

SafeGuard™ H2O Hydrogen Sulfide Removal System



Hydrogen sulfide (H₂S), a common contaminant in many water sources, is particularly problematic for drinking water companies, whose consumers complain about the taste it imparts. Conventional treatment methods often remove H₂S by venting it into the air, permanently exposing communities to the familiar and intense “rotten-egg” smell.

Traditional H₂S removal technologies such as aeration and ozonation are effective. However, they are energy intensive and directly conflict with the water industry’s goal of reducing its greenhouse gas (GHG) emissions. Unlike treatment methods that simply remove H₂S, SafeGuard™ H₂O is an innovative solution that provides utilities with a proven way to reduce H₂S while minimizing GHG emissions. As a low-carbon approach to H₂S removal, SafeGuard H₂O can be powered by renewable energy.

Why SafeGuard H₂O

The process effectively removes H₂S to non-detect levels while lowering treatment costs through reduced energy consumption and operational requirements. The fully automated SafeGuard H₂O system uses a food-grade tin metal precursor and an in situ electrolytic generator to produce a non-toxic stannous reagent on-site and on demand. The treatment precursor (tin) is highly stable and can be stored safely with no special handling requirements.

The modular process design is compact and is available in a containerized configuration. It integrates easily with existing infrastructure and can be scaled to meet application-specific needs. Because the system can be fully controlled, monitored, and optimized remotely 24/7/365, the need for on-site personnel for supervision is minimized, further reducing operating costs.

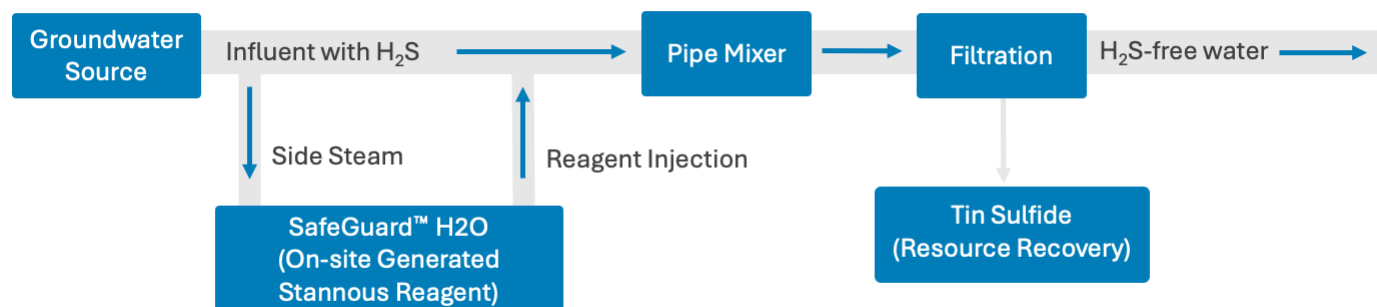
Turning Hydrogen Sulfide Into a Valuable Resource

Tin sulfide, a valuable resource with applications across multiple industries, can be recovered from the H₂S removal process (Figure 1). With SafeGuard H₂O, stoichiometric amounts of non-toxic tin sulfide are produced and can be easily filtered out using a 0.1-0.05 micron filter, enabling efficient resource recovery of sub-micron particles.



Dr. Vladimir Dozorsteve, Sr. Product Manager at AMS, with SafeGuard H₂O system and tin electrode.

Figure 1. SafeGuard H₂O Hydrogen Sulfide (H₂S) Removal Process



SafeGuard H₂O is an innovative, sustainable, and effective solution for H₂S removal. Rather than simply eliminating a contaminant, it enables utilities to recover a valuable industrial resource while reducing GHG emissions and lowering treatment costs. The recovered tin sulfide offers key benefits for industries such as battery manufacturing and semiconductors, where it serves as a non-toxic, efficient material.

By transforming H₂S from a waste stream into a reusable resource, SafeGuard H₂O demonstrates how innovative water treatment can support both environmental sustainability and the circular economy.