



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Nancy A. Kedzierski	Project Number J0219
Project Title I Don't Want to Hear It! A Study of the Efficiency of Various Soundproofing Materials	
Objectives/Goals The purpose of my project was to find out which of 17 different materials [including organic matter, masonry products, paper products, containers, and common insulators] would be the most efficient at soundproofing a room. My hypothesis was that fiberglass, ceiling tiles, and cardboard would be the best at soundproofing, while plastic bottles, empty wall [air], and styrofoam would be the worst soundproofing materials.	
Abstract The purpose of my project was to find out which of 17 different materials [including organic matter, masonry products, paper products, containers, and common insulators] would be the most efficient at soundproofing a room. My hypothesis was that fiberglass, ceiling tiles, and cardboard would be the best at soundproofing, while plastic bottles, empty wall [air], and styrofoam would be the worst soundproofing materials.	
Methods/Materials To test my project, I built six walls using 2 x 4s and dry wall to hold the materials. One was a large wall that was the main testing wall, four small walls to make it more like a room, and to keep the sound from traveling around the wall, and a large wall as the ceiling. The sound generators that I used were a Taboo game buzzer, a car horn, and a muffled car horn. I used these sound generators so that I had a range between the sound levels. Each of the sound generators was measured three times at three different points on the wall for each of the 17 insulating materials.	
Results My results were that, over all, the best soundproofing materials were books [29.57% efficient], crumpled newspaper [29.32% efficient], and fiberglass [29.22% efficient], and the worst were styrofoam [24.85% efficient], aluminum cans [24.19% efficient], and plastic bottles [23.55% efficient].	
Conclusions/Discussion The reason that the books were the best soundproofing material was that the covers of the books provided a padded layer that made it harder for the sound vibrations to pass through by acting as a dampening layer or a shock absorber. The top three insulators also possessed enough density of insulation to keep the sound from travelling through at its maximum level. The aluminum cans and plastic bottles performed poorly because the structure of the containers allowed for a continuous path for which the sound vibrations to travel.	
Summary Statement The project was a study of the efficiency of 17 different sound insulating materials in a room-like model utilizing three different sound generators.	
Help Received Mother helped in design of board and father helped in the construction of the model	