

Tasmanian Investigation Test Number 1

Sampling Details

January 17, 2005. Sampled for Dr Alison Bleaney by the St Helens Marine Farmers.

Locations Sampled

North George
South George
Pyengana
Upstream of Town's Water Intake pipe (Water Intake)

Purpose

To determine the baseline condition of the George River system, St Helens, Tasmania, with respect to the presence of toxin or toxins (referred to from here onwards as "toxin(s)").

Results

Skimmer box samples indicated that substances toxic to Sea Urchins were present at South George, Pyengana and the Water Intake sampling locations. These substances caused 100% mortality at all sites compared with 8 to 10% mortality amongst laboratory control treatments. Mortality was also significant for oysters when exposed to the South George sample. Only oyster development was inhibited for the other two locations (Pyengana and the Water Intake sample, table 1).

Grab samples indicated that significant concentrations of toxin(s) were present with respect to both test organisms for the Pyengana sample, but the North George sample was only significantly toxic to Sea Urchins.

Conclusions

Skimmer box results indicate that toxic substances were present on this first round of sampling. Grab samples indicate that, at the Pyengana location, concentrations of toxin(s) were sufficiently high to be of concern with respect to the test organisms (drinking the water or being exposed to the water in an untreated state is therefore, likely to be hazardous).

Status

Result to be confirmed through re-testing. Pursuant to the Australian Drinking Water Guidelines, Tasmanian Health was notified. It was agreed that the Department of Primary Industry Water and the Environment (DPIWE) would participate in a repeat sampling of these locations.

Test Number 2

Sampling Details

February 14, 2005. Sampled by Rick Krassoi, Ecotox Services Australia for the Clients. Sampled by DPIWE for the Tasmanian Governments investigation.

Locations Sampled

North George
South George
Pyengana
Upstream of Town's Water Intake pipe (Water Intake)

Purpose

To confirm the presence of toxin(s) within the George River system, St Helens, Tasmania, following the results of Test 1 which were reported to the Tasmanian Government.

Note: only surface foams were tested by the Sydney Laboratories.

Results

Comparison between the sensitivity of the three test organisms indicates that Oysters are the most sensitive to the toxin(s), Sea Urchins are the next most sensitive and that Cladocerans are the least sensitive. Of the four locations sampled, toxicity was found to increase with distance downstream, with the Water Intake location containing the most toxin(s), followed by Pyengana, then South George, with North George being the least toxic.

Advanced Analytical ran tests for man-made pesticides, man-made herbicides and general screens. They concluded that more than 400 substances were present in the water but none were man-made herbicides, pesticides or fungicides. Examination of the detection limits indicated that some of the suspected chemicals could have been missed at concentrations that might be toxic. After discussion, it was decided that lower detection limits would be targeted for the next round of testing.

Test Number 3

Sampling Details

February 2 & 3, 2005. Sampled by Judy Marshall, University of Tasmania.

Locations Sampled

North George
South George
Pyengana
Moulting Bay

Purpose

To determine the baseline condition of the George River system, St Helens, Tasmania, with respect to the presence of toxin(s) before and during rainfall.

Results

Skimmer box samples indicated that toxin(s) to Cladocerans were present at North George and South George prior to rain. These substances caused 100% mortality for the South George sample and 20% mortality in the North George sample. Toxicity persisted during early rain within the South George sample (100% mortality) but not for the North George sample or the sample from Pyengana, where no mortality was observed. No mortality was observed for the samples from South George or North George, which were sampled during the middle of the rain event.

Grab samples indicated that significant concentrations of toxin(s) were present with respect to Cladocerans for the Moulting Bay sample (100% mortality) taken the day following the onset of rain, but the South George sample, taken in the middle of the rain event, was not toxic.

Conclusion Based on Tests 1, 2 & 3

Surface foams were toxic for nearly every sample. Two grab samples were toxic (water column is occasionally toxic). A proper investigation is warranted.