



Introduction

Heterotrophic microbial growth in drinking water is a result of organic carbon utilisation by bacteria. Knowing the concentration of utilisable DOC in drinking water, as well as the way in which bacteria convert such substrate to biomass, allows understanding of regrowth and biological stability in drinking water.

Approach

Three experimental set-ups are described in which the basic principles of growth in drinking water environments were studied. These are: (1) separate batch growth of a pure culture and a natural community in complex synthetic media; (2) continuous growth of a natural community in glass bead biofilms in a lab-scale reactor with complex synthetic media; and (3) growth of a drinking water bacteria in a pilot scale activated carbon filter. Organic carbon was measured with DOC, LC-OCD and AOC analysis, while biomass was measured with cultivation independent flow cytometry and ATP analysis.

Result

We demonstrated that a clear and straightforward correlation could be drawn between DOC removal and biomass production, from which cellular yields can be derived. However, natural freshwater often contains up to 80 % recalcitrant organic carbon, meaning that utilised carbon is measured against a considerable background, which can lead to error. Open questions about the correct method for measuring biodegradable organic carbon and the interpretation of such results are discussed.

More information

Full details on this deliverable can be found under D3.3.1. Further information can be requested from:

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TECHNEAU Knowledge Integrator (TKI) categorisation

Categorisation of Knowledge Packages

Categorisation (i.e. classification, contains and constraints) of knowledge packages (KPs) can be carried out by 'checking' the appropriate boxes in the attached tables. For example, for a KP investigating point-of-use treatment suitable for a developing world country, the following might be checked:

Classification: Process chain – Tap (Customer) – Point-of-use (POU).

Contains: Report; Literature review.

Constraints: Low cost; Simple technology; No/low skill requirement; No/low energy requirement; No/low chemical requirement; No/low sludge production; Developing world location.

Note that only the lowest level classification needs to be checked, e.g. Point-of-use (POU) in the above example.

Meta data can be included under the 'More Information' section of the Executive Summary Report, i.e. Author(s), Organisation(s), Contact details (name and email), Quality controller (name and organisation) and Date prepared. (The TKI administrator can enter Source (= TECHNEAU), Date submitted (TKI) and Date revised (TKI)).