

PESTICIDE ANALYSIS



The Australian Water Quality Centre (AWQC) is dedicated to ensuring and responding to the public health requirements relating to the provision of water and wastewater services for communities in Australia and across the world.

Pesticides can find their way into our waterways by many routes, the most likely being run off when spraying is followed by heavy rains. The AWQC offers a range of NATA accredited pesticide analysis to ensure that pesticide levels are monitored. Methods are applicable to a range of waters including natural waters, seawaters and drinking waters. All methods are designed to correspond to the Australia drinking water guidelines.

Method development and/or validation for other pesticides may be conducted on request.

Acidic Herbicides

Acid herbicides are the first of our pesticide methods to be transferred to our new AB 4000 Q trap LC/MS/MS system. The method is fully validated and the reporting limits of many compounds has been reduced to as low as 0.05 ug/L. This is a significant improvement on the previous method.

— Specialist water services

Ensuring public health

This method is applicable to a range of waters including drinking waters and natural waters such as river and ground waters. Limits of reporting are listed below.

Analyte	LOR (mg/L)	Analyte	LOR (mg/L)
2,4-D	0.05	Silvex	0.05
2,4,5-T	0.05	Chlorsulfuron	0.04
Clopyralid	0.5	Metsulfuron-methyl	0.04
Dicamba	0.2	Sulfometuron-methyl	0.04
MCPA	0.05	Haloxypop	0.05
Picloram	0.2	Haloxypop-methyl	0.05
Triclopyr	0.1		

Chlorinated Pesticides

This method is applicable to a range of waters including drinking waters, natural waters and sea waters. Samples are analysed by gas chromatography with electron capture detection (ECD). Limits of reporting are between 0.01µg/L and 0.05µg/L.

Analyte	LOR (mg/L)	Analyte	LOR (mg/L)
Aldrin	0.01	Endosulfan SO ₄	0.05
Chlorthal-dimethyl	0.05	Lindane	0.05
Dieldrin	0.01	Heptachlor	0.05
Endosulfan 1	0.05	Heptachlor epoxide	0.05
Endosulfan 2	0.05	Trifluralin	0.05
Chlorthalonil	0.05	Chlordane-a	0.01
Chlorpyrifos	0.05	Chlordane-g	0.01
4,4'-DDD (TDE)	0.05	Endrin	0.05
4,4'-DDE	0.05	Methoxychlor	0.05
4,4'-DDT	0.05	Vinclozolin	0.05
Hexachlorbenzene (HCB)	0.05		

Nitrogen and Phosphorus containing Pesticides

This method is applicable to a range of waters including drinking water, natural water and sea water. The technique utilized is gas chromatography with nitrogen phosphorus detection (NPD). Limits of reporting are below.

Analyte	LOR (mg/L)	Analyte	LOR (mg/L)
Atrazine	0.5	Silvex	0.5
Azinphos-methyl	0.5	Chlorsulfuron	0.5
3Diazinon	0.5	Metsulfuron-methyl	0.5
Fenitrothion	0.5	Sulfometuron-methyl	0.5
Hexazinone	0.5	Haloxypop	0.5

Glyphosate and Aminomethyl Phosphonic Acid (AMPA)

This method is applicable to surface waters and ground waters. Glyphosate and its metabolite AMPA are analysed using HPLC with a fluorescence detector. Limits of reporting are 5 ug/L for both components.

Fipronil

Fipronil and its most toxic metabolite Fipronil-desulfinyl are analysed by gas chromatography with an electron capture detector. It can be analysed in surface and ground waters. Limits of reporting are 0.1 ug/L for both components.

Atrazine and Metabolites

Atrazine and its metabolites are measured in a range of surface, ground and treated waters by HPLC coupled with mass spectrometry and a photodiode array system. Atrazine and its metabolites are of interest because of their high solubility in water and persistence which makes them frequently detected. The metabolites are of interest because they behave differently from their parent compound. The primary degradation products in water include hydroxyatrazine (HA), desethylatrazine (DEA) and desisopropylatrazine (DIA).

Limit of reporting for these compounds are 0.1 ug/L.

Sampling Requirements:

Sampling techniques are very important for the correct analysis of pesticides.

- One Litre glass bottles
- Glyphosate samples can be collected in a 355mL PET bottle
- No air gap
- Transport & store at 4°C
- If multiple pesticide analyses are required more volume may be needed.

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