



# Best Practices Database

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**Enviro Options (PTY) Ltd, Johannesburg**

*South Africa*

Good Practice

New for 2002

## Categories:

Poverty Eradication:

- vocational training

Environmental Management:

- ecological sustainability
- environmentally sound technologies

Infrastructure, Communications, Transportation:

- safe water provision
- sanitation
- waste-management and treatment

**Level of Activity:** Global

**Ecosystem:**

## Summary

The purpose of the initiative was to produce a dry sanitation system which was researched and developed after the experience and work in the field of stabilization of raw sewage using unsorted garbage as a bulking agent. As odour problems were experienced in the process of forced aeration composting became apparent, the necessity to control this odour problem lead to the production of the micro-biological odour filter. The process of forced aeration composting was utilized to treat and stabilize large volumes of organic waste. The author designed and developed South Africa's first energy from waste programme at a landfill site in Grahamstown SA where methane gas was extracted to provide heating and cooking facilities for domestic houses, to burn bricks, for ceramic firing and to power combustion engines

## Narrative

### SITUATION BEFORE THE INITIATIVE BEGAN

The Enviro Loo was developed because previous research in the field of sewage stabilization showed that there was an urgent need for a sanitation system that did not require the use of water, which is a scarce commodity.

### ESTABLISHMENT OF PRIORITIES

As most of the under-privileged population of the world had to make do with either a pit latrine or bucket system toilet, it was decided to attempt to provide a simple affordable, odourless sanitation system that provided a certain amount of dignity . All the staff of the company was involved in this endeavour .

### FORMULATION OF OBJECTIVES AND STRATEGIES

The first objective was to hand build prototype models to be tested under normal working conditions . When these proved to be successful with certain modifications, the making of steel moulds was commissioned so that the finished product could be manufactured in polyethylene plastic . The units so produced were distributed throughout South Africa to test the efficiency of the dry sanitation system under various climatic conditions . These units were monitored over a number of years.

There followed an extended period of marketing to make Government departments aware of the innovative technology . Once the product was established in South Africa , the system was promoted internationally by reading papers at international conferences and by creating a web-site for product awareness.

### MOBILISATION OF RESOURCES

Initially the entire project was financed by the La Trobe family when this became too much of a burden, outside investors were approached to contribute to the financing of the company .. The technology of the various products was developed, in house based on the original research of B. E . La Trobe and continued by G. La Trobe . The human resource came originally from within the family . Gavin and Brian were later joined by Mark . Andy Moorcroft joined as the account . Other staff was recruited as the company grew larger . The staff, executive and factory are all based in Johannesburg and are multiracial .

### PROCESS

Just as nature recycles garden refuse into compost, the Enviro Loo Dry Sanitation System provides the right environment for human waste, toilet paper and organic material to break down through a natural process into an inoffensive compost-like material.

The Enviro Loo operates by separating the liquid and solid wastes. The system then utilises radiant heat and adequate ventilation to pass through the waste within the sealed container, thus converting solid waste, via the stimulated bacterial and biological activity, into a compost like material. Oxygen, moisture, heat and organic material are required for the aerobic bacteria and microbes to recycle human waste. Radiant heat is absorbed and conducted through the UV protected black polyethylene plastic of the manhole cover and vent pipe.

Through the uniquely designed ventilation system, adequate oxygen is provided for the aerobic decomposition and deodorising process. Human faeces consists of roughly 95% liquid. As the solids dry, the urine and liquid portion drains to the bottom of the container, which via ventilation through the system is evaporated and vented to the atmosphere. The solid waste then dries and decomposes into a compost-like material, roughly 5 to 10% of its original mass.

The unique ventilation system aided by the increased internal temperature causes a negative pressure within the container which ensures no backdraft into the toilet pan. The airflow is assisted by the patented ventilation extraction unit, positioned on top of the outlet vent pipe. Air is drawn into the container via the inlet pipes ensuring adequate ventilation for fast odourless decomposition of human waste.

### RESULTS ACHIEVED

Seven large scale odour filters have been established at meat rendering plants in South Africa . Forced aeration plants were established to stabilize slaughter house wastes. The establishment of the dry sanitation system, the Enviro Loo, though slow in the beginning has gradually become more popular to the extent that there are now about 15,000 units installed and operating in various parts of the world .Exports are growing and the sanitation system is already established in Angola, Australia, Botswana, Brazil, Greece, Ghana, Gabon, Kenya, Nigeria, Namibia Uganda, Zambia and Zimbabwe . The first shipment to Central America is to take place shortly.

By providing an affordable, zero discharge system and odourless sanitation system it has improved the living conditions of those people who use them and it prevents the pollution the underground water system . This safeguards the local environment, ensures the dignity of the users and goes a long way to assist in disease prevention of waterborne diseases. This in turn can potentially drastically reduce

health and hospital costs.

If this system were to become universally accepted it could make significant inroads into providing an effective low cost sanitation system, particularly where water is in short supply . It has to be remembered that half the world's present population is without any form of sanitation system which is an enormous pollution hazard.

#### SUSTAINABILITY

Most of the exported units are paid for on a cash basis . In low cost housing projects there is usually Government subsidies .

Gender equity is never a problem . The Enviro Loo takes cognisance of various cultural differences . Where water is used for anal cleaning ; this is provided . Those accustomed to a waterborn system sometimes have a negative response and take a while to get used to the dry system but when they are assured that the system is odourless it becomes more acceptable .

The Enviro Loo is environmentally friendly in that it does not pollute under ground water. It is odourless, it requires no power and is driven by the energy from the sun and the wind.

#### LESSONS LEARNED

No matter how brilliant an idea or technology it does not mean that it will automatically gain universal acceptance . It takes time . Mankind is always deeply suspicious of any innovation, particularly if the if it is simple . One has to be prepared for many disappointments .

One must always incorporate into ones designs what the client requires ; don't try to push the client to accepting something that is contrary to his cultural heritage . It is our company ambition to provide a simple sanitation system that becomes more cost effective for the those who have little of the luxuries of life.

#### TRANSFERABILITY

Our basic technology because of its very nature has been patented in many Countries of the World . The knowledge is transferred by training local people and those in other countries in how to use the equipment, how to manufacture it under license, how to assemble it and how to install it correctly . In this way it provides employment to many others . The company is in the process negotiating the sale of licenses for manufacture in other areas of the world which , in turn will make the product cheaper by cutting out shipping costs . A separate company has been established in Australia and presently licenses are being negotiated in Nigeria and Botswana .

Our company is presently busy with the development of an improved Enviro Loo which will incorporate all the improvements that have become necessary because of shortcomings that have become evident from our experience in the field, both locally and in other lands

### Key Dates

1983 Establish Grahamstown's new landfill site for gas extraction .

1985 Research started for the Enviro Loo.

1993 Established Enviro Options in the field.

1997 WIPO/OAU Award

1998 The first Enviro Loo units exported to Australia.

### References

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**Type of Organization:** Private Sector

## Partners

## Financial Profile

Year	Total Budget (US\$)
2002	1,500,000
2001	700,000

Â 1999	900,000Â
Â 1998	450,000Â

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