Impact of Triclosan on Water Quality and Public Health in Alabama and Georgia

Abstract

Georgia is among the fastest-growing states in the nation, placing significant demands on its water resources. One primary challenge lies within the Public Utilities Department (PUD) in Athens-Clarke County, which monitors trihalomethane (THM) levels and has reported instances exceeding the maximum contaminant level (MCL). The department has implemented measures to address these exceedances and strives for safe water quality for Alabama. Water quality monitoring has revealed a increase in various THM contaminants across different water bodies. The Water Quality Report for Athens, Alabama, identified higher tap water contaminants, including THMs, increasing steadily in 2022. The Cahaba River recorded a turbidity of 0.2 FNU and a specific conductance of 173 µS/cm, with data on THMs showing compliance exceeding regulatory limits, highlighting the importance of ongoing monitoring requirements, emphasizing Alabama's need for ongoing monitoring to ensure safe drinking water. Additionally, organochlorine contaminants, such as Triclosan (TCS), are detectable in drinking water sources throughout the United States. Since its development in 1964, TCS and other antimicrobial compounds have been extensively utilized in various consumer products. These compounds can be ingested or absorbed through the skin and are detectable in human plasma, breast milk, and urine samples. Studies have shown that the expanded use of antimicrobial agents causes them to remain suspended in the ecosystem. Concerns related to TCS overuse include antibacterial-related allergies, microbial resistance, endocrine disruptions, altered thyroid hormone activity, and tumor growth. Organochlorine contaminant exposure can increase inflammation, leading to chronic inflammation associated with cardiovascular disease and cancers. Chronic inflammation from these agents can result in loss of immune competence. Our research examined the overuse of TCS-containing products, increasing total trihalomethane (TTHM) levels and affecting water supply quality. We systematically reviewed to identify studies on water quality and organochlorine contaminant levels using pre-established techniques and keywords. Secondary data on TTHM concentrations were obtained from annual water safety reports for major metropolitan water plants in Alabama and Georgia. We analyzed TTHM levels from primary water sources across the southern states. Our study found that increased TCS use has led to higher levels of trichloromethane, resulting in elevated TTHM levels in water quality reports.