

Iron, Manganese and Turbidity Fact Sheet

This sheet has been produced to provide you with some information about iron, manganese and turbidity.

Parameter	Limit set in Regulations
Iron	200 micrograms per litre ($\mu\text{g/l}$)
Manganese	50 micrograms per litre ($\mu\text{g/l}$)
Turbidity	4 FTU

Existing Treatment on the Supply

If the supply has existing iron or manganese reduction treatment installed, but has still failed then there are a number of options that could be tried to increase the effectiveness of the treatment.

- Have the treatment unit serviced by a reputable water treatment company (this should be done at least annually anyway).
- Increase the backwash frequency to every night if not already backwashing this frequently. This should free up as much space as possible in the media.
- Replace the treatment unit for a larger unit.
- Add an additional treatment unit.
- Clean sediment build up out of any storage tanks.

General Information

Iron

In North Norfolk iron is present in a soluble form in the water contained in the chalk aquifer. This aquifer is a layer of chalk deep below the surface of the ground. Most deep bore holes draw their water from here. When the deep bore water comes into contact with oxygen the iron comes out of solution and forms small rust particles. High levels of iron can be undesirable for a number of reasons.

- The water often smells and tastes unpleasant.
- It can stain laundry and plumbing fixtures orange.
- High iron levels can also interfere with the efficiency of ultra violet light units by coating the quartz sleeves used in the units and reducing light penetration. These units are used to kill bacteria in some private water supplies.
- In storage tanks the particles can settle out and form an orange silt. This is an ideal environment for some bacteria to survive.
- The iron can form a layer inside pipework so reducing the flow of water.

Manganese

In North Norfolk manganese is present in a soluble form in the water contained in the Chalk Aquifer. When the deep bore water comes into contact with oxygen the manganese can come out of solution. High levels of manganese in drinking water are undesirable for a number of reasons.

- At levels of 20 micrograms per litre, manganese can form coatings on piping which may break off resulting in black fragments in the water and may reduce the flow rate in the pipe.
- Levels exceeding 150 micrograms per litre can give an unpleasant taste and stains plumbing fixtures.
- High manganese levels can also interfere with the efficiency of the ultra violet disinfection processes by coating the quartz sleeve of treatment units.

Turbidity (clarity or cloudiness)

Turbidity is caused by particulate or soluble materials in suspension including iron, manganese, clay, silt or organic particles. The test for turbidity gives an indication of the clarity of the water by measuring the intensity of light scattered and absorbed. If turbidity has failed in the water sample taken from your supply it is most likely to be caused by high iron and/or manganese levels.

What to do if your supply has failed for iron/manganese/turbidity

The Private Water Supplies Regulations 2016 state that the Relevant Person(s) must make the supply wholesome by reducing the iron/manganese/turbidity levels to below the limits in the Regulations (see previous table for levels).

Iron and Manganese Reduction

Iron removal units may also reduce manganese levels to below the standard. However, there are filter systems available which are specific to manganese. Most iron and manganese removal systems available work in a similar way by aerating the water to bring the iron out of solution and form particles that can be removed by a filter media. This media is then backwashed most nights to remove the build-up of iron particles.

If there are any storage tanks in the distribution system they should be cleaned out to remove sediment build-up. Pipes may also need to be flushed through or replaced to reduce the input from historical build-up.

Local suppliers and installers of water treatment can be found in the Yellow Pages or on www.yell.com under 'Water Treatment' or 'Water Engineers' in Norfolk. These categories include a few companies who specialize in supplying and servicing treatment for PWS. Check that the company has experience of dealing with small scale or domestic PWS.

Risk Assessments

When the Private Water Supply is Risk Assessed the servicing records by fully trained water treatment personnel, a site plan, and records of regular onsite checks by the person responsible for the supply, must be available.

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