# Energy from Waste using Poultry Litter and MBM

Rose Energy made planning application to operate a bio-mass fuelled 30MW power plant at a site in Glenavy, Co. Antrim. The process fuel will be a mix of poultry bedding and meat and bone meal (MBM) using fluidised bed technology. The process will include a reception and materials building, a turbine hall and a boiler house, 42m high containing a fluidised bed boiler. Process gases will be treated by flue gas treatment plant before being discharged from a 80m high stack. There are houses within 200m of the process boundary and sensitive agricultural and ecological receptors.

The Airshed conducted a detailed air quality impact assessment using three dispersion models (AERMOD, ADMS and ISC) and a human health risk assessment using USEPA approved HHRAP methods.

Rose Energy provided estimates for upper, typical and lower combustion gas flows. These were used to calculate the mass emissions from the process. Both poultry bedding and MBM fuel feedstocks are likely to be minor sources of cadmium, lead and mercury, compared to conventional waste incineration plant e.g. those burning municipal solid wastes (MSW). Emission rates were based on permitted emission rates and estimated combustion gases. Two main emission Scenarios were assessed in detail.

The assessment had regard to best practice Guidelines for dispersion modelling and included a detailed model sensitivity analysis for meteorological data, stack height, surface roughness, terrain, buildings, receptor height, exhaust temperature, stack exhaust velocity, particle density and deposition velocities. The assessment considered the worst case factors for all these quantities and assumed the credible worst case for each parameter. The main assessment was based on predictions obtained using ADMS 4, a model approved by EHSNI, subject to its proper use. Additional model runs were conducted using AERMOD, a USEPA approved model. The predictions for the HHRAP were obtained using ISCT3, an older generation dispersion model, because this model provided the worst case predictions.

The stack height determination considered stacks ranging from 50 – 100m. This indicated that the benefit from increasing stack height reduced significantly beyond 80m. The same reduction in dispersion with increased stack height was evident for short term airborne pollutants, long term airborne pollutants and deposition rates. The Airshed assessment concluded that the emissions from the process should be discharged from a 80m high stack with exhaust temperature at or above 120$^{o}$C with an efflux velocity not less than 22m/s.

The air quality impact assessment was reviewed by an independent academic, NIEA, the Planning Service and two local authorities.

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