



The drop on water

# Colour

Ideally, drinking water should be clear and colourless. A change in colour in drinking water may be the first indication of a water quality problem.

## Sources

Colour is normally more prevalent in surface water sources.

Groundwater is usually colourless. Colour in well water may indicate natural substances in the water supply, including

- dissolved organic matter such as humic substances, tannin, lignin, or coal
- inorganic materials such as iron, manganese, copper, or zinc

Colour in well water may also indicate inadequate water treatment or the presence of surface or subsurface contaminants in the water supply, including

- surface water containing dissolved organic matter
- suspended matter or industrial wastes, such as pulp and paper mill effluent or textile effluent

## QUICK FACTS

- Groundwater is naturally colourless. Colour in well water may mean dissolved organic or inorganic matter is present. This may be from natural causes or may indicate a water quality problem.
- Colour can be visually detected and confirmed through laboratory testing.
- The Canadian drinking water quality guideline for colour is an Aesthetic Objective (AO) of less than or equal to **15 TCU**.
- The presence of colour in drinking water may be indirectly linked to health, although its primary importance in drinking water is aesthetic.
- The source of the colour change must be investigated. The hue of the water may provide information regarding the source.
- The bacterial quality of the water and well construction should be checked.
- To improve the aesthetic quality of drinking water, homeowners may consider water treatment options or use an alternative water source.

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## **Aesthetic Objective for Drinking Water $\leq$ 15 TCU**

Relative colour intensity in water samples is measured using an arbitrary scale. The units are called true colour units (TCU).

The Canadian drinking water quality guideline for colour is an Aesthetic Objective (AO) of **less than or equal to 15 TCU**.

Most people can detect a colour of 15 TCU in a glass of water. In large volumes of water, such as in a bathtub, 5 TCU will be apparent. Few people can detect a colour level of 3 TCU.

## **Colour in Drinking Water**

The presence of colour in drinking water may be indirectly linked to health, although its primary importance in drinking water is aesthetic. Colour may be due to natural geology or may indicate possible drinking water contamination. The hue of the water may provide information regarding the source.

### **Red-brown**

Red, brown, or rusty coloured staining may indicate iron in well water. Adverse health effects are not expected at levels normally found in drinking water. See our fact sheet on iron and manganese for more information.

### **Black**

Brownish-black stains might be due to manganese in drinking water. Adverse health effects are not expected at levels normally found in drinking water. See our fact sheet on iron and manganese for more information.



### **Yellow-brown**

Humic substances, tannin, and lignin can impart a yellowish to brownish colour in water. Humic substances, tannin, and lignin are not believed to be harmful to human health. However, their presence in drinking water may mean other surface contaminants are also present. See our fact sheet on humic substances for more information.

### **Green or blue**

A green or blue colour is generally the result of water coming in contact with copper, often in the plumbing system. Very high concentrations of copper can cause nausea and other gastrointestinal discomforts. See our fact sheet on copper for more information.

### **White**

Water with a high concentration of zinc tends to have an opalescent (milky) appearance. Short-term exposure (over days or weeks) to very high levels of zinc can result in nausea and diarrhea. See our fact sheet on zinc for more information.

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## Testing

Regularly test your well water for a standard suite of chemical and physical parameters, including colour. Use an accredited water testing laboratory. Find a list of accredited water testing laboratories at [www.gov.ns.ca/nse/water/waterlabs.asp](http://www.gov.ns.ca/nse/water/waterlabs.asp) or see the Yellow Pages under “laboratories.”

Get the special sampling bottles and instructions on proper sampling from the laboratory.

The cost of analyzing water samples can range from \$15 for a single parameter to \$230 for a full suite of chemical parameters. The cost can vary depending on the lab and the number of parameters being tested.

## REGULAR TESTING

Homeowners are responsible for monitoring the quality of their well water:

- Test for bacterial quality every 6 months.
- Test for chemical quality every 2 years.
- Test more often if you notice changes in physical qualities – taste, smell, or colour.

Regular testing alerts you to problems with your drinking water.



## Solutions

Colour is an aesthetic parameter. Aesthetic parameters may impair the taste, smell, or colour of water. Although colour does not pose a health risk, its presence can indicate deteriorating groundwater quality and could indicate other problems with well water quality, which may cause adverse health effects.

If colour is confirmed to be present above 15 TCU in the well water, investigate the source of colour in drinking water. Consider the following options:

- If the colour is caused by surface sources, it may indicate the presence of pathogens or other contaminants present in surface water, which may cause adverse health effects:
  - Test your well water for other contaminants, including bacteria.
  - Inspect the well construction.
  - Consider drilling a new well with proper site selection and construction to prevent contamination.

When the source of colour is naturally occurring and does not pose a health risk, treating your water is optional. You may choose to treat your water to improve the colour and make it more pleasing to consume.

When the source of colour is from surface sources and other contaminants, including bacteria, are present, consider well construction improvements or water treatment options.

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## Treatment

We recommend purchasing a treatment system that has been certified to meet the current NSF standards. NSF International is a not-for-profit, non-governmental organization that sets health and safety standards for manufacturers in 80 countries. See its website at [www.nsf.org](http://www.nsf.org).

Although there are currently no treatment units certified specifically for colour adjustments, effective methods for treating colour in drinking water include

- coagulation
- distillation
- settling
- filtration techniques

Once a system is installed, re-test your water to ensure the treatment system is working properly. Maintain the system according to the manufacturer's instructions to ensure a continued supply of safe drinking water.

For more information on water treatment, see our publications *Water Treatment Options* and *Maintaining Your Water Treatment*, part of the *Your Well Water* booklet series at [www.gov.ns.ca/nse/water/privatewells.asp](http://www.gov.ns.ca/nse/water/privatewells.asp).



### Considerations

The characteristics of iron, iron bacteria, and humic substances can be very similar in drinking water. It is important to determine which of these is causing water problems, because the treatment options are very different. Chlorine can be used to treat iron and iron bacteria, but chlorine added to water containing humic substances may contribute to the formation of trihalomethanes (THMs). For more information on THMs, see our fact sheet at [www.gov.ns.ca/nse/water/thm.asp](http://www.gov.ns.ca/nse/water/thm.asp).

Humic substances may interfere with the efficiency of certain other types of treatment units. Seek advice from a water treatment professional.

### FOR MORE INFORMATION

#### Contact

Nova Scotia Environment at  
1-877-9ENVIRO  
or 1-877-936-8476

[www.gov.ns.ca/nse/water/](http://www.gov.ns.ca/nse/water/)



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