

Contact: Steve Dundorf, (303) 445-2263

Desalting and Water Purification Research Program

Evaluation of Biological Treatment of Perchlorate Impaired Water Supplies

DWPR Report #116, S.G. Lehman et al., MWH

Background:

Perchlorate is an inorganic salt used as an oxidizer in solid propellants for rockets, missiles, and fireworks. It is on USEPA's drinking water Contaminant Candidate List and regulated by California DHS at a level of 6 ppb.

There are many ways to treat for perchlorate. MWH evaluated ion-exchange (IX) to remove it from the source water with biological treatment to reduce perchlorate in the IX regeneration brine to chloride.

Objectives:

- Demonstrate IX treatment,
- Improve biological brine treatment to enhance perchlorate reduction,
- Determine if treated brine can be reused for IX resin regeneration,
- Optimize reactor configurations, and
- Determine cost parameters.



Results:

IX was evaluated using chemical brine treatment, biological treatment using a sequencing batch reactor and a fluidized bed reactor. Cost estimates were compared to single use disposable IX resin. Disposable resin had a slight capital cost advantage over the two biological treatment methods, but the highest O&M cost. The biological fluidized bed reactor configuration for IX brine treatment was most cost effective on an annual basis, with a cost of \$1.11 per thousand gallons.

