

# Who knew pee was valuable?

By [Dave Chambers](#)

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Liquid gold has been discovered at the University of Cape Town. It comes in the form of urine, which engineering students have transformed into fertiliser and bricks. Now UCT says urine from its urinals has the potential to produce six tonnes of fertiliser a year - twice the amount it uses on its sports fields.



Image source: [www.pixabay.com](http://www.pixabay.com)

Civil engineering lecturer Dyllon Randall said: "Chemically speaking, urine is liquid gold. It makes up less than 1% of domestic wastewater but contains 80% of the nitrogen, 56% of the phosphorus and 63% of the potassium of this wastewater.

"We literally pee away these valuable nutrients every day."

After spending two years in Switzerland working on a "reinvent-the-toilet" challenge funded by the Bill and Melinda Gates Foundation, Randall challenged four civil engineering doctoral students to continue his work.

Craig Flanagan built a urinal containing calcium hydroxide, which reacted with urine to produce calcium phosphate. Phosphate is a key ingredient in fertiliser, but natural deposits of phosphate are expected to run out within the next 50 years.

Suzanne Lambert took Flanagan's leftover urine and put it into sand that had been colonised with an enzyme that produces calcium carbonate. Randall said this cemented the sand into any shape, such as a brick. It was the first time this had been done with urine. By-products of the bio-brick process are nitrogen and potassium, also used in fertilisers.

Bilal Kowdur harvested 110 litres of urine from 10 makeshift urinals installed at a UCT residence and used it to make nearly 2kg of fertiliser.

Tinashe Chipako researched the feasibility of installing waterless urinals on upper campus and found that UCT uses the equivalent of about seven Olympic-size swimming pools of water annually just to flush urinals.

*Source: The Times*

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