

## WHY WAS IT NECESSARY TO DEVELOP TERRA MUNDA?

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### EXTENDED ABSTRACT

Despite the fact that handling of latrine is our oldest global environmental problem, that affects every person, it was still unresolved until the end of the twentieth century. Already 2000 years before Christ it was attempted to solve the problem by using drinking water to flush away the latrine from closets in palaces of wealthy persons and from official closets. This method was abandoned. The modern European water closet was reintroduced around the year 1900 with a method to use our most important necessity, drinking water, only to transport away latrine from the toilet. Despite great advancement in most technical areas the toilet technique has in principle not developed during 4000 years. Without consideration of the consequences of the devastating influence on the environment and health for humanity the extension of this mega system is irresponsibly enforced.

Of current population of the earth, about 6 billion people, half are lacking acceptable toilets; 1.2 billion people have water flushing toilets, WC, and the remaining group has different forms of dry toilets. All faeces contain disease bearing micro organisms which may be infective. Faeces also contain valuable nutritious substances/minerals and may also contain drug residues. Drinking water is our most essential nutrient of which no land living organisms can exist. The amount of drinking water is limited and is an insufficient product for billions of people. Those 1.2 billion people using WC spend and pollute double as much drinking water as the total population of the earth needs to sustain life if it is estimated to 3 litres per person and day. Only about 3 % of waste water in the world is passing some form of sewage-treatment plant, and whatever modern the plant is it cannot to a reasonable cost make latrine water drinkable.

A most efficient way to transmit infection from latrine, spread drug residues and nutrients which can over-fertilize water is to dilute the latrine in the toilet stool with a large amount of water and with insufficient purification distribute the mixture to watercourses, lakes, sea and water supply. WC is thus only a transport system which is not resolving the latrine problem. Greywater which has not been contaminated with latrine may be more readily purified and returned to nature without damage to the environment. Terra Munda with its simple solution and total responsibility for an unbroken circulation can be described in one sentence: A rational management and treatment of latrine bringing back its nutritious agents to the field from where they came with the food. This process is in accordance with the means of nature: chemical transformation, decomposition and evaporation of urine. When working with the nature, the nature will be our best collaborator. The Terra Munda system(see *Figure 1*) functions without water and chemicals, and is independent of infra structure such as water and

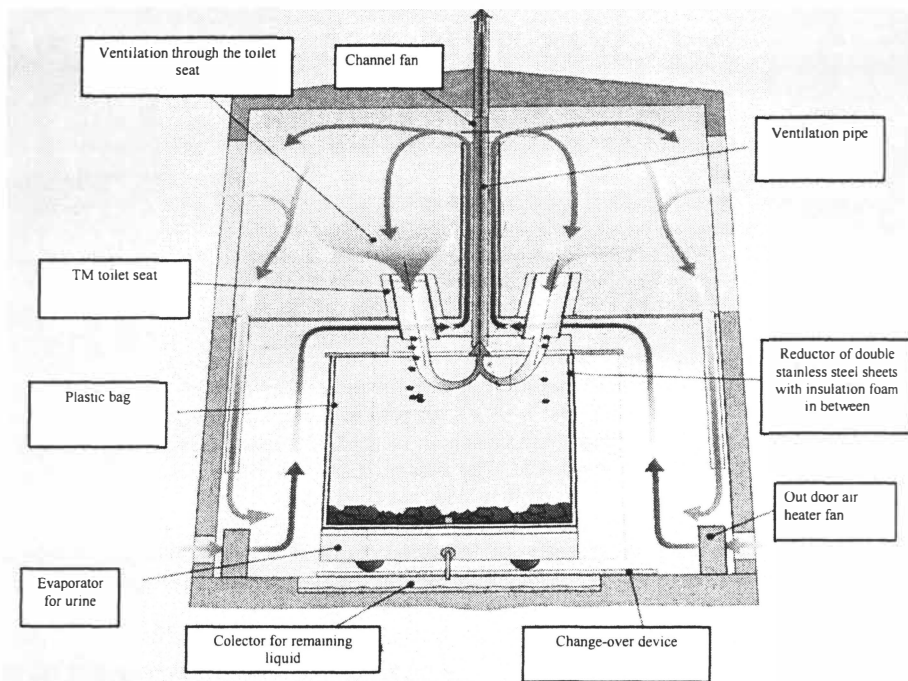


Figure 1. Schematic of the Terra Munda system

sewers pipes as well as purification plants. Optionally, the energy demand can be supplied from sun/wind energy.

The urine is transformed in the reducer to an essentially odourless fluid, water content reduced continuously, and drawn off to be spread on the field or evaporated to get the nutritious agents as easily handled dry substance. The latrine can thus be an important agent for improvement of the environment. Ventilation is through the toilet stool (see Figure 1), and air borne infectious agents will not enter the toilet which is essentially odour free. The first step in the latrine handling is shifting the place of the reducer under the toilet stools by which procedure the latrine is rapidly distributed on the surface of the bed of the reducer (see Figure 1). In so doing, the micro organisms in the total bed are activated and the faeces get a large area exposed to air facilitating decomposition and urine evaporation. In collaboration with Swedish and international universities the system is further developed, in particular in respect of the degradation of the latrine.

A potentially infectious agent should immediately be isolated to avoid spreading. In this case the faeces. In the plastic bag, also protecting the reducer from contamination, the faeces is isolated as soon as it leaves the body. The material can be isolated until any infectious agents or drug residues have been decomposed by long storage, pasteurizing or burning.

As the latrine is immediately isolated and finally treated in a contained process Terra Munda fulfils reasonable medical/hygienic requirements. The system is, by its low energy and almost insignificant transport demand and running cost, no connection and water fee or silt deposit transportation etc., very economic in relation to other means of latrine handling. The system has by its shifting procedure unlimited capacity irrespective of size and load, and is practically unsusceptible to natural catastrophes. Recent natural catastrophes have without exception destroyed the WC-system of affected densely populated areas followed by lack of sanitary premises. With the Terra Munda system an emergency plan can readily be developed which in a few days resolve the first sanitary problems irrespective of where they have evolved and in the long run build a practically catastrophe safe toilet system. With the latrine we can act in accordance with nature and by a simple and economic way reach environmental improvement or against nature and continue with a complicated and expensive system that destroys our environment. The choice is ours. The community has introduced the WC-system and forced the citizen to connect and accede. It should be the responsibility of the community to contribute to the development of a system resolving the environmental problems with latrines and toilets. The Terra Munda system is in function and used with extraordinarily results by the Swedish and Finish national road administrations, Swedint and by private persons. A complete production is operating with final mounting of turn key structures in our factory. The system can be built into present or locally produced buildings. Those interested in our solution to the toilet problem are kindly invited to visit our factory in Gamleby with an exposé of different types of Terra Munda- from the smallest replacing latrine containers to the largest for catastrophe effort and official toilets. Västervik community has also built an official medium size toilet according to latest experience in Gamleby which is also open for study visit.