

**New Hampshire Water Pollution Control Association  
SPECIALTY CONFERENCE- Biological Nutrient  
Removal with  
Dr. Clifford Randall and Dr. James Barnard**



The New Hampshire Water Pollution Control Association and New Hampshire Department of Environmental Services are pleased to offer a one day seminar on biological nutrient removal with two of the leading international experts in the wastewater field. Come join us as we learn about the latest technologies for nitrogen and phosphorus treatment during this day long specialty seminar.

**James L. Barnard Ph.D. and Clifford W. Randall Ph.D.**

**Dr. Barnard** is recognized internationally for developing the MLE Process, BARDENPHO Process (BARNard DENitrification and PHOSphorus removal) and Phoredox (AO and A2O), biological nutrient removal process configurations. He introduced biological removal of nitrogen and phosphorus to North America with the design of BNR plants for Palmetto FL and Kelowna B.C. in the seventies. He graduated in Civil Engineering from the Universities of Stellenbosch in South Africa, the University of Texas at Austin and Vanderbilt University, Nashville, Tennessee. He is presently employed by Black & Veatch in Kansas City. He is a winner of the WEF Thomas R. Camp Medal for the development of innovative processes and was the first recipient of the Koch/Imhoff Award from the International Water Association, Gold Medal from the South African Academy of Science and Arts and the 2007 Clarke Award.

**Dr. Randall** introduced biological nutrient removal (BNR) wastewater treatment to the Chesapeake Bay area in 1984, and worked with the Hampton Roads Sanitation District from 1986-90 to demonstrate BNR technology and develop the patented VIP process, which has been in operation at the 40 mgd VIP (Lambert's Point) Plant since 1991, and at the 30 mgd Nansmond Plant for more than 10 years. Active in professional organizations, Dr. Randall is Past-President of the Virginia Water Environment Association, Past-member of the Water Environment Federation Board of Control, Past-President of the Association of Environmental Engineering and Science Professors, Past-Chair of the USA National Committee for Representation to the International Water Association (IWA), Past-Chair of the Nutrient Removal Specialty Group of IWA, Past-USA Representative on the Scientific and Technical Committee of IWA, Past-Chair of the Research Council, Past-Chair of the Water Quality Division, and Past-Vice-Chair of the Wastewater Management Committee of the Environmental Engineering Division of the American Society of Civil Engineers.

**SCHEDULE OF EVENTS**

- 8:00 Sharp** Registration at the Auditorium of the NHDES at 95 Hazen Drive, Concord, NH
- 8:30 am** Introduction – Harry Stewart, P.E., DEE, NHDES Water Division Director
- 8:30—10:00** Reasons for BNR – 20 min.  
Effluent Standards in various locations – 20 min.  
Nitrification – 40 min.
- 10:00 – 10:15** Morning refreshments will be provided by Underwood Engineers
- 10:15—12:00** Denitrification N/NDen – 55 min.  
Biological Phosphorus Removal – 50 min.
- 12:00 – 12:45** Box Lunch at the NHDES side conference rooms adjacent to auditorium
- 12:45 – 2:00** Carbon Requirements and Fermentation – 45 min.  
Process Flow Diagrams for full BNR – 40 min.
- 2:00 – 2:15** Break
- 2:15 – 3:30** Sludge Treatment and Return Streams Treatment – 35 min.  
Phosphorus Recovery – 20 min.  
Limits of Technology – 20 min.

**3:30** **Question and Answer Period**  
*0.6 CEU's will be awarded to all who attend.*

Registration Fees: \$75.00 NHWPCA Members \$100.00 Non Members (includes 2008 Dues)

**Registration Deadline:** Postmarked by July 18, 2008. Only 150 seats available, first come/first served.

**Specialty Conference – BNR Seminar Registration Form**  
Wednesday, July 30, 2008

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Amount Enclosed: \_\_\_\_\_

Facility/Company \_\_\_\_\_

Pre-registration only, no walk-ins accepted, must be postmarked by July 18<sup>th</sup>, 2008. No Late Registrations Accepted

# tickets @ \$75 each \_\_\_\_\_ (NHWPCA members) # tickets @ \$100 each \_\_\_\_\_ (non-members, includes 2008 Dues)

Please return this form with payment to: **NHWPCA, PO Box 95, Concord, NH 03302-0095, Attn: Marie P.**

**Make checks payable to: NHWPCA**

**NHWPCA SPECIALTY CONFERENCE – BNR SEMINAR**

July 30, 2008

**Directions to NHDES Offices, Concord, NH**

**From Points South:** Follow US Route 93 N to exit 14. Right at lights, go up to hill and left at Hazen Drive at the top of the hill. Follow signs to NH Department of Environmental Services.

**From Points North:** Follow US Route 93 S to exit 14. Left at lights, go up to hill and left at Hazen Drive at the top of the hill. Follow signs to NH Department of Environmental Services.



**NHWPCA  
P.O. Box 95  
Concord, NH 03302-0095**

**New Hampshire Water Pollution Control Association  
2008 SPECIALTY CONFERENCE  
BIOLOGICAL NUTRIENT REMOVAL SEMINAR**

Wednesday, July 30, 2008  
The Auditorium at NHDES, Concord, NH