DEQ	OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: January 1, 1989 **Revised Date:** **Reformatted Date:** January 7, 2013	**Subject:** Response Procedures for Volatile and Synthetic Organic Chemical Contamination **Division/Office and Program Names:** ODWMA-Public Water System Supervision Program		**Category:** ☐ Internal/Administrative ☐ External/Noninterpretive ☒ External/Interpretive
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A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION, PURPOSE, OR ISSUE:

The presence of volatile organic chemicals (VOCs) or synthetic organic chemicals (SOCs) in drinking water is generally considered an indication of water supply contamination. VOCs or SOCs in a water supply may represent a potential health concern and can indicate that the source water is vulnerable to contamination. VOC and SOC contaminants have been identified in all types of water supplies in Michigan, including community water supplies (CWSs), noncommunity water supplies (NCWSs), and those serving single family residences. The VOCs and SOCs include compounds that have maximum contaminant levels (MCLs) established by the United States Environmental Protection Agency, those with proposed MCLs, and those for which there is very little available toxicology information. Some of the VOCs and SOCs are known or suspected human carcinogens.

A wide variety of circumstances may be involved in each case of potential chemical contamination, including toxicity and concentration of the compound identified, water supply construction, site conditions, and other factors. It is the goal of the Office of Drinking Water and Municipal Assistance (ODWMA) to ensure that Michigan residents and visitors have a continuously safe and adequate drinking water supply. Part of this goal is to locate and investigate cases of drinking water contamination. If contamination of a water supply is identified, efforts are initiated to protect the water supply from further contamination, monitor water quality, minimize exposure to users of the water supply, and alert the public.

This policy presents guidelines and standard procedures for ODWMA and local health department (LHD) staff responding to those situations where VOCs or SOCs have been identified. Because of the wide variety of circumstances, which will exist with each case, staff judgment and discretion will play a significant role in using these guidelines. The guidelines address practices to confirm contamination, identify precautionary measures to minimize exposure, and describe appropriate corrective actions. The best precautionary measure when VOCs or SOCs are confirmed present is source replacement as the presence of VOCs and SOCs not only represent a potential health concern, their presence also indicates that the source is vulnerable.

AUTHORITY:

The Michigan Safe Drinking Water Act, 1976 PA 399, as amended and Administrative Rules (Act 399), Michigan Compiled Law 325.1015, Section 15, Protection of public health; notice to supplier of water; inspection of waterworks systems; order; public hearing; emergency order; action limiting water system expansion or water use.

STAKEHOLDER INVOLVEMENT:

This policy has been in effect since 1989 and has not been the subject of controversy.

POLICY:

Sample Collection

If a water supply has been sampled for VOC or SOC analysis, and the analysis shows the presence of VOCs or SOCs, check samples must be collected to confirm the presence of the contaminant regardless if it is a regulated or unregulated contaminant. The following procedures should be followed when collecting check samples:

1. The check sample must be collected from the same source and sampling tap used for the initial sample (as close to the water source as possible).

2. If multiple wells are present, it will be necessary to isolate each well for sampling purposes, and the check sample should be collected while the same well is operating as it was operating when the initial sample was collected.

If the check sample confirms the presence of a VOC or SOC, then an investigation into possible sources of the contamination must be initiated. If initial and check samples were taken from the point of entry to the CWS or NCWS and not from the source well, an additional sample from the source well will be needed as part of the contamination source investigation. If samples and investigations indicate the source of water such as the aquifer is contaminated, appropriate precautionary measures should be initiated. If contamination is from a location other than the water source, corrective actions and precautionary measures must be initiated. Examples of potential sources of contamination include cross connections, pipe permeation, airborne, or residuals from new construction or water supply repairs.

If the check sample does not detect the presence of a VOC or SOC, it should not be assumed that the original sample was in error and that chemical contaminants do not exist in the water supply. A second check sample should be collected. If VOCs and SOCs are again not detected, then a CWS or NCWS can return to routine monitoring. If the samples are from a private residential water supply and contaminants are not detected in both check samples, no further action is necessary. If the second check sample does confirm the presence of a VOC or SOC, then response actions as detailed within this policy are required.

Initial Response Actions

Normally, precautionary measures are not imposed until after a check sample confirms the presence of the VOC or SOC. Exceptions to this general rule include:

1. Physical Observation. For example, there is an odor, taste, or visual evidence indicating the presence of chemical contaminants in the water.

2. By Association. For example, adjacent wells have already been confirmed for the presence of chemical contaminants.

3. Cause and Effect. For example, a tank containing a particular contaminant located very close to the water source, ruptures and spills its contents on the ground surface, and the contaminant was detected in the initial sample.

4. Judgment/Discretion. Circumstances may dictate that precautionary measures be implemented even before an initial sample is collected.

If a regulated VOC or SOC contaminant is confirmed present in a CWS or NCWS at a concentration above an established MCL, then public notice, additional monitoring, and precautionary measures in accordance with Act 399 must be followed. Precautionary measures should include water source replacement or treatment to remove or reduce public exposure to the contaminants. If the regulated contaminants detected in a CWS or NCWS are at concentrations below established MCLs, then increased monitoring in accordance with Act 399, Rule 716 should be initiated.

If contaminants detected in a CWS or NCWS are unregulated compounds, an investigation into possible sources of the contaminants should be initiated. Further response actions may include elimination of the contaminant source if identified, replacement of the water source if deemed appropriate, or increased monitoring of the water supply.

If regulated or unregulated VOC or SOC contaminants are detected in a private residential water supply, then precautionary measures as detailed in this policy are recommended.

Precautionary Measures

Once the presence of VOCs or SOCs in the water supply has been confirmed, the appropriate precautionary measures should be initiated by the supplier of water, the DEQ, or the LHD as appropriate. The following precautionary measures are generally required, but are not mandatory for all cases of confirmed VOC or SOC contamination.

1. Notification. When a regulated contaminant is confirmed present at a concentration above an established MCL at a CWS or NCWS, notification of all customers is required. The notification must meet the content and delivery methods detailed in Act 399, Part 4 Public

Notification Rules. Prompt notification is encouraged when a regulated contaminant is present at a concentration below the MCL or when an unregulated contaminant is confirmed present in a CWS or a NCWS, but at a minimum, shall be accomplished as required in the annual consumers' confidence or annual water quality report where applicable. Notification of analysis results and potential health effect issues shall be provided to private residential water supply users by a LHD or the DEQ when their water supplies are confirmed to contain VOCs or SOCs.

2. Monitoring. A CWS or a NCWS with VOC or SOC contaminants confirmed present should be monitored on a quarterly basis until a permanent remedy is obtained or it is determined the contaminant concentrations are consistently and reliably below a level that is considered to pose an increased risk to public health. A private residential supply should be monitored on a quarterly basis except for cases where bottled water is being provided. The owner of the water supply is responsible for the collection and analysis of water samples. Analysis must be performed by a laboratory certified by the DEQ for VOC and SOC analysis work, and results must be reported to the DEQ.

3. Reduce Exposure. Reduce exposure to the contaminated water by limiting use of the contaminated source. Examples include:

   a. Use other municipal water sources and discontinue using the contaminated source.
   b. Use other uncontaminated wells at the site.
   c. If multiple wells are used by the water supply and only one well is contaminated, place the contaminated well in the last position of use.
   d. Install water treatment such as point-of-entry or point-of-use devices to remove or reduce the presence of VOCs and SOCs. If a CWS or NCWS has contaminant concentrations below an established MCL, or the water supply contains an unregulated contaminant, we cannot require the use of treatment devices. However, the DEQ strongly recommends that the water from the well not be used for drinking purposes and suggests that the owner seek an alternative source or install approved treatment devices.
   e. If the contaminated well is a private residential well, the DEQ and the LHD should encourage the owner to seek an alternate source of drinking water until a permanent remedy to resolve the contamination can be achieved.

Use of Contaminated Drinking Water

Public Water Supplies - VOC or SOC is below an MCL. If a contaminant concentration is below an established MCL, the DEQ cannot require a CWS or a NCWS to stop serving that water to their public. However, the DEQ will recommend the CWS or NCWS minimize use the well to the extent possible and encourage them to seek an alternate water source. Unless there are site-specific hydrogeologic conditions allowing a monitoring reduction, quarterly monitoring for the contaminants of concern should be required if there is continued use of the contaminated source.

Public Water Supplies - VOC or SOC is above an MCL. If a contaminant concentration exceeds an established MCL, the CWS or NCWS must pursue a permanent remedy. Where at all possible, an approved source of water (hauled water, bottled water, temporary treatment of the contaminated water) shall be provided as a temporary measure while a permanent solution is pursued. Such temporary measures shall apply to Type III, NCWS, and small CWS systems. Where not practical, such as at larger CWS systems, the public notice must adequately address all concerns. Consideration of providing a temporary source even on large CWS systems must be given where acute health hazards exist or if a permanent solution is not readily available.

Single Family Residential Water Supplies. Advisories issued regarding single private residential wells are not enforceable by the DEQ or an LHD. Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and Administrative Rules provide for interim and permanent response measures such as bottled water, well replacement, connection to a CWS, treatment, and other corrective measures. The DEQ, an LHD, or others may monitor water quality in lieu of response measures where MCLs for public water supplies have not been exceeded in the private well. All users of a water supply containing compounds at concentrations exceeding an MCL will be advised against using the water.

Water quality monitoring by the DEQ or an LHD is dependent upon approved laboratory analytical capacity and staff availability. The DEQ may give consideration to interim monitoring of single family residential wells by responsible or potentially responsible parties in lieu of providing an alternate permanent water source. However, the final solution should either be a permanent water supply replacement or a hydrogeologic study conclusively demonstrating that the contamination concentration is diminishing or that certain wells will not be impacted by a contaminant plume.

Special Conditions. Under certain conditions, contaminant concentrations may be elevated high enough to warrant a no-body contact advisory. The DEQ will not issue no-body contact advisories, nor will it recommend that one be issued by an LHD without a thorough review, analysis, and recommendation by a Department of Community Health toxicologist.

Because of the volatile nature of some compounds dissipating with exposure to heat and the air, use of water with low levels of VOCs is generally acceptable for dish washing. This applies to both hand washing and machine washing. Staff discretion may be necessary if the concentrations of the VOCs are extremely high.

Water supplies contaminated with unacceptable concentrations of VOCs or SOCs should not be used for cooking. However, these sources may be acceptable for washing and rinsing food products where the contaminated water will not be part of the finished product.

Commercially prepared and packaged ice must be used if the on-site water is not approved for drinking. Use of any on-site ice-making equipment must be discontinued.

Other special circumstances may arise that will require staff to use judgment/discretion in determining the health risk associated with contaminated water for those purposes.

OFFICE CHIEF APPROVAL:

Liane J. Shekter Smith, P.E., Chief — Date
Office of Drinking Water and Municipal Assistance

12-28-2012

DEPUTY DIRECTOR APPROVAL:

Jim Sygo, Deputy Director — Date

1/7/2013