

Successful Selenium Removal from Coal Pond Water

Sorbster was tasked with removing selenium from the retention pond of a coal fired power plant. We used a specially designed blend of Sorbster® Medias, determined by two previous phases. We ran this study continuously for 33 days, 1,600 bed volumes, with one 5-day break between day 11 and day 12. (This was to prove intermittent operating capability which was also successful.) The stream was run through columns for a total of 30 min EBCT. The goal was to reduce selenium from 80 µg/L (ppb) to below the <35 µg/L (ppb) customer target.

Challenges:

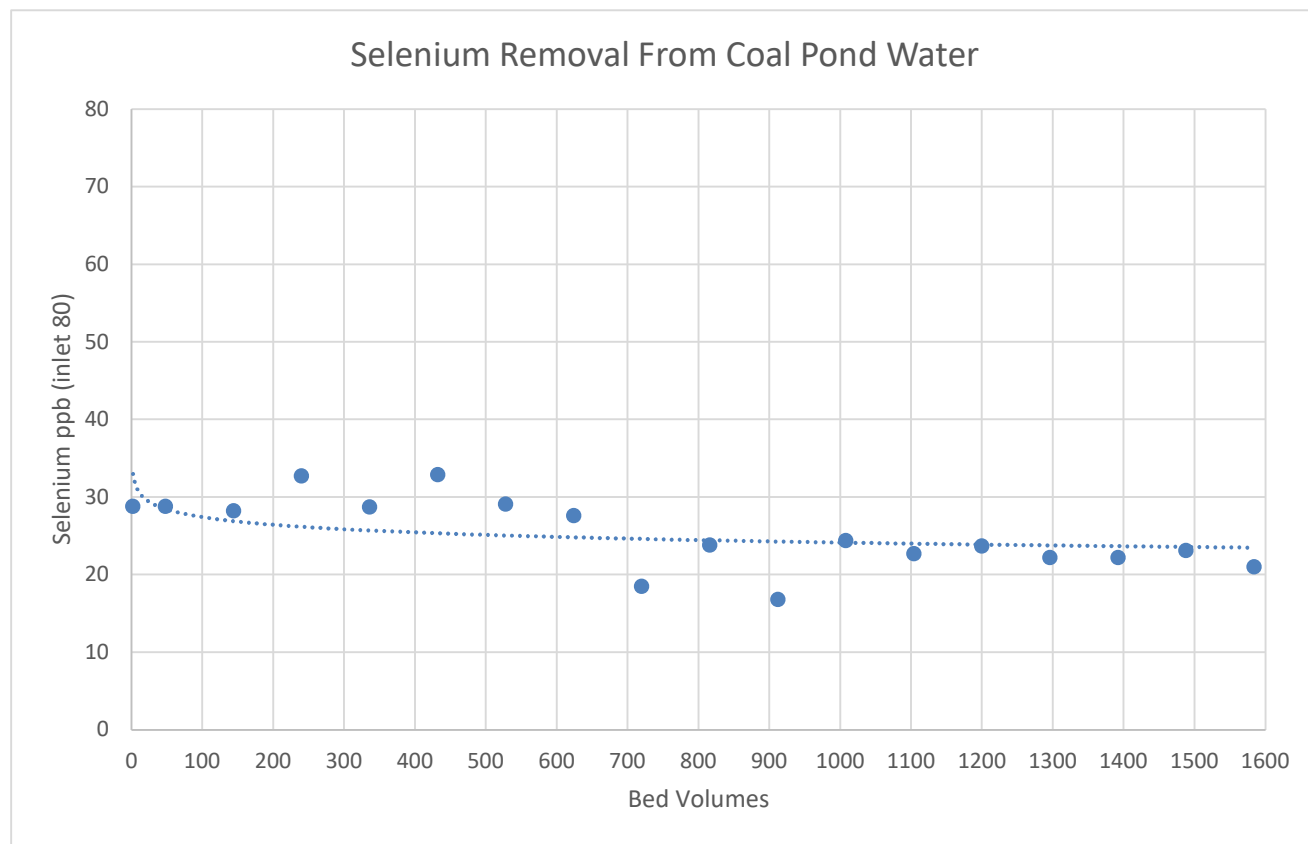
One of the significant challenges in this study was a high number of sulfates, 3,440 mg/L. Sulfates act as competing anions with selenium in chemisorption processes. While we did not remove any of the sulfates, we have found a way to limit their effect preventing selenium removal.

Selenium Removal:

Sorbster successfully treated the water below the target of <35 µg/L (ppb) for the entirety of the water sample. We had a sustained removal rate of 65% (24 ppb average effluent) using Sorbster® Se-1 media targeting both selenate and selenite in the selenium in the water stream.

Higher removal can be achieved with a longer contact time.

Other metals such as mercury, arsenic, hexavalent-chromium, zinc, copper, and silver can be removed in the presence of sulfates by the same method with other Sorbster® Medias.



Sorbster® Se-1 Media Properties:

- Effectively removes soluble selenite, selenate, and selenocyanate in a wide range of process streams in a single pass, eliminating the need for multiple medias
- Produces no ancillary water streams that require additional treatment, handling, or disposal
- Our Media passes the EPA TCLP test and allows for nonhazardous disposal options, reducing total cost to treat
- Requires fewer changeouts than competing media, maximizing ROI
- Can be installed in a side stream flow-through tank
- Easily configured to manage flow rate changes
- High Adsorbent capacity extending useable life

Let Sorbster Inc. help with your selenium removal needs and water conservation issues. We can tailor a Sorbster® Media solution to fit your system and goals.

All Sorbster® Medias Offer These Benefits:

- Flexible application without hidden costs
- Little operator intervention, minimal training
- Low energy requirement
- Lead-lag vessels for continuous operation during change out
- Long media life requiring fewer changeouts
- No activation chemicals
- No ancillary waste streams
- Non-Hazardous disposal reduces waste costs

To learn more about removing selenium or other heavy metals from coal pond water please contact:

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