



Iowa Department of Natural Resources
 Water Supply Program
Operational Evaluation Level Report

The purpose of the operational evaluation level (OEL) is to allow a system to take action, if possible, to reduce the elevated disinfection byproduct levels in the system before a violation of the maximum contaminant level (MCL) occurs.

The OEL is calculated for each sampling site by using the disinfection byproduct (DBP) analytical data for the current and previous two quarters:

$$OEL = \frac{(2 \times \text{current quarter's result} + \text{results from the previous two quarters})}{4}$$

That value is then compared to the MCL for TTHM and HAA5. If the OEL exceeds the MCL, the system is required to conduct an investigation and write a report that is submitted to the DNR.

Listed below are the various areas in a system that could contribute to DBP formation. Each area must be evaluated and addressed in the report, unless allowance to limit the scope of the evaluation has been requested in writing by the system and approved in writing by DNR.

This evaluation and report is meant to be completed by the system operator. A consultant is not needed at this time.

System Information (DNR to complete this section)

Name of PWS: _____ PWSID: IA

Date the written report is due to DNR (90 days): _____ Number of sites sampled: _____

Beginning period for evaluation (First sample quarter included in the OEL): _____

Number of sites above the OEL: _____

Has an OEL been completed for this system previously? Yes No

If so, when: _____

OEL exceeded for: TTHM, Level _____ HAA5, Level _____

Initial Data Review and Evaluation Process

- Were the samples were properly collected from the approved sampling plan locations, preserved, and analyzed?
 Yes No
- Did the lab report include any additional information about the sample results that might indicate a laboratory problem?
 Yes No
- Review the TTHM and HAA5 data from all sites in the sampling plan to determine if the exceedance is localized or system-wide.
 One site exceeded OEL Multiple sites exceeded OEL
- If you know the cause of the OEL exceedance, you may request approval from the DNR in writing to limit the scope of the OEL report. The entire system must be evaluated unless a limited scope is approved by DNR in writing.
- Evaluate the system and identify steps that could reduce the TTHM and HAA5 levels in the system in the future. Include short-term and long-term steps where applicable. Add additional pages as needed in the explanation.
- Submit the written report to DNR by the 90-day deadline.

System Evaluation and Possible Contributing Factors

Review these areas for the OEL report: source water, treatment process, and distribution system. Many factors could contribute to the elevated disinfection byproduct levels. These are included in the review of each area of the system.

In general, warmer water temperature, lengthy water age, increased disinfectant levels (especially free chlorine), and increased organic carbon levels (e.g., algal blooms in surface water), can all contribute to increased disinfection byproduct levels.

Note for 100% Consecutive Systems: If your system does not add any chemical to the water purchased from another system, you do not need to consider the source or treatment factors. However, if you have knowledge of something in those two areas that could have affected your system's disinfection byproduct levels, please include that information in your report.

1. Source & Source Water Quality

- Yes No A. Have you changed the practices in getting your source water? Examples: changed well pumping depth, well rehab, changed intake depth or intake structure, changed pumping rates, pumping times or frequency, etc.
- Yes No B. Have you changed or added sources? Examples: using emergency sources, drilled a new well, changed or added a purchased connection, etc.
- Yes No C. Have you seen changes in the source water quality? Examples: turbidity, pH, temperature, alkalinity, hardness, drought conditions, heavy rain, changes in agricultural practices, algae blooms, lake turnover, color change, taste & odor incident, etc.
- Yes No D. Other:

If you answered YES to any of these questions, please explain (refer to the item letter in your response):

2. Treatment Process

- Yes No A. Have you changed the type of disinfectant? Example: switched from chloramines to free chlorine, discontinued chlorine dioxide addition, etc.
- Yes No B. Have you changed the amount (dosage) of disinfectant?
- Yes No C. Have you changed or added locations of disinfectant points? Examples: added a booster station, changed disinfectant points in the treatment train, etc.
- Yes No D. Other than disinfection, have you changed or made additions to any treatment processes, including changing filter media or other maintenance activities?
- Yes No E. Have you made changes to any other chemical applications? Examples: changes in coagulant type or filter aid, application point, dosage, process controls, etc.
- Yes No F. Have you had any upsets in the routine treatment processes?
- Yes No G. Have you noticed decreased filter run times or increased frequency of backwash cycles?
- Yes No H. For SW/IGW systems: have you had elevated disinfection byproduct precursor levels? Examples: lessened TOC removal percentage, increased DOC, etc.
- Yes No I. For SW/IGW systems: have you had unusual turbidity levels (raw, IFE, or CFE)?
- Yes No J. For SW/IGW systems: have you had longer pre-sedimentation detention times?
- Yes No K. Other:

If you answered YES to any of these questions, please explain (refer to the item letter in your response):

3. Distribution System Operation

- Yes No A. Have you added additional service connections? Examples: Change in residence time, change in water flow from addition of more connections, or annexing another service area, etc.
- Yes No B. Have you experienced significant increase or decrease in water demand? Examples: drought conditions and restrictions, industry opening or closing, population change, etc.
- Yes No C. Has new piping created new loops or dead-ends?
- Yes No D. Does your storage tank fill and drain from the bottom, potentially causing stagnation at the top levels of the tank?
- Yes No E. Has the residence time of water in your storage tank increased or decreased? Example: tank is being filled or drained more often
- Yes No F. Have you changed your storage management practices?
- Yes No G. Have you had frequent main breaks or major construction in your distribution system?
- Yes No H. Do you purchase water that has no disinfectant added, or has a different disinfectant than what you currently use? Examples: You purchase water that has chloramines and you feed free chlorine
- Yes No I. Do you have areas where disinfectant residual levels are below 0.3 mg/L free chlorine or 1.5 mg/L total or combined chlorine?
- Yes No J. Have you had significant changes in chlorine demand to maintain residual disinfectant level?
- Yes No K. Do you have a valve exercising and flushing protocol?
- Yes No L. Have you changed your distribution system flushing procedure?
- Yes No M. Have you had any changes in treatment that occurs in the distribution system? Examples: changes in booster chlorination addition points, or dosage
- Yes No N. Have you had an increase in customer complaints?
- Yes No O. Other:

If you answered YES to any of these questions, please explain (refer to the item letter in your response):

4. Additional Questions

- Yes No A. Did you experience unusually warm air temperatures?
- Yes No B. Do you have tank management or operational procedures? Examples: cleaning schedule, set operational levels of your tank (high and low), etc.
- Yes No C. Can you allow the tank to drain lower to use the older water?
- Yes No D. Was a tank mixer in use?
- Yes No E. Can you reduce the chlorine or chloramines dosage and still maintain the required residuals in the distribution system?
- Yes No F. If you purchase water, have you worked with your water provider to optimize water age and reduce disinfection byproduct formation?
- Yes No G. Other:

If you answered YES to any of these questions, please explain (refer to the item letter in your response):

For those areas or factors that could have contributed to the increased disinfection byproduct levels, what can be done to reduce the levels in the future and avoid a violation of the TTHM or HAA5 maximum contaminant level? List the possible remedies within the control of the system for the identified factors.

Report

Please explain what you found in your investigation as to the cause of the elevated DBPs, and what short-term and long-term steps you could take to minimize future disinfection byproduct formation:

Cause(s): _____

Short-term steps: _____

Long-term steps: _____

See EPA's "Guidance Manual for Conducting the Operational Evaluation" (180 pages) for more information on specific factors and remedies at: [//nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1002YDW.txt](http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1002YDW.txt)

Person completing the report: _____ **Phone:** _____

Job Title: _____ **Cell phone:** _____

Email: _____ **Report date:** _____

Time period used in evaluation: _____

(This period includes the first quarter sample results used in the OEL calculation through the third quarter's results, such as January 2016 through September 2016)

I certify that the information in this report, including any attachments, is true and accurate to the best of my knowledge.

Signature

The report must be:

- submitted to DNR within 90 days,
- made available to the public upon request, and
- retained by the system for at least 10 years.

Send the completed report to DNR at the following address:

Mail: DNR – Water Supply Engineering Section
Attn: OEL Report
502 E. 9th ST
Des Moines, IA 50319-0034

Fax: (515) 725-8202

DNR will evaluate this report. If there is an action that the system can take to reduce the disinfection byproducts before the next compliance sample is collected and that action does not reduce the system's disinfection protection, the system may take that action immediately.

Examples of actions that a system could take without seeking DNR approval would be to:

- enact a flushing program to reduce water age in a low-use area, or,
- manage the storage capacity to encourage turnover and reduce water age.

Examples of actions that are not acceptable to take without first receiving DNR approval include:

- to change the type of disinfectant,
- to change the point of disinfection, or,
- to have disinfectant residuals that are below the required minimum levels.

If you have questions about what can be done without approval, please contact the DNR person listed in the cover letter.