# AQUASCOUT

### **Universal Biosensors**





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#### **Company Background**

Universal Biosensors (UBI) was established in 2001 and is headquartered in Melbourne, Australia.

UBI is a world class test strip manufacturer with over 20 years experience across a variety of industries.

World leader in electrochemical cell technology whose technology has been used to deliver more than 15 billion diagnostic tests to patients & customers worldwide.

UBI has a suite of 11 portable electrochemical sensing products in market across the human health, wine and veterinary industries.

UBI has developed a portable heavy metals sensor platform called AQUASCOUT.











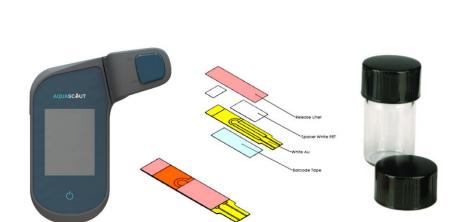
#### **AQUASCOUT**

Universal Biosensors have developed a handheld water testing platform, AQUASCOUT, which can detect and monitor heavy metals in water samples.

AQUASCOUT addresses key issues associated with the current methods for heavy metal detection (laboratory testing) which are time consuming and expensive.

The potential market opportunities for AQUASCOUT include:

- Utilities (drinking water) lead pipe inventory and replacement,
- Mining, utilities and industrial waste monitoring,
- Utilities (drinking water/water treatment/recycling) water quality compliance testing,
- Consumers accessing the technology to test the quality of their water at home.



**Test Strip** 

Buffer

Analyzer



#### AQUASCOUT – Global Opportunity

The Lead (Pb) water testing market is valued at over \$1.04b and the Heavy Metals testing market is growing at CAGR of 4.8%.

Over 160m buildings across US, Europe, India and China have lead pipes.

Governments from certain countries are beginning to legislate the removal of lead pipes ie. US and France.

Current methods for lead detection are time consuming and expensive and no accurate portable detection product exists.

From a study in 2022, >6% of domestic households in the UK are recording lead levels greater than the legislated limits.

Metal	Percentage	Market Size (USD)	Number of Tests
Lead	30%	\$1.04b	53.98m
Arsenic	28%	\$0.97b	50.38m
Mercury	20%	\$0.69b	35.98m
Cadmium	11%	\$0.38b	19.79m
Other	11%	\$0.38b	19.79m
Total	100%	\$3.46b	179.92m

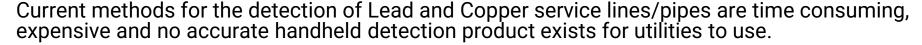
Immediate global opportunity for testing with over 160 million buildings containing lead pipes.







#### AQUASCOUT - Overall Benefits



UBI's AQUASCOUT allows location of Lead and Copper pipe infrastructure with:

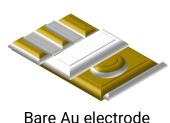
- Accuracy (Comparable to laboratory-based testing methods from initial trials),
- Immediate Results (Results within 5 minutes),
- Low Cost (US \$10 per test),
- Portable Tests (Test water direct from the tap),
- Easy to Use Workflow (No calibration, external chemicals or trained operators required),
- Results Transferred Wirelessly (Data can be sent wirelessly to create a database of pipe networks).



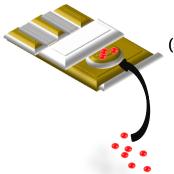


AQUASCOUT - Technology

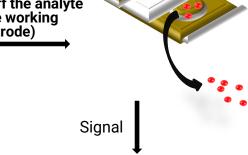
AQUASCOUT detects Lead or Copper in water by using the electrochemical sensing technique Anodic Stripping Voltammetry.

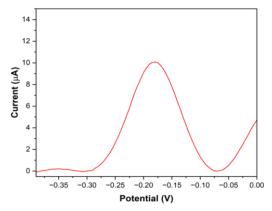


Pre-concentration of analyte on the working electrode



Anodic Stripping Scan (stripping off the analyte from the working electrode)



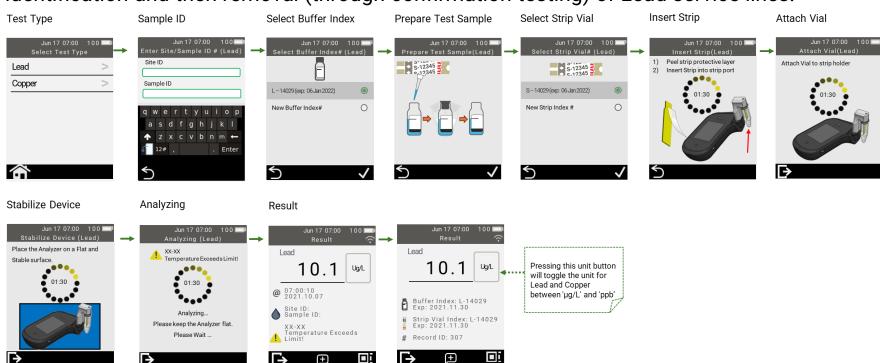




AQUASCOUT - Workflow

**Target users:** Water utilities.

**Initial application:** The detection of Lead (or Copper) in drinking water to help water utilities more easily meet their Lead service line inventory requirements and provide a more cost-effective avenue for the identification and then removal (through confirmation testing) of Lead service lines.







#### AQUASCOUT - Features

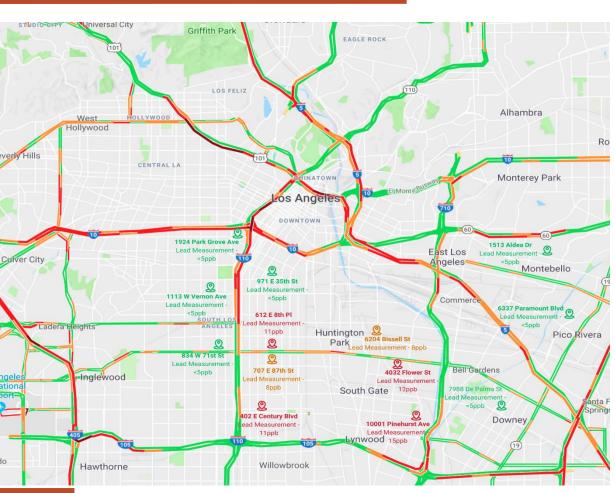


AQUASCOUT will provide a cost effective, fast and accurate way for utilities to identify, monitor and decide on removal of lead service lines from their networks:

- No installation required,
- Minimal training required,
- Rechargeable lithium-ion battery,
- · Integration with ESRI GIS mapping software in progress,
- Wireless data transfer to utilities' databases if required,
- Analyzer should be cleaned if any visible signs of dirt/oils. Test strips and buffers are one use,
- User data is not stored on the device, only a site/sample reference ID,
- UBI are exploring the appropriate EPA certifications for monitoring/screening for Lead and Copper in drinking water.



#### AQUASCOUT

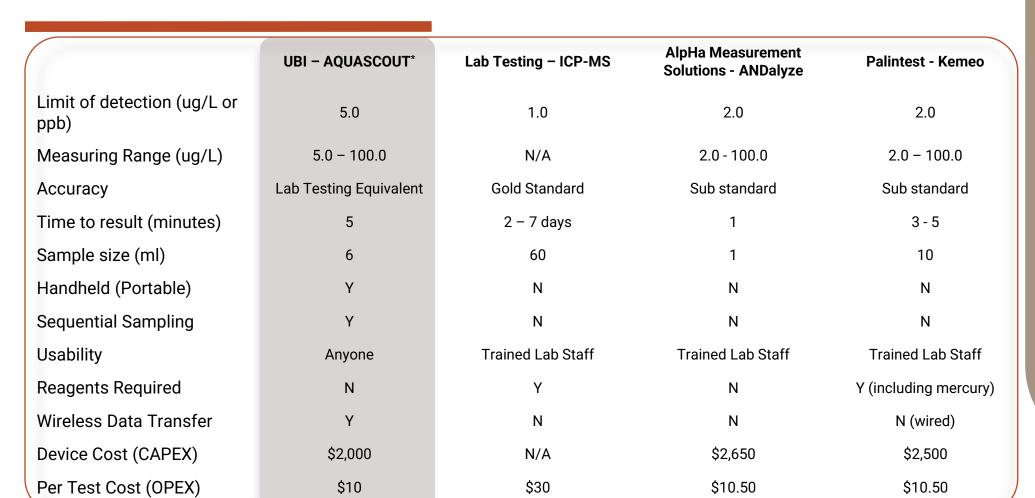


Concept: The data can be tagged to geo-locations to enable easy identification of individual properties that breach allowable limits of lead in drinking water. Resulting in more cost-effective identification, removal and replacement of lead service lines.





#### AQUASCOUT - Competitive Analysis (Lead)





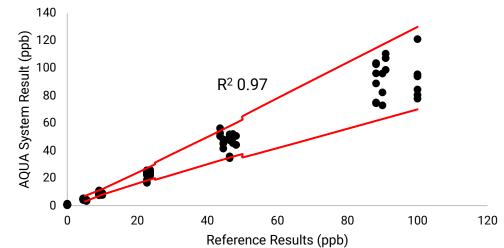
AQUASCOUT - Case Studies - Initial Lead Performance

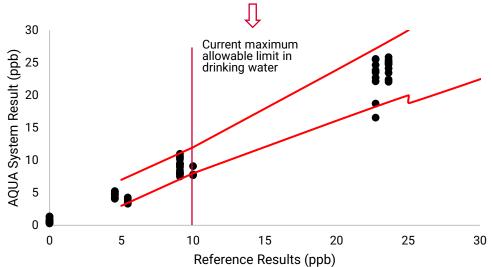
#### **Lead Sensor**

- Limit of detection is 5ppb (ug/L),
- Maximum allowable impurity in drinking water globally of 10ppb (ug/L),
- Measuring range for the UBI sensor is between 5 – 100ppb,
- Target CV of optimized sensor is 3-5%,
- No observable effect of pH,
- No observable effect of temperature.

#### **Initial Study**

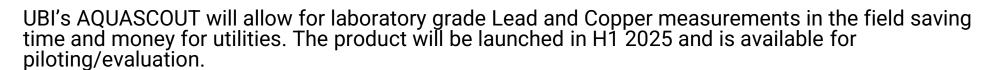
- 36 tap water samples from Victoria, Australia and California, USA. Mix of un-spiked and samples spiked with different concentrations of Lead,
- Tested 3 replicates of each sample and compared them to a reference measurement (from local Eurofins laboratory).







AQUASCOUT - Next Steps



**UBI** want to:

1. Identify a commercial partner(s).





## **END**

# AQUASCOUT

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