To whom it may concern:

I have been boating for over thirty-five years - in both salt and freshwater. I currently cruise extensively on the Great Lakes with my home port located on Lake Erie. Like everyone else, I was always under the impression that the traditional zinc anode could invariably be relied on to protect the various underwater metals from galvanic corrosion in any environment. Last year I learned that this is simply not the case.

Two years ago, to improve performance and fuel efficiency, I decided to change propellers. The set of Nibral props that had been on the boat had, over the years, become pitted despite my regular use of zinc shaft collars, which curiously had always remained essentially pristine.

The new set of Nibral props were installed, again supposedly protected by the commonplace zinc anodes. However, when the boat was hauled at the end of the season, I was stunned to see that these new props were beginning to pit. I decided it was time to learn more about galvanic corrosion - a process of deterioration of one metal that occurs whenever two dissimilar metals are immersed in an electrolyte solution as a result of their differing electrical potential producing a voltage difference between them.

To prevent this corrosion of vital underwater metals, a third - less noble (more active) - metal is introduced into the system. This method of cathodic protection has traditionally been provided by the well known zinc anode, which works quite well and should be used in salt water. **But zinc has no place in freshwater.**

In freshwater, zinc quickly forms an insulating oxide that seals it and renders it useless as a sacrificial anode. A quick glance at the galvanic series of metals reveals that magnesium is the most active (least noble) anode with a greater driving or protecting voltage and, as such, offers the best protection from corrosion in freshwater.

Convinced that my problem was caused by inadequate cathodic protection, I search for a company that manufactured magnesium anodes for pleasure craft and discovered that Canada Metal (Pacific) Limited offered such a product in a magnesium prop nut anode design for up to 2" diameter shaft application.

At the beginning of last season, I purchased and installed a second new set of Nibral props, using the previous (pitted) set as spares, behind which I installed a set of Canada Metal (Pacific) Martyr magnesium prop nut anodes. When the boat was hauled at season's end, the propellers revealed absolutely no evidence of corrosion while the magnesium anodes were extensively corroded as one would expect from an appropriate sacrificial anode. In short, the magnesium anodes did their job and corrosion was held at bay.

The message is clear: one should use anodes most suitable and effective for the environment in which the vessel is operated. **In freshwater, that anode is ideally MAGNESIUM.**

Kenneth A. Spano, M.D.