

So You Can Breathe Easier

A late-blooming Navy veteran earns his Ph.D. and digs into the science behind air pollution.

by JENNIFER ABBASI

Navy veteran Tim McAuley is on a mission: to improve the air we breathe. For a guy who entered the military straight out of high school (where he was a marginal academic performer), researching pollution seems an unlikely career. But he found his calling and now evaluates the impact of industrial development, cigarette smoke and automobile fumes that choke the atmosphere in places such as where our kids walk to school.

For instance, a few years ago, when an asphalt company tried to set up shop in Westford, Mass., a community group contacted McAuley to analyze the factory's impact on air quality. "The last thing this small country town needed was an asphalt plant," McAuley says of Westford, which already had a quarry and a concrete plant.

His research team determined that the asphalt company's air quality impact models, which projected legal levels of emissions, were dangerously inaccurate; in fact, the plant would probably significantly exceed national air quality standards three months of every year. Because of research by McAuley and other scientists, the town's board of health rejected the permit.

McAuley is chief executive manager of CHANGE (Consulting for Health, Air, Nature, & a Greener Environment), an air quality and human health exposure firm in Queensbury, N.Y. He started the company in 2009, when he was 35.

Back in high school in Lake George, N.Y., McAuley probably couldn't have guessed that he'd end up with a doctorate in environmental science and engineering—the first ever granted by Clarkson University in Potsdam, N.Y.—or that he'd direct a multinational consulting business with networks in close to 150 countries. A jock with a C average, McAuley entered the Navy after high school graduation because he knew he wasn't ready for



college. Two years into his service, McAuley was stationed aboard the USS *Mount Whitney* at the Norfolk Naval Base in Virginia. On Sundays, his day off, he'd hang out at the town's Barnes & Noble, and during one visit he picked up a book on Albert Einstein and Isaac Newton. The purchase ignited an interest in science that changed his life.

Before long, he had a stack of science books in his tiny quarters, and fellow sailors came to him for tutoring for their chemistry courses at the nearby community college. It was then that he realized he would go into medicine or science after the Navy.

Although he was "one of the worst chemistry students in high school," McAuley can recall an early science lesson that captured his imagination. His first-grade teacher drew an atom—electrons circling a nucleus—on the chalkboard and compared it to the classroom, with everyone working together. McAuley began to look at himself as an entity in the vast universe. He remembers standing on a beach in Maine when he was 12, looking out toward the horizon and feeling like a tiny molecule with amazing things surrounding him. "I've always been interested in things you can't see but that are going on around you," he says.

After the Navy, molecules became his life's work. When he showed up for a campus visit at the College of Saint Rose in Albany, N.Y.—where he would later earn his undergraduate degree in biochemistry—the dean of admissions asked him to fill out an application. He produced one that was already typed up, and she accepted him on the spot.

McAuley, a self-described type A personality, says he's always been driven, whether in sports or in science. But it was the military that taught him the discipline necessary to succeed in academia and then build a global business.

In the Navy, he served as a radioman, a communications officer responsible for decoding and delivering classified messages up the chain of



Photos courtesy of CHANGE



From left, Tim McAuley discovered a passion for science when he was serving in the Navy; McAuley and his team have done studies in places such as the Peace Bridge in Buffalo, N.Y., and (two right photos) Ho Chi Minh City in Vietnam.

command. The job, which took him to Haiti for Operation Support Democracy in 1994, sometimes required working 16- to 18-hour shifts for weeks at a time. It was a highly detailed position with intense pressure—an admiral could reduce you two levels in rank for one mistake. “You’re exhausted, but you don’t have the option to say, ‘I’m going to bed, I’ll be back.’ That doesn’t exist.”

Today that diligence extends to providing his clients with accurate science on air quality, says Margo Pedrosa, deputy director of the Safe Routes to School National Partnership, an organization that works to promote children safely walking and biking to school. McAuley produced a report for the partnership on how communities, school districts and families can reduce kids’ exposure to air pollution while they stay active on their way to school.

Funded by the federal Centers for Disease Control and Prevention and published in August 2012, the report was sent to 13,000 educators,

parents, health professionals, planners and engineers around the country. It provides suggestions on mapping lower traffic-pollution routes and implementing anti-idling zones, remote parking programs to reduce traffic congestion near schools and walking-bus programs, where parents walk a group of children to school on a set route to increase physical activity and make the journey to school more fun, all focused on ensuring kids breathe cleaner air.

“Tim was really important in helping us understand the complicated science behind air pollution—how it affects children, how it disperses, and how you can and can’t mitigate it,” Pedrosa says. “He combed through the research journals to assemble a group of studies on the impact, and then explained them in a way that nontechnical people could understand. And he used his connections within the air-quality world to identify some good examples of efforts to reduce air pollution that could be applied in a Safe Routes to School setting.”

As a dad—his daughter, Corinne Elise, is 16 months old—McAuley is personally motivated to help kids breathe better air. Research has shown that children exposed to high levels of air pollution can have abnormal lung development and growth, and even cognitive problems.

“I want my daughter to have an environment that’s cleaner because of some of the work I’ve done,” McAuley says. “I feel that the work I’m involved in... will help shape and establish strict guidelines for protecting not only the environment, but human health.”

Despite his passion for clean air, McAuley is committed to presenting the truth about air pollution, even when the results are controversial or unpopular. The Westford community group that hired him to assess the impact of a proposed new asphalt factory asserted that the town’s existing industry was responsible for a high asthma rate in its school, but McAuley’s research showed that the school was actually upwind of the quarry and concrete plant.

He has worked to help people locate sources of secondhand smoke in their apartment buildings, in some cases getting repeat offenders evicted, and yet his recent two-year study showed electronic cigarettes don’t expose bystanders to carcinogens. (Electronic cigarettes are electric-powered devices that vaporize a nicotine solution into a mist that’s inhaled; smokers sometimes use e-cigarettes to help them kick or cut back on their habits.) This research is a victory for e-cigarette users, but opponents of the devices argue that they could be a gateway for more people to become addicted to nicotine. As a result, there will be “a lot of unhappy people,” McAuley says. “But science is science—I don’t care what side of the fence I’m working on.” **S**

Jennifer Abbasi is a science and health writer living in Portland, Ore. She profiled Vy Higginsen, who teaches gospel music to New York teenagers, in the June issue.