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Problems Related to Building Permit Procedures for Slurry Containers

In the past years, environmental awareness has increased substantially. Thus, farm animal housing is viewed critically as well. Today, the storage of slurry, manure, silage, and effluents is subject to numerous regulations, which are intended to avoid negative effects on the entire environment.

In order to find out where the authorities see the problems and how they weigh them, complete building permit procedures with the relevant attachments were procured and evaluated using the aid of farm building societies.

For a long time, farmers intending to build agricultural structures and the engineers hired by them have been complaining about building permit procedures for the construction of slurry containers (used as a comprehensive term for all demanuring techniques here) taking too much time as well as the procedures being difficult and often accompanied by a very large number of authorities which are only marginally involved.

Evaluation of Building Permits

Based on the existing differences in the building permits for slurry containers in Germany, building permits from different federal states were compared. The following documents were available for evaluation:

1) Lower Saxony (§ 75 of the Construction Regulations from 13 July 1995, Statute Book of Lower Saxony, p. 199); nine building permits from four counties; period: 1997 until 2000 (provided by the Farm Society of Lower Saxony)

2) Hestia (§ 50 of the Hessian Construction Regulations from 20 December 1993; Statute Book I, p. 655); 17 building permits from 10 counties; period: 1998 until 2001 (provided by the Hessian Farm Society).

The building permits from the different regions show a different picture. While the building permits from Hestia are homogeneous with regard to the conditions for the structures, the structures in Lower Saxony exhibit numerous differences. This mainly concerns conditions caused by increased environmental awareness, i.e. the installation of ring drainage- and leakage detection systems as well as their checks.

In Hestia, the exclusion of water pollution through suitable measures (ring drainage systems on plastic film with inclination into control shafts) is required for all structures (100%). In Lower Saxony, this only applies to 30% of all cases. In addition, regular tightness checks along with regular records are required in Hestia. This applies to structures in Lower Saxony to the same extent

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Fig. 1: Slurry container made of reinforced concrete with cover „tent“ type

(90%) with the special requirement of sending an annual report to the Civil Engineering Office of the county in 50% of the cases.

Another field is the reduction of air pollution from slurry containers. This can be achieved by using swimming layers. In the building permits from Lower Saxony, such equipment is required for approximately 45% of the structures. In the Hessian permits, this was the case only once. In addition to the regulations governing construction and operation, structures in Lower Saxony must fulfill another requirement which applies to all structures, i.e. a greening plan, which is required in only about 50% of the cases in Hessian.

Air Pollution and Permit Procedures

Due to fears that ammonia emissions from agriculture (in particular from slurry storage) may pollute the atmosphere, different reduction measures were already introduced in all federal states as of 1990. In addition to the determination of the container size depending on the herd size, spreading restrictions as well as regulations governing the handling of slurry have been enacted. The covering of slurry containers is considered the most effective measure.

For the covering of slurry containers, different materials are employed [1, 2]. First, a rough distinction must be made between swimming and fixed covers. The de-mixing of slurry alone generates a swimming layer, which causes a significant reduction in emissions. However, the disadvantage of this pro-

cess is that the formation of a solid swimming layer requires a certain time depending on its composition. Admixtures such as perlite pellets or short-chopped straw can compensate for this disadvantage. This method, however, entails the danger of the swimming layer or parts of it being blown away or pushed to the side by strong wind. As a result, parts of the container surface are temporarily exposed.

Therefore, the most reliable possibility for a swimming odour seal is a swimming cover consisting of welded plastic sheets with floating bodies [3]. These covers may be round with a larger bulge for use in containers out of concrete or reinforced concrete. For rectangular containers, which in Germany at least are generally plastic-coated earth basins, rectangular covers are provided, whose edges are buried. Both solutions are accepted as „tight“ by the authorities.

In many cases, however, fixed covers are required if residential buildings are in the vicinity of the farm. In small containers, it is possible to use covers which consist of the same material as the containers. These can be:

- covers out of reinforced concrete (which may even carry vehicles)
- covers out of steel (welded)
- covers out of aluminium (riveted, not welded)
- covers as timber framing with panelling and roof covering
- covers out of plastic-coated tissue over a telescoping central post, coated with epoxy resin.

Figure 1 shows a modern slurry container out of reinforced concrete with „tent-like“ covering.

In several international treaties, the federal government has obliged itself to reduce ammonia emission to 550,000 t by 2010. The covering of slurry containers is considered an effective measure for the reaching of this goal.

Conclusions

The permit procedures for the construction of slurry-, manure-, silage-, and effluent containers remain difficult and lengthy even though, given proper construction, the construction-technical problems, such as „tightness“ are considered solved.

Additional measures which do not provide any further environmental benefits would unnecessarily impair the builders' competitiveness.

Literature

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