

Technology's description

The invention described here relates to a co-culture of resistant bacterium of the Mesotoga lineage and at least one Hydrogenotrophic Sulfato-reducing bacterium. The process is proved to be a treatment method of heavy metals contaminated sediments.

This specific coculture of bacteria used here is particularly efficient in the treatment of Phosphogypsum, an industrial byproduct formed during the production of phosphate fertilizer when treating apatite and Phosphorite with sulfuric acid. Those gypsum can be toxic and/or radioactive and hazardous for the environment. Furthermore, Phosphogypsum materials are usually toxic for common bacteria.

The proposed treatment can be performed at temperatures ranging from 25°C to 55°C and particularly from 30°C to 40°C. The receptor element can be Sulfur or heavy metals (As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Sn or Tl). The donor element can be of several forms, such as Lactate, Fructose or Chlorophenolic.

Advantages

- High bacteria resistance & tolerance to the toxic environment ;
- Immobilization or precipitation of metals ;
- Separation of precipitated metals ;
- Low cost bioprocess with high performances in terms of metals elimination, using cheap substrates (sugar or organic wastes).
- Wastes & metals recycling opportunities.

Applications

Soil & industrial effluent treatments.
Treatment of Phosphogypsum.

Intellectual property

Patent

Development level

Technology validated in lab



Technology transfer

- Licence ; Know-how.

