Drinking Water Quality Regulator for Scotland

Incident Assessment

Muirdykes RSZ Discoloration 6 October 2012

DWQR Inspector:
William Byers

Summary of Incident

On 6th October 2012, a series of consumer contacts were received describing discoloured water in the Linwood area of Paisley. The area affected has historically been supplied with water from Muirdykes Water Treatment Works but had been transferred temporarily onto the distribution system fed from Blairlinnans WTW. The transfer had taken place some two months prior to the unfolding incident. As complaints were continuing to be received, a team was set up to manage the incident and investigate the cause. Arrangements were made to distribute bottled water to consumers although no restrictions on the use of the water supply were necessary. Over the course of the next few days, a programme of flushing the water mains was carried out and a series of water samples were taken within the affected area. Systematic field investigations of the network were also implemented to try to establish the cause.

Sampling of the supply showed there to be no evidence of contamination through ingress but the discolouration was due to a disturbance of deposits in the mains. The analysis for PAH however, also identified the presence of Benzo(a)pyrene at levels exceeding the standards. The likely cause of this was thought to be the scouring action from the flushing on a section of bitumen-lined water main, which was due for rehabilitation. Flushing was continued to clear the problem and continuing sampling showed a decreasing trend in PAH. Samples taken on 11 October were all clear of PAH and showed water quality to have been restored.

DWQR Assessment of Cause of Incident

The operation of a control valve in the distribution network introduced changes to flow patterns and pressures in the water mains serving this area. These changes created a disturbance to deposits in the mains and caused the discoloration of the supply generating 389 contacts from consumers. DWQR considers however that Scottish Water's Boundary Valve Management to be lax and this is the root cause of the incident.

DWQR Assessment of Actions Taken by Scottish Water

The operation of boundary valves is a controlled operation requiring authorisation from senior managers and there are visual indicators at boundary valves to alert field staff to their importance. The valve operated and which was the trigger for this discolouration event was thought by managers to be a temporary boundary valve but no record had been made of its change in designation within corporate information systems. Scottish Water planners had correctly carried out a risk assessment for the methodical transfer of the area onto the neighbouring Blairlinnans supply but key failures in procedure at implementation of the operation laid the foundation for the incident. No record has been retained of the valving operation, the extent of which had changed from the plan, no arrangements were made for the designation of a temporary Water Operational Area boundary valve and no visible indicator was placed in the valve chamber of the new status of the valve.

DWQR's investigation indicates the consequence of this is that in carrying out other works, an authorised contractor who was unaware of the importance of the valve, operated it to facilitate their own Network plans. DWQR is concerned that Scottish Water failed to utilise all the appropriate information sources and examine records adequately to identify the real cause of the incident. In addition, although Scottish Water maintain a daily log of activities being carried out on the water supply networks, it is disappointing that they are unable to draw reports from the system to assist investigation of the full circumstances of activity preceding an event to aid determination of cause.

Investigation of this incident has also revealed that Scottish Water's obligations set out in their DOMS procedures towards verifying the status of boundary valves through audit, have not been met.

DWQR considers Boundary Valve Management to be a cornerstone and essential requirement of water supply management and finds Scottish Water to have demonstrated serious failure of its responsibilities in this regard.

In terms of response to the emerging incident, Scottish Water's attention to the requirements of consumers over the duration of the incident was good. They also undertook the necessary engagement with Health professionals ensuring the appropriate advice was provided to consumers.

Scottish Water identified a number of actions from this incident. DWQR accepts that these are appropriate and will be monitoring to ensure they are completed prior to signing off the incident. Additionally, DWQR made a number of recommendations.