

# Private Water Supply Health Issues



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## Aim

The aim of this document is to take a scientific look at the health issues related to drinking water from a private water supply. In particular it looks at the issue of immunity build up.

## United Kingdom Private Water Supplies

In the United Kingdom there is evidence to support a claim that poor private water supplies can cause significant health problems unless they are subjected to some form of treatment. One study of 218 local authorities across Britain in 1996 for example, found that 77 per cent of private supplies serving households failed microbiological standards (Macdonald, 2005). Another survey in England carried out between 1996-1997 found that 33 per cent failed regulatory standards for *E. coli*. (Jiggins, 2005) A third study in north-east Scotland between 1992 and 1998 found that 57 per cent of a total of 1,199 private supplies failed microbiological standards (Ends Report 2001).

Reid (Reid *et al.*, 2002) supports the claim that contaminated private water supplies can represent a significant potential health risk. He points out that uncertainties remain with respect to understanding the extent that climate, land management and landscape properties interact to influence the extent and any trend in private water supply contamination. Referring to a study of private water supplies described by Rutter (Rutter *et al.*, 2000) Reid describes a clear regional and seasonal pattern to microbiological contamination of supplies with greatest failure rates recorded during summer and autumn.

A study reported by Collinge (Collinge, 1989) showed that more than half of the private supplies tested in Calderdale were subject to contamination by faecal coliforms and failed to meet the standards set by World Health Organisation drinking water guidelines and the European Union standards. Other studies have shown similar failure rates (Barracough *et al.*, 1988. Humphrey *et al.*, 1985 and Shepherd *et al.*, 1997 cited Reid *et al.*, 2002. Fewtrell *et al.*, 1998).

## Safe levels of coliforms

Skinner (Skinner, 2003) suggests that the standards set by the regulations are unachievable. He proposes that high quality potable water should contain zero coliforms per 100 millilitre sample, however it is unrealistic to expect even protected, un-treated sources in rural areas to always achieve the zero limit. He points out that many practitioners in the developing world consider coliform levels up to 10 mg/l to be satisfactory. He does however point out that sources with contamination levels above 50 mg/l definitely need urgent investigation to find ways of reducing contamination.

Why drinking water with coliform levels up to 10 mg/l will not make you ill is not clear. Perhaps a contributory factor might be that people who regularly consume contaminated water might build up an immunity which prevents them from becoming ill when consuming water with low coliform counts.

## Building up immunity

If you have been drinking contaminated water for many years then you could have developed immunity and might even be resistant to the many germs in your water. You should know that, as you get older your immunity may start to fade and other people visiting your home will not be resistant to the bugs. Manure contains bacteria known as *E. coli* (0157) which can, and does seriously harm adults and children (Clapham, 2004).

Also, if the cows around your supply pick up a new disease, you will probably go down with it three days after the next downpour of rain. Alternatively, if the farmer re stocks with new animals they will have a different selection of bugs in their gut that you will not be immune to.

Drinking water containing pathogenic micro organisms does not affect everyone equally. After a

# Microbiological Contaminants

supply becomes contaminated, perhaps only one member of the family might be affected. Whether a person becomes ill is dependent on many factors. The reaction of individuals will vary, even though they may all consume the same number of pathogenic organisms.

Nutrition and fitness will affect the way your body's immune system is able to fight the disease. This will not always guarantee success of course, as even super-fit sports people can become seriously ill.

As with many areas of science there may be robust arguments for and against the consumption of raw water containing small levels of microbiological contamination. However, the regulations have set a limit of zero pathogens in drinking water, putting further discussion beyond the scope of this work.

## References

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