

Incident Summary

Tarbert Argyll WTW Coagulation failure 29 November 2016

DWQR Inspector:
Moira Malcolm
Event No. 8146

Event Category: Significant

On 30th November 2016 the ICC alerted the standby operator of a high treated aluminium alarm at Tarbert Argyll WTW and the operator attended site at 06:00 where he noticed that the treated aluminium monitor was reading 5132µg/l (the highest the scale can read). The operator shut off the high lift pumps to the next process stage to prevent further non-compliant water passing through the works and into supply. There is no monitoring of aluminium after the clear water tank, so it is not possible to state with any certainty the extent of the contamination with aluminium of the water entering into supply.

The operator found that the sodium carbonate in the dosing line going to the pumps for coagulation had frozen due to the cold weather. The line was thawed and dosing resumed. The pipes were lagged and trace heating reset to activate at 12°C. Bench tests were taken throughout the incident until satisfactory aluminium results were received and the works was put back online at 13:05.

Whilst investigating the failure it was found that the soda tank stirrers were not working, as they had not restarted after a power failure the previous day, this would have compounded the issue related to pH correction because the strength of the sodium carbonate solution was sub-optimal.

Samples taken from consumer's taps on 30th November show very high aluminium values (maximum recorded value 567 µg/l). The bench testing carried out to assess the levels of aluminium entering supply during the event were all very low and failed to capture the severity of the non-compliance. This discrepancy has been attributed to the hydraulic conditions at the treatment works because the low clear water tank (CWT) level resulted in streaming.

A similar event occurred on 24th November, with soda freezing in a different part of the dosing pipework. On that occasion water above the PCV for aluminium left the CWT for approximately 2 hours. This short duration, and the appropriate response that operators took to the event classifies it as a minor event.

The frozen sodium carbonate in the pipework caused an imbalance in coagulation chemistry resulting in water high in aluminium to be produced and enter supply for a period of approximately 5 hours. The poorly coagulated water plus excess aluminium caused an increase in turbidity and placed

a higher chlorine demand on the disinfection process, resulting in a drop in the free chlorine residual.

The event has been categorised as Significant. Scottish Water has identified ten actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made no additional recommendations.