



India



## Bio-digester Toilets by Banka BioLoo

Banka BioLoo 

To address the need for a cheaper and easy-to-operate alternative to the traditional waste disposal system, Banka BioLoos offer a sanitation solution that treats waste at the source.

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Partners: Defense Research and Development Organization (DRDO)

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### Problem Addressed

The shortage of sanitation facilities in India is a major concern. Over 600 million people, half of India's population, do not have access to toilets. As a result, people are forced to defecate in the open, which leads to health hazards, environmental concerns, and water contamination. These problems are further exacerbated by the Indian Railways's open-chute toilet system, which allows human waste to drop onto the rail tracks below. Untreated human waste and fecal matter lying in the open is a threat to the well-being and health of society. The absence of sanitation is more acute in rural and peri-urban areas, which have a very high prevalence of open defecation.

### Innovative Approach

Banka BioLoos are an affordable and durable solution to the lack of toilets, and treat the waste produced on-site. Banka BioLoo collects data along a number of indicators, including the number of people who stop defecating in the open, the improvement in health standards, the quantity of human waste treated and the amount of water recycled.

The organization relies on bio-digester technology to treat the waste: anaerobic bacteria are adapted to work at temperatures as low as 23°F and as high as 122°F. The bacteria act as inoculums, or seed material, for the bio-digesters and convert the organic human waste into water, methane and carbon dioxide. The anaerobic process inactivates the pathogens responsible for water-borne diseases. Bio-digesters serve as reaction vessels for bio-methanation and provide anaerobic conditions and required temperature for the bacteria. The special design of the bio-tank can be customized as per the requirement and need of the client or end-user, and these toilets form a zero discharge human waste solution.

There are many benefits to the user, society and the environment. BioLoos provide a very inexpensive sanitation facility for low-income people, as well as for large institutions or corporations. The specially designed easy-to-incorporate bio-tanks hold the bacteria for treatment and take up less space than traditional practices. The BioLoos do not require sewage connectivity to the main line and there is no energy requirement or harmful by-products. Pathogen-free, good quality effluent water can be used for gardening and agriculture which eases the burden on municipal and other freshwater sources. If the water is left to percolate, it replenishes the water table. After secondary treatment, the water can be used for household purposes as well. Bio-methane can be used as fuel for cookstoves and to generate energy. Systems can be deployed on a large scale in a region or across geographies, reducing the cost substantially to end-users.

Please visit this program profile at:

<http://washinnovations.r4d.org/program/bio-digester-toilets-by-banka-biolo>

This reduces dependence on governmental and other managing bodies for sewage disposal and treatment infrastructure.

### Program Solution

Banka BioLoo's solutions meet the need for a basic, easy-to-install and hygienic human waste disposal mechanism in areas that currently have no sanitation facilities. To address the need for a cheaper and easy-to-operate alternative to the traditional waste disposal system, BioLoos treat human waste at the source with no need for transporting the waste, no contamination of environment or groundwater, no energy needs and no heavy infrastructure. On the contrary, the system leaves pathogen-free water so effluent that it can be re-used. For large bio-tanks, methane can be collected and used for fuel. These toilets can be installed anywhere without constraints of land type, terrain, or distance. The bio-toilet system disposes human waste in a 100% eco-friendly manner that saves energy, conserves water, and produces biogas.