



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Alyssa R. LoGalbo	Project Number J1313
Project Title Does the Density of Drywall Correlate to Its Radiation Shielding Potential?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals There are many different types of drywall that are used all around an average, well made home. I want to find out if there is a correlation between the density of the drywall and its radiation shielding potential so I will know if one should use denser drywall to build walls that protect from radiation.</p> <p>Methods/Materials Calibrate the survey meter. Measure and weigh various samples of drywall, calculate density. Put the radiation source(Tecnicium 99-m) into one end of a caliper and the Scillation probe of the survey meter in the other. Record the change in attenuation in CPM (counts per minute) with and without the drywall for each sample and type of drywall. Calculate the transmission ratio factor, percent of change and HVL (Half Value Layer) for each sample. Compare and analyze the results.</p> <p>Results As the density of drywall increases, the half value layer (HVL) gets smaller. There is a negative correlation of .70; density and HVL move in opposite directions. When density goes up up, HVL goes down. This indicates that denser drywall is more effective in protecting from gamma radiation.</p> <p>Conclusions/Discussion When building a wall with the intention of shielding radiation, use drywall with the highest density - it will most likely yield the best results. From the types studied in this investigation, the drywall with concrete board would be the most effective type of material to use when shielding radiation.</p>	
Summary Statement This project determined that there is a correlation between drywall density and its ability to protect us from gamma radiation.	
Help Received Acquired and used radiation source under supervision of Dr. LoGalbo, Mother helped set up board, Home Depot provided drywall samples.	