

Evaluation of chemical and microbiological quality of water from artesian wells of Nova Esperança do Sul-RS

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Introduction

The water supply in rural zone of Nova Esperança do Sul-RS is realized by artesian wells. In this case, the delivered water is only chlorinated without others treatments. This is classified as a collective alternative solution of water supply for human consume¹.

The Ordinance number 2914/11 of Ministry of Health regulates the procedures of control of quality and the standards of potability of water¹.

In this context, samples of water from ten artesian wells of rural communities of Nova Esperança do Sul-RS were analyzed.

Results and Discussion

In this work, samples of water from ten artesian wells of rural communities of Nova Esperança do Sul-RS were analyzed.

The chemical parameters evaluated in the water samples were pH, color, hardness, iron, manganese, fluorine and free residual chlorine content. The samples were also tested to the presence of *Escherichia coli* and total coliforms.

The results of chemical parameters are presented in the Figures 1 and 2.

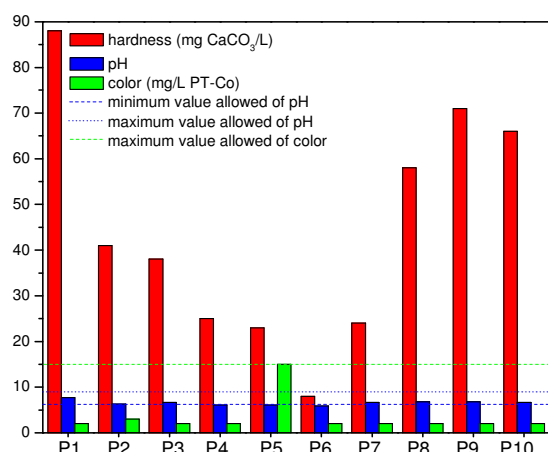


Figure 1. Values of hardness, pH and color of analyzed samples.

All samples presented values of hardness (maximum allowed of 500 mg CaCO₃/L) and color in accordance with the law¹. However, the sample from PC6 showed a pH value of 5.9 i.e. a value slightly lower than the allowed (pH allowed in the range of

6.0 – 9.0)¹. All samples shown absence of manganese and are in accordance with law (maximum value of manganese content allowed of 0,3 mg/L)¹.

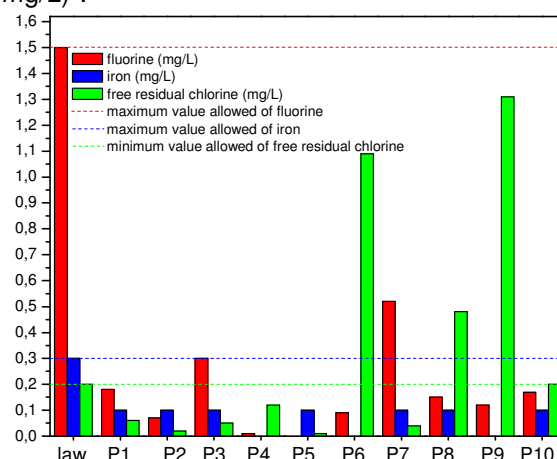


Figure 2. Values of fluorine, iron and free residual chlorine of analyzed samples.

All samples presented values of iron and fluorine content in accordance with the law. The fluorine in these samples occurs naturally. In the other hand, only four samples (PC6, PC8, PC9 and PC10) presented free residual chlorine content in accordance with the law. Thus, the samples from wells PC3, PC4 and PC5 presented contamination by *E. coli* while the samples from PC1, PC2, PC3, PC4, PC5 and PC7 presented contamination by total coliforms.

Conclusions

The chemical parameters are in accordance with the law. However the microbiological study reveals a risk to the health of the consumers. The microbiological contamination is associated to lower free residual chlorine content.

Acknowledgements

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¹BRASIL. Ministério da Saúde. Portaria 518, de 25 de março de 2004. Estabelece os procedimentos e responsabilidades relativos ao controle e vigilância da qualidade da água para consumo humano e seu padrão de potabilidade, e dá outras providências. Diário Oficial [da República Federativa do Brasil], Brasília, 26 mar. 2004b. Seção I, p. 266.