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First Name: **Wei** Last Name: **Zhang**

Title: **Assistant Professor**

Institution: **Michigan State University**

Mailing Address: **1066 Bogue ST, RM A516**

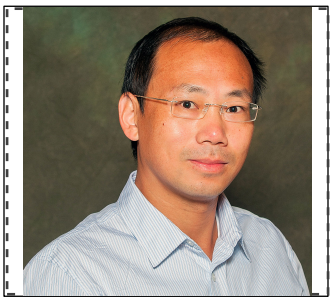
Plant and Soil Sciences Building

City: **East Lansing** State: Michigan Zip Code: 48824

Country: USA

Country Code: 1 Phone: (517) 353-0471

Email: weizhang@msu.edu Website: https://msu.edu/~weizhang/



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Education:

PhD: Environmental Engineering MS: Biosystems Engineering BS: Environmental Chemistry

General Areas of Expertise:

environmental and soil physics & hydrology, emerging contaminants, colloids, engineered nanoparticles, antibiotic resistance

Short Bio:

Dr. Wei Zhang is an Assistant Professor of Environmental and Soil Physics at Michigan State University (MSU), USA. He received his Ph.D. degree in Environmental Engineering from Cornell University in 2010, his MS degree in Biosystems Engineering from Oklahoma State University in 2006, and his bachelor's degree in Environmental Chemistry from Nanjing University in 2000. Wei is broadly interested in the quality and sustainability of soil and water resources, with emphasis on the movement of water, solutes, and ultra-fine particles (microorganisms, abiotic colloids, and engineered nanomaterials) and their interactions with contaminants in natural and engineered systems. His current research focuses on the fate and transport of emerging contaminants including antibiotics, engineered nanoparticles, and emerging microbial pathogens. His research is supported by U.S. Department of Agriculture (USDA) and other funding agencies. Wei has published 43 peer-reviewed articles in premier journals in environmental and soil sciences such as Environmental Science & Technology (10 papers), and Water Research (7 papers), and given over 30 invited talks and 70 conference presentations. His publications have been cited over 1000 times, with an H-index of 19. Wei currently serves as an Associate Editor for Journal of Environmental Quality, and Canadian Journal of Soil Science. Wei actively review manuscripts for over 30 journals, and proposals for USDA and US National Science Foundation. He previously received the USDA New Investigator Award, US National Research Council Research Associateship Award, and Cornell Liu Memorial Award.

Five Representative Publications:

1. Chen, Z., W. Zhang, G. Wang, Y. Zhang, Y. Gao, S.A. Boyd, B.J. Teppen, J.M. Tiedje, D. Zhu, and H. Li. 2017. Bioavailability of soil-sorbed tetracycline to Escherichia coli under unsaturated conditions. Environmental Science & Technology, 51(11), 6165-6173.
2. Jeon, S., C.S. Krasnow, C.K. Kirby, L.L. Granke, M.K. Hausbeck, and W. Zhang. 2016. Transport and retention of Phytophthora capsici zoospores in saturated porous media. Environmental Science & Technology, 50(17), 9270–9278.
3. Liu, C.-H., Y.-H. Chuang, H. Li, B.J. Teppen, S.A. Boyd, J.M. Gonzalez, C.T. Johnston, J. Lehmann, and W. Zhang. 2016. Sorption of lincomycin by manure-derived biochars from water. Journal of Environmental Quality, 45(2), 519-527.
4. Liu, C.-H., Y.-H. Chuang, T.-Y. Chen, Y. Tian, H. Li, M.-K. Wang, and W. Zhang. 2015. Mechanism of arsenic adsorption on magnetite nanoparticles from water: Thermodynamic and spectroscopic studies. Environmental Science & Technology, 49(13), 7726–7734.
5. Zhang, W., U. Rattanaudompol, H. Li, and D. Bouchard. 2013. Effects of humic and fulvic acids on aggregation of aqu/nC60 nanoparticles. Water Research, 47(5), 1793-1802.

FEWSTERN Symposium 2017 Presentation Title and Abstract:

Title: Pharmaceutical exposure changes pharmaceutical residues, antibiotic resistome and bacterial community in lettuce and soil

Abstract: As fresh water is becoming scarcer in many parts of the world, crop irrigation with reclaimed water is becoming more popular. Reclaimed water often contains trace levels of pharmaceuticals (e.g., antibiotics). Thus, crop irrigation with reclaimed water could result in accumulation of pharmaceuticals in food crops, and changes of antibiotic resistant bacteria (ARB) and genes (ARGs) in crops and soils. The transfer of pharmaceuticals, ARB and ARGs from food crops to humans via dietary exposure may pose potential risks to food safety and human health. Here we investigated the accumulation of pharmaceuticals in greenhouse-grown lettuce under overhead or soil surface irrigation. The changes in bacterial communities and ARG profiles in lettuce shoots, roots, and soils were also explored. Lettuce shoots had greater concentrations of pharmaceutical residues and ARGs under overhead irrigation than under surface irrigation. Bacterial community was more diverse in soils than in lettuce. Bacterial communities and ARG profiles were altered by antibiotic stress imposed by the irrigation water. Our results suggest that irrigation practice could be optimized to reduce the potential risks to food safety, when reclaimed water is used for crop irrigation.