



Selenium Removal Process

Why selenium Removal is Important?

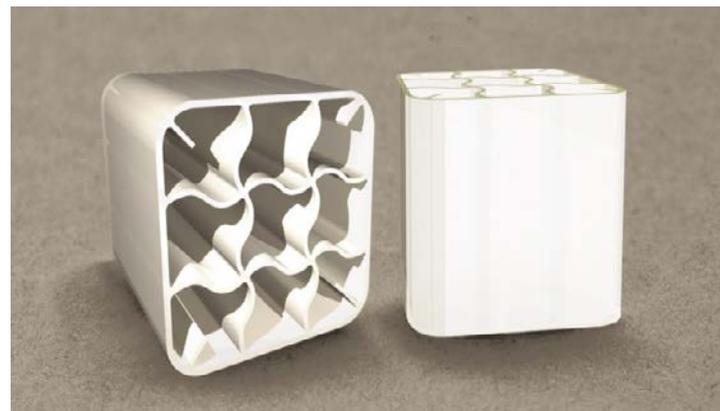
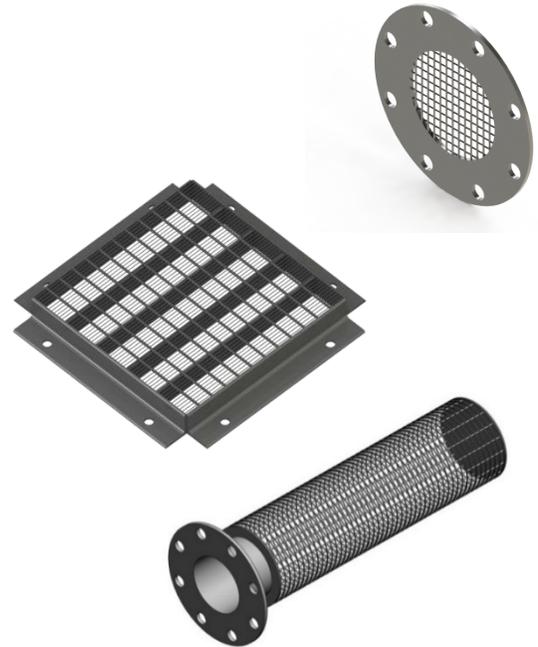
Selenium is found naturally in the environment. In small amounts selenium is necessary for human life and is also safe. Although at higher concentrations it is toxic. It has emerged as a concern for industries such as oil refining, mining and power generation. As the wastewater produced by these industries contains a high amount of selenium.

Challenges faced in selenium removal

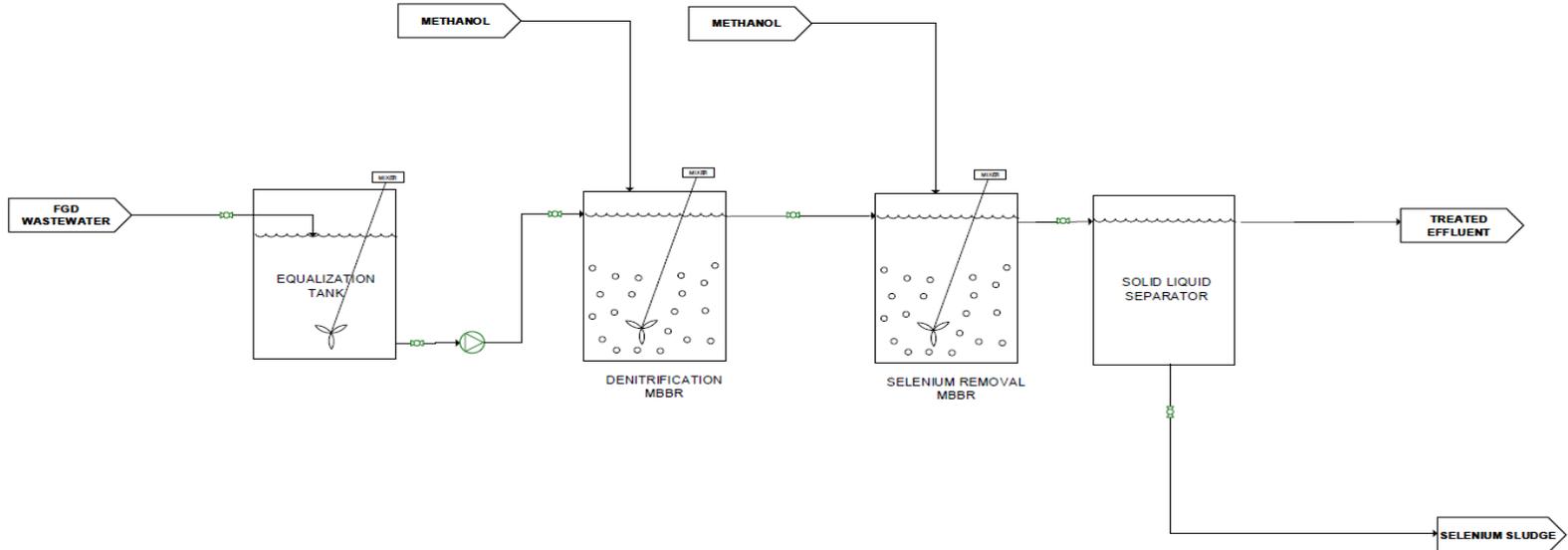
Selenium is present as selenate or selenite in aqueous form. Selenate is difficult to remove. It predominates in oxidizing environments. To remove selenium through precipitation a high quantity of iron is required. This process results in higher sludge production and higher disposal costs.

Biological Treatment

This is a more cost-effective technique than precipitation. In this the soluble selenium oxides (selenate and selenite) are converted to elemental selenium which can be easily removed.



Process Flow diagram



Headworks BIO Selenium Removal Process

The process developed by headworks has following process:

- The wastewater influent goes through an aerobic MBBR reactor where denitrification takes place.
- The denitrification happens on the inhouse developed ActiveCell media.
- Next the wastewater is transferred to selenium removal reactor. Here the integrated Fixed-Film Activated Sludge technology is used to reduce selenium oxides into elemental selenium.

QUALITY THAT NEVER QUILTS

To learn more about Selenium Removal, contact:
 Headworks BIO Inc. +1.713.647.6667
 HWBIO@headworksintl.com

Selenium Removal Process

Advantages

- Removal - Higher selenium removal ($5\mu\text{g/L}$)
- Cost Effective - Much more cost efficient, simpler option for selenium removal over precipitation methods.
- Low Maintenance - Self regulating process automatically responds to fluctuations in organic loads, without the need for operational adjustments
- Expandable - The IFAS process allows gradual, multi-step, plant expansion, due to the progressive addition of media
- Sludge Disposal – Lower costs than conventional alternatives.

Features

- Inhouse designed ActiveCell media provides a huge surface area ($680\text{ m}^2/\text{m}^3$) and lower sludge production.