

MICROBIOLOGICAL RISK ASSESSMENT OF AGIOS GEORGIOS SOURCE SUPPLIES IN NORTHWESTERN GREECE BASED ON FAECAL COLIFORMS DETERMINATION AND SANITARY INSPECTION SURVEY

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EXTENDED ABSTRACT

The assessment of potential risks from microbiological contamination of drinking water supplies is of greatest concern to human health. The study involves the examination of water samples from Agios Georgios source that supplies the capitals, the major towns and several villages of Arta, Preveza and Lefkada prefectures, in Northwestern Greece. The study includes the sanitary inspection survey of the source and the microbiological examination of water samples on a monthly basis during the period February 1996-June 1999 except of Augusts (n=38). The microbiological risk assessment (MRA) approach of World Health Organisation (WHO) guidelines was applied to enhance the source protection.

The faecal contamination of the source water was quantified using *faecal (thermotolerant) coliforms (FC)* as indicator bacteria. Microbiological analyses indicate that of the 38 samples analyzed the FC failure rate was 63.2 % according to the limit set by the 80/778 directive of the European Union. The 36.8% of the source water samples was found in conformity with WHO guidelines, 42.1% of low risk, 21.1% of intermediate risk while there was not found samples of high or very high risk. Failure rates displayed a seasonal trend being greater during the winter, decreased during spring and autumn and lower during summer. This observation was explained partially by a significant positive relationship with the rainfall amount ($r_{\text{spearman}}=0.890$, $P=0.001$).

The sanitary inspection score was found 5/10 during the whole survey period that corresponds to an intermediate risk of source contamination. The classification for FC in contamination categories was found 36.8% A (no risk), 42.1% B (low risk) and 21.1% C (intermediate risk). The previous risks were combined for the assessment of waterborne risk, which was determined, as intermediate to high; therefore there is a need for high action priority. The potential remedial actions were also suggested in order to improve the source protection of such supplies.

Key words: Agios Georgios Source, Risk assessment, *Faecal Coliforms*, Greece.