

## **Roberton WTW Aluminium Dosing Control Failure Incident – 29<sup>th</sup> October 2009**

DWQR's assessment of this Incident is that at 0942hrs on 29<sup>th</sup> October 2009 Roberton Water Treatment Works was shut down to allow the changeover of live power connections on the new works which had just been completed. At 1101hrs the plant was re-started but neither of the Polyaluminium Chloride coagulant dosing pumps (duty and standby) would start under an auto setting. The standby pump was set to manual and it started dosing correctly. The other pump was left live but, as it was still set on auto, it was not running and therefore not dosing chemical. At this point the works was running normally.

The Operator left site at 1400hrs. An orthophosphate dosing alarm was received at 1525hrs and a Standby Operator attended the works at 1600hrs to deal with the problem. When on-site he also cleaned the turbidity meter which was found to be dirty. He left the site at 1700hrs when the plant was operating normally.

At 2003hrs a low dosed pH alarm was passed to the Standby Operator who took no action because he believed that it was a false alarm linked to the earlier plant shutdown. When he was passed a high clarified water turbidity alarm at 2117hrs the Standby Operator discussed the situation with the Standby Team Leader who checked the other water quality trends on the telemetry system. These were found to be normal at the last dial out at 2115hrs. At 2205hrs and 2223hrs the Standby Team Leader dialled into the site to check water quality trends and noted that the clarified turbidity was on a rising trend and so instructed the Standby Operator to attend the works. He arrived at 2300hrs and found the coagulant pump that was set on auto but not dosing earlier had started dosing, along with the pump set on manual, leading to overdosing of the Polyaluminium Chloride coagulant. The pump set on manual was switched off and the plant left running with the coagulant pump on the auto setting. The plant was left to recover clarified water quality before filter washing started at 0130hrs on 30<sup>th</sup> October and continued overnight.

During the incident the turbidity of the water from all six filters reached values in excess of 2NTU (the maximum allowed under the Regulations being 1NTU), while the mixed filtered water residual aluminium was over the maximum allowed concentration for approximately 12hrs. The final water leaving the works residual aluminium exceeded the maximum allowed for around 16hrs but the turbidity remained within the standard. Good chlorine residuals were maintained throughout the incident.

DWQR notes that a time lapse of three hours occurred between the receipt of the low dosed water pH alarm and the Standby Operator arriving on site to deal with the problem. This is an unacceptable delay in reacting to a potential problem in the critical coagulation treatment process. However DWQR also notes that steps have been taken to prevent a repeat of this incident namely, issuing site instructions on the steps to be taken should the coagulation pumps fail to start after a shut down and, linking the coagulant flow meter to the telemetry system along with alarm settings.