

Incident Assessment

Teangue WTW
THM Failure
September 2015

DWQR Inspector:
Moira Malcolm

Event No. 7170

Event Category: Significant

Summary of Incident

Between 3rd September and 19th October 2015, repeated failures for trihalomethanes (THMs) were observed from consumer's taps served by Teangue water treatment works (WTW) in south west Skye. THMs are by-products produced when the chlorine added at the WTW for disinfection reacts with naturally occurring colour and total organic content (TOC). The prescribed concentration or value (PCV) for THMs is 100µg/l, which was breached on 11 occasions during the incident, with the highest value recorded as 216.9µg/l.

When the issue was first observed, the granular activated carbon (GAC) filters, which assist in the removal of TOC, were taken offline for cleaning to improve performance, but it took seven days to effectively clean and reinstate these. Also while flushing the network (to remove water not passed through the GAC) a closed valve was discovered which may have caused a lower turnover of water, giving more time for THMs to form in distribution.

Health professionals were informed of the failures and no customer contacts were received due to this incident.

DWQR Assessment of Cause of Incident

The root cause of the incident was the naturally high organic content of the source water (which peaks over the summer months). The WTW was unable to effectively remove this, and this was compounded by the GAC being offline for flushing for seven days, plus the age of the water in the network due to a closed valve.

DWQR Assessment of Actions Taken by Scottish Water

DWQR is satisfied that Scottish Water took appropriate action to resolve the issue, but the failure of the GAC to respond quickly to cleaning prolonged the incident, as did the closed valve. Several issues were noted:

1. The WTW is not fully equipped to ensure that all THM precursors are removed during treatment, and Scottish Water propose that this shall be remedied by introducing chloramination to the works during 2016. Scottish Water also acknowledge that replacing the spiral membranes with a higher specification one (one Regulation 33 approval has been gained) will improve the removal of organic pre-cursors. The Drinking Water Safety Plan (DWSP) for Teangue WTW acknowledges the risk of inadequate treatment resulting in higher TOC (ref T40114) but categorises the likelihood as 'unlikely'.
2. Due to the high likelihood of THM formation, it is important that Scottish Water understand the extensive distribution network served by Teangue WTW. The risk of THM formation is identified in the



DWSP (ref D70601), but understanding the network is not recognised as a factor at present and should be addressed.

The event has been categorised as Significant. Scottish Water has identified a number of actions and DWQR accepts that these are appropriate and will be monitoring to ensure they are completed prior to signing off the incident.

