ASSIMILABLE ORGANIC CARBON AND BACTERIAL REGROWTH IN TREATED WATER SUPPLY

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SEPTEMBER 1991

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A Dissertation submitted to the
University of Newcatle Upon Tyne
Depatrment of Civil Engineering
Environmental Engineering Group

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In fulfillment of the requirement
for the Degree of Master of Science

September 1991

Recovery of injured or dormant bacteria was identified to be the main cause of bacterial regrowth in the main supply lines. While detachment of biofilm from surfaces of service connections and internal plumbing systems may have resulted in high culturable bacterial counts in some samples.

No correlation can be established between bacterial regrowth or assimilable organic carbon concentration with distribution system characteristic (location, pipe age and pipe materials).

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CHAPTER 1: LITERATURE REVIEW

1.1 DEFINATION OF TERMS

A number of different terms are used to describe the general bacterial population of drinking water and the phenomena related to it.

The total direct count of bacterial population of drinking water include both viable and non-viable; metabolically active and dormant bacteria.In this study, it is quantified by using the Epifluorescence Acidine-orange Direct Count method (AODC). This count will also be refered to as the total count.

The bacterial population is more commonly measured by using cultural techniques,which measure only that part of the total count which will grow in the laboratory under a defined set of conditions.

The counts obtained under this method has been refered to by a variety of terms, such as heterotrophic plate count (HPC) and the colony count.The number of bacterial cell which grow and form colonies on the plate are normally quoted as colony forming unit (cfu). In this study, the bacterial population which are cultured using yeast extract agar (YEA), pour plate method, counted after 7 days and incubated at 20°C will be refered to as the heterotrophic plate count.

"Regrowth" is refered to the increase in bacterial numbers in the distribution system resulting from cell reproduction, detachment of biofilms and the rehabilitation of injured or dormant bacteria, in an environment conducive for its proliferation such as reduced disinfectant residual and availability of nutrients.

Assimilable organic carbon (AOC) is that portion of the total dissolved organic carbon (DOC) that can be readily digested by aquatic microorganism and used for growth. Often AOC comprises just a fraction (0.03%-27%) of total dissolved organic carbon [Van der Kooij,1982].