



Policy: Drinking Water Treatment for Surface Water Supplies	Policy #: 3.3	Page 1 of 4 Section: Drinking Water
Authorization: Ann Thomas Regional Manager HPES	Date Approved: November 13, 2007	Date Revised: February 16, 2010

PURPOSE:

The *Drinking Water Protection Act* requires that all water supply systems provide potable water. The *Drinking Water Protection Regulation* further states that drinking water originating from surface water must be disinfected.

This policy characterizes the level of treatment for surface water expected by VIHA and should provide for adequate removal or inactivation of pathogenic organisms that may be present in raw water. Turbidity and situations when filtration may not be required are also addressed.

POLICY:

1. All water supply systems in VIHA that use surface water sources will be required to maintain the following treatment specifications:
 - 4-log removal/inactivation of viruses
 - 3-log removal/inactivation of Giardia cysts and Cryptosporidium oocysts
 - 2 treatment processes, usually filtration and disinfection
 - 1NTU turbidity (maximum) in finished water

2. Under the following conditions, a water supply system may be permitted to operate without filtration:
 - a. Average daily source water turbidity levels measured at equal intervals (at least every 4 hours) – 1 NTU or less (95% of days) and not above 5 NTU on more than 2 days in a 12 month period.
 - b. Escherichia coli 20/100ml or less in 90% of source water samples.
 - c. Two primary disinfectants are provided, which together achieve a 4-log removal/inactivation of viruses and 3-log reduction in Giardia and Cryptosporidium.

3. The Drinking Water Officer may require additional/alternative treatment to address any of the following:
 - a. High bacterial counts or risk of fecal contamination of source water.
 - b. High organic matter that may result in unacceptable levels of disinfection by-products.
 - c. Chemical or other contaminants than may affect potability.

PROCEDURE:

New Water Supply Systems

Applications from new water supply systems, which include a surface water source and are received after the effective date of this policy, will need to be in compliance with the policy before a construction permit or operating permit is issued.

Existing Water Supply Systems

Staff responsible for drinking water systems will implement this policy for existing systems as follows:

1. Identify all water supply systems that use surface water and serve more than 500 persons per day.
2. Send a standard letter to each water supplier stating that the Vancouver Island Health Authority is consulting with them under Section 8(4) of the Act with regard to the proposed attachment of the following condition to their operating permit, "By (date to be determined), this system will provide 2 treatment processes acceptable to VIHA, achieve a 4-log removal/inactivation of viruses and 3-log removal/inactivation of parasites, and produce a finished water with less than 1 NTU turbidity." Enclose other information as appropriate and request written comments within 30 days.
3. Consider the comments received, and complete any other consultations necessary to determine the final wording of the condition to be placed on the operating permit, including the date by which the condition is to be met.
4. Amend the operating permit.
5. Obtain an implementation strategy from the water supplier, and monitor progress leading to compliance with the conditions on the operating permit.

DEFINITIONS:

Disinfection:

A water treatment process using chemical oxidants or equivalent agents designed to destroy pathogenic organisms. Primary disinfection processes include such methods as ultraviolet irradiation, chlorination and ozonation.

Log Removal/Inactivation:

The percentage reduction in the density of viable target organisms

- 1-log removal/inactivation equates to a 90% reduction
- 2-log removal/inactivation equates to a 99% reduction
- 3-log removal/inactivation equates to a 99.9% reduction
- 4-log removal/inactivation equates to a 99.99% reduction

Treatment Processes:

In VIHA, two treatment processes means -


1. Two methods of primary disinfection for systems with consistently low levels of both turbidity and E. coli. The two methods will generally be ultraviolet irradiation and chlorination, or
2. Filtration and disinfection, for all other systems.

LEGISLATION:***Drinking Water Protection Act*****Operating permits and requirements for water supply systems**

- 8 (4) The drinking water officer or an issuing official may change the terms and conditions of an operating permit if the officer or issuing official consider this advisable, but must first consult with the water supplier respecting the proposed changes and must consider any comments of the water supplier in response.
- (5) Terms and conditions included in an operating permit under this section may set requirements and standards that are more stringent than those established by this Act or the regulation.

Regional Manager Approval:	Signature: 	Print Name: Ann V. Thomas
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Dated: MAR 7, 2008

Office of the Chief Medical Health Officer Senior Management Approval:	Signature: 	Print Name: Richard S. Stanwick MD, MSc, FRCPC, FAAP
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Dated: MAR 7, 2008