Sarah Newton, Geological Engineer

Sarah is a Senior Geological Engineer specializing in the field of geohazard management for pipelines. Over the past twelve years she has pioneered and led the development of Cambio™, the world's most comprehensive and sophisticated software specifically designed for managing pipeline geohazards. The geohazard management programs directly facilitated by Cambio now comprise over 300,000 miles of pipelines and approximately 250,000 inventoried geohazard sites (Newton et al., 2022) located around the world. These risk-informed programs annually prevent 5 to 7 geohazard related pipeline failures reducing geohazard failure risk by a factor of 3 to 5 relative to the industry average (Newton et al., 2019). Success in her role as lead for Cambio development and implementation relies on her ability to quickly learn new skills and lead and manage a diverse team of composed of about 40 software, GIS, data science, pipeline engineering and geoscience professionals.

Early in her career in 2012, a pipeline failure caused by river erosion put Sarah in a challenging and stressful position as a key person who was supporting the geohazard management program for the operator leading up to the failure. Through this experience Sarah gained a deep understanding and appreciation for the consequences of pipeline failures and the impacts they can have on the environment, communities and on an operator's business. While many would have been discouraged by the event and retreated from the challenges, Sarah instead seized the opportunity to improve the program, working closely with a senior engineer to develop a new methodology for assessing probability of pipeline failure from hydrotechnical hazards. This new methodology reduced subjective risk assessment and replaced it with repeatable and consistent estimations of pipeline vulnerability and probability of pipeline exposure (Dooley et al., 2014). To support this method, a significant improvement was required to the database including development of an extensive global geohazard failure database and a suite of software for automated characterization and monitoring of watercourses. Through her team's work, it is now possible to demonstrate that less than 10% of geohazard sites are responsible for nearly 90% of pipeline geohazard risk, allowing operators to direct their management resources in a much more efficient manner.

Since 2012 Sarah has continued to advance the practice of pipeline geohazard management both technically and through her ongoing leadership developing Cambio. Since 2014 Sarah has served on BGC's Pipeline Technical Steering Committee and has published or co-published eight technical papers. She also serves as part of the committee leading BGC's pipeline sector team and annually organizes a conference for several dozen pipeline operators who come together to learn and share experiences and collectively advance the state of pipeline geohazard management. In recent years Sarah has also advanced software and database development for geohazard management in mining, transportation, energy and communities.

Sarah is a committed mentor, dedicating time and energy to mentoring and developing her team. She also successfully balances a demanding professional career with a young family, demonstrating her capacity to concurrently manage challenges on multiple fronts and prioritize the most important.

Sarah is a unique nomination because the impact of her work has contributed to measurable and far-reaching positive change in the world. This change was not inevitable but is the result of her effort and dedication to challenging and advancing the state of geohazard management practice for pipelines.

Publications

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