

## Fate and Effects of Anthropogenic Chemicals in Seagrass Ecosystems

Seagrass beds are important ecologically and support the economic health of Florida. Seagrass declines have been common in Florida and excessive nutrients are thought to be the major anthropogenic cause. However, toxic chemicals are also thought to be a factor by some, but published information describing their fate and effects in seagrass beds is less available than for accelerated eutrophication. Consequently, their impact, either alone or in combination with other stressors, is uncertain. This presentation summarizes the reported concentrations of potentially toxic chemicals in grass bed-associated surface waters, sediments and plant tissues and reported toxicity effect concentrations. Based on the review, fate information is more available for trace metals than for non-nutrient organic chemicals in rooted sediments. Laboratory toxicity results derived in aqueous exposures are available for 12 species of seagrasses and various trace metals, pesticides, oil and oil dispersants. Toxicity data derived for chemical mixtures and single chemicals in sediment matrices could not be found. Chemical contaminants in tissues of 20 seagrass species have been reported but their biological significance is mostly unknown. Experimental conditions have varied considerably in seagrass contaminant research and interspecific differences in chemical residues and chemical tolerances are common, which limits generalizations and extrapolations among species and chemicals. As a result of the fragmented information and lack of experimental consistency, effective risk assessments for most anthropogenic contaminants and seagrasses cannot be conducted at most geographic scales in Florida or elsewhere. Future research should focus on determining toxic effect levels and critical body burdens for seagrasses and common near shore contaminants that have phototoxic potential and identifying sensitive species, response parameters and life stages.

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Keywords: Seagrasses, Anthropogenic Chemicals, Fate, Toxicity

Challenge: Ecosystem health

Issues: Sources and impacts of emerging contaminants