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Promotion and implementation of bioenergy for a better environment: A mini review

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Biogas from biomass appears to have potential as an alternative energy source, which is potentially rich in biomass resources. This is an overview of some salient points and perspectives of biogas technology. The current literature is reviewed regarding the ecological, social, cultural and economic impacts of biogas technology. This article gives an overview of present and future use of biomass as an industrial feedstock for production of fuels, chemicals and other materials. However, to be truly competitive in an open market situation, higher value products are required. Results suggest that biogas technology must be encouraged, promoted, invested, implemented, and demonstrated, but especially in remote rural areas. (1) Biogas technology can not only provide fuel, but is also important for comprehensive utilisation of biomass forestry, animal husbandry, fishery, evolving the agricultural economy, protecting the environment, realizing agricultural recycling, as well as improving the sanitary conditions, in rural areas. (2) The biomass energy, one of the important options, which might gradually replace the oil in facing the increased demand for oil and may be an advanced period in this century. Any country can depend on the biomass energy to satisfy part of local consumption. (3) Development of biogas technology is a vital component of alternative rural energy programme, whose potential is yet to be exploited. A concerted effect is required by all if this is to be realised. The technology will find ready use in domestic, farming, and small-scale industrial applications. (4) Support biomass research and exchange experiences with countries that are advanced in this field. In the meantime, the biomass energy can help to save exhausting the oil wealth. (5) The diminishing agricultural land may hamper biogas energy development but appropriate technological and resource management techniques will offset the effects.

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Solvent selection guides for pharmaceutical chemistry

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As solvents represent most of the material used to produce an Active Pharmaceutical Ingredient, selecting the "greenest" solvents and reducing their amount is the most effective way to improve the sustainability of its synthesis. Several solvent selection guides have been published by pharmaceutical companies or institutions (Pfizer, GSK, GCI-PR, and Sanofi). A special focus on Sanofi's guide will be made. As part of the European project CHEM21, a survey of these solvent guides has been made, permitting to rank many classical solvents into four categories, from "recommended" to "highly hazardous". In order to rank less classical solvents, and in particular bio-derived solvents, a methodology has been developed. A set of Safety, Health and Environment scores is proposed, based on very easily available physical properties and GHS statements. A simple combination of these scores gives a preliminary ranking of any solvent. The CHEM21 solvent selection guide thus obtained is the first guide integrating bio-derived solvents. The guide and the methodology have been integrated in the CHEM21 on-line training platform, which is publically available. A demonstration of this platform will be made.

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