



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Conrad M. Esch	Project Number J0811
Project Title The Ability of Different Materials to Block Cell Phone Transmissions	
Abstract Objectives/Goals The purpose of this experiment is to test whether materials of different types will block cell phone transmission. The hypothesis is that conductive materials will block transmission and non-conductive ones will not. Methods/Materials A cell phone will be placed inside enclosures constructed of various materials; several sizes of wire mesh, tin foil, plastic, wood, salt water, and tap water. The cell phone will be called from a separate phone. Each call will be noted for; if it was received and signal strength. The experiment will be conducted in two locations; high and medium signal reception areas. Results In both locations only the saltwater and tin foil enclosures completely blocked cell phone transmissions. The smallest mesh, window screen mesh, blocked cell phone signals in the medium signal reception area, but not at the location with high signal reception. Larger size mesh, plastic, wood and tap water enclosures did not block cell phone transmissions. Conclusions/Discussion Cell phone transmissions are electromagnetic microwave radiation that can be blocked or diverted by conductive materials. Although several of the enclosures were conductive, only tin foil completely blocked signal transmission. A mesh size smaller than window screen is apparently needed to completely block cell phone transmissions. Salt water also effectively blocked transmissions. The salt dissolved in the water had some conductivity, therefore redirecting the transmissions back toward the cell phone.	
Summary Statement The purpose of this experiment is to test whether enclosures made of conductive and non-conductive materials will block cell phone transmissions.	
Help Received Parents helped build enclosures and edit report.	