# Occurrence of 52 typical odour causing compounds in drinking water of major cities across China

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**Abstract:**

Taste and odour (T&O) problems directly impact the aesthetic episodes of water quality. However, too many chemicals were reported to correlate with odour problem in drinking water. In this study, 52 typical odourous compounds were selected and an analysis method was developed by liquid-liquid extraction (LLE) combined with triple quadrupole gas chromatography mass spectrometry (GC-MS/MS). Source water and finished water samples were collected from 74 water treatment plants across major watersheds of China from 2015 to 2016. Odour characteristics and typical odourants were investigated. Of the investigated 52 odour compounds, 15-20 chemicals could be frequently detected. For some typical odourants, such as 2-MIB, geosmin, pyrazine, o-nitrophenol, pyridine and thiazole, high detection frequency occurred in source water, while some typical compounds were detect in the finished water, such as aldehydes, phenols and benzene-containing compounds. Swampy/septic odour problem were found to occur frequently in source water, which might be due to typical three thioethers, including dimethyl disulfide (DMDS), diethyl disulfide (DEDS), dimethyl trisulfide (DMTS). This study shows a nationwide distribution of odour characteristics and typical odourant occurrenc in drinking water, which can provide support for drinking water quality management in China.

**Key words:** odourants; odour characteristics; GC/MS/MS