



**FLORA & FAUNA
GUARANTEE**

NOMINATION NO. 313
ITEM NO. T9221

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE
FINAL RECOMMENDATION ON A NOMINATION FOR LISTING

Input of organotins to Victorian marine and estuarine waters.
(Potentially Threatening Process)

Date of receipt of the nomination: 21 January 1994 **File No.:** 94/0636
Date of preliminary recommendation: 27 January 1994
Date of final recommendation: 5 May 1994

Validity:

The nomination is for a valid item and the prescribed information was provided.
In the opinion of the SAC the process is adequately defined and described.

The nominated process is the accidental or deliberate input of organotins, including Tributyltin (TBT) to marine and estuarine environments. TBT is a marine antifouling agent. Although the half life of TBT in water is relatively brief, it can persist in sediments far longer, and it appears to concentrate in the sediments of harbours, marinas and shipping channels. Organotin compounds, particularly TBT, were introduced into antifouling paints in the 1960s, although they were uncommon until the 1970s when there was a rapid increase in use.

TBT prevents the growth of sedentary marine fouling organisms on boats' hulls and thus aids in the movement of watercraft through the water. Copolymer paints, which are an advanced form of antifouling paint containing TBTs, have a relatively uniform release rate and self polishing effect, thus providing significant savings for larger, faster vessels. In seawater, the chemical bond between the TBT cation and polymer is broken and TBT is released. Once released, it can be taken up by marine organisms either through direct ingestion or absorption.

TBT is acutely or chronically toxic to a wide range of marine organisms, including algae, molluscs, crustaceans and fish (Smith and McVeagh 1991).

The range of flora or fauna affected or potentially affected was adequately stated in the nomination.

Significance of the threat which the potentially threatening process poses or has the potential to pose was adequately stated in the nomination.

Eligibility for listing as a potentially threatening process under the Flora and Fauna Guarantee

The nominated item satisfies at least one criterion of the set of criteria prepared and maintained under Section 11 of the *Flora and Fauna Guarantee Act* 1988, and stated in Schedule 1 of the *Flora and Fauna Guarantee Regulations* 1990.

Evidence that criteria are satisfied:

Criterion 5.1 *The potentially threatening process, in the absence of appropriate management, poses or has the potential to pose a significant threat to the survival of a range of flora and fauna.*

Evidence:

TBT has been shown to be acutely or chronically toxic to a wide range of organisms, including algae, molluscs, crustaceans and fish (Smith and McVeagh 1991). TBT leached from antifoulants can produce shell thickening and spat failures in oysters, imposex in dogwhelks, reduced recruitment in scallops, direct lethality, behavioural and morphological alterations, changes in reproduction and growth and biochemical and haematological effects (Beaumont and Budd 1984, Maquire 1987, Lewis 1988, Daly and Fabris 1993).

Imposex, a condition where females develop male characteristics thus preventing reproduction, has been reported worldwide, in Europe, the United States, South East Asia, New Zealand and Australia (Ellis and Pattinson 1990, Nias 1991). Imposex attributed to TBT has been reported in dogwhelks at eight of the ten sites sampled in Port Phillip Bay (Foale 1993).

Background Information

- In 1989, concerns over the environmental consequences of the use of TBT led to a ban on its use on boats under 25 meters in Victorian waters. Monitoring of Port Phillip Bay waters in 1990/91 failed to indicate any decline in TBT levels following the introduction of these regulations (Daly and Fabris 1993).
- Daley and Fabris (1993) noted that TBT concentrations in Port Phillip Bay waters were considerably higher than levels known to have sublethal effects on aquatic organisms.

Advertisement for public comment

In accordance with the requirements of Section 14 of the *Flora and Fauna Guarantee Act 1988*, the preliminary recommendation was advertised for a period of at least 30 days.

The preliminary recommendation was advertised in:

"The Age" - on 30 March 1994

"The Weekly Times" - on 30 March 1994

Government Gazette - on 31 March 1994

Submissions closed on 4 May 1994.

Further evidence provided:

No public comments were received by the Scientific Advisory Committee.

No evidence was provided to warrant a review of the Scientific Advisory Committee's preliminary recommendation that the potentially threatening process is eligible for listing.

Documentation

The published information and research data provided to the SAC have been assessed. To the best of their knowledge, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

Final Recommendation of the Scientific Advisory Committee

The Scientific Advisory Committee concludes that on the evidence available the nominated item is eligible for listing in accordance with Section 11 of the Act because primary criterion 5.1 is satisfied.

The Scientific Advisory Committee recommends that the nominated item be supported for listing on Schedule 3 of the *Flora and Fauna Guarantee Act 1988*.

Selected references:

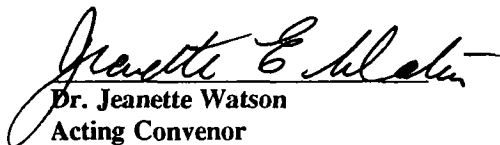
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Endorsement by the Convenor of the Scientific Advisory Committee

Date

28 July 1994


Dr. Jeanette Watson
Acting Convenor