Cranfield to develop innovative waterless toilet

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Cranfield University is to develop a waterless, hygienic toilet with the potential to transform the lives of the 2.5 billion people worldwide without access to basic sanitation, thanks to $800,000 funding from the 'Reinvent the Toilet Challenge' of the Bill & Melinda Gates Foundation Water, Sanitation and Hygiene initiative.

Cranfield is one of a number of organisations and universities approached by the Water, Sanitation and Hygiene program of the Gates Foundation as part of the Reinvent the Toilet Challenge, which aims to leverage advances in science and technology to create a new toilet that will transform waste into energy, clean water and nutrients.

Many areas which lack access to safe and affordable sanitation are also those areas with non-existent or unreliable water, sewage and electricity supplies. The team at Cranfield proposes a concept for a sustainable sanitation solution – the Nano Membrane Toilet - which will be able to treat human waste on-site without external energy or water, allowing it to be safely transported away and potentially reused.

The concept uses a combination of innovative nano and advanced water treatment technologies and the University's specialist design skills. The concept works by essentially reducing the water content of the sludge through membranes that allow extraction of water as a vapour, using a mechanism powered by the user. The resulting sludge moves downwards under gravity and is encapsulated in briquette form, with the potential for reuse in combusting or applying to land as a fertiliser. This

reinvented toilet will also have potential in wealthy countries, as clean, safe water and energy becomes more and more a precious resource and the world becomes increasingly eco-conscious.

The results of the first round of grants are being featured at the Reinvent the Toilet Fair on August 14 and 15, 2012 at the foundation's offices in Seattle, Washington. The fair will showcase innovations from around the world, working towards the shared vision for a 'reinvented toilet'.

A prototype of the Cranfield concept is due for completion next year.

Provided by Cranfield University