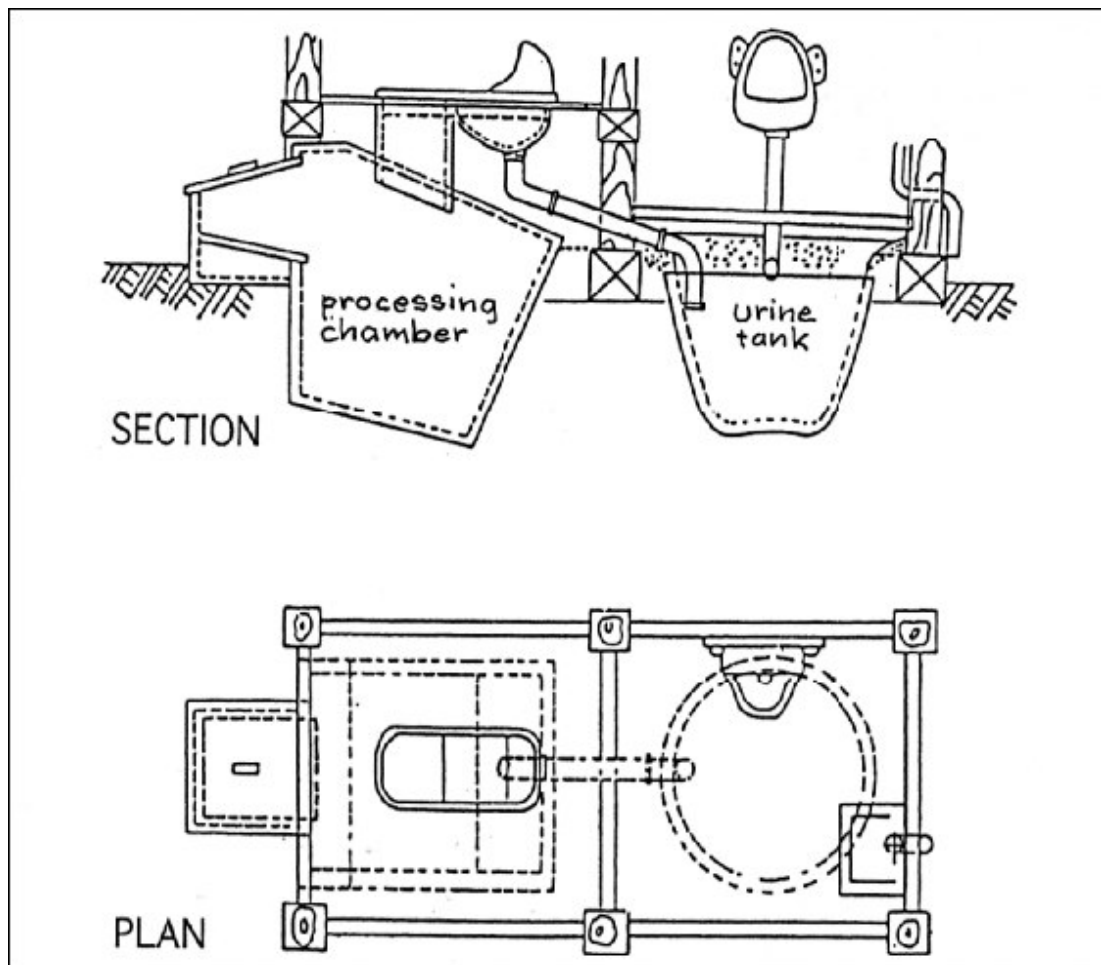


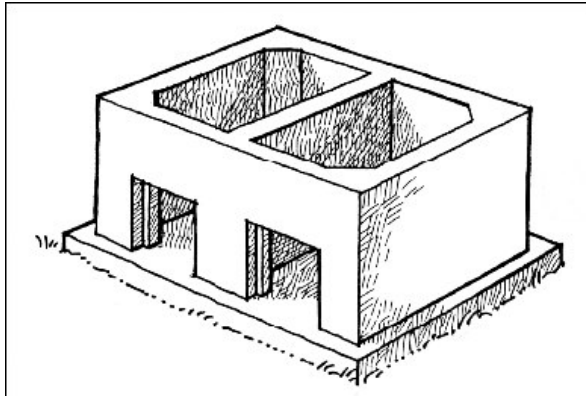
The traditional Vietnamese double vault toilet

The classic example of an ecological sanitation system is the Vietnamese double-vault toilet. It is widely used in northern Vietnam and over the past 25 years the concept has also been introduced in a number of countries around the world, for example China, Mexico and Sweden. In northern Vietnam it used to be common practice to fertilize rice fields with fresh excreta. As this was a dangerous practice, in 1956 the health authorities started campaigns to construct double-vault dry toilets. The campaigns were followed by long and persistent health education programmes. The objective of the new toilet design was to kill pathogens before the faeces were spread on the fields. A precursor to the Vietnamese system was developed around 1950 at the Kanagawa Prefectural Public Health Laboratory in Yokohama¹.



Section and plan of a urine diverting toilet ('Benjo') developed at the Kanagawa Prefectural Public Health Laboratory, Yokohama, Japan, around 1950.

The Vietnamese toilet consists of two processing chambers each with a volume of about 0.3 cubic metres. The toilet is built entirely above ground with the processing chambers placed on a solid floor of concrete, bricks or clay. The floor is built up to at least 10 cm above ground so that heavy rains do not flood it.



The processing chambers of the Vietnamese double-vault toilet. Each vault is 80 x 80 x 50 cm. The picture also shows the two 30 x 30 cm openings for removal of dehydrated material.

The processing chambers are covered with a squatting slab that has two drop holes, footrests and a groove for urine. Both holes have tight-fitting lids (not shown in Figure 3.3). At the back there are two openings, 30 x 30 cm, for the removal of the dehydrated material. These openings are kept sealed until it is time to empty one of the chambers.

People excrete in only one chamber until it fills. Before the vault is used for the first time, the household members cover the floor with a layer of powdered earth. The purpose of this earth is to absorb moisture from the faeces and to prevent them from sticking to the floor. After each use people sprinkle two bowls of ashes over the faeces. The ashes absorb moisture, neutralize bad odours and make the faeces less attractive to flies. Urine drains away through the groove in the slab and collects in a jar behind the toilet. Paper used for anal cleaning is dropped in a box or jar and burnt. Thus in the receptacle there are only faeces, ashes and soil. The contents are therefore fairly dry and compact. The jar for collection of urine can be placed in position either empty or partly filled with water, lime or ashes. The urine or the urine-soaked ashes are used as a fertilizer. The first vault can be used for about 4–5 months by a household of 4–6 persons. When it is two-thirds full, someone in the household levels the content with a stick. He or she then fills the vault to the brim with dried, powdered earth, and seals the vault. All openings are tightly closed with lime mortar or clay. The other vault now comes into use instead. When the second vault is nearly full, he or she opens and empties the first vault. The dehydrated faeces, now odourless, are used as fertilizer. The Nha Trang Pasteur Institute recommends a retention time of 6 months and in cool climates 10 months². In Vietnam the experience of this system is mixed. There is no doubt that it does function well when properly used. A problem in northern Vietnam used to be that some farmers emptied the processing chambers whenever they needed fertilizer, regardless of the retention time. This means that partly processed and even fresh faeces were occasionally spread in the fields. As a result of persistent health education this behaviour is nowadays less common.

Text and images from:

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References:

¹ Kodama, T., Harada, F., Muto, N., Morikubo, S. and Okamoto, H. (1955) the studies about parasite control in rural areas in Japan – the new type of pit privy to separate urine and stool. *Yokohama Medical Bulletin*, 6(2), April. Yokohama University School of Medicine, Japan.

² Duong Trong Phi, Bui Chi Chung, Le Thi Hong Hanh and Harada, H. (2004) *Report on Results of Ascaris suum tests to evaluate pathogen dieoff in fecal material inside the ecosan toilets built in Dan Phuong-Lam Ha-Lam Dong-Vietnam*. Report to Ministry of Health, Hanoi, Vietnam, and JICA, Tokyo, Japan.