

## Passage of Organics Through Desalination Membranes ~ Effects of Biofouling and Membrane Status

Martin Reinhard, PhD, Stanford University

~International Symposium on Membrane Biofouling: Science & Solutions~

28-30 April 2010, Copper Queen Hotel, Bisbee, Arizona, USA

Removal of trace organic contaminants by desalination membranes is an increasingly important aspect of water reuse applications. Besides salts, membranes are relied on to remove aggregate organic matter, as well as specific organics such as pharmaceuticals, endocrine disruptors, and perfluorinated compounds. Recent research has focused on studying the relationship between compound structure and fate (*e.g.*, rejection or adsorption) as a function of membrane properties (*e.g.*, permeability, polarity) and status (fouling, age). Biological fouling processes in particular can influence the apparent organic-contaminant rejection, for example by enhancing concentration polarization, or through biodegradation. By evaluating the rejections of homologous series of structurally-related compounds by biofouled membranes, it is possible to gain insight into both the nature of the fouling mechanism and the rejection mechanism. Results of controlled laboratory experiments will be discussed and compared with data from field studies.