

# IMPROVEMENT OF NIGHTSOIL MANAGEMENT FOR HANOI

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## Introduction

Hanoi City is situated in the Red River Delta. The city covers an area of about 4,500 ha. The total population of is 2.5. million out of which 1.3 million are urban inhabitants. 14 % of the population is served by double-vault toilets; 11,5 % by bucket toilets; and the rest by public toilets. The key issues of human excreta management in Hanoi are poor maintenance of toilets; no standards for installation of toilets, an unregulated private sector for management and inadequate disposal facilities. These issues have had a negative impact on the environment and pose a high risk for human health. The paper presents several options for better management of human excreta in the city. Some technical options and recommendations for improvements of the service quality for nightsoil management in old quarters of the City are also given.

Existing sanitary conditions in Hanoi

Existing conditions in various parts of Hanoi can be described as follows:

**Village areas:** In the peri-urban part of Hanoi most households have 5 rooms under a tiled roof, a kitchen and an agricultural products store attached to the front wing of the house, a water tank and a fruit/flower garden. Each plot covers a total area of 200 - 500 m<sup>2</sup> of which the house occupies 20% - 30%. Village houses are inherited from generation to generation and are often situated next to each other, like urban terrace houses. The typical sanitary device is a single or double vault toilet with or without urine diversion. The (partially) treated excreta are used as fertilizer on the household's own land. In these parts of Hanoi there are no connections to sewers.

**Edges of village areas:** Due to rapid population growth there may be up to 4 generations living in one house. Over the last decades communal authorities have granted permission to cultivate and build on the edges of village areas to reduce the "overload" of traditional houses. The plots have a total area of 100 -200m<sup>2</sup>, 50 - 100m<sup>2</sup> of which is built-up area and the rest is garden . There may also be a small shop. The typical sanitary device is a single or double-vault toilet with or without urine diversion. The (partially) treated excreta are used as fertilizer on the household's own garden. In these parts of Hanoi there are no connections to sewers.

**Multi-story blocks of flats :** In an attempt to meet the demand for accommodation, the State, during the period of 1970 -1990, invested in the construction of multi-story blocks of flats. They were intended for State employees who did not own a house or who were living under crowded condition in town. Each block of is for 80 - 100 households. The individual flats have access via a balcony. The total area of each flat is 24, 28, 35, 41 or 55 sqm. Most of the heads of households are workers or officers who are renting the flats from the State.

The typical sanitary conditions in these blocks are on-site toilets or public bucket toilets. The inhabitants pay a periodic nightsoil collection fee. There are many groups of nightsoil collectors who collect from families with double-vault or bucket toilets. They collect periodically or as per request by the owners who pay them some money. The nightsoil is transported on simple vehicles such as bicycles with two baskets. Each bicycle can carry from 80 kg to 100 kg of nightsoil. The collectors receive about VND 50,000 (about USD 3?) from selling 100 kg of nightsoil.

**Institutional areas ( living quarters for employees of offices, reseach institudes,**

**colleges and the armed forces):** Some offices, colleges, hospitals, research institutes and army groups have large land areas often used to provide staff accommodation, usually in the form of one-story blocks for small households. Electricity and water fees are covered by the employer and there is no need to pay house rent. The typical sanitary device is a public bucket toilet or septic tank, depending on the economic conditions of the households. The City Authority is responsible for the collection of nightsoil. The Urban Environmental Company (URENCO) has a responsibility for the collection of nightsoil and sludge from the septic tanks of public toilets and sometimes individual toilets.

**Central areas:** The center consists of ancient streets with old buildings and high density. This is a commercial area crowded with people. Sanitary facilities were constructed a long time ago and have never been upgraded. The most common sanitation systems is bucket toilets serving groups of households in narrow lanes.

**New buildings:** Urban high-income earners have invested in land bought from local people and built 2 - 3 story buildings for different purposes such as restaurants, hotels, offices and rental accommodation for foreigners. These buildings have flush toilets connected to municipal sewers. Effluent from septic tanks are also discharged into the municipal sewers.

### **Key issues**

According to a report in 1998, the quantity of collected nightsoil is 760 tones /year. The nightsoil is collected either by the Urban Environmental Company (URENCO) or by private entrepreneurs. The collection work is manual for bucket and double-vault toilets and by vehicles with vacuum pumps for septic tanks.

The key issues of nightsoil management in Hanoi are:

- Poor maintenance of toilets; no standards for installation of toilets, unregulated private sector for operation and inadequate disposal facilities.
- The organic wastes both dry and wet are not reused in a hygienic way. The excreta are used as fertilizer without adequate treatment and therefore constitute a high risk for public health.
- In the regions where human faeces have not been collected and utilized, many problems face the government cadres and officials who are responsible for initiating changes to make the people collect and utilize human faeces and urine. It is difficult to make people understand the use of fertilizers and to make them abandon their prejudices.
- Inadequate human resources for the sector and bureaucratic planning and payment systems.

These issues are having a negative impact on the environment and constitute a high public risk.

### **Proposals**

It is necessary to have sanitary state enterprises responsible for processing the collected faeces and for selling it to the farmers, so that hygienic standards can be maintained and infectious diseases prevented. Limited transportation of the compost should be allowed within the city. The farmers to whom the compost is distributed should be instructed by the sanitary state enterprises and agricultural officials on how best to utilize the compost.

In the old urban districts there should be demonstration public toilets based on urine diversion so as to gain experience and to provide visible evidence to the people.

Excreta and solid waste processing plants for Hanoi should be established. Human faeces and urine are the main components needed to provide good quality compost.