Save Our Macleay River
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Scientists speak about the contamination of the Macleay

Following an invitation by the community group *Save Our Macleay River* (SOMR), three scientists presented their research findings in Bellbrook on Friday 31 January. They have extensively studied the arsenic and antimony contamination of the Macleay River and its tributaries above and below Hillgrove and Halls Peak to the floodplain.

Dr Sue Wilson, Senior Lecturer, School of Environmental and Rural Science at the University of New England (UNE) and the project leader, has been instrumental in numerous studies since 2000, investigating the levels of arsenic and antimony in the catchment and their effects on humans and the agricultural and riparian environment.

Dr Matt Tighe, Senior Lecturer in Ecosystems Management at UNE, has done very detailed work on the effects of arsenic and antimony on the floodplain.

Associate Professor Paul Ashley is an Adjunct at UNE, with a special interest in mine remediation. He has been involved in studies of mineral deposits and contamination in the catchment since 1998.

45 people attended the presentation and listened with great interest. "While none of us are experts we certainly appreciated being presented with such technical information and also for the scientists taking the time to explain their research," said Bernadette O'Sullivan of Pee Dee Station

"Informing the public is and has always been a priority for SOMR and this presentation was another step towards letting the public know about the state of the Macleay River," she said.

Dr Wilson explained that the rock formations in the escarpment are very high in minerals and that the water and the sediments along the streams are naturally enriched by arsenic and antimony, the so called background readings.

However, most of the contamination in the Macleay system is caused by waste dumps from numerous mines operating in the catchment before 1970. Only Hillgrove Mine has been operating in more recent times. It has been in care and maintenance since 2009 and is to recommence mining antimony and gold in March this year. Antimony and gold are highly priced commodities in the current world market. Arsenic is not mined, but co-occurs with the minerals at Hillgrove and is released from natural or disturbed rocks with the antimony.

Contamination derived from mine waste at Hillgrove has affected stream sediment quality for over 300 km in the Macleay River system to the Pacific Ocean. Periodic flooding has dispersed contaminated sediment across the floodplain. The water quality is greatly affected by arsenic and antimony for at least 60 km down stream of Hillgrove.

“Drinking water guidelines are not currently exceeded at our West Kunderang monitoring location and further downstream, unless the river is in flood conditions. Sediment concentrations of both metalloids, however, are elevated, above background, to the floodplain,” said Dr Wilson.

Several of the more recent research projects Dr Wilson presented, have focussed on the bioavailability of the elements, testing if and how much of the contaminants are taken up by plants.

“Arsenic is known to cause cancer. Much less is known about antimony, but it does show cancer causing potential. For the scientists and for the residents of the Macleay River Valley it is vital to find out if these cancer causing elements are entering the food chain, causing risk to both humans and the environment,” said Dr Wilson.

“More needs to be understood on biogeochemical pathways, food chain transfers, speciation and ecotoxicology, especially for antimony. This will lead to better informed understanding of the real risks and development of appropriate and targeted management strategies. It is important that this research is funded and that all Macleay stakeholders work together to ensure people living on and using the Macleay are safe and the environment protected,” Dr Wilson concluded.

Dr Matt Tighe presented some results from his studies of the flood plain. He explained the interrelation between acid sulphur soils and the release of arsenic and antimony. “The contaminated deposits can be clearly linked to flood events since the beginning of historic mining activities,” he said.

Associate Professor Ashley finished the presentations with some comments on Halls Peak. In his opinion, the large waste dump at Gibsons Open Cut above the Chandler River has the potential for economically viable processing. “Mining under current environmental protection could actually assist in remediating the current acid drainage on the site.”

SOMR members are concerned that any future mining would not be confined to the waste dump at Gibsons Open Cut. Indeed the exploration company repeatedly claimed there is potential for operations bigger than Mt Isa. “Massive new workings are being planned in the Halls Peak area which would surely expand the contamination problems, not solve them,” said Christa Schwoebel of Kempsey.

Dr Wilson said, “We are pleased that the community is interested to learn about our research results and what questions still need answers. We are happy to return later in the year and give a presentation to the residents in the Lower Macleay.”

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