Nicholas Dugan, Environmental Engineer in EPA's National Risk Management Research Laboratory

Water Systems Division
Mailing Address

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Areas of Expertise:

- **Impact of drinking water oxidants on cyanobacteria:** Evaluating the impact of potassium permanganate exposure on toxin release from intact cells as a function of permanganate dose, pH, and turbidity. Evaluating the impact of permanganate exposure on toxin release from cells following prior exposure to copper sulfate algicide.
- **Impact of drinking water adsorbents on cyanobacteria toxin concentrations:** Evaluating the removal of toxins by powdered activated carbon.
- **Removal of oxidized inorganic contaminants in drinking water treatment through anaerobic biological processes:** Evaluating the removal of perchlorate and nitrate as a function of temperature. Evaluating the impact of electron donor concentrations. Evaluating the treatment of anaerobic contactor effluent prior to entry of treated water into a distribution system.
- **Removal of particulate and microbial contaminants in drinking water treatment through coagulation, flocculation, sedimentation and granular media filtration:** Evaluating the removal of *Cryptosporidium* oocysts and *Microcystis aeruginosa* as a function of pretreatment chemical type, pretreatment chemical dose, and filter loading rates.

Select Publications:

Dugan, N.R.; Smith, S.J; and T.T. Sanan. "The Impacts of Potassium Permanganate and PAC on Cyanotoxin Release." *Journal AWWA – in press*, scheduled for publication November 2018.

Schenck, K.; Rosenblum, L.; Wiese, T.E.; Wymer, L.; **Dugan**, N.; Williams, D.; Mash, H.; Merriman, B.; and Speth, T. 2012. "Removal of Estrogens and Estrogenicity through Drinking Water Treatment." *Journal of Water and Health* 10:1:43-55.

Dugan, N.R.; Williams, D.J.; and Meyer, M.; et al. 2011. "Polishing Effluent from a Perchlorate-Reducing Anaerobic Biological Contactor." *Journal AWWA* 103:8:74-84.

Dugan, N.R.; Williams, D.J.; Meyer, M.; et al. 2009. "The Impact of Temperature on the Performance of Anaerobic Biological Treatment of Perchlorate in Drinking Water." *Water Research* 43:7:1867-1878.

Diehnelt, C.; **Dugan**, N.R.; Peterman, S.; et al. 2006. "Identification of Microcystin Toxins from a Strain of Microcystis Aeruginosa by Liquid Chromatography Introduction into a Hybrid Linear Ion Trap-Fourier Transform Ion Cyclotron Resonance Mass Spectrometer." *Analytical Chemistry* 78:2:501-512.

Dugan, N.R.; and Williams, D.J. 2006. "Cyanobacteria Passage through Drinking Water Filters During Perturbation Episodes as a Function of Cell Morphology, Coagulant and Initial Filter Loading rate." *Harmful Algae* 5:1:26-35.
View more research publications by Nicholas Dugan

Education:

- M.S., University of Cincinnati, Cincinnati, OH; Environmental Engineering, 1998
- B.S., University of Cincinnati, Cincinnati, OH; Civil & Environmental Engineering, 1995
- B.A., Carleton College, Northfield, MN; Economics, 1988

Professional Experience:

- Project/Research Area Lead – Safe and Sustainable Water Resources National Program Area: Nutrients – Management of Harmful Algal Blooms
- Professional Engineer – OH

Committees and Memberships

- American Water Works Association Research Foundation – Cyanotoxin Focus Area – Technical Advisory Committee
- American Water Works Association Research Foundation – Utility Responses to Cyanobacterial/Cyanotoxin Events – Project Advisory Committee

Awards and Honors

- EPA Gold Medal for Exceptional Service – Cyanotoxin Drinking Water Protection Team, 2017
- EPA Bronze Medal for Commendable Service – Safe and Sustainable Water Resources National Program Team, 2016
- EPA Bronze Medal for Commendable Service – Toledo Harmful Algal Bloom Response Team, 2015
- Federal Service Excellence Award – Project Team Category, 2015
- American Water Works Association - Ohio Section – Brest Presentation at Annual Conference Award, 2015
- Office of Water Achievement in Science & Technology Award, 2014
- American Water Works Association - Water Science and Research Division Best Paper Award, 2012

Meet EPA Researcher Nick Dugan
Science Matters – Keeping the Water Flowing: Helping Water Treatment Facilities Handle Harmful Algal Blooms
Science Matters – Small Systems with a Big Problem: Harmful Algal Blooms