

PED virus and considerations for manure management

This document covers all farm waste, eg manures, slurries, dirty water, wash water, feed and other organic materials which may have been in contact with livestock or be potentially contaminated by PED virus.

1. PEDv background

- Porcine Epidemic Diarrhoea virus (PEDv) causes acute and severe outbreaks of diarrhoea that rapidly transmits among all ages of pigs
- The disease is most serious in newborn suckling piglets where mortality can reach 100%
- Infection with PEDv can cause significant financial losses
- PEDv does not infect people (or other farm animals) and it is not a food safety risk.

2. How is PEDv spread?

- The main source of PEDv is infected faeces, which can be spread by pigs, people, vehicles and equipment, and via contaminated semen, bedding, feed, water and wildlife
- PEDv can also be spread through the air and via porcine blood plasma
- Collecting, transporting, storing and spreading or incorporating pig slurry, manure or dirty water all have serious implications regarding the risk of spreading the PED virus.

Even small amounts of infected waste on roadways, farmyards, equipment or clothes can be enough to spread PEDv.

3. How long does PEDv survive?

Research studies in the US have not confirmed a specific time frame and/or temperature that would ensure inactivation of PEDv in solid or liquid manure (slurry), but it is at least four weeks, and likely to be much longer at <25°C.

4. General considerations

Ensure everyone involved in agricultural operations has an understanding of how this specific virus is spread and the impact that it can have on the pig industry, particularly if using external contractors.

The National Association of Agricultural Contractors has general protocols and procedures regarding 'Spreading Materials to Agricultural Land', including biosecurity.

These can be found at:

<http://www.naac.co.uk/userfiles/files/ALBC%20Spreading%20Module%20Dec%202013.pdf>

5. Manure storage for PEDv positive units

- Manure and slurry stores must be well maintained, leak-proof and heaps should not be allowed to spread
- Enhance vermin control around stores, as rodents and birds are potential carriers of infection
- The manure should be held as long as possible, and until the weather is warmer, to reduce the amount of virus present
- Covering the heaps can be of benefit
- If it is not possible to spread manure and all storage is full, seek advice from the Environment Agency on minimum requirements for short-term storage
- Manure stores should be completely agitated before application as the lifespan of PEDv is considerably shortened under aerobic conditions.

6. Scheduling farms

- Contractors should not schedule pig farms one after the other. If possible, spread manure from different livestock operations in rotation (pigs, dairy, etc.)
- If a farm is PEDv positive, it should be scheduled last in the week, with extra emphasis on stringent cleaning and disinfection of all kit afterwards.

7. Where to spread manure from PEDv-positive units

- Review the farm Manure Management Plan before spreading and amend as necessary to reduce the risk of virus spread
- Keeping manure and slurry on the same property as the pig buildings can limit transport and infection spread
- Good communication with local farmers is essential – it may be possible to find areas that contaminated manure can be spread with least risk to neighbouring pig farms
- Follow all regulations applicable to spreading, eg Nitrate Vulnerable Zones and Defra's Code of Good Agricultural Practice for the Protection of Soil, Water and Air
- Take particular care close to water courses, ponds, lakes, boreholes and springs which could further spread the virus
- If unsure, contact the Environment Agency to discuss exceptional circumstances.

8. Planning in advance

- Draw up plans showing entrance, route and exit points for the farm staff/contractor to access the manure storage
- This should, ideally, be separate to the normal farm traffic or areas used by farm staff
- Enforce the line of separation (see **SOP 6**) and educate contractors of its significance
- Contractors must not cross the line of separation and must not enter pig buildings or come into contact with any pigs
- Allow extra time for cleaning and disinfection of equipment used in manure spreading
- Ensure there are appropriate washing and disinfection facilities available
- Agree in advance the routes that will be used to transport manure to fields
- Plan how any manure spills, particularly on public roads, are to be handled.

9. Equipment and personnel

- **Everything** must be free of organic matter (dirt, muck, dust, straw, etc.), cleaned and disinfected before arriving on farm
- This includes:

Vehicles and tankers/ spreaders	All outside surfaces
	Especially wheels and wheel arches
	Always check the inner wheel rim surface, close to any stub axles or frames
	Particular attention to the outlet nozzle of the tanker or discharge point of the spreader
Vehicle cabs	Especially foot wells and pedals
	Steering wheel and controls also important
	Use dilute disinfectant and cloth
All equipment	Machinery
	Pipes and connectors
	Handheld tools
All people	Clean hands - carry gloves, wipes and hand sanitiser in cab
	Clean clothes and footwear

- Do not bring dogs, even if they remain in the cab
- Remember that even the tiniest trace of infected pig faeces has the potential to spread the disease
- Refer to **SOPs 4** and **5** regarding biosecurity protocols for vehicles and visitors entering pig farms
- Effective PEDv disinfectants include sodium hypochlorite, peroxygen compounds and phenols. A full list of Defra-approved disinfectants can be found on:
http://www.defra.gov.uk/animalh/diseases/control/testing_disinfectants.htm



10. Manure, slurry and waste water application

Best practice	Why?
Spread directly to ground and avoid equipment that will atomise or discharge at height, especially splash plate-type spreaders.	Reduces the risk of airborne virus spread.
Fully inject or incorporate into soil as quickly as possible.	Avoids virus spread by limiting run-off. Also reduces chance of wildlife spreading the virus.
Manage equipment and application rates to avoid manure boiling up in the injection slot and leaking onto headlands.	Reduces runoff and wildlife spread.
If surface applying without incorporating, do so when temperatures are warmer and there will be several days of sunshine.	Heat and sunshine can help inactivate the virus.
Avoid windy days.	Reduce airborne virus spread.
Do not use land which is waterlogged, frozen hard or covered with snow.	Increases the risk of surface run-off and virus spread.
Do not spread liquids on fields with sub surface or mole drains when soils are cracked, or on fields that have recently been subsoiled.	

11. Final stage

- Once completed, thoroughly clean and disinfect equipment
- Ideally, do not use equipment on other pig farms for at least two days.

Remember that even the tiniest trace of infected pig faeces has the potential to spread the disease if it comes into contact with a pig.