

Letter to the Editor

Reply to comment on “*Vibrio vulnificus* and *V. parahaemolyticus* necrotising fasciitis in fishermen visiting an estuarine tropical northern Australia location”

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We thank Brian Hearne from McArthur River Mining (MRM) for providing a response¹ to our paper.² We were careful in our paper not to draw any direct link between mining activities and *Vibrio* infections, and to avoid naming the Mine. The potential relevance of water heavy metal concentration to *Vibrio* infection was not the focus of our paper, illustrated by the fact that it is not mentioned in the Abstract. We stated in the Discussion that ‘A link between *Vibrio* infections and local environmental perturbation is speculative only, but it would appear that altered heavy metal water content in the area could have the potential to affect *Vibrio* population density...’. We are aware that, as noted in the MRM letter, the local Environmental Protection Agency has acknowledged that the only scientific evidence to date of impact from the mine in the estuarine reaches of the river or in the Gulf is in the immediate vicinity of the loading facility.

The reference which we sourced (a commentary by The Environment Centre Northern Territory on MRM's draft environmental impact statement),³ in seeking whether specific environmental characteristics may have contributed to the apparent clustering of four *Vibrio* infections in the Northern Territory, stated: “Downstream medium sulfate concentrations are approximately 60 per cent higher than upstream median concentrations...The downstream copper median concentration is 2.3, lead 3.9 and zinc 23...upstream concentrations are closer to guidelines at 2.2, 3.2 and 9 respectively...”. These data accurately reflect those provided by MRM for their 1995–2003 monitoring. We therefore reasonably concluded that downstream heavy metal concentrations were on average higher than upstream for that monitoring period. That the downstream metal concentrations have been higher than those upstream has been attributed to natural conditions in this metal rich environment. This is supported by such differentials preceding the mining operations. However, there is considerable fluctuation in the metal levels in the monitoring figures provided by MRM, with levels in 1995–2003 at times clearly above the Australia and New Zealand Environment and Conservation Council Water Quality (ANZECC) Guidelines 2000 figures. Therefore even assuming that such levels reflect natural variation in a metal rich environment, MRM's statement in their letter that “...zinc, lead and copper levels recorded in the McArthur River are within the acceptable range under ANZECC Water Quality Guidelines” does seem to contradict their monitoring data for that period.

Speculation is an essential component of scientific pursuit, and drives further investigation through hypothesis generation. Fluctuations in heavy metal water content do appear to occur in this region, which is not surprising given the naturally occurring high mineral content in the vicinity. Whether the cluster of severe *Vibrio* infections is related to such fluctuations and/or to other environmental considerations noted by us² such as climate change remains an important public health consideration. We reiterate that we were not implicating the mine in our report and we are very pleased and respect that MRM acknowledges and supports the importance of investigating this issue further.

References

[1](#) Hearne B. Letter. *Journal of Infection*,

[2](#) A. Ralph and B.J. Currie, *Vibrio vulnificus* and *V. parahaemolyticus* necrotising fasciitis in fishermen visiting an estuarine tropical northern Australian location, *Journal of Infection* (Aug 4 2006).

[3](#) McArthur River Mine Open Cut Project: Comments on the draft environmental impact statement, October 2005; The Environment Centre NT Inc.