eurofins

The World's Leading Laboratory Network

Meat Industry Services

www.eurofins.co.nz

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Cover photo: Export quality beef and lamb

Introduction

Eurofins-ELS is one of New Zealand's leading experts in the areas of:

- Air quality monitoring
- Boiler water
- Environmental water
- Landfills
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- 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. We grew through natural growth as well as the acquisition of local laboratories until in December 2012 we were acquired by Eurofins - the largest laboratory network in the world.

Eurofins Scientific is an international life sciences company which provides a unique range of analytical testing services to clients across multiple industries. The Group is the world leader in food and pharmaceutical products testing. It is also number one in the world in the field of environmental laboratory services, and one of the global market leaders in agroscience, genomics, pharmaceutical discovery and central laboratory services.

We are based in a purpose built facility of 1450 m^2 at 85 Port Road, Lower Hutt. Eurofins-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.

Who should read this brochure?

This brochure has been prepared for all exporters of meat and meat products. It includes all water quality details required by the Overseas Market Access Requirement (OMAR).

As one of New Zealand's leading laboratories we are able to perform all the analytical requirements needed to maintain export status, including water and effluent tests, product and NMD data entry.

Meat Works Inputs

It can be said that a finished-product is only as good as its individual components. A meat processing plant has many contributing processes that can affect the final quality of that product including, air, water, and steam quality. Eurofins offers a full IANZ and MILAB accredited testing service for all these important meat works inputs.

Air Quality monitoring
Eurofins operates dedicated air monitoring equipment that we operate on site wherever air quality monitoring is required. The instruments we use are capable of analysing:

- Microbiological Quality such as total plate counts
- Yeast and Mould
- Particulate matter and Gasses

Water Potability
A large component of all food types is water. It is used as an ingredient as well as for washing equipment. Some supplies are sourced from industry owned bores and treatment plants, while others come directly from a council supply, however all water should be analysed at any point where it comes in contact with a product.

The next release of the NZ Drinking Water Standards will place a mandated requirement on all water producers to comply with all process, monitoring, and compliance procedures contained in that standard. This has the potential to greatly change the operation of New Zealand's potable water production. Eurofins is happy to assist you with this change.

Water quality can change as it passes through a delivery or reticulation system, so it is important to check for various parameters that can affect the quality of your product. This should not be limited to microbiological quality as some chemical parameters can impart unwanted tastes or colours to the product.

Meat works are also required to comply with the Human Consumption Specs, and routinely perform Faecal Coliform, pH, Turbidity, and Chlorine monitoring as required. Eurofins can assist you with these analyses and will streamline the HC and EU OMAR analyses to minimise costs wherever possible.

Boiler Water
Boiler water should be monitored routinely by an independent IANZ registered laboratory. Recommended tests include pH, Total Dissolved Solids, Sulphite, alkalinity species, and Phosphate. Eurofins is IANZ accredited to perform these tests, and can provide you with a full boiler testing service.

Overseas Market Access Requirements (OMAR)

Documented Overseas Market Access Requirement takes effect for all export meat and fish premises. This new OMAR includes a section on potable water quality that replaces the 1984 MAF circular. In the OMAR the CATA suite has been changed to a Check Monitoring Suite, while CATB has changed to Audit Monitoring.

The testing required by the OMAR covers only that portion of water used for processing. You may also be required to perform testing to meet the New Zealand Drinking Water Standards (NZDWS). Where a requirement overlaps, and the NZDWS level is stricter then this takes precedence.

Eurofins will provide a complete service for all tests required by and described in the EU OMAR as well as the Human Consumption Specs.

Frequency of testing

Frequency of testing is the first issue that will affect most exporters. The frequency of testing is still governed by the volume of water used, but extra bands have been included to minimise the impact on smaller premises. Defining whether the water is sourced from town or own supply has been dropped.

Daily Water Usage m^3	**Check Monitoring (Samples per year)**	**Audit Monitoring (Samples per year)**
less than or equal to 100	2	1 every 2 years
More than 100 but less than or equal to 1,000	4 + 3 for each 1,000 m^3/day and part thereof of the total volume	1
More than 1,000 but less than or equal to 10,000		1 + 1 for each 3,300 m^3/day and part thereof of the total volume
More than 10,000 but less than or equal to 100,000		3 + 1 for each 10,000 m^3/day and part thereof of the total volume
More than 100,000		10 + 1 for each 25,000 m^3/day and part thereof of the total volume

Therefore a plant that uses 10,000 m3 a day will be required to perform 34 check samples and 5 audit samples per annum. Because the Check Monitoring is included with the Audit Monitoring the count reduces to 29.

In addition to the usual tests listed in the OMAR is a requirement to test a comprehensive suite of pesticides 5 yearly. This can be included in one of the Audit Monitoring suites for that year.

There are many additional changes that need to be considered, including the change of terminology from CATA and CATB to Check and Audit Monitoring respectively. Other changes include:

Parameters that have been removed from the CATB Suite

- Alkalinity
- Calcium
- Chemical Oxygen Demand
- Dissolved Reactive Phosphorus
- Free CO2
- Hardness
- Magnesium
- Phenol
- Potassium
- Zinc

Parameters that have been added to the Check Monitoring Suite

As well as the microbiological tests, E.coli, Enterococci, Clostridium perfringens, and Coliform bacteria are a set of extra chemical parameters. These are aluminium, colour, and iron.

Parameters that have been added to the Audit Monitoring Suite

Most of the tests that have been included in the new Audit Monitoring Suite are organics and include:

- Acrylamide
- Epichlorohydrin
- Pesticides such as 1080, Diquat and Thiabendazole.

Some general chemistry and microbiological tests have also been included:

- HPC at 22°C
- Bromate
- Total Organic Carbon (TOC)
- Oxidisability

It is important to note that TOC can also be used to measure oxidisability and this is how Eurofins will analyse your samples.

Whenever and Audit suite is required the parameters must also include the tests listed in the Check suite.

Clarification of differences between the OMAR and the MAF Circular

Many different units have been used in the MAF circular and OMAR, which may cause confusion when you are comparing your CATB reports to your Audit reports. The following guide should assist you:

Conductivity
When the 1984 MAF circular was released conductivity was reported at a standard temperature of 20'C. Since then the standard reporting protocol has changed to 25'C. In order to adjust to the new test method Eurofins applied a correction factor of 1.1 to the MAF circular value of 40 mS/m and rounded to 45 mS/m.

The 2004 OMAR allows an equivalent conductivity of 275 mS/m.

Aesthetically acceptable
This is a term not usually used by laboratories because we prefer to use real numbers that can be compared to other real numbers. The tests listed in the OMAR with this requirement are Colour, Odour, Taste, and Turbidity.

Colour
We measure colour using a spectrophotometer, and report as True Colour Units as defined by the NZDWS.

Taste and Odour
We ask that the person collecting the samples drink some of the water and to include a comment on its taste and odour. If the quality is acceptable, we include this on our report.

Turbidity
Turbidity is required by the OMAR to be aesthetically acceptable. Eurofins follows the guidelines of the New Zealand drinking Water Standards (NZDWS) and uses a level of 5 NTU. Nephelometric Turbidity Units are measured on a dedicated turbidity machine and numbers above 5 indicate a level of light scattering particles.

pH
Although the maximum allowed pH has been lifted to 9.5 you need to be aware that at this level chlorine is almost useless as a disinfectant. For example, at pH 9.0 you will need a chlorine concentration of 1.4 g/m3 to provide the disinfection equivalent of 0.2 g/m3. The optimum pH for effective chlorine disinfection is 8.0.

Reporting Units and Maximum Limits

The 1984 MAF circular used g/m^3 and mg/m^3 as the reporting units and this has changed in the 2004 OMAR to units such as mg/L and µg/L.

The units can be described as:

g/m^3 are the same as mg/L and parts per million (ppm)
mg/m^3 are the same as µg/L and parts per billion (ppb).

Some of the maximum allowable limits in the OMAR have changed from the MAF circular to bring them into line with the NZDWS. Significant changes are listed below in red.

General Chemical Parameters

Test Name	Old Limit		New Limit		Comments
Aluminium	0.2	g/m3	200	ug/L	Unchanged
Ammonium	0.2	g/m3	0.5	mg/L	Increased 2.5x
Antimony	0.05	g/m3	5	ug/L	Reduced 10x
Arsenic	0.05	g/m3	10	ug/L	Reduced 5x
Benzene	10	mg/m3	1	ug/L	Reduced 10x
Benzo(a)pyrene	0.01	mg/m3	0.01	ug/L	Unchanged
Boron	1	g/m3	1	mg/L	Unchanged
Cadmium	0.005	g/m3	5	ug/L	Unchanged
Chromium	0.05	g/m3	50	ug/L	Unchanged
Conductivity	40	mS/m at 20'C	275	mS/m at 25'C	Increased from 45 mS/m at 25'C
Copper	0.05	g/m3	2	mg/L	Increased 40x
Cyanide	0.1	g/m3	50	ug/L	Reduced 2x
Fluoride	1.1	g/m3	1.5	mg/L	Increased slightly
Hydrogen Ion Concentration (pH)	6.5 - 8.5		6.5 - 9.5		Range increased at alkali end
Iron	0.2	g/m3	200	ug/L	Unchanged
Lead	0.05	g/m3	10	ug/L	Reduced 5x
Manganese	0.05	g/m3	50	ug/L	Unchanged
Mercury	0.001	g/m3	1	ug/L	Unchanged
Nickel	0.05	g/m3	20	ug/L	Reduced 2.5x
Nitrate	10	g N /m3	50	mg/L	Unchanged
Nitrite	0.03	g N /m3	0.5	mg/L	Unchanged
Selenium	0.01	g/m3	10	ug/L	Unchanged
Sodium	200	g/m3	200	mg/L	Unchanged

Some of the limits have dropped significantly and will challenge the ability of some laboratory instruments. It is commonly accepted that an instrument should have an operating detection limit of 5 times lower than the MAV it is measuring. This means that some metals will require ICP technology to satisfactorily detect the OMAR limits. Using other techniques may increase the risk of false positives due to an increase in uncertainty at that level.

Pesticides

Test Name	Old Limit		New Limit		Comments
Aldrin & Dieldrin	0.3	mg/m3	0.00003	mg/L	Reduced 10x
Chlordane	0.3	mg/m3	0.0002	mg/L	Reduced slightly
DDT + Isomers	1	mg/m3	0.001	mg/L	Unchanged
Diquat	60	mg/m3	0.01	mg/L	Reduced 6x
Lindane	3	mg/m3	0.002	mg/L	Increased slightly
Pentachlorophenol	10	mg/m3	0.01	mg/L	Unchanged

OMAR Water Suite Details

The full list of Check Monitoring parameters is as follows:

• Aluminium	• Ammonia
• Clostridium perfringens	• Coliform bacteria
• Colour	• Conductivity
• E.coli	• Enterococci
• Iron	• Nitrite
• Odour	• pH
• Taste	• Turbidity

The cost of each test in the Check Monitoring Suite is listed on the Eurofins sample submission form.

The Audit Monitoring Suite includes the following parameters. Please note that we have replaced the oxidisability test with TOC and that pesticides are listed as a separate suite below. As well as the tests listed below, an Audit Monitoring Suite includes all the parameters in the Check Monitoring Suite.

• 1-2 dichloroethane	• Acrylamide
• Aluminium	• Antimony
• Arsenic	• Benzene
• Benzo(a)pyrene	• Boron
• Bromate	• Cadmium
• Chloride	• Chromium
• Colony Count at 22’C	• Copper
• Cyanide	• Epichlorhydrin
• Fluoride	• Iron
• Lead	• Manganese
• Mercury	• Nickel
• Nitrate	• Nitrite
• Selenium	• Polycyclic aromatic hydrocarbons
• Sulphate	• Sodium
• Total Organic Carbon	• Tetrachloroethane and Trichloroethane
• Vinyl chloride	• Trihalomethanes - Total
• Total Pesticides	

Because of the important nature of the suite, Eurofins recommends that you send us ALL the analyses required for the Audit Suite, however this is not essential. It is possible for you to complete some tests in-house and get us to perform the remainder.

The price for the routine audit testing will depend on the tests you require us to complete – please check the sample submission form for details.

PLEASE NOTE - All microbiological samples used for compliance purposes will include a check to ensure the delivery temperature remains below 10'C. We will record on our report the temperature of the sample as it is received.

Every five years you will also need to analyse for the following pesticides.

• 1080	• Endrin
• 1,2-dibromo-3-chloropropane	• Fenoprop
• 1,2-dibromoethane	• Heptachlor and heptachlor epoxide
• 1,2-dichloropropane	• Hexachlorobenzene
• 1,3-dichloropropene cis	• Hexazinone
• 1,3-dichloropropene trans	• Lindane
• 2,4,5-T	• MCPA
• 2,4-D	• Mecoprop
• 2,4-DB	• Metalaxyl
• Alachlor	• Methoxychlor
• Aldrin + dieldrin	• Metolachor
• Atrazine	• Metribuzin
• Azinphos methyl	• Oryzalin
• Bentazone	• Oxadiazon
• Bromacil	• Pendimethalin
• Carbofuran	• Pentachlorophenol
• Chlorodane	• Permethrin
• Chlorpyriphos	• Picloram
• Chlortoluron	• Pirimiphos methyl
• Cyanazine	• Procymidone
• DDT + isomers	• Simazine
• Diazinon	• Terbuthylazine
• Dichloroprop	• Thiabendazole
• Dimethoate	• Triclopyr
• Diquat	• Trifluralin
• Diuron	

The Eurofins sample submission form lists all the tests required for audit monitoring, and it is the responsibility of each premise to tell their laboratory what tests to perform. All you need to do is tick either the individual test you require (or the full suite), then fax the form to us. We will send you the bottles you need to complete the sampling.

The price for each audit suite will differ according to the tests you require.

If you have any queries about this process your MAF VA can assist. Alternatively, Eurofins maintains close contact with all relevant authorities and can also assist you where required.

Clarifying Reporting Units

The units and limits shown in the OMAR are different from standard laboratory reporting units for nitrate, nitrite and ammonia tests. Eurofins reports use different maximum limits that are derived from the mathematics shown below.

Nitrate
Nitrate results are expressed by laboratories as NO_3-N which is not the same unit as the NO_3 used in the OMAR.

The OMAR limit for nitrate is 50 g/m^3 expressed as NO_3. We can mathematically determine the limit when reporting as NO_3-N using the formula:

$$50 \times 14/62 = 11.3\ g/m^3$$

Where: 50 is the OMAR limit
14 is the atomic weight of Nitrogen
62 is the atomic weight of Nitrate (NO_3)

Nitrite
Nitrate results are expressed by laboratories as NO_2-N which is not the same unit as the NO_2 used in the OMAR.

The OMAR limit for nitrite is 0.5 g/m^3 expressed as NO_2. We can mathematically determine the limit when reporting as NO_2-N using the formula:

$$0.5 \times 14/46 = 0.15\ g/m^3$$

Where: 3 is the OMAR limit
14 is the atomic weight of Nitrogen
46 is the atomic weight of Nitrate (NO_2)

Ammonia
Ammonia results are expressed by laboratories as ammonia-nitrogen which is not the same unit as ammonia used in the OMAR.

The OMAR limit for ammonia is 0.5 g/m^3 expressed as ammonium. We can mathematically determine the limit when reporting as ammonia-nitrogen using the formula:

$$0.5 \times 14/18 = 0.39\ g/m^3$$

Where: 0.5 is the OMAR limit
14 is the atomic weight of Nitrogen
18 is the atomic weight of Ammonium (NH_4)

Meat Works Processes

On Site Hygiene Checks
Eurofins is accredited to perform plant hygiene evaluations on site by collecting plant and equipment swabs as well as air quality data. The quality system of each food processor should include regular hygiene checks to ensure the product is produced in a clean environment using clean equipment.

For local clients our service can include regular visits by our own sampling staff.

NMD Sampler Training
Eurofins has certified trainers on staff that perform on-site training of meat-works sample collection staff.

It is a requirement that an authorised trainer conducts sampler training and that the trainer retains all records. Eurofins is accredited to ISO17025, which requires very strict records management. All training and records management will be conducted under this management structure.

NMD Data Entry
Data can be extracted directly from our Laboratory Information Management System (LIMS) into Excel for reporting or into a format compatible with your own database. The reports we produce are very flexible and are designed with our clients' use, in mind.

As part of our contracted analytical service we enter data into the NMD database at no extra cost.

Meat Works Products

Meat works manufacture a wide range of products, of which meat is only part. Eurofins offers a full range of chemical and microbiological tests that covers all products manufactured.

Eurofins is registered under the NZFSA LAS Program, and has been assisting meat companies with the certification of export product for many years. Our meat testing scope includes Bovine, Ovine, Cervine, Caprine, and Porcine.

We can provide sampling equipment such as swabs and diluent and templates, and will arrange for couriers as part of our contractual obligations. The list below shows all currently accredited tests we are able to perform.

Meat and Meat Product - Microbiological Tests
The following tests are all accredited with IANZ and NZFSA and are tested in accordance with MIMM "Microbiological Methods for the Meat Industry" (3ed)

2000 and the following NZ Food Safety Authority (Animal Products) National Microbiological Database (NMD) Technical Procedures: Farmed Animals.

- Aerobic Plate Count at 30°C
- Escherichia coli
- E coli 0157:H7 & nSTEC
- Staphylococci (coagulase positive)
- Salmonella
- Listeria monocytogenes
- Clostridium perfringens
- Sulphite-reducing anaerobes

Meat and Meat Product - Chemical Tests
Eurofins is LAS and IANZ accredited to perform proximate analyses on Meat and Meat products including Meat and Bone Meal. The tests include:

- Ash
- Carbohydrate
- Fat
- Moisture
- Protein
- Calcium

Tallow
Please ask about our Tallow testing service, which includes all the usual tests such as Free Fatty Acids, Peroxide Value and Moisture.

Meat Works Outputs

As well as producing products for sale, meat works also generate by-products that must be disposed of. These by-products include air and water wastes that may need treatment to meet Resource Consent requirements. Eurofins has a long history of working with Resource Consents and offer a full analytical testing service.

Air Discharges
Factory discharges are being closely scrutinised as environmental improvements continue. Eurofins is IANZ accredited to perform the analyses of NOx (nitrite) and SOx (sulphate) in stack discharges as well as particulate matter. The particulate matter can be further analysed for metals content if required.

Effluent Discharges
All factories and food processors produce waste. Eurofins can provide all the analytical testing you need, whether these are regulated by local council Trade Waste by-laws or Resource Consents.

Testing services include but are not limited to:

- Ammonia
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Metals
- Microbiological analysis
- Oil and Grease
- Sulphide
- Suspended Solids
- Total and dissolved nitrogen species including Kjeldahl
- Total and dissolved phosphorus species

Other Effluent Treatments
Eurofins is IANZ accredited to perform all the usual chemistry parameters that are performed on DAF tanks. This includes all stages of effluent treatment such as grease traps, clarifiers, biofilters, and wetland discharge.

Sampling Information

"The result of any test can be no better than the sample on which it is performed".

The objective of sampling is to collect a portion of material small enough in volume to be transported conveniently and handled in the laboratory while still accurately representing the material being sampled.

Sampling is an often underestimated but very crucial step in the process of determining food safety. Many things can go wrong before the sample reaches a laboratory so we offer assistance to minimise risk associated with:

- Inappropriate sample types and locations
- Incorrect sampling technique and labelling
- Sample contamination
- Sample homogeneity
- Delivery timeframes

Our service provides clear and easy to follow sampling procedures using colour coded labels wherever possible. Eurofins has its own team of samplers so we know what is needed to ensure accurate and safe sampling under all types of conditions.

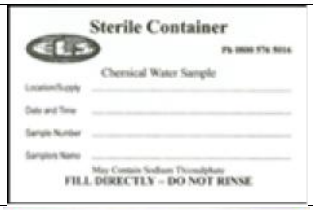
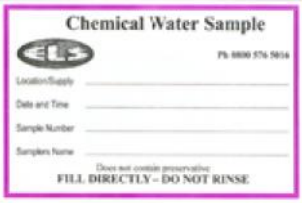
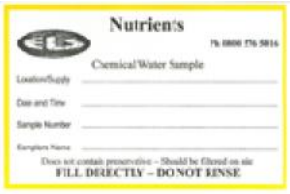
Delivery to Eurofins
Microbiological samples should be delivered to the laboratory as soon as possible but within 24 hours and between 0° and 10° Celsius.

Please ask for a copy of our “Assuring Sample Integrity” brochure.

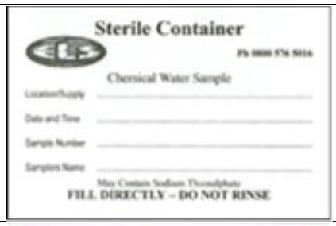
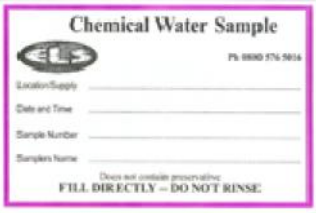
Sampling Containers

Please let us know when you are ready to sample and we will prepare sampling kits for you.

Check Monitoring Kit:

Tests	Bottle Label
Aluminium, Iron	
Bacteria Tests – Enterococci, E. coli, Coliform bacteria, Clostridium perfringens	
pH, conductivity, colour, turbidity	
Nitrite, ammonia	

Human Consumption Tests

Tests	Bottle Label
Faecal coliforms	
pH and turbidity	

The Audit monitoring suite adds six additional bottles for the standard suite and 9 bottles for the 5 yearly pesticide suite. Please let us know at least a week in advance so we can prepare these kits for you.

Contact Details

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

Main Lines

Wellington	Main Telephone	(04) 576-5016
Christchurch	Main Telephone	(03) 343-5227
Auckland	Main Telephone	(09) 579-2669

Direct Lines

	Accounts	(04) 568-1205
Rob Deacon	General Manager	(04) 568-1203
Sunita Raju	Microbiology Lab Manager	(04) 568-1206
Tracy Morrison	Chemistry Lab Manager	(04) 568-1200
Sharon van Soest	Chemistry Lab Manager	(04) 568-1200
Deb Bottrill	Sample Logistics Manager	(04) 576-5016
Dan Westlake	Christchurch Lab Manager	021-242-2742
Ralph Veneracion	Auckland Lab Manager	021-242-2711

Email can be directed to staff using "first name last name"@eurofins.com

Courier

Wellington: 85 Port Road, Seaview, Lower Hutt, New Zealand 5010

Auckland: 35 O'Rorke Road, Penrose, Auckland 1061

Christchurch: 43 Detroit Drive, Rolleston 7675

Mail

P.O. Box 36-105, Wellington Mail Centre, Petone, New Zealand 5045.

Email

General Information: eurofinswellington@eurofins.com

WEB

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IANZ Accreditation Numbers:
Biological 639, Drinking Water 787,
Chemistry 414, RLP 1140