ACM/598

DISCUSSION PAPER

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD (ACMSF)

FOOD STANDARDS AGENCY POSITION ON THE RECYCLING OF SEWAGE SLUDGE TO AGRICULTURAL LAND

Background

1. As a result of increasing concerns about the use of sewage sludge on agricultural land, the Government initiated a wide-ranging review of the scientific literature. Following publication of this review, in 1998, the Government announced its intention of revising the current regulations to provide further safeguards against the transfer of pathogens from sewage sludge to the food chain. It is likely that a consultation paper on the proposed changes will be issued in the near future.

2. However, the proposed changes have already been reflected in the "Safe Sludge Matrix" a voluntary agreement drawn up by Water UK (representing the water companies) and the British Retail Consortium. The latest version of this document can be found at http://www.adas.co.uk/matrix/SSM.pdf (or appended at A in the hard copy version of this paper).

3. Key features of the existing voluntary controls and the planned revisions of the regulations are a ban on the application of untreated sludge (including septic tank sludge) to land to be used for food crops and the tightening of sludge treatment processes. Subject to a few exceptions, the latter prohibits the use of conventionally treated sludge on land used for fruit, vegetables, salads, horticulture and grazing, whilst allowing the use of enhanced treated sludges with appropriate harvesting intervals.

4. Whilst the provisions were based on a considerable body of science, it was recognised that there were some gaps in the knowledge base and a programme of research to study the reduction in pathogen levels provided by a range of sludge treatments, both conventional and enhanced, was put in place. Officials from the Department of Health and, latterly, from the Food Standards Agency, have been part of the steering group for the research programme. The research has now been completed and shows that conventional treatments generally give a 2 log reduction in pathogens, whilst enhanced treatments give a reduction of 6 logs or better. A summary of the results will be circulated under separate cover.

5. ACMSF has been asked to peer review the final part of this research, which is a risk assessment. A subgroup of the Committee has already reviewed some interim data from the risk assessment and provided advice on the methodology being adopted. It is envisaged that the final report will soon be ready for further comment.

6. On the basis of the log reduction in pathogens demonstrated by the research, those involved in the steering group, including officials from the Food Standards Agency, have generally concluded that the safe sludge matrix provides an adequate margin of safety. The Agency's current position was expressed in a paper presented at a meeting held in Edinburgh earlier this year. A full version of the paper is annexed at B. It concluded with the following summary:

   " The Food Standards Agency position is that it considers that the application of sewage sludge to agricultural land should not present any unacceptable risks to food safety, provided that it is carried out in compliance with the statutory requirements and the provisions of the Safe Sludge Matrix. We are participating in the review of these controls to ensure they continue to provide an appropriate level of protection of food safety."

7. With the impending publication of the Government's consultation on proposals that would give statutory effect to the Safe Sludge Matrix and the publication of the results of the research programme, it appears to be the appropriate time to seek the views of Advisory Committee members on this matter.

Action required

8. Members are invited to advise on the adequacy of the Safe Sludge Matrix in the light of the results of the research programme.

Secretariat

September 2002
(cm7020)

ANNEX A

THE SAFE SLUDGE MATRIX

Latest version can be found at <http://www.adas.co.uk/matrix/SSM.pdf>

ANNEX B

THE SUSTAINABLE ROUTES OF BIOSOLIDS TO LAND - THE FOOD SAFETY PERSPECTIVE

1. The spreading of sewage sludge on agricultural land is controlled in the UK by the Sludge (Use in Agriculture) Regulations 1989, which implement EC Council Directive 86/278 (the 'Sludge Directive'). These regulations are supported by a voluntary Code of Practice. The Code and the Regulations include limits on the levels of heavy metals in sludge applied to land to protect human, animal and plant health from any unacceptable risks from these contaminants in sewage sludge. They also include provisions to minimise the transfer of contaminants and microbial pathogens to humans via crops by requiring time intervals between applying sludge and harvesting crops.

2. More stringent requirements have been introduced under 'The Safe Sludge Matrix' agreed in December 1998 between Water UK, representing the UK water and sewage operators and the British Retail Consortium, in association with ADAS and the NFU. Among other things, this voluntary agreement phased out the use of untreated sewage sludge on agricultural land used for growing food crops at the end of December 1999. The Government has announced a formal ban on the spreading of untreated sludge on land used for food crops from 2001. The use of untreated sewage sludge on all agricultural land has an end date of 31 December 2005. The Safe Sludge Matrix also requires more stringent treatment of sludges that are to be applied to land used for food crops and this requirement is to be incorporated into a revision of the UK Regulations.

3. The scientific evidence underlying the existing UK Regulations was subject to a detailed and independent review published by the WRc in 1998 (*Review of the Scientific Evidence Relating to the Controls on the Agricultural Use of Sewage Sludge – Parts 1 and 2).* The report provides a detailed review of the potential range of and risks from chemical contaminants and pathogens in sludge, including a discussion of the research carried out on heavy metals and organic contaminants. The review did suggest that, whilst there was no direct evidence in the UK of adverse effects on human health resulting from the transmission of pathogens from sludge, there was a potential (albeit extremely small) risk of disease transmission. It therefore recommended that only treated sludge should be applied to agricultural land. The Safe Sludge Matrix goes beyond the recommendations in the WRc report, allowing only enhanced treated sludges to be used for grazing land and for most land used to grow crops.

4. Established sludge treatment methods will significantly reduce the concentrations of pathogens such as *salmonellae* in the sludge, but may not produce a completely pathogen-free product. A second barrier for the protection of humans is introduced in restrictions on land use after sludge application. There was a lack of information on the extent of pathogen reduction produced by conventional methods of treatment and by enhanced

treatment methods. A programme of research has therefore been undertaken to ascertain the levels of pathogens in sludges, the level of pathogen reduction achieved by various methods of treatment and to assess the risk associated with the application of treated sludges to land used for growing crops. In the meanwhile, the Safe Sludge Matrix takes a precautionary approach to minimise any possible risks.

5. Potentially Toxic Elements (PTEs) are inorganic elements that are found in sewage sludge at higher concentrations than in soil. The principal concerns are on heavy metals such as cadmium and lead. When sludge is applied to land, the PTEs remain in the cultivated layer of topsoil where they may accumulate after repeated applications of sludge to the same field. Thus the potential exists for these elements to enter the food chain and to affect human health. The PTEs need to be controlled so that toxic levels are not reached in either soil, or food produced on treated soil. This is done either by limiting the PTE content of sludge and its rate of application, or by limiting the loading rate of metals to land. In either approach, the objective is to ensure that limits for PTEs in soil are not breached.

6. One document considered in the WRc review mentioned earlier, with a direct bearing on the food safety aspects of the use of sewage sludge on agricultural land, was the 1993 report from the then Steering Group on Chemical Aspects of Food Surveillance. This independent body carried out its study as part of an overall review of the rules for sludge application commissioned by MAFF and DoE. This considered data available at that time on lead and cadmium since those are the only PTEs likely to be present in sludge-amended soils in quantities that might affect food safety.

7. This report looked at the uptake of lead and cadmium by crops from amended soils. It was concluded that no significant rise in lead concentrations above background concentrations occurred in plants grown in soil treated with sewage sludge. This finding is due to lead being relatively unavailable to crops from the soils investigated. However, cadmium has a greater tendency than lead to accumulate in plants by uptake from soil. The likely dietary exposures from offal and vegetables to cadmium at differing concentrations in the soil resulting from amendment with sludge were estimated. It was shown that dietary exposures from food produced at the current soil limit of 3 mg/kg is little different from the average UK dietary exposure to cadmium, and within the safety guideline (Provisional Tolerable Weekly Intake or PTWI set by JECFA) for cadmium. The scientific evidence was considered not to justify any change in the limits in soils for lead or cadmium.

8. In addition to PTEs, organic chemicals may be present in sludge. However, the main potential pathway for these to get into the foodchain is not by plant uptake, as the rates of transfer into plants for most organic chemicals are small. All studies to date show that the only significant pathway of human exposure from the agricultural use of sludge is by direct ingestion of sludge residues by grazing animals and subsequent transfer of organic contaminants into offals and dairy products. On average, the proportion of food in the diet

produced from animals grazing on land treated with sewage sludge will be low, as the amount of treated pasture is low.

9. The Food Standards Agency position is that it considers that the application of sewage sludge to agricultural land should not present any unacceptable risks to food safety, provided that it is carried out in compliance with the statutory requirements and the provisions of the Safe Sludge Matrix. We are participating in the review of these controls to ensure they continue to provide an appropriate level of protection of food safety.

ACM/598 (CORRIGENDUM)

DISCUSSION PAPER

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD (ACMSF)

FOOD STANDARDS AGENCY POSITION ON THE RECYCLING OF SEWAGE SLUDGE TO AGRICULTURAL LAND

Members are requested to note that the second sentence of paragraph 3 of ACM/598 should be replaced with the following 2 sentences :-

"The latter prohibits the use of conventionally treated sludge on land used for fruit and horticulture. Its use is permitted on land used for vegetables, salads and grazing, provided harvesting intervals are observed."

Secretariat
September 2002