



# ŽIVOT U DISTRIBUTIVNOM SISTEMU - ZNAČAJ MATERIJALA U DODIRU SA VODOM ZA PIĆE - „HOTEL“ ZA BAKTERIJE

## LIFE IN DISTRIBUTION SYSTEMS - THE IMPORTANCE OF MATERIALS IN CONTACT WITH DRINKING WATER - „HOTEL“ FOR BACTERIA

### ABSTRAKT

Biostabilnost distributivnog sistema je određena kvalitetom vode nakon tretmana, ulaskom bakterija i mikrobnim rastom u cevima. Materijali cevi su u intenzivnom i stalnom kontaktu sa vodom i stoga imaju značajan uticaj na njen kvalitet. Postojeća evropska legislativa zaheva da materijal cevi ne sme oslobađati štetne supstance u vodenu fazu, niti podržavati značajan suspendovani i/ili imobilisani mikrobni rast. Same metode za procenu biostabilnosti vode ne pružaju potpunu informaciju o biološkoj (ne)stabilnosti distributivnog sistema, isključujući efekte materijala, korozivnih procesa i stvaranja sedimenata. Prema tome, metode za procenu materijala sa aspekta biostabilnosti su takođe neophodne. Trenutno, u cilju standardizacije prihvatljivih granica interakcije između vode i materijala vrši se harmonizacija metoda za proizvode u kontaktu sa vodom u okviru razvoja Evropske šeme prihvatljivosti. Pažljiv odabir materijala zasnovan na pouzdanim testovima i definisanim kriterijumima biostabilnosti distributivnog sistema obezbeđuje isporuku bezbedne vode do potrošača.

**Ključne reči:** distributivni sistem, voda za piće, biofilm, materijal cevi, biostabilnost

### ABSTRACT

Biostability of distribution systems is determined by the quality of water after treatment, the entry of bacteria and microbial growth in pipes. Pipe materials are in an intense and constant contact with water and therefore have a significant impact on its quality. Existing European legislation requests that the plumbing material cannot release harmful substances in the aqueous phase, or support a significant suspended and/or immobilized microbial growth. The methods for assessing water biostability do not provide complete information on the biological (in)stability of distribution systems, excluding the effects of materials, corrosive processes and sediment formation. Accordingly, methods for assessing the material in terms of biostability are necessary as well. Currently, in order to standardize the acceptable limits of interaction between water and materials, the harmonization (of methods for products that are in contact with water) is being done within the development of the European Acceptance Scheme. A careful selection of materials, based on reliable tests and defined criteria of biostability of distribution systems, provides the delivery of safe water to consumers.

**Key words:** distribution system, drinking water, biofilm, pipe material, biostability

## 1 UVOD

Nakon odgovarajućeg tretmana, voda za piće ispunjava zahtevane standarde kvaliteta. Međutim, tretirana voda može naknadno promeniti svoj kvalitet prilikom transporta kroz distributivni sistem do potrošača. Ponovni rast mikroorganizama i stvaranje biofilma mogu dovesti do različitih problema u distributivnim sistemima, pre svega pogoršanja mikrobiološkog kvaliteta pijaće vode. Poznato je da biofilm doprinosi stvaranju korozivnih naslaga i akumulaciji organskih i neorganskih materija, naročito polimera mikrobnog porekla.

## 1 INTRODUCTION

After appropriate treatment, drinking water meets the required quality standards. However, treated water can subsequently change its quality during transport through the distribution system to consumers. Re-growth of microorganisms and the formation of biofilms can lead to various problems in distribution systems, primarily deterioration of microbiological quality of drinking water. It is known that biofilm contributes to the production of corrosive deposits and accumulation of organic and inorganic materials, especially polymers of microbial origin.

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