BRUCITE AS A NEW NATURAL SORBENT FOR WATER PURIFICATION

Description
Brucite, a hydroxide mineral (Mg(OH)$_2$), can be used as a sorbent for:
- extraction of heavy metal ions from natural and industrial waste waters;
- cleaning of drinking groundwater from iron and manganese;
- filtering in household filters.

Technical appraisal and economic benefits
- high-capacity sorption of heavy metal ions (see Table for comparison with other sorbents):

<table>
<thead>
<tr>
<th>Sorbent</th>
<th>Sorptive capacity, mg/g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active carbon</td>
<td>100 - 120</td>
</tr>
<tr>
<td>Sulfonated coal</td>
<td>up to 100</td>
</tr>
<tr>
<td>Resin</td>
<td>100 - 150</td>
</tr>
<tr>
<td>Zeolites</td>
<td>40 - 50</td>
</tr>
<tr>
<td>Modified zeolites</td>
<td>80 - 100</td>
</tr>
<tr>
<td>Brucite</td>
<td>900-1400</td>
</tr>
</tbody>
</table>

- no secondary pollution of water;
- reactivation by lean solutions of mineral acids with complete recovery of sorptive capacity;
- operation in both static and dynamic modes;
- possibilities for improvement of sorptive capacity by modification.

Application areas
- purification of drinking and waste water;
- sterilization of galvanic production flows;
- selective extraction of heavy metal ions;
- decontamination from highly dangerous admixtures (mercury, lead, bismuth, etc.);
- neutralization of acid waste waters in hydrometallurgy.

Development stage
A set of laboratory studies and experimental-industrial tests at various objects.

Patent situation

Commercial offers
Consultancy, cooperation in design.

Estimated cost
Varies as a function of conditions and purposes of application. Separate estimates are required in each case.

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