Greener Concrete and Cleaner Oceans

Cochran, Rachel (School: Bartlesville High School)

The purpose of this project was to test the effects of plastic waste as a concrete additive. The research question was: How will mixing plastic into concrete affect the concrete's strength? To test this, three different concrete bricks were created using standard concrete mix. Two of the bricks had plastic pieces, one with larger pieces and one with smaller pieces, the last brick was pure concrete, as the control. Each brick was created at the same room temperature with the same concrete mix to water ratio, and the same sized mold to control all variables except the amount of plastic in the concrete brick. When testing the concrete a repetitive striking test was used. A small weight was raised to the same height and dropped on the center of the brick, repeating until it broke through. The concrete brick with the small pieces of plastic took the most strikes to break followed by the concrete brick with large plastic pieces; the control brick broke easiest. The small plastic brick likely performed best because the plastic was able to diffuse much of the striking pressure, but the pieces were not so large as to disrupt the concrete's bond to itself.

Awards Won:
Missouri University of Science and Technology: $575 Missouri S&amp
T summer camp scholarship