

## **Tasmanian Public & Environmental Health Network (TPEHN)**

[http://www.sourcewatch.org/index.php?title=Pollution\\_Information\\_Tasmania](http://www.sourcewatch.org/index.php?title=Pollution_Information_Tasmania)

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Re: **Forico: Alpha-Cypermethrin Derogation Application to FSC - 2015**

In our opinion it is unacceptable, given that alpha-cypermethrin is classified as a 'highly hazardous' pesticide (FSC-GUI-30-001a V1-0 EN) and the specific information regarding Tasmanian water catchments/watersheds, that Forico should be allowed a derogation.

We propose that one of the key areas that Forico needs to include in its Management Plan is the protection of water catchments/watersheds and to clearly articulate strategies to ensure that no activities undertaken will adversely impact water quality. Adherence to the current Water Quality Act (State Policy on Water Quality Management 1997), Water Management Act 1999, National Water Initiative, Australian Drinking Water Guidelines and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality contained within the National Water Quality Management Strategy (NWQMS) are a prerequisite for land use by Forico.

We also note that FSC in its main objectives, states that pesticide-free measures should be taken for all pest control.<sup>1</sup> To comply with FSC policies, Forico needs to fully articulate its pesticide policy, along with its pest control management strategies and policies in its Management Plan.

It is in our opinion not acceptable for Forico to aerielly apply alpha-cypermethrin to plantations in water catchments and seek derogation for its use from FSC as FSC has considered alpha-cypermethrin to be a highly hazardous chemical and has already removed it from the FSC list of acceptable pesticides that can be used by forestry industries.

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<sup>1</sup> Water Pollution in Tasmania, Forest Stewardship Certification and Water, SourceWatch. Available at: [http://www.sourcewatch.org/index.php/Water\\_pollution\\_in\\_Tasmania#Background\\_to\\_Water\\_Quality\\_in\\_Tasmania](http://www.sourcewatch.org/index.php/Water_pollution_in_Tasmania#Background_to_Water_Quality_in_Tasmania), last accessed 6 October 2014

Alpha-cypermethrin has variable half-lives depending on whether the degradation is in the vapour (up to 49 days) or water phase (over 100 days).<sup>2</sup>

Pyrethroid insecticides such as alpha-cypermethrin are acutely neuro-toxic by targeting vital electrical channels – called voltage-gated sodium channels –in neurons.<sup>3</sup> The chemicals essentially boost the electrical signals that are moving into the cells. The over-activation of these channels changes neuron function and ultimately leads to paralysis and death in the targeted pest.

As well as being an acute neurotoxin<sup>4</sup>, alpha-cypermethrin is known to suppress normal immunity and alter cell signalling via endocrine disrupting effects<sup>5, 6, 7, 8, 9</sup> and can cause long term cognitive changes as well as auto-immune disease decades after acute exposure.<sup>10</sup> Alpha-cypermethrin is also known to cause developmental and learning delays in children and children are especially sensitive to its toxic effects.<sup>11</sup>

Alpha-cypermethrin is also highly toxic to aquatic life, bees and insects.<sup>12</sup>

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<sup>2</sup> <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6554> Alpha-cypermethrin, last accessed 6 October 2014

<sup>3</sup> Pesticide Action Network, 1995, Cypermethrin – a synthetic pyrethroid, *Pesticides News*, Issue 30, pp 20-21,

<sup>4</sup> Singh AK, Tiwari MN, Prakash O & Singh MP, 2012, Current Review of Cypermethrin-induced Neurotoxicity and Nigrostriatal Dopaminergic Neurodegeneration, *Current Neuropharmacology*, Vol 10(1), pp 64-71

<sup>5</sup> Huang C, Li X, 2014, Maternal Cypermethrin Exposure during the Perinatal Period Impairs Testicular Development in C57BL Male Offspring, *PLoS ONE*, Vol 9(5), 396781

<sup>6</sup> Wang C, Zhang Q, Zhang XF, Liu J & Liu WP, 2010, Understanding the endocrine disruption of chiral pesticides: The enantioselectivity in estrogenic activity of synthetic pyrethroids, *Science China Chemistry*, Vol 53(5), pp 1003-1009

<sup>7</sup> Go V, Garey J, Wolff MS & Pogo BGT, 1999, Estrogenic Potential of Certain Pyrethroid Compounds in the MCF-7 Human Breast Carcinoma Cell Line, *Environmental Health Perspectives*, Vol 107, pp 173-177

<sup>8</sup> <http://www.endocrinedisruption.com/pesticides.permethrin.summary.php>

TEDX -Endocrine disruption and Pyrethroids, last accessed 6 October 2014

<sup>9</sup> Vaiserman A, 2014, Early-life Exposure to Endocrine Disrupting Chemicals and Later-life Health Outcomes: An Epigenetic Bridge? *Aging Dis.* Dec 2014; 5(6): 419–429. doi: [10.14336/AD.2014.0500419](https://doi.org/10.14336/AD.2014.0500419)

<sup>10</sup> Muller-Mohnssen H, 1999, Chronic sequelae and irreversible injuries following acute pyrethroid intoxication, *Toxicological Letters*, Vol 107(1-3), pp 161-176

<sup>11</sup> Shelton JF, Hertz-Picciotto I & Pessah IN, 2012, Tipping the Balance of Autism Risk: Potential Mechanisms Linking Pesticides and Autism, *Environmental Health Perspectives*, Vol 120(7) pp 944-951

<sup>12</sup> Kim Y, Jung J, Oh S & Choi K, 2008, Aquatic toxicity of cartap and cypermethrin to different life stages of *Daphnia magna* and *Oryzias latipes*, *Journal of Environment Science and Health B*, Vol 43(1) pp 56-64

A key issue of alpha-cypermethrin is the difficulty of detection as it is very difficult to find in the water column un-attached to particulate matter.<sup>13</sup> In 2005 the Tasmanian Government initiated a quarterly water pesticide monitoring programme for 55 rivers after many years of community outrage over the use of biocides in commercial forestry with documented pesticide spray drift and contamination of water.<sup>14</sup> As DPIPWE in Tasmania undertook water testing for pesticides only on the particulate free portion of the water column, any claims that alpha-cypermethrin has not been detected in river water, are at least suspect if not entirely misleading. Alpha-cypermethrin is also toxic at below normal laboratory detection levels.

DPIPWE has ceased all routine pesticide monitoring in waterways since July 2014.

While FSC has however apparently allowed derogations for alpha-cypermethrin within Australia (e.g. ITC and Timbercorp in Victoria), Tasmania has unique properties that should disallow such a derogation.

Like other parts of south-east Australia, Tasmania is currently experiencing changing weather patterns as a result of climate change, with increasing sea temperatures off its eastern coastline and prolonged periods of rain resulting in flooding on the back of a prolonged severe drought.

Rainfall in Tasmania follows a complicated pattern with increased annual rainfall on the west coast (approximately 1,500 mm), increasing in the central highlands (approximately 2,700 mm) and decreasing along the north-west coast (approximately 1000 mm) and the midlands and east coast (approximately 700 mm). Along the north-east coast the rainfall is evenly distributed over the year but can be very erratic as heavy rainfalls from the warm Tasman Sea are quite frequent.

Tasmania has exotic plantations in 44 out of its 48 main water catchments/watersheds which also supply water for drinking, agriculture and aquaculture uses. Many plantations are close to farms and dwellings. Rivers in Tasmania are short and upper catchments are mostly in sloped valleys<sup>15</sup> which practically means that aerially spraying mature plantation trees (from at least 5m above tree height and often 45m above ground level due to the topography) will allow for insecticide drift to water bodies and surroundings, with subsequent contamination.

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<sup>13</sup> Gan J, Lee SJ, Liu WP, Haver DL & Kabashima JN, 2005, Distribution and persistence of pyrethroids in runoff sediments, *Journal of Environmental Quality*, Vol 34(3), pp 836-841

<sup>14</sup> Water Pollution in Tasmania, Water Pollution Issues in Tasmanian Catchments, SourceWatch. Available at: [http://www.sourcewatch.org/index.php/Water\\_pollution\\_in\\_Tasmania#Background\\_to\\_Water\\_Quality\\_in\\_Tasmania](http://www.sourcewatch.org/index.php/Water_pollution_in_Tasmania#Background_to_Water_Quality_in_Tasmania), last accessed 6 October 2014

<sup>15</sup> Leaman D, 2004, Issues of Water Use and Management in Tasmania. Available at: <http://www.edo.org.au/edotas/pdf/leaman%20-%20water%20use%20in%20tas.pdf> last accessed 6 October 2014

There is no holistic data on the effect of this insecticide on Tasmanian threatened species (e.g. Tasmanian Devils) or endangered Tasmanian species (approximately 700) or the native soil organisms that inhabit the plantation floor. Many of Forestry Tasmania's plantation trees are exotic *Eucalyptus nitens* and pest control should be improved by using native mixed species in plantations, rather than using pesticides. Native mixed plantations have been shown to have less beetle damage. Additionally, use of this insecticide will kill other insects including natural beetle predators causing ecosystem disruption/dysfunction. The highly hazardous insecticide will likely be washed into rivers along with leaf litter, where it can be washed down short rivers usually attached to particulate matter to estuaries. It has been shown to remain in sediments in rivers and may then re-circulate in water columns and rivers at times of rains/floods.

In addition to the above, the issues relating to the adverse effects of mixtures and cumulative effects<sup>16</sup> (pesticides, wetting agents, fertilisers and toxins e.g. from E.nt plantations<sup>17</sup>) has not been addressed.

To summarise, it is unacceptable given that alpha-cypermethrin is classified as a 'highly hazardous' pesticide (FSC-GUI-30-001a V1-0 EN) and the specific information regarding Tasmanian water catchments/watersheds, that Forico should be allowed a derogation.

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<sup>16</sup> Scammell M K, Montague P, and Raffensperger C, 2014, Tools for Addressing Cumulative Impacts on Human Health and the Environment, Environmental Justice, Volume 7, Number 4, 2014 DOI: 10.1089/env.2014.0016

<sup>17</sup> Bleaney A, Hickey C W, Stewart M, Scammell M & Senjen R, 2014, Preliminary investigations of toxicity in the Georges Bay catchment, Tasmania, Australia - *International Journal of Environmental Studies*: DOI:10.1080/00207233.2014.988550