



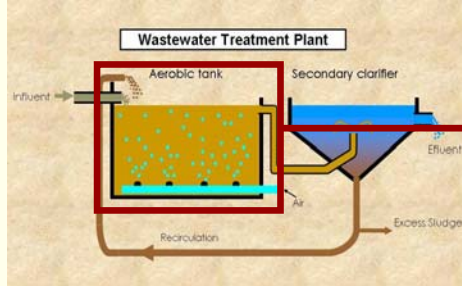
# MICROSCOPIC ANALYSIS: A VERY POWERFULL TOOL FOR THE CONTROL OF WASTEWATER TREATMENT PLANTS

Hydrolab  
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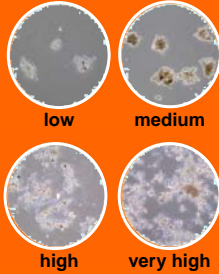
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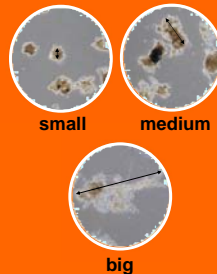
The use of microorganisms that are present in biological wastewater treatments as indicators to the process permit to monitor and control the wastewater treatment plants. It permits to improve the process management and help to predict major changes long before they become a serious problem with a difficult solution. The microscopic analyses of activated sludge and biofilms provide a direct information from the system. This permits to evaluate the process condition and set up operative directions to optimize the treatment efficiency.



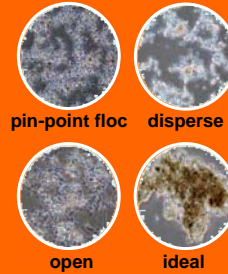
## CONCENTRATION



## SIZE



## STRUCTURE



## BACTERIA

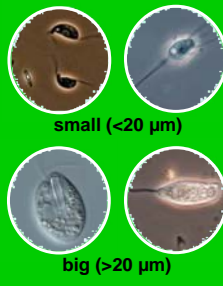


### FLOC CHARACTERIZATION

## CILIATES



## FLAGELLATES



## AMOEBAE

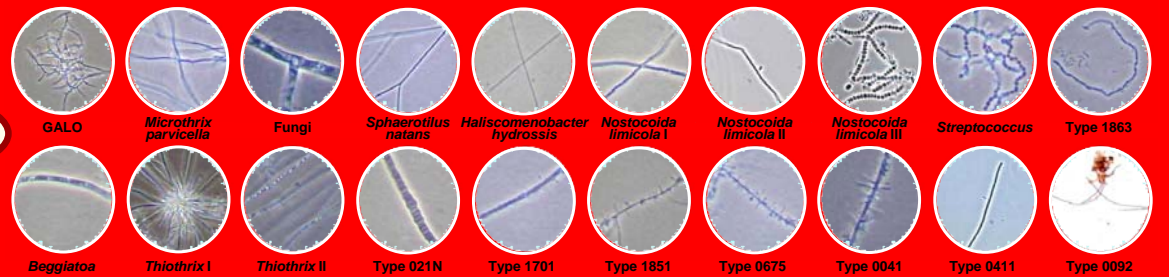


## METAZOA



### PROTOZOA METAZOA

### FILAMENTOUS MICROORGANISMS



## DIAGNOSTIC

- Excessive organic load
- Insuficient organic load
- Excesive sludge age
- Low sludge age
- Rapid increase of influent BOD
- Low DO concentration
- Septicity
- Fermentation processes
- Nitrification an no denitrification
- Insuficient nutrients (N and/or P)
- Low pH
- Presence of heavy metals
- Toxicity
- Excelent activated sludge health

## PROBLEMS

- Deflocculation, high effluent turbidity
- Light sludge and/or foaming
- Disintegrated sludge
- Unstable, high effluent turbidity
- Deflocculation, Disintegrated sludge
- Deflocculation, cell decay
- Light sludge, high effluent turbidity
- Deflocculation, Light sludge
- Sludge up-flow in secondary clarifiers
- High density light sludge
- light sludge
- Deflocculation, cell decay
- cell decay, Disintegrated sludge
- High quality effluent

## CONTROL

- Decrease sludge extraction
- Increase sludge extraction
- Increase sludge extraction
- Decrease sludge extraction
- Decrease sludge extraction, Decrease DO
- Increase DO
- Increase DO, use of oxidant
- Increase DO
- Intermitently aeration stop
- Supply N and/or P
- Supply NaOH to neutralise
- Previous physical-chemical treatment
- Increase sludge extraction, increae DO
- Excelent conditions