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The Future Impact of Total Exposure Health

Colonel (ret.) Kirk Phillips has combined his passion for helping people from a health –standpoint with his engineering background to become a Bioenvironmental Engineer in the U.S. Air Force. Over the course of his nearly 30 years of military career and his exit into civilian life, he has been making strides in the IH/OH field. He's been heavily involved as an AIHA member throughout his career, attending our conferences regularly since 1989.

We're grateful that as part of his position in the USAF, Colonel Phillips worked hard to make obtaining a CIH an important expectation and assured that barriers to conference attendance were removed for the Air Force Bioenvironmental Engineers (Exposure Scientists).

Colonel Phillips will be our closing keynote speaker at AIHce EXP in Philadelphia. We spoke with him to dive a little deeper into his background, the development of Total Exposure Health (TEH), and his thoughts on the future of our industry.

AIHA: Could you tell us a little more about your personal and professional background?

Phillips: I started my career in HSE after graduating with an Aerospace Engineering degree and pre-med coursework. I wanted to use my engineering to help people from a health standpoint and found an ideal place as a Bioenvironmental Engineer in the USAF. My knowledge of aircraft design, material science, and maintenance was a great foundation for supporting the Air Force workforce, their families, and the installation—which is essentially a small town with a medium to large airport. A bioenvironmental engineer is a unique career field where you have the responsibility for industrial hygiene, environmental health, radioactive material management and control, and many areas of safety.

Out of my experience in the Air Force, I spent 13 years doing broad scope HSE work for nearly all the industrial trade areas as well as with advanced research in materials uses of ionizing and non-ionizing radiation. Along the way, I completed a MS in Engineering and Environmental Management, and obtained a CIH. My remaining time was used overseeing and directing various levels of the USAF HSE program in a thought leader capacity. I completed my career leading the bioenvironmental engineering field of approximately 1,900 engineers, physicists, architects, and technicians worldwide.

AIHA: What was the biggest challenge in making the transition from military to civilian life in your professional experience?

Phillips: For me it has been walking out of a building and not reaching to put on a hat. (That's a bit tongue-in-cheek, but military members will identify.) In all seriousness, the challenge I placed on myself was ensuring that wherever I went, the primary focus had to be on improving lives. That has been my single greatest motivator since before I can remember.

I originally limited my job search to the governmental and nonprofit sectors but I came to realize there were opportunities in the profit sector as well. I landed at LJB Inc., which began as an engineering company fueled by integrity, quality, and service. Today, LJB provides services in health, safety and environmental services, architecture, engineering, planning, and surveying. LJB specializes in civil, environmental, safety, and

structural engineering disciplines and is a world leader in fall protection. The company's core purpose is “Improving the Quality of Life”; I believe LJB Inc. lives that every day.

I have also found the transition rewarding as the nonprofit Battelle Memorial Institute asked me to work with them on helping deliver Total Exposure Health to change the nature of health care of the future. So now I find I’m supporting TEH in the public, private, and nonprofit sectors.

> ***“Continuing to practice our professions in a stovepipe is the easiest thing to do and breaking out of that form will be our greatest challenge. We need to begin presenting ourselves as exposure scientists who are willing to adopt new ways of monitoring and include exposures apart from just the work environment."***

AIHA: You developed Total Exposure Health in 2014. What inspired it? What goes into developing such a revolutionary initiative?

Phillips: Three things comprised the essential ingredients for inspiration: IH history, practice experience, and reading scientific studies in the life sciences and environmental communities well outside of my core work areas. One of my favorite possessions is an 1867 Handbook of Industrial Hygiene, revised edition. This textbook updated just after the U.S. Civil War and covers many of the areas of exposure we still care about today. While their knowledge was limited in specific cellular or biological process impacts, they could see the results at the organ level. I realized from this book that the practice of industrial hygiene is substantially the same as it was 150 years ago.

Additionally, it was clear that, while as a profession, we have addressed the most egregious forms of exposure, our populations were still having diseases where something apart from pure exposure levels were important (i.e. some but not all individuals exposed to a chemical or physical hazard to the same level would get an associated disease).

My broad scope of practice in working with exposures of all types of populations—not only workers—led me to beyond just the industry of industrial hygiene and think of all the exposures that we as humans encounter in our daily lives. I combined this experience with reading the latest studies coming out of the computational toxicology, molecular biology, genomics, and exposomics fields. Numerous studies also presented within the own “stovepipes” of various professions and it occurred to me that great benefit could be achieved by eliminating the stovepipes and combining them all together into a new way of thinking...an exposure scientist way of thinking.

Finally, from a futurist standpoint, I see much of the heavy exposure type work and processes being eliminated as far as the human component is concerned with automation, process replacement, etc. and that we need to move 150 years forward. We need to look at the impacts to humanity not because of exposures above an OEL but from exposures, while the below the dose response curve still results in disease for some “outliers.” These outliers are our customers of the future.

AIHA: What do you see as a challenge for our industry in the next three years?

Phillips: Continuing to practice our professions in a stovepipe is the easiest thing to do and breaking out of that form will be our greatest challenge. We need to begin presenting ourselves as exposure scientists who are willing to adopt new ways of monitoring and include exposures apart from just the work environment. A worker exposed to noise at work may also moonlight in a bar, or play an instrument, or travel in a noisy commuter rail.

Our protection of that worker needs to account for these exposures and provide protection options for “their life.”

We need to have our research entities, government regulators, and forward-thinking businesses consider advances in genomics and disease proclivity when establishing how we will protect our populations. We need to consider exposures that may be well below an exposure limit that might need to be the limit for select individuals and populations. This will allow industrial hygienists deliver precision health in conjunction with the healthcare delivery system providing precision medicine.

AIHA: Anything else you'd like to add for the AIHce EXP audience?

Phillips: Total Exposure Health is both a new way of thinking and delivering our services right now. To some extent, it is also about the future delivery of advances in science and medicine by the IH community. There are many ways we can begin to provide additional value to our customers and communities today. Then, after taking advantage of that “low-hanging fruit,” we can progressively adopt and provide amazing advances in disease prevention and deliver true precision health. I think anyone who comes to the closing session will have their paradigms challenged and be inspired about what science will allow our field to do in the future.