



# Iron, Manganese, Hydrogen Sulfide

## Water Treatment

Conventional removal of iron, manganese and hydrogen sulfide has typically been accomplished by oxidation followed by filtration through a sand/anthracite media or by a combination of medias, some of which have the ability to accelerate the oxidation of the contaminants.

Layne's engineers can evaluate your water quality, recommend abatement strategies, conduct technology verification pilot studies and design and install turnkey treatment plants to meet radium compliance standards.



*Iron, manganese and hydrogen sulfide, when present in potable water in concentrations above the USEPA secondary limits, pose aesthetic problems for consumers.*

*Most groundwater contains some iron and manganese which naturally leaches from rocks and soils. Excess amounts in drinking water can cause discolored water, rusty-brown stains or black specks on fixtures and laundry. Excess amounts may also affect the taste of beverages and can build up deposits in pipes, heaters or pressure tanks.*



LayneOx™ vastly enhances the kinetics of the removal process by serving as a catalyst in the presence of a pre-oxidant such as chlorine. This process effects contaminant reductions to well below the secondary MCL utilizing surface adsorption of the oxidized iron and manganese as the primary removal mechanism.

LayneOx enables the treatment of high flow rates of water at high surface loading rates (SLR) ranging from 4-15 gpm/sq ft depending on the raw water concentrations of contaminants, thereby resulting in significant equipment and plant capital cost savings. Traditional filtration medias operate at significantly lower SLR and often require the use of more costly pre-oxidants.

LayneOx is a naturally mined, washed, screened and graded NSF 61 certified, 80% manganese dioxide content media. It has exceptional hardness and abrasion-resistant characteristics rendering it ideal for use in high rate systems that can be delivered as a fully

integrated shop-assembled, skid mounted, automated plant for rapid installation and startup. Depending on the flow rate and concentrations of iron and manganese, plants can be configured utilizing either horizontal or vertical pressure vessels. Cost effective sodium hypochlorite can be injected upstream of the filters with a short contact time to promote oxidation and deposition onto the LayneOx media.

Layne engineers, after an evaluation of the water quality and other site-specific operational criteria, can determine a preliminary plant configuration to effect the required degree of removal. Often a brief one-week pilot study can be conducted to verify the various process parameters, finalize design and confirm capital and operating costs.

Automated plants comprised of LayneOx filters, pre-oxidant feed equipment and backwash water recovery and reuse systems can be provided by Layne as an integrated package.



800.407.4449

[www.laynechristensen.com](http://www.laynechristensen.com)

Layne Christensen Company

Water Technologies:

Define  
Develop  
Deliver