



CITIZENS' GUIDE TO
The Characterization of Tentatively Identified Compounds
(TICs) in Water Samples Collected from Public Water Systems
in New Jersey

Research Study
March 2003



The New Jersey Department of Environmental Protection (NJDEP) and the Environmental and Occupational Health Sciences Institute (EOHSI) of New Jersey have completed the study, *The Characterization of Tentatively Identified Compounds (TICs) in Water Samples Collected from Public Water Systems in New Jersey*. The full report as well as a research project summary are complete and are available at: <http://www.state.nj.us/dep/dsr/>.

What is a TIC?

A TIC is a compound that can be seen by an analytical testing method, but its identity and concentration cannot be confirmed without further analytical investigation. A photograph can be used as an analogy to describe a TIC. The photograph's subject, located in the foreground, is in focus. The photograph also captures background information and often this information is fuzzy. The subject is clear, but the background components (i.e., the tentatively identified items), even though they are captured in the photograph, are fuzzy. Using this analogy, the TICs are the captured, but "fuzzy", background items in the sample. This study was able to detect hundreds of chemicals because the instrumentation was set up to screen for TICs rather than focus on a limited number of specific identifiable chemicals.

Why was this study conducted?

As the agency responsible for regulating public water systems, NJDEP conducts studies to investigate the occurrence of "unregulated" contaminants to determine if additional contaminants should be considered for regulation in drinking water. This was one such study. Most of the water systems sampled during the study have treatment to remove historical volatile organic chemical contamination. This work investigated the potential presence of non-volatile and semi-volatile organic chemicals in those water supplies.

What chemicals are regulated in drinking water?

There are federal or state drinking water standards for, 26 volatile organic chemicals, 33 semi-volatile organic chemicals, and 16 inorganic chemicals. Chemicals are selected for regulation based on many factors including the availability of testing methods, potential health effects, and frequency of occurrence of the chemical in water. The 1996 Amendments to the Safe Drinking Water Act requires the EPA to establish criteria for a monitoring program for unregulated contaminants and to publish a list of contaminants to be monitored. In establishing the list, EPA divided the contaminants among those which are priorities for additional research, those which need additional occurrence data, and those which are priorities for consideration for rulemaking.

What were the results of this study?

Results from this study showed that water systems impacted by identified waste sources have distinct and sometimes unique TICs associated with them. The TICs were generally low in concentration, most being below a part per billion (microgram per liter, $\mu\text{g/L}$).

If I'm a customer of one of these water systems, should I feel concerned?

Using current available information it appears from the results of the study that you need not be concerned about harmful health effects. The study showed that when TICs were present, they were generally at very low concentrations. The study also validated that the existing water treatment technologies present were removing volatile compounds to levels below state drinking water standards. Many semi-volatile chemicals were also removed by the treatment.

What's the state doing about TICs?

Sampling at additional water systems is planned. More interpretation of the occurrence of TICs in water systems is needed before a policy is developed to address them as a group. As individual compounds, they are too numerous and too infrequently detected to warrant state-wide drinking water standards. But some policy needs to be developed to address the occurrence of additional contaminants in drinking water. One possible preventive approach is to upgrade water treatment technologies at selected public water supplies so that general categories of organic chemicals are removed.

What about my water system – it wasn't included in this study.

In this study, water systems with a history of volatile organic chemical contamination were selected. All public community water systems are required to send customers a Consumer Confidence Report, which describes the overall quality of the system's drinking water, including any detections of regulated and unregulated contaminants and violations of drinking water standards. The occurrence of TICs is not currently included in this report, as the interpretation of TICs is only beginning to be qualified.

I have a private well. What can I do?

The NJDEP recommends private well owners to have their well periodically sampled for certain parameters. For guidelines, go to <http://www.state.nj.us/health/eoh/hhazweb/edmat.htm>.

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