

Hygienic Aspects of the German „*Kleingruppenhaltung*“ for Laying Hens

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The Council Directive 1999/74/EC for laying hens prohibits non enriched cage systems (NEC) by January 2012 in the EU. It allows non-cage systems and enriched cages where laying hens have at least 750 cm² of cage area per hen. In Germany from 1 January 2009 onwards such enriched cages are forbidden and will be replaced by so called “small colony systems” (*Kleingruppenhaltung*) where the hens are kept in groups of 40 or 60 birds providing an individual minimum area of at least 800 cm² per hen, a laying nest and a dust bath as well as perches in two different heights. The units must have a minimum area of 25,000 cm² and a height of 50 cm at all locations, above the trough 60 cm. However, there is still little experience with this system in practice in particular in relation to air and environmental hygiene. This paper reports about measurements of ammonia, dust, micro-organisms and endotoxins in the air of a laying hen houses equipped with *Kleingruppenhaltung* (K) compared to an aviary (A) and a floor raised systems (FR). The measurements were carried out monthly during one year using filtration and impingement techniques and special gas analysers. The dust concentrations in K (n=12) were only half of the concentrations in (A) (n=12) and 4.5 times lower than in (FR) (n=12). The average value of Ammonia was found at 2 ppm in K (n=12) compared to 9.5 (A) (n=12) and 28 ppm (FR) (n=12). The total bacteria count resp. staphylococcae and enterococcae were found at 1.4 x 10⁵ (K) (n=72) resp. 1.0 x 10⁶ (A) (n=72) and 1.4 x 10⁶ (FR) (n=72) cfu/m³. The endotoxin concentrations ranged from 749 (K) (n=36) and 2247 (A) (n=36) to 3062 endotoxin units (EU) per m³. The *Kleingruppenhaltung* seems to offer hygienic advantages compared to alternative systems such as aviaries and floor raised systems. However, there is a need for more and longer lasting practical experiences with this system and also comparisons with the furnished cages should be carried out. For the future it seems important that the *Kleingruppenhaltung* gets its own registration number from the EU competent authorities.

Keywords: laying hens, *kleingruppenhaltung*, hygiene, dust, bacteria