MONITORING THE CONCENTRATION OF ETHANEDINITRILE IN A COMMERCIAL LOG TRIAL

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Ethanedinitrile (EDN) is a new fumigant that is being considered as an alternative to methyl bromide (MB) as a phytosanitary treatment for pine logs (*Pinus radiata* D. Don) exported from New Zealand. This study aimed at quantifying the concentrations of EDN emissions which can be expected in surrounding locations during the fumigation and consequent aeration of pine log stacks. Three commercial size (average 750 m^3) export grade log stacks were fumigated with 50 g/m^3 EDN for 10 hours. Logs were treated on a forest skid site located at Kinleith (Tokoroa), New Zealand. Fumigations of individual stacks were conducted on three successive days (13, 14 and 15 April 2016) and were completed using standard equipment and practices similar to those used for fumigations with MB in New Zealand. Once fumigations were completed, the tarpaulin was removed and the concentrations of EDN in the environment were determined at a height of 1.8 m at a distance of 5 m around the stack in all directions, and at a distance of 10 and 25 m in a downwind position. Samples were analysed in a laboratory within 6 weeks of collection, using a gas chromatograph (GC). Our results indicate that the concentrations of EDN in the treated space followed the anticipated pattern over time, with concentrations decreasing during fumigation because of adsorption and absorption of the fumigant by logs and the loss of fumigant through the tarpaulin. At a distance of 1 m from the tarpaulin during the treatment period, the concentrations of EDN ranged from 4 to 160 ppm. Concentrations of EDN in the environment during aeration were very low. No EDN was detected four hours after the tarpaulins were removed. The data will be used in support of an application to register EDN for use as a fumigant in New Zealand and other countries.