

Occupational Exposure to Aerosolized Brevetoxins during Florida Red Tide Events:  
Effects on a Healthy Worker Population

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**Abstract**

*Karenia brevis* (formerly *Gymnodinium breve*) is a marine dinoflagellate responsible for red tides that form in the Gulf of Mexico. *K. brevis* produces brevetoxins, the potent toxins that cause neurotoxic shellfish poisoning. There is also limited information describing human health effects from environmental exposures to brevetoxins. Our objective was to examine the impact of inhaling aerosolized brevetoxins during red tide events on self-reported symptoms and pulmonary function. We recruited a group of 28 healthy lifeguards who are occupationally exposed to red tide toxins during their daily work-related activities. They performed spirometry tests and reported symptoms before and after their 8-hr shifts during a time when there was no red tide (unexposed period) and again when there was a red tide (exposed period) . We also examined how mild exercise affected the reported symptoms and spirometry tests during unexposed and exposed periods with a subgroup of the same lifeguards. Environmental sampling (*K. brevis* cell concentrations in seawater and brevetoxin concentrations in seawater and air) was used to confirm unexposed/exposed status. Compared with unexposed periods, the group of lifeguards reported more upper respiratory symptoms during the exposed periods. We did not observe any impact of exposure to aerosolized brevetoxins, with or without mild exercise, on pulmonary function. *Environ Health Perspect* 113:644-649 (2005).