

Ways of achieving null waste point in municipal solid waste handling

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The problem of municipal solid waste (MSW) is very actual as its solution connected with a necessity to guarantee the normal vital functions of population, sanitary city cleaning, environmental protection and saving of resources.

Incremental transition from polygon burying to industrial recycling is the basic tend of decision of the MSW problem in the world practice.

In the Odessa agglomeration 800 000 tons of solid waste are produced annually. Part of them is transported to the two city dumps. The term of exploitation of one of them has expired in 1979. That is why the solution of this problem should be found immediately and in the complex way.

As the expensive industrial recycling is the final stage in the general scheme of solid waste management and its efficiency depends on the organization of the process on the each of previous stages (collecting and transporting or removing MSW) the primary task in the MSW management for the nearest prospect is the optimization of their collection and removing

In accordance with the conception developed in the Odessa State Environmental University (Complex Approach to the Increasing of Efficiency of Solid Waste Handling) it is expedient to determine such streams of waste:

1. Organic substances that can easily decompose :food organics, leaves;
2. Inert mineral waste of large size: building waste;
3. Potential secondary mineral resources (SMR): old furniture, home electronics, container collection waste (literary garbage, metals, glass, rubber, leather, textiles);
4. Dangerous waste: medical waste, mercury lamps, accumulators, batteries.

Managing the stream of potential SMR must be built on the principle of economical expediency in the chain waste producer – waste sorter – SMR recycler. Realization of this principle is possible because activities in separate waste collection must stimulate subjects that produce it.

The system of separate waste collection is well developed in such European countries as Denmark, Netherlands, Germany. Variants of collecting secondary raw materials in different countries and territories may vary depending on local conditions: waste containers near the buildings, specialized centers of secondary raw materials collection, paid collection centers.

Forming the waste market and the market of waste-made products is very important. If there is no market of secondary raw materials the system of separate collecting will not develop and dumps will expand beyond the city boundaries.

Sorting of solid waste directly in its source eliminates the possibility of mixing the wastes and of destructive influence on the natural environment in the case of burying dangerous household waste at the polygon.

The alternative for dumps and combustion plants is the step-by-step formation of the system of primary garbage sorting beginning from collecting especially dangerous waste (mercury lamps, batteries, etc.) and finishing with refusal of using refuse chutes – the main source of unsorted waste. Presorting of garbage allows processing it directly in the city, to save valuable raw materials.

There are different modifications of waste separating technologies. Sometimes separate collecting in two containers is provided: one is for waste that can be used as the secondary raw materials and the second for all other waste. Then the potential SMR are transported to specialized plants where they are sorted for categories: glass, paper, metal, plastic, etc. Such approach requires the participation of sociability.

Ideally waste should be separated (not mixed) by its “source” – population or the staff of organizations producing so-called “commercial waste”. No program of secondary raw materials collecting will work by itself without definite efforts of the local authority.

The simplest way to stimulate the secondary raw materials collecting is to equip the centre of such collecting. Such centre can be a kind of a stall with several containers where citizens should throw away definite materials (for example, a container for green glass, a container for paper, etc.)

Generally the dilemma of any secondary raw materials collecting program can be presented in such way: the more complex are requirements for citizens, the higher quality of collected materials, the less necessity in additional processing, the more probability of economical success of the program but the less level of citizens' participation.

Important role may be played by an economical incentive – establishment of a differentiated payment for waste removal depending on its quantity. The other economical instrument of waste management should be mentioned – establishing the price for which one could return some of used materials. Such price is usually set for those kinds of production which are undesirable in the general waste stream (e.g. automobile accumulators). Such approach has also negative aspects, e.g. baseless high price can cause theft of accumulators. But if the price is set rationally this instrument can be very effective. One of the brightest examples is the soviet system of prices for returning glass bottles. This system has been working for many years in spite of changing of social order and economical conditions.

The existing state of the problem of municipal solid waste in Odessa agglomeration is very close to a critical situation. It is essential to take immediate measures for decreasing quantity of waste which are accumulating on the existing dumps and on the new ones. This goal can be achieved in the way of organizing a rational system of separate waste collecting and further processing with extraction of valuable components of potential secondary mineral resources. The only one requirement to this system – it should be elaborate.