



Environmental Laboratory Services

Testing the Waters



Swimming Pools

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Summary of suites: price includes bottle delivery on standard courier routes.

Test Code	Purpose	Cost - exc GST	Page
PSP1	Microbiology Suite	\$70	6
PSP	Chemistry Suite	\$36	6
PSP2	Full Micro and Chem suite	\$96	6

Cover Photo: Inflatable duck used by children at play

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 m² 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?

Pool water quality is a major health issue for everybody who operates a swimming pool. Laboratory tests should be performed by anyone who operates a pool for public use, such as hotels, schools, and councils.

Even if you have a personal interest in your private water quality, peace of mind can be achieved at minimal cost.

Who Should Be Testing Their Pools?

Under the New Zealand Swimming Pool Standard 5826:2000 a public pool is defined as any pool other than for domestic use, and includes commercial, school, institutional, club, hospitality industry, community and local authority pools.

Under this definition, any pool used by a member of the public must be tested. This brochure has been developed to assist pool owners with the understanding of testing services available.

Which Tests Should You Test For?

It seems that every year the media finds a new bug living in our swimming pools and because of this, the public has become increasingly aware of the quality of the water that they swim in.

Only by regularly testing your water through a qualified independent laboratory can you satisfy the demands of the public while meeting your obligations under New Zealand Standard NZS 5826:2000.

On site observations and tests should be carried out so that an accurate account of sampling conditions can be recorded. Under this standard you are required to hold appropriate NZQA unit standards and must analyse and record your pool water quality at set intervals.

ELS can assist you to analyse for the parameters that are required less frequently or require an accredited laboratory to perform.

We also analyse for Free Available, Combined and Total Chlorine but these must be performed on site and are therefore not included in the packages we offer. These tests are recorded by you as required in the NZS 5826:2000.

It is important to note that maintaining the level of Free Available Chlorine is the best way of destroying harmful bacteria. Keeping your pool chemistry balanced ensures that the chlorine will do what it is meant to.

Cyanuric acid is only used by the larger council pools and is also not included in our standard suites. We can however, test for it.

Cryptosporidium and Giardia are protozoa that have recently found their way into public pools and have caused serious illness. At the moment the test is very expensive and is not performed routinely except on some council pools.

Surprisingly, Legionella can be found in pool water at public pools, especially if the water temperature is warmer than 23° C and the pool fittings favour the formation of aerosols. Again, chlorine levels must be maintained to reduce the risks associated with these bacteria.

These tests include:

Test name	Lowest	Desirable		Highest	Notes
Alkalinity	60	80	120	200	Alkalinity measures the capacity of water to buffer against pH changes. A pool with high alkalinity can look cloudy and lead to scale formation. A pool with low alkalinity can suffer pH bounce and can be corrosive.
Calcium Hardness	40			300	Calcium hardness builds up in pools using calcium hypochlorite for chlorination. High levels of hardness can lead to cloudy water and scale formation. Low levels can cause corrosion.
Free available Chlorine – Pools	1	1.5	3	5	Chlorine is used to kill harmful bacteria in the pool. The FAC test measures the portion of chlorine available to react.
Free Available Chlorine – Spas	2	3	5	10	
Combined Available Chlorine	0	<0.5		1.5	Chlorine combines with bacteria in the pool and stops being available to kill more bacteria. This test measures the portion of chlorine no longer available.
Cyanuric acid	25	30	50	150	Cyanuric acid is added to outdoor pools to slow the breakdown of chlorine caused by sunlight.
Faecal Coliforms	Should not be present				Faecal coliforms are pathogenic gut bacteria that can cause illness. Chlorine is an effective way to destroy the bacteria.
pH	7.2	7.4	7.6	8.0	pH measures how acid or alkali a water is. The effectiveness of chlorine depends on the pH of the water, so it is important to maintain your pool pH at the right level all the time.
Pseudomonas aeruginosa	Should be less than 10/100mL				Pseudomonas are pathogenic bacteria found in wounds, that can cause skin infections. Chlorine is an effective way to destroy the bacteria.
Standard Plate Count	Should be less than 200/100mL				This test measures all the live bacteria present in your pool including the good and bad types. The higher the number, the poorer the water quality.
Staphylococcus aureus	Should be less than 100/100mL				Staphylococci are pathogenic bacteria that can cause infections of the skin, eyes, ears, throat, and nose. Chlorine is an effective way to destroy the bacteria.
Total Dissolved Solids	Should be less than 1000 above tap water.				This test measures the dissolved material in your water. At high levels your chlorine will become less effective.

How to Arrange Everything

After you have read this brochure and decided which suite you require, please give us a ring to arrange the delivery of bottles to you. Alternatively you could visit our website and order through there.

You will receive the bottles within a few days. Please fill them up following the instructions and then send back to ELS. Please include your cheque as payment. We will process the samples and deliver a report within a few days.

How to collect the samples

We will provide you with colour-coded bottles and clear instructions to make sampling easier. Each bottle corresponds to a particular preservative type and ensures the parameters under examination remain as constant as possible. Alternatively, we can collect the samples if you are nearby.

How to return the samples to ELS

All samples should be delivered to the laboratory as soon as possible but within 24 hours. Microbiological activity continues even at 4°C so the sooner we receive samples the better. Please follow the instructions we include.

ELS operates 365 days a year and accepts samples from Monday to Saturday. Please remember that if you send samples on a Friday your courier may require a Saturday delivery ticket.

Cost of Analysis

ELS offers three suites of tests that cover the chemistry and microbiology analysis required. These suites cover all the common tests required by the standard.

Microbiology Suite \$78.75 including GST

Faecal coliforms	Staphylococcus aureus
Pseudomonas aeruginosa	Heterotrophic Plate Count at 35°C

Chemistry Suite \$40.50 including GST

pH	Alkalinity
Calcium Hardness	Total Dissolved Solids

The two suites can be combined for a full water quality suite at a discounted price of \$108.00 including GST.

More specialised tests are also available if required

Legionella	\$ 45 + GST
Cyanuric acid	\$ 12 + GST
Chlorine	\$ 6 + GST (sample needs to be at the lab within 1 hour)
Sampling service	\$ call if your pool is close to our laboratory

Advice and Reports

ELS is IANZ accredited to perform all analyses required by NZS 5826:2000.

The analytical report provided by ELS will be signed by IANZ authorised analysts that are nationally and internationally recognised. Comments when the result is outside the upper, lower and desirable levels will be included on the report and further advice is available by contacting us.

Analytical Report

ELS
Example Report

Report Number : 56796

Date : 16 July 2004

Lab Number : 04/20315 Private Swimming Pool Chemistry Suite

Order No. :

SampleDate : 20/06/04 Time: 10:25

Date Received : 20/06/04

Site Code : 00 Your Pool Name Here

Test	Result	Comments
1 pH	7.5	Complies
52 Alkalinity (Total)	50 g CaCO ₃ /m ³	Outside Excessive Lower Limit of 60 g CaCO ₃ /m ³
60 Calcium Hardness	75 g CaCO ₃ /m ³	Complies
92 Faecal Coliforms	<1 cfu/100mL	Complies
94 Staphylococcus aureus	<1 cfu/100mL	Complies
96 Pseudomonas aeruginosa	11 cfu/100mL	Complies
123 Total Dissolved Solids	950 g/m ³	Complies
138 Heterotrophic Plate Count @ 35	180 cfu/mL	Complies
1111 Cyanuric Acid	35 g/m ³	Complies

Comments :

Results relate only to the sample as received.

Test Methodology:

Test	Methodology
pH	APHA 20th Edition Method 4500 H. LAS approved test 4.3.
Alkalinity (Total)	APHA 20th Edition Method 2320 B
Calcium Hardness	APHA 20th Edition Method 3500-Ca D
Faecal Coliforms	APHA 9222 D, MIMM 11.A3.1 LAS Approved Test 1.2
Staphylococcus aureus	APHA 20th Edition Method 9213 B
Pseudomonas aeruginosa	APHA 20th Edition Method 9213 E
Total Dissolved Solids	Conductivity meter calculation
Heterotrophic Plate Count @ 35	APHA 9215B
Cyanuric Acid	Portable Test Kit

All test methods and confidence limits are available on request.

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Microbiology Signatory

Chemistry Signatory



This laboratory is accredited by International Accreditation New Zealand. The tests reported have been performed in accordance with our terms of accreditation, with the exception of tests marked "not IANZ", which are outside the scope of this laboratory's accreditation. This report may not be reproduced, except in full.

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.

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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