

<p><b><u>GUIDELINE</u></b> Process for Assessing and Responding to Increased Turbidity in the Source Water of Unfiltered Drinking Water Systems</p>		<p><b><u>SECTION</u></b> Environmental Health Services</p>	
<p><b><u>AUTHORIZATION</u></b> Regional Director, Health Protection</p>	<p><b><u>DATE APPROVED</u></b> November 27, 2008</p>	<p><b><u>DATE REVISED</u></b></p>	

**INTENT**

All water systems that provide water from a surface source should provide adequate treatment. However, some systems have not yet fully-implemented their plans to upgrade their treatment trains to the level required by Fraser Health. In the interim, it is important that these water systems have a plan in place to identify and address any increased health threat posed by deteriorating source water quality. The purpose of this guideline is to set out a process for how source water turbidity can be incorporated into this plan.

**SCOPE OF THIS GUIDELINE**

The treatment processes employed by water systems on surface water sources will include filtration unless the local Health Authority is satisfied that the appropriate filtration-exemption criteria have been, and continue to be, met.

For water systems that are providing adequate treatment, turbidity monitoring has two purposes:

- Source water – To ensure that raw water quality is within the parameters for which the treatment system is designed and, for systems that once met the filtration exemption-criteria, to ensure that the filtration-exemption criteria continue to be met
- Post - filter – One measure of treatment operations. The excursion limits depend on the type of filtration methodology.

These water systems are **outside of the scope** of this guideline.

For surface water systems that have not yet completed their treatment upgrade plan, source water turbidity is one parameter that can be monitored in order to:

- offer assurance that the level of risk to the consumers is not increased to an unacceptable level during the period that treatment upgrades are occurring and
- identify instances of increased risk that might warrant a mitigation plan that might include public notification.

These water systems are **within the scope** of this guideline.

**PROCEDURES:**

Step #1 - All water systems on surface water should have a time-specific plan for upgrading their treatment systems to meet the expectations set for that system by their Health Authority.

Step #2 - The water system should advise its consumers of the need to upgrade their treatment, the added health protection that the upgrade will provide and their time-line for completing the upgrade.

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Step #3 - The water system should monitor source water quality (such as turbidity), treatment operational parameters (such as CT values for chlorine and ozone and post - treatment microbial monitoring), distribution system water quality (such as disinfectant residuals and microbial monitoring) and consumer reports of altered water quality.

Step #4 - If source water turbidity increases, the following process should be considered:

- When source water turbidity increases to a level above what is usual for a particular water system, a water quality advisory or boil water notice should be issued, if one is not already in place, unless an assessment indicates that there is no increased risk to the health of the consumer above that associated with routine operations and that, therefore, no public notification is indicated. This assessment should include:
  1. Characteristics of the source water (cause of the turbidity; type of land use that might be causing or affecting the material responsible for the turbidity; whether the turbidity for this water system has been associated with pathogen load and, if so, whether the nature of the turbidity in this event is the same as that for which the association [or non - association] has been demonstrated; degree of excursion from normal source water quality for this system)
  2. Evidence that the existing treatment processes is/are being maintained (Operational parameters are being maintained AND no fecal coliforms or E. coli post-treatment AND adequate disinfectant residual in the distribution system)
  3. Evidence of increased illness among consumers that could be due to drinking water
  4. Logistical considerations such as the anticipated length of time the operational upset is expected to last and the time it would take to issue a public notice
  5. Any other factors that may be set out in the most current edition of the Drinking Water Officer Guide.

The assessment may lead to one of the following conclusions which would trigger the appropriate related response(s):

1. If it is determined that there is no increased risk to health, no public notification is warranted other than the on-going information provided by the water supplier that the microbial treatment is being upgraded and the time line on same. If filtration is not part of the treatment plan and depending on the turbidity limits of the proposed treatment train, the message may need to include the fact that they may continue to receive cloudy water.

**GUIDELINE**

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2. If the assessment does not provide assurance that the risk to health has remained unchanged, a Water Quality Advisory could be considered or, if already in place, reinforced.
  3. If it is determined that the risk to health may be increased, a Water Quality Advisory could be considered or, if already in place, reinforced. If it is determined that the risk to health has increased, a Boil Water Notice could be considered or, if already in place, reinforced. The Drinking Water Officer guide should also be consulted for guidance when determining the appropriate type of notice.
- When the water turns cloudy (which usually happens at approximately 5 NTU), a public notice should be issued. The content of the public message should be based on the result of an assessment which should include the five factors outlined above. In addition, consideration should be given to the need for enhanced monitoring of treatment parameters, post-treatment microbial results, distribution system microbial results, distribution system disinfectant residuals, illness among consumers or other factors as deemed appropriate to that situation.

The assessment may lead to one of the following conclusions and trigger the appropriate related response(s):

1. If the result of the assessment is that there is no increased risk to health, the public should be advised of the reason for the altered appearance of their drinking water, that consuming the water will not pose an increased risk to their health and what the water supplier is doing to upgrade treatment. If filtration is not part of the treatment plan and depending on the turbidity limits of the proposed treatment train, this message may need to include the fact that they may continue to receive cloudy water. Finally, the public notice should state how consumers will be advised when operations return to normal.
2. If the result of the assessment is that there may be increased risk to the health of the consumers or if there is inadequate information to determine whether or not the risk to health has increased, a Water Quality Advisory or Boil Water Notice could be issued depending on the particulars of the situation. The Drinking Water Officer guide should also be consulted for guidance when determining the appropriate type of notice. In addition, measures could be taken to collect in order to clarify whether or not the risk has increased over base-line.
3. If the result of the assessment is that the risk to the health of the consumers has increased, a Boil Water Notice should be considered. The Drinking Water Officer guide should also be consulted for guidance when determining the appropriate type of notice.