

**Title of Article:** Evaluation of Levels of Regulated Trihalomethanes (THMS) in a Community Drinking Water Supply in Nigeria.

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**Outlet:** Nigerian Journal of Engineering, 2013, 19 (2), 63-72.

**Abstract:** The study assessed the levels of trihalomethanes in drinking water from Ahmadu Bello University treatment plant between 2008 and 2010. Two hundred and fifty two (252) samples of processed drinking water at various stages of treatment and distribution were taken in duplicates. In accordance with the United States Environmental Protection Agency (USEPA) Method 551.1, samples were taken using ammonium chloride as de-chlorinating agent and methyl tert-butyl ether (MTBE) as solvent extractant during samples' analyses. Concentrations of the four regulated trihalomethanes (trichloromethane -  $\text{CHCl}_3$ , tribromomethane -  $\text{CHBr}_3$ , tribromochloromethane and bromodichloromethane) were analysed using Agilent gas chromatograph (GC) model 19091-413 with Chemstation software. From the study, only tribromomethane was detected immediately after chlorination while trichloromethane and bromodichloromethane were detected at storage in the booster station. Peak values of these analytes were also obtained at the booster station. Maximum permissible levels of the analytes are set only as total mean trihalomethanes. In the study, total mean trihalomethanes (TTHMs) values ranged from zero in the raw water and water after sedimentation to  $1.3140\text{E-}02 \pm 1.4614\text{E-}05$  mg/L in the booster station water samples but decreased to  $1.0601\text{E-}02 \pm 1.6625$  mg/L at household level. These values exceeded the national limit of 0.001 mg/L but fall within acceptable limits under the United States Environmental Protection Agency (USEPA), European Union (EU), Canadian and World Health Organization (WHO) standards. Statistically, the observed mean values showed some significant differences and also had significant relationships with some of the sampled waters' physical parameters such as pH, residual chlorine, total organic carbon and temperature. Furthermore, the study highlights total dissolved solids and nitrates as additional contributors to total mean trihalomethanes in drinking water sampled but found seasonal influence to be insignificant despite significant temperature influence. As these trihalomethanes (THMs) are implicated in carcinogenicity and mutagenicity their presence in conventionally treated drinking water creates serious health challenges.