UK-ADAPT

www.uk-adapt.org.uk

May 2007 Newsletter

This newsletter is the twelfth in the series of monthly updates on the UK-ADAPT initiative. It is provided to all registered users on the UK-ADAPT website. Please forward to any colleagues that might be interested in UK-ADAPT and encourage them to use the website and register their projects.

Overview
There has only been limited activity on the UK-ADAPT website during May. We are still slowly expanding the database of relevant diffuse pollution projects but there is always scope for more, if you have any that you haven't yet added then please do so!!!

New Projects
There are 189 projects currently listed on the website. Please continue to review all diffuse pollution projects undertaken by your organisation since 2000 and consider registering them on UK-ADAPT. If anyone has a large number of projects to register, or any problems please contact Matthew Taylor for assistance on 01623 844331
or at uk-adapt@adas.co.uk

UK-ADAPT Feedback
If you have any comments on the website or require assistance with registering and editing projects or updating contact details, please contact us at uk-adapt@adas.co.uk

Case Study
If you would like your project to be featured in subsequent months newsletters then send us an email at uk-adapt@adas.co.uk and it can be arranged, all we need is a short summary of the project.

Featured Case Study
Each newsletter features a flagship project that is registered on the UK-ADAPT website. This month we focus on a project entitled **Development of operational guidelines to support safe application of biosolids to agricultural land**. A project jointly funded by UKWIR, Defra and the EA to develop simple, practical guidelines on the management of biosolids, and land receiving biosolids, in order to minimise possible detrimental effects on the quality of the surrounding watercourses. The work was carried out by ADAS and Reading University in collaboration with water companies in three regions.

Development of operational guidelines to support safe application of biosolids to agricultural land

Biosolids produced from municipal sewage treatment works (STW's) are a useful source of nutrients and organic matter for soils and their recycling to agricultural land is widely recognised as a practical and environmentally sustainable disposal option. However, land application of biosolids increases soil phosphorus (P) more rapidly than other amendments and may reduce water quality through increased transfer of P in agricultural runoff to water causing eutrophication. Eutrophication of surface waters is an important UK and European issue which requires a pragmatic and integrated catchment management approach to control, including transfer of P in land runoff. A better understanding of the fate of biosolid P in soils and subsequent risk of P loss in runoff is therefore required in order to safeguard land application as a beneficial disposal route. Many biosolids are now 'improved-treated' with iron (Fe) and lime which influence P availability.

A risk-based management approach to biosolid application was developed taking account of the hydrological connectivity between the field and the watercourse, and the potential for runoff and erosion to increase the mobilisation of soil and biosolid P. It was proposed that biosolids can be more liberally applied to fields with no direct hydrological connectivity by rapid flow pathways to the watercourse, whilst adoption of more sensitive biosolid and land management measures to reduce runoff and erosion risk are required for fields with medium and high connectivity risk. More sensitive land management may include adjusting the amount of biosolid applied, the method of application or the way the soil is cultivated, or by establishing protection zones (e.g. buffer strips). Improved management of land may lower the P loss risk class sufficiently to allow increased biosolid application rates on some soils without detriment to water quality, depending on biosolid type.

To identify management guidelines on sustainable biosolid application, an incubation study investigated the impact of different rates and types of biosolid on soil available P (standard Olsen-extractable P), and potential soil P release to runoff (soil water-extractable P) on five different soil types.

Biosolids gave less than 50% of the increase in soil available P (Olsen-P) that was obtained with inorganic P fertiliser, and often had no effect on soil water-extractable P. Biosolids treated with lime and Fe significantly increased P sorption capacity and those containing total Fe:total P element ratios >2 actually decreased soil water-extractable P and therefore P release to runoff waters. Variation in P release between the soil types and different biosolid types tested could largely be explained by effects on percent soil P saturation. This work has helped define how biosolids can be sustainably applied to land without detriment to surrounding watercourses. The results suggest that soil Olsen-extractable P (the standard soil test used in the industry) alone is not a good indicator of P loss risk on biosolid-amended soils. Even when the equivalent of 20 years of typical sludge P supply was incorporated into the soil, there was no increase in runoff P concentrations, depending on soil and biosolid type, even though Olsen-P was increased. Current guidelines on biosolid application rates based on soil (Olsen) P levels in voluntary codes of practice may therefore be unnecessarily restricting their application rates to agricultural land. These findings are based on laboratory incubation studies and need further verification under field conditions.