Drinking Water Quality Regulator for Scotland

Incident Assessment

Tweedsmuir WTW
Benzene detection
18 February 2014

DWQR Inspector:
Matt Bower

Event No. 5869

Event Category: Significant

Summary of Incident

A routine operational sample taken from this small treatment works final water detected very low levels of benzene. Further sampling detected equally low levels in the distribution system at consumers' taps. Investigations by Scottish Water revealed that no benzene was present in the raw water entering the treatment works. Investigations by Scottish Water revealed that the likely source of the benzene was newly replaced carbon in the filter at the treatment works. Scottish Water immediately isolated the filter, using tankered water and a temporary filtration unit to maintain supply quality. This resulted in further samples being clear for benzene.

DWQR Assessment of Cause of Incident

Tweedsmuir is a very small water treatment works supplying approximately 18 properties in the Scottish Borders from Talla Reservoir. DWQR is satisfied that Scottish Water has identified the cause of the detections as being the newly replenished carbon media in the filter at Tweedsmuir. The maximum concentration detected was 8.05 μg/l, against a regulatory standard of 1 μg/l. Seven investigatory samples exceeded the regulatory standard, although none breached the health based WHO Guideline Value of 10 μg/l.

DWQR Assessment of Actions Taken by Scottish Water

Scottish Water first became aware that the initial, routine, sample had marginally failed the standard on 6 March. Understandably, as benzene is an unusual parameter to fail, Scottish Water requested reanalysis of the original sample and for further samples to be taken. Initial results for these were received on 10 March, with final quantitative results confirmed on 11th. DWQR has queried these timescales, but Scottish Water has explained that the normal analysis time-scale for this determinand was several weeks and the sample had been analysed as quickly as possible. Once the result was obtained the water treatment works was taken out of service and extensive investigation and flushing commenced. Stakeholders were also notified at this time.

DWQR considers that once the second, comprehensive, set of results were received, Scottish Water acted promptly to restore water quality as quickly as possible. Actions taken were appropriate and effective.

Following this incident, Scottish Water was keen to establish the cause of the failure in order to pinpoint exactly where the benzene entered the treatment process. The company undertook extensive investigations, which is to be commended. These included identifying other sites using the same media and assessing risk

based on specific circumstances of use as well as examining the supply chain of the carbon and visiting the UK supplier to check for sources of contamination and audit the company's procedures and facilities. These investigations indicated that the benzene had somehow contaminated the carbon at the supplier in Brazil or en-route to the UK. This is the first time that benzene has been an issue with carbon used in filters in the UK water industry. Other sites in Scottish Water that use the same carbon have been tested for benzene, with no significant detections. Scottish Water has modified its sampling post GAC replacement to include a test that would detect benzene prior to the filter entering supply.

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