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EDUCATION

- Ph.D. *University of California, Berkeley* - Civil Engineering - 1990
Major field of study: Environmental Engineering
Minor: Chemical Engineering and Microbiology
Dissertation Advisor: Dr. David Jenkins
- M.S. *University of British Columbia (Canada)* – Bio-Resource Engineering - 1986
Major field of study: Environmental Engineering
- B.S. *McGill University (Canada)* –Bioresource Engineering (Great Distinction) - 1984

PROFESSIONAL EXPERIENCE

- 2006 - *Professor*, Civil & Environmental Engineering, University of Delaware.
- 2000 – 2006 *Associate Professor*, Civil & Environmental Engineering, University of Delaware.
- 1995 - 2000 *Assistant Professor*, Civil & Environmental Engineering, University of Delaware.
- 1991 - 1995 *Assistant Professor*, Environmental Engineering, Illinois Institute of Technology, Chicago, IL.
- 1990 - 1991 *Consulting Engineer*, Novatec Consultants Inc., Vancouver, B.C., Canada
- 1987 - 1990 *Engineering Trainee*, Sacramento Wastewater Treatment Plant, Sacramento, CA.

PUBLICATIONS

1. Lee, J.W., Cha, D.K., Oh, Y.K., KO, K.B., and Song, J.S. Zero-valent Iron Pretreatment for Detoxifying Iodine in Liquid Crystal Display (LCD) Manufacturing Wastewater. *Journal of Hazardous Materials*, 164, 67-72 (2009).
2. Ryu, H.W., Yoo, S.K., Choi, J.M., Cho, K.S., Cha, D.K., Thermophilic biofiltration of H₂S and isolation of a thermophilic and heterotrophic H₂S-degrading bacterium, *Bacillus* sp. TSO3, *Journal of Hazardous Materials*, **168**, 501–506 (2009).
3. Shin, K. H. and Cha, D. K. "Microbial Reduction of Nitrate in the Presence of Nanoscale Zero-Valent Iron" *Chemosphere*, **72**, 257-262 (2008).

4. Ahn, S. C., Oh, S. Y., Cha, D. K. "Enhanced Reduction of Nitrate by Zero-Valent Iron at Elevated Temperatures." *Journal of Hazardous Materials*, **156**, 17-22 (2008)
5. Lee, J. W., Cha, D.K., Kim, I. K., Son, A., and Ahn, K. H. "Fatty acid methyl ester (FAME) technology for monitoring biological foaming in activated sludge: Full scale plant verification." *Environmental Technology*, **29**, 199-206 (2008).
6. Oh, S. K., Chiu, P. C. and Cha, D. K. Reductive transformation of 2,4,6-trinitrotoluene, hexahydro-1,3,5-trinitro-1,3,5-triazine, and nitroglycerin by pyrite and magnetite. *Journal of Hazardous Materials*, **58**, 652-655 (2008).
7. Shin, K. H, Son, A., Cha, D. K., and Kim, K. W. "Review on Risks of Perchlorate and Treatment Technologies" *Journal of Korean Society of Environmental Engineering*, **29(9)**, 1060-1068 (2007).
8. Oh, S. Y., Cha, D. K., Chiu, P. C., and Kim, B. J. "Zero-valent iron treatment of RDX-containing and perchlorate-containing wastewaters from an ammunition-manufacturing plant at elevated temperatures." *Water Science and Technology*, **54(10)**, 47-53 (2006).
9. Oh, S. Y., Lee, J., Cha, D. K. and Chiu, P. C. "Reduction of Acrolein by Elemental Iron: Kinetics, pH Effect, and Detoxification" *Environmental Science and Technology*, **40**, 2765-2770 (2006).
10. Son, A., Lee, J. W., Chiu, P. C. and Cha, D. K. "Microbial Reduction of Perchlorate with Zero-valent Iron." *Water Research*, **40**, 2027-2032 (2006).
11. Oh, S. Y., Chiu, P. C., Kim, B. J. and Cha, D. K. "Enhanced reduction of perchlorate by elemental iron at elevated temperatures." *Journal of Hazardous Materials*, **B129**, 304-307 (2006).
12. Perey-Saxe, J., Lubenow, B. L., Chiu, P. C., Huang, C. P. and Cha, D. K. Enhanced biodegradation of azo dyes using an integrated elemental iron-activated sludge system: I. Evaluation of system performance. *Water Environment Research*, **78**, 19-25 (2006).
13. Perey-Saxe, J., Lubenow, B. L., Chiu, P. C., Huang, C. P. and Cha, D. K. Enhanced biodegradation of azo dyes using an integrated elemental iron-activated sludge system: II. Effects of physical-chemical parameters. *Water Environment Research*, **78**, 26-30 (2006).
14. Oh, S. Y., Chiu, P. C., Kim, B. J. and Cha, D. K. "Zero-Valent Iron Pretreatment for Enhancing the Biodegradability of Hexahydro-1,3,5-trinitro-1,3,5 triazine (RDX)." *Water Research*, **39**, 5027-5032 (2005).
15. Oh, S. Y., Cha, D. K., Kim, B. J. and Chiu, P. C., "Reductive Transformation of Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine(HMX), and Methylenedinitramine (MDNA) with Elemental Iron", *Environmental Toxicology and Chemistry*, **24**, 2812-2819 (2005).

16. Kim, S. D., Bae, J. E., Park, H. S., and Cha, D. K. Bioleaching of cadmium and nickel from synthetic sediments by *Thiobacillus ferrooxidans*. *Environmental Geochemistry and Health*, **27**, 229-235 (2005).
17. Chang, J. S., Radosevich, M., Jin, Y. and Cha, D. K. Enhancement of phenanthrene solubilization and biodegradation by trehalose lipid biosurfactants. *Environmental Toxicology and Chemistry*, **23**, 2816–2822 (2004).
18. Oh, S.Y., Cha, D. K., Kim, B. J., and Chiu, P. C. Reduction of nitroglycerin with cast iron: pathway, kinetics, and mechanisms. *Environmental Science and Technology*, **38**, 3723-3730 (2004).
19. Oh, S. Y., Cha, D. K., Chiu, P. C. and Kim, B. J. Conceptual technology comparison for pink water treatment: zero-valent iron/fenton reagent reactor, anaerobic fluidized bed reactor, and granular activated carbon, *Water Science and Technology*, **49**(5-6), 129-136 (2004).
20. Oh, S. Y., Chiu, P. C, Kim, B. J., and Cha, D. K., Enhancing fenton oxidation of TNT and RDX through pretreatment with zero-valent iron. *Water Research*, **37**, 4275-4283 (2003).
21. Oh, S. Y., Cha, D. K., Chiu, P. C. and Kim B. J. Enhancing oxidation of TNT and RDX in wastewater: pretreatment with elemental iron. *Water Science and Technology*, **47**(10), 93-99 (2003).
22. Oh, S. Y., Cha, D. K., Kim, B. J., and Chiu, P. C. Effect of adsorption on the transformation of TNT and RDX with elemental iron. *Environmental Toxicology Chemistry*, **21**, 1384-1389 (2002).
23. Perey, J. R., Chiu, P. C., Huang, C. P., and Cha, D. K. Zero-valent iron pretreatment for enhancing biodegradability of azo dyes. *Water Environment Research*, **74**, 221-225 (2002).
24. Oh, S. Y., Cha, D. K., and Chiu, P. C. Graphite-mediate reduction of 2,4-dinitrotoluene with elemental iron. *Environmental Science and Technology*, **36**, 2178-2184 (2002).
25. Ma, H., Kim, S. D., Cha, D. K., and Allen, H. E. Effect of copper binding by suspended particulate matter on toxicity. *Environmental Toxicology Chemistry*, **21**, 710-714 (2002).
26. Kim, D. W., Cha, D. K., Seo, H. Y., and Bak, J. B. Influence of growth rate on biosorption of heavy metals by *Nocardia amarae*. *J. Microbiol. Biotechnol.*, **12**, 878-881 (2002).
27. Kim, D. W., Cha, D. K., Wang, J., and Huang, C. P. Heavy metal removal by activated sludge: influence of *Nocardia amarae*. *Chemosphere*, **46**(1), 137-142 (2002).

28. Dean, S. E., Jin, Y., Cha, D. K., Wilson, S. V., Radosevich, M. Phenanthrene Degradation in Soil Co-Inoculated with Phenanthrene-Degrading and Biosurfactant-Producing Bacteria. *Journal of Environmental Quality*, **30**, 1126-1133 (2001).
29. Perey, J. R., Oh, S. Y., Cha, D. K., Chiu, P. C. and Huang, C. P., Enhancing Biodegradability of Refractory Aromatics: Pretreatment with Elemental Iron, *Ex Situ Biological Technologies*, 149-155 (2001).
30. Lampron, K. J., Chiu, P. C. and Cha, D. K. Reductive dehalogenation of chlorinated ethenes with elemental iron: the role of microorganisms. *Water Research*, **35**, 3077-3084 (2001).
31. Kim, S. D., Gu, M. B., Allen, H.E. and Cha, D. K. Physicochemical factors affecting the sensitivity of *Ceriodaphnia dubia* to copper. *Environmental Monitoring and Assessment*. **70**, 105-116 (2001).
32. Chang, J. H., Qiang, Z., Huang, C. P., and Cha, D. K. "Electroosmotic flow rate: a semiempirical approach." Nuclear Site Remediation (edited by Eller, P. G. and Heineman, W. R., American Chemical Society, Washington, DC, pp 247 (2000).
33. Qiang, Z., Chang, J. H., Huang, C. P., and Cha, D. K. "Oxidation of selected polycyclic aromatic hydrocarbons by the Fenton's reagent: effect of major factors including organic solvent." Nuclear Site Remediation (edited by Eller, P. G. and Heineman, W. R., American Chemical Society, Washington, DC, pp 187 (2000).
34. Niec, J. H. and Cha, D. K. "Influence of anoxic selectors on heavy metal removal by activated sludge." *Biotechnol. Bioprocess Eng.*, **5**, 431 (2000).
35. Cha, D. K., Chiu, P. C., Chang, J. S. and Kim, S. D. Hazardous waste: treatment technologies. *Water Environment Research*, **72** (2000) (Annual literature review paper).
36. Kim, S. D., Ma, H., Allen, H. E. and Cha, D. K. Influence of dissolved organic matter on the toxicity of copper to *Ceriodaphnia dubia*: effect of complexation kinetics. *Environmental Toxicology Chemistry*, **18**, 2433-2437 (1999).
37. Cha, D. K., Fuhrmann, J. J., Kim, D. W. and Golt, C. M. Fatty acid methyl ester (FAME) analysis for monitoring *Nocardia* levels in activated sludge. *Water Research*, **33**, 1964-1966 (1999).
38. Ma, H., Kim, S. D., Cha, D. K., and Allen, H. E. Effect of kinetics of complexation by humic acid on the toxicity of copper to *Ceriodaphnia dubia*. *Environmental Toxicology and Chemistry*, **18**, 828-837 (1999).
39. Kim, S.D., Kilbane, J. J., and Cha, D. K. Prevention of acid mine drainage by sulfate reducing bacteria: organic substrate addition to mine waste piles. *Environmental Engineering Science*, **16**, 139-145 (1999).

40. Cha, D. K., Chiu, P. C., Kim, S. D. and Chang, J. S. Hazardous waste: treatment technologies. *Water Environment Research*, **71**, 870 (1999) (Annual literature review paper).
41. Wang, J., Huang, C. P., Allen, H. E., Cha, D. K. and Kim, D. W. Adsorption characteristics of dye onto sludge particulates. *Journal of Colloid & Interface Science*, **208**, 518-528 (1998).
42. Lampron, K. J., Chiu, P. C. and Cha, D. K. Biological reduction of trichloroethene supported by Fe(0). *Bioremediation Journal*, **2**, 175-181 (1998).
43. Park, A. J., Cha, D. K., and Holsen, T. M. Enhancing solubilization of sparingly soluble organic compounds by biosurfactants produced from *Nocardia erythropolis*. *Water Environment Research*, **70**, 351-355 (1998).
44. Cha, D. K., Chiu, P. C., Sarr, D. and Kim, D. W. Hazardous waste: treatment technologies. *Water Environment Research*, **70**, 705-720 (1998) (Annual literature review paper).
45. Cha, D. K., Song, J. S., and Sarr, D. Hazardous waste treatment technologies. *Water Environment Research*, **69**, 676-689 (1997) (Annual literature review paper).
46. McCue, J. J., Holsen, T. M., Gauger, W. K., Kelley, R. and Cha, D. K. Effect of amorphous ferrous sulfide on the microbial reductive dechlorination of PCB Aroclor 1242. *Environmental Toxicology and Chemistry*, **15**, 1071-1082 (1996).
47. Moschandreas, D. J., Cha, D. K. and Qian, J. Measurement of indoor bioaerosol concentrations by a direct counting method. *ASCE Journal of Environmental Engineering*, **122**, 374-378 (1996).
48. Cha, D. K., Song, J. S., Kim, B. J., and Sarr, D. Hazardous waste treatment technologies. *Water Environment Research*, **68**, 575-586 (1996) (Annual literature review paper).
49. Su, M. C., Cha, D. K., and Anderson, P. R. Influence of selector technology on heavy metal removal by activated sludge: secondary effects of selector technology. *Water Research*, **29**, 971-976 (1995).
50. Cha, D. K., Jenkins, D., Lewis, W. P., Kido, W. H. Closure to discussion of process control factors influencing *Nocardia* populations in activated sludge. *Water Environment Research*, **65**, 93 (1993).
51. Cha, D. K., Jenkins, D., Lewis, W. P., Kido, W. H. Process control factors influencing *Nocardia* populations in activated sludge. *Water Environment Research*, **64**, 37-43 (1992).

SPONSORED RESEARCH CONTRACTS AND GRANTS

US Army Engineering Research and Development Center, “Simultaneous Removal of Perchlorate and Energetic Compounds by Zero-Valent Iron and Perchlorate Respiring Bacteria” 4/06 – 12/08.

US Army Engineering Research and Development Center/ Chesapeake Watershed Cooperative Ecosystems Studies Unit, “Development of Appropriate Treatment Technology for PAX-21 Manufacturing Wastewater” 7/08 – 12/08.

US Department of Defence, Environmental Security Technology Certification Program (ESTCP) “Pilot-Plant Evaluation of Integrated Iron-Fenton Process for Treatment of Pink Water”, 01/05 – 12/08.

U.S. Environmental Protection Agency, “Short-term Chronic Toxicity of Photocatalytic Nanoparticles to Bacteria, Algae, and Daphnid” (co-PI), 8/04-7/07

GS Engineering and Construction Corp. “Enhancing Biodegradability of Refractory Compounds in Wastewater Treatment Facilities Using Zero-valent Iron”, 04/04- 03/06.

US Army Construction Engineering Research Lab, “Reductive Removal of Aqueous Perchlorate by Elemental Iron”, 03/04 – 12/04.

US Army Construction Engineering Research Lab, “Iron Pretreatment of Nitroglycerin”, 04/02 – 05/03.

International Copper Association, “Effect of Copper on Nitrifying and Heterotrophic Populations in Activated Sludge”, 07/01 – 10/03.

Korea Institute of Science and Technology, “Fatty acid analysis for monitoring microbial communities in wastewater treatment processes”, 08/00 – 12/03.

Water Environment Research Foundation, “Enhancing biodegradability of refractory aromatics in wastewater: pretreatment with elemental iron”, 05/00 – 08/02.

US Army Corps of Engineers , “Anaerobic Treatment of Pink Water”, 04/00 – 09/01

Water Environment Research Foundation, “ Chemistry of natural and wastewater organic matter and effects on copper toxicity” (co-PI), 10/99 – 09/02.

DuPont Company, “Fatty acid methyl ester (FAME) technology for monitoring nitrifying populations in mixed cultures”, 98 – 00.

U.S. Environmental Protection Agency, “Fate and transport of heavy metals in subsurface: effect of polymer-surfactant aggregates” (co-PI), 98 – 01.

U.S. Geological Survey, “The effect of biosurfactants on the fate and transport of nonpolar organic contaminants in porous media”, 97 – 99.

U.S. Department of Energy, “Electrochemical processes for in-situ treatment of contaminated soils” (co-PI), 96 – 99

University of Delaware Research Foundation, “Fatty acid analysis for monitoring microbial communities in wastewater treatment processes”, 98 – 99.

International Copper Association, “Bioavailability of Copper: Effects of Chemical Speciation”, 96 – 98.

US Environmental Protection Agency, “Enhancing biodegradation of sorbed hydrophobic compounds using nonionic surfactants” (co-PI), 95 – 97

US Army Corps of Engineers, “Bioleaching of heavy metals from contaminated solids”, 93 – 94.

Ferrara Pan Candy Company, “Evaluation of anaerobic filter for the treatment of candy company wastewater”, 92 – 93.