



Environmentally-safe and Efficacious Control of Zebra Mussel Macrofouling

Learn more!

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Technology Case
2005-11

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Patent Status
• US Patent pending
• Published as
US 20100256256

Publications
[“Exploration of structure-antifouling relationships of capsaicin-like compounds that inhibit zebra mussels \(*Dreissena polymorpha*\) macrofouling”](#) *Biofouling*. 23 (5): 295 (2007)

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Discovery

- Environmentally-friendly water treatment additives have been developed for controlling macrofouling by zebra mussels and other organisms
- Water treatment additives include two classes of chemical structures that are useful as antifoulants:
 - Lipophilic-Amide-Spacer-ElectroNegative structures, examples of which include the natural product capsaicin and related compounds anandamide and pseudocapsaicin
 - TetraHydroCannabinoid structures

Features

- Represents an ideal antifoulant with optimal antifouling efficacy, antifouling longevity, minimal toxic liability, and ease of application and cost
- Is an environmentally-friendly alternative to existing organometallic antifoulants that will minimize overall environmental impact
- Research conducted with support from the United States Naval Research Laboratory

Benefits

- Effective at reducing aquatic biofouling on a surface after application to the surface or after being added to the aquatic environment in contact with the surface
- Suitable for treatment of public fresh water systems and other aquatic environments

Opportunities

- Continued dispersion of zebra mussels across many of the North American waterways has created concerns by blocking pipelines, clogging water intakes of municipal water supplies and hydroelectric companies, increasing fuel consumption of commercial shipping fleets, and impacting recreational boat and marina owners
- Cost of controlling zebra mussels at power plants and other water-consuming facilities in the United States is estimated at \$500 million annually, while the United States Coast Guard estimates that total economic losses and control efforts cost the United States about \$5 billion annually