

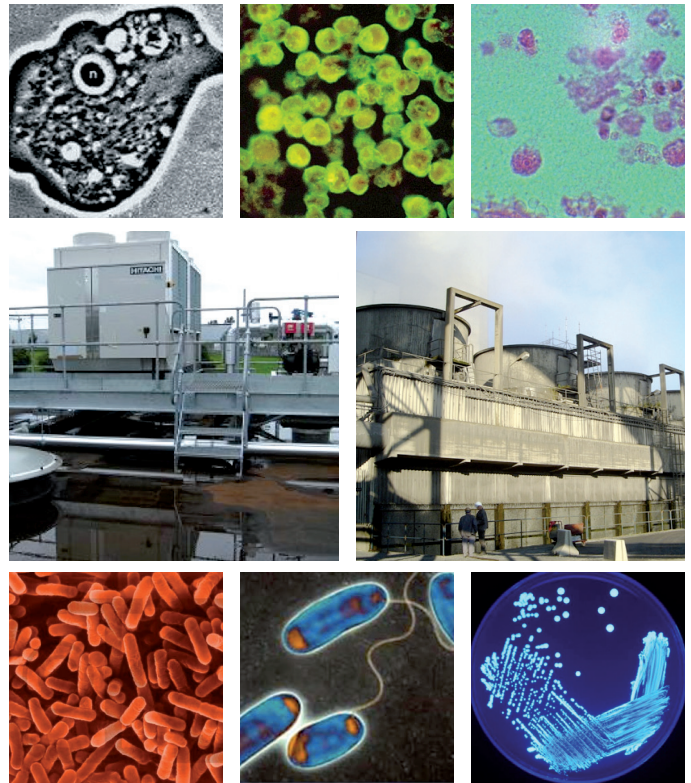
# Pathogens Control Management

## The invisible threat in water

Industrial cooling water systems and large air conditioning systems are a major source of pathogenic organisms such as *Legionella* and *Naegleria*. These thermophilic organisms thrive in water at temperatures between 25°C and 60°C, and are found in bodies of warm fresh water, such as ponds, lakes and rivers. They are also found in soil and sludge, near industrial warm water discharges, and in stagnant ponds.

Humans can be infected by these organisms through inhaling aerosols containing the pathogens and, in the case of *Naegleria*, by penetration of infected water under pressure through the nose.

- ♥ *Naegleria fowleri* is a free-living single celled amoeba that can invade and attack the human nervous system and cause meningoencephalitis, a serious form of meningitis, almost always resulting in the death of the victim.
- ♥ *Legionella pneumophila* is a human pathogenic bacterium which causes Pontiac fever, legionellosis or Legionnaires' disease. This is a serious form of pneumonia, which can be fatal if not treated quickly and appropriately.



### PREVENTION BETTER THAN CURE

Preventing and controlling the growth of *Legionella* and *Naegleria* in water bodies must be done by:

- ♥ Follow maintenance guidelines
- ♥ Develop control management plans
- ♥ Carry out appropriate levels of water analysis
- ♥ Create emergency plans including disinfection guidelines

ENGIE Laborelec has many years of experience in these areas.

## How it works

### RISK MANAGEMENT

- ♥ ENGIE Laborelec offers expert recommendations to prevent the development of pathogens and reduce the risks of infection;
- ♥ A wide-ranging and objective risk analysis is carried out and a management plan is developed, tailored to each specific installation;
- ♥ A monitoring plan is also put in place, with representative samples analysed in our specialized laboratory;
- ♥ Where necessary, measures to reduce any immediate risks can be put in place.

### SPECIALIZED PATHOGEN LABORATORY

Where the presence of pathogens is suspected, or where the risk of infection is high, water analysis must be carried out.

ENGIE Laborelec has its own fully equipped ultra-modern laboratory for pathogen detection which uses a full range of analysis methods.

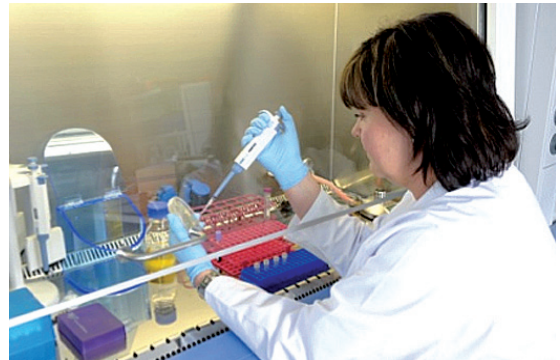
#### Naegleria fowleri analysis:

- ♥ Culturing
- ♥ Enzyme-linked immunosorbent assay (ELISA)
- ♥ Polymerase chain reaction (PCR)

#### Legionella species and Legionella pneumophila analysis:

- ♥ Polymerase chain reaction (PCR)
- ♥ Culturing (in collaboration with or subcontracted to an accredited laboratory)

Analysis can be carried out on sludge samples as well as water. PCR technology can detect the presence of pathogens in water within 48 hours, making it possible to react quickly to an infection, reducing the risk that the pathogens will multiply rapidly.



### Would you like to know more?

Don't hesitate, send us an e-mail.

#### ENGIE Laborelec

chemistry.laborelec@engie.com  
www.laborelec.com

### Five reasons for you to choose ENGIE Laborelec

- Wide-ranging technical expertise in electricity generation, grids, and end-use
- Customers enjoy enhanced profitability and sustainability of energy processes and assets
- Unique combination of contract research and operational assistance
- Independent advice based on certified laboratory and field analysis worldwide
- More than 50 years of experience