



Mini Review

Sapropel as fuel: A further Perspective

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Abstract

Findings in a fairly recent paper on sapropels are discussed and certain points enlarged upon. A discussion into sapropels more widely follows. Comparative properties of peats and sapropels are emphasised.

Keywords: Sapropels, peats, carbon neutrality.

Introduction

Sapropels are similar to peats in many important ways. Peat is of course formed by deposition of vegetation. The difference with sapropels is that they are derived from aquatic plants and from other freshwater life including plankton. Kozlovskaya et al.¹ give a calorific value of 20.6 MJ kg⁻¹ for a dry sapropel, which can be compared for example with the value of 22.5 MJ kg⁻¹ for a Canadian peat in a dry state².

One respect in which sapropels differ from peats is their lower humic acid content³.

Examination of the carbon neutrality or otherwise of sapropels: The article by Kozlovskaya et al.¹ in a previous issue of this journal contains some interesting information on possible fuel use of sapropel in Lithuania. The paper starts with a deprecatory discussion of the use of conventional fuels and extols biomass alternatives. It unequivocally describes sapropels as being 'biomass' and this point needs clarifying. The term 'biomass' suggests carbon neutrality, and this one would not expect a sapropel to have. The time scale of sapropel formation is thousands of years. For example, Brown et al.⁴ reported the ages of a group of sapropels from beneath the Black Sea as being in the range 3000 to 7000 years.

The carbon in a biomass fuel like wood was present in atmospheric carbon dioxide on a much shorter time scale than that, meaning that when such a fuel is burnt carbon dioxide is simply being put back where it came from. That is not so with sapropels, so the word 'biomass' is less applicable if at all. This point applies equally to peats, which are also formed on a time scale of millennia. Of course, where in the work of Kozlovskaya et al.¹ the sapropel for briquetting is combined with sawdust or straw that component is carbon-neutral.

A good deal of the paper by Kozlovskaya et al.¹ is taken up with briquetting. The fact that the sapropel examined was briquetted without a binder is noted and is of importance. There is a basis for comparison of sapropel briquettes with peat briquettes, which are produced in significant tonnage in countries including Belarus and Estonia.

Discussion

Fuel use of sapropels is negligible internationally, but this is not so of sapropelic coals. Humic coals are formed, on a time scale of millions of years, from peat. Where coalification is not of peat but of sapropel the term sapropelic coal applies, and such coals are low in humic content. An example of major use of sapropelic coal is the power station at Trbovlje in Slovenia, where coal of sapropelic origin has been used for nearly 50 years to produce electricity. Peat, which is the precursor to humic coals, is itself a widely used fuel but the same is not true of the geological precursor to sapropelic coals. A degree of change to this is not inconceivable, for example there is active interest in Romanian sapropels for fuel use⁵.

Conclusion

If and when sapropels are used as a fuel to a significant degree there will be no carbon neutrality benefits accruing as there would be from use of fuels such as wood, rice husks or (extending the discussion to liquid fuels) biodiesel.

References

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