

Guidance for Farmers in Nitrate Vulnerable Zones

Field application of organic manures

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Field application of organic manures

Parts 5 and 6 of the Regulations establish rules which restrict when, where and how you can spread organic manure to land on your farm. In summary:

YOU MUST NOT:

- spread organic manure at a rate greater than 250 kg N/ha in any 12 month period
- spread organic manures with a high readily available nitrogen content during defined closed periods

YOU MUST:

- carry out a field inspection before spreading any organic manure
- comply with non-spreading areas and conditions
- prepare a risk map for land on which you intend to spread manures
- use the appropriate equipment for spreading slurry
- incorporate organic manures into bare soil and stubble where appropriate
- keep a copy of your risk map and records of applications of organic manure

If you are in an NVZ originally designated in 1996 or 2002, you will need to comply with these rules from 1 January 2009. If, however, you are in an NVZ newly designated in the 2008 Regulations, you have until 1 January 2010.

The shaded boxes in Sections 1-9 below set out the rules in more detail and the following paragraphs provide further explanation. A step-by-step guide is provided at the back of this Leaflet to help you prepare a risk map.

Note: organic manures include livestock manures and all other nitrogen-containing organic materials such as sewage sludge, composts, food wastes, and organic wastes (treated and untreated).

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1. The organic manure N field limit

Before you apply organic manure to a field you must decide what an appropriate application rate would be by:

- assessing the amount of crop available nitrogen likely to be supplied by the application of organic manure (see Leaflet 6).
- ensuring that this addition of nitrogen does not cause you to breach the N max limit (see Leaflet 7).

The Regulations also establish a maximum application rate for organic manure.

YOU MUST NOT spread organic manures to any field at a rate which would result in the total nitrogen supplied exceeding 250kg/ha in any 12 month period.

Other important points to note about this limit:

- it does not include livestock manures deposited by grazing animals;
- you can use Table 7, Leaflet 3 to help you identify the application rates (in m³/ha or tonnes/ha) that supply 250kgN/ha;
- you can use your risk map (see Annex 1) to help you identify the area of the field used to calculate your compliance with the 250kgN/ha limit. This should exclude any areas where organic manure must not be spread, such as the 10 metre buffer zone around surface waters, and the 50 metre buffer zone around springs, wells and boreholes; and
- if you make more than one application to any field you will need to consult your field records in order to check that subsequent applications do not cause you to exceed this limit.

2. Closed periods for organic manures with a high readily available N content

The Regulations establish a 'closed period' that prohibits the spreading of those types of organic manure that contain high readily available nitrogen (e.g. slurry, poultry manure and liquid digested sludge) to land at times of the year when the risk of nitrate loss is high.

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YOU MUST NOT spread organic manures with a high readily available N content (i.e. more than 30% of the total N content is in a form that can be readily taken up by the crop) to land in the following periods (dates inclusive):

	Grassland	Tillage land
Sandy or shallow soils	1 Sep to 31 Dec	1 Aug to 31 Dec*
All other soils	15 Oct to 15 Jan	1 Oct to 15 Jan

Applications during the closed period will be permitted in the following circumstances:

- * If a crop is sown on tillage land with sandy or shallow soils on or before 15 September, applications will be permitted between 1 August and 15 September inclusive.
- If you are a registered organic farmer, applications will be permitted at any time to specified crops (see Table 6, Leaflet 3), or to other crops if written advice is obtained from a FACTS qualified adviser, provided that a maximum application rate of 150 kg N/ha is not exceeded between the start of the closed period and the end of February.

If you do not currently have sufficient manure storage to enable you to comply with the minimum storage requirements (see Leaflet 4) and the closed periods set out above, you must provide extra storage by 1 January 2012. Therefore the latest date for complying with the closed periods is 1 January 2012.

You should try to spread organic manure in the spring, where practically possible, as this is the time of year when the greatest amount of nitrogen will be taken up by the crop. Applications during the autumn and winter will supply nitrogen to the soil that will be poorly utilised and at greater risk of leaching or run-off.

Outside the closed period, conditions may still be unsuitable for spreading. The Regulations establish a number of rules (described in Sections 3–5 below) that you will need to take account of when making decisions about when and where it is safe to spread organic manure.

Other important points to note about the closed periods include:

- it does not apply to organic manures with a low readily available N content, which may include the following:
 - duck manure produced by birds on straw or wood shavings may have a readily available nitrogen content below 30% total N. You will need to demonstrate a low level of readily available N content in duck manure by sampling and analysis (see Leaflet 3).
 - dirty water (i.e. very dilute run-off from lightly fouled concrete yards or from the dairy/parlour) is excluded provided that it is collected separately from slurry and does not contain liquids from weeping-wall stores, slurry strainer boxes, slurry separators or silage effluent which are rich in nitrogen.
- a definition of sandy or shallow soils is provided in Leaflet 3. You should use your risk map to help you identify which areas of your farm have soils which fall within that category.

3. Restrictions on applications outside the closed period

From the end of the closed period until the last day of February, YOU MUST:

- NOT spread more than a maximum of 50 m³/ha of slurry or 8 tonnes/ha of poultry manure in a single application; and
- allow at least 3 weeks between each individual application.

4. Field inspections

Before spreading organic manures, YOU MUST make an inspection of conditions in the field to assess the risk of run-off to surface water, taking into account:

- the slope of the land, particularly if it is greater than 12 degrees (equivalent to 20%, or 1 in 5);
- ground cover;
- proximity to surface water;
- weather conditions;
- soil type and condition; and
- presence of land drains (other than a sealed impermeable pipe).

YOU MUST NOT spread organic manure if you identify there is a significant risk of run-off getting into surface water.

To help you with field inspections, you should consult your risk map.

5. Non-spreading conditions and areas

You will need to take account of the following rules when undertaking your field inspection.

YOU MUST NOT spread organic manure when the soil is:

- waterlogged;
- flooded;
- snow covered; or
- frozen for more than 12 hours in the previous 24 hours.

YOU MUST NOT spread organic manures within:

- 10 metres of surface water, except on land managed for breeding wader birds or as species-rich semi-natural grassland and under certain circumstances (see paragraph below); or
- 50 metres of a spring, well or borehole.

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Note: applications are allowed on days when early morning frost thaws during that day.

If you manage land for breeding wader birds or as species-rich semi-natural grassland and the land is notified as a Site of Special Scientific Interest or is subject to an agri-environment scheme then you can spread straw-based solid manure (e.g. farmyard manure) within 10 metres of a surface water provided

- it is spread between 1 June and 31 October;
- it is not spread directly into surface water; and
- the total annual amount does not exceed 12.5 tonnes per hectare.

6. Preparing a risk map for your farm

By 1 January 2010 , YOU MUST produce a map of your farm which shows:

- each field and its area in hectares;
- all surface waters;
- any springs, wells or boreholes on the holding or within 50 metres of the holding boundary;
- areas with sandy or shallow soils;
- land with a slope of more than 12 degrees;
- land within 10 metres of surface water and within 50 metres of a spring, well or borehole;
- land drains (other than sealed impermeable pipes);
- sites used for temporary field heaps (if you use this method of storing manure); and
- land that has a low run-off risk (if you intend to spread to this land during the storage period for the purpose of reducing your storage capacity requirement – see Leaflet 4).

YOU MUST update the risk map within three months of a change in circumstances (e.g. you take on more land, you install or remove field drains).

You may have prepared a risk map as part of your manure management plan for an Entry Level Stewardship agri-environment scheme, or a farm assurance scheme, or compliance with an environmental permit. These will be suitable provided they are adapted to include all the information listed above.

If you do not have an existing risk map, you can use the step-by-step guide provided at the back of this Leaflet (Annex 1) to produce one. This guide highlights other information that can be usefully recorded on your map to help you decide if a field application of organic manure can be made without causing water pollution.

You should use your risk map to help you undertake your 'field inspections' and help you comply with the rules relating to 'non-spreading conditions and areas' (see Sections 4 and 5).

7. Slurry spreading equipment

Once you have decided it is safe to spread organic manure, you will need to check before actually making the application that you are able to do so in the correct manner (see below and Section 8).

YOU MUST spread organic manure in as accurate a manner as possible.

By 1 January 2012, YOU MUST only spread slurry using equipment that has a low spreading trajectory (i.e. below 4 metres from the ground).

Application equipment should be suitable for the type of organic manure being spread and should be capable of producing a reasonably uniform spread pattern.

- Splash plates can be used if they are adjusted to provide a low spread pattern that does not exceed 4 metres above the ground.
- Advanced techniques for applying slurry, such as band spreaders and injectors, will improve the uniformity of spread, reduce ammonia and odour emissions and increase the amount of nitrogen taken up by crops.

Guidance is available on the different spreading systems available for slurry (see 'Further information').

8. Spreading organic manure to bare soil and stubble

If you apply organic manure on bare soil or stubble (other than soil that has been sown), YOU MUST:

- incorporate poultry manure into the soil as soon as practicable, and within 24 hours at the latest.
- incorporate slurry and liquid digested sludge into the soil as soon as practicable, and within 24 hours at the latest unless it is applied by a band spreader or injected into the soil.
- incorporate any other organic manure (e.g. farmyard manure) into the soil as soon as practicable, and within 24 hours (unless it has been spread as a mulch on sandy soil) if the land is sloping and within 50 metres of surface water that could receive run-off from that land.

The risk of run-off and water pollution increases on land that is bare or with limited ground cover, and where it is sloping and/or adjacent to watercourses. Incorporating manures quickly into the soil reduces these risks.

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Important points to note:

- You can incorporate organic manures using any technique that mixes or buries the manure into the soil (e.g. by disc, tine, plough).
- To minimise ammonia and odour emissions you should consider incorporating slurry and poultry manure even sooner than the 24 hours maximum period established in the rules.
- You do not need to incorporate into the soil if you use band spreaders (trailing shoe or trailing hose machines that apply slurry in bands onto or close to the ground) or injectors to apply slurry or liquid digested sludge.

9. Record keeping

The Environment Agency will check your compliance with the rules described in this leaflet by undertaking a physical inspection of the fields on your farm and looking at your records.

YOU MUST keep the following records:

- A copy of your risk map.
- A record of all organic manure field applications.
- A record of any written advice from a FACTS qualified adviser.

For a full description of the field records that you must keep relating to applications of organic manure, please refer to Annex 1, Leaflet 6.

As with all records required by the Regulations, you must keep the above for a minimum of five years.

10. Further information

Managing Livestock Manures (Booklets):

- Making better use of livestock manures on arable land (Booklet 1)
- Making better use of livestock manures on grassland (Booklet 2)
- Spreading systems for slurries and solid manures (Booklet 3)

These are available from ADAS Gleadthorpe, Meden Vale, Mansfield, Nottinghamshire NG20 9PF; telephone 01623 844331

The following guidance is available by visiting www.defra.gov.uk

Code of Good Agricultural Practice – (revised; available late 2008)

Manure Management Plan – a step-by-step guide for farmers

STEP-BY-STEP GUIDE FOR PREPARING A RISK MAP FOR YOUR FARM

This guide will help you produce a risk map for your farm and highlights other information that can be usefully recorded on your map to help you decide if a field application of organic manure can be made without causing water pollution.

The four steps you will need to follow are:

Step 1 Collect your information

Step 2 Identifying land where organic manures must not be spread

Step 3 Identifying land where organic manures should not be spread under certain conditions or where rates should be restricted

Step 4 Identifying other areas that you must take into account to comply with the NVZ rules

Important note: The guidance provided here is similar to the Defra Manure Management Plan step-by-step guide for farmers. You may have prepared a risk map (in your manure management plan) for an Entry Level Stewardship agri-environment scheme, or for farm assurance schemes, or compliance with an environmental permit. These will be suitable but must be adapted to include all the information required by the Regulations (see Step 4).

Step 1 Collect your information

To draw up the risk map you will need:

a. A map or maps of the farmed land that clearly shows:

- every field and watercourse (including all ditches)
- field areas in hectares (1 hectare = 2.5 acres)
- any boreholes, springs or wells, including any on neighbouring land within 50m of your boundary

If these features are not marked on your map, please draw them in.

b. Coloured pens or pencils – red, orange, yellow, green. You can use blue for watercourses.

Notes:

If you use a 1:2,500 scale map; 1 grid square = 1 hectare and 1 side of a square = 100 metres.

If you use a 1:10,000 scale map; 1 grid square = 100 hectares and 1 side of a square = 1,000 metres.

Field application of organic manures – Annex 1

Step 2 Identifying areas where organic manures must not be spread

1. Identify where the following areas occur on your farm and colour them on your map in **red** (see figure 1 below). Where an area is an unusual shape, for example circular areas around wells, mark off a square or 'practical' shaped area of the field.

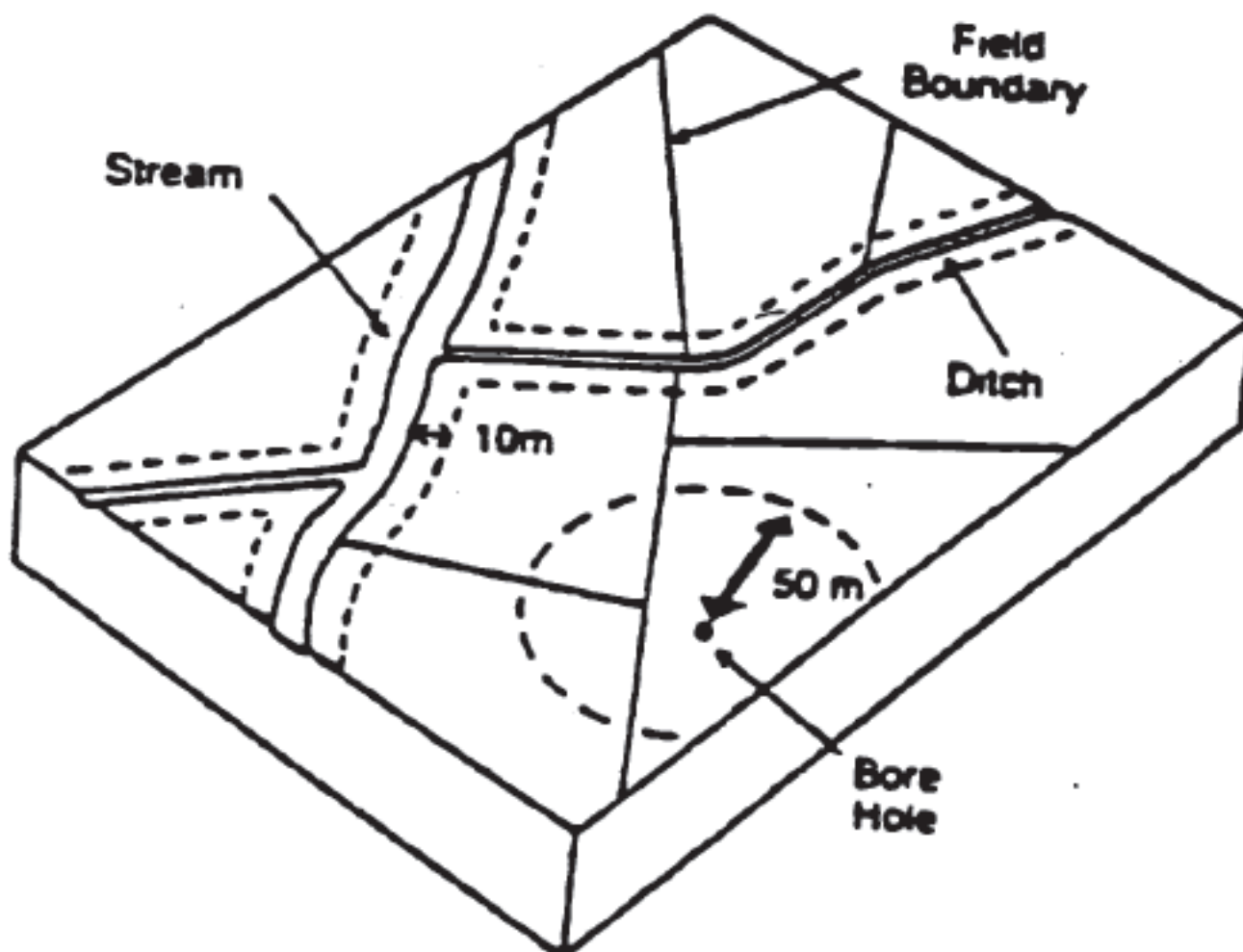
Areas on which organic manures must not be spread are:

- Within at least 10 metres of either side of any surface water including ditches, temporary dry ditches and piped ditches. This will avoid direct spreading into the surface water and also reduce the risk of run-off reaching the surface water. Do not forget to include surface waters that form the boundary of your farm.
- Within at least 50 metres of any spring, well, borehole or reservoir.

Other non-spreading (red) areas are:

- Very steep slopes where run-off is a high risk throughout the year.
- Any areas where you may not be allowed to spread for reasons such as a tenancy agreement, an abatement notice due to smell, Sites of Special Scientific Interest, agri-environment agreement or other reason.
- The surface is rocky or uneven so that your equipment cannot be used effectively or safely.

Figure 1: Areas on which organic manures must not be spread.



Field application of organic manures – Annex 1

2. You should identify other areas (fields or parts of fields) where you do not normally spread organic manures and leave these areas **white** on your map.

This may be because of:

- non-farmed areas – buildings, roads, tracks,
- particular land use such as orchards, woodlands, etc,
- location, e.g. they are too far from the farmstead.

Step 3 Identifying areas where organic manures should not be spread under certain conditions or where rates should be restricted

Some areas of the farm will be unsuitable for spreading at certain times of the year, particularly in winter. These could vary from year to year. Other areas may receive organic manure at any time of the year but the rate and frequency of application may need to be carefully limited.

1. Identify areas which meet the conditions in **Table 1** and mark them on your map in **orange** (very high risk) or **yellow** (high risk) as indicated.
 - **Orange areas** cannot be used when certain conditions apply, but they will usually be available at some times of the year.
 - **Yellow areas** may be used for spreading at most times of the year but application rates should be no more than 50m³/hectare (4,500 gallons/acre) in a single application when certain conditions apply.
2. Number the orange areas on your map using the reasons and number key from Table 1. Number the map with all the conditions affecting it.
3. Colour the remaining areas of crops and grass **green** (lower risk). Green areas **do not** have effective pipe or mole drains and may be used for spreading at most times of the year. Remember you may need to leave some areas white (Step 2).

Field application of organic manures – Annex 1

Table 1 – Identifying very high risk (orange) and high risk (yellow) areas

Conditions leading to very high and high risk areas	Colour Map	Numbers for orange areas ¹
Fields or part fields next to a watercourse, spring or borehole when the surface is severely compacted ² or waterlogged.	Orange	1
Fields or part fields that are likely to flood sometime in most winters.	Orange	2
Field or part fields next to a watercourse, spring or borehole when the soil is at field capacity ³ (in winter) and there is:	Orange	3
<ul style="list-style-type: none"> • a steep slope • a moderate slope and a slowly permeable soil (i.e. a clay soil or one through which water passes only slowly) • a moderate slope and a well-drained soil • a slight slope and a slowly permeable soil 	Orange Orange	3
All fields or part fields with effective pipe or mole drains (but see extra limitations below ⁴)	Yellow	
Very shallow soils (less than 30 cm) over gravel or rock, e.g. limestone, chalk, slates and shales	Yellow	

Notes:

¹ Key for numbered orange areas:

- 1** You should not spread on these fields when the surface is compacted or waterlogged
- 2** You should not spread when there is a risk of flooding
- 3** You should not spread when the soil is at field capacity i.e. when the soil is fully wetted

² Severely compacted is when rain stays on the surface after rainfall.

³ Field capacity is when the soil becomes fully wetted and more rain would cause water loss by drainage. This normally happens in autumn and lasts until the spring.

⁴ Fields or part fields which in the last 12 months have been pipe drained, mole drained or sub-soiled over drains should not be used for spreading.

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Step 4 Identifying other areas required by the NVZ rules

1. Identify and mark land with a **slope of more than 12 degrees** (equivalent to 20% or 1 in 5) which is not included in your existing non-spreading (red) areas. You must not spread manures to these areas when there is a significant risk of run-off to surface water.
2. Identify any **sandy or shallow soils** on your map by cross-hatching. Land in NVZs has 'closed periods' for two broad soil types where application of certain types of manure is not allowed. The cross-hatching will help you distinguish the relevant closed periods. Note: sandy soil and shallow soil is defined (see Leaflet 3).
3. Identify and mark **low risk run-off land**. This is optional and you only need to do this if you want to use applications of slurry or poultry manure to such land to reduce your storage need (see Leaflet 4). Low risk run-off land is defined as land with an average slope of less than 3 degrees, does not have land drains (other than a sealed impermeable pipe), and is at least 50 metres from a watercourse or conduit leading to a watercourse.
4. Identify **sites used for field heaps**, if any. Where possible, these should be located in green areas. They must never be situated in red areas. You should also record the dates of when the field sites were used.

Colour in the boxes and attach the keys below to your map to help you identify areas more easily.

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Colour Key

	Orange areas (numbered 1, 2 or 3) Very high risk		Red areas Land where organic manure should never be spread
	Yellow areas High risk		Cross-hatched areas Identifies sandy or shallow soils
	Green areas Lower risk		White areas Land not normally used for spreading

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