MINIMISE THE VOLUME OF DIRTY WATER PRODUCED

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Description

Minimise the volume of dirty water produced by:

- minimising unnecessary dirty yard areas
- avoiding excessive use of water in washing down yards, buildings, etc.
- preventing unnecessary mixing with clean water from uncovered clean yard areas and from roofs, etc.
- roofing over yard areas
- covering dirty water and slurry stores.

Rationale, mechanism of action

Minimising the volume of dirty water produced reduces the volume to be stored and spread. Farms will be less likely to run out of storage space during winter and thus be forced to spread dirty water or slurry at times when there is a high risk of pollution occurring.

On some farms, dirty water is collected separately and spread on fields whereas on others it is added to the main slurry store. Covering dirty water and slurry stores prevents rainfall from adding to the volume to be stored. Keeping the fouled yard area as small as possible minimises the volume of water required to wash it down and, hence, the volume of dirty water or slurry produced. Roofing these yards will avoid additional inputs from rainwater, thereby reducing the volume of dirty water produced and the amount of run-off water capable of transporting pollutants directly to a water course.

Poorly designed or badly maintained drains and gutters allow rainwater from non-fouled yards and from roofs to mix with dirty water and further increase the volume. This clean water does not require treatment and should be managed separately, e.g. to a soak-away. Avoiding unnecessary inputs of water reduces the volume of dirty water or slurry produced and increases the number of days storage without needing to increase storage capacity. This helps avoid the need to apply dirty water and slurry when ground conditions are unsuitable, which reduces the likelihood of surface run-off and transport of N, P and FIOs into watercourses and of nitrate leaching to groundwater. The method reduces the volume of liquid to be stored and handled but has no effect on the total amounts of N, P or FIOs.

Relevance, applicability & potential for targeting

The method is mainly applicable to farms with cattle, particularly dairy farms, though most livestock farms will produce some dirty water. In the UK, as part of the Integrated Pollution Prevention and Control (IPPC) regulations, since 2007 all new pig farms (and substantially modified units) have to cover their slurry stores, although this is directed at reducing ammonia emissions rather than water pollution. The method will be effective in reducing losses from fine textured and capping soils where there is the greatest risk of run-off and on free-draining soils where there is a high risk of nitrate leaching.

There are few limitations to the adoption of this method though there may be practical limitations to the roofing of yards and covering of dirty water or slurry stores. The extent to which yard areas can be reduced is limited by the need to avoid overcrowding that might adversely effect herd health and milk quality. Preventing unnecessary inputs of rainwater will be most effective in high rainfall areas. Using a pressure washer to wash down yards uses more water than a non-pressurised supply.

Effectiveness, including certainty
For a 'typical' dairy farm (that had not restricted the generation of dirty water) one might expect a very small reduction in N leaching per year, averaged over the farm area [1]. For phosphorus, it is estimated that on a clay loam soil in the west of the UK, there would only be a small reduction in the manure component of the baseline P loss, as there is very little P in dirty water [1].
The option could potentially result in a moderate reduction in the loss of faecal indicator organisms, due to the reduction in the volume of faecally 'contaminated' liquid, and a reduction in the area from which faecal material can be transported [1,2,3].

Time frame
Effectiveness will be almost instantaneous, as soon as appropriate measures have been implemented.

Environmental side-effects / pollution swapping
If the volume of dirty water added to the slurry store or of rain falling into the store is reduced, the slurry will have a higher dry matter content, which may slightly increase ammonia emissions when it is spread.

Administrative handling, control
The option could be encouraged through capital grant schemes. However, these in turn would require a level of inspection to check efficiency of uptake.

Costs: investment, labor
On a dairy farm, this method could require additional fencing and gates to keep dairy cows away from some of the concrete areas, as well as investment associated with roofing and jet wash machinery. It also includes covering the slurry store. For indoor breeding pigs, there is only the capital cost of covering the slurry store.

References
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