

# AALSO Symposium and Workshops

## Instructions to Authors

**GENERAL FORMAT:** Abstracts should be typed using MS Word or similar software (no PDF please). Preferable font is Times New Roman (TNR), font size 12 (except as noted below). Set "Language" to "English (US)" and **adjust paper size to 8.5 x 11 inches.**

At the top of the first page, format as follows: **RIGHT & LEFT MARGINS:** 1.2 inches (3.05 cm). **TOP & BOTTOM MARGINS:** 1.0 inch (2.54 cm). **ALIGNMENT:** Justified (so paragraphs are block left & right). **WIDOW/ORPHAN:** On. **HEADER & FOOTER:** 0.5 inch (1.27 cm) each.

**TITLE:** Type the title (boldface and centered) on the second line from the top, capitalizing major words (TNR **bold**, font size 14); use more than one line if necessary. The title should be brief, descriptive, and have all words spelled out. If more than one line is necessary, use single spacing between lines.

**AUTHOR(S) NAME(S) AND ADDRESS(ES):** Skip one line. Type the author(s) name(s) centered and single spaced (TNR ALL CAPS, font size 12) with a semicolon between authors. Skip one line, then follow with the author(s) address(es), also single spaced, capitalizing the first letter of all major words (TNR *italic*, font size 12). In the case of authors from different institutions, identify the authors and appropriate institutions by corresponding Arabic numerals in superscript. PLEASE INDICATE THE SPEAKER BY UNDERLINING THAT AUTHOR'S NAME.

**ABSTRACT:** Skip two lines, center, type the word **Abstract** (TNR **bold**, font size 12). Skip a line and type the abstract; single spaced with one line between paragraphs. The abstract should be approximately 100 to 300 words in length. It should be concise, factual and contain the main results and conclusions, and be suitable for reproduction.

A full manuscript is not required.

**SUBMISSION:** Please submit your abstract to the AALSO Lecture Committee by following the instructions given on AALSO.org or the Call for Presentation emails. Submission dates do vary from year to year so pay attention to the current Symposium Call for Presenters information.

**OUTLINE:** All accepted submissions should include an outline of the presentation. The outline should indicate the topics that will be included and the flow of the presentation. Instructions for outline submittal will be included in the acceptance letter.

**EXAMPLE ABSTRACT & OUTLINE:** The following two pages include an example abstract and an example outline that shows all of the main layout components described in the Instructions to Authors. PLEASE NOTE that this is to be used as an example only.

# **Foam Fractionation versus Ozone Contacting: Impacts on Water Quality in a Natural Seawater System**

ROGER PHILLIPS<sup>1</sup>; ERIC KINGSLEY<sup>1</sup>; SARAH MANSERGH<sup>1</sup>; ROBIN WEBER<sup>2</sup>

<sup>1</sup>*Monterey Bay Aquarium, 886 Cannery Row, Monterey CA, 93940, USA*

<sup>2</sup>*University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA, 95064, USA*

## **Abstract**

The Monterey Bay Aquarium Outer Bay Exhibit is a 1.2 million gallon (4,540 m<sup>3</sup>) natural seawater system displaying tuna and other pelagic animals. Inconsistent visibility in this exhibit prompted evaluation of life support system components to improve water clarity. Pilot-scale foam fractionation and ozone contacting treatment systems were installed on the Outer Bay system and studies were conducted to determine the effectiveness of each treatment at improving water clarity. Ozone was applied at doses ranging up to 0.3 mg/L in the foam fractionator and up to 1.0 mg/L in the ozone contactor. Changes in water clarity or turbidity were the main focus of these studies; however, the use of ozone necessitated monitoring other impacts on water quality. Water quality criteria monitored during these studies included: turbidity, particle size distribution, densities of bacteria (disinfection), dissolved oxygen, pH, oxidation-reduction potential, residual ozone, and the production of residual oxidants (free chlorine, hypobromite and bromate). The foam fractionator reduced the turbidity of system seawater at ozone doses up to 0.1 mg/L. Ozone doses above 0.2 mg/L increased the turbidity of treated seawater in both the foam fractionator and the ozone contactor. Water quality results from foam fractionation and ozone contacting are summarized and compared.

**TITLE:** Foam Fractionation versus Ozone Contacting: Impacts on Water Quality in a Natural Seawater System

**SPEAKER:** Roger Phillips

**I. Introduction**

- a. Introduction of myself
- b. Project Information
  - i. Exhibit Name and Description
  - ii. Location and Size
  - iii. Animals

**II. Problem Statement**

- a. Visibility concerns
- b. Water quality concerns

**III. Pilot Study**

- a. Installation of Foam-Fractionation Systems
- b. Installation of Ozone Treatment Systems
  - i. Ozone Dosage

**IV. Results**

- a. Visibility/Turbidity
- b. Water Quality
  - i. Turbidity, particle size distribution, densities of bacteria, dissolved oxygen, pH, oxidation-reduction potential, residual ozone, and residual oxidants

**V. Conclusions**

- a. Comparison of Designs
  - b. Acknowledgments