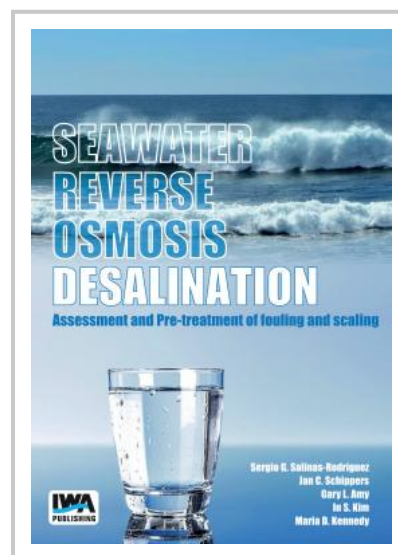


# Seawater Reverse Osmosis Desalination: Assessment & Pre-treatment of Fouling and Scaling

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Desalination as a method to provide clean drinking water has become vital – particularly in a context where drought, water scarcity and rapid quality decrease of water bodies have become an undeniable reality. After more than half a century of membrane-based desalination, fouling and scaling is still a dominant challenge. In membrane technologies, in particular, fouling and scaling are a major issue with respect to design, operation, reliability of the technologies and cost.

This textbook covers theory and practice and is intended for designers, operators, consultants, suppliers and students. Principles of ultra- and nanofiltration and reverse osmosis (RO) are discussed, enabling the reader to understand the link between design, operation and fouling and scaling. Fouling (particulate, organic -including algal bloom events, inorganic, and biofouling) and scaling are treated in detail, including parameters to determine fouling and scaling potential of feed waters. Principles of conventional and advanced pre-treatment processes are highlighted and their effect on preventing fouling and scaling. In addition, the process design of RO systems and the recent advances in seawater RO and emerging membrane-based processes for seawater desalination are presented.



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