

# ALLEGAN COUNTY HEALTH DEPARTMENT

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## Office Administration

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## Bioterrorism Preparedness

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## Personal Health

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## Communicable Disease

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## Environmental Health

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## Resource Recovery

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## Dioxin Testing in Otsego, Michigan Public and Residential Well Supplies

### City of Otsego Results

The City of Otsego's municipal water was recently tested for a group of 29 chemicals referred to as dioxin-like chemicals. After reviewing the test results, the Michigan Department of Health and Human Services has determined there is no health concern regarding these chemicals in City of Otsego water.

### Residential Well Results

The full set of laboratory results for residential wells have not been received from the laboratory. Complete results are needed for each well to calculate the TEQ. Full residential well results are expected by mid-October. Once received, the Michigan Department of Health and Human Services will calculate the TEQ and provide individual results to the residents whose wells were tested.

### Background Information

Dioxin-like chemicals include dioxins, furans, and PCBs. There are 29 dioxin-like chemicals: 7 dioxins, 10 furans, and 12 PCBs. Dioxin-like chemicals were selected for testing in Otsego wells. Dioxins are generated through numerous industrial processes including waste generated from paper mills. Dioxins are also generated by many other man-made activities such as incineration and backyard burn barrels. These dioxin and dioxin-like chemicals are very toxic and harmful to human-health; therefore it is important to determine if they are present in the wells. Recent test results found low-levels of two of the dioxin-like chemicals in residential wells. These results prompted testing of the local municipal water supplies.

### Evaluating Health Risk from Dioxin-Like Chemicals

The best method of evaluating the health risk of these 29 chemicals is provided by the United States Environmental Protection Agency (U.S. EPA) ([https://rais.ornl.gov/documents/dioxin\\_tef.pdf](https://rais.ornl.gov/documents/dioxin_tef.pdf)). This method has been evaluated by an international group of dioxin experts through the World Health Organization and adopted by the U.S. EPA.

The U.S. EPA calculation provides the total toxicity of the dioxin-like chemicals that are present. The total toxicity of the dioxins is called the total toxicity equivalence or TEQ. The TEQ guides the health recommendations made by health agencies to the community.

The toxicity numbers for each dioxin-like chemical are called toxic equivalence factors or TEFs. To calculate the total TEQ of dioxin-like chemicals, the amount of each dioxin-like chemical is multiplied by its TEF to get a toxic equivalent concentration or TEC. The TECs are calculated for each dioxin, furan, or PCB, then all of the TECs are added together to get the total TEQ. The TEQ is compared to numbers that are determined by health agencies to be protective of health.

**City of Otsego Municipal Water Results**

There are three wells that supply water to the City of Otsego distribution system. Test results for two of the City of Otsego wells did not find any 29 of the dioxin-like chemicals.

**City of Otsego Municipal Water Evaluation**

The TEQ for well 3 of the City of Otsego water was 0.092 parts per quadrillion-TEQ (ppq-TEQ). The test result of 0.092 ppq-TEQ is more than 100 times below the health protective number of 12 ppq-TEQ used by the Michigan Department of Health and Human Services to determine health risk. The health protective number of 12 ppq-TEQ is well below the amount that anyone - pregnant women, child, or adult - can drink daily over their lifetime and not cause harm to their health.

MDHHS concludes that 0.092 ppq-TEQ does not represent a public health hazard.