Fluoride Treatment

AdEdge AD74 Fluoride Treatment Systems

Q: Why do we need to remove excessive fluoride from drinking water?

A. *The US EPA has set a Maximum Contaminant Level (MCL) for fluoride in drinking water at 4.0 mg/L and a secondary limit of 2.0 mg/L because fluoride can cause chronic health issues such as bone and tooth density loss, heart problems, respiratory disease and cancer at higher levels. More and more communities are taking steps to remove excess fluoride from drinking water due to these known health concerns.*

Q: What is AD74 technology?

A. *AD74 is an adsorptive alumina-based metal oxide which has been certified for use in drinking water under NSF Standard 61. This media has been designated as the "Best Available Technology" for fluoride removal in drinking water by the Water Quality Association, the American Water Works Association, and the US Environmental Protection Agency. It is capable of removing fluoride at levels of 1-8 mg/L with > 90% removal efficiency. The media is used in AdEdge's manual or automated filtration systems that are pre-engineered, customized, and packaged by AdEdge for site-specific requirements.*

AdEdge APU Treatment System

Q: What are the two treatment options for removing fluoride using AD74 technology?

A. *The AD74 adsorption based technology can be utilized in one of two ways depending on the site specific requirements, limitations, and permitting requirements: (1) as a one-time use media that is discarded when the capacity is reached; or (2) in reusable mode through the process of on-site regeneration of the media enabling it to be used repeatedly without offsite disposal.*

Option 1: *One-time use mode (disposal)*

The AD74 media has a high affinity for fluoride. Therefore the media can be run to exhaustion without any regeneration or on-site wastewater discharges and then disposed offsite as non-hazardous waste. This process is most often used in very small to medium sized water systems and in cartridges for point-of-use (household) units. Features of this option include:

- *One time use is best utilized when fluoride concentrations are less than 4 mg/L.*
- *Media life will depend on daily water usage, pH, fluoride level, and other parameters such as silica and sulfates.*
- *Capacity is very pH dependent; lower the better; optimal is 5.5 pH. Therefore, pH adjustment of the raw water is common for optimizing performance.*
- *Typical life is days to several months, depending on size/throughput and water chemistry.*
- *Requires minimal operator effort and attention.*
- *Media can be disposed as non-hazardous waste.*
- *Relatively high overall operating cost due to media replacement frequency.*

Option 2: On-site Regeneration (continuous use)

AD74 can be regenerated on-site with dilute caustic (sodium hydroxide) after the media has been run to exhaustion, as measured by fluoride breakthrough. This removes the fluoride from the media so it can be placed back in service. Process control is required to neutralize the media before it is put back in service and the wastewater before disposal in sanitary sewer, drain or leach field, wastewater plant, or other option.
Features of this option include:

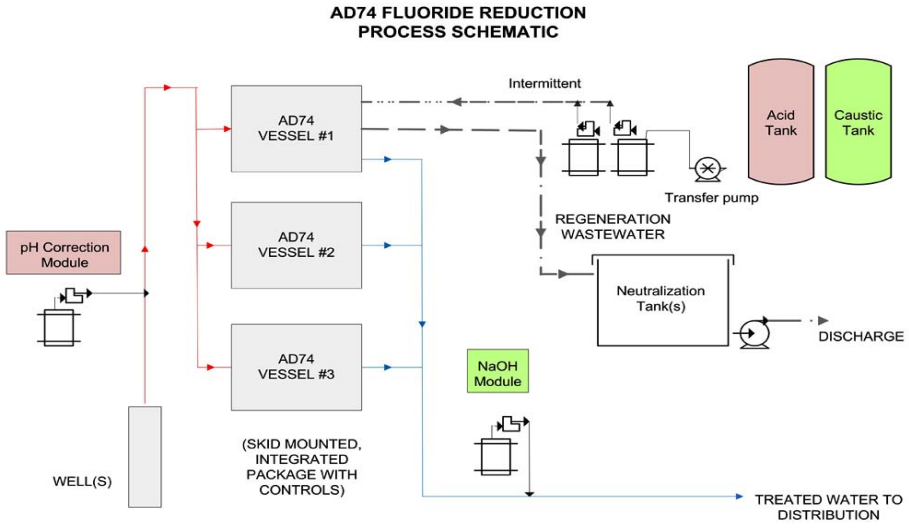
- *Effective fluoride removal up to 8 mg/L.*
- *Moderate filtration rates.*
- *Typical media life is 3-4 years as capacity exhausts with time.*
- *AdEdge provides ancillary equipment for regeneration and neutralization as part of the packaged solution.*
- *Wastewater is non-hazardous after neutralization and can be discharged to sanitary sewer, drain or leach field, wastewater plant, or other option.*
- *Lowest overall capital and operating cost option.*
- *Optimum operating pH is from 5.5 – 6.5. Adjustment may be necessary using sulfuric or hydrochloric acid for pH adjustment prior to the adsorption process.*
- *Requires more operator time and involvement than single use option because of the regeneration and chemical handling.*

Q: How long does the media last before replacement is needed?

A. *The AD74 media life is based on several primary factors, including specific site water quality parameters (fluoride concentration, pH, silica, and other anions) treatment objectives, and water usage. Capacity predictions are run by AdEdge using a proven, predictive model for calculating run life and media capacity at the proposal stage prior to installation to establish expectations for performance.*

Q: How do I obtain a site specific proposal or determine the best option for my water system?

A. *For specific information or cost and sizing proposal, contact AdEdge Technologies, Inc. at 678-835-0052 or visit our website at www.adedgetechnologies.com. You will be asked to provide some site specific information and a complete water analysis upon which a proposal can gladly be provided by our technical staff.*



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