

Using Natural Virus Markers to Safeguard the Integrity of Membrane Plants

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Abstract:

Water reuse is a crucial development to mitigate increasing global water stress. Membrane filtration systems are increasingly used for the production of high quality water, also particularly for the reuse of highly contaminated water sources (e.g. wastewater or effluent). A lack of an essential membrane integrity method for virus removal resulted into the development of a new natural virus (NV) method, which is based on indigenously present virus markers in water sources. This novel NV method is used to regularly monitor four full scale drinking water treatment plants, including MF/UF/NF and RO membranes. Furthermore, on pilot scale deliberately induced membrane damage to membranes was investigated to determine the effect on virus rejection. The successful NV method will leverage the implementation of water treatment processes, like membrane based treatments, for crucial global issues like drinking and irrigation water production, water reuse, and contributes directly to SDG6.

Keywords: Membrane Integrity, Virus Removal, Water Reuse