



MAY 2014

UNE Scientists on Contamination of the Macleay Catchment at Gladstone, Friday May 30 2014

Forty-five people attended the presentation by Drs Susan Wilson and Matt Tighe and Adjunct Associate Professor Paul Ashley at Gladstone hall on Friday May 30, despite a sudden (though overdue) drop in temperature and heavy rain.

Also in attendance were councillors Anna Shields and Bruce Morris from Kempsey Council and Bob Mumbler, Chairman of the Dunghutti Elders, who gave a welcome to Country and also a short

address about concerns of the local Indigenous community for whom the use of the river is an intrinsic part of their cultural traditions.



Bob Mumbler, addresses the meeting.

The main findings of the research team, who have been studying the Macleay Catchment since 1999, are that the Macleay system is impacted by mining derived antimony and arsenic contamination. Stream sediment concentrations in the upper catchment are 80 to 438 ppm antimony, 86 to 329 ppm arsenic and a contaminated sediment dispersion plume extends to the coastal floodplain 300 km to the east, where antimony and arsenic concentrations (which co-occur) exceed background over 90% of the floodplain area. While the health impacts of arsenic are well-known (carcinogenic), little is known about antimony, although both elements are closely aligned in the periodic table.

This is the largest known anthropogenic dispersion of antimony in Australia. Like arsenic, antimony can dissolve in water, especially with high alkaline levels such as in the Macleay River. Despite this the safety guidelines are very limited in Australia and there has been no systematic testing of meat and vegetables in the Macleay Catchment which is 11,450



From left: Cr Anna Shields, Dr Matt Tighe, Adjunct Associate Professor Paul Ashley, Dr Sue Wilson, Cr Bruce Morris.

square kilometres making it one of the major river systems on the east coast.

The major known source of this historic mining contamination comes from the Hillgrove Mine near the head of Bakers Creek. The mine has been in operation since 1877 and up to the 1970's (when legislation was introduced) tailings and waste went straight into the creek, introducing toxic waste into the 309 km of waterways to South West Rocks.

Up to 60 km downstream of Hillgrove Mine, concentrations in sediment and water are significantly elevated after which they decrease. It has been estimated to take one thousand years for the contamination to make its way through the river system as it largely lies dormant during dry and normal flow conditions. However in high rainfall and flood conditions the contaminated sediments are flushed downstream.

Dissolved antimony in water can be taken up by plants through their root systems and the researchers have modelled possible effects on humans. At this stage there is no funding to test impacts on human or ecosystem health.

Our modern lifestyle creates high demands for mineral resources and environmentally sensitive places like Hillgrove and Halls Peak are far from exhausted of such resources which are of increased

value recently. While current mining methods and legislative regimes are reassuring, there is no guarantee that our river will not suffer further contamination from mining activities at our headwaters, so vigilance on the part of all stakeholders is vital.

What is not reassuring is the fact that recent government cost cutting and restructuring has led to many experts working in the field losing their positions or funding sources. This, at a time of increased mining activity planned in our headwaters.

There are still so many questions left unanswered. It is essential to assess the effects of antimony on human and environmental health, and also to continue monitoring the level of water contamination in our river system.

Thanks to the efforts of this dedicated team of researchers we at least have a benchmark of the current state of the river, against which to measure any impacts future mining may have. ♦



If you drink the water, fish, canoe, swim, water your stock or gain income from our river, you need to be informed and active