

**EMERGENCY MANAGEMENT PLANS -  
EXPERIENCES WITH BLUE GREEN ALGAE IN LANCE  
CREEK RESERVOIR**



***Paper Presented by :***

**James McComb**

***Author:***

**James McComb**

*Manager Operations & Maintenance*

South Gippsland Water



*61<sup>st</sup> Annual Water Industry Engineers and Operators' Conference  
Civic Centre - Shepparton  
2 and 3 September, 1998*

# EMERGENCY MANAGEMENT PLANS - EXPERIENCES WITH BLUE GREEN ALGAE IN LANCE CREEK RESERVOIR

James McComb, *Manager Operations & Maintenance*, South Gippsland Water

## ABSTRACT

South Gippsland Water activated its Emergency Response Plan on Friday 6<sup>th</sup> February 1998 as a **precautionary** measure due to possibly high algal toxins in the Lance Creek Reservoir which supplies the townships of Cape Patterson, Inverloch and Wonthaggi covering a population of approximately 12,000. The Water was given the “all clear” on the following Wednesday afternoon the 11<sup>th</sup> of February and had in fact been found suitable for drinking at all times.

The Authority set up emergency water supply centres at three locations and adopted an extensive communications program to advise special needs customers, other consumers, government agencies and the general community of the situation. The Authority’s response to the situation worked well and the need for proper Emergency Response planning has been highlighted and the need for consideration of the finer detail in Emergency Response planning is also noted.

## KEY WORDS

Emergency Plans, Blue Green Algae, Water Quality, customer

## 1.0 BACKGROUND

South Gippsland Water operates the Lance Creek Reservoir which is situated in South Gippsland Victoria, approximately 13 km North East of Wonthaggi on the Lance Creek. It has had a long history of Blue Green Algae with an outbreak being recorded in the local press in 1935. The catchment is open with the majority of the land cleared with predominantly dairy cattle in the catchment, resulting in a large run off of sediments and nutrients. The Reservoir holds approximately 4,000 ML of water and is approximately 85.6 hectares in area. At the time of the outbreak in February 1998, the new water treatment plant was still under construction with the Authority now having a DAF (Dissolved Air Flootation) plant in operation which has a capacity of 20 ML per day with average daily demand in February 1998 being 6.5 ML/day.

South Gippsland Water is an innovative participant in the water industry responsible for water and wastewater services for twenty towns over an area of approximately 4,000 square kilometres with a population of over 30,000 people. The Authority services the area of South Gippsland including the larger towns of Korumburra, Leongatha, Wonthaggi and Inverloch. The Authority’s administrative centre is based at Foster (approximately 170 km south east of Melbourne) and has operational centres at Wonthaggi, Korumburra, Toora, Yarram and Leongatha.

## 2.0 INTRODUCTION

This paper describes how South Gippsland Water (The Authority) responded to an emergency situation caused by the water supply at Lance Creek Reservoir potentially containing excessive algae toxin. The action taken by the Authority to provide an emergency supply of water and communicate with customers is outlined and the resulting lessons learnt from the event are discussed.

## 3.0 ACTIVATING THE EMERGENCY RESPONSE

On February 5 1998 there was a sudden increase in numbers of Blue Green Algae (*Microcystis* &

Anabaena Circinalis) in Lance Creek Reservoir which was treated with Algicide. Due to the fact toxicity sample results were not 100% conclusive the Authority (in consultation with the Department of Human Services) decided as a precautionary measure to warn consumers against using the water for potable purposes and implemented its Emergency plan. The towns affected were Cape Patterson, Inverloch and Wonthaggi comprising a total population of approximately 12,000 people in addition to a number of rural properties. There were also large numbers of tourists in the caravan parks and other accommodation, in addition to a number of special events organised by service groups adding to the population.

The Emergency Response Plan was instigated at 5.10 pm Friday 6 February 1998 and key activities of that response are set out chronologically in the appendix (10.0) until water testing proved conclusively that the water was safe to drink on Wednesday afternoon of the 11<sup>th</sup> February 1998.

#### **4.0 THE RESPONSE**

On Friday 6<sup>th</sup> February 1998 at the Foster Office (Head Office) a meeting was quickly organised with all office staff to discuss response actions to the Emergency. A whiteboard was used to list key activities, actions requirements and key information items that staff need to be aware of, such as do not drink the water and boiling will not make the water safe. Operations staff at Wonthaggi were advised of the situation and asked to be ready for further instructions.

The top priorities were to notify key customer groups and relevant Government agencies, send out media releases and install emergency supplies of water. The Authority already had a quantity of bottled water on hand at Wonthaggi and arranged for more to be delivered on the Saturday morning. In addition staff organised two tankers from Murray Goulburn (based at Leongatha) and one tanker from a private contractor to cart water from Korumburra to the affected towns.

To ensure the quality of the tanker water was acceptable sodium hypochlorite was added to the contractor's tanker before the first fill with the milk tankers (being food carrying vehicles) deemed to not require such treatment. To get the water out of the milk tankers required special adaptors and fittings to make it easy to fill containers. The contractor's tanker already had a tap fitted and a pump fitted, with the pump later proving very useful to fill tanks or top up the other tankers.

A roster of staff was organised to man the office 24 hours a day to handle all phone queries and a roster was set up to man the tankers at the three locations (Caper Patterson, Inverloch and Wonthaggi), from 6.00 am to midnight each day. It was decided having staff at the emergency water locations after midnight was not warranted and people could help themselves if required. However one night a tap was left on which drained a tank dry.

On the Friday night 6,000 warning notices were printed for distribution on Saturday. The warning notices were distributed by staff, meter reading contractors and volunteers as the regular distributors could not be contacted (in fact on holidays).

The demand for water on the Friday night was relatively quiet as many consumers had not yet received notification of the alert in respect of the water supply. The main demand came from commercial customers using water for cooking eg restaurants and bakeries.

On Saturday morning staff were reasonably busy in terms of supplying emergency water and with attending to customer queries on what was happening with the water supply. It was interesting to see how different people reacted with some bringing twenty litre containers for filling, others bringing a box full of empty one litre soft drink containers, others bringing cooking pots and others arriving with nothing saying "what do we do?". Some customers attending the emergency supply did not want

water but were happy with reassurance that the situation was under control and that drinking water was available if required.

One issue of concern was people bring sub standard (ie dirty) containers or containers that looked like they had contained fuel. If people did not have containers, or the container was unsuitable, then the customer was lent a 20 litre container and asked to bring it back as soon as possible. Less than 25% of containers were actually returned and although the Authority had the people names and phone numbers there was insufficient resources to try and reclaim the containers. Bottled water was distributed to customers such as the elderly who could not attend one of the three distribution centres.

One complaint frequently aired was the fact that it had been recycle night last Thursday and people had thrown all their plastic containers out!

The Authority received many queries from people on what they could and could not do with the water and with customers also asking “if I boiled the water would it be safe?” with the correct advice given that “boiling was not effective in making the water safe for potable purposes.” A number of commonly asked questions during the Emergency are set out in the appendix. (11.0)

In order to aid the distribution of water the Authority purchased approximately 12 rain water tanks which were set up at the three centres or near strategic locations that suited special needs customers. The idea of the tanks was to increase the number of distribution points rather than fill one container at a time from each of the tankers. After the initial rush on Saturday morning, the demand for water was not as great as expected. The amount of demand for water was one important issue of concern and the Authority in fact over catered. The contract tanker was engaged in a circuit where he would fill up his tanker and then top up other tankers, drop off water to the hospital, certain commercial premises, Authority rain water tanks and other locations as requested.

Extra staff were asked to start work at Wonthaggi Depot Monday morning to assist where required in the delivery of bottled water or other activities. As previously mentioned the amount of demand was far lower than expected, and by Monday afternoon six staff was sufficient to distribute water assisted by the contract tanker driver. At all times staff were informed on the status of the emergency and when the “all clear” was likely to be given.

The water was deemed satisfactory on Wednesday afternoon, 11th February 1998, and had in fact been satisfactory all along. The communication process then repeated itself in notifying key customer groups and government agencies, sending out media releases and advising all other customers that the water had indeed proved to be satisfactory. Customers such as restaurants, coffee shops, motels, (etc) were particularly appreciative to get a call shortly after the “all clear” was known.

The Authority arranged a function soon after the “all clear” to thank the staff for their efforts during the emergency and it was considered important to thank the staff soon after the event to make the appreciation more effective and relevant. Another function was arranged for customers who assisted the Authority during the Emergency including the younger ones who helped deliver notices.

## **5.0 CUSTOMER ISSUES**

There were a number of customers (hospital, nursing homes, some food outlets etc) that received special consideration from the Authority. These customers received extra supplies of bottled water, had regular filling of their own storage tank or were supplied with a tank which was filled by tanker on a regular basis. Bottled water was dropped off to a number of customers who for various reasons could not get to the depots.

Discretion had to be used in how far staff went to help customers and all customer groups, where possible needed to be treated equally. The fact that certain things were for free did increase demand by some consumers to excessive levels or some consumers simply had unrealistic expectations on what the Authority could do. Some customers ask for three or more boxes of bottled water or asked for their rainwater tank to be filled up. The response varied depending on the customer need and the priorities at the time. As a guide staff were asked to only give out two bottles of bottled water per customer or up to twenty litres per customer from the emergency supplies.

The bakeries received extra volumes of water due to the need for water early in the morning when Authority staff were not available, but this then caused concern from other food outlets that were not receiving the same service. When the reason for differences was explained most people accepted the situation.

General information was given to customers about what they should not do with the water. Advice given included: do not drink the water, do not clean your teeth with it, people with sensitive skin should take care in bathing, do not use it for food preparation and do not use it in cooking. It was highlighted that the whole exercise was a precautionary measure but people should still be careful.

Where it became more difficult when people asked more specific questions in regards to specific health problems, concerns with animals or whether they could water their vegetables.

In response to human health issues or animal health issues people were asked to contact respectively their Doctor or Veterinarian. In regard to vegetables the Authority advised any salad type vegetables that would be eaten soon after should not be watered with town water until further notice.

One large food exporter requested 23 tankers of water per day to get him through the crisis. After some discussion it was determined that most of the water was used for washing down or some other non critical process and a smaller quantity of only three tankers was adequate. An employee of the food exporter asked the tanker driver if he could drop off a load of water at the employees house at Leongatha to fill his new pool, as Leongatha had water restrictions ! Obviously his request was denied.

In some larger organisations the communication became difficult as the Authority would talk to one representative who would then not pass on the information to his organisation. One CEO from a large customer rang the Authority to find out what was going on and we advised him to talk to his staff member who we had spent thirty minutes explaining the situation to. He then advised he wished he could but that staff member was out playing golf!

On the Sunday preparations were made to supply drinking water to business houses, the schools and kindergartens. All the schools and kindergartens were contacted on the Sunday night to ensure they were informed of the situation. Most requested that the Authority supply water and depending on the size of the school /kindergarten either quantities of bottled water were supplied or a rainwater tank was supplied and filled by tanker.

The Authority also supplied a quantity of paper cups with some schools continually requesting replacements. Authority staff respectfully suggested that the students reuse the cups as the Authority did not have the resources to keep delivering more cups.

## **6.0 MEDIA**

A number of media releases were sent out on a regular basis to keep the press informed of the state of the Emergency. The majority of requests for interviews were handled by the Chief Executive Officer (Mr Steve Evans) and generally the press and other media were informative without too much sensationalism. One Melbourne news report was less favourable and showed consumers with a very negative view of the situation. The news crew had to in fact interviewed eight consumers

before they obtained the negative response they wanted.

## **7.0 LESSONS TO BE LEARNT**

The Authority believes it handled the situation very well and on the whole the public and our customers accepted the situation well. Consumers had been through a similar situation in 1990 and hence there was less customer concern about the situation than if it had been a new situation. In addition approximately 50% of consumers in the affected areas have rainwater tanks which reduced the need for the Authority to supply potable water. The fact that the warning was precautionary may have reduced consumer concern and if the water had been definitely unsafe there may have been a different reaction from both consumers and the Authority.

Much credit has to be given to Authority staff who stayed calm in a difficult situation and who were able to deal confidently with the customers, giving them reassurance that the situation was being well handled. Many of the operations staff were present in the 1990 situation and this experience helped them with the recent emergency.

Obviously possible emergency situations should be avoided and Water Authorities need to revise and practice their emergency plans on a regular basis.

The Authority received criticism from some customers that they did not receive any official warning from the Authority, and found out about the situation from friends or neighbours. One issue was the fact notices were put in letter boxes on the weekend when many people do not check their mail. Additionally the notice may just be simply discarded as another piece of junk mail. One customer suggested warning signs should have been posted at the entrances to the affected towns and another suggested a loud hailer should have been used. Others suggested large signs should have been posted in shop windows at the town centres. External warning signs would have been difficult to install quickly and there is the concern of how people would see them at night. The loud hailer option had been considered but it was thought it may cause confusion, rather than provide useful information or lead to excessive concern about the situation.

In the area affected there are a number of Holiday homes and the Authority received a number of calls weeks after the "all clear" from people who had just read the notice not to drink the water. Quite often while on the phone they would then find the other notice explaining the emergency situation was now over. This situation is hard to avoid and staff may have to answer queries weeks after the Emergency Situation has passed.

In hindsight the Authority could have prepared more written information to hand out to consumers on what could and could not be done with the water. Queries relating to the affect on animals were difficult to answer and there is a need for emergency contact sources for this information, such as vets or Government Departments.

The Authority had a minor problem with fax communication, (at head office) as the Fax was used frequently for sending out information, so that it was difficult to receive a Fax. This could be avoided by having the option to receive or send faxes through computer modem or provision for another Fax.

Staff made a number of calls on the Friday to locate extra bottled water supplies. After much chasing around and stress, a delivery was arranged for Saturday morning at 10.00 am. One enterprising retailer, hearing of the Emergency on the radio had arranged for his own extra supplies of bottled water and had them in store that Friday night !. The lesson is that some of your customers may have better contacts for supplies of bottled water or other supplies and this could be considered in emergency planning.

The fact that the Emergency occurred on a Friday late in the afternoon made it difficult to obtain emergency supplies but the situation would have been worse if it happened on a Saturday or later at night.

There was misinformation spread about the affects of the algicide with rumours spread it would make people sick which was in fact not true. This concern could have been avoided by including more information in respect of the algicide in media releases and information brochures.

Thought also need to be given to what goes on your web page if applicable.

## **8.0 ISSUES THAT NEED TO BE ADDRESSED IN AN EMERGENCY**

From this Emergency situation the Authority has reviewed its response to the emergency situation and how it could better cope next time with a similar emergency or any other type of emergency. The following points should be considered when reviewing or developing any emergency response plan.

- ◆ Consider how you can give your consumers confidence in the situation by giving them the basic facts and how the Authority is dealing with the situation.
- ◆ Consider how you would handle different situations, how does the situation change from 'the water may be unsafe' to 'the water is unsafe'.
- ◆ Having an up to date list of contact phone numbers special needs customers and other contacts.
  
- ◆ Major customers may need to have their own emergency plans and need to nominate contact officers in an emergency so time is not wasted talking to several people from the same organisation.
- ◆ Have suppliers who can provide services after hours eg notice printing, delivery.
- ◆ Have certain supplies on hand eg bottled water.
- ◆ Ensure procedures are formulated to ensure the situation is not made worse, ensure the standpipes used are flushed before the first filling of tankers, ensure the tankers are clean, and ensure procedures control the quality of containers being filled.
- ◆ Have prepared information ready for distribution. A number of commonly asked questions are listed in the appendix (11.0) and although many are fairly basic pre-planning the answers or having ready information can save significant amounts of time and reduce stress on staff. Information sheets need to include a date so the reader knows if it is the latest advice. Consistent responses from the staff involved are required to make sure there no confusion and some customers or the media may test the organisation by talking to a number of staff.
- ◆ Prepare for how you handle the media, who is allowed to talk to the media. Dealing with the media can consume a lot of resources, plan set press conferences every day rather than responding to individual requests. However the media tend to work to their own timetables and may not accept a regular press conference.

- ◆ Remember approximately 75 % of time is out of normal work hours; will your plan work after hours?
- ◆ Consider if the normal organisational structure has to be changed for an emergency situation. Eg. are office staff prepared to do operations function or do the chains of command change?.

Some of the details need to be considered carefully, often Emergency Response Plans look at the big picture but can fail on minor details. For example in the use of water tankers there are many issues to consider including, does the stand pipe need to be flushed for the first fill, is the tanker clean or need disinfection, how will the water be taken out of the tanker (is a pump needed or special fittings), how long do they take to fill and are the receiving containers clean?. There are also manual handling issues to be considered with a stand required for containers to be supported on while being filled and a trolley may be need to take full containers back to the cars for customers. The location of the tanker is important as over time water is spilt and the wrong location could get muddy and cause safety concerns.

## 9.0 SUMMARY

This paper outlines how the Authority responded to a Water Quality Emergency and highlights what areas proceed well and the areas where improvement can be made. Some of the lessons learnt can be applied to many other emergency situations and the main point is that organisations need to plan for emergencies to make sure that they have considered the issues and do not make a bad situation worse. The finer details of Emergency plans need to be considered as little oversights may cause unnecessary delays or make the situation worse. There is a higher expectation from the community and customers that organisations be prepared for Emergencies and there is no excuse for not being ready.

## APPENDIX

### 10.0 CHRONOLOGICAL LIST OF MAIN ACTIVITIES DURING THE EMERGENCY

#### Friday 6 February Action taken

- ◆ Press Releases to Media
- ◆ Staff Briefed
- ◆ 24 hour phone Roster set up at Head Office
- ◆ Whiteboard set up at Head Office with checklist, rosters & key information
- ◆ Produce warning letter for letter drop
- ◆ Three sites set up for emergency water ( Cape Patterson, Inverloch & Wonthaggi)
- ◆ Tankers sent to emergency water sites
- ◆ Further supplies of bottled water ordered
- ◆ Emergency Contacts notified including :
  - Health Surveyor
  - Hospitals
  - Displan co-ordinators
  - Police
  - Major Customers
  - Businesses
  - Motels, Caravan Parks, Hotels etc
- ◆ Printed letters for distribution to customers on Saturday
- ◆ Prepared Strategy for coming day:
  - letter drops
  - further press releases



further water testing

- ◆ Brief by fax or phone to :
  - Authority Members
  - Members of Parliament
  - Councillors
  - Others

#### **Saturday 7 February Action taken:**

- ◆ Emergency Water supply fully activated
- ◆ Notice drop commenced
- ◆ Notices displayed in shops and other areas
- ◆ Water delivered to special needs customers
- ◆ Media interviews
- ◆ Water Tanks placed in strategic locations
- ◆ Additional supplies of Bottled water stocked and distributed
- ◆ Double checked notification to small businesses and other special needs customers

#### **Sunday 8 February Action Taken:**

- ◆ Continued with emergency water supply
- ◆ Meeting with Members and Management Team
- ◆ Planned for Businesses, Schools for Monday
- ◆ Water Tanks arranged for schools
- ◆ School notified of action for Monday
- ◆ Additional staff rostered for Wonthaggi depot

#### **Monday 9 February Action taken:**

- ◆ Continued with emergency water supply
- ◆ Water tanks and paper cups delivered to schools

#### **Tuesday 10 February Action Taken:**

- ◆ Continued with emergency water supply
- ◆ Delivery of Three Tankers of Water to Food Exporter
- ◆ Advice to customers prepared (that water now satisfactory)
- ◆ Letter drop for Wednesday organised (Advising Water deemed satisfactory)

#### **Wednesday 11 February Action Taken:**

- ◆ Continued with emergency water supply
- ◆ Water declared satisfactory
- ◆ Media Releases, letterdrop etc

#### **Thursday 12 February Action taken:**

- ◆ Emergency Water Supply discontinued

### **11.0 COMMONLY ASKED QUESTIONS BY CUSTOMERS**

I have just found out the water is unsafe after drinking five cups of tea what do I do ??

Can I brush my teeth with it?

Can I wash in it?

Can I water my plants with it?

I have wrigglers in my rainwater tank how do I remove them?

I have just bought a new rainwater tank can you fill it for me?

I have got a rash from the water what do I do?

My dog, budgie etc just drank the water what do I do??

I have had a headache (or stomach problem etc) for the last six months and your water is to blame, so what do I do?

Will customers be given a discount on their charges due to the water quality issue?

How long will the problem last? What is the Authority doing? Who's fault is it?