



D7. Water

Water is involved in virtually every physiological process in swine production. It helps move food along the intestinal tract, transports digested nutrients and is a carrier in waste elimination.

When it comes to water, both quality and quantity matter. Recommended quantities are given in the *Recommended Code of Practice for the Care and Handling of Farm Animals Pigs*. Water quality is determined from analysis. Bacterial analysis can provide measures like coliform counts. Experience has shown that counts over 1/100 ml are capable of causing scours in young pigs. Water chlorination will effectively reduce coliform counts, but finding an elevated count or high nitrate level may indicate a problem with surface drainage, which may, in turn require a change in management practices.

A chemical analysis can be used to determine the levels of various minerals present in a water

sample. The Canadian Task Force on Water Quality established the water quality guidelines that are shown in the table below.

Total dissolved solids (TDS) or the filterable residue, is the main indicator of water quality. Water with a TDS of less than 1000 mg/L is acceptable for all ages of pig. Water with a TDS over 7000 mg/L can cause serious health problems and promote water refusal. Levels over 10000 mg/L are unfit for animal consumption.

Nitrates can act as an indicator for bacterial contamination of water. If nitrate levels in your water are elevated, you may want to consider sending a water sample for bacterial testing. Pigs are more resistant to nitrates than other animals, however, and levels must exceed 750 mg/L to cause decreases in average daily gain in growing pigs.

Canadian Water Quality Guidelines for Livestock

Item	Maximum Recommended Limit (mg/L)
Major Ions	
Calcium	1000.0
Nitrate and Nitrite	100.0
Nitrite alone	10.0
Sulphate	1000.0
Total Dissolved Solids	3000.0



Canadian Water Quality Guidelines for Livestock

Item	Maximum Recommended Limit (mg/L)
Heavy Metals and Trace Ions	
Aluminum	5.0
Arsenic	0.5*
Beryllium	0.1**
Boron	5.0
Cadmium	0.02
Chromium	1.0
Cobalt	1.0
Copper	5.0
Fluoride	2.0***
Lead	0.1
Mercury	0.003
Molybdenum	0.5
Nickel	1.0
Selenium	0.05
Uranium	0.01
Zinc	50.0

Source: *Task Source on Water Quality Guidelines, 1987*

* 5.0 if not added to feed

** Tentative Guidelines

*** 1.0 if fluoride present in feed

- Producers are encouraged to test their water annually, but this is not currently a requirement of the CQA® program (On-Farm Quality Assessment Form question #3)
- If Total Dissolved Solids or nitrate levels are elevated, producers are encouraged to have follow-up tests conducted, to check for bacterial contamination.
- Remember that pesticides and heavy metals can also be a concern in water.

Dupchak, Karen. 1999. Evaluating Water Quality for Livestock. Manitoba Agriculture and Food, Winnipeg, Manitoba.