

Mike Dereviankin

CHEMOMETRIC CONSULTANT

Forensic toxicology and data science consultant with a focus on interpretation & education for the utilization of modern statistical approaches and machine learning to interpret multi-variant chemical data. Primary consulting experience with private companies, litigation firms, regulatory agencies, oil & gas, the chemical industry, and academia.

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EDUCATION

McMaster University, Hamilton, ON

Masters of Science, Analytical Biogeochemistry, 2018-2020

Dissertation	<u>Developing analytical methods utilizing comprehensive two-dimensional gas chromatography time-of-flight mass spectrometry to monitor biodegradation of alkylated poly- aromatic hydrocarbon isomers within an oil sand tailing pond.</u>
Advisor	Dr. Gregory F. Slater
Extracurriculars	McMaster University Varsity Water Polo & Swimming Team

University of Guelph, ON

Bachelor of Science, Biological & Pharmaceutical Chemistry (Honours), 2012-2017

Dissertation	<u>Reduction of halocarbons to hydrocarbons by NADH models and NADH.</u>
Advisor	Dr. Michael K. Denk
Extracurriculars	University of Guelph Gryphon's Varsity Swim Team
Distinctions	<u>USports Academic All Canadian</u>

WORK EXPERIENCE

Dec 2021 - Present	Dereviankin Consulting Inc. , Principal Consultant
Mar 2020 - Present	Chemistry Matters Consulting Inc. , Consultant
2018 - 2020	McMaster University , Teaching Assistant
Sep 2017 - Sep 2018	Labstat International ULC. Kitchener , Quality Auditor

EXPERTISE

MAIN DOMAINS: **Analytical chemistry, Statistics, Data Science, Biomonitoring, Epidemiology**

Statistics	Univariate Statistics, Multivariate Statistics, Parametric Statistics, Non-Parametric Statistics, Data Pre-Processing, Validation Error analysis, Bayesian statistics
Programming	Python, R, Matlab, JSL
Language	English, Russian, Ukrainian

Environmental Forensics Investigation

- 2021 - present **Environmental Forensics Investigation of Environmental Contaminants in Portland Harbor Superfund Site**
Stanley Black & Decker, Rhode Island, USA
Used recent sampling results to determine fingerprints to conduct source apportionment of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs), polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). Extensive statistical analysis with various receptor models to determine unique end-members and allocate the contribution of sources on a sample-by-sample basis.
- 2020 - present **Environmental Forensics Investigation of Environmental Contaminants in Centredale Manor Restoration Project Superfund Site**
FMC Corporation, Philadelphia, PA, USA
Chemometric workflow of environmental contaminant data from the Portland Harbor Superfund site. Extensive work developing dashboards for showcasing source apportionment, dimensionality reduction and predictive modelling interactively during litigation support meetings. The case involves the chemical fingerprinting of polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), polychlorinated biphenyls (PCBs) and other environmental contaminants.
- 2020 - 2021 **Environmental Forensics Investigation of Heavy Metal Forensic Investigation**
Cenovus, Calgary, AB, Canada
Univariate and multivariate statistical analysis of groundwater heavy metal data to compare site-wide dispersion in comparison to background concentrations.
- 2020 - 2021 **Environmental Forensic Investigation of Environmental Contaminants at Hardisty Terminal Facility**
Husky Oil Operations Ltd., AB, Canada
Chemometric workflow of environmental contaminant data from the Portland Harbor Superfund site. Extensive work developing dashboards for showcasing source apportionment, dimensionality reduction and predictive modelling interactively during client meetings. The project involved the chemical fingerprinting of sediment samples for polycyclic aromatic hydrocarbons (PAHs) in conjunction with plume modelling.

Data Science Consulting

- 2020 - present **Chemometric Assessment of Microbial Volatile Organic Contaminants**
Chaminade University of Honolulu, Honolulu, HI, USA
Chemometric workflow examining temporal microbial degradation change in volatile organic contaminant fingerprint under controlled conditions. Presentation of interactive dashboards in Plotly (R Studio).

Human Biomonitoring Investigation

- 2020 - present **Exposure Assessment Evaluating Blood Data for Alleged PCB Exposure**
Monsanto Company, St. Louis, MO
Providing chemometric analysis of plaintiff blood data in connection with lawsuits or other claims pending against Monsanto involving alleged polychlorinated biphenyl (PCB) exposure and blood concentrations for plaintiffs. Provided expert data analysis on reference US general population (NHANES) as supporting evidence in expert witness reports.
- 2020 - 2021 **Exposure Assessment Evaluating Blood Data for Alleged PCB Exposure**
Monsanto Company, St. Louis, MO
Cases :
Bard, et al. v. Monsanto, et al.
Beulter, et al. v. Monsanto et al.
Soley, et al. v. Monsanto et al.
Providing chemometric analysis of plaintiff blood data in connection with lawsuits or other claims pending against Monsanto involving alleged polychlorinated biphenyl (PCB) exposure and polychlorinated dibenzofuran (PCDF) exposure and blood concentrations for plaintiffs from the Sky Valley Education Center (SVEC) in Monroe, Washington. Provided expert data analysis on reference US general population (NHANES) as supporting evidence in expert witness reports.

RESEARCH OUTPUT

Peer-Reviewed Publications

1. Megson, D., Tiktak, G.P., Shideler, S., Dereviankin, M., Harbicht, L., Sandau, C. (2023). *Source apportionment of polychlorinated biphenyls (PCBs) using different receptor models*. Science of the Total Environment. <https://doi.org/10.1016/j.scitotenv.2023.162231>
2. Denk, M. K., Milutinović, N. S., & Dereviankin, M. Y. (2019). *Reduction of halocarbons to hydrocarbons by NADH models and NADH*. Chemosphere. <https://doi.org/10.1016/j.chemosphere.2019.05.169>

CONFERENCE PROCEEDINGS

1. Dereviankin, M., Sandau, C. (2022). *Polychlorinated Biphenyl (PCB) Fingerprints and Composition End-Members of the US General Population Using NHANES 2003-2004*. Dioxin Conference 2022.
 2. Megson, David., Sandau, C. (2022). *Source Apportionment of Polychlorinated Biphenyl (PCB) Comparing Statistical Methods and Identifying, "Non-Aroclor" Sources*. Dioxin Conference 2022.
 3. Dereviankin, M. (2022). *Source apportionment of Polychlorinated biphenyls (PCBs) in sediment using different receptor models: A case study on Portland Harbor Superfund Site, Oregon, USA*. SETAC North America 43rd Annual Meeting.
 4. Sandau, C., Dereviankin, M. (2021). *Unscrambling Contaminant Mixtures to Determine*
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Sources and Chemical Fingerprints – PAH Case Study Using RAMP Oil Sands Monitoring Data. AQRD Virtual Seminar.

5. Dereviankin, M., El-Warakly, M., Warren, L.A., Slater, G.F. (2020). *Monitoring Biogeochemical Cycling in an Oil Sand Pit Lake via High-Resolution Spatial Distribution of Organic Chemicals.* GeoConvention.

TEACHING

1. Dereviankin, M. (2023). Data Analytics and Statistics in Quantitative Chemical Analysis – Chemometric Workflow for Forensic Investigations (Course ID: SC120). Pittcon 2023.
2. Dereviankin, M. (2022). Data Analytics and Statistics in Quantitative Chemical Analysis – Chemometric Workflow for Forensic Investigations (Course ID: SC14468). Pittcon 2022.
3. Dereviankin, M. (2021). Data Analytics and Statistics in Quantitative Chemical Analysis – Chemometric Workflow for Forensic Investigations (Course ID: SC7843). Pittcon 2021.

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