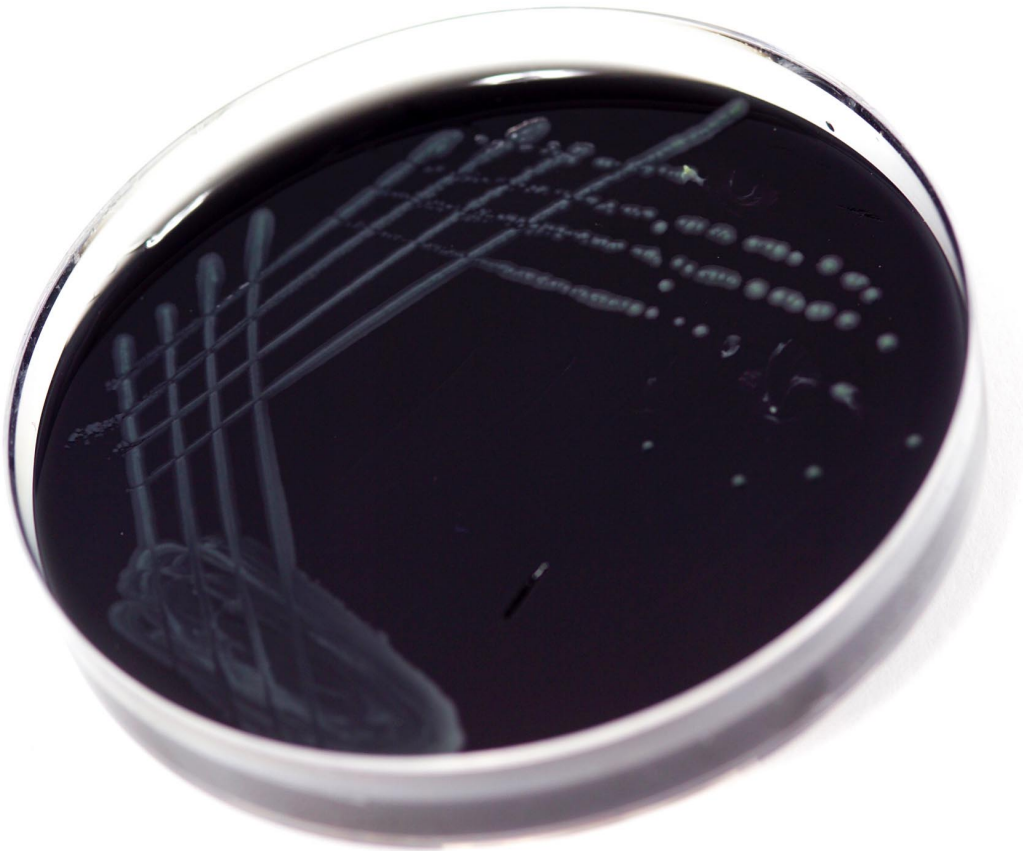




Environmental Laboratory Services

Testing the Waters



Legionella

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## Introduction

Environmental Laboratory Services is one of New Zealand's leading experts in the areas of:

- Air quality monitoring
- Boiler water
- Environmental water
- Landfills
- Meat industry services
- Potable water for councils
- Sample Integrity
- Swimming pools
- Biological fluids
- Ceramicware and metal food containers
- Food and Dairy Products
- Legionella
- Metals
- Potable water for small communities
- Sewage and effluent
- Trade waste

The company has its origin as part of the Hutt City Council Laboratory and became a private enterprise in 1994. In 1998 the laboratory acquired the Wellington City Council Laboratory. In September 2001, ELS further expanded with the purchase of the Inorganic Chemistry section of AgriQuality New Zealand. This section was previously part of ESR, which before that was the DSIR.

We are based in a purpose built facility of 1450 m<sup>2</sup> at 85 Port Road, Lower Hutt. ELS is comprised of four separate laboratory areas – Instrumental Chemistry, General Chemistry, Biological Fluids, and Microbiology. The latter is further split into three separate rooms with clean, cleaner and ultra clean capabilities. The ultra clean lab is used for pathogenic bacteria determinations.

ELS is privately owned by scientific people committed to the science industry in New Zealand. We continue to be one of the few major laboratories in the country with such a broad microbiological and chemical analysis capability. We provide high quality, fast turnaround analyses at competitive prices.

## Who should read this brochure?

This brochure has been prepared for all people working with cooling towers, potting mix, and swimming pools, as well as people associated with hospitals and elderly care centres.

Legionella is a greater risk to people with lung problems, such as smokers and the elderly.

If you consider there is a risk, then regular Legionella testing should be performed.

## Who should be testing for Legionella?

In the summer of 1976, an outbreak of pneumonia occurred among persons who attended an American Legion convention in Philadelphia. These individuals who developed illnesses were said to have 'legionnaires' disease. There were 182 documented cases, with 29 deaths. By early January 1977, the etiological agent was isolated and a new family of bacteria, the Legionellaceae, was discovered. In 1979, the bacterium that caused the Philadelphia outbreak of legionnaires' disease was classified as *Legionella pneumophila*.

*Legionella pneumophila* has been responsible for illnesses linked to air conditioning systems in buildings.

Another species called *Legionella longbeachae*, which occurs in soils, composts and potting mixes, has recently been found to cause illness in some people.

Legionella species also live happily in warm water circulation systems found in retirement homes, hospitals, and swimming pool complexes. It can also live in domestic and hotel spa pools, as well as hot water cylinders that are not set at the correct temperature.

ELS routinely tests Legionella in the following matrices:

- Cooling Tower water
- Recycled warm water systems
- Soils and compost
- Swimming Pools

We recommend that all air conditioning systems are analysed monthly as required by the BIA standard.

Producers and sellers of potting mix and compost should strongly consider a regular testing program in order to monitor the risk your product is posing to you're the purchasers of your product.

We also urge the regular testing of warm water circulation systems in retirement homes and hospitals and for operators of swimming pools to consider this test also.

## How to arrange a test

Give us a call and we will send to you the sample bottles and equipment you need. ELS will perform the analysis in a purpose built biohazard cabinet housed inside our pathogen laboratory. Because, the bacteria are very slow growing the test can take up to 10 days to complete.

We will let you know if Legionella is found when it is not expected.

## Legionella and cooling towers

New Zealand has concentrated on testing air conditioning systems as the primary source of Legionella related illness and the Building Industry Association (BIA) has recently amended the New Zealand Building Code to perform the test at monthly intervals.

The new, more rigorous testing regime is based on the current Australian-New Zealand Standard, AS/NZS 3666.3. It expands on the current requirement of a monthly bacteriological testing of water in cooling towers, by also requiring a specific Legionella bacteria test each month. This was previously required six monthly

Environmental Laboratory Services is IANZ accredited to perform Legionella in Cooling Towers. We are also accredited to perform Heterotrophic Plate Count (pour plate) for cooling towers.

Our Legionella methodology follows the method published by the N.Z. Communicable Disease Centre, and the joint Australian/New Zealand Standard AS/NZS 3896: 1998.

### **Sampling Cooling Towers for Legionella**

#### Safety Precautions

A facemask and other protective clothing as required are to be worn when collecting water samples from cooling towers. The condition of the tower should be recorded to include the presence of biological growths and sludge.

#### Sample Collection from Cooling Towers

Obtain water samples from incoming supply to tower from the header tank or the ball valve in the tower.

Collect samples in 100mL sterile containers from pond water furthest away from the make up and from the water return line of the circulation system to the tower. If this is not practical, take samples from cooling tower pond. Sludge and biofilm material can also be analysed.

Samples that cannot be processed immediately should be kept in a refrigerator for not more than 24 hours.

## Legionella and circulated water systems

Legionella may contaminate and grow in other water systems such as hot and cold-water services. They survive in low temperatures and thrive at temperatures between 20 degrees centigrade and 45 degrees centigrade if the conditions are right, e.g. if a supply of nutrients is present such as rust, sludge, scale, algae and other bacteria. Because high temperatures kill them, the BIA recommends the minimum temperature of 55°C for hot water systems.

Samples from chlorinated sources must be free of chlorine, achieved by adding sodium thiosulphate to the container. ELS provides sample containers suitable for this use, as well as sterile swabs for use around shower heads and taps.

There are two techniques to collect Legionella samples from within a building system.

### Collection of Samples from Water Services within Buildings

- The external surface and rim of the outlet being sampled should be clean and free of deposits.
- Samples should be collected before and after outlets are flushed and from the distal point of each service.
- Pour the samples from cisterns, calorifiers, hot water cylinders, and showers directly into 100mL sterile containers provided by ELS.

### Collection of samples from Shower Heads and taps.

- Remove showerhead etc from the fixture or pipe and allow a little water to drip out.
- Moisten a sterile swab with water and thoroughly swab the inside of the pipe, showerhead etc.
- Break the swab aseptically into a 100mL sterile bottle containing not more than 10mL of water.

## Legionella and potting mix

Samples of potting mix can be collected in plastic bags and sent directly to ELS.

We recommend and can provide suitable bags that can be zip locked.

## Legionella questions we are often asked

### **What is Legionellosis?**

Legionellosis is a bacterial disease that is common in adults over the age of 50 and is extremely rare in those under age 20 and most cases occur in males. It is a chest condition similar to pneumonia and can appear as a mild flu-like illness or a more severe respiratory condition.

Common early symptoms include loss of appetite, muscle pains, headache, abdominal pains and diarrhoea, and fever. A dry cough can develop as the disease progresses.

Some people are more at risk than others. Smokers and other people prone to lung disease are particularly susceptible.

### **How is it treated?**

A course of antibiotics is usually recommended, with rapid health improvement.

### **Can I become immune to it?**

Yes. If you are exposed to Legionella you can contract a mild form of the disease that your body builds up antibodies to, providing immunity to future infection. This immunity is specific to the species you were exposed to.

### **What should I do if I think I'm affected?**

See your medical practitioner immediately. The sooner you are treated the quicker you can recover.

### **How soon do I see symptoms?**

The incubation period for Legionellosis is two to 10 days, usually five to six days.

### **Am I Infectious?**

*Legionella* is not transmitted person-to-person.

### **How can avoid catching the disease?**

If you work in a building with a water-circulation type of air conditioning system, ask if that system has been tested?

When handling potting mix take care when opening and do all you can to avoid dust.

Wash your hands carefully after handling all soil.

## Contact Details

Please feel free to contact ELS by any one of the methods shown below.

### TELEPHONE

Main lines to Central Services

Main Telephone	(04) 576-5016
Facsimile	(04) 576-5017
Free Phone	(0800) 576-5016

Direct Lines

Joanne	Accounts	(04) 568-1205
Rob Deacon	General Manager	(04) 568-1203
Sue Meiklen	Occupation Health	(04) 568-1207
Sunita Raju	Microbiology	(04) 568-1206
Terry Manning	Managing Director	(04) 568-1204
Tracy Morrison	Instrumental Chemistry	(04) 568-1200
Jacinta Hira	General Chemistry	(04) 568-1209

Email can be directed to staff using "first initial last name"@els.co.nz

### COURIER

85 Port Road, Seaview, Lower Hutt, New Zealand.

### MAIL

P.O. Box 36-105, Moera, Lower Hutt, New Zealand.

### EMAIL

General Information: solutions@els.co.nz

### WEB

www.els.co.nz



NZFSA Laboratory Approval Scheme  
Accreditation Number 905

IANZ Accreditation Numbers:  
Biological 639, Drinking Water 787,  
Chemistry 414, Dairy L1921