Drinking Water Quality Regulator for Scotland

Incident Assessment

Knowehead WTW Disinfection Failure 04 March 2011

DWQR Inspector:
William Byers

Summary of Incident

A failure of the disinfection process at Knowehead WTW near Freuchie occurred on 4 March 2011. There had been ongoing problems with chlorine dosing pumps tripping out of service at the works but on this occasion, the dosing was offline for a short period. Knowehead draws water from a borehole and is operated together with the nearby Newton of Lathrisk borehole to feed into the Lomond Hills Supply system. Disinfection was unaffected at both of these works and the failure at Knowehead for the short duration did not cause any significant deterioration in the water quality to consumers. The pumps were restored to operation and continued to be operated manually to ensure disinfection was maintained. Further instances of the plant failing on 3 & 4 April led to investigation of the software which controlled the dosing pumps and again on 3, 4 & 5 May when the failures were attributed to the dosing lines being air locked.

A bacteriological sample taken from the final water produced at Knowehead failed on 3 May 2011 with 3 Coliforms. There were however no further failures recorded from resamples from the works or in other sample taken within the water supply zone.

During May, Scottish Water carried out a number of repairs to the dosing lines, including replacement of a faulty pressure relief valve and also amended the control software. On 20 June and 5 July, new dosing pumps were fitted providing a fully refurbished dosing system.

DWQR Assessment of Cause of Incident

DWQR declared an incident due to the repeated instances of loss of disinfection at the site and is satisfied the root cause of the failures of the plant is likely to have been a fault with a pressure relief valve on the dosing line.

DWQR Assessment of Actions Taken by Scottish Water

DWQR considers Scottish Water to have taken the necessary actions to resolve the problems at the works. The time taken to fully understand the root cause however is considered to be unnecessarily long.

Measures have been put in place to enable automatic shutdown of all the boreholes in this system should low chlorine residuals be detected by monitoring instruments and thereby prevent untreated water being passed into supply.

There are no further actions identified from this incident.