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Organic Analytical Laboratory
Division of Atmospheric Science
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(a) Professional Preparation

Konkuk University, Seoul, South Korea	Rural engineering	B.S., 2007
Konkuk University, Seoul, South Korea	Environmental science	Ph.D., 2012
Rutgers University, NJ, USA	Public Health	Ph.D., 2018
Desert Research Institute, NV, USA	Environmental Health	Postdoctoral fellow, 2019

(b) Appointments

Assistant Research Professor	Desert Research Institute, NV, USA	Aug 2019-Present
Senior Researcher	ETwaters, Inc., Seoul, South Korea	Dec 2012-Present
Postdoctoral Fellow	Desert Research Institute, NV, USA	Jan 2018-Aug 2019
Student Assistant	Rutgers School of Public Health, NJ, USA	Dec 2012-Jan 2018
Graduate Teaching Assistant	Rutgers School of Public Health, NJ, USA	Mar 2015-Jun 2015

(c) Publications

Peer-reviewed Journal Articles

16. **Son, Y.**, Mainelis, G., Delnevo, C., Wackowski, O., Schwander, S., Meng, Q. (2019) Investigating e-cigarette particle emissions and human airway depositions under various e-cigarette use conditions. *Chemical Research in Toxicology*, Accepted
15. **Son, Y.**, Mishin, V., Laskin, J. D., Mainelis, G., Wackowski, O. A., Delnevo, C., Schwander, S., Samburova, V., Khlystov, A., Meng, Q. (2019). Hydroxyl Radicals in E-cigarette Vapor and E-vapor Oxidative Potentials under Different Vaping Patterns. *Chemical research in toxicology*, 32(6), 1087-1095
14. **Son, Y.**, Weisel, C., Wackowski, O., Mainelis, G., Schwander, S., Delnevo, C., Kipen, H., Meng, Q. (2018). Evaluation of e-vapor nicotine and nicotyrine concentrations emitted under various e-liquid compositions, device settings and vaping topographies. *Chemical Research in Toxicology*, 31(9), 861-868
13. Samburova, V., Bhattarai, C., Strickland, M., Darrow, L., Angermann, J.E., **Son, Y.**, Khlystov, A. (2018). Aldehydes in exhaled breath during e-cigarette vaping: results of a pilot study. *Toxics*, 6(3), 46
12. **Son, Y.**, Osornio-Vargas, Á. R., O'Neill, M. S., Hystad, P., Texcalac-Sangrador, J. L., Ohman-Strickland, P., Meng, Q, Schwander, S. (2018). Land use regression models to assess air pollution exposure in Mexico City using finer spatial and temporal input parameters. *Science of The Total Environment*, 639, 40-48
11. Yoon, C.G., Rhee, H.P. & **Son, Y.*** (2017). Applicability study of ecological impact assessment using AQUATOX model in Paldang Reservoir, South Korea. *Desalination and Water Treatment*, 60, 39-47
10. Meng, Q., Nagarajan, S., **Son, Y.**, Koutsoupas, P., & Bielory, L. (2016). Asthma, ocular symptoms, and skin test sensitivity across National Health and Nutrition Examination Surveys. *Annals of Allergy, Asthma & Immunology*, 116(2), 118-125.
9. Meng, Q., Schwander, S., **Son, Y.**, Rivas, C., Delnevo, C., Graber, J., Giovenco, D., Bruen, U. & Robson, M. (2016). Has the mist been peered through? Revisiting the building blocks of human health risk assessment for electronic cigarette use. *Human and Ecological Risk Assessment: An International*

Journal, 22(2), 558-579.

8. **Son, Y.**, Rhee, H. P., Yoon, C. G., & Kwon, T. Y. (2016). Feasibility study of ecological wastewater treatment system for decentralized rural community in South Korea. *Desalination and Water Treatment*, 57(44), 20766-20773.
7. Choi, J., Yoon, C. G., Rhee, H. P., **Son, Y.**, Cho, M., & Ryu, J. (2016). National risk assessment of irrigation on farmland near wastewater treatment plants in Korea. *Paddy and Water Environment*, 14(2), 281-288.
6. **Son, Y.**, Mishin, V., Welsh, W., Lu, S. E., Laskin, J. D., Kipen, H., & Meng, Q. (2015). A Novel High-Throughput Approach to Measure Hydroxyl Radicals Induced by Airborne Particulate Matter. *International journal of environmental research and public health*, 12(11), 13678-13695.
5. **Son, Y.K.**, Yoon, C.G., Rhee, H.P., & Lee, S.J. (2013). A review on microbial and toxic risk analysis procedure for reclaimed wastewater irrigation on paddy rice field proposed for South Korea. *Paddy and Water Environment*, 11(1-4), 543-550.
4. Rhee, H.P., Yoon, C.G., Lee, S.J., Choi, J.H., & **Son, Y.K.** (2012). Analysis of nonpoint source pollution runoff from urban land uses in South Korea. *Environmental Engineering Research*, 17(1), 47-56.
3. Rhee, H.P., Yoon, C.G., **Son, Y.K.**, & Jang, J.H. (2011). Quantitative risk assessment for reclaimed wastewater irrigation on paddy rice field in Korea. *Paddy and Water Environment*, 9(2), 183-191.
2. **Son, Y.K.**, Yoon, C.G., Kim, H.C., Jang, J.H., & Lee, S.B. (2010). Determination of regression model parameter for constructed wetland using operating data. *Paddy and Water Environment*, 8(4), 325-332.
1. Kim, H.C., Yoon, C.G., **Son, Y.K.**, Rhee, H.P., & Lee, S.B. (2010). Effects of open water on the performance of a constructed wetland for nonpoint source pollution control. *Water Science and Technology*, 62(5), 1003-1012.

Conference Proceedings

15. **Son, Y.** and Ryu, J. (2019) Development of low-cost autonomous air quality sensing platform to access health impacts associated with wildfire events. *Proceedings of Nevada Public Health Association annual conference*, Reno, NV, USA
14. **Son, Y.**, Bhattarai, C., Samburova, V., and Khlystov, A. (2019). Impact of Vaping Patterns on Carbonyls and Carbon Monoxide Emissions from Four Popular Types of Electronic Cigarettes. *Proceedings of Society of Research on Nicotine & Tobacco annual meeting*, San Francisco, CA, USA
13. **Son, Y.**, Khlystov, A., Samburova, V., Al-Shujairi, A., Giovenco, D., Delnevo, C., and Meng, Q. (2019) Passive Nicotine Exposures in Electronic Cigarette Vape Shops in New Jersey, USA. *Proceedings of Society of Research on Nicotine & Tobacco annual meeting*, San Francisco, CA, USA
12. **Son, Y.**, Bhattarai, C., Samburova, V., Meng, Q., Wackowski, A, Delnevo, C., and Khlystov, A. (2019). Estimating the Human Health Risks Induced by Harmful Chemical Exposures from Four Types Electronic Cigarettes. *Proceedings of Society of Research on Nicotine & Tobacco annual meeting*, San Francisco, CA, USA
11. Khlystov, A., **Son, Y.**, Samburova, V., and Bhattarai, C. (2019). Characterization of nicotine, aldehyde, and carbon monoxide emissions from four types of electronic cigarette devices. *Proceedings of American Chemical Society annual meeting*, Orlando, FL, USA
10. **Son, Y.**, Samburova, V., and Khlystov, A. (2018). Carbon Monoxide and Carbonyl Emissions from Four Popular E-cigarettes. *Proceedings of Nevada Public Health Association annual meeting*, Las Vegas, NV, USA
9. Samburova, V., **Son, Y.**, Bhattarai, C., Strickland, M., Darrow, L., Angermann, J.E., and Khlystov, A. (2018). Aldehydes in exhaled breath during e-cigarette vaping: results of a pilot study. *Invited Speaker at Nevada Tobacco Prevention Coalition Regular Meeting*
8. Pearson, J.L., Crabtree, M.B., Maloney, S.F., Hiler, M., Spindle, T., Kilgalen, B., Nareg, K., **Son, Y.**, Samburova, V., Khlystov, K., Eissenberg, T. (2018) A comparison of e-cigarette nicotine aerosol content vs blood nicotine concentrations: Markten vs. e-Go T. *Proceedings of Tobacco Regulatory Science annual conference*

7. Al-Shujairi, A., **Son, Y.**, Meng, Q., Giovenco, D., Delnevo, C. (2018) Indoor Air Quality in Electronic Cigarette Vape Shops. Proceedings of Society of Research on Nicotine & Tobacco annual meeting, Baltimore, MD, USA, POS5-5
6. **Son, Y.**, Osornio-Vargas, A. R., O'Neill, M., Texcalac-Sangrador, J. L., Ohman-Strickland, P. A., Meng, Q., Torres, M. & Schwander, S. (2017) A Novel Land Use Regression Model to Assess Air Pollution Exposure for Tuberculosis Research in Mexico City Using Finer Spatial and Temporal Input Parameters. Proceedings of American Thoracic Society International Conference, Washington DC, USA. American Journal of Respiratory and Critical Care Medicine, 195:A3908.
5. Meng, Q., **Son, Y.**, Kipen, H., Laskin, D., Schwander, S., Delnevo, C. (2017) Particles Released from Primary E-Cigarette Vaping: Particle Size Distribution and Particle Deposition in the Human Respiratory Tract. Proceedings of American Thoracic Society International Conference, Washington DC, USA. American Journal of Respiratory and Critical Care Medicine, 195:A1023.
4. **Son Y.K.**, C.G. Yoon, H.C. Kim, J.H. Jang. (2009) Development of Regression and Design Model for Constructed Wetland System using Performance Data. Proceedings of 13th international conference on diffuse pollution and integrated watershed management, Seoul, Korea, pp 27-28
3. **Son Y.K.**, C.G. Yoon, H.P. Rhee, H.C. Kim. (2009) A Health-risk Analysis Procedure for Reclaimed Wastewater Irrigation in Paddy Rice Field. Proceedings of 7th IWA World Congress on Water Reclamation and Reuse, Brisbane, Australia, pp. 87
2. **Son Y.K.**, C.G. Yoon, J.H. Jeon, J.H. Jang. (2008) Effect of Subwatershed Size on the BOD Loading Estimate in Hydrological Simulation Program-Fortran Simulation. Proceedings of 12th international conference on integrated diffuse pollution management, Khon Kaen, Thailand
1. **Son Y.K.**, C.G. Yoon, T.Y. Kwun, J.W. Son. (2008) The Performance and Analysis of Natural and Ecological Wastewater Treatment System. Proceedings of 1st Asia-Pacific young water professional conference, Gwangju, Korea, pp71-72

Regional Journal Articles (Korean)

7. **Son, Y.K.**, Rhee, H.P., Kim, H., Choi, S.W., & Kim, J.D. (2015) Safety Evaluation of a Wastewater Reuse for the Farmland Irrigation in Jeju Island. Journal of The Korean Society of Agricultural Engineers, 57(4), 21-29.
6. **Son Y.K.**, Yoon, C.G., Kim, J.S., Kim, H.J., (2012) The Effect of Season and Shape on Nitrogen Removal in Constructed Wetland. Journal of Korean Society on Water Quality, 28(1) 95-102.
5. **Son Y.K.**, Yoon, C.G., Kim, H.J. & Haam. J.H. (2012). Variation of Water Treatment Efficiency during Long-term Operation of Constructed Wetland. Journal of Korean Society of Agricultural Engineers, 53(6) 121-128.
4. Rhee H.P., Jung, K.W., Lee, B.S., Ham, J.H., & **Son, Y.K.** (2012) Analysis of Water-quality Improvement Efficiency of constructed Wetland Using NPS-WET Model. Journal of Korean Society on Water Environment, 28(2) 230-331.
3. Jung J.Y., Shin, Y.R., Choi, J.H., Choi, I.K., Yoon, C.G. & **Son, Y.K.** (2011) Characteristics of Pollutant Loads in Saemangeum Watershed Using HSPF. Journal of Korean National Committee on Irrigation and Drainage, 18(2) 54-65.
2. Shin Y.R., Yoon, C.G., **Son, Y.K.**, Kim. H.J. (2010) Seasonal Variation in Heavy Metal Removal Efficiency and Application of Risk Assessment for Constructed Wetlands. Journal of Korean Society of Agricultural Engineers, 52(6) 57-62.
1. Jang, J.H., Yoon, C.G., Jung, K.W., & **Son, Y.K.** (2009) Decision of Critical Area Due to NPS Pollutant Loadings from Kyongan Stream Watershed using BASINS-SWAT. Journal of the Korean Society of Agricultural Engineers, 51(5), 69-78.

(d) Past/Current Projects (PI/Co-PI)

Per- and polyfluoroalkyl substances (PFAS) in the southern Nevada watershed, 2019-2020, Co-PI, Maki Foundation, \$79,980

Development of a High-Throughput Electronic Cigarette Testing System, 2018-2019, PI, DRI Foundation, \$34,882

Developing Analytical Methods for Nicotine Metabolites to Study Health Effects Associated with Electronic Cigarette Use, 2018-2019, PI, DRI-internal, \$10,257

(e) Skills and Expertise

- Developed comprehensive monitoring skills for water, air, soil, and plant contamination
- Performed multiple risk assessment projects following the procedure published by US EPA
- *Analytical device*: UV spectrometry, TD/GC/MS, HPLC/UV, UPLC/MS, ICP-AES
- *Programing language*: FORTRAN, Visual Basic, Python
- *Indoor air quality model*: CONTAM
- *Watershed/water-quality model*: HSPF, SWAT, EFDC, WASP, QUAL series
- *GIS package*: ArcGIS
- *Statistical package*: SAS, R

(f) Membership

International Society of Exposure Science
Society for Research on Nicotine & Tobacco
Society of Environmental Toxicology and Chemistry
Korean-American Scientists and Engineers Association
Korea Engineering and Consulting Association

(g) Journal Reviewer

Ecological Engineering
Science of The Total Environment
Human and Ecological Risk Assessment: An International Journal
Ecotoxicology and Environmental Safety
Journal of The Air & Waste Management Association
Journal of Integrative Agriculture
Computers and Electronics in Agriculture
Environmental Modeling and Software
Sustainability
Energies

(h) Selected Honors, Leadership and Education Activities

- Guest Editor of *Toxics* (ISSN 2305-6304), Special Issue entitled "Speciation, Characterization, and Quantitative Analysis of Toxic Organic Species in Indoor Air."
- Co-Lecturer of Introduction to Python at ATMS program, University of Nevada, Reno (January 2020)
- Guest Lecturer of Introduction to Environmental Health Science, Exposure Science at School of Public Health, Rutgers University (2013-2017)
- Guest Lecturer of Introduction to Environmental Science, Watershed Management, Irrigation and Drainage Engineering at Department of Rural Engineering, Konkuk University (2008-2010)