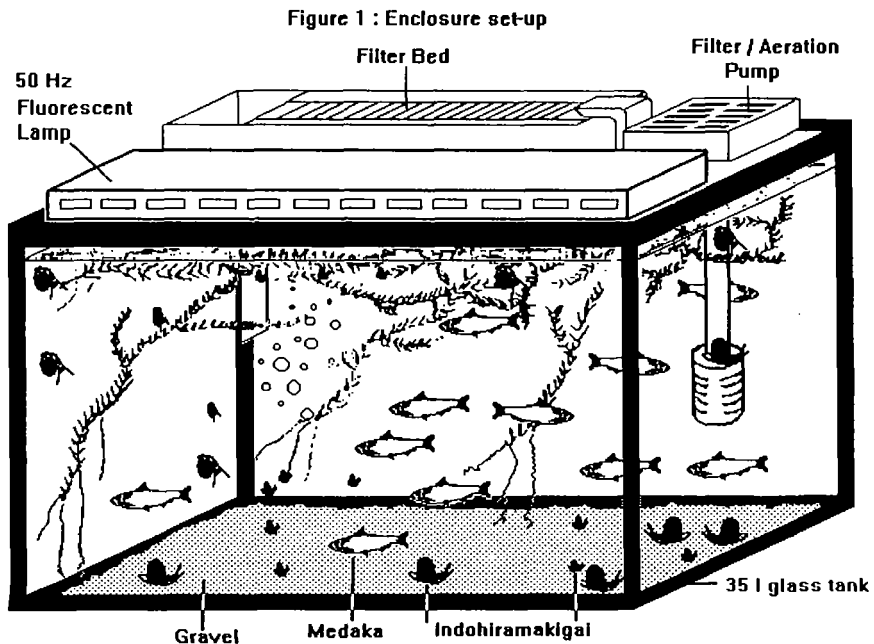


A Comparison of the Biological Effects of 1368-Tetrachlorodibenzo-p-dioxin and 33'44'-Tetrachloroazobenzene on the aquatic snail *Indohiramakigai*.

Graeme Allinson, Mayumi Ueoka, Hiroyasu Ito and Masatoshi Morita

National Institute for Environmental Studies
16-2 Onogawa, Tsukuba, Ibaraki, Japan.

Introduction : The aim of these studies was compare the exposure response of the aquatic snail *Indohiramakigai* (*Indoplanorbis exustus*) to 1,3,6,8-tetrachlorodibenzo-p-dioxin (1368-TCDD) and 3,3',4,4'-tetrachloroazobenzene (33'44'-TCAB), both contaminants of agrochemicals used in Japan (1,2).



ECOTOX

Method : The experimental enclosure set-up (Figure 1) and the sample treatment is described elsewhere⁽³⁾. In our studies contaminated fish food was fed to Japanese Medaka on the assumption that most of the dose would remain bound to the non-digested portion of the chow^(4,5) and pass into the detritus in a natural manner. Thereafter the snails would be exposed to the chemical while foraging for food. We would in turn be able to compare the bioavailability and relative toxicity of the two chemicals to the snails.

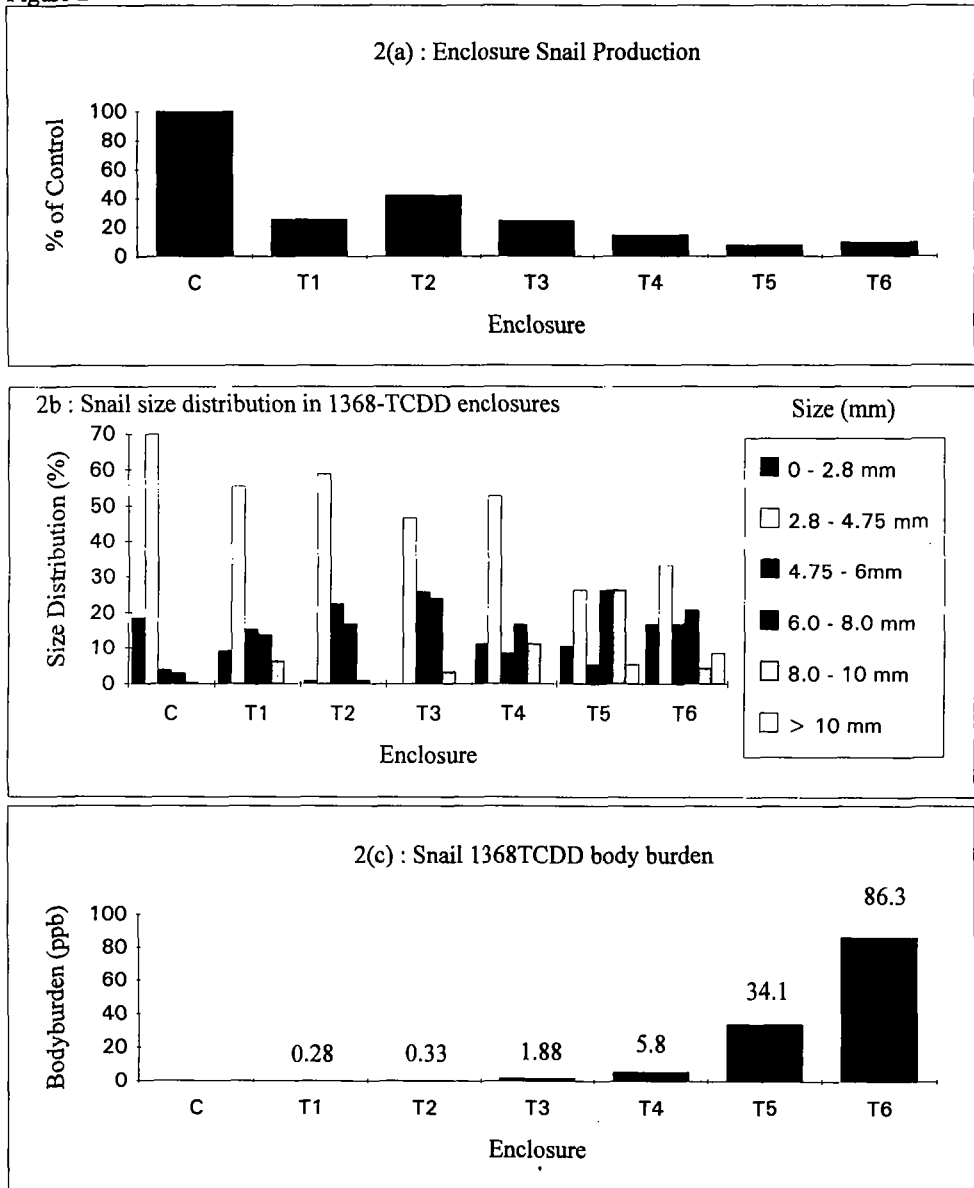
Results : The effects of the various 1368-TCDD contamination levels are shown in Figure 2(a-c)(1368-TCDD 1-6 : 0.4, 1, 4, 10, 40, 100 ppm). It can be seen that even at the lowest contamination level the snail production in the experimental enclosures is significantly lower than in the controls (2a). There is also a trend towards a smaller number of larger snails (2b) containing a higher body burden of 1368-TCDD per snail (2c) with increased dioxin dose. Any effects of increased chow 33'44'-TCAB levels on the snails are less apparent (Figure 3(a-c) ;TCAB 1-6 : 0.5, 1, 5, 10, 50, 100 ppm). Snail production is down in the experimental enclosures in comparison to controls(3a) but the numbers and size distribution (3b) appear not to change much despite increased snail 33'44'-TCAB body burdens with increased chow contamination (3c).

Conclusion : 1368-TCDD is generally considered to have little or no biological activity⁽⁵⁾ but our studies have shown that this assertion may not be true, and indeed this compound may be considerably more toxic than had been thought. 33'44'-TCAB has been ascribed dioxin-like biological responses, but, at least for this species of gastropod, its toxic potential appears no greater than that of 1368-TCDD. However, as our 1368-TCDD results and other studies on 2378-TCDD have shown⁽⁵⁾ dioxins exhibit a range of species dependent toxicities. Hence it is still possible that long term exposure to 33'44'-TCAB may pose a threat not only to other gastropods but other species too.

References

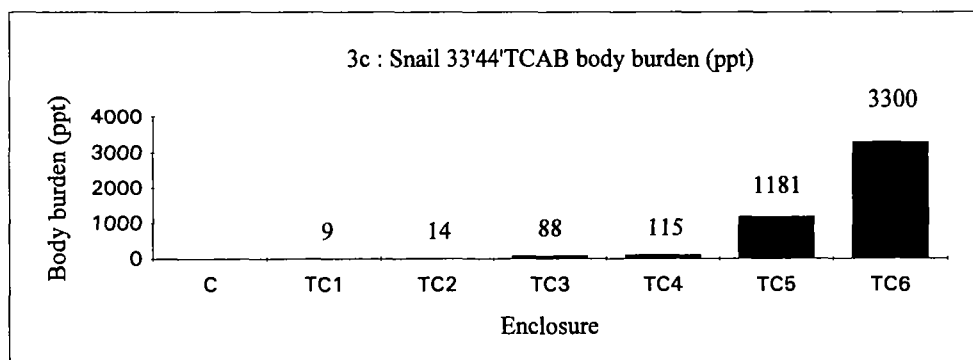
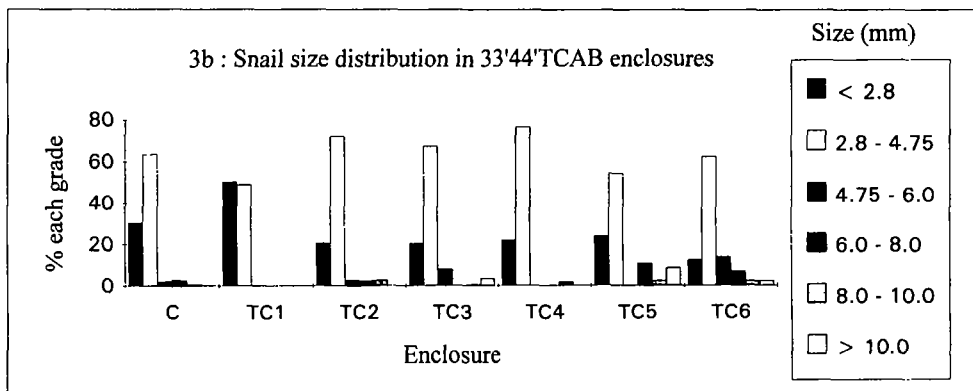
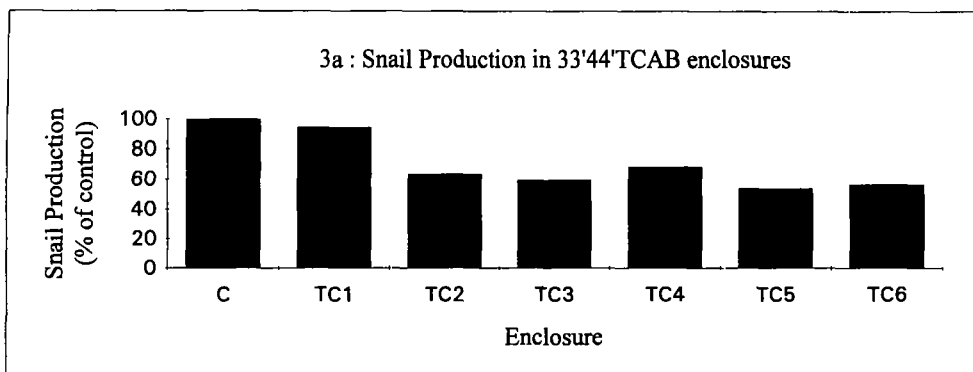
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Figure 2



Legend: C = Control Mean ; T1 - T6 = 1368TCDD 1 - 6

Figure 3



Legend : C = Control ; TC 1 - 6 = 33'44"TCAB 1 - 6