

In nearby land, lead, zinc, copper, iron, manganese, tin and antimony are found. With more than 5.5 million tons of flotation tailings material of mine “Grot”, this area is the tailings pond with the highest altitude in the Republic of Serbia. Vegetation is not developed. On the surrounding land, there was mineralized dust spotted, and in soil there are stated heavy metals of anthropogenic origin from the tailings pond. The most toxic heavy metal is lead. This is the basis of, “Heavy metals in the soil around the flotation tailings of lead-zinc mine “Grot” southeastern Serbia,” professional paper, written by V. Bozidar Djokic, Milun Jovanovic and Olivera Djokic, from the Geological Institute of Serbia, and the Highway Institute. The paper was published in the journal “Mining and Metallurgy Engineering Bor” from 2013. This journal is issued by the Institute for Mining and Metallurgy Bor.

As mining activities generate waste, near mines landfills are formed in Serbia which are mostly unsecured. Data on the material in landfills are missing, presented mainly in the form of fund documentation. The impacts of the landfill on the surrounding land, water and air, through which toxic substances are easily introduced into the food chain, and the human organism, are rarely analyzed. Basic information from the tailings pond “Grot” are also missing. Lands around “Grot” were developed at Surdulica granodiorite. Local residents consumed agricultural products, produced on it.

After the information about the mine tailings pond “Grot” (formed on the plateau of Seliski stream) and the surrounding area, the authors present the results of quantitative and qualitative analysis.

In the Seliski stream valley, about 5.5 Mt of overburden material was deposited, which is during its flotation preparation is treated with chemicals that cause cancer and mutagenic changes in the environment. On the soil surface around the tailings pond mineralized dust was found, indicates recent contamination. From heavy metals in the soil from the tailings pond, were found lead, zinc, copper, iron, manganese, tin and antimony. These contents in the soil were still smaller than in tailings pond. The presence in the soil is of anthropogenic origin, and depends on the processing activities of the mine “Grot”, and concentration on the terrain morphology and weather conditions. Lead is the most toxic heavy metal that is continuously determined in the soil. Concentrated in the surface horizon, of shallow soil, lead penetrates deeper into horizons. Despite the absence of data of meteorological stations, that would indicate the dominant wind directions (the nearest are in Vranje and Bosilegrad, but due to the distance from the tailings and large altitude difference is not relevant) observed macroscopic mineralization in the soil indicates, that the dominant wind direction can be from north to the south.

The mine “Grot”, from whose activities have great impact on the quality of the living environment, is practically the only company in which business can find by local population that belongs to territorially Vranje, one of the most underdeveloped municipalities in the Republic of Serbia.

Further investigations will be focused on identifying the presence of these elements in the soil vegetation in the environment, and in their bioavailability determination. Applied sequential analysis would give evaluating of the toxicity potential of heavy metals.