

Removal of FGD Wastewater Pollutants Using Passive Wetland Treatment Technology

Flue gas desulfurization (FGD) wastewater is a significant NPDES discharge concern due to its high concentration of heavy metals, especially selenium and mercury. FGD wastewater can also contain significant amounts of nutrients such as nitrate. Presently, the most popular technology used in power plants to remove these pollutants is physical-chemical treatment. However, this method can not effectively remove selenate, nor can it treat the mercury to low levels.

Constructed wetlands have showed strong capability to remove selenium and mercury at some power plants. The combination of a full scale vertical flow components (VFC) and a series of full-scale horizontal flow components (HFC), together with a pilot-scale VFC have exhibited good selenium and mercury removal at Alabama Power Company's (APC) Plant Gorgas Steam Plant. This wetland treatment system was built during the late 1990s to treat acidic coal pile runoff. Currently, there are no full-scale wetland systems in the country equipped with a full-scale vertical flow component other than this wetland at Plant Gorgas. This research program is evaluating the coupling of the VFC and HFC wetland types into a hybrid passive treatment system for the control of mercury and selenium. Over one year of pollutant removal data from this system is presented.

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