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Drinking Water Engineering and Science Discussions

Interactive comment on "Technical Note: Community of bacteria attached on the PVDF MF membrane surface fouled from drinking water treatment, in Seoul, Korea" *by* Kyongmi Chon et al.

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This Technical note consist of measurements to indentify bacteria and NOM-fouling on the membrane surface. The microbiological part of the work is well decribed but the technological data of the membrane installation is rather poor and should be extended.

Espacially the data about the enhanced chemical backwash (ECB) and the cleaning in place (CIP) of the full scale installation are important. This is specially important for the interpretation of the microbiology: Most full scale surface water plants have a ECB every 24 hours in many cases with a high concentration of chlorine. In some cases with high pH. In most full scale plants the biology is killed in this way every 24 hours.

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The membranes of MF/UF are chlorine resistant. (this is not the case for NF/RO membranes which are not chlorine resistant and biofouling can accumulate in the spacers). The biological growth in surface water is not such that substancial biomass is growing on the membrane surface within 24 hours. So in MF/UF biofouling is not regarded as a problem. Probably the biomass detected on the surface is simply filtered from the surface water and not backwashed from the surface during the hydraulic backwash. If this is the case this is not defined as biofouling. Biofouling is defined as growth of biomass on the membrane. A clear definition of biofouling is very important!

NOM-fouling is regarded as the most important fouling mechanism in MF/UF this is because the NOM-molecules are much smaller (<100 nm) compared to bacteria (>1000 nm) and NOM can cause pore blocking or adsorption in the pores. They can build up a dence cake on the membrane surface. It would be interesting if data are available about the quantative mass of NOM and (living) bacteria. Even more interesting is information about the contribution of both to the pressure build-up of the MF membranes. From this information conclusions can be drawn about the importants of NOM-fouling or biofouling. But as indicated most literature is in favour of NOM-fouling in MF/UF.

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