



**House
Legislative
Analysis
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NO MARINE PAINTS WITH TRIBUTYL TIN

**House Bill 4688 as passed by the House
First Analysis (6-8-87)**

**Sponsor: Rep. William R. Bryant, Jr.
Committee: Agriculture and Forestry**

THE APPARENT PROBLEM:

Tributyltin (TBT) refers to any one of a number of highly toxic organic tin compounds used in a wide variety of products, including many pesticides. Nine TBT compounds are registered as pesticides with the U.S. Environmental Protection Agency (EPA) for use in marine antifouling paints, while nearly 340 paint products containing TBT compounds are registered by the EPA for marine use.

The economic savings, both in fossil fuel and in maintenance, from the use of marine paints containing TBT can be considerable. TBT compounds are the most effective antifouling marine paint additives so far devised to protect surfaces of ships and other structures from the growth of marine organisms. Antifouling paints are primarily used on boat hulls, but may also be applied to docks, buoys and other marine structures. The paints protect submerged surfaces from fouling by marine organisms (such as algae, bacteria, and, in salt water, animals such as barnacles) that attach themselves to the structures. These organisms adhere to the bottoms of ships, increasing drag and decreasing the ship's speed (and thus, of course, increasing fuel use). They also contribute to corrosion and to the floating weight of a vessel, and can interfere with the proper flow of waters through conduits and valves. There are copper-based alternatives to TBT, but whereas marine paints containing TBT last for up to seven years, copper-based alternatives need to be replaced or touched up every year or two. What is more, copper-based antifouling paints are corrosive, particularly to aluminum, so a protective coating must be applied to metal surfaces prior to using a copper-based antifouling paint.

Unfortunately, TBT compounds also are probably the most toxic compounds ever deliberately introduced by humans into natural waters. Extremely low levels of TBT are lethal to marine and freshwater aquatic plants and animals, including nontarget organisms, some of commercial value. For example, after four days of exposure to 6.9 parts per billion (ppb) of TBT, half of a test sample of rainbow trout died. Half of a bluegill sample died after exposure to 7.6 ppb, while the same percentage of channel catfish died after exposure to 12.0 ppb. What is more, the EPA has speculated that laboratory conditions may underestimate the toxicity of TBT by up to 70 percent, so that under natural conditions freshwater fish would die at much lower levels of contamination. In addition to the acutely lethal effect of these compounds, a variety of chronic effects also have been observed, including anatomical anomalies in fish and growth retardation in fish, crustaceans, mollusks and algae.

Although the biocidal properties of TBT compounds were discovered in the early 1950s and the first TBT-containing marine paints became commercially available in the mid-1960s, until very recently the technological capability to measure for TBT residues in the low parts per trillion did not exist. As a result, monitoring data on TBT residues in aquatic ecosystems were very limited. But as tests have become more and more sophisticated, lower and lower

levels are seen to have serious effects. Even before the recent advances in analytical technology, however, enough was known for two European countries to take action. In France in the late 1970s oyster harvesting declined in waters where TBT paints were used, and the paints were banned in 1982. Britain, also concerned about a faltering oyster industry, initiated analyses of TBT in coastal waters in 1982 and subsequently proposed limits of 20 parts per trillion as an acceptable level of TBT in natural waters. In 1986 Britain banned the production of paints with a certain level of TBT.

North American marina waters often have TBT concentrations in excess of the British proposed standard of 20 ppt. For example, in the Detroit and St. Clair rivers, recent monitoring surveys indicated that TBT was present in over 90 percent of the subsurface water samples, with values going up to 150 ppt. One marina in Lake St. Clair had a TBT concentration of 2,910 ppt.

In April, 1987, the director of the Department of Natural Resources (DNR) wrote to the director of the Department of Agriculture, who is responsible for administering the Pesticide Control Act, expressing the conviction that TBT poses an "imminent hazard" in Michigan waters and suggesting that the further introduction of TBT into Michigan waters be prevented by suspending the registration of the substance. At the end of April, the state Toxic Substance Control Commission adopted a resolution also calling for the MDA to immediately cancel the registration of all products containing TBT that cause the release of TBT into aquatic ecosystems. The Department of Agriculture suspended the registration of TBT effective June 1 (which means TBT no longer can be sold) and will be holding a hearing on the suspension on June 22.

THE CONTENT OF THE BILL:

The bill would create a new act which would prohibit the sale or use of marine paints containing tributyltin. Anyone violating the act would be guilty of a misdemeanor and could be fined \$10,000 and jailed for 90 days. In addition, violators would be subject to civil and administrative fines of up to \$5,000 and \$500, respectively, for each violation. The bill would not prohibit the use of a watercraft or structure which had been painted with paint containing TBT before the bill were enacted.

FISCAL IMPLICATIONS:

The House Fiscal Agency reports that the bill would result in costs to the state to administer the program and revenues from fines levied under the program, but has no specific dollar amounts. (6-8-87)

ARGUMENTS:

For:

Although little is known about the toxic effects of TBT on humans, its known extreme toxicity to marine life and the

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fact that it already is in the food chain make its banning imperative.

Concern about the ecological impact of TBT has already lead countries such as France, Britain, Germany, Switzerland, and Japan to ban or severely restrict its use. Several states (including Virginia, Maryland, and North Carolina) have already removed TBT from the marketplace, while others (including California, Oregon, Washington, Florida, and Alaska) all have legislative or executive actions pending to severely restrict or eliminate its use. Michigan also should act to eliminate TBT from its waters as quickly as possible.

The need for action is further emphasized by the extent to which TBT is already in use in the Great Lakes. According to data from the Office of Great Lakes in the DNR, approximately 720,000 boats are registered this year in Michigan, while a 1985 survey showed that the Great Lakes states contain approximately a third of all the nation's 9,420,000 registered boats. TBT users comprise about 30 percent of the registered boat owners, which translates to some 216,086 boats in Michigan alone and nearly a million boats throughout the Great Lakes states. The potential number of TBT users poses a considerable ecological risk to the Great Lakes, a risk that is compounded by the fact that the Great Lakes states also now constitute one of the few remaining unregulated markets for TBT manufacturers. There is the possibility that, unless TBT is banned for use in the Great Lakes, Michigan and other Great Lakes states and provinces could become a "dumping ground" for cheap TBT.

Against:

The bill as it now stands would impose a tremendous hardship on those marine supply companies who in good faith bought stocks of TBT-containing paint for sale this year. The marine business in Michigan is marginal as it is, with a brief three-month period every year in which to operate. If marine wholesalers are not allowed to dispose of their inventories, or if they are required to take back stock already sold to retailers, the economic effects could be devastating. At the very least, either marine supply companies should be allowed to sell this year's stock or else the state should offer to buy the companies' inventories and suitably dispose of the paint itself. (There is a precedent—in the case of the fungicide EDB—for the state paying indemnities for a banned product.) These paints have been registered and sold for over 20 years. What's the great urgency that they need to be banned just at the beginning of this year's marine paint season?

Against:

The bill is unenforceable, or, rather, only selectively and unfairly enforceable. The bill prohibits the use of paints containing TBT, and yet Great Lakes and international freighters surely will continue to use such bottom paints. This means that local and regional pleasure craft industries (such as marine suppliers and aluminum boat builders) will be penalized, while the Great Lakes and international freighters will continue to use this ostensibly banned paint (unless the MDA plans on checking each freighter that enters Michigan waters and fining any found using TBT-based paint).

Response: Since fish feed in the shallows, that is where TBT is most likely to enter the food chain. By concentrating on watercraft that contaminate the shallow waters, the most harmful effects of TBT can be minimized.

Against:

If organic tin compounds are so toxic, then all TBT-containing products ought to be banned. After all, TBT is used extensively in outdoor weatherizing paints and stains (not to mention in "Odor-Eater" socks) and could well pose a threat to groundwater when it washes off outdoor structures.

Response: The bill only addresses aquatic uses of TBT-containing compounds because on land, TBT disintegrates fairly rapidly (within a number of months) into non-toxic forms. What is more, it binds in the soil, and is not likely to contaminate groundwater.

POSITIONS:

The Department of Agriculture supports the bill. (6-5-87)

The Department of Natural Resources supports the bill. (6-5-87)

The Toxic Substances Control Commission supports the bill. (6-5-87)

The Michigan United Conservation Clubs support the bill. (6-5-87)

The Michigan Environmental Council strongly supports the bill. (6-8-87)

The Midwest Marine Supplies Company strongly opposes the bill. (6-8-87)

The Michigan Boating Industries Association opposes the bill. (6-8-87)