

# **PROTOFILWW: Two year-sampling of protozoa, little metazoa and filamentous bacteria in 37 Portuguese wastewater treatment plants**



Ana Nicolau\*, Marta Neto, Liliana Santos, Vânia Fernandes, Manuel Mota

*Centre of Biological Engineering, University of Minho, Braga, Portugal*

*E-mail address: [protozoa@deb.uminho.pt](mailto:protozoa@deb.uminho.pt) (A. Nicolau).*

Activated-sludge represents a component of the largest biotechnology in the world: wastewater treatment. Yet it differs substantially from the large-scale production of economically important metabolites or biomass: for decades, the aerating tanks of the wastewater treatment plants (WWTP) have remained “black boxes”, its complexity discouraging most microbiologists.

Moreover, studies integrating both the prokaryotic and the eukaryotic populations in activated-sludge are, even presently, rare. Particularly, there is an assumed difficulty in establishing how the interactions between the bacterial and the protozoa populations can affect the performance of the activated sludge system.

On the other hand, excessive growth of filamentous bacteria is considered the main concern of WWTP managers. It is said that every WWTP in the world went, go or will go through the well-known phenomena of filamentous bulking or foaming. It is also said that the basis for understanding and fighting these problems depends on the proper identification of the causing microorganisms: by acting upon the factor favoring the problematic species, one can expect to control its overgrowth.

In the 80s and 90s of the last century, some surveys suddenly revealed the extent and severity of filamentous overgrowth. In Portugal, a detailed investigation has been carried out recently through the PROTOFILWW Project: protozoa, little metazoa and filamentous bacteria populations of 37 WWTP were extensively studied during two years. The prevalence and the correlations among the prokaryotic and eukaryotic components and between them and the operational and performance parameters will be presented.