



Advancing Microplastic Analysis: From Laboratory Inception to Accreditation

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- Lab was set up in **2019**
- Since January 2021 we have processed more than **1000 commercial samples**
- Since November 2023 we are **ISO/IEC 17025:2017 accredited for Microplastics Analysis in Potable Water**



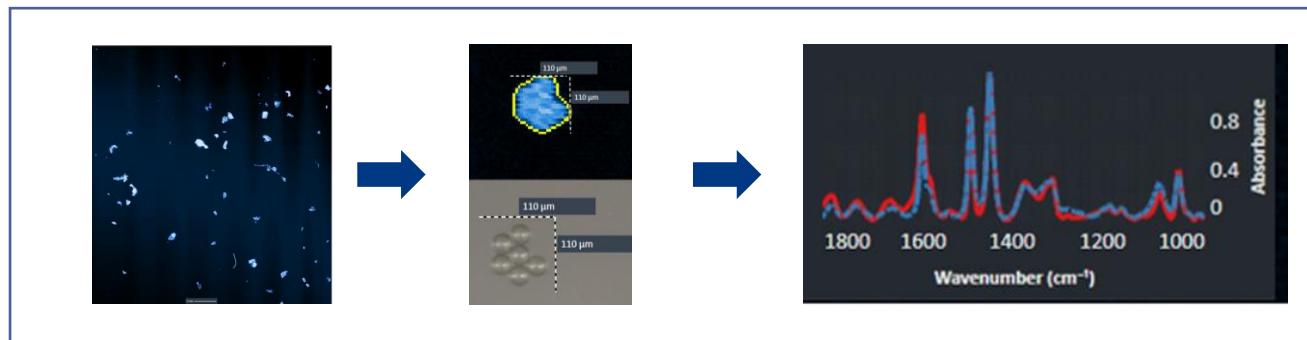
NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.



How do we analyse Microplastics?

- Agilent 8700 Laser Direct Infrared (LDIR) Chemical Imaging system
- Size range
 - **20 to 5000 μm**
- We are reporting:
 - **Number**
 - **Size**
 - **Type**
 - Morphologie
 - Colour



How do we analyse Microplastics?



Potable
Water,
Surface
Water,
Ground
Water,
Wastewater



Sewage,
Soil,
Biosolids,
Compost,
Biochar



Sand,
sediment



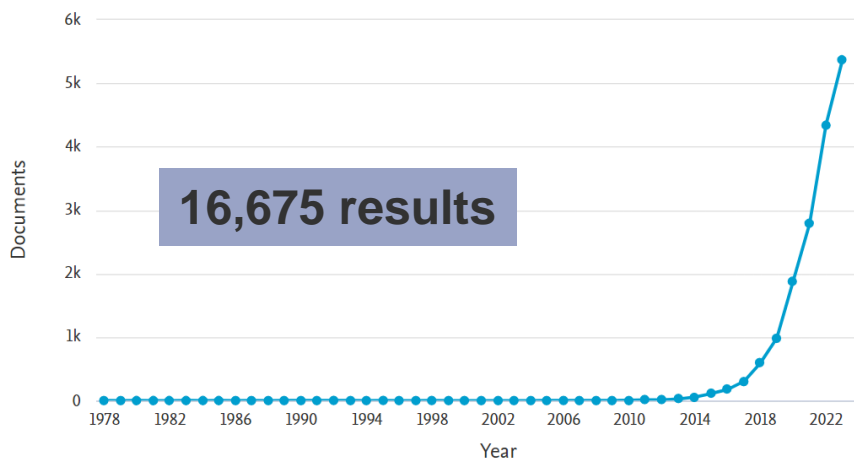
Oysters,
Mussels,
Fish Tissue



Air,
Food
Products,
Cosmetics
and Personal
Care
Products,
Packaging

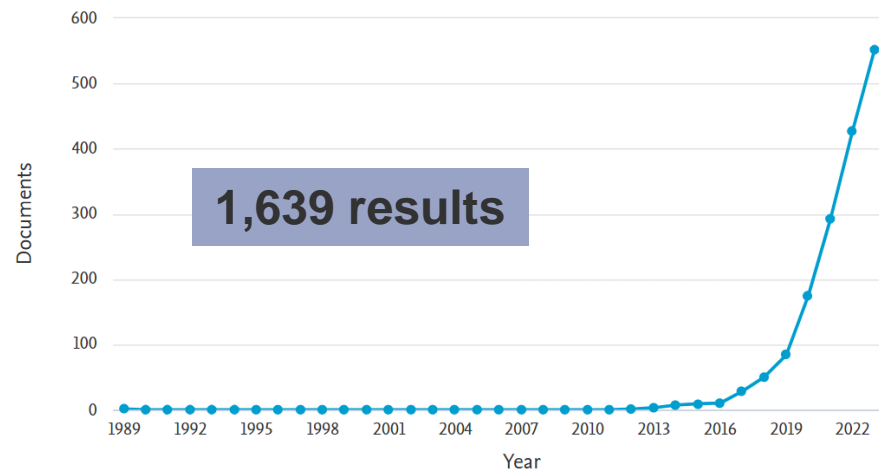
✓ Ongoing research & development based on market needs

Documents by year



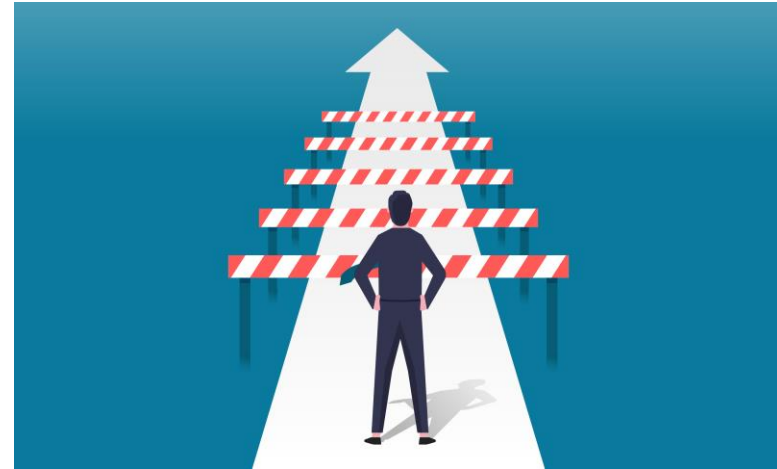
Scopus Search: Microplastic

Documents by year

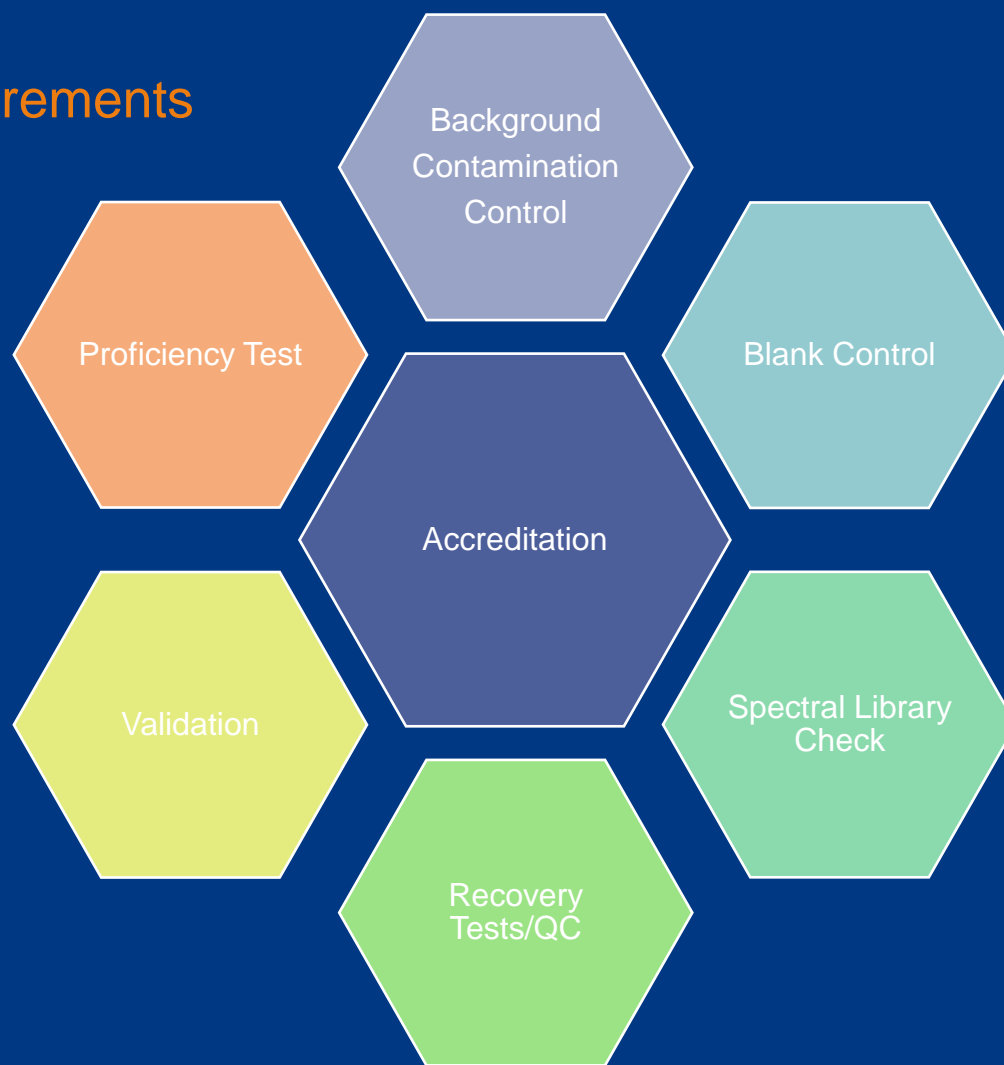


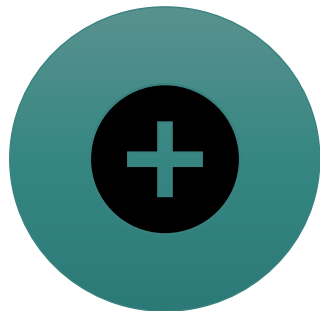
Scopus Search: Microplastic Quality

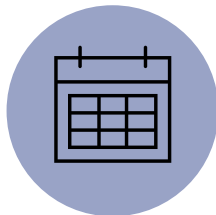
- **What was our motive?**
 - Most of our test that we offer are ISO 17025 accredited
 - Going in line with the Californian Water Boards requirements
- **How did we realise it?**
 - Conversations with NATA
 - Outlined validation requirements
 - Method based on:
 - *SWB-MP1-rev1: Standard Operating Procedures for Extraction and Measurement by Infrared Spectroscopy of Microplastic Particles in Drinking Water by the State Water Resources Control Board in California* has been the bases of our methodology



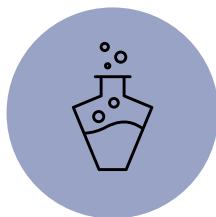
Validation Requirements







Monthly laboratory air blank



Reagent check



Matrix blanks

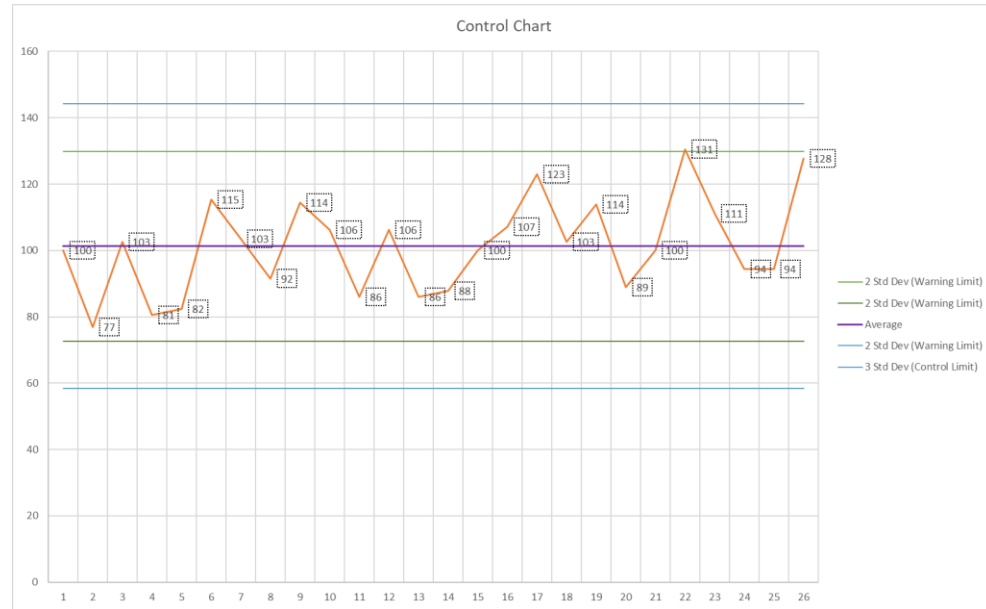
- We only report the 9 most common polymers:
 - Polyethylene (PE)
 - Polypropylene (PP)
 - Polystyrene (PS)
 - Polyvinylchloride (PVC)
 - Polyethylene Terephthalate (PET)
 - Polycarbonate (PC)
 - Polymethylmethacrylate (PMMA)
 - Polyamide (PA)
 - Polyurethane (PU)
- The spectral library used has been checked with two independent reference materials for every polymer type we report
- **Hit Quality Index (HQI)** of 0.8 is implemented



Recovery Tests



Cospheric PE beads
(75-90 μm , 250-300 μm) in
surfactant solution



Cospheric PE beads
(250-300 μm)

- **Minimum Detectable Amount (MDA)** calculated as per SWB-MP1-rev1 by the California State Water Board calculated with replicated Laboratory Reagent Blank (LRB)
- **P&A** and **MU** has been calculated for two different spike levels (± 50 and 100 MPs/L)
 - PE 75-90 μm
 - PE 250-300 μm
 - PS 70 μm

Microplastics	MDA	Unit
Polyethylene (PE)	3	MPs/L
Polypropylene (PP)	10	MPs/L
Polystyrene (PS)	3	MPs/L
Polyvinylchloride (PVC)	3	MPs/L
Polyethylene Terephthalate (PET)	6	MPs/L
Polycarbonate (PC)	4	MPs/L
Polymethylmethacrylate (PMMA)	3	MPs/L
Polyamide (PA)	6	MPs/L
Polyurethane (PU)	5	MPs/L

- Accuracy: between 75 - 98 %
- Precision: between 5 - 20 %RSD
- MU: between 10 - 30 %

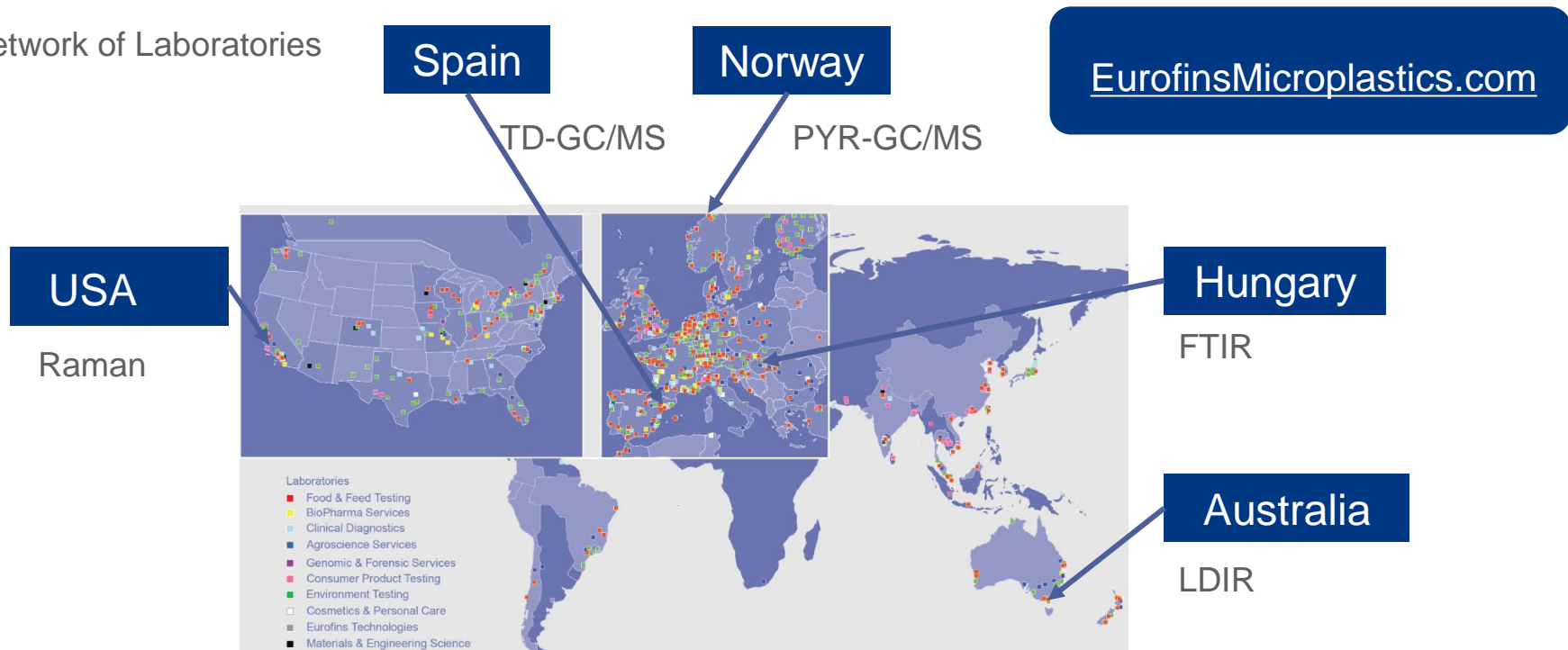


SOUTHERN CALIFORNIA
COASTAL WATER
RESEARCH PROJECT

Applying next-generation science to aquatic ecosystems management
A PUBLIC AGENCY



Our Network of Laboratories



Plastic Dust Cloud Project

Sample Location (12 Locations, 9 Countries)



Sampling and Analysis



Sampling

- Established laboratory for **commercial Microplastics Analysis by LDIR**
- Since November 2023 we hold **ISO 17025 NATA accreditation** for the Potable Water matrix
- And the pillars for our accreditation were:
 - ✓ Background Contamination Control
 - ✓ Blank Control
 - ✓ Spectral Library Check
 - ✓ Recovery Tests/QC
 - ✓ Validation
 - ✓ Proficiency Test



Thank you



Thank you, the entire
Microplastics Team and all our
project partners!

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