

Degree: MPH-45

Field of Study: Occupational and Environmental Health

Practicum Project Abstracts 2023

Project Title	Project Summary or Abstract
Strategy and organization of medical surveillance programs for researchers working with hazardous chemicals in MIT	Researchers deal with many potentially hazardous chemicals in their research. The practicum involved designing a framework that EHS staff, PIs, and Occupational Health can use to ascertain whether lab workers require medical surveillance.
Hierarchy of Controls for Explosive Decompression Risk in Military Aircraft	<p>In 2015 the military saw a number of explosive decompressions in 4th generation fighter aircraft resulting in air gas embolism of a pilot. After investigation of these incidents, the risks were primarily mitigated through the application administrative strategies, such as the emergency checklists. However, after re-emergence of these events in 2020, 2022, and 2023 it was identified that the administrative controls were not properly distributed, understood by writers, and applied to the hazard. Therefore, to further mitigate the risk, my team used strategic communication and engineering controls in addition to clearer administrative controls to better mitigate these risks. Engineering controls involve designing or modifying equipment or processes to eliminate or reduce hazards. In the case of explosive decompression, engineering controls focused on the likely cause of these events. It targeted changing the routine maintenance procedures and environmental factors to engineer the hazard away. These measures can reduce the likelihood of air gas embolism by removing the source of overpressurization.</p> <p>Administrative controls were also clarified and communicated directed from subject matter experts through the aerospace medicine chain of command to ensure the engineers, aviators, and program offices could include the correct wording in emergency procedures checklists. Additionally, the procedures to follow up on these recommendations were analyzed as a critical control point for failure, as the organization was lacking the ability to track medical hazards mitigation measures to completion.</p> <p>By prioritizing engineering controls over administrative controls and improved systems learning and</p>

	<p>memory, fighter aircraft risk of cockpit overpressurization can be effectively managed. This approach involves designing and implementing robust engineering controls that eliminate or reduce hazards at the source, provide crew with accurate and clear emergency instructions, and ensure the system retains these lessons while remaining agile for future hazards.</p>
<p>Styrene Exposure and Its Potential Effect on Hearing in Combination with Noise</p>	<p>Chemical ototoxicity is a relatively new toxicological endpoint. A systematic review was undertaken to investigate the relationship between styrene, with and without co-exposure to noise, and ototoxicity. The two objectives for this systematic review: 1) to investigate the potential (causal) ototoxicity of styrene exposure at work and 2) to investigate the potential (causal) ototoxicity of styrene exposure in combination with noise exposure at work. The review will be used as a resource to inform policy changes and updates to the acceptable exposure level of styrene in British Columbia, Canada, set by Worksafe BC.</p>
<p>Empowering OEM through Recruitment</p>	<p>Prior to the practicum, I worked with a nationwide team to identify gaps of public knowledge in my project area. Once in the MPH, I pitched the possibility to a potential host organization, our largest domestic professional society. With their support, I conducted field research on the centralized and decentralized aspects of the recruitment pipeline leading into our field, a known bottleneck with complex causes and limitations. I identified trends from the data, assessed the needs of the target populations, and developed public content to fill in those gaps of knowledge. Key stakeholders at various organizations and at various levels informed my project from inception through completion. Mentors and editors provided crucial feedback. We are now in the final phases of approval and publication. This new public information will directly improve the quantity and quality of applicants to OEM residencies and thereby improve the landscape of occupational physicians for the next generation of American workers.</p>
<p>Stories of Health & Science</p>	<p>The entrance to Harvard School of Public Health proclaims its motto: Powerful Ideas for a Healthier World. Not as catchy, but a lot more honest, are the truths that powerful ideas only achieve a healthier world when they're well implemented and well communicated. In the face of eroding public trust in health and science, BL2 seeks to shift the dial on public perception. We inspire the next generation of scientists and public health practitioners by telling stories of science and medicine on the cutting edge in large and small-screen formats.</p> <p>I have been part of BL2's story research and development team. Together we have researched,</p>

	<p>composed, refined, and pitched stories to inspire trust in medicine and public health, to inspire awe of and connection with the scientific process, and to inspire hope in the development of technology to tackle climate change. Our current active projects include an IMAX film on medical breakthroughs, an IMAX film on climate solutions, a children's series on science applications, and a sitcom on biotechnology development. I plan to continue with BL2 part time as a writing and research fellow after graduation to follow at least some of these projects through to fruition.</p>
<p>Application of Occupational Health Principles in Clinical Practice, Research and Policy – From rural India to the US</p>	<p>It is a paper that discusses the possible avenues for the application of Occupational and Environmental Health principles into relevant problems in rural India and in my work in the US healthcare. It also compares and contrasts the two countries' healthcare and the difference in their challenges.</p>