

Detection of human remains from underwater conditions: A fluorimetric analysis of water surrounding decomposing tissue.

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This is my abstract for my whole project.

Information relating to decomposition of human remains in an aqueous environment is limited. This restricts time effective search and recovery operations by the Police. This experiment aimed to investigate whether unfiltered water and filtered water would affect the detection of fluorescence created by a decomposing body and the point in time when the body would no longer produce any chemical moieties that cause the fluorescence. To understand the effect of such water conditions, 20ml of water samples was collected from a local nature reserve at Staffordshire University (GPS. 53.005787, -2.173315). 10ml of this sample was filtered to remove microorganisms because they may have some effect upon the fluorescence or they may fluoresce themselves the remaining 10ml was kept in its unaltered condition. Mice which were used as human proxies, were submerged for each water condition and incubated to 20 degrees Celsius over a period of 10 weeks. Samples were collected weekly the fluorescence intensity measured and the level of decomposition using a Body Aquatic Decompositional Score (BADs). Fluorimetry was used to identify the total peak area of fluorescence for each sample. A scatter graph identified that each sample varied significantly from each other, highlighting that there was no significant trend between the total peak area and the length of time in ADD's. Further work regarding a Class 4 Laser and a LED Diode Forensic Lighting System will determine whether fluorimetry is a visually effective technique to aid underwater searches for missing persons.

Linking closer to the laser work, I have been running my samples on the fluorimeter at three wavelengths (405nm, 445nm and 532nm) so I can link the results to the laser. I need to identify if the results I have found are actual fluorescence or just scattered light.