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LANDFILLS AND LANDFILLING IN ESTONIA

Jüri Teder
PIC Estonia Ltd.
Estonia

HISTORICAL BACKGROUND

Waste disposal and treatment follows causally its generation. The practice of waste dumping in Estonia has been influenced by historical features of waste generation. Over centuries Estonians' main activities was agriculture, fishing and handicraft. The low-urbanised peasant society's in habits and culture did not know the term "a waste". The residues formed in small farms and settlements were handled by the people themselves, treated and adapted by the nature unnoticeably. The main reason of this possibility was that all type of waste were rich in bio-degradable organic matter. The content of hazardous chemicals and non-biodegradable material was null. Due to very little number of towns and the specific composition of municipal waste the dumpsites in vicinity of the settlements did not give occasion of environmental pollution caused by waste.

The situation changed after the springing up of light and heavy industry in Estonia last century. The construction of manufactures, shipyards and factories influenced Estonian's manner of life and resulted in the growth of the towns. All this reflected in waste generation and disposal. The situation became more complex with the starting of mining activities before World War II, especially with the growth of the oil shale mining and its thermal processing. The oil shale mining and processing waste was accumulated in huge heaps, dumps and landfills, as well as ever growing amounts of urban and other industrial waste. But, the change did not turn to dangerous as one can conclude. The local traditions and Estonian's mentality in communication with the nature resisted to develop waste generation up to the fatal accidents. The open dumpings created more nuisance than a persistent threat to public health and environment. The managing with the waste and dumpsites was not influenced by the State, it was primarily a local task.

Since 1940 until 1991, when Estonia was occupied by the Soviet Union, the system alien to the national mentality and traditional values was imposed on the country. Significant ecological changes occurred due to pollution of the environment, caused primarily by overdeveloped industrialisation and urbanisation, inappropriate for local needs oil-shale mining, processing and power production, also by the large-scale and concentrated agricultural production. The use of new synthetic, often toxic and dangerous materials, including chemicals, plastics, heavy metals, radioactive products, pesticides and solvents had additional impact on the composition and quality of waste considering its hazard to human health and environment. The nature was no longer able to handle the increased volumes and different types of waste and accept the bigger and smaller dumpsites spread all over the land. For Estonia, the era started of being too small and nature too weak for the treatment of generated and disposed waste.

CONTEMPORARY SITUATION

The seriousness of the present waste problems is induced by the huge amounts of waste generated every year. The annual waste generation in 1995 was 13.6 million tons. The main part of this volume, some 7.6 mln t, can be characterised as hazardous waste according to the Estonian Waste Classifier. Oil-shale mining and quarrying together with oil-shale energy-based production and the chemical industry dominate (92% of total waste generation) among the waste sources. The average annual amount of solid municipal waste and sewage sludge makes together 687,000 t; i.e. about 450 kg per capita.

As the consequence, growing amounts of industrial and municipal waste rose the number of landfills up to 521. Thus, Estonia became during the half century rich in landfills. (The of term (sanitary)landfill is for Estonia incorrect, because most of the existing and abandoned landfills are actually dumpsites without proper methods for environmentally sound disposal. This is the main reason why in use of landfills engineering and technical efforts must be done in order to minimise landfills' hazards and nuisances.)

Table: The current situation with landfills in Estonia according to the results of inventory

Type of landfill	Amount of landfills			
	Functioning	Not functioning	In design phase	Total
For municipal waste	250	92	9	351
For industrial waste	52	27	-	79
For animals carcasses	47	44	-	91
TOTAL	349	163	9	521

By the Estonian Landfill Register 48% of all landfills are specified as the municipal waste landfills and 71 % of them are in use. About 31 % of all landfills are not functioning now. It does not mean that they are closed down on up-to-date level. Unfortunately, most of them (particularly landfills for municipal waste) are closed only on a paper, i.e. by the order of local government. Only the number of dumping places for dead animals is diminished remarkably.

Majority of industrial waste landfills are located in north-east of Estonia. They are as the heaps of residues from oil-shale mining and processing or the plane depositories ("ashland") occupying over 2000 ha of land. Especially dangerous to the environment are the heaps containing oil-shale processing waste - semi-coke and other residues; the ash deposits near electric power plants and the radioactive waste depository at Sillamäe. This is the main feature of to-day's landfilling practise in Estonia.

The functioning landfills for municipal waste (250) are versatile characterised by the Register. There are 14 bigger sites covering area over 6 ha each. First position has Tallinn landfill - site area is 28 ha and 3.5 mil. tons of waste is deposited. But, there are 156 landfills (62 %) covering each the area only 1.5 ha. As the rule, they are situated in rural areas. Being relatively low in capacity and having infrequency in use, the aerobic process of waste biodegradation prevails. In contrary to the environmentally hazardous industrial waste landfills, they are not polluting groundwater and air. It is considered that the pollution risk from municipal waste landfills is connected with the remaining 95-100 bigger sites. This is the second feature of current Estonian landfilling.

The history of waste generation and landfilling in Estonia clearly reflects the grimaces of planning economy which was introduced in 1940. The political system made possible to value only the growth of industrial/agricultural production and undervalue the nature and environment. It resulted in the nonsense that every bigger industrial enterprise or agricultural farm took the liberty to establish its own landfill and once it has been established not to manage it in a proper way. Now, the generation of nineties in Estonia, has to deal with the problems and results of wrong landfilling.

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