



Urinals | Photo source Pixabay

[Innovation](#) > [Sustainability](#) > [New process makes bricks from urine](#)

## NEW PROCESS MAKES BRICKS FROM URINE



### **Students in South Africa have developed a way to convert human urine into building materials.**

Here at Springwise, we have seen bio-waste used in an increasing number of innovations. These have included a house made from [farm waste](#) and [textiles](#) made from live organisms. Now, civil engineering students at the [University of Cape Town](#) have created bricks using human urine. The bio-bricks were created using a natural process called microbial carbonate precipitation. This is similar to the way seashells are formed.

The bio-brick process involves colonising loose sand with bacteria that produce the enzyme urease. The urease breaks down the urine to produce calcium carbonate (the materials shells are made of). The calcium carbonate acts like a cement to solidify the sand. The calcium carbonate and sand bricks can be formed into any shape, including building bricks. The bio-bricks can be made harder by allowing the bacteria to work for longer.

Unlike regular bricks, which must be fired in a kiln, the bio-bricks are made at room temperature. This saves considerable energy. The bio-brick process piggy-backs onto processes that already exist to remove calcium phosphate from urine. Calcium phosphate is a key ingredient in commercial fertilisers. The urine is first collected using special urinals which extract the calcium phosphate. The remaining liquid is used to grow the bio-bricks. Nitrogen and potassium, two more components of commercial fertilisers, are extracted from any remaining urine. Still to be determined is an efficient, and socially acceptable, urine collection and transport system. A truly efficient system may also need to devise a way to collect urine from women's restrooms.

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### **Takeaway:**

According to a senior Lecturer Dr Dyllon Randall, who was supervising the work, the bio-bricks are creating paradigm shifts with respect to how society views waste. “In this example you take something that is considered a waste and make multiple products from it. You can use the same process for any waste stream. It’s about rethinking things.” What other waste could be converted into useful materials?