

Office of Saline Waters Progress Reports Digitized and Available through TRAIL

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TRAIL has completed digitization of the Research and Development Progress Reports series issued by the Office of Saline Waters (OSW) between 1955 and 1972. These technical reports are valuable research resources for topics that include thermodynamics, engineering, economics, and water resource policy.

OSW was established within the U.S. Department of Interior, under the Assistant Secretary for Water and Power Development, in 1955. This office continued the work of earlier programs, initially begun through an Act of Congress. (Public Law 82-448, July 3, 1952 – “An Act to provide for research into and development of practical means for the economical production, from sea or other saline waters, of water suitable for agricultural, industrial, municipal, and other beneficial consumptive uses, and for other purposes.”)

In the mid-twentieth century, many areas of the United States, including California and the inland West, experienced acute water shortages and droughts. In a letter to Congress in 1951, Oscar L. Chapman, Secretary of the Interior, noted that “Many Eastern cities, including New York City, Norfolk, Baltimore, Philadelphia, St. Petersburg, Tampa, Mobile, and New Orleans, as well as Midwestern and Western cities, are vulnerable to droughts; and sudden increase in the population or industry, such as that which would result from defense preparations or war, would cause serious water shortages in many areas.” (Hearing, Committee on Interior and Insular Affairs Serial No. 15, “**Production of Fresh Water from Sea Water**,” Y4.In 8/14:82/15.)

This OSW Research and Development Progress Reports series presents accounts of the research progress on saline water conversion with the intention of promoting and facilitating long-term development of economical, large-scale processes for the demineralization of sea water.

Desalination methods can be roughly categorized into five fundamental demineralization processes:

1. Distillation
2. Membrane
3. Freezing
4. Humidification
5. Chemical

Large-scale implementation of these processes requires an understanding of the physics and chemistry of mineralized water (both structural problems and, in particular, thermodynamic properties); mechanical and chemical engineering of plant processes using properties of ion

transport, reaction rates, and energy requirements; and plant engineering and economics in terms of costs' assessment in comparison with conventionally available water resource technologies. In addition to these fundamental understandings, each process (through its development deals with a special set of problems) must address topics like heat transfer, materials selection, corrosion of metals and materials, scale formation, energy source considerations, and disposal of waste brine. (For more historical background and perspective on OSW, please see "**History, Function, and Program of the Office of Saline Water**," by Charles F. MacGowan.)

OSW issued 785 numbered reports in this series, covering a wide range of topics related to developing commercially viable desalination. All are available through TRAIL as part of its mission to make historic federal technical reports more accessible. Some examples that illustrate some of the range of topics and treatments within the OSW Research and Development Progress Reports series include:

- Research on Salt Water Purification by Freezing, No. 7. 1955.
- Theoretical Studies of the Behavior of Ions in Aqueous Solutions of Mixed Electrolytes with Respect to Osmionic Cell Operation, No. 76. 1963.
- The Potential Contribution of Desalting to Future Water Supply in Texas, No. 250. 1966.
- Silicate Reactions – A Review, No. 307. 1968.
- An Economic and Engineering Analysis of the Electrodialysis Process, No. 470. 1969.
- Scale Control in High Temperature Distillation Utilizing Fluidized Bed Heat Exchangers, No. 571. 1970.
- The Effect of Aerobic Marine Bacteria on the Corrosion of Metals in Sea Water, No. 662. 1971.
- MSF [Multi-Stage Flash] Pilot Plant Test on Polluted Waters, No. 728. 1971.

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Other Resources and Links

Records of the Office of Saline Water. Guide to Federal Records, National Archives. Accessed September 2016 at <http://www.archives.gov/research/guide-fed-records/groups/380.html>