

URBAN DEVELOPMENT AND HUMAN EXCRETA IN THE 21ST CENTURY

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At the beginning of the 21st century we are facing a serious crisis of environmental pollution and ecological imbalance. The crisis is endangering human existence and reproduction. The pollution caused by our own excrements is specially serious. In many areas water resources have been heavily polluted by discharge of untreated sewage directly into rivers and lakes.

The toilet is a product of our urban civilization. In 1852 the first flush toilet was installed in London and the flush system has since then become widely used all over the world. But is this a step in the right direction? We all know that water is the most essential resource for human life. More than 70% of the surface of the earth is covered by water, but the water that we can use is just a very small portion. At present 6-15 liters of water will be flushed each time we use a toilet - more than half the water we use every day. This use of large amounts of water to flush away a small amount of excreta creates a lot of transport, management and environmental problems. I want to suggest a different approach.

First, we must pay attention to the study of microbiology and biochemistry. The focal question of the toilet problem is the treatment of the excrement. The main component of the excrement is water, undigested fibres and microorganisms. There is plenty of nitrogen, phosphorus, potassium and other trace elements. We can use bacteria to treat the excrement. Bacteria utilize the nutritional elements to live and to reproduce. More excrement means faster reproduction. Through decomposition, excrement will turn into organic fertilizer, water, methane etc. Through high temperature treatment and sanitization the organic fertilizer can be used in agriculture production. The methane can be used as in urban areas. Water can be reused. If we industrialize the process we can not only change excrement into useful products and solve the pollution problem but also greatly promote the development of the economy. The key to the toilet problem is variety of microorganisms. The researcher find 80~120 kinds of the bacterial now. From the report the ecological toilet has been built in Beijing according to this principle. It is in the process of launch.

Second, we must put emphasis on the exploitation and utilization of material beneficial to environment protection. For example the material used to build toilets should be high technology nano material. It is not only solid and durable. The more important is it resists water, bacteria and pollution. The air purification equipment made from nano material can break down harmful gas into harmless substances. The energy of the toilet should be a new energy like solar and wind power. An energy source that is inexhaustible and non-polluting. The sanitary products such as toilet paper and sanitary napkins should be made of decomposable and retrievable material. This can sharply decrease the pollution of sanitary garbage. The pollution of the landscape from train train toilets can be solved that way.

Third, we must emphasize research and development of architectural and engineering aspects. A qualified ecological toilet should be not only graceful in the apparent to harmonize with the around environment but also rational in the inner structure. From the design of the urinal to the transport structure of the excrement should all be

scientific. At the same time we still must consider the problems of ventilation and cleaning.

The flush toilet is a symbol of 19th century human civilization. The new-style ecological toilet is the symbol of 21st century human civilization. The toilet is part of our urban civilization. The public toilet is the window of the civilization image of the city, the symbol of the developmental level of the economy and the quality of urban life. It shows the development level of the material civilization and the spiritual civilization and indicates the cultural quality of a nation. The ecological toilet should be used by every family thus solving a problem that has been puzzled people for thousands of years.