



Water Quality & Treatment Solutions, Inc.  
An Environmental Engineering & Science Consulting Company

# ISSAM NAJM, Ph.D., P.E., BCEE

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## EDUCATION:

Ph.D., Environmental Engineering, Univ. of Illinois at Urbana-Champaign 1990  
M.S., Environmental Engineering, Univ. of Illinois at Urbana-Champaign 1987  
B.S., Civil Engineering, American Univ. of Beirut, Lebanon 1985

## REGISTRATION:

Professional Civil Engineer, California (1997). Registration Number C 57496



## TEACHING EXPERIENCE:

2007 – Present Adjunct Associate Professor  
Civil & Environmental Engineering Department  
University of California at Los Angeles  
*Physical & Chemical Processes in Water Treatment*

1998 – 2005 Instructor  
Civil & Environmental Engineering Department  
University of California at Los Angeles  
*Physical & Chemical Processes in Water Treatment*  
*Design of Water Treatment Plants*

## PROFESSIONAL EXPERIENCE:

**Water Quality & Treatment Solutions, Inc.**  
Los Angeles, California  
2000 – present: Founder and President

**Montgomery Watson**  
Pasadena, California  
1997 – 2000: Vice President and Manager, Applied Research Department  
1994 – 1997: Principal Engineer; Applied Research Department  
1992 – 1994: Supervising Engineer; Applied Research Department  
1990 – 1992: Senior Engineer, Applied Research Department

## SUMMARY:

Issam Najm is the founder and president of **Water Quality & Treatment Solutions, Inc. (WQTS)**, a specialty environmental engineering and science consulting company whose mission is to provide water utilities with innovative and cost effective solutions to water quality and water treatment challenges. He provides technical leadership of the company's projects, and ensures that our clients are provided the superior service they deserve. Dr. Najm is intimately involved in a number of WQTS projects including the evaluation of water treatment plant performance, pilot-scale and bench-scale testing of water treatment

technologies, regulatory and permitting support for existing and new treatment plants, development of water quality monitoring plans, and development of models for water treatment processes.

From 1990 through 2000, Dr. Najm was a member, and then Manager of the Applied Research Department of Montgomery Watson (currently MWH, Inc.), a global environmental engineering company. During his tenure with Montgomery Watson, Dr. Najm was responsible for a large number of water quality and treatment evaluation projects conducted for water utilities across the United States. Dr. Najm also led a number of research projects funded by the AWWA Research Foundation.

Dr. Najm is a registered Professional Civil Engineer in the State of California, and is a Board-Certified Environmental Engineer with the American Academy of Environmental Engineers. Dr. Najm is an adjunct Associate Professor of environmental engineering at the University of California Los Angeles (UCLA). His primary teaching focus is on the principles and application of water treatment technologies with emphasis on physical and chemical processes.

### **RECOGNITIONS & AWARDS:**

- ❑ George Warren Fuller Award – AWWA – 2017
- ❑ Best Paper Award – AWWA Water Quality Division – 2014
- ❑ Dr. Pankaj Parekh Research Innovation Award – Water Research Foundation – 2014
- ❑ Best Research Paper Award – AWWA Water Science & Research Division – 2007
- ❑ Best Publication Award – AWWA – 2007
- ❑ Board-Certified Environmental Engineer, American Academy of Environmental Engineers
- ❑ Young Civil Engineer Achievement Award, University of Illinois at Urbana-Champaign, Civil & Environmental Engineering Alumni Association, 1999
- ❑ Academic Achievement Award for best doctoral dissertation, American Water Works Association, 1990

### **MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:**

- ❑ American Water Works Association (AWWA)
- ❑ American Academy of Environmental Engineers & Scientists (AAEES)

### **COMMITTEE MEMBERSHIP:**

- ❑ Associate Editor, AWWA Water Science, AWS, American Water Works Association, 2018 – Present
- ❑ American Academy of Environmental Engineers & Scientists, AAEEES; Member of the Board of Trustees; 2015 – 2017
- ❑ AWWA CA-NV Section; SOURCE Editorial Advisory Committee, Chair; 2014 – 2017
- ❑ Disinfection By-Products Technical Action Workgroup, AWWA: 2012 – Present
- ❑ AWWA; Water Research & Science Division Trustee, 2007 – 2013
- ❑ Journal AWWA Editorial Advisory Board, Chair; 2009 – 2013
- ❑ Journal AWWA Editorial Advisory Board, Member – 2001 to 2009
- ❑ Peer Review Editorial Board, Journal AWWA, Chair; 2006 to 2009
- ❑ AWWA; Inorganic Contaminants Committee: Chair; 2002 – 2006
- ❑ AWWA; Organic Contaminants Research Committee, Chair; 1998 – 2001

### **EXAMPLE PROJECTS:**

Dr. Najm has been involved in dozens of water quality and treatment projects across the United States. A short list of representative projects he led at WQTS is included below. References for these projects are available upon request.

***Evaluation of Treatment Alternatives for the Control of Disinfection By-Product Formation  
El Dorado Irrigation District, Placerville, California***

WQTS was retained by the El Dorado Irrigation District to conduct an evaluation of the factors leading to the formation of elevated levels of Disinfection By-Products (DBP)s in its distribution system, and identify approaches to reduce the DBP levels.

***Technical and Permitting Support for the City of Santa Barbara's Seawater Desalination Plant  
IDE Americas, Inc., Carlsbad, California***

IDE Americas, Inc. retained the services of WQTS to provide technical and permitting support under its contract with the City of Santa Barbara to rehabilitate and operate the City's seawater desalination plant. Dr. Najm has prepared technical memoranda on various technical aspects of the project, participated in meetings with the State Water Resources Control Board's Division of Drinking Water (DDW) staff, and provided general technical support for the plant's startup effort.

***Design Review for the Patterson Pass WTP and Del Valley WTP Modifications  
Zone 7 Water Agency, Livermore, California***

The Zone 7 Water Agency owns and operates two water treatment plants: the 24-MGD Patterson Pass WTP and the 40-MGD Del Valle WTP. The Agency embarked on two capital improvements project to install new media filters and a 5-MG clearwell at the Patterson Pass WTP and add ozonation at the Del Valle WTP. Zone 7 retained the services of WQTS as a technical resource to help in the preparation of the design RFP documents, review of design proposals, and review of the design submittals through the issuance of construction bid documents.

***Evaluation and Implementation of Treatment Technologies for Mining-Influenced Water  
Park City Municipal Corporation, Park City, Utah***

Park City draws its drinking water from water flows out of the portals for two closed mines in the local mountains. While the City utilizes only a portion of the water, it is responsible for the entire water flow. Due to elevated levels of various metals in the water and the tightening of discharge limits into the local creeks, the City is required to lower the metals from all the water flow to the new discharge limits. As the City embarked on a long-range program to identify, design, build, and operate treatment facilities for this mining-influenced water, the City retained the services of WQTS to provide technical support in the evaluation of treatment alternatives, and the bench-scale and pilot-scale testing of treatment technologies.

***Evaluation of Cyanotoxins Removal/Destruction with Water Treatment Technologies  
Zone 7 Water Agency, Livermore, California  
Alameda County Water District, Fremont, California  
Santa Clara Valley Water District, Santa Clara, California***

The Zone 7 Water Agency, Alameda County Water District, and the Santa Clara Valley Water District treat water drawn from the Sacramento-San Joaquin Delta via the South Bay Aqueduct (SBA). The three agencies pooled resources and retained the services of WQTS to conduct bench-scale testing to evaluate the ability of each agency's treatment plant to remove and/or destroy cyanotoxins that could be generated by a future cyano-bacterial bloom in the Delta or the SBA. WQTS received raw SBA water, spiked it with four cyanotoxins, and evaluated their potential destruction with ozone and chlorine, as well as their removal with the addition of Powdered Activated Carbon (PAC).

***Evaluation of T&O Removal at the City's Water Treatment Plant  
City of Yuba City, California***

The City of Yuba City operates a 36 MGD surface water treatment plant that treats water from the Feather River. During recent years, seasonal algal activity in the water supply resulted in the presence of low levels of 2-methylisoborneol, MIB, which imparts objectionable taste-and-odor (T&O) into the City's drinking water. The City retained the services of WQTS to conduct a desktop study to identify and evaluate viable options for MIB removal from the City's water. After the completion of the study, WQTS conducted bench-scale testing to evaluate the potential removal of MIB from the City's water supply using Powdered Activated Carbon, PAC.

***Evaluation of Waste Minimization Alternatives for Cr(VI) Treatment Systems  
Water Research Foundation, Denver, Colorado***

WQTS completed a research project jointly funded by the Water Research Foundation (WRF) and the California Water Service Company (CalWater) aimed at evaluating alternatives to reduce the waste production from three treatment technologies used for the removal of hexavalent chromium, Cr(VI), from water. Extensive bench-scale testing was conducted to evaluate the recovery and reuse of the brine solution from ion-exchange processes used for Cr(VI) removal that would otherwise have to be hauled off site for disposal.

***Evaluation of the Impact of Water Quality on the Technical Feasibility and Cost of Cr(VI) Treatment  
Water Research Foundation, Denver, Colorado***

WQTS completed a research project jointly funded by the Water Research Foundation (WRF) and 11 water agencies from California, Nevada, and Oklahoma. The project focused on evaluating the impact of different groundwater qualities on the removal of hexavalent chromium, Cr(VI), from water using three treatment technologies: 1). regenerable strong-base anion-exchange, 2). disposable weak-base anion-exchange, and 3). reduction, coagulation, and filtration.

***Development of an Online EXCEL-Based Cost Model for Cr(VI) Removal from Groundwater  
Water Research Foundation, Denver, Colorado***

WQTS developed an EXCEL-based model that estimates the capital and annual O&M costs of three different technologies for the removal of Cr(VI) from groundwater. The model, which can be found at [www.CrVITreatmentCosts.com](http://www.CrVITreatmentCosts.com), allows the user to enter specific water quality data, and then uses them to develop capital and annual O&M costs for Cr(VI) removal with coagulation-filtration, strong-base ion-exchange, or weak-base ion exchange processes.

***Evaluation of Alternative Strontium Treatment Technologies  
Water Research Foundation, Denver, Colorado***

The Water Research Foundation (WRF) selected WQTS to conduct a desktop evaluation of alternative treatment technologies for the removal of Strontium from groundwater. WQTS conducted a thorough literature review of available technical information on strontium chemistry and removal mechanisms, which were then presented and analyzed in a technical report. The report also included a list of research needs for consideration by the Foundation.

***Development and Implementation of a Sulfide & Manganese Groundwater Treatment Strategy  
City of Santa Barbara, California***

The City of Santa Barbara, California, has a number of groundwater wells that produce water with elevated levels of manganese and sulfide. The City had a greensand filtration system that it built to treat this groundwater, but it was not capable of removing sulfide, and the City took it off-line for more than 20 years. While conventional sulfide removal technologies can treat the water, the location of the site in the middle of downtown Santa Barbara and its very limited footprint, made it impossible to implement these technologies. WQTS identified and pilot-tested a new and novel approach to removing sulfide from water using granular iron-oxide media that can be implemented at the same site. Since then, the City modified the plant and used the existing vessels to implement the new treatment technology, which began operation in 2013. The plant is successfully removing sulfide and manganese from the groundwater.

***Pilot-Scale Testing of Biological Treatment for Nitrate Removal from Groundwater  
City of Glendale, California***

Part of the City of Glendale's groundwater contains elevated nitrate levels due to past agricultural activities. The City retained the services of WQTS to conduct pilot-scale testing of biological treatment for the removal of nitrate from the groundwater without the generation of an objectionable waste stream as that generated by ion-exchange systems. Biological nitrate removal utilizes the natural bacteria present in the groundwater in an engineered system to degrade nitrate. WQTS successfully completed the pilot testing effort and demonstrated its suitability for drinking water treatment to the State's Division of Drinking Water. After the completion of the study, the City and WQTS received conditional approval of the treatment system from DDW.

**PEER REVIEWED JOURNAL ARTICLES:**

1. Seidel, C.J.; I.N. Najm; N.K. Blute; C.J. Corwin; & X. Wu. "National and California Treatment Costs to Comply with Potential Hexavalent Chromium MCLs", *Journal AWWA*, **105**:6 (2013).
2. Najm, I.N. "An Alternative Interpretation of Disinfection Kinetics". *Journal AWWA*, **98**:11 (2006).
3. Najm, I.N.; M. Kennedy; & W. Naylor. "Lignite vs Bituminous GAC for Biofiltration – A Case Study". *Journal AWWA*, **97**:1 (2005).
4. Rosen, J.S.; I. Najm; J. Sobrinho; & S. Via. "Role of Variability in Design, Implementation, and Interpretation of Microbial Inactivation Studies," *Water Science & Technology: Water Supply*, 4(2):93-101 (2004).
5. Najm, I.N.; K. Rakness; M. Hotaling; S. Via; & D. Rexing. "A Proposed C×T Table for the Synergistic Inactivation of *Cryptosporidium* with Ozone and Chloramine," *Journal AWWA* **96**(6) 105-113 (2004).
6. Nerenberg, R., B.E. Rittmann, and I.N. Najm. "Perchlorate Reduction in a Hydrogen-Based Membrane Biofilm Reactor". *Journal AWWA*, **94**(11):103-114 (2002).
7. Najm, I.N. "User-Friendly Carbonate Chemistry Charts". *Journal AWWA*, **93**(11):86-93 (2001).
8. Najm, I.N.; R.R. Trussell. "NDMA Formation in Water & Wastewater". *Journal AWWA*, **93**:2 (2001)
9. Najm, I.N.; J.P. Marcinko; & J.A. Oppenheimer. "Impact of Water Quality and Analytical Methodology on TOC Analytical Results." *Journal AWWA*, **92**(8) (2000).
10. Trussell, R.R.; & I.N. Najm. Application of Advanced Oxidation Processes for the Destruction of Disinfection By-Product Precursors. In *Formation and Control of Disinfection By-Products in Drinking Water*. Philip Singer, Editor. American Water Works Association. Denver, CO (1999).
11. Najm, I.N.; C.H. Tate; and D. Selby. "Optimizing Enhanced Coagulation With PAC Addition: Case Study". *Journal AWWA*, **90**:10 (1998).
12. Najm, I.N.; E.M. Aieta; J.A. Oppenheimer; and B.T. Gallagher. "Impact of Turbidity on the Inactivation of *Giardia* cysts With Ozone". *Water Supply*, Vol. 16; Nos 1/2, pp. 419-442 (1998).
13. Kawamura, S., I.N. Najm, K.M. Gramith, "Filter Trough Modifications to Minimize Media Loss During Filter Washing," *Journal AWWA*, **89**:12 (1997).
14. Najm, I.N., "Advances in the Mathematical Modeling of Powdered Activated Carbon Processes," *Journal AWWA* **88**:10 (1996).
15. Najm, I.N., and S.W. Krasner, "Effects of Bromide and Natural Organic Matter on the Formation of Ozonation By-Products," *Journal AWWA*, **87**:1 (1995).
16. Najm, I.N., N.L. Patania, J.G. Jacangelo, S.W. Krasner, "Evaluating Surrogates for Disinfection By-Products," *Journal AWWA*, **86**:6 (1994).
17. Najm, I.N., V.L. Snoeyink, Y. Richard, "Removal of 2,4,6-Trichlorophenol and Natural Organic Matter From Water Supplies Using PAC in Floc-Blanket Reactors," *Water Research*, **27**:4 (1992).
18. Najm, I.N., V.L. Snoeyink, and Y. Richard, "Effect of Initial SOC Concentration on its Activated Carbon Adsorption Capacity in Natural Water," *Journal AWWA*, **83**:8 (1991).
19. Najm, I.N., V.L. Snoeyink, B.W. Lykins, and J.Q. Adams, "Powdered Activated Carbon for Drinking Water Treatment: A Critical Review," *Journal AWWA*, **83**:1 (1991).
20. Najm, I.N., V.L. Snoeyink, M.T. Suidan, C.H. Lee, and Y. Richard, "Effect of Particle Size and Background Organics on the Adsorption Efficiency of PAC," *Journal AWWA* **82**:1:65-72 (1990).
21. Wang, Y.T., M.T Suidan , J.T. Pfeffer, and I.N. Najm, "The Effect of Concentration of Phenols on Their Batch Methanogenesis," *Biotechnology and Bioengineering* **33**:1353-1357 (1989).
22. Suidan, M.T., I.N. Najm, Y.T. Wang, and J.T. Pfeffer, "Anaerobic Biodegradation of Phenol: Inhibition Kinetics and System Stability," *Journal of Environmental Engineering, ASCE* **114**:6 (1988).

**PEER REVIEWED RESEARCH REPORTS:**

1. Najm, I.N., Romer-Maraccini, O., Maraccini, P.A. *Verification of the Effect of pH on the Microbial Inactivation Efficiency of Free Chlorine*. In Press. Water Research Foundation, Denver, CO (2019)
2. Najm, I.N. *Strontium in Water: Critical Review of its Treatment Options and Considerations for its Removal*. Final Report, Water Research Foundation, Denver, CO (2016)
3. Najm, I.N.; N.L. Patania-Brown; E.Y. Seo; B.T. Gallagher; K.M. Gramith; N. Blute; X. Wu; M. Yoo; S. Liang; S. Maceiko; S. Kader; & J. Lowry. *Impact of Water Quality on Hexavalent Chromium Removal Efficiency and Cost*. Final Report, Water Research Foundation, Denver, CO (2014).
4. Najm, I.N.; N.L. Patania-Brown; B.T. Gallagher; E.Y. Seo; & K.M. Gramith. *Minimizing Waste Backwash Water from a Biological Denitrification Treatment System*. Final Report, Water Research Foundation, Denver, CO (2014).
5. Najm, I.N.; N.L. Patania Brown; & K. Gramith. *Quantifying Hydrazine in Chloraminated Water*. Final Report, Water Research Foundation, Denver, CO (2011).
6. Najm, I.N.; N.L. Patania Brown; & K. Gramith. *Minimizing Backwash Volume from Coagulation/Filtration for Arsenic Removal*. Final Report, Water Research Foundation, Denver, CO (2010).
7. Najm, I.N.; N.L. Patania Brown; K. Gramith; & T. Hargy. *Validating Disinfection in Ozone Contactors*. Final Report, Water Research Foundation, Denver, CO (2008).
8. Najm, I.N.; N.L. Patania Brown; & K. Gramith. *Minimizing Backwash Water Volume Generated from the Coagulation/Filtration Process used for Arsenic Removal*. Final Report, Water Research Foundation, Denver, CO (2007).
9. Najm, I.N.; & N.L. Patania Brown. *Formation of Hydrazine as a Chloramine By-Product*. Final Report, Water Research Foundation, Denver, CO (2006).
10. Singer, Philip C.; H.S. Weinberg; K. Brophy; L. Liang; M. Roberts; I. Grisstede; S. Krasner; H. Baribeau; H. Arora; & I. Najm. *Relative Dominance of Haloacetic Acids and Trihalomethanes in Treated Drinking Water*. Final Report. Awwa Research Foundation, Denver, CO (2002).
11. Najm, I.N., & R.R. Trussell. "Emerging Water Treatment Technologies." In *Emerging Water Contaminants*. Report by the National Research Council (1999).
12. Najm, I.N., V.L. Snoeyink, T.L. Galvin, and Y. Richard, "Evaluation of Powdered Activated Carbon Use for the Control of Organic Compounds During Drinking Water Treatment," Final Report, AWWARF, (January 1991).
13. Najm, I.N. "Evaluation of the Use of Powdered Activated Carbon for the Control of Organic Compounds During Drinking Water Treatment," Ph.D. Dissertation, University of Illinois at Urbana-Champaign, Urbana, Illinois (1990).
14. Najm, I.N., "Kinetics of Anaerobic Biodegradation of Phenolic Compounds," M.S. Thesis, University of Illinois at Urbana-Champaign, Urbana, Illinois (1987).

**CONFERENCE PRESENTATIONS:**

1. Najm, I.N., O. Romero-Maraccini, P. Maraccini. "Examining the Effect of Water pH on Microbial Inactivation with Free Chlorine.", In Proceedings of the AWWA Annual Conference & Exposition, Las Vegas, NV (2018).
2. Najm, I.N.; M. DeHaan; C. Busch; P. Swaim; & B. Emerson, "Heavy Metals Removal to Ultra-Low Levels – A Bench-Scale Study", In Proceedings of the AWWA Annual Conference & Exposition, Philadelphia, PA (2017).
3. Najm, I.N.; Romero-Maraccini, O.; Gallagher, B. & M. Paulucci, "Cyanotoxins & MIB Removal with Powdered Activated Carbon", In Proceedings of the AWWA California-Nevada Section Spring Conference, Sacramento, CA (2016).

4. Najm, I.N. "Minimizing Waste Brine Production from Ion-Exchange Plants Operated for Cr(VI) Removal from Groundwater", In Proceedings of the AWWA California-Nevada Section Spring Conference, Sacramento, CA (2016).
5. Najm, I.N. "Cyanotoxins Removal with Drinking Water Treatment Technologies", In Proceedings of the AWWA Annual Conference & Exposition, Chicago, IL (2016).
6. Najm, I.N. & S. Teefy, "Proposed Chlorine CT Values for Giardia Inactivation at pH Greater than 9.0." In Proceedings of the AWWA Water Quality Technology Conference, Salt Lake City, UT (2015).
7. Najm, I.N. "Application of the Segregated Flow Analysis (SFA) Method for Calculating Disinfection Across a Contactor." In Proceedings of the AWWA Water Quality Technology Conference, Salt Lake City, UT (2015).
8. Najm, I.N. & G. Deol; L. Hakes; & P. Zhou. "Cyanotoxins Removal with Water Treatment Technologies Applied to South Bay Aqueduct Water." In Proceedings of the AWWA California-Nevada Section Conference, Anaheim, CA (2015).
9. Najm, I.N. & M. Rho. "Biological Removal of VOCs from Groundwater – Results of a Bench-Scale Study." In Proceedings of the AWWA CA-NV Section Fall Conference, Anaheim, CA (2014).
10. Najm, I.N. "Critical Review of California DPH's Cost of Compliance with Cr(VI) MCL." In Proceedings of the AWWA CA-NV Section Fall Conference, Anaheim, CA (2014).
11. Najm, I.N., "Feasibility and Cost of Hexavalent Chromium Removal from Groundwater," Paper presented at the Association of California Water Agency's Regulatory Summit, Oxnard, California (2013).
12. Najm, I.N. "National, California, and Community Cost of Implementing a Cr(VI) MCL." Paper presented at the Water Research Foundation Hexavalent Chromium Workshop, Sacramento, CA (2013).
13. Najm, I.N.; T.J. Kim; & C. Ajwani. "Optimizing Biological Denitrification of Groundwater – Recovering Waste Backwash Water & Co-Removal of Hexavalent Chromium." In Proceedings of the AWWA Water Quality Technology Conference, Long Beach, CA (2013).
14. Najm, I.N.; N.L. Patania-Brown; N. Blute; X. Wu; S. Kader. "Feasibility and Cost of Hexavalent Chromium Removal from Groundwater." In Proceedings of the AWWA Water Quality Technology Conference, Long Beach, CA (2013).
15. Najm, I.N., N.L. Patania Brown, N. Blute, & S. Kader, "Impact of Water Quality on Cr(VI) Treatment Efficiency and Cost," In Proceedings of the AWWA Annual Conference & Exposition, Denver, Colorado (2013).
16. Najm, I.N., D.J. Askenaizer, & R. Takidin, "Performance & Cost of Biological Denitrification of Groundwater," In Proceedings of the AWWA Annual Conference & Exposition, Denver, Colorado (2013).
17. Najm, I.N., & D.J. Askenaizer, "Pilot-Scale Evaluation of Biological Denitrification of Groundwater." Paper presented at the AWWA Inorganic Contaminants Workshop, Sacramento, California (2013).
18. Najm, I.N., C. Seidel, N. Blute, C. Corwin, X. Wu, "Hexavalent Chromium Treatment Goals – Community and National Cost Implications." In Proceedings of the AWWA Water Quality Technology Conference, Toronto, California (2012).
19. Najm, I.N., & G. Lynch, "Fitting an Arsenic & Manganese Treatment Plant on a 'Postage Stamp'", In Proceedings of the AWWA CA-NV Section Fall Conference, San Diego, California (2012).
20. Najm, I.N., & D.J. Askenaizer, "Pilot-Scale Evaluation of Biological Denitrification of Groundwater." In Proceedings of the AWWA CA-NV Section Fall Conference, San Diego, California (2012).
21. Najm, I.N., S. Thomson; & L. Chiourn, "Impact of Watershed Fire on a Water Treatment Plant – The Santa Barbara Experience," In Proceedings of the AWWA CA-NV Section FALL Conference, Sacramento, California (2010)
22. Teefy, S., I.N. Najm, L. Sangines, B. Gentry, & C. Pena, "Full-Scale Demonstration of Bromate Control with Pre-Chloramination." In Proceedings of the AWWA Annual Conference & Exposition, Chicago, Illinois (2010).

23. Najm, I.N., N.L. Patania Brown, K. Gramith, J. Ma, "A Novel Use of Ultra-Light Media in a Coagulation-Filtration Process for Arsenic Removal from Groundwater". In Proceedings of the AWWA Annual Conference & Exposition, Chicago, Illinois (2010).
24. Najm, I.N., S. Thomson; & L. Chiourn, "Impact of Watershed Fire on DBP Formation & Control – The Santa Barbara Experience," In Proceedings of the AWWA Annual Conference & Exposition, Chicago, Illinois (2010).
25. Najm, I.N., N.L. Patania Brown, K.M. Gramith, "Hydrazine Formation as a By-Product of Chloramine Addition to Natural Waters," In Proceedings of the AWWA Annual Conference & Exposition, Chicago, Illinois (2010).
26. Najm, I.N., B.T. Gallagher, M. Phillibert, J. Meyerhofer, R. Anderson, & S. Thomson. "A Novel Approach to Sulfide Removal from Groundwater", In Proceedings of the AWWA Annual Conference & Exposition, San Diego, California (2009).
27. Teefy, S.M., A. O'Brien, J. Fong, & I. Najm. "When T&O Destruction is the Primary Goal, what is the Optimum Ozone-Peroxide Process Configuration?". In Proceedings of the AWWA Annual Conference & Exposition, San Diego, California (2009).
28. Patania Brown, N., I. Najm, K. Gramith, S. Liang, B. Boman, & I. Babbitt. "Hydrogen-Based Autotrophic Biodegradation of Nitrate & Perchlorate in Groundwater," In Proceedings of the AWWA Annual Conference, San Diego, California (2009).
29. Teefy, S.M., C. Pena, B. Gentry, I. Najm, A. Mofidi. "Comparison of Bromate Control Strategies – pH Suppression vs. Chloramine Addition." In Proceedings of the AWWA Water Quality Technology Conference, Cincinnati, Ohio (2008).
30. Najm, I.N., D. Dempsey, Y. C. Guo. "Hydrazine as a Chloramine By-Product", In Proceedings of the AWWA Annual Conference, San Francisco, California (2005).
31. Najm, I.N., S.M. Teefy, S.E. Barrett. "NDMA Formation from Water Treatment Polymers". In Proceedings of the AWWA Annual Conference, Orlando, Florida (2004).
32. Najm, I.N. "Control of Nitrosamine Formation in Water Treatment". In Proceedings AWWA Annual Conference, Anaheim, California (2003).
33. Najm, I.N., S. Teefy, & L. Hidas. "Optimizing the Use of Carbon Dioxide for Bromate Control." In Proceedings of the AWWA Annual Conference, Anaheim, California (2003).
34. Rosen, J.S.; I.N. Najm; S.H. Via; J.A.H. Sobrinho; & M.M. Marshall. "Effects of Variability on the Developing Regulations for Ozone Inactivation of *Cryptosporidium parvum*." In Proceedings of the AWWA Water Quality Technology Conference, Seattle, WA (November 2002).
35. Najm, I.N., M. Kennedy, and Bill Naylor. "Full-Scale Comparison Between Lignite GAC and Bituminous GAC for Biofiltration". In Proceedings of the AWWA Water Quality & Technology Conference, Seattle, WA (November, 2002).
36. Najm, I.N., and J. Ma. "Formation of Nitrosamines as By-Products of Chloramination". Paper presented at the AWWA Annual Conference in New Orleans, Louisiana (June, 2002)
37. Najm, I.N., and S. Teefy. "Reducing Bromate Formation with Carbon Dioxide Addition". Paper presented at the AWWA Annual Conference in New Orleans, Louisiana (June, 2002)
38. Najm, I.N.; and R.R. Trussell. "NDMA Formation in Water & Wastewater". Paper presented at the AWWA Water Quality Technology Conference in Salt Lake City (November, 2000)
39. Rittmann, B.E.; R. Nerenberg; & I.N. Najm. "Autohydrogenotrophic Perchlorate Reduction," Paper Presented at the AWWA Inorganic Contaminants Workshop, Albuquerque, NM (February 28 & 29, 2000)
40. Najm, I.N.; R.R. Trussell; L. Boulos; B. Gallagher; R. Bowcock; C. Williams; and D. Clifford. "Application of Ion-Exchange Technology for Perchlorate Removal from Drinking Water," Paper presented at the AWWA Annual Conference, Chicago, IL (June, 1999)



41. Teefy, S.; & I.N. Najm. "Evaluating Performance of Backwash Water Treatment Processes Using Indigenous Aerobic Bacterial Spores," Paper presented at the AWWA Annual Conference, Chicago, IL (June, 1999)
42. Najm, I.N., R.R. Trussell, D.E. Clifford, and R. Bowcock. "Evaluating Ion-Exchange Technology for Perchlorate Treatment," Paper presented at the National Groundwater Association's Specialty Conference on Perchlorate and MTBE, Anaheim, California (June, 1998).
43. Najm, I.N., R.R. Trussell, E.M. Aieta. "Comparing Kinetic Models for *Giardia* and *Cryptosporidium* Inactivation with Ozone". Paper presented at the AWWA Water Quality Technology Conference, Denver, CO (November, 1997).
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