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Sarah Ceaser Tinker

Drinking Water and
Gastrointestinal Illness in Atlanta,
1993 – 2004

By

Sarah Ceaser Tinker
Doctor of Philosophy
Department of Epidemiology

_____
Paige E. Tolbert, Ph.D.
Advisor

_____
Christine L. Moe, Ph.D.
Committee Member

_____
Mitchel Klein, Ph.D.
Committee Member

_____
W. Dana Flanders, M.D., D.Sc.
Committee Member

_____
Appiah Amirtharajah, Ph.D., M.S.
Committee Member

Accepted:

_____
Lisa A. Tedesco, Ph.D.
Dean of the Graduate School

_____
Date

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Sarah Ceaser Tinker
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Advisor: Paige E. Tolbert, Ph.D.

An Abstract of
A dissertation submitted to the Faculty of the Graduate School of
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Doctor of Philosophy

Department of Epidemiology

2007

Previous research has suggested municipal drinking water may contribute to endemic gastrointestinal (GI) illness in the U.S., but the results were inconsistent, and the burden of GI illness attributable to drinking water contamination remains unclear. Three studies were conducted to examine the population impact of multiple surrogates of drinking water quality in Atlanta, Georgia. These analyses made use of an extensive emergency department (ED) database containing information on more than 10 million visits made to 41 hospitals between 1993 and 2004. The first of these studies considered the association of GI illness with an estimate of the time taken by drinking water to travel from the treatment plant to the end user (water residence time). The second study examined the role of the drinking water treatment plant itself as a risk factor for GI illness, as source water quality and treatment methods differ by plant. The final study examined the association between turbidity, the primary indicator of drinking water quality used by utilities, and ED visits for GI illness using time-series methods. The results support roles for both the raw water source and the distribution system as sites of drinking water contamination. Filtered water turbidity, a primary water quality measure used by the utilities, did not appear to predict risk. Overall, these studies suggest that a low level of GI illness in Atlanta may be attributable to drinking water exposure, particularly among young children and the elderly.

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