

Treatment Process Evaluation Checklist

NO DATA AVAILABLE

Facility Name: _____

Checklist Completed by: _____ Date: _____

A. Review finished water data for the time period prior to the OEL exceedance(s) and compare to historical finished water data using the following questions:

- Were DBP precursors (TOC, DOC, SUVA, bromide, etc.) higher than normal? Yes No
- Was finished water pH higher or lower than normal? Yes No
- Was the finished water temperature higher than normal? Yes No
- Was finished water turbidity higher than normal? Yes No
- Was the disinfectant concentration leaving the plant(s) higher than normal? Yes No
- Were finished water TTHM/HAA5 levels higher than normal? Yes No
- Were operational and water quality data available to the system operator for effective decision making? Yes No

B. Does the treatment process include predisinfection? Yes No

If NO, proceed to item C. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Was disinfected raw water stored for an unusually long time? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were treatment plant flows lower than normal? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were treatment plant flows equally distributed among different trains? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were water temperatures high or warmer than usual? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were chlorine feed rates outside the normal range? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was a disinfectant residual present in the treatment train following predisinfection? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were online instruments utilized for process control? |
| <input type="checkbox"/> | <input type="checkbox"/> | Did you switch to free chlorine as the oxidant? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there a recent change (or addition) of pre-oxidant? |
| <input type="checkbox"/> | <input type="checkbox"/> | Did you change the location of the predisinfection application? |

C. Does your treatment process include presedimentation? Yes No

If NO, proceed to item D. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Were flows low? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were flows high? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were online instruments utilized for process control? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was sludge removed from the presedimentation basin? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was sludge allowed to accumulate for an excessively long time? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you add a coagulant to your presedimentation basin? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there a problem with the coagulant feed? |

D. Does your treatment process include coagulation and/or flocculation? Yes No

If NO, proceed to item E. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Were there any feed pump failures or were feed pumps operating at improper feed rates? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were chemical feed systems controlled by flow pacing? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were there changes in coagulation practices or the feed point? |
| <input type="checkbox"/> | <input type="checkbox"/> | Did you change the type or manufacturer of the coagulant? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you suspect that the coagulant in use at the time of the OEL exceedance did not meet industry standards? |
| <input type="checkbox"/> | <input type="checkbox"/> | Did the pH or alkalinity change at the point of coagulant addition? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were there broken or plugged mixers? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were flow rates above the design rate or was there short-circuiting? |

E. Does your treatment process include sedimentation or clarification? Yes No

If NO, proceed to item F. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Were there changes in plant flow rate that may have resulted in a decrease in settling time or carry-over of process solids? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were settled water turbidities higher than normal? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there any disruption in the sludge blanket that may have resulted in carryover to the point of disinfection? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there any maintenance in the basin that may have stirred sludge from the bottom of the basin and caused it to carry over to the point of disinfectant addition? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was sludge allowed to accumulate for an excessively long time or was there a malfunction in the sludge removal equipment? |

F. Does your treatment process include filtration? Yes No

If NO, proceed to item G. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Was there an increase in individual or combined filter effluent turbidity or particle counts? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there an increase in turbidity or particle loading onto the filters? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there an increase in flow onto the filters or malfunction of the rate of flow controllers? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were any filters taken off-line for an extended period of time that caused the other filters to operate near maximum design capacity and creating the conditions for possible breakthrough? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were any filters operated beyond their normal filter run time? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were there any unusual spikes in individual filter effluent turbidity (which may indicate particulate or colloidal TOC breakthrough) in the days leading to the excursion? |
| <input type="checkbox"/> | <input type="checkbox"/> | Were all filters run in a filter-to-waste mode during initial filter ripening? |
| <input type="checkbox"/> | <input type="checkbox"/> | If GAC filters are used, is it possible the adsorptive capacity of the GAC bed was reached before reactivation occurred (leave blank if not applicable)? |
| <input type="checkbox"/> | <input type="checkbox"/> | If biological filtration is used, were there any process upsets that may have resulted in the breakthrough of TOC (leave blank if not applicable)? |

G. Does your treatment process include primary disinfection by injecting chlorine prior to a clearwell? Yes No

If NO, proceed to item H. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Was there a sudden increase in the amount of chlorine fed or an increase in the chlorine residual? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there an increase in clearwell holding time? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was the plant shut down or were plant flows low? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there an increase in clearwell water temperature? |
| <input type="checkbox"/> | <input type="checkbox"/> | Did you switch to free chlorine recently as the primary disinfectant? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was the inactivation of <i>Giardia</i> and/or viruses exceptionally high? |
| <input type="checkbox"/> | <input type="checkbox"/> | Was there a change in the mixing strategy (i.e. mixers not used, adjustment of tank level)? |

H. Does your plant recycle spent filter backwash or other streams? Yes No

If NO, proceed to item I. If YES, answer the following questions for the period in which an OEL exceedance occurred:

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Did a change in the recycle stream quality contribute to increased DBP precursor loading that was not addressed by treatment plant processes? |
| <input type="checkbox"/> | <input type="checkbox"/> | Did a recycle event result in flows in excess of typical or design flows? |

I. Do you inject a disinfectant after your clearwell to maintain a distribution system residual? Yes No

If NO, proceed to item J. If YES, answer the following questions for the period in which an OEL exceedance occurred:

Yes No

- Was there a sudden increase in the amount of chlorine fed?
- Was there a switch from chloramines to free chlorine for a burnout period?
- If using chloramines, was the chlorine to ammonia ratio in the proper range?
- Was there a problem with either chlorine or ammonia mixing?

J. Did concern about complying with a rule other than Stage 2 DBPR, such as the Lead and Copper rule, the LT2ESWTR, or any other rule constrain your options to reduce the DBP levels at this site? For example, are you limited by other treatment targets/requirements in your ability to control precursors in coagulation/flocculation? Yes No

If NO, proceed to item K. If YES, explain below and consult EPA's *Simultaneous Compliance Guidance Manual* for alternative compliance approaches.

K. Conclusion

Did treatment factors and/or variations in the plant performance contribute to the OEL exceedance(s)? Yes No
 Possibly

If YES or POSSIBLY, explain below.
