

## Carron Valley WTW – Prolonged Aluminium Failure 6 January 2010

DWQR Inspector:  
Matthew Bower

### Summary of Incident

This incident occurred when solid pieces of lime broke away from the interior walls of the lime silo and blocked the lime dosing lines on several occasions over a two day period. This resulted in the treatment process not operating at the correct pH and soluble aluminium passing through the process, causing an exceedence of the aluminium standard in water leaving the works. Sample data suggests that water leaving Carron Valley exceeded the standard for aluminium for approximately 24 hours.

### DWQR Assessment of Cause of Incident

A build up of hard lime deposits around the edges of the lime silo broke up and entered the dosing pumps. It is not clear when the lime silos were last cleaned by Scottish Water, however DWQR would consider this to be essential maintenance, which should have been undertaken at regular intervals. An initial delay in a low pH alarm being recorded at Scottish Water's Intelligent Control Centre prevented an operator from being called out quickly to deal with the first major blockage. The absence of the standby lime dosing pipework further delayed things as it meant there was only a single dosing line and the operator had to manually transfer pipework rather than simply switching between pumps. Scottish Water does not explain why this pipework had been removed, as it is normal practice to have duplicate pipework for lime dosing equipment. The company has identified the replacement of the standby lines as an action following this incident.

### DWQR Assessment of Actions Taken by Scottish Water

Scottish Water staff reacted promptly to all water quality alarms once they were received and took correct action to restore the treatment process. At the request of Scottish Water's Public Health Team, a number of samples were taken in order to establish water quality at the treatment works and in the distribution system during the incident. Correct liaison with the local authority and health board took place. Scottish Water does not appear to have taken any other action to minimise the effect of the higher aluminium on consumers, although sample data suggests that aluminium was diluted once it entered the distribution system.

Scottish Water has identified the following actions that need to be taken in response to the incident:

<b>Action Number</b>	<b>Action Description</b>	<b>Action Owner</b>	<b>Action Completion Date</b>
1	Review Schedule of Cleaning of the Lime Tanks	Team Leader	Complete
2	Re-establish dosed water and final water lime duty and standby delivery lines.	Team Leader	Complete
3	Re-enforce the escalation process through a toolbox talk	Team Leader	Complete
4	Investigate the delay in the visibility of alarms to ICC Operator	Intelligent Control Centre Manager	Complete
5	Clean lime tanks	Team Leader	Complete
6	Re-range the ex-clear water tank aluminium monitor on SCADA / Telemetry	Team Leader	Complete
7	Water Operations Manager to distribute a copy of this incident report to all other Water Operations Managers for dissemination.	Water Operations Manager - West	Complete

DWQR has no additional recommendations to make in respect of this incident.