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'A minimally intrusive solution for urban cooling': This paint could make cities feel 1.5C cooler



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Cool paint can help cities combat the urban heat island effect, a new study suggests.

Cool paint coatings could help cities feel up to 1.5C cooler, a new study has found.

Using paint to counter the 'urban heat island' effect is nothing new, but this real-world experiment showed just how impactful it can be.

Researchers at Nanyang Technological University (NTU) coated the roofs, walls, and road pavements of an industrial area in Singapore with paint containing additives that reflect the sun's heat.

The first-of-its-kind study, published in the journal *Sustainable Cities and Society* in March, revealed that paint could be a key tool in making urban areas more comfortable for work and play in a warming world.

How can cool paint help reduce heat in cities?

Up until now, most studies of cool paint coatings have been either simulation-based or tested in scaled-down models. The NTU researchers set out to examine its real-world impact.

Coating an area of the city with **cool paint**, they were able to compare temperatures and comfort levels with an adjacent uncoated area.

The researchers measured air movement, surface and air **temperature**, humidity, and radiation over two months. They found that the coated area saw up to a 30 per cent reduction in heat released from the built-up surfaces.

This resulted in it being 2C cooler at the hottest time of the day.

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Containing additives that **reflect** the sun's heat, the paint was successfully able to reduce surface heat absorption and emission. Roofs with the cool paint coating reflected 50 per cent more sunlight and absorbed up to 40 per cent less heat as a result, during the hottest time of a sunny day, compared to conventional roofs.

It also made the area more comfortable for **pedestrians** as it was around 1.5C cooler. Their thermal comfort level was measured using the Universal Thermal Climate Index - an indicator for human outdoor temperature sensation that takes into account temperature, relative humidity, thermal radiation and wind speed.

"Our **study** provides evidence that cool paint coatings reduce heat build-up and contribute to the cooling of the urban environment," says the study's lead author, Dr E V S Kiran Kumar Donthu.

'A minimally intrusive solution for urban cooling'

The findings could be invaluable in cities looking for a quick and cheap way to combat the devastating and worsening effects of **heatwaves**.

"This is a minimally intrusive solution for urban cooling that has an immediate effect, compared to other options that often require major urban redevelopment to deploy," says Kiran Kumar Donthu.

By reducing the amount of heat absorbed in **urban structures**, it can also make buildings cooler and reduce the need for indoor **air-conditioning**, he adds.

- **Only seven countries in the world breathe safe air. Three of them are in Europe**

This is not only useful in cities like Singapore which are hot year-round, but also in other urban areas as the **world warms**.

“With global warming, people will increasingly look for ways to stay cool,” says lead investigator, Associate Professor Wan Man Pun. “Our study validates how cool paint coatings can be a strategy to reduce the **urban heat island** effect in future.”

Further research will see the NTU team focus on how the cool paint coating holds up over time in the same experiment location.