Karessa L. Manning
Environmental Risk Analyst

https://www.linkedin.com/in/karessa-manning/

Summary

Karessa has a M.S. in Geography with a minor in Computational Science and a B.S. in Geology and Environmental Studies with a minor in Geography from the University of Tennessee. She has 10+ years of experience in the environmental science field and is currently an environmental risk analyst at the University of Tennessee working on risk assessment modeling for the Environmental Protection Agency (EPA). Her career objective is to utilize her knowledge of environmental risk assessment, environmental policy, and advanced programming skills in her primary work which consists of environmental model development and application to chemical and radiological risk assessment.

Skills & Abilities

HTML • Python • RStudio • ESRI Tools • Selenium • LaTex • SAS • Linux • Data Compilation & Analysis • MathType • MS Office • Research • Environmental Risk Assessment • Water & Soil Sampling • Radiation Dose Assessment

Experience

Environmental Risk Analyst-University of Tennessee, Knoxville, TN (04/16 – Present**)**

Employs multiple programming languages and software to manage and execute quality assurance protocols for over 15 risk assessment webtools funded by the EPA's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program, URS|CH2M Oak Ridge LLC (UCOR), the State of Alaska, and the State of Delaware. Quality assurance for these tools must be meticulous, as they measure radionuclide and chemical contaminant exposure risk in diverse human health risk scenarios: including resident, recreator, farmer, and workers for multiple media including soil, air, water, and biota. Researches and incorporates radiation and chemical exposure guidance from multiple national and international agencies into risk models. Identifies, evaluates, supports, and solves complex issues related to risk model development. Develops, maintains, and controls chemical risk, radiation risk, and radiation dose equations used in mathematical environmental risk models for EPA webtools. Collaborates and upholds good working relationships with EPA project sponsors. Writes new guidance language for chemical and radionuclide environmental risk assessment webtools in collaboration with project sponsors. Prepares materials used for trainings and provides peer instruction to environmental and human health risk assessors. Manages interns and is the lead contact for ingestion of contaminated biota for the EPA's Preliminary Remediation Goal (PRG) and Dose Compliance Concentration (DCC) webtools.

- Current Projects
  - The Risk Assessment Information System (RAIS)
  - Regional Screening Levels for Chemical Contaminants at Superfund Sites (RSL)
  - Regional Removal Management Levels for Chemicals (RML)
  - Vapor Intrusion Screening Levels Calculator (VISL)
  - Preliminary Remediation Goals for Radionuclides (PRG)
  - Dose Compliance Concentrations for Radionuclides (DCC)
  - Radionuclide Vapor Intrusion Screening Levels Calculator (RVISL)
  - Building Preliminary Remediation Goals for Radionuclides (BPRG)
  - Dose Compliance Concentrations for Radionuclides in Buildings (BDCC)
  - Surface Preliminary Remediation Goals for Radionuclides (SPRG)
  - Dose Compliance Concentrations for Radionuclides in Outdoor Surfaces (SDCC)
  - State of Alaska Cleanup Levels, Cumulative Risk, and Four-Phase Risk Calculators
  - State of Delaware Reporting Levels Calculator (currently in development)

Risk Analyst-Street Legal Industries, Oak Ridge, TN (05/15 – 03/16)

Mathematical model development for environmental exposure risk assessment models related to public health. Developed, maintained, and controlled risk and dose equations used in human health risk exposure models. Wrote guidance language for risk assessment tools in collaboration with EPA project sponsors. Managed and regularly improved efficiency of quality assurance protocols for multiple webtools funded by the EPA and DOE.

Risk Assessment Intern-Oak Ridge National Laboratory, Oak Ridge, TN (06/13 – 05/15)

Updated Ecological Benchmarks for Spatial Analysis and Decision Assistance (SADA) software and the Risk Assessment Information System (RAIS) database. Compiled USDA ARS pesticide data for new webtool. Followed existing quality assurance protocols to test accuracy of webtool outputs and update equation images and html user guides in the RAIS as well as webtools for the EPA to reflect new guidance for exposure parameters.

Soil Science Laboratory Graduate Assistant-University of Tennessee, Knoxville, TN (11/13 – 05/14)
Measured vapor pressure of micro-aggregate soil samples to determine transport efficiency of contaminants, water content, and water retention ability. Utilized CO_2 measuring software to perform and quantify respirations for soil. Assisted in preparation of field equipment and sampling equipment. Collected general measurements of soil samples and performed chemical dilutions.

Customer Care Representative-CVS Caremark Corporation, Knoxville, TN (11/11 – 01/13)
Upheld HIPAA security practices and maintained customer files. Helped members with questions about plan design and ordering prescriptions. Assisted members in obtaining their prescriptions under extenuating circumstances.

Laboratory Certification Intern-NV Division of Environmental Protection, Carson City, NV (10/08 – 05/11)
Maintained sensitive files for laboratory certification in the SDWA, CWA, and RCRA to allow laboratory operation within the State of Nevada. Performed precise data entry. Maintained water sample location maps for Nevada watersheds.

Volunteer Archaeological Technician-United States Forest Service, Carson City, NV-(08 – 10)
Researched and identified artifacts in the field and in pictures for official reports. Operated GIS field instruments and edited maps for project reports using ESRI software.

Volunteer Snapshot Day Team Leader-NV Division of Environmental Protection, Carson City, NV-(10/08 – 05/11)
Led teams of citizen volunteers in taking water samples and cataloging sites. Educated volunteers about water quality and point and non-point source pollution. Calibrated field equipment including pH, DO, turbidity, and conductivity meters. Cataloged and profiled all sampling sites from each watershed. Presented to elementary students about the creation of water pollution and taught them daily activities, at home, that can mitigate the impact to their watershed.

Education

M.S. Geography, Minor in Computational Science-University of Tennessee, Knoxville, TN (05/21)
- Thesis Title: Association Between Stream Impairment by Mercury and Superfund Sites in the Conterminous USA
- Supervisor: Dr. Liem Tran
- Thesis Description: Used simple and multiple logistic regression models to explore the potential connection between mercury-contaminated NPL sites and the presence of mercury impaired streams at the Hydrologic Unit Code 12 (HUC-12) level across the conterminous US; relative to other natural and anthropogenic sources of mercury in the environment.

B.S. Geology & Env. Studies, Minor in Geography-University of Tennessee, Knoxville, TN (05/15)
A.S. Geosciences-Western Nevada College, Carson City, NV (12/10)

Achievements

- Thesis: Association Between Stream Impairment by Mercury and Superfund Sites in the Conterminous USA (manuscript of thesis research is currently embargoed for future journal submission)
- Lead author of ORNL technical memo (ORNL/TM-2016/328). Title: "Biota Modeling in EPA's Preliminary Remediation Goal and Dose Compliance Concentration Calculators for Use in EPA Superfund Risk Assessment: Explanation of Intake Rate Derivation, Transfer Factor Compilation, and Mass Loading Factor Sources". Available upon request and online.
- Co-author of ORNL technical memo (ORNL/TM-2020/1780). Title: "Bateman Equation Adaptation for Solving and Integrating Peak Activity into EPA ELCR and Dose Models". Available upon request and online.
- Co-author of ORNL technical memo (ORNL/TM-2019/1269). Title: "Air Exchange Rate Impact on Actinon, Thoron, and Radon Activity Equilibrium Factor and Inhalation Fractional Equilibrium Factor Determination in Vapor Intrusion Risk and Dose Models". Available upon request and online.
- Poster presentation for biota modeling in EPA calculators at Society for Risk Analysis (SRA) – 2016 conference.
- Exhibitor at Society for Risk Analysis (SRA) –2019 conference.
- Paper presentations for thesis research at American Association of Geographers (AAG) annual conference in 2017, 2018, 2019.