

The Effects Of Organic Matter Concentration On Raw Water Treatability

Introduction

The removal of natural organic matter (NOM) during water treatment is becoming more important for all water utilities in the UK, associated with the trend of increasing regulatory standards for trihalomethanes (THM), disinfection by-products (DBP) formed when residual organics react with chlorine. Furthermore, it is known that UK waters also have the potential to form Haloacetic acids (HAAs), currently regulated in the US, at levels that may be of concern if UK regulations are brought in for their control. NOM is complex, known to vary both temporally and spatially, and is generally described as a poorly defined mix of organic substances with variable properties in terms of acidity, molecular weight (MW) and molecular structure.

Current removal strategies typically involve conventional coagulation methods. However, traditional approaches to coagulation control tend to focus solely on coagulation pH and coagulant dose as these tend to be the main operational variables. Consequently, such an approach does not adequately respond to changes in organic concentrations and composition. Continuing research into the removal of organics from drinking water is important, especially with regards to the formation of potentially carcinogenic DBPs.

Objectives

Using monthly samples from 16 surface water treatment works,

1. To understand the impact of different operational parameters on organics removal, throughout the water treatment process flowsheet
2. To develop future strategies for organics removal, specifically tailored for each STW surface water site
3. To consider the results gained in conjunction with results from other research projects currently underway

Deliverables

The key outputs resulting from this work will be an understanding of the impact of different operational parameters on organics removal throughout the water treatment unit processes, and the subsequent development of future strategies for organics removal, specifically tailored for each WTW.

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