



UKWIR Project RG07 D 202

CONSEQUENCES TO THE WATER INDUSTRY OF CONTROLS ON ORGANICS CHEMICALS IN SLUDGE

Treated sewage sludge (biosolids) has been recycled to agricultural land for many decades in the UK, Europe, the US and other parts of the world. This is recognised as the Best Practicable Environmental Option (BPEO) in most circumstances, adding plant nutrients and humus-forming material to enrich the soil. The practice is supported by the UK Government and European Commission.

Current Regulatory Regime

Recycling sewage sludge is a highly regulated process. Current controls are based on the 1986 EU Sludge Directive (86/27/EEC) and the UK Sludge (Use in Agriculture) Regulations supported by a Code of Practice and Hazard Analysis and Critical Control Points (HACCP) management practice. An important part of the current regime is the voluntary adoption by the Water Industry of the Safe Sludge Matrix. The Safe Sludge Matrix, developed to provide a framework that gives all food industry stakeholders confidence that biosolids recycling to agricultural land is safe, has been the driving force behind the UK adopting the highest standards of treatment for sewage sludge recycled to land, surpassing the current regulatory requirements of the European Union.

Proposed Regulatory Changes

The existing Sludge Directive (86/278/EEC) does not lay down any threshold limits for concentrations of organic compounds in sewage sludge used in agriculture. However, as indicated in the European Thematic Strategy on the Prevention and Recycling of Waste published in December 2005, the Commission intends to revise Directive 86/278/EEC on sewage sludge in 2007.

Recent proposals from the EU indicate that there would be new limit values for

organic compounds as well as changes to existing levels for heavy metals. There is little agreement as to whether controls on organic contaminants in sewage sludge are needed and, if so, which organic contaminants to regulate. Nevertheless there is a strong likelihood that limit values for some organic chemicals will be included, which could have serious implications for the recycling of sewage sludge to agricultural land.



Water Industry Response

In response to the concerns highlighted, UKWIR has proposed a project that will identify the technical, financial and environmental consequences to the Water Industry should limit values for certain organics be included within any revised Sludge Directive.



Following a competitive tender procedure Atkins was appointed as the preferred contractor. In order to address the project requirements, Atkins has put together a highly experienced in-house team that will be supported by external expertise and specialist knowledge provided by ADAS and Imperial College.

The project will be undertaken in four parts:

- Brief review of the current and proposed regulatory regimes;
- Review of the literature to: identify the sources of the organic chemicals of concern; gain an understanding of their fate during treatment (and in particular to where they partition); and hence provide information that will enable the potential extent of the problem (i.e. quantities of substances that may need to be removed), to be identified. The impacts of additional treatment, to achieve effluent standards under other legislative drivers, and the potential for additional sludge production containing organic loads will be considered.
- Review of the literature and practical water company experience to identify treatment technologies that may be able to reduce organic substances in sludge to meet the proposed limits. Where there is insufficient data to provide reliable removal efficiency figures, Atkins will use a fate modelling procedure. This will be based on the consortium's knowledge of the degradation potential of the organic compounds and the operating parameters of the technologies of interest. The output will be estimated removal efficiencies within defined confidence boundaries.
- Identify the whole life financial and environmental cost implications depending on the technology to be utilised and the quantities of organics to be removed.

It is anticipated that the project will take 12 months to be completed.

Project Aims and Benefits

It is anticipated that the project outputs will be used to inform the Water Industry of the potential consequences of proposed organic limits and, through Water UK, to influence discussions at both national and EU level with respect to the nature and extent of the controls that may be brought in through any potential revision of the Sewage Sludge Directive.

The following additional benefits may also arise:

- The ability to treat and remove the organics in question may improve stakeholder perception with regard sludge to land application and provide an increased level of confidence in the safety of the re-use strategy;
- The evaluation of the environmental consequences of additional treatment should highlight the potential carbon footprint impacts of meeting the proposed organic limits;
- The financial and technical evaluation may be used by water companies to inform both their overall sludge strategies and the potential investment requirements for PR09;
- The technology review may lead to an identification of the gaps in treatment capability that could stimulate R&D;
- The source review will seek to provide an indication as to whether source control could be utilised as a mitigation measure.

