Case study - MidCoast Council

Managing a chemical overdose incident

Customers expect their water to be safe and pleasant to drink and businesses often rely on water quality for their goods, services and operations.

This case study describes how MidCoast Council successfully managed a chlorine overdose incident and implemented water management improvements to prevent the incident from occurring in the future.

This case study is a resource for regional and county council decision-makers, including Councillors and operation staff of council-owned local water utilities.

About MidCoast Council

- MidCoast Council is responsible for 195 towns, villages and localities in the Mid North Coast region of NSW.
- The local government area is home to more than 93,000 residents across 10,054 square kilometres.
- The two main population centres are Taree and Forster-Tuncurry.
- Council manages more than $3.9 billion in assets including over $1.2 billion in water and sewerage assets.

Figure 1 Map showing the location of MidCoast local government area on the mid North Coast of NSW

PUB22/967

System context

In 2011, MidCoast Water took over from Gloucester Shire Council to operate the Gloucester water supply which supplies water to around 1,700 customers. In 2017 MidCoast Water was amalgamated into MidCoast Council. To avoid confusion, this case study only refers to MidCoast Council.

The Gloucester water supply system supplies water to the townships of Barrington and Gloucester and is made up of 1 water treatment plant, 3 reservoirs, 7 booster pump stations and 1 raw water pump station. The raw water pump station was built around the late 1930s/early 1940s and was upgraded in the 1980s.

Water for the Gloucester water supply system is sourced directly from the Barrington River, upstream of where it joins with Gloucester River, and treated at Gloucester water treatment plant. There is no off-stream storage. The conventional treatment plant includes a flocculation tank, clarifier, sand filters, chlorine disinfection and fluoridation.

The event

In March 2015, the Gloucester water supply was unintentionally overdosed with chlorine and MidCoast Council had to issue a precautionary 'do not drink' notice while it rectified the issue.

Impacts on the local community included:

- tap water that 'tasted like bleach
- reports of burning eyes
- temporary closure for some businesses and short-term impacts for other businesses such as the local pub unknowingly serving heavily chlorinated water through its drinks mixer system and ice maker
- local supermarkets ran out of bottled water.

Immediate actions during the event included:

- all schools and preschools were notified directly, except for one primary school. This was an oversight caused by a clerical list error, highlighting the importance of an up-to-date emergency contact list
- bottled water was provided to vulnerable customers including the hospital, schools and preschools
- the water treatment plant had to be manually operated with the chlorine dosing system being manually isolated after each run
- MidCoast Council flushed water mains and disposed of the water onto grassed areas and roads, rather than directly into the river. Samples were taken from the Gloucester River to confirm that heavily chlorinated water had not made it to natural waterways
- MidCoast Council was in contact with NSW Health, NSW Office of Water (now DPE Water) and the Environmental Protection Authority (EPA) throughout the incident

- MidCoast Council chairperson and executive team were available to the community for 3 hours on 27 March (post-event) to discuss the incident and answer questions from the public.

All of these actions had to be performed in addition to 'business as usual' requirements of operating a water supply system, putting pressure on Council's resources from operators through to Councillors.

Figure 2. Commercial customer self-testing of the drinking water shows very high levels of chlorine. Gloucester Advocate, 25 March 2015.

Once the precautionary 'do not drink' notice was lifted, Gloucester residents were requested to flush their house pipes for at least 10 minutes before using the water. Following this request, rebates of $50 were provided on the next water account to every customer supplied by the Gloucester water supply for inconvenience caused by the outage and to offset water charges due to internal flushing. Commercial customers who experienced significant financial loss as a direct result of the outage were invited to make contact with MidCoast Council.

An independent external consultant was engaged to undertake a full investigation. The investigation identified actions to prevent recurrence, including:

- an online residual chlorine analyser with alarms was installed to automatically notify operators of incorrect chlorine dose
- additional daily visual operational checks were implemented, noting chemical storage volumes.

Council governance

Midcoast Council is a council under the *Local Government Act 1993* (NSW) and is subject to a range of obligations under that Act, including supply of drinking water and management of 6 water supply systems: Manning, Tea Gardens, Gloucester, Bulahdelah, Stroud and North Karuah.

Under the *Public Health Act 2010* (NSW) Council must

- meet requirements of the Public Health Act
- meet levels of service agreed with the community
- carry out and uphold a quality assurance program, often known as a Drinking Water Management System or DWMS
- the DWMS must be consistent with the Framework for Management of Drinking Water Quality in the Australian Drinking Water Guidelines (ADWG).

The Australian Drinking Water Guidelines set out a holistic approach to managing drinking water, including understanding where sources of contamination and how contaminated can impact customer's drinking water

MidCoast Council has had a Drinking Water Quality Management System in place since 2014 and routinely undertakes monitoring and review of its water supply systems to ensure they stay compliant and fit for purpose.

Overview of risks

MidCoast Council was exposed to several risks from the incident, some of which are summarised in Table 2.

Risk	Consequence to Council	Impacts
Increased operational disruption and extra activity in responding to and fixing the overdose	• Increased cost (unplanned nature of the work was challenging to coordinate). • Staff fatigue from increased call outs. • Exposure to potential non-conformance on other system obligations and levels of service. • Additional costs of unnecessary chlorine chemical.	• Financial • Reputation • Public health • Work health and safety • Compliance
Lack of ability to address customer queries and concerns across multiple channels.	• Reputational impacts for Council, councillors, executive staff and the MidCoast region. • Loss of confidence in Council. • Ongoing concerns about damage to private water services caused by the overdosing. • Increased calls to address water corrosivity over the short and long terms.	• Reputation • Political • Wellbeing • Financial
Reduced reputation of town because of precautionary 'do not drink' notice.	• Potential reduction in tourism. • Impact on regional economy. • Political fallout.	• Financial • Political

Risk	Consequence to Council	Impacts
Lack of ability to contact all relevant stakeholders in a timely manner due to updated emergency contact list.	• Potential illness due to consumption of water by vulnerable consumers. • Reputational impacts for Council, councillors, executive staff and the MidCoast region. • Loss of confidence in Council.	• Public health • Reputation • Political
Financial loss due to rebates and compensation.	• Rebates were paid to all customers via water bills for inconvenience and to offset charges due to internal flushing. • Compensation for financial loss was paid to commercial customers due to outage.	• Financial

Table 1 Overview of risks Council were exposed to from the chlorine overdose incident

Insights gained

Some of the key insights gained from this event were:

- importance of early and direct communication with residents
- early notification with regulators assisted in the response
- importance of all staff awareness and understanding the importance of drinking water quality
- importance of implementation and organisational support for the Drinking Water Quality Management System
- importance of Critical Control Points, online monitoring and automation
- criticality of design of system components meeting standards and best practice
- independent review of the event identified root cause and provided recommendations for improvements.

Considerations

- How can you be confident that Council has enough controls in place for early notification to communities and businesses if water treatment processes have been inadequate?
- How can you be confident that Council's emergency contact lists are up to date?
- How knowledge and resources would you need if you had to appear at a public meeting to answer questions about a water quality incident that impacted Council's water systems?

References

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