



Dinner Meeting

The Carolinas Chapter of the Association of Environmental & Engineering Geologists

Guest Speaker:



**Sarah Kalika, PG, CAC, CDPH Lead I/A/S
Principal Geologist, DiabloGeo Environmental Consulting
AEG President 2023-2024**

PRESENTATION

**“USING ELEVATED CONCENTRATIONS OF CHROMIUM AND NICKEL AS AN
INDICATOR FOR THE PRESENCE OF CHRYSOTILE ASBESTOS IN SERPENTINITE
ROCK UNITS”**

MEETING DETAILS

- Place:** Kau – Restaurant/Butcher/Bar
2003 Yanceyville Street, Greensboro, North Carolina 27405
- Date:** Thursday, October 24, 2024
- Time:** 5:30 PM socializing begins, 7:00 buffet dinner, 8:00 Sarah’s presentation
- Cost:** AEG members \$35, non-members \$50, students **free** with college ID
- Reservations:** Please make reservations with Paul Weaver by 6:00 PM on Thursday, October 17
email: pmweaver187@gmail.com.

Sarah Kalika's Bio

Sarah has over 22 years of experience as a geologist in the environmental consulting industry and a Bachelor of Science in Geological Sciences from the University of California, Santa Barbara. She has performed primarily environmental geoscience investigations during her career, including Phase I & II assessments for property transactions, asbestos and lead surveys for renovations and demolitions, abatement oversight, geologic mapping and sampling for the presence of naturally occurring asbestos, asbestos-dust mitigation plan preparation, area air monitoring for asbestos, construction stormwater pollution prevention plan preparations and inspections, and health and safety plan preparations. She has successfully managed the investigation, regulatory agency interaction, documentation, and cleanup of many complex, high profile, and confidential development projects, including schools, agricultural redevelopment, commercial and residential properties, highways, and rail corridors.

As a California Certified Asbestos Consultant and Professional Geologist, Ms. Kalika has a unique combination of expertise with applying regulations originally written for asbestos in building materials to construction projects that impact asbestos occurring naturally within rock and soil. Ms. Kalika is skilled in navigating the often-complicated assortment of regulations that apply to asbestos and asbestiform minerals and provides awareness training sessions for workers who will interact with asbestos-containing soil or rock on jobsites.

As an AEG member, she has served as chair of several operational committees as well as the Naturally Occurring Asbestos Technical Working Group, and co-chaired the AEG Annual Meeting in San Francisco, and serves on the Executive Council as Past President.

Ms. Kalika is a frequent public speaker and gives presentations for consulting companies, school districts, commercial property managers, and members of AEG.

Presentation Synopsis

Serpentine is a magnesium silicate mineral formed when peridotite is altered by extremely hot water during tectonic plate subduction and partial crustal melting from heat from the upper mantle. It is composed of the platy minerals lizardite and antigorite criss-crossed by veins of chrysotile. In California, serpentinite is typically found within the Coast Range, Klamath Mountains, and Sierra Nevada foothills. When analyzed for metals presence, serpentinite rocks typically contain elevated chromium and nickel. Chrysotile asbestos is often found in veins within serpentinite.

When project sites are evaluated for the presence of potentially hazardous substances or waste soil is analyzed for landfill disposal pre-approval, metals are part of the list of required analytes, but evaluation for the presence of asbestos is often not included.

Following years of anecdotal observation, this research intended to evaluate whether the presence of elevated chromium and nickel concentrations could be a reliable indicator for the presence of chrysotile asbestos. If such a correlation could be made, at what concentrations would the presence of Cr and Ni be a predictor for chrysotile?

This study used data from soil samples collected within California's Coast Ranges and reported within site investigation reports published for public use on the California Department of Toxic Substances Control Envirostor database and California's State Water Resources Control Board Geotracker database. Data was evaluated using statistical tools to establish a threshold concentration for chromium and nickel, above which, serpentinite is likely to be the source and warrants additional analysis for the presence of chrysotile asbestos. To test this theory, elevated concentrations of chromium and nickel from USGS were mapped to see if this method could be used as a reliable predictor for where to find serpentinite rock and was found to be successful in identifying a specific location in Maryland.

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