

Faarooq Amosu

Chemical oceanography is one of the leading scientific fields to ensure environmental safety. Due to circulating ocean currents and the dependence on water as a species to survive, water pollutants do not only affect the bodies of water they occupy. Entire populations of organisms introduced to these pollutants can be wiped out due to the slightest change in temperature or pH level. These ecosystems form a web of interconnected ecosystems that can easily affect the global health of those who consume sea food, water from open air water bodies, the quality of our atmosphere, and weather patterns. This topic inspires me because of the alarmingly increasing pervasiveness of pollutants in our water.

Both the U.S. Navy and Marine corps are military branches that utilize mobility across maritime areas. The changing quality of our marine biomes results in adverse conditions for sea-faring vehicles. Planes and ships may experience drastically changing weather conditions and sea levels that can slow or halt the ability of the forces to deliver essential services and troops to U.S. allies and outposts.

Channing Bolt, a chemical oceanographer sponsored by the U.S. Navy SMART scholarship, works to remove trace metals from our water supply. Trace metals are metallic compounds that exist in microscopic quantities all across the world and are increasing in the water. Bolt works at San Diego labs to manufacture wearable filters that can remove the trace metals from the water through deionization, a feat that commercial bought camping filters cannot achieve. She also is involved with the research of the changing arctic region under the effects of global warming, pioneering studies to prevent adverse environmental changes.

Ms. Bolt's studies on trace metals and the changing climate of the arctic region relate most nearly to my interests in the economic liberation of African nations. As it is known, more than 60% of Africans do not have access to clean drinking water, and the issue has only worsened with the pollutions of oceans which feed in the water providing estuaries. As an aspiring biochemical engineer and humanitarian, Ms. Bolt's work is very enlightening to hear, and encourages me to pursue fields that intend on combatting the near-inevitable water crisis mankind may face.

Predicting the future, chemical oceanography will likely be the leading field in environmental safety. All means of cleaning out oceans, filtering water, and securing ecosystems and endangered species will be consulted by or run through someone in this scientific field. In 15-20 years, automation will have improved enough for largescale filtering systems to be installed near the opening of every major freshwater source. Ensuring the quality of water being consumed and providing time for more solutions for seawater and saltwater care to be implemented.

Additionally, environmental rules and regulations will be enforced heavily and bans on carbon emitting appliances will be introduced. Electric vehicles will be the norm for a growing majority of Americans,

causing a decline in gas stations and other aspects from the fossil fuel sector of the global energy industry. This will of course have effects on the economic state of the Middle East and all fossil fuel providing nations but will ultimately force them to install more renewable resources and lessen the dependence on oil reserves as an export.

The future will also enable the branches of the U.S. military to be able to operate without the fear of polluting the environment with the harmful compounds used for their equipment. The Navy and Marine Corps will also benefit immensely with self-powering vehicles that can sustain their energy through solar/hydroelectric means. This advancement will propel the U.S. to be the leader of renewable energy as well as all other duties the nation provides for the globe.