat (33°C) and cold (18°C). The sixth group was the control, it was kept at 25°C and no liquids were added to it. Six sets of models were made for each of the six groups. The models were made from plastic empty milk bottles (which are made from the same material as landfill liners) filled with layers of soil and objects that represented each type of trash. Every week, for six weeks, one model from each treatment group was opened and the mass of the different objects was recorded. The amount of gas emitted by the models was measured by using a system of water displacement. Results The group with heat had the fastest rate of decomposition and released the most amount of gas. The control group had the slowest rate of decomposition and gave off the least amount of gas. The group with the 10% sugar solution had the second fastest rate of decomposition, while emitting the third least amount of gas. Conclusions/Discussion In landfills, garbage usually takes decades to decompose and the gas released contributes to the greenhouse effect. Not all landfills are identical. For some landfills it might be a good idea to add different liquids or increase the temperature to optimize rates of decomposition and gas emissions. The results suggest that adding a 10% sugar solution would be beneficial for increasing rates of decomposition and minimizing gas emissions for the average landfill.	
Summary Statement This project is about how different temperatures and liquids increase rates of decomposition while producing less gas in landfill models.	
Help Received Dr. Robert Anex, Dr. Dennis Truax, and Mr. Ray Huitric answered questions. Parents proofread. Advisor supervised.	