

# Review of: "On-Line Monitoring of Minor Oil Spills in Seawater Using Sediment Microbial Fuel Cells: A Preliminary Study"

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Potential competing interests: No potential competing interests to declare.

## On-Line Monitoring of Minor Oil Spills in Seawater Using Sediment Microbial Fuel Cells: A Preliminary Study

This article presents sediment microbial fuel cells used as biosensors to detect minor oil spills in freshwater. Various external resistances (220  $\Omega$ , 300  $\Omega$ , 430  $\Omega$ , 510  $\Omega$ , 1000  $\Omega$ , and 2000  $\Omega$ ) were assembled to assess their ability to detect oil in seawater. The results indicated that as oil was added to the cathode of the microbial fuel cells, there was a clear and gradual decrease in the voltage output due to the oil's interference with oxygen dissolvability in seawater.

### Comments:

This article seems very close to a previous paper, and the conclusion presented is that the relationship between the change in voltage and change in time was less linear than the change observed in previous studies, and inconsistent across the different voltages.

Figure 1 shows clearly the variation of voltage versus resistance. No linear correlation has been observed. In these conditions, it seems to be difficult to develop hypotheses in the next part of the paper if the working of the microbial fuel cell is not correctly described and understood.

The curve G (no resistance) should be commented on. Does it correspond to the short circuit of the cell or the open circuit voltage?

Figure 2:

The power density reaches a maximum value for 1000  $\Omega$ . We can conclude that this resistance corresponds to the optimum resistance. But no discussions on the kinetics of the reaction in the microbial fuel cell are presented. The details on the experimental procedure for measurements are not given.

According to the value of current, the time of equilibration of the cell can be different.

More generally, on the concept of sensor, there are no discussions on the effect of biofilm in the sediment. It seems that the sensor is only due to the oxygen effect on the cathode. In this case, is it necessary to use a microbial fuel cell?

The title suggests that the sensor is linked to the microbial fuel cell. But in fact, it is not the case.

In conclusion, I suggest **very major revisions** of this article to focus on the analytical principle and to avoid confusion with the microbial fuel cell. This biofuel cell is only used to supply electrodes.