

## Question to EURCAW-Pigs: Pleuritis and animal welfare

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### Question

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EURCAW-Pigs received the following question from a welfare policy worker in one of the Member States:

*"Is there any evidence in scientific literature that there is a link between pleuritis (found during PM examination) and a bad climate and thus a reduced welfare of pigs in farms?"*

Several EURCAW experts contributed to the response below. The EURCAW secretariat did the final editing, and may be contacted for queries: [info.pigs@eurcaw.eu](mailto:info.pigs@eurcaw.eu).

### Answers

In short, the answer is:

Most studies indicate that there is no direct link between chronic pleuritis (CP) found post mortem at slaughter and air quality in weaner/finisher herds. The prevalence of CP seems to be mainly associated with the infection pressure – especially with *Actinobacillus pleuropneumoniae*.

### Background

At slaughter, the occurrence of chronic pleuritis (CP) is recorded for all pigs. Pleuritis is an inflammatory reaction of the pleura due to infection with pathogens, often an extension of pneumonia. Different pathogens, and in particular *Actinobacillus pleuropneumoniae* (App), are associated with the occurrence of pleuritis. Therefore, whether a herd is infected by App or not, seems to be the most valid predictor of the occurrence of pleuritis (Cleveland-Nielsen et al., 2002; Enøe et al., 2002; Ruggeri et al., 2020).

Many different studies have examined how herd- and management factors are associated with the occurrence of respiratory signs and lung lesions at slaughter (Stärk, 2000; Fraile et al., 2010; Jäger et al., 2012; Pessoa et al., 2022). However, only a few have specifically looked into the association between pleuritis and a reduced air quality.

In 1991, Donham studied environmental air contaminants in 28 Swedish pig herds. The statistical study design was weak, but they reported a correlation between respirable microbes and total number of microbes in the air and pneumonia. They found no correlations with dust, endotoxin or ammonia level and no correlations between any air contaminant and pleuritis. In a cross-sectional study in 150 herds, Maes and co-workers (2001) found that CP was associated with decreased airspace per pig but included no direct measures of air quality. Hälli and co-workers (2020) investigated in a case control study involving 46 herds, whether the temperature (room-/wall-/outdoor- temperature), humidity, airflow and ammonia level could be associated with the occurrence of CP at slaughter. They found no association with any of these air-quality parameters.

In a study including approximately 1000 pigs in one herd, potential associations between dust particles and ammonia level and the occurrence of lung lesions at slaughter were evaluated (Michiels et al., 2015). Air quality was measured consecutively in the period from 11 to 28-29 weeks of age. Slaughter was at 29 weeks. The authors found an association between dust level and occurrence of CP, but less so with the level of ammonia (only significant in univariable models). Another study, involving 143 farrow-to-finish herds found no associations between CP and slaughter and the level of CO<sub>2</sub>, ammonia or dust particles in the finishing house (Fablet et al., 2012).

According to McClendon et al. (2015) pigs seem to have adapted to reduced air quality, and therefore often do not elicit clinical signs or reduced weight gain in conditions with a low air quality. In an experimental setup, (Andreasen et al., 1999) studied the effect of 0, 50 and 100 ppm ammonia combined with infection with *Mycoplasma hyopneumoniae* and toxigenic *Pasteurella multocida* in pigs during the grower-finisher stage. They found no effect on clinical signs or lung lesion scores by ammonia thus their study supported the notion, that pigs are quite robust towards bad air quality with respect to lung lesions.

### Relevant references

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