Cool It: Keeping Children Safe from Playground Burns

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During the summer, many children throughout the United States (and the globe) are burned by overheated playground equipment. Since there has been little study of the issue, there are few recommendations to help prevent these injuries. I researched information about previous burn cases and few resolutions were found. Using the engineering design process to create a solution, I designed pieces of playground equipment that incorporate a thermal switch placed on the equipment to detect high temperatures and activate a cooling system using an underground water reservoir to course geothermally cooled water through the equipment. This design would allow the equipment to be cooled reducing the chance of heat-related injury to the children. The purpose of this project was to design and build a prototype of the cooling system to discover whether the system was functionally feasible as well as analyze the data and proportion it to a real playground. After constructing the system prototype, I tested different settings (i.e. thermal switch settings) of the prototype components to optimize the time it would take to cool the system. Finally, with my results I was able to determine if this project could potentially be used in full sized playgrounds as well as the possible applications in other systems. This portion of the experiment process will allow me to finalize the design of the full size playground pieces that will reduce the chance of injury and allow for physical activity with a reduction in the chance of harm to children using the playground.

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