

# FACT SHEET



## Field filtration of water samples

### introduction

The key aim of taking a water sample and having it analysed is to be able to look at analysis results and have them accurately reflect the quality of water in question. It is critical that the composition of the sample submitted to the laboratory be representative of the water source you are trying to measure.

During sample storage and transport after sampling and prior to analysis, the composition of the water can change. The action of microbes, aeration, temperature and the chemical reactivity leads to (depending on the analyte) changes in the composition of the water samples.

Appropriate sample preservation is therefore important to prevent these changes prior to analysis (as outlined in Australian/New Zealand standard 5667.1). The important issue of field filtration in water sampling is not specifically addressed in this standard or its parts and there are some general guidelines that should be considered depending on the sample being taken.

### mpl laboratories analysis services

- Potable, Industrial & Agricultural Water testing
- Respirable and Inspirable Dust testing
- High Volume / Total Dust testing
- Microbiological testing (Legionella testing etc.)
- Asbestos testing - Identification and Counting
- Synthetic Mineral Fibre Estimation
- Soil testing
- Solvents and Pesticides
- Fumes, Vapours and Gases
- Diesel Exhaust Gases
- TCLP Analysis

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## ground water testing - metal analysis

Groundwaters (and surface waters) for analysis of metals (e.g. heavy metals, toxic metals) should be field filtered prior to acidification.

The preservation procedure for metals is to acidify samples in polyethylene bottles to pH less than 2. This acid is either already in the sample bottle prior to sampling or added to it by the laboratory upon receipt and prior to sub-sampling. The purpose of this is to prevent the effect of adsorption of metals onto the plastic walls of the bottle, which leads to low analysis results when sub-samples are poured from the bottles.

If samples are not filtered prior to acidification then what will be measured is the acid extractable metals. That is the concentration of dissolved metals in the water sample will then equal what was dissolved in the water originally plus whatever can be extracted with nitric acid from the sediment present.

## drinking (potable) water testing - metal analysis

For drinking waters, samples should not be filtered prior to acidification.

A representative sample is important, however it must be assumed that whatever comes from a tap will be drunk – whether dissolved or suspended. Thus for potable waters it is really only total metals that are important.

The separation of the dissolved versus suspended metals is only important if searching for the cause (e.g. corrosion versus sediment) of a high metals result.

## nutrient analysis

For nutrient analysis the issue is in relation to measurement of total nitrogen (or total kjeldahl nitrogen - TKN) and total phosphorous. This analysis by definition means that samples should be shaken to re-suspend any sediment prior to sub-sampling for analysis, thus wastewater samples should not be filtered.

Shaking the samples is critical for waste waters going to discharge or sewerage samples since the majority of nitrogen and phosphorous present in the samples is often present in the sediment and it is the entire waste stream that is going to treatment.

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If however, you are sampling a groundwater or surface water, then the nutrient content of the sediment is not relevant - only the dissolved fraction. Thus samples of groundwater for analysis of nutrients should be filtered prior to analysis to remove soil sediments which will generally contain far higher nutrient loadings than the water itself.

## cyanide analysis

For cyanide samples, filtration for cyanide analysis should be performed on groundwater samples prior to preservation. Waste water streams or potable waters should not be filtered prior to preservation for reasons previously outlined. Further information on cyanide sampling issues is given on another fact sheet.

For metals and nutrient analysis, if a client is unable to field filter the samples, then MPL can perform this task for them. A request for this must be stated clearly on the chain of custody at time of sample receipt (a single filtration fee per sample will apply).

Due to changes in sample composition upon preservation for cyanide, shaken sub-samples must be taken for cyanide determination and cannot be filtered by MPL.

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