



São Paulo - Brazil - May - 22nd to 24th - 2013

Acc4ademic

INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

Electricity from Poultry Manure: A Clean Alternative to Direct Land Application

BILLEN, P.^a, COSTA, J.^b, VAN CANEGHEM, J.^a, VANDECASTEELE, C.^{a*}

a. *University of Leuven, Department of Chemical Engineering,
W. De Croylaan 46, B-3001 Leuven, Belgium*

b. *BMC Moerdijk, Middenweg 36a, 4782 PM Moerdijk, The Netherlands*

**Corresponding author, pieter.billen@cit.kuleuven.be*

Abstract

In the EU direct land spreading of animal manure is restricted to avoid excessive fertilization of agricultural areas with resulting eutrophication problems. The combustion of poultry manure in biomass power plants is an interesting alternative to direct land spreading. In this paper, the environmental impact of combustion and of direct land spreading of poultry manure are compared, considering three aspects of cleaner production: sustainable energy production and GHG emissions, pollution prevention and recycling of materials.

In a life cycle perspective, it is shown that the production of electricity from poultry manure reduces the emissions of GHGs, NH₃, nitrates, SO₂ and NO_x to the environment. The reduction of the emissions and resulting decreased environmental impact is partly due to the diversion of poultry manure from land spreading and partly due to the replacement of electricity production by the combustion of fossil fuels.

The combustion ash is rich in phosphorus and potassium, but low in nitrogen, so that it can be recycled as an inorganic soil conditioner. The ash is dry, odorless, and free of pathogens, which are beneficial properties compared to fresh poultry manure. Moreover, the amount of heavy metals with respect to the macronutrient phosphate, is unchanged compared to the poultry manure as it enters the combustor. Therefore, land application of the poultry manure ash has the same environmental impact as poultry manure spreading. It may be considered a means to balance the needs and use of phosphorus between regions.

Keywords: Poultry manure, land spreading, combustion, environmental impact

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

São Paulo - Brazil - May 22nd to 24th - 2013