AUTOMATED WATER DRONE DEVELOPMENT FOR HEAVY METAL CONTAMINATES DETECTION

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Water is a crucial resource, not only is it used for drinking but also for recreation, power generation, and it is an environmental necessity. Water contamination can arise as a side effect from industrial processes or an extreme natural phenomenon. Contaminations must be treated quickly or risk permanent environmental damage. However not only is the process for sending out surveyors to canvas the contaminated region time consuming, the waiting period for the many water sample results can also be extremely long.

The objective of this project is to develop a low-cost autonomous water drone with integrated sensors to sample bodies of water for potential contaminants such as those produced in an algae bloom. Once they have been detected proper clean up can commence before a situation occurs. It will eliminate wait time, be able to perform multiple tests in a short amount of time, create high resolution data, give rapid responses to environmental changes, and find contamination source allowing for easier and faster clean ups. Chemically treated paper sensors known as colorimetric sensors will be attached onto the surface water drone where a color changing chemical reaction will trigger on contact with the specified contaminate.

For better detection underwater samples have higher concentrations of contaminates which lead to the development of a submarine drone. The submarine has a Raspberry Pi to control the drone, a battery source to power the drone's attachments, and sending data back from the drone. It takes advantage of CO_2 cartridges to change its buoyancy to submerge and resurface. It has more room for sample collection and different types of sensors can be used with it.