

# Space agency: Human urine could help make concrete on moon

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The full moon sets behind trees in the Taunus region near Frankfurt, Germany, Thursday, May 7, 2020. (AP Photo/Michael Probst)

The European Space Agency said Friday that human urine could one day become a useful ingredient in making concrete to build on the moon.

The agency said researchers in a recent [study](#) it sponsored found that urea, the main organic compound in urine, would make the mixture for a "lunar concrete" more malleable before it hardens into its sturdy final form.

It noted that using only materials available on site for a moon base or other construction would reduce the need to launch supplies from Earth.

The main ingredient in "lunar concrete" would be a powdery soil found on the moon's surface known as lunar regolith. ESA said urea, which can break hydrogen bonds and reduce the viscosity of fluid mixtures, would limit the amount of water necessary in the recipe.

"Thanks to future lunar inhabitants, the 1.5 liters (3.2 pints) of liquid waste a person generates each day could become a promising by-product for space exploration," it said in a statement.

On Earth, urea is used as an industrial fertilizer and a raw material by chemical and medical companies.

"The hope is that astronaut urine could be essentially used as it is on a future lunar base, with minor adjustments to the water content," study co-author Marlies Arnhof said in the ESA statement. "This is very practical, and avoids the need to further complicate the sophisticated water recycling systems in space."

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