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Conclusion of the experimental arrangement and Measurement of the emission reduction



The mineral floating cover made of expanded clay to cover the slurry tank

Experimental setup and measurements:

The project started in December 2015. A PE pond basin (900 l) was filled with liquid manure from a conventional pig fattening house and covered with the mineral floating cover CN PROTECT PLUS®. The measurements took place between 06.01.2016 and 25.08.2016. 2 winter, 2 transition and 2 summer measurements were taken. For the smell there were 12 single measurements, for ammonia 9 single measurements. No nitrogen oxides occurred over the entire measurement period. Problems and unforeseen events did not occur. The complete measurement report is available for CN Consulting + Baustoff-Vertriebsgesellschaft mbH and can be viewed at any time.

After the first 3 runs of measurement, those were extended by impinger measurements, which replaced the ammonia carrier measurements in smell to obtain a better measured value resolution. In the course of the measurements, an extra container with CN PROTECT PLUS® was placed on liquid manure for the settling test.

Odour retention:

Overall, a large part of the smell emissions from all measurements was retained by the mineral floating deck made of CN PROTECT PLUS®, which would normally have been based on liquid manure.

The retention for CN PROTECT PLUS® is 85 - 100 %, on average 98 %, whereby it must be taken into account that if the initial concentration is somewhat higher (i.e. the emissions emanating from the uncovered slurry), the retention is also much higher. For 342 GE (smell unit) in the raw material, the retention is 92-100%, for 813 GE it is 97-100%. Overall, the values measured on the covered material are usually below the detection limit (LOD), i.e. normally up to 100 % of the smell is retained.

The decrease in the emissions of pure manure to the summer measurements could be related to the fact that no manure was yielded and the smell emissions decayed over time.

Ammonia retention:

In all measurements, a large part of the ammonia emissions were retained by the CN PROTECT PLUS® floating deck, which would normally have been based on slurry.

For CN PROTECT PLUS® the retention is 75 - 100 %, on average 92 %. If only the impinger measurements, which are much more accurate, are used, a retention of 84 - 98 % results.

Rate of descent:

Furthermore, it was determined which portion of the mineral floating layer sinks to the bottom of the slurry tank within a certain period of time and is therefore no longer part of the floating layer.

The volume of the lowered portion was determined. The following result was determined:



The volume of the sunk portion was determined as follows:
4 % sunk, overall only little material sunk.

This was an experimental setup on a laboratory scale - no manure silos were examined. The tank had been standing still during the test period and did not get moved. The evaluation took place after a test period of 224 days.

Signature of the project manager
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