P. King[1], A. Middel[2], J. Vanos[1], K. Kaloush[3], J. Medina[3], D. Sailor[4], J. Karam[3], L. Napogbong[3], P. Lartey[3], M. Alhozaimy[3], M. Alhazmi[4], Z. Van Tol[1], G. Guzman[1], *Enhancing Urban Resilience through Innovative Cool Pavement Technologies: Insights from the Cool Pavement Pilot Program*

The Cool Pavement Pilot Program, initiated by the City of Phoenix and conducted in collaboration with Arizona State University, investigates the efficacy of innovative cool pavement technologies designed to mitigate urban heat. This initiative addresses escalating summertime temperatures that pose significant public and environmental health risks in urban settings, utilizing a series of advanced measurement techniques to monitor the performance of the pavement alternative and its impact compared to traditional asphalt.

Surfaces treated with "CoolSeal" exhibit significantly lower average surface temperatures by up to 12°F, contributing to reduced urban heat levels. Air temperature measurements indicate slight but beneficial reductions, enhancing pedestrian comfort. While mean radiant temperatures increase over cool pavements during peak sun hours, the overall ultraviolet radiation exposure does not increase, ensuring pedestrian safety and informing the location of cool pavement installations. Laboratory tests demonstrate superior performance in terms of lower thermal conductivity and higher solar reflectance compared to traditional materials.

The findings underscore the critical role of urban infrastructure innovations in mitigating the effects of climate change and enhancing urban resilience. By providing empirical evidence on the benefits of cool pavements, this research supports the broader implementation of such technologies in similar urban environments globally.

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