Recycled Manure Solids (RMS) as bedding in cubicles for dairy cattle – mandatory conditions and recommended best practice for compliance[1].

The requirements in this section must be followed at all times. By complying with these conditions you can ensure that action will not be taken against farmers under the Animal By-Products and Animal Welfare regulations. Requirements are either based on the need to mitigate risks to an acceptable level as required under regulation or a consensus agreement by industry stakeholders about good management practice. Although the assumption is that use of RMS will mainly be for dairy cattle, beef farmers which can comply with the required conditions (1-14) may also use RMS bedding for beef cattle.

1. **RMS must only be produced using raw cattle manure/slurry from housing and/or yards.**

Manure from other livestock species must not be included for the production of RMS, to avoid introducing external pathogens which may affect cattle health.

2. **Material that has been composted or digested must not be used.**

The spores of certain bacteria, particularly those that are heat-resistant may be encouraged by composting. Too high a concentration of spores can lead to losses during the manufacture of cheese and reduce the shelf life of pasteurised milk.

Putting manure through a digester will also increase temperatures, which can affect pathogen load. Until further information is available, use of RMS produced from the output of a digester is not permitted. Equally, use of digestate which contains feedstock from non-farm sources could cause an additional unacceptable risk, and is not permitted.

3. **RMS must only be used as bedding for cattle which are in the same epidemiological unit as those cattle from which it is generated.**

To minimise the risk of disease transfer, RMS must only be produced on the unit on which it is to be used and only from slurry originating from that unit. Slurry or manure must not be moved between units either before or after processing. An epidemiological unit comprises animals which come into contact with each other directly or indirectly (e.g. shared facilities or personnel) as part of the same farm business. They may not necessarily be housed on the same site or premises.

[1] Source DairyCo; further information is available at (http://www.dairyco.org.uk/media/1037862/q_a_rms_bedding.pdf)

4. **Movement of RMS between epidemiological units is not permitted.**

Similarly, to reduce the risk of transferring pathogens, slurry or manure to be used to produce bedding must not be moved between units, either before or after processing.

5. **RMS must not be produced from manure/slurry of herds which are subject to official restriction for notifiable diseases, other than TB.**

The main notifiable disease of concern is foot and mouth disease, as the infective agent can occur in faeces and urine up to four days before clinical signs appear. A list of notifiable diseases is available on Defra's website (http://www.defra.gov.uk/animal-diseases/notifiable/).

6. **Manure from TB Inconclusive reactors and TB reactors must be excluded from the use of RMS.**

As yet the specific risk of TB spread has not been studied. However, unless TB is advanced in an animal, there are unlikely to be large numbers of organisms shed in faeces. With regular testing, the chances of reaching this stage of infectivity are much reduced. However, if TB were present in slurry, it is not likely to be reduced by physical separation. Therefore, manure from TB inconclusive reactors and TB reactors must be excluded from RMS.

7. **Manure from aborted cattle under brucellosis investigation must be excluded from use as RMS**

On farms where RMS are being used for bedding, rigorous biosecurity is even more important in relation to suspected brucellosis cases as it is a zoonosis.

8. **Other materials, such as birthing fluids and placental material, manure from calving areas, and waste milk must not be disposed of by adding these to manure/slurry going for RMS.**

Afterbirth and other fluid materials are a potential risk for disease transmission. Waste milk, subject to withdrawal period, must not be added to the slurry pool, as there is an increased risk of developing antibiotic resistance. Anecdotally, inclusion of waste milk in material used for bedding has been associated with increased cell count/mastitis problems.

9. **There should be no shared equipment for the handling and processing of feed and RMS.**

If any equipment is shared (loaders etc.) it must be thoroughly cleaned between uses. Designed to prevent cross contamination of feed or forage.

10. **Should any separation equipment be moved between different epidemiological units, it must be thoroughly cleaned and disinfected before moving and subsequent re-use.**

On the continent, movement of contaminated equipment has been linked to transfer of pathogens from one farm to another.

11. **RMS must only be used as bedding for housed cattle over six months old**

Regulations on calf health and welfare (Council Directive 2008/119/EC and the Welfare of Farmed Animals Regulation 2007) state that calves must have access to a lying area which is 'clean, comfortable and adequately drained and which does not adversely affect the calves'. Young stock are particularly susceptible to disease and if infected may be highly contaminating themselves. Risks of disease transmission will be minimised by preventing calves less than six months old from having contact with faeces and slurry from adult cattle. Any calves that are inadvertently born in areas bedded on RMS must be removed as soon as possible from the area, to a location where suitable alternative bedding is provided.

12. **Milk from herds using RMS must be pasteurised.**

Bedding materials are potential sources of contamination for milk. Micro-organisms and their spores can get on to the teat from the bedding and through the milking process end up in the milk bulk tank. As a precautionary measure, use of RMS is not permitted on farms selling unpasteurised milk.

13. **RMS must be produced from a slurry separator unit, designed for the purpose, which produces manure solids of at least 34% DM.**

Slurry is mechanically separated into a liquid fraction and a "solid" fraction, typically by using a screw or roller press action. The equipment needs to be capable of extracting sufficient water to make the solid fraction at least 34% dry matter. If the material is too wet (below 34%) it is unsuitable for use as bedding.

14. **RMS must only be used on cubicle beds, and not as a deep bed in pens or yards.**

RMS must only be used in cubicles, either as a layer on top of mattresses, or as a cubicle bed up to 15 cm in depth. It should not be used in calving areas, due to the susceptibility of newborn calves to Johne's disease.

Recommended Best Practices:

In addition, to the requirements above which **must** be followed at all time, the twelve recommendations in this section should be followed as current best practice.

1. Users of RMS as dairy cow bedding should actively monitor cow health, in particular intramammary health, as well as bulk tank milk, quality

2. Farm personnel should be made aware of the importance of personal hygiene during and following the handling of RMS

3. RMS should be prepared and stored under cover to avoid an increase in water content prior to application

4. Manure/slurry from animals under treatment should not be incorporated into RMS (this includes dry cow treatment)

5. Manure/slurry from animals/herds showing clinical signs of infection, enteric condition or outbreaks of clinical disease (e.g. Salmonella, VTEC E.coli. etc.) should not be incorporated

6. There should be excellent cow preparation at milking time (e.g. pre-milking teat preparation and pre-dipping), sanitation of milking equipment and cow hygiene

7. There should be excellent bedding/cubicle management, including:

- Adding RMS to the beds in limited quantities to allow further drying to take place
- Managing beds to minimise ‘heating’ and therefore bacterial multiplication after application
- Designing and managing beds to minimise contamination with urine and fresh faecal material
- Frequent removal (at least daily) of freshly soiled material from bedding)

8. Ventilation should be adequate and overstocking avoided, to ensure further drying of RMS once applied to bedding and to minimise the levels of ammonia in the housed atmosphere

9. Freshly separated RMS should be used as soon as practically possible (normally within 12 hours)

10. Newly introduced adult animals to the herd should not have their manure mixed into the RMS system (for a period of one month), i.e. material from isolation pens should not be added to the pool for separation

11. Water and/or solutions used in footbath wash should not be disposed of in the slurry/manure to be used as RMS bedding

12. Manure/slurry from cattle less than 12 months old should not be used as a raw material for RMS. The material should only be used to bed cattle older than 12 months old.