



FAO European Cooperative  
Research Network



## **Recycling of Agricultural, Municipal and Industrial Residues in Agriculture**

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### **RAMIRAN 2002**

**Proceedings of the 10<sup>th</sup> International Conference  
of the RAMIRAN Network**

**General Theme: Hygiene Safety**

**Štrbské Pleso, High Tatras, Slovak Republic  
May 14 - 18, 2002**

**Edited by Ján Venglovský and Gertruda Gréserová**

ISBN 80-88985-68-4



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## INFLUENCING OF A MUNICIPAL WASTE OF CITY ON ENVIRONMENT (AN EXAMPLE LVIV, UKRAINE)

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A lengthy period of industrial production decline, which has taken place in Ukraine for the last 10 years, has not resulted in decreasing the negative tendency of waste accumulation. Unfortunately, the waste secondary usage in industry and households does not grow either. Lviv region is one of four regions of Ukraine, which are characterized by the highest indexes of waste accumulation (National report, 1999).

During the last three years Lviv urban dumps (area of city - 171 km<sup>2</sup>, quantity of the inhabitants - 813 thousand people) received municipal waste in the amount of 1 mln m<sup>3</sup>/yr, which makes 1,15 mln m<sup>3</sup>/yr per person (0,77 kg / day/person). Till now the programs of separate waste collecting have not been implemented in the city, therefore urban dumps receive both organic, and inorganic wastes, which creates a wide range of ecological problems, bound with municipal waste impact on environment. All municipal waste of Lviv is removed to the urban dump, which was created in 1956. The dump is 5 km away from the city and occupies the area of 33 ha, the altitude of the dump makes 45 m. Total amount of waste stored by municipal services during last 3 years makes 10700 t/years. According to the information given by the city dump administration, the structure of municipal waste consisting of organic matters for 50-60%, is characterized by predominance of paper (up to 40-50%), and also waste of plastic (up to 12 %) that can be considered valuable secondary raw materials.

The ecological situation around the dump remains very tight. The results of analyses of underground assays of water in operating wells of quaternary and cretaceous aquifers horizons, conducted by the state geologic enterprise Westukrgeology in 1992, revealed considerable contamination of water by chloride, sodium, manganese, beryllium, chromium, nickel, cadmium, titanium, strontium, phenol, simazin. The soil cover of the dump area is contaminated by lead, zinc, chromium and other heavy metals. The analysis of vegetables grown on plots of land in dump influence zone (up to 200 m) testifies a considerable excess of the permissible level of cadmium, lead and arsenic in beet and cabbage (by 20-30, 3-5 and 5-9 times respectively). These data also confirm results of lithochemical examination of the dump conducted in 1998 by Institute of geology and geochemistry of full minerals of the National Academy of Sciences of Ukraine. Data of the laboratory of department of the analytical control of State department of ecology and natural resources in the Lviv region testify a decrease of a general level of contamination of underground water in the dump area, though parameters of biological oxygen absorption, general oxidizability, contents of chlorides, ammonium of nitrogen and lead exceed the standards, adopted in Ukraine, by 1.1-5,6; 12-14, 25-28; 11-14 and 30 times respectively.

Examinations of health of the population living in the dump influence zone have not shown special deviations of parameters of morbidity from the parameters typical in the

Lviv region. Though, a long-term influence of contaminants on health of the population can be exercised in the more distant future.

Lviv regional administration has decided to close the Lviv urban dump of a municipal waste by 2006. But the problem what to do with the existing object remains open. There are some projects targeted at using the dump for effecting biogas and its recultivation. But the final solution still waits for its time, and there remains very little time.