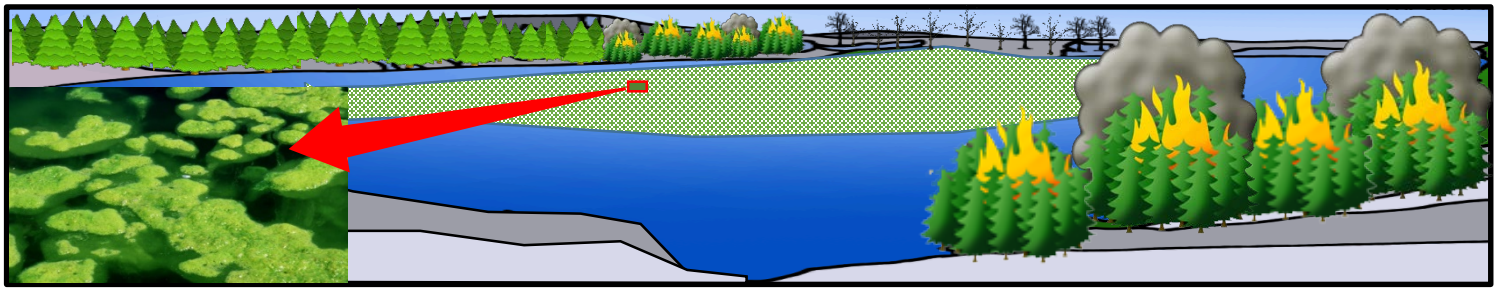
Biogeochemistry & Environmental Quality

CLEMSON UNIVERSITY

Wildfire Promotes Harmful Algal Bloom in Source Water



Why you should care: Forested watersheds are critically important to the supply of clean drinking water. Wildfire consumes woody biomass and produces charcoal and ashes, which eventually are flushed into source water during rainstorms.

What we did: Ashes produced under different fire severities were mixed with green algae and blue-green algae in water. Their growth rates were monitored under controlled laboratory conditions. Water were then analyzed for water treatability following standard procedure.

Take Home Messages: Ashes from wildland fire contains significant levels of nutrients that could promote harmful algal blooming in source water. Certain algae can produce toxic chemicals. Also, algal biomass can react disinfectants such as chlorine and produce carcinogenic chemical during drinking water treatment.

What you can do: 1) Install water filters (e.g. activated carbon) to reduce pollutants in your tap water if your source water is affected by wildfire in last year 2) Check with your water utiliry to obtain a recent water quality report, 3) Do not smoke or set up a camp fire in forest or wildland areas, and 4) Support environmental research against forest fire.

BG&EQ Science Communication 3 (2018) - Details of the study can be found in: Tsai and Chow (2016) Growing algae alter spectroscopic characteristics and chlorine reactivity of dissolved organic matter from thermally-altered forest litter. Environmental Science & Technology 50: 7991-8000, and Tsai et al. (2017). Dynamic changes of disinfection byproduct precursors following exposures of microcystis aeruginosa to wildfire ash solutions. Environmental Science & Technology 51: 8272-8282. Contact: Dr. Alex Chow – achow@clemson.edu. Web page: http://people.Clemson.edu/~ACHOW/