



## **Elimination of landfills and dumps followed by decontamination of the territory and obtaining energy for own consumption.**

The project envisages establishment of a company for the disposal of municipal solid waste (MSW), all types of oil sludge and acid sludge, as well as tires and other rubber technical goods with a capacity of 100 cubic meters of raw materials per day using the technology of low-temperature pyrolysis (one reactor). The company will generate revenues from disposal services fees, as well as revenues from processed products sales: liquid furnace fuel 35-50% (pyrolysis oil), carbon black 20-30% (soot), scrap metal 1-5%.

The project is supposed to be scalable and have significant potential for further development. The company perceives itself as a socially important and cost-effective business in the area of economically deleterious waste disposal. The recycling carried out under the project will benefit society by means of recycling hazardous waste into non-renewable resources (petroleum products).

## **Environmental proposal**

### **General purposes:**

- 1 - elimination of solid waste landfills
- 2 - solution of environmental problems at the site of the solid waste landfills
- 3 - effective suppression of pathogenic microflora contained in wastes buried in the landfill and surrounding soils
- 4 - provision of electricity to the equipment that is part of the landfill elimination plant by means of generating energy carriers in the course of the treatment of waste buried at the landfill
- 5 - increasing the profitability of the project due to the sale of synthetic motor fuel obtained from waste processing
- 6 – recovery of the territory by means of area decontamination and biological reclamation, drawing territories back into economic circulation
- 7 - employment of highly efficient equipment and technology for the elimination of landfills and dumps
- 8 – soil and air sampling for analysis of the ecological condition prior to the commencement of the operations and after dump disposal.



### **Novelty, competitiveness.**

The project implies to use new techno-biological solutions for processing of stale waste, depending on the decomposition state of the organic matter in the landfill body. The novelty of the technical solution lies in the use of various technological processes and equipment, depending on the degree of decomposition of the organic matter in the landfill body.

Exploration of solid waste landfills in various countries has demonstrated 18-35% residual content of organic matter in 20-40 years old horizons. For those layers, it is viable to use biological products accelerating the processes of organic matter anaerobic fermentation. The next stage consists in forced sampling and safe utilization of biogas followed by full-scale decontamination of the landfill body, immobilization of hydrogen sulfide and mercaptans, and obtaining the residue for further processing in the pyrolysis reactor.

There is no competition in the area of the proposed project as European countries prefer to create ski slopes and parks on the top of locked solid waste landfills instead of cultivating them, thus ignoring the fact that such landfills are a time bomb destroying environment, poisoning larger territories every year. A non-deactivated solid waste landfill, according to experts, is sure to poison the territory, air and underground aquifers **for 100 to 150 years.**

### **THE FIRST PHASE OF THE PROJECT INCLUDES:**

Air sampling at the landfill site and the surrounding areas.

Soil sampling from the ground level to -30 meters mark, taking samples each meter throughout a vertical well. Sampling wells shall be drilled in the area surrounding the landfill.

Drilling wells in the body of the landfill and in the surrounding area, connecting wells into a common mainline, introducing a biological product to accelerate the fermentation process, pumping out and utilizing biogas in increased volumes, neutralizing hazard class 2 hydrogen sulfide and mercaptans that pollute the environment and poison the air.

After reducing the amount of emitted biogas to the safe level, biological products are introduced into the wells for binding toxic substances into inert compounds, effectively destroying residual organic matter and pathogenic microflora. These biological products are successfully used in industrial wastewater treatment plants for the treatment of highly polluted wastewater and its degassing to the state of technical water with the possibility of its discharge into fish-breeding reservoirs. The biological products sink into the ground through the body of the landfill, neutralize the accumulated toxic substances and pathogenic microflora, degas the soil being spread by groundwater, which contributes to the rapid recovery of fertile ground and underlying soils, without employing expensive and ineffective mechanical or chemical recultivation.



## **THE SECOND PHASE OF THE PROJECT INCLUDES:**

Installation of a processing plant, development of the deactivated landfill body followed by crushing the matter and processing it in high-power pyrolysis reactors. Refined products in the form of liquid fuel will be sold to increase the profitability of the project, and the gas fraction will be used as flue gas in pyrolysis reactors and gas-electric devices to meet the electricity consumption needs of the facility's equipment. The processed soil will be partly used as a filling at the pit bottom, and partly for the production of environmentally friendly building materials.

**The final stage of the work is soil and ambient air re-sampling with the provision of test results to the customer and public at large.**