



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Saman T. Khan	Project Number J0912
Project Title Radiation in My House?	
Abstract Objectives/Goals The objective of the project was to determine which household electrical device emitted the most extremely low frequency (ELF) radiation while in use. Methods/Materials Using a gaussmeter, several appliances including a laptop, microwave, refrigerator, cordless phone, cellular phone, iPad, hair dryer, alarm clock, television, and computer monitor were tested for ELF emission. Each appliance was tested with the gaussmeter at different distances - at 5 cm increments starting from 0cm until the gaussmeter stopped detecting any ELF. This was repeated three times for each appliance. The data was then graphed out. Results The appliances all varied in the amounts of ELF emitted as well as in how quickly the ELF dropped as the gaussmeter was distanced from the appliance. The microwave emitted the most amount of ELF and took the largest distance to drop ELF levels to stop being detected by the gaussmeter (40cm). The computer monitor and the cordless phone had the lowest initial ELF readings (both under 2.6 mG) and also the quickest drop in emission as distance was increased. The rest of the appliances all read above the maximum ELF reading on the gaussmeter (5mG) in their initial readings at 0 cm and dropped off at various distances. All the ELF levels decreased as distance between the gaussmeter and appliances increased. Conclusions/Discussion All of the devices we use on a regular basis give off electromagnetic forces that can affect our bodies. Though research says that ELF is mostly safe, we should still take precautions and protect ourselves until we are more certain of the effects of ELF. We can do this by keeping a good distance away from and limiting our contact with electrical devices. We should keep alarm clocks away from our heads while we sleep, use air dryers at an arms legnth away, and stay away from the microwave while we use it.	
Summary Statement This project was designed to determine which household electrical device emitted the most extremely low frequency (ELF) radiation while in use.	
Help Received My mother helped me with measuring ELF emission with the gaussmeter and helped me design my board. My friend Gabriel helped me graph my data using excel.	