Saving Our Environment: Ash to Concrete

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In my project, I looked into different ways of recycling in Hawaii. Due to the fact that Hawaii has very limited landfill space, any form of recycling would have a large impact on the local environment and community. Basically, I took a waste product in the form of ash and I tested varied amounts of it in concrete mix designs. My hypothesis was that the more ash I add into the concrete mix, the lower the strength would be, and that using more ash in the mixes would reduce the amount of waste (ash) going into the landfills. The 4 concrete mix designs that were tested included various concentrations of ash and constant amounts of the other materials. After mixing, the concrete was poured into cylinder molds and left to cure for the curing periods. With 3 cylinders per mix design, 1 was tested at 7 days for the initial strength, and the other 2 were tested at 28 days for the final strength measurement. The cylinders were tested in a compression strength test machine and data was gathered for the strengths in psi. The results supported my hypothesis, and the higher ash concentrations reduced the strength the most. The benefits to society include the fact that a waste product can be used as a sustainable construction material and can help to save our environment by reducing the need to mine raw materials and by reducing the amount of waste going into Hawaii's landfills.

Awards Won: