SITE SOLID MANURE HEAPS AWAY FROM WATERCOURSES AND FIELD DRAINS

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Description
Where solid manure is stacked in the field or outside of buildings, the heap should not be sited over field drains or close to a watercourse (i.e. at least 10 m separation).

Rationale, mechanism of action
Keeping manure heaps away from field drains and watercourses reduces the risk of pollutants from the manure entering surface waters through preferential flow to drains or via surface run-off into a watercourse. Siting manure heaps away from drains reduces the risk that preferential flow of effluent through the soil might transport N, P and FIOs to field drains. Similarly, an adequate separation distance between the heap and a watercourse reduces the risk that any effluent from the heap might run over the soil surface directly into the watercourse. There is often an increased risk of run-off from the area immediately surrounding the heap because of damage to the soil structure caused by farm machinery when loading/unloading manure.

Relevance, applicability & potential for targeting
The method is applicable to all farms that produce or import solid manure and store it in the field. Benefits are likely to be greatest on heavier soils, where there is a greater risk of surface run-off and where drains are more likely to be present.
The method is simple to implement with few limitations to its use. However, it will be difficult to find suitable positions for manure heaps on those farms where most fields have a system of closely-spaced drains. The method will provide little additional benefit where manure heaps have already been sited on concrete and the effluent is collected.

Effectiveness, including certainty
N: A small reduction in nitrate leaching is estimated on the fields to which the option is applied. This assumes that 20% of manure heaps are at risk (i.e. over a drain, etc), and only 2% of total N is leached. Averaged over the farm area, this corresponds to a very small reduction in nitrate leaching losses per unit area.
P: Cuttle et al. [1] estimated that option implementation would result in a small reduction in the manure component of the baseline P loss.
FIOs: The option is expected to result in a moderate reduction in FIO losses. The effectiveness is assumed to be zero for the broiler farm because the litter is a relatively dry material and the heap would need to receive an appreciable amount of rain before any seepage occurred. By this time, the temperature in the heap would be expected to have risen sufficiently to kill off most of the FIOs that are present.

Time frame
Loss reduction for P and FIOs is expected within the year of implementation. For nitrate, the effect is expected during the winter following implementation.

Environmental side-effects / pollution swapping
The method will also reduce water pollution risks from ammonium-N and elevated levels of BOD. It is unlikely to increase any pollutant losses above those normally arising from manure storage.

Administrative handling and control
The option could be monitored through inspections supported by remote sensing.

Costs: investment, labor
For the arable farm, there is assumed to be a cost / ha over 100 ha nominal management cost of changing the location of the manure heap. For the beef and broiler farm, this cost is applied over the whole farm area.

References
[1] Cuttle, S., Macleod, C., Chadwick, D., Scholefield, D., Haygarth, P., Newell-Price, P., Harris, D., Shepherd, M., Chambers, B. & Humphrey, R. (2007) An Inventory of Methods to Control Diffuse Water Pollution from Agriculture (DWPA) USER MANUAL. Defra report, project ES0203, 115 pp. p. 63-64 http://www.cost869.alterra.nl/UK_Manual.pdf