

# SEWAGE TREATMENT PLANTS IN SMALL TOWNS OF UKRAINE

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The problem of drainage and wastewater treatment of small towns in Ukraine is extremely relevant even today. Only about 57% of small towns and urban settlements have centralized sewerage systems. Also, less than 5% of rural settlements are connected to sewerage systems [1].

This problem is extremely relevant due to the pollution of rivers and groundwater by insufficiently treated or untreated wastewater.

It is important to identify whether there is a dependence on the geographical location of small towns in Ukraine, or whether this is a common problem common throughout the country. The authors propose such an analysis on the example of small towns, such as Yaremche located in Ivano-Frankivsk region, Vilkove (Odessa region), Chuguiv (Kharkiv region) and Skole (Lviv region).

In a study of small towns, it was determined that in all selected cities there are problems with drainage, wastewater treatment and storm sewer systems. Wastewater treatment plants in small towns have been in operation since the 1970s and 1980s.

Local authorities are trying to solve these problems, but they lack the funds.

Yaremche is a mountain town where the organization of treatment facilities is a separate problem.

In 2017-2018, a complete modernization of treatment facilities was started in Yaremche. Construction and modernization are now suspended, the city still uses an outdated biological wastewater treatment system in ponds.

Vilkove also has a similar problem. The city is situated on Danube River delta and built on a network of canals. It is quite difficult to plan such a sewerage system to cover all buildings. In 2018, a new modern wastewater treatment system was built in the city. The project envisaged a large number of pumping stations. Unfortunately the sewerage system also did not cover the entire city. And in 2021 the system is working intermittently due to debt for electricity.

The existing treatment facilities in Skole were put into operation in the 1970s. The percentage of obsolescence of technological equipment is currently over 90%.

In Chuguiv, the same situation is observed with the obsolescence of treatment facilities.

Analysis of the international experience of solving this problem allows us to identify four areas of solution:

1. Connection of small cities to sewage treatment plants of large cities.

2. Connection of several settlements to one sewer system with joint treatment facilities.
  3. Construction of individual treatment facilities for each settlement
  4. Construction of autonomous treatment facilities for individual buildings [2].
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1. Sustainable sanitation in Central and Eastern Europe - meeting the needs of small and medium-sized settlements / Ed. I. Bodik and P. Ridderstolp. - Global Water Partnership Central and Eastern Europe, 2007.
  2. Hirol, N.N. & Protsenko, S.B. & Kowalski, Dariusz & Girol, Anna & Lagod, Grzegorz & Kravchenko, V.S. & Macneva, T.S. & Jakimchuk, B.N. & Kovalchuk, A.V.. (2014). Канализация малых населенных пунктов. 10.13140/RG.2.1.4093.6726.