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This edition of TechTALK focuses on **CATALYTIC FILTRATION** of iron, manganese and sulfur from groundwater to eliminate irrigation system clogging.

Iron, manganese and sulfur, normally found in their reduced state in groundwater, have the potential to clog an irrigation system. As soon as the water is pumped for irrigation, partial oxidation occurs which may cause dripper passages to clog, either by sedimentation or by encouraging bacterial growth.

Sand media filters efficiently remove such micro-elements. As the oxidized metals are extremely fine and composed of very fragile agglomerates, screen and disc filters are inefficient in removing them. Additionally the prolonged period the water remains in the gravel filters contributes to oxidation and agglomeration of these elements.

Many methods are available for oxidation and removal of these elements from irrigation water and we recommend the **catalytic filtration** method. The dual action - chemical oxidation due to the reaction with catalytic sand and filtration from the sand media filter - provides an excellent solution.



NETAFIM RECOMMENDATIONS

Filtration Flow Rate or Velocity: in all media filters including the catalytic, the water flow rate through the filter has a significant influence on separation. For removal of iron, manganese and sulfur, the filtration speed should not exceed 8 gpm/sq.ft. When filtering irrigation water, it is not economically feasible to operate at such a low speed, so the flow rate must be adjusted but should not exceed 14 gpm/sq.ft.

Gravel Size: the smaller the media diameter the greater the filtration efficiency. For the minimum required flow rate of 14 gpm/sq.ft., it is possible to use a catalytic sand diameter of 20 x 40 mesh.

Media Depth: the deeper the media the greater the filtration efficiency. In addition, a deeper media increases the contact time for element oxidation and adhesion to the media particles which improves removal by the filter.

Sand Type: catalytic sand is engineered with a light-weight manganese dioxide coated filter media. This allows lower backwash rates, superior oxidation capacity and virtually no media fines to remove at startup. It is effective at removing iron, manganese, hydrogen sulfide and arsenic from groundwater.

Chemical Oxidation of Metals Prior to Filtration: it is necessary to perform chemical oxidation prior to filtration and the preferred, most efficient material is chlorine. The minimum dosage is 1 ppm active chlorine per 1 ppm iron/manganese/sulfur (1:1 ratio), but a 2:1 ratio is recommended, particularly where the concentrations of these elements are high (between 2-10 ppm), or when manganese is present.



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