

Submission into The Fin-Fish aquaculture industry in Tasmania

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Healthy planet, healthy people.

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Introduction

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-government organisation of medical doctors and students in all Australian States and Territories. Our members work across all specialities in community, hospital and private practices. We work to prevent and address the diseases - local, national and global - caused by damage to our natural environment. We are a public health voice in the sphere of environmental health with a primary focus on the health harms resulting from pollution to the air, soil and water.

DEA welcomes the opportunity to comment on the regulation of Tasmania's aquaculture industry and encourages the Senate to use this opportunity to ensure that aquaculture is regulated by global best-practice with regards to protection of environmental health and monitors baseline and ongoing data to ensure continuous assessment and management of risk. We recognise the importance of the fin-fish aquaculture industry to the state of Tasmania however if the industry is to continue to grow it must ensure that the health of Tasmania's waterways and human health are not compromised.

DEA notes that the terms of reference of the enquiry have not specifically outlined a need for human health impact assessment. DEA's position is that assessment and regulation of industries which may feasibly affect health must include mandatory assessment of human health risks. This should include not only risks conferred by release of particulate pollutants, but risks through other mechanisms such as noise and light pollution, and impacts on the local and global environment.

Term of reference

a) Adequacy and availability of data on waterway health

As with all health and environment risk assessments, there is imperative need for high quality baseline data on potential risks including pollutants. DEA notes that in the past decade the Tasmanian government, through the Department of Primary Industries, Parks, Water and the Environment (DPIPWE), has collected some data on levels of some metals and antibiotics that have been used by the aquaculture industry¹.

¹ McLeod & Eriksen (2007), A review of the ecological impacts of antibiotic and antifoulants currently being used in the Tasmanian salmonid farming industry.

However, the scale of ongoing data collection has not to date been reflective of the need for continued monitoring of potential threats to human health. The continued operation and expansion of the aquaculture industry in Tasmania requires that a clear plan is in place to collect data on waterway health, with specific reference to levels of antibiotics, metals and other substances that would not naturally occur in those environments.

b) The impact on waterway health, including on threatened and endangered species

DEA is focussed on the complex interaction between human health and our natural environment and is therefore interested in environmental degradation, particularly the loss of biodiversity and the effect this is having, and will continue to have, on human health and social stability.

The activities of the aquaculture industry have the potential to affect both local biodiversity as well as human health through contamination of target and non-target species.

In particular the bioaccumulation and contamination of the marine environment with polychlorinated biphenyls (PCBs) is of concern. PCBs are persistent, cancer-causing chemicals that continue to contaminate the environment and the food supply. Research in the United States has demonstrated PCB contamination of farmed salmon is significant², being much higher than that found in wild salmon³ and are likely a consequence of elevated levels of contamination found in commercial salmon feed.

Based on tolerable daily intake (TDI) values for PCBs research indicated a possible safety concern for individuals who on a regular weekly basis consumed farmed salmon⁴. Independent laboratory testing of farmed salmon to investigate contamination levels of PCBs. Tasmanian salmon producers currently use Skretting's Complete Feed for Salmonids manufactured by Skretting Vancouver, Canada^{5, 6, 7}.

² Environmental Working Group (2003). PCBs in farmed salmon, factory methods unnatural results. *Washington DC*.

³ Hites et al. (2004). Global assessment of organic contaminants in farmed salmon. *Science* 303:226-229

⁴ Easton M et al. (2002). Preliminary examination of contaminant loads in farmed salmon, wild salmon and commercial salmon feed. *Chemosphere*, 46(7):1053-1074

⁵ Skretting (2010). Skretting's Complete Feed for Salmonids Winter Plus 3500

⁶ Cabello F (2006). Heavy use of prophylactic antibiotics in aquaculture: a growing problem for animal health and for the environment. *Environmental Microbiology* 8(7):1137-1144

⁷ Sapkota A et al (2008). Aquaculture practices and potential human health risks: current knowledge and future priorities. *Environment international* 34(8):1215-1226

DEA notes that:

- There have been no comparable studies of PCB contamination in Tasmanian fish farms
- Antibiotics are currently used by the industry in Tasmania to prevent and manage outbreaks of infectious diseases, whilst antifoulants have historically been used to counteract bio-fouling of pens

A comprehensive study of potential human health risks of aquaculture practices demonstrated a number of human health concerns associated with the use of both antibiotics and antifoulants⁸. These include:

- Findings of elevated levels of antibiotic residues, antibiotic-resistant bacteria, persistent organic pollutants, metals, parasites and viruses in aquacultured fin-fish
- Eco-toxicological effects and subsequent changes in local ecology and biodiversity and associated human health
- Increased potential for exposure to contaminants for those in closer proximity to the industry such as industry employees and nearby residents
- Effects on ecosystem function (i.e. microbial and geochemical processes that regulate the cycling, bioavailability and fate of micro and macro nutrients).

DEA emphasises that perhaps the most significant barrier to safe and healthy development of the aquaculture industry in Tasmania is the dearth of current available data and the as yet unquantified human health risks. What data does exist from overseas is suggestive of the potential for human health impacts due to industry activities. However, such studies as that by Sapkota et al. need to be replicated with specific relevance to the Tasmanian setting and the current use of antibiotics, anti-foulants and other introduced substances.

f) Other relevant matters

Other potential local human health impacts of the aquaculture industry

A number of residents in the Channel and Huon have expressed concern about the effects of the local aquaculture industry on their own psychological health and wellbeing. Night-time activities on leases cause considerable disturbance to residents including:

⁸ Sapkota A et al (2008). Aquaculture practices and potential human health risks: current knowledge and future priorities. *Environment international* 34(8):1215-122

- Lights on leases after midnight which shine into houses disrupting sleep
- Noise associated with operation of special purpose vessels and equipment associated with fish farms
- Trucks entering and leaving shore based facilities

Many of these long term residents chose to live in these areas for the peace and quiet and now feel that peaceful living along the once pristine waterway is now impossible. EPA studies have shown residents' complaints to be reasonable in their demands. Feelings of a loss of solace, anger and frustration as well as chronic sleep deprivation, has led to psychosomatic illness in some residents. Albrecht's^{9,10,11}, research in the Upper Hunter Valley of New South Wales where the rapid expansion of open cut mines and the power industry has resulted in significant modifications to the natural environment found evidence of mental illness where people's mental well-being was threatened by the severing of 'healthy' links between themselves and their home/territory and illnesses created by living in an environment that had been contaminated by pollutants and toxins. The term 'solastalgia' was used to describe such illnesses.

Residents on the Tasman Peninsula, and Bruny Island, in the Huon Valley and South Channel have raised their concerns with the aquaculture industry:

"Please change the hours of operation as I do not want to be woken unnaturally at 6am on Sunday mornings. I ask too that Huon Aquaculture has the decency to apologise for the community it is harassing by continual assaults to their nervous system and senses. In my case I have had to fight for 25 years at considerable risk to myself from the stink, the unacceptable noise - day and night - and the times I and other have nearly been run off the road by fish transporting trucks.... [and] sleep deprivation"¹².

The response of the aquaculture industry to concerned individuals is suggestive that the industry is aware of the psychological impacts their activities may be causing. These responses have been along the lines of *"I encourage you to contact Lifeline or other mental health practitioner if you are feeling unwell"*¹³, and resulted in additional consultations to local medical officers.

⁹ Albrecht G (2006). Solastalgia. *Alternatives Journal* 32(4/5): 34-36

¹⁰ Albrecht G (2011). Chronic environmental change: emerging 'psychoterratic' syndromes. In I Weissbecker (Ed.), *Climate change and human well-being: global challenges and opportunities* (pp.43-56), Washington DC. Springer

¹¹ Albrecht et al (2007). Solastalgia: the distress caused by environmental change. *Australasian Psychiatry*. 15(s1):S95-98.

¹² Wescott, S (2015). [Sleep deprivation]

The health impacts of the aquaculture industry on some residents is further amplified due to socio-demographic factors such as education, employment status, and partner status which are known to be significant indicators of co-morbidity in anxiety disorders¹⁴. Overall, the extent of psychological impacts of aquaculture activities on residents is poorly understood and requires addressing as part of a broad investigation of the impacts of the aquaculture on the health of Tasmanians.

¹⁴ Hofmeijer-Sevink M et al. (2012). Clinical relevance of comorbidity in anxiety disorders: A report from the Netherlands Study of Depression and Anxiety. *Journal of Affective Disorders*, 137(1-3):106-112