INTEGRATION OPPORTUNITIES OF CENTRAL FLOTATION POND FROM BAIA MARE IN THE MINING CIRCULAR ECONOMY

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Abstract

During time, society was concerned with industry development, by optimising the equipments in order to increase production and relieve employees work. The actual economy is also based on a linear model of consuming the resources, in which companies are extracting the raw materials and using them to obtain different products that are sold to consumers. But when the products no longer meet their necessities, they are thrown away, favouring a deficitary wastes management, which is considered a fundamental problem of future socio-economic evolution. In Romania, one of the most relevant waste streams generator is mining industry, with a total number of 19 mining spots located in Baia Mare area, a region with tradition in the extraction and processing of ores, where tailings have been improperly stored, causing soil, water and air pollution, but also health diseases of the inhabitants from the area. Central flotation pond (CFP) are a great interest because of their content of Cu, Pb, Zn, Au that can be reintroduced in the economic circuit by the recovery of the raw materials. Therefore, the actual tendency is to implement a circular economy, which is a regenerative system based on the use of a renewable energy sources, disposal of the toxic chemicals and waste, through the design of new materials and products. Also, a rational exploitation, processing and usage of the raw materials, together with an efficient wastes management will have a positive impact on improving humans present and future life, by preserving the natural resources for a longer period of time and saving the planet.

Raw materials

- Overproduction
- Accumulation of waste
- Reduced life cycles
- Over-exploitation of natural resources

Chemical composition of main ores (source K. Kouzmanov) vs CFP

<table>
<thead>
<tr>
<th></th>
<th>Zn</th>
<th>Pb</th>
<th>Ag</th>
<th>Au</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavnic (5.9 Mt)</td>
<td>5.9 %</td>
<td>1.5 %</td>
<td>27 g/t</td>
<td>0.4 g/t</td>
</tr>
<tr>
<td>Suior (9.3 Mt)</td>
<td>9.3 %</td>
<td>1.4 %</td>
<td>36 g/t</td>
<td>3 g/t</td>
</tr>
<tr>
<td>Herja (1 Mt)</td>
<td>5.2 %</td>
<td>3.5 %</td>
<td>47 g/t</td>
<td>0.4 g/t</td>
</tr>
<tr>
<td>Experimental composition</td>
<td>0.57 %</td>
<td>3.5 %</td>
<td>0.0075 %</td>
<td>0.002 %</td>
</tr>
</tbody>
</table>

Comments and Conclusions:

Waste management has become a fundamental problem of future socio-economic evolution, a direct result of traditional linear economic development. The transition from linear to circular economy aims to reuse the product that is recycled when it ends its life. The circular economy is more environmentally friendly and its main objective include sustainable economic growth. The mine waste management for the tailing dams of Baia Mare area has his main goal to reduce the environmental impact and maximize the environmental performances in the region.

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