

PARTICIPANTS SHOULD BRING SAMPLES

from their activated sludge system to include 100 mls of MLSS from the exit end of the aeration basin and a separate sample of foam, if present.

Sandwich lunch and drinks will be provided.

For a successful workshop we ask all participants that have access to a positive low phase contrast microscope with a 10X eyepiece, 10X lens & 100X oil immersion lens please bring them. The class goal is to have one microscope per two people.

For questions concerning the class call Carl Wilcox 207-774-2112 or email cwilcox@woodard-curran.com

Please reserve your seat by sending an email to Jeanne Chasen at jchasen@woodardcurran.com at Woodard & Curran, indicating the number of people that will attend, and the number of phase contrast microscopes you can bring, or fax this form attention Jeanne Chasen, fax 207-774-6635, tel 207-774-2112.

PLEASE MAIL CHECKS BY FEB 15TH

payable to WOODARD & CURRAN and reference filament identification course 219392.

MAIL TO:

Woodard & Curran
c/o Jeanne Chasen
41 Hutchins Drive
Portland, ME 04102

DR. MICHAEL RICHARD

Dr. Richard is a world authority on wastewater treatment microbiology and he provides microbiological analysis and filament identification for bulking, foaming and other treatment problems for activated sludge systems, lagoons, filters or any biological treatment process. This information is used in troubleshooting, problem diagnosis and suggestion of remedial actions for wastewater treatment problems. Dr. Richard has been providing this analysis since 1980 and has analyzed more than 17,000 sludges for more than 4,000 clients.

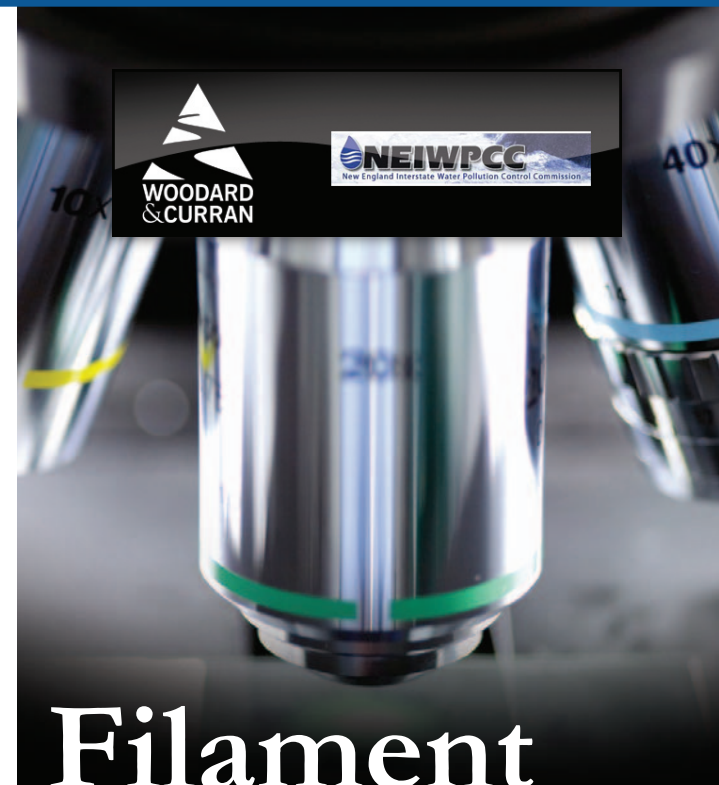
PAUL DOMBROWSKI, PE, BCEE

Mr. Dombrowski has 20 years of experience providing consulting engineering services to municipalities and industrial clients. He focuses on the evaluation, design, construction, operation; and process evaluation of wastewater treatment facilities. An active participant in professional associations and the environmental engineering community, Mr. Dombrowski has presented on a range of wastewater related issues at all levels, and has lectured on environmental engineering at several universities. He has authored or provided technical review of numerous industry recognized texts most recently the WEF Manual of Practice entitled "Biological Nutrient Removal Operation in Wastewater Treatment Plants".

Sponsored by



in conjunction with



Filament & IDENTIFICATION & PROCESS CONTROL IN ACTIVATED SLUDGE

Thursday, May 15
and Friday, May 16, 2008
8:00 am – 4:00 pm
Portland Water District
225 Douglass Street
Portland, Maine

Instructors: Dr. Michael Richard
Paul Dombrowski, PE

THIS TWO DAY WORKSHOP WILL COVER

the microbiology of activated sludge systems and will provide the participant with hands-on training in microscopic identification and assessment techniques for poor floc formation, dispersed growth, bacterial foaming and filamentous bulking. Identification of filamentous bacteria in activated sludge will be emphasized.

The course will consist of six hours of lecture with slides and 8 hours of hands-on laboratory work with phase contrast microscopes. The textbook for this course will be: Manual on the Causes and Control of Activated Sludge Bulking, Foaming and Other Solids Separation Problems, Third Edition, D. Jenkins, M. Richard and G. Daigger, Lewis Publishers, 2003.

Lecture topics will include an overview of the microbiology of activated sludge; detailed microscopic techniques used in filament identification; the causes of filamentous bacteria; and use of this information in problem solving. Specific laboratory techniques to be gained include: use of the phase contrast microscope; handling and preparation of samples; microscopic counting and staining techniques; identification of filaments in activated sludge; and use of this information in problem solving.

Optional Manual for \$80 additional: *Causes and Control of Activated Sludge Bulking, Foaming and Other Solids Separation Problems, Third Edition*, D. Jenkins, M. Richard and G. Daigger, Lewis Publishers, 2003. *Purchase strongly recommended.*

BRIEF OUTLINE

Day 1 – Thursday May 15th

8:00 – 8:30	Introduction
8:30 – 10:00	Lecture: Activated Sludge Microbiology
10:00 – 10:15	BREAK
10:15 – 12:00	Lecture: Activated Sludge Microbiology Problems
12:00 – 1:00	LUNCH
1:00 – 3:00	Lab: Use of the phase contrast microscope
3:00 – 3:15	BREAK
3:15 – 4:00	Lab: work with good and bad sludges

Day 2 – Friday May 16th

8:00 – 9:00	Lecture: Filament Identification Techniques
9:00 – 10:00	Lab: Filament identification with samples
10:00 – 10:15	BREAK
10:15 – 12:00	Lab: Continue filament identification
12:00 – 1:00	LUNCH
1:00 – 2:00	Lab: Examination of participant samples
2:00 – 2:15	BREAK
2:15 – 3:30	Lecture: Use of this information in problem solving
3:30 – 4:00	Questions and Answers

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THE DETAILS

Number of people who will attend _____ x \$325 ea. \$ _____

Number of course manuals desired _____ x \$80 ea. \$ _____

Total amount due \$ _____

Number of phase contrast microscopes you can bring _____

Contact Name _____

Company _____

Telephone _____

Fax _____

Email _____

Mailing Address _____

State & Zip _____

