Much Ado about Oil

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The purpose of this investigation was to examine the impacts of an ocean oil spill and of possible recovery efforts on marine flora. Two redox titration experiments were undertaken during the investigation. The first focused on the dissolved oxygen content of water over time where the surface is covered with a body of crude oil. The dissolved oxygen titration results implied that the oxygen content will rapidly decrease over time, so fast removal of the oil is necessary for the survival of marine life. This presented information specifically of the effects on marine life in deep waters, where oxygen is already limited. To quickly remove surface oil, it is often oxidised by burning in oxygen. This combustion reaction produces tonnes of carbon dioxide as well as other hazardous greenhouse gases. A current experimental project to sequester carbon dioxide from the atmosphere by stimulating phytoplankton growth uses the process of ocean iron seeding. This was tested by the redox titration between Fe^{2+} and MnO_4 where Australian kelp was placed in acidified iron solution. The iron experiment seemed to not show an uptake of iron, instead it demonstrated that the acid in iron solution causes the iron to leach out of the kelp. It also unveiled the loss of pigmentation in the kelp. Further paper chromatography tests were done which confirmed this. Iron seeding can therefore be very harmful to the photosynthetic potential of kelp and may have unprecedented effects on the marine ecosystem, so caution must be taken.

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