

SPATIO-TEMPORAL VARIATION IN TRIHALOMETHANES IN NEW SOUTH WALES.

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Background and Aims: We described the spatio-temporal variation of trihalomethanes in drinking water in New South Wales, Australia from 1996 to 2007.

Method: We conducted a descriptive analysis of the spatial and temporal trends and the influence of season and drought on the monthly concentration and speciation of trihalomethanes (THMs) using routinely sampled data from two metropolitan and 13 rural water utilities within New South Wales.

Results: Monthly total THM concentrations in the two metropolitan water utilities of Sydney/llawarra (mean 66.8µg/L) and Hunter (mean 62.7µg/L) were similar compared to the considerable variation between rural water utilities (range in mean THM: 14.5-330.7µg/L). Higher THM concentrations were found in water supplies treated with chlorination compared to chloramination and in water supplies sourced from surface waters compared to ground water. Ground water was found to have a higher proportion of brominated THMs compared to surface water. Chloroform was the predominate THM in two-thirds of the rural water utilities. We found variation in the concentration and speciation of THM between seasons and between periods of drought or no drought. The total mean THM concentrations were higher in summer than winter in twelve of the fifteen utilities. During drought the concentrations of chloroform were found to have decreased while BDCM and DBCM increased in a large number of utilities.

Conclusion: There is considerable spatial and temporal variation in THMs amongst New South Wales water utilities and these variations are likely related to water source, treatment processes, catchments, drought and seasonal factors. Although we had no data on the levels of organic matter in the water supplies, the decrease in chloroform during drought may be due to the lack of organic matter entering the water supplies from decreased rain run-off and the increase in DBCM and BDCM may be due to increased salinity from the lowering of water supplies.