

## Fact sheet 4: slurry bags, lined wire mesh and corrugated panel stores

### Are you planning to build or substantially alter a new slurry bag, lined wire mesh or corrugated panel store?

This fact sheet will help you meet the requirements of the Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) Regulations 2010. These are commonly referred to as the SSAFO Regulations and apply in England.



For above and below ground steel or concrete slurry stores and reception pit construction see fact sheet 1. For earth banked slurry store construction see fact sheet 5.

Slurry must only be stored in a storage system that satisfies the requirements of the SSAFO Regulations.

The Reduction and Prevention of Agricultural Diffuse Pollution Regulations (England) 2018, (known as the Farming Rules for Water (FRfW)), also require that where slurry and other organic manures are stored, they must be stored at least 10 metres away from inland freshwaters or coastal waters, and at least 50 metres away from a spring, well or borehole. You should also consider the risk of agricultural diffuse pollution, such as field drains or connectivity via roads and ditches, when deciding where to store organic manure beyond the distances outlined above.

We have a duty to protect groundwater. We will normally oppose the construction of new slurry storage systems within a drinking water Source Protection Zone 1 unless we agree to site-specific mitigation measures that minimise the risk to drinking water supplies.

We advise that you seek specialist advice on the siting, design, construction and installation of your slurry system. We recommend that you choose a contractor who fully understands the SSAFO Regulations and building standards who will provide you with written confirmation that the design, construction, and installation, will meet the legal requirements.

You may require planning permission. We recommend that you check with your Local Authority. CIRIA Report C759F, [Livestock manure and silage storage infrastructure for agriculture](#) also provides guidance on planning requirements.

You are legally required to notify us of your proposals at least 14 days before work constructing the new or improved store is to begin. We recommend that you notify us earlier than this to help ensure costly mistakes are avoided.

## **What is slurry?**

The SSAFO Regulations define slurry as: “liquid or semi-liquid matter composed of excreta produced by livestock while in a yard or building (including that held in wood chip corrals); or a mixture wholly or mainly consisting of livestock excreta, livestock bedding, rainwater and washings from a building or yard used by livestock, of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process”.

Other terms have been used to describe slurry of varying strengths or dilutions, such as dirty water and lightly fouled water. These are all forms of slurry.

Wash water and contaminated rainwater runoff can be kept in a separate store from your main slurry store, but you must store and handle it as slurry. They must be included in your slurry storage calculation.

## **What is other fouled water?**

CIRIA Report C759F, livestock manure and silage storage infrastructure for agriculture, describes other fouled water as unclean water arising on a farm that is not directly contaminated by livestock excreta. It applies to drainage from farm buildings and yards not accessible to livestock but used for farm activities and by farm vehicles. Common contaminants include mud, spilt feed, fertiliser, and detergents. It includes roof water contaminated with dust from animal housing. It may not be acceptable to discharge other fouled water to ground, surface waters or to soakaways without interception and treatment. We advise you to discuss your proposals with us, before discharging any fouled water.

## **What is clean water?**

Clean water refers to water draining from roofs or other surfaces that is free of contamination, including dust from animal housing. Clean water kept separately from slurry and other fouled water may be discharged to ground, surface waters or soakaways without interception and treatment.

## **What are the storage requirements?**

The SSAFO Regulations require a minimum of 4 months slurry storage capacity.

Additional rules concerning slurry storage capacity apply to farmers within [Nitrate Vulnerable Zones \(NVZ\)](#) and operators of permitted [intensive livestock](#) farms.

Farmers in NVZs must have a minimum of 6 months storage for pig slurry and poultry manure. The storage period is 1<sup>st</sup> October to 1<sup>st</sup> April inclusive. For cattle and other livestock slurry at least 5 months storage is required. The storage period is 1<sup>st</sup> October to 1<sup>st</sup> March inclusive.

We strongly recommend you have at least 6 months storage capacity for all types of slurry. Installing more slurry storage than the minimum required by law may also be necessary for practical management purposes. This will help you to make the best use of nutrients and organic matter within the slurry. It will reduce pollution risk, save money and will help ensure that you comply with the FRfW by allowing you to apply slurries and manures when soil and crops need nutrients and at times when ground and weather conditions are appropriate.

Defra's Slurry Infrastructure Grant supports the construction of new storage or expanding the existing storage on farm to 6 months capacity. Further information is at [About the Slurry Infrastructure grant, who can apply and what it can pay for - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/about-the-slurry-infrastructure-grant)

## How do I calculate total slurry production?

The slurry store, along with any other slurry storage, must be large enough to accommodate the maximum quantity of slurry likely to be produced and directed to it in any continuous four-month period, including rainfall and all water contaminated with livestock manure.

Your slurry production calculation must include everything that will end up in your slurry store(s). If your system will direct rainwater from uncontaminated parts of the yard to your store(s), you must include this in your calculations.

To meet SSAFO requirements the maximum quantity of rainfall likely to be produced in any four-month period, usually October to January inclusive, needs to be used in the slurry storage calculation. To meet this requirement the Environment Agency expects rainfall figures that predict the wettest year in the last five years to be used (known as M5 120-day rainfall).

We recommend that you use the AHDB Slurry Wizard to carry out the slurry storage calculation, which estimates M5 120-day rainfall, and other periods up to 12-months.

**Note:** You will be required to use the Slurry Wizard to support your application if you are applying for a grant under the Slurry Infrastructure Grant scheme. See [Slurry wizard | AHDB](https://www.ahdb.co.uk/slurry-wizard)

## How do the Regulations affect slurry systems?

The Regulations set design and construction standards for slurry systems that are new, or substantially enlarged or reconstructed since 1991.

- You must notify us, ideally in writing, about any new, substantially enlarged or substantially reconstructed system at least 14 days before any construction begins.
- You must tell us about the type of structure and where it is to be used.
- We are likely to request details of the proposed design and construction.
- Slurry systems must be impermeable, protected against corrosion, and constructed in accordance with British Standard BS5502: Part 50 1993.
- Slurry systems should be designed and constructed so that with proper maintenance they last for at least 20 years.
- No part of the system can be within 10 metres of any inland freshwaters or coastal waters. This includes field drains.
- FRfW also require that organic manures are stored at least 10 metres away from inland freshwaters or coastal waters, and at least 50 metres away from a spring, well or borehole.
- You should consider the risk of agricultural diffuse pollution when deciding where to store organic manure beyond the distances outlined above.
- All parts of the system must comply with the regulations whenever it is used.

**Note:** "inland freshwaters" includes any stream, ditch, or land drain, even if it flows for only part of the year.

## What are slurry bags?

Slurry bags fall into two categories, self-supported and supported bags. Self-supporting slurry bags resemble a "pillow" and typically range in capacity from 5m<sup>3</sup> to 1,700m<sup>3</sup>. They are often used as a temporary slurry storage solution. Supported slurry bags are larger bags, of up to 10,000m<sup>3</sup>, usually placed in a pre-prepared concave area, with an embankment or wall that acts as a supporting cradle. Supported bags are often used as a permanent slurry storage system.



Self-supported slurry bag



Supported slurry bag

## What are wire mesh and corrugated panel stores?

Wire mesh, or net, and corrugated panel stores are normally cylindrical, approximately 3 metres tall and range in capacity from around 200m<sup>3</sup> to 2500m<sup>3</sup>. They are often used as a temporary storage solution.

A mesh, or net, store usually consists of galvanised steel uprights supporting a galvanised steel mesh. A corrugated panel store usually consists of galvanised polyurethane coated corrugated steel panels. Both types of stores are built on a simple foundation of concrete slabs. One or more layers of reinforced plastic and a plastic liner are installed to form a tank, which is held in place by durable cord. A plastic floating cover is usually fixed in place.



Lined wire mesh store



Lined corrugated panel store

## **Are slurry bags and wire mesh stores suitable for permanent slurry storage?**

The SSAFO Regulations do not exclude slurry bags, wire mesh or corrugated panel stores. These types of stores can be easily damaged by machinery and sharp objects. We do not consider them to be sufficiently robust against damage to be suitable for “permanent” storage use of livestock slurry or other organic manures unless suitable secondary containment is provided.

For use as a permanent slurry store:

- Slurry bags, wire mesh and corrugated panel stores should be installed within secondary containment, for example an earth bund of at least 110% of the bag’s maximum capacity.
- Secondary containment bunds must be sufficiently impermeable and sufficiently well engineered to contain and deal with leakage without causing pollution.
- The use of a secondary artificial liner beneath a slurry bag may be required.
- In most locations a method for leak detection will be necessary.
- Mesh stores must be designed and constructed to include a freeboard of at least 300mm.
- Where slurry can flow from the drainage outlet of a slurry store, the outlet must be fitted with two lockable valves in series, unless the outlet drains to a receiving tank that is larger than, or is at the same height, as the outlet tank.
- Each valve must be capable of completely shutting off the total flow of slurry from the store.
- The design and positioning of the valves should account for the possibility of a single piece of debris obstructing both valves.
- The distance between the valves must be at least one metre.

- The valves must be locked shut when not in use. They must only be used under close supervision and never left unattended while open or partly open.
- We will normally oppose the construction of new slurry storage systems, including mesh and corrugated panel stores, within a drinking water Source Protection Zone 1 unless we agree to site-specific mitigation measures that minimise the risk to drinking water supplies.

We suggest you seek confirmation from your contractor that the base of the store has been designed and constructed to suit site conditions.

We may consider “temporary use” without secondary containment, subject to a risk assessment and protection from livestock, sharp objects, vandalism or vehicular damage.

**Note:** for further information on earth bank constructions, refer to our Fact Sheet 5.

### **What is temporary use?**

Temporary use is not defined in the SSAFO Regulations. We consider temporary use to be less than 12-months unless a longer period is otherwise agreed subject to a pollution risk assessment. The integrity of the slurry bag or store’s liner must be maintained at all times.

When notifying us of your proposal to use a slurry bag, wire mesh or corrugated panel store for temporary use you can identify all suitable sites where a slurry bag may be sited as a one-off notification. If the circumstances of use change, then a new notification is required.

### **Does the SSAFO Regulations apply to the storage of AD digestate?**

Anaerobic digestate is not slurry. The slurry storage requirements of the SSAFO Regulations do not apply to the storage of other organic manures and wastes that are not slurry. However, the SSAFO Regulations construction standards are appropriate for reducing any significant risk of water pollution to a minimum. We expect all anaerobic digestate and other manure storage structures to meet the standards and we insist on them throughout the planning process.

### **What happens after I submit proposals to the Environment Agency?**

We will assess your proposals and the site. In many cases we will visit the site and meet with you or your agent. We will usually make our assessment clear to you in writing.

**Note:** if you are applying for a Defra grant under the Slurry Infrastructure Grant scheme, launched in 2022, your application will be sufficient to meet the legal requirement to notify us about new, substantially enlarged or reconstructed slurry storage systems. You will have to supply supporting information as part of your grant scheme application to the

Rural Payments Agency (RPA) who will share it with the Environment Agency. You should check the grant scheme guidance.

## **What happens if pollution occurs?**

The responsibility for preventing pollution falls to the person with custody or control of the installation. Normally that is you, the farmer.

If pollution occurs, you may be liable. Great care is essential in the construction, operation, and maintenance of the system.

If pollution occurs, you should report it. Call the Environment Agency incident hotline. Telephone: 0800 80 70 60

## **Where can I find further help?**

You can find further information on GOV.UK at [Storing silage, slurry and agricultural fuel oil - GOV.UK \(www.gov.uk\)](http://www.gov.uk)

There is detailed guidance on the construction of slurry stores and other installations in CIRIA Report C759F, [Livestock manure and silage storage infrastructure for agriculture](http://www.gov.uk)

To help identify any Source Protection Zones, look at [Groundwater source protection zones \(SPZs\) - GOV.UK \(www.gov.uk\)](http://www.gov.uk).

If you are unsure, please contact your local Environment Agency office via our general enquiries line. Telephone 03708 506 506