

# India army offers 'glacier toilet' in hi-tech sell-off

January 3 2012, by Pratap Chakravarty

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Developed for troops serving on glaciers high in the Himalayas, the non-flushing "bio-digester" toilet made by India's top defence research body is now being offered to companies and poorer states.

It is one of 200 technologies produced by the Defence Research and Development Organisation (DRDO) identified as for sale via the Federation of Indian Chambers of Commerce and Industry (FICCI).

The national trade body and DRDO in October forged a four-year partnership to hawk dual-use military products as part of Premier Manmohan Singh's pledge in 2008 to offer defence technology spin-offs to the public, officials said.

The "bio-digester" is among 10 of the DRDO products put on the fast-track for sale to state governments and private companies, an Indian [defence ministry](#) official added.

"Our condition is to take any non-classified technology (that can be used) for the benefit of the common man," said Nirankar Saxena, Executive Director of FICCI's Centre for Technology Commercialisation, which heads the project.

The "bio-digester" toilet conceived by a DRDO unit in the city of Gwalior, works by mixing self-multiplying bacteria with human waste in specially-made tanks, resulting in the production of [methane gas](#) and water.

It was meant for Indian [combat troops](#) deployed on Siachen, a 6,300-metre-high (20,800-feet-high) glacier in disputed Kashmir where temperatures can fall up to to minus 50 degrees Celsius (minus 58 degrees Fahrenheit).

Experts say they believe some 5,000 soldiers are deployed on the frigid wasteland, where calm has prevailed since a 2003 ceasefire with rival Pakistan.

"Work on it began 15 years ago because excreta buried in snow by soldiers in the Siachen glacier polluted rivers when the ice melted," said scientist Vijay Veer of the Defence Research and Development Establishment, a DRDO unit.

The bacteria used in the mountain version of the toilet were originally found in Antarctica, but another cocktail can be used in the hot tropical plains where the need for toilets in India is most acute.

FICCI's Saxena said the Indian territory of Lakshadweep -- a cluster of islands -- has sought 12,000 bio-digesters at some 25,000 rupees (\$550) a unit for a major housing project.

Other DRDO products include heat shields for trains and vehicles, windows that control light penetration, mosquito repellents and medical kits to tackle dengue and chikungunya, both insect-borne viruses.

They also plan to market a spray that guarantees to keep woollen clothes moth-free, affordable fire extinguishers and a body cream that keeps bed bugs away.

The DRDO also has high hopes for its "Heat Stabilised Narrow Fabrics and Cordages for Improved Elastic Recovery Property" which military boffins believe could be used in bras.

"The technology is a heat-stabilised narrow fabric and the elastic in it is more robust than materials used in commercial brassieres," a DRDO official added.

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