



“Gheorghe Asachi” Technical University of Iasi, Romania



WATER QUALITY IN THE GHESHLAGH RESERVOIR (IRAN) AND DOWNSTREAM THE DAM

Fariba Rezaei^{1*}, Amin Sadeghi², Hamed Ghader Zadeh³, Patrick Van Damme¹

¹Department of Plant Production, Faculty of Bioscience Engineering, University of Gent, Coupure Links 653, Gent 9000, Belgium

²Department of Plant Production, Faculty of Agriculture, University of Kurdistan, Pasdaran Av., Sanandaj, Iran

³Department of Agricultural Economics, Faculty of Agriculture, University of Kurdistan, Pasdaran Av., Sanandaj, Iran

Abstract

In 1979, the Gheshlagh river continuum was affected by the construction of Gheshlagh dam. More than three decades after presence and operation of this dam, there is a necessity to evaluate water quality in Gheshlagh reservoir. Therefore, water quality data was determined monthly from October 2008 to September 2009, to evaluate the impact of Gheshlagh dam presence and operation on the reservoir's water quality. Eight parameters were analyzed (dissolved oxygen, biological oxygen demand, chemical oxygen demand, ammonia nitrogen, mercury, lead, arsenic and fluorine) to evaluate water quality status at five sampling stations. Four sampling stations were located in the reservoir (stations A, B, C and D) and one sampling station was located downstream the dam (station E). Estimated organic pollution index showed that the most remote station situated at 7.2 km upstream the dam (station A) had a non-polluted status. In sampling station D, the organic pollution index reached the highest pollution level (3.8), whereas in sampling station E the value of this index was lower (3.4) than that at station D. Additionally, water toxicity was mainly explained by the presence of mercury ($9 \cdot 10^{-4}$ mg l⁻¹) that was occurred in a concentration of 9 times higher than the its maximum acceptable concentration proposed by the World Health Organization. In general, the water quality in the Gheshlagh reservoir is lower than that in the downstream of the dam.

Key words: hydrology, organic pollution, toxic pollution

Received: March, 2011; Revised final: November, 2011; Accepted: November, 2011
