

## ABSTRACT

### Drinking water quality of wells in villages of western Georgia

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Despite the fact that there are large amount of water recourses in western Georgia, there is a problem of safe drinking water which caused by anthropogenic pollution and accelerated by properties of the landscape (below the sea level) and high level of ground.

Water samples were taken in summer 2009 in 7 villages of Samegrelo and Imereti regions. These villages are: Matkhoji, Jikaishi, Najakhao, Sepieti, Nosiri, Akhali sopeli, and Maltakva district of surroundings of Paliasomi. It was determined 13 water indexes of 7 well samples for sanitary-chemical analyses. It was found that common hardness (Ca, Mg) was higher (135,9mg/l) when Maximum Available Concentration (MAC), which often is typical for wells of western Georgia. Other indexes mainly were in norms.

Nitrates and nitrites concentration was determined in 40 wells by using of express nitrate quick tests from Merck. It was found out that in 5 wells the amount of nitrates was higher than MAC (50 mg/l) and it corresponded to 60mg/l. With our researches was found out that organoleptical and epidemiological indexes – (oxygen demand) are high in wells of Maltakva and in surroundings of Paliastomi, which might be explained with flowing of sewage from lot of existing eutrophicated small reservoirs of this area. In some of cases (village Akhali Sopeli) reasons of raised level of nitrates and ammonia in wells were damaged canalization pipeline and in other cases sewage from pit latrines and farms of local population. In other cases nitrate pollution can be caused by infiltration of human and animal waste from pit latrines and stables in the groundwater.

Biological researches of surface waters from wells surroundings territories found out that main species of microorganisms which penetrate with flowing waters into the wells: these main species are: bacteria *E. Coli* and toxic algae species *Nodularia Spumigena*.

### Conclusions

Unavailability of sanitary-epidemiological services increases the risks of water related diseases in this regions.

Usage of EPA quick tests for express methods of bacteriological and chemical researches in field (or in the places) are recommended.

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### **Awareness raising of children on safe water and hygiene.**

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Awareness raising of children on safe water and hygiene is part of the UNECE program of Education for Sustainable Development which aims the environmental education of children as kindergarten and school ages, students of different graduates as well as specialists.

It is considered and suggested guideline for Water Safety Plan for schoolchildren and teachers, which aims the training the children on simple methods for determining the water quality themselves. Quick tests on nitrates, tabulation and mapping on simple water indexes will develop the skills of schoolchildren for determining of water quality and assessing risks in their villages, homes, schools and in other places.

The WSP manual is developed by WECF and based on the WHO instrument to assess the risks for small scale water supply systems and contains information concerning water safety plans, background information, educational information and suggestions for teachers. With this manual teachers and pupils can develop water safety plans for small scale water supply systems together. (WECF, 2009, <http://www.wecf.eu/english/publications/2008/wspmanuals-revised.php>)

Methods of bioindication of water bodies include usage the simple methods and accessible equipments such as magnifier, or visual inspection (transparency, smell, colour and etc.) for water sampling and determination of small organisms in the water bodies that give an indication on water quality.

### **Conclusion**

It is recommended to develop publications on simple methods of bioindication of water samples for children of different ages, separately for kindergarten and school ages in order to rise their knowledge on healthily environment and clean water.