FORM 38

Rule 60(2)

FINDING INTO DEATH WITHOUT INQUEST

Section 67 of the ***Coroners Act 2008***

Court reference: 1180/08

In the Coroners Court of Victoria at Melbourne

I, KIM PARKINSON, Coroner

having investigated the death of:

Details of deceased:

Surname: JOHNSON
First name: STEPHEN
Address: 433 Darnum Allambee Road, Cloverlea, Victoria 3822

without holding an inquest:

find that the identity of the deceased was STEPHEN JAMES JOHNSON and death occurred on 20th March, 2008

at Dandenong and District Hospital, David Street, Dandenong, Victoria 3175

from

1a. MULTIPLE ORGAN FAILURE DUE TO *AEROMONAS SOBRIA* SEPSIS IN A MAN WITH CIRRHOSIS

Pursuant to Section 67(2) of the **Coroners Act 2008**, an inquest into the death was not held and the deceased was not immediately before the person died, a person placed in custody or care; but there is a public interest to be served in making findings regarding the following circumstances:

1. Mr Stephen Johnson was born on 13 August, 1960 and was 47 years old at the time of his death. Mr Johnson resided at 433 Darnum Allambee Road, Cloverlea, with his wife Mrs Patricia Johnson and was employed as a teacher at the Warragul Regional College (College), located at Warragul. The College runs the Gulwarra Heights Community Farm (the farm), which keeps cattle and deer. Mr Johnson worked at the farm.

2. Investigations were undertaken in relation to the death by WorkSafe Victoria Inspector and by Ms Robyn Duffy of the Baw Baw Shire Council. I have been assisted by these investigations in my finding in this matter.

3. On 10 March 2008, Mr Johnson cut his hand whilst fixing a float valve in a water trough that was located in a paddock of the farm.

4. On Saturday 15 March 2008, Mr Johnson sought medical attention from the Warragul Hospital after feeling generally unwell for approximately one week. Mr Johnson had generalised lethargy and associated vomiting. He also complained of having cramps in his lower leg and hand.

5. A number of tests were conducted, however investigations were unable to detect the primary source of infection. Mr Johnson had a high bilirubin[1] count and elevated blood sugar levels. The clinicians noted that he had been working with water troughs at a school cattle farm.

6. Mr Johnson was admitted to the High Dependency Unit (HDU) on 16 March 2008. Doctors, concerned to establish the cause of possible liver damage, queried Mr Johnson's usual alcohol consumption. Mr and Mrs Johnson reported average levels of alcohol consumption.

7. Mr Johnson's condition continued to deteriorate, including increased swelling of the leg and renal dysfunction. Whilst ultrasound was performed on abdomen and leg, no significant findings were noted.

8. On Monday 17 March 2008, pathology identified the presence of bacteria *Aeromonas Sobria*,[2] which was a water borne bacterium. Mr Johnson's antibiotic regime was altered in response and he was closely observed. His condition continued to deteriorate.

9. On Wednesday 19 March 2008, due to his progressive hypotension, acute liver and renal failure together with disseminated intravascular coagulation, he was airlifted to Dandenong Hospital, where he was admitted to the Intensive Care Unit. Dr Yvonne Kearley, Director, Dandenong Intensive Care, reported that dialysis was unsuccessful. Surgery revealed acute necrotizing fasciitis[3] and myonecrosis[4] of the lateral aspect of the left leg. The wound was extensively debrided from the left mid calf to the upper thigh. A second surgical procedure was performed on the night of admission for control of postoperative bleeding.

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[1] A reddish-yellow pigment in the bile that forms as a product of haemoglobin, excess amounts in the blood produce the yellow appearance observed in jaundice.

[2] *Aeromonas Sobria* causes a broad spectrum of infections in humans, usually in immuno-compromised patients. It may cause gastroenteritis in healthy individuals or septicaemia in individuals with impaired immune systems or various malignancies. Source www.foodstandards.gov.au

[3] Tissue death such as that associated with Group A streptococcus infection.

[4] The destruction or death of muscle tissue.

10. The family were informed of the extremely poor prognosis. Despite surgery, appropriate antibiotic therapy, extensive inotropic support, hemofiltration and blood product support for profound coagulopathy, Mr Johnson's condition continued to deteriorate. Support was withdrawn following discussion with the surgical team and the family. Mr Johnson died on Thursday 20 March 2008.

11. Dr Melissa Baker, Forensic Pathologist of the Victorian Institute of Forensic Medicine, conducted an autopsy and determined the cause of death as multiple organ failure due to *Aeromonas Sobria* sepsis in a man with cirrhosis. Dr Baker commented:

> *"Aeromonas is a gram negative bacterium which is commonly found in aquatic environments. Infection may be acquired through ingestion with subsequent gastroenteritis, or through exposure of open wounds with subsequent bacterial septicaemia. Necrotizing fasciitis is a common manifestation of infection due to Aeromonas species. Immuno-compromised individuals and those with chronic illnesses such as diabetes or cirrhosis appear to be more susceptible to systemic infections caused by Aeromonas. There are several case reports of Aeromonas sepsis and necrotizing fasciitis in individuals with cirrhosis, a condition which was present in Mr Johnson."*

12. She commented that it was possible the wound to Mr Johnson's hand was the portal of entry for the *Aeromonas Sobria* sepsis, which may have been present in the water trough.

13. The post mortem examination also revealed the presence of significant natural disease. The heart was enlarged (the weight being above that expected for a man of the deceased's height and weight) and there was moderate to severe coronary artery atherosclerosis. Cirrhosis was also present and individuals with cirrhosis appear to have increased susceptibility to sepsis and necrotizing fasciitis caused by gram negative organisms. Histology results of the gastrointestinal tract revealed that the cirrhosis was "established".

Investigations undertaken by public health authorities and reported to the coroner

14. Mr Stuart Konstanty, Business Manager of the College advised that the College contacted Baw Baw Shire Council, requesting that they conduct testing on the water troughs and on the dam.

15. The Council undertook testing on the farm water supply. The initial sample of the water was to determine whether the water met the potable water standards. Council collected samples of water from the dam and provided them to an independent laboratory on 30 April 2008. The laboratory tested the samples for E.coli and coliforms. They did not initially test for *Aeromonas Sobria* sepsis as this had not been requested and they were unaware of any details relating to Mr Johnson's illness, which may have caused them to undertake that testing.

16. E.coli was identified in testing. As the water was untreated, it was expected that there would be high levels of bacteria present, as a result of livestock faecal contamination, a normal condition for a farm environment. The report from the laboratory indicated the water from the dam did not meet potable water standards. The Council then sought further information and collected water samples from the dam and the water troughs in each yard/paddock at the farm. *Aeromonas Sobria* sepsis was detected in the water.

17. The Council provided advice to the school in relation to personal hygiene and to ensure that staff and students had good quality water for washing hands after working on the farm. The council inspector informed the Enteric Disease Control Section, Department of Human Services (DHS) of the results. DHS advised that they would only conduct a follow up investigation if there were two or more cases of suspected food/water borne illness.

18. Whilst it appears that another teacher from the same College had fallen ill the year before with septicaemia, it does not appear that this information was provided to DHS and consequently follow up investigation by that department was not triggered. The limited information available in relation to the other event, does not however, enable any conclusion as to the circumstances in which that infection was acquired and therefore does not assist with this enquiry.

WorkSafe Victoria

19. WorkSafe Victoria was notified of this incident on 30 July 2008. Inspector Amy Baker attended the College on 1 August 2008, to enquire as to the circumstances surrounding the illness of Mr Johnson and potential connection to the water troughs.

20. Inspector Baker reported that she again attended on 13 August 2008, and viewed the dam, troughs, water taps and a shed. She was provided with a copy of the laboratory report. Inspector Baker requested the College to implement certain safety precautions to do with personal hygiene. Inspector Baker re-attended the College on 7 October 2008, and noted that the College had produced a fact sheet on personal hygiene for distribution to farm users and improved washing facilities. She reported:

> *"I am satisfied that the school is providing, so far as is reasonably practicable, information in relation to the hazards of dam water and how to reduce any risk associated with it."*

21. As part of her investigation, Inspector Baker sought advice from DHS who were not concerned about the results of the tests, as long as people were not drinking the water and there were correct hygiene procedures in place. DHS advised Inspector Baker that the levels of E.coli were normal environmental levels.

22. Graeme Prentice, Group Leader, Field Operations of WorkSafe, advised that they did not conduct a comprehensive investigation into the matter. Nor did they commission any tests of the water, as any results obtained would be inconclusive in determining that the quality of the water at the time of their intervention was the same as at the time of the reported exposure. He advised that WorkSafe directed their intervention towards identifying if there was a current risk of illness from exposure to water and ensuring that there were controls in place to mitigate the risk. WorkSafe relied on the tests conducted by Baw Baw Shire Council and advice from DHS. WorkSafe concluded that the potential health risks as a result of exposure to contaminated waters were within normal expectations for this type of working environment. Following their intervention, they were satisfied that the College had revised their hygiene procedures for employees and others accessing the farm to include washing hands with soap and water form the town mains and had provided the facilities and instruction in this regard.

College Response

23. The College has implemented a policy entitled *Information Sheet: Gulwarra Heights Community Farm - Basic Farm Hygiene Requirements,* the contents and requirements of which are informed to all farm participants whether students, teachers or employees.

24. At the request of the Coroner, a review was undertaken by the Coroner's Prevention Unit, of the literature associated with *Aeromonas Sobria,* which suggests that there were no microbiological values for occupational exposures to untreated water and no recommended maximum level of exposure. It appears that there are no specific standards, beyond the generic obligations pursuant to the *Occupational Health and Safety Act* 2004 to manage the health and safety of employees and visitors, including students.

25. The literature suggests that *Aeromonas Sobria* is an opportunistic pathogen that tends to cause sepsis in older men who are immuno-compromised, have blood or bone marrow cancers, serious liver disease or who suffer traumatic injuries.

26. It appears that risks associated with contact with untreated water may be effectively managed by maintaining basic hygiene, which would include washing hands with soap and clean water and infection control such as covering wounds.

27. Mr Johnson's medical history indicates that he would potentially be susceptible due to his liver disease, which was of an unknown origin and may possibly have been genetic.

FINDINGS

28. Having considered all of the available evidence, it appears that Mr Johnson had cirrhosis (of an uncertain origin) at the time he was admitted to the Warragul Hospital, and that he was probably unaware of his condition. The cirrhosis may have resulted in his being immuno-compromised at the time of his exposure to the *Aeromonas Sobria* bacteria.

29. I find that the water borne disease *Aeromonas Sobria* (which is ubiquitous in the environment) was likely to have been present in the water trough when Mr Johnson cut his hand and this was the likely source of the bacterial infection.

30. I find that the hospital care and management of both hospitals was timely and appropriate in the circumstances.

31. I find that Mr Stephen Johnson died on 20 March 2008, of multiple organ failure due to *Aeromonas Sobria* sepsis in a man with cirrhosis.

COMMENTS

Pursuant to Section 67(3) of the **Coroners Act 2008**, I make the following comments connected to the death:

1. Personal hygiene is paramount to heath and safety when working or visiting farms, particularly with dams and trough water. It is important that staff, students and visitors to school farms are advised and reminded of the possible risks of exposure to bacteria and organisms from contact with dams and trough water.

2. In view of the steps taken by the College as to hygiene, in compliance with the advice of the WorkSafe Authority and the Baw Baw Shire Inspector, I make no recommendations as to preventative measures.

Signature:

Kim M W Parkinson
Coroner

19th September, 2011

Distribution list:

Mrs Patricia Johnson
Department of Employment, Education and Training
Warragul Regional College
Baw Baw Shire Council
Department of Human Services
WorkSafe Victoria