

## Factory farming: an underestimated hazard towards public health?

The West-Flemish Environmental Federation (WMF) made an overview of the possible consequences of intensive livestock breeding in West-Flanders (and the other Flemish intensive livestock areas). The conclusions point in one direction: "The Flemish and federal authorities must urgently carry out more research into the possible health risks for farmer and neighbor."

### Summary

It is proven that living in regions of intensive livestock breeding potentially poses risks to the health of farmers, their families and local residents, and certainly for the group YOPI (Young, old, pregnant and ill). It is also clear that the environment (water, soil, air, consumption of (packed) vegetables, ...), as also direct contact with animals or livestock producers or veterinarians, provide a possible contamination with multiresistant zoonoses. Belgium ranks the top in Europe for the presence of multiresistant organisms. Research also shows that the combination of breeding different types of livestock in some regions (like in Western Flanders, especially the intertwining of pig and poultry stables, poses additional health risks involving the occurrence of possible genetic cross-links. That pigs are genetically close to humans, we don't have to explain. Moreover, a well-microbial balance in the soil provides a reduced strength of the penetrating bacteria. But even at that level, the province does not have high scores. The accumulation of emissions, stock density and spacing between production entities, as well as the type of production (closed or not) have their role. Also do the lack of quality of and compliance with the operating conditions (eg scrubbers, whether or not in use / maintained) induce possible increased risks of emission of contaminants over longer distances.

Research on the health effects of the emission of particulate matter from stables, and by extension agricultural dust in general, has a suboptimal implementation in Flanders. There are many gaps in knowledge about the composition, distribution and the potential effects on human health. For example, today there is too little research on the chances of survival of faecal micro-organisms in the soil, water and air, and there is uncertainty about the measurement techniques of the endotoxin levels in the particulate matter, and the composition of the endotoxins. Guidelines for prevention of environmental contamination, work with theoretical models. Sampling of contaminants, on the spot, are scarce or not found. The currently most growing sector, poultry breeding, is the largest emitter of particulate matter. Potentially, residents of the areas of poultry breeding plants are also in greater risk to have health complaints and respiratory infections by resistant organisms, which are contained in the fine dust.

Concerning the health effects of ammonia, very little is known today. For ammonia is both distributed through the air (and as a secondary fine particles), as precipitated on the soil, the route of distribution route and its effects, are difficult to map. Certain is that ammonia causes a bigger potential risk to public health than previously assumed, even in cities. Moreover, West-Flanders is the absolute champion in Flanders and Belgium –even for the most of the regions in Europe-, with a theoretical emission of 17.3 million kg (theoretical, for sampling on the spot doesn't happen regularly).

Previously unsuspected agents, now seem to lead to resistance. It seems a matter of time before e.g. disinfectants have their end in the resistance of different worms and harmful bacteria. The emergence of multidrug-resistant parasites and fungi (by the use of azoles in corn production for animal feeding) should cause concern. In the Netherlands, the number of victims of resistant fungi, for example, is estimated by a recent study as one every week.

Finally, odor nuisance, according to enclosed research, must be viewed from both the psychological and the physical angle. Odor causes more than just an unpleasant feeling, which can even lead to physical complaints.

Figures on the current state of public health in this region, concerning risks caused by livestock breeding, seem not to be collected certainly not at a local level. Not even in the known concentration areas. The temporal impact on the environment is therefore not taken into account when estimating the risks: an annual average uncovers much less than the peaks of emission. Even for the target group whose impact is to be considered as the biggest (YOPI). However, a monitoring network for various contaminants and pathogens is a basic condition for describing the situation and testing to standards, target values and insights. In addition, the European standards reduce the risk assessment provided by the World Health Organization for particulate matter, and have not yet been established for all contaminants standards, if even measured already. This also means that the Best Available Techniques for the Reduction of Health Risks have not been updated to the last insights in possible risks, and estimates of the risks in the environmental impact reporting are insufficient, due to the absence of highly relevant research data and binding regulations in this regard. At this moment adjustments are being made within the new environmental impact assessment guidelines will offer a little more comfort, but it will also help to implement and apply the latest findings from international and national research into licensing policies.

The environmental and public health cost of intensive livestock raises, together with the complexity and spreading of the problem. For example, the treatment of an infection by ESBL-producing intestinal bacteria is up to 28,000 EUR and with MRSA up to 37,000 EUR (individual). For the environmental and health costs of NH<sub>3</sub> emissions only in West-Flanders (17,296,189 kg in 2014), according to figures from the Flemish Government, are calculated as 570,768,000 EUR. This is half of the net added value of the entire agri- and horticultural complex of Flanders.

Research on prevention of and information on the risks of contamination by various emissions from intensive livestock breeding, for the inhabitants of such areas, was not found for Flemish territory. Therefore this needs to be a clear mission for the Flemish Government.

The impact on the YOPI group is, in our opinion, a most underexposed theme. This group has less resistance and is therefore more susceptible to health problems due to infections. Given that this target population grows in number (aging, increase of chronic diseases, ...), it is more than ever a group to shift focus to.

Little is known on the effective increase of health risk by living in or near an area of intensive livestock breeding, is derived from the very limited research of Flemish signature, little known. However, this involves major risks, not only in terms of direct health costs but also of quality of life and general health in Flanders.

Not included in the given research, but therefor not of secondary importance, are the effects on climate and nature. After all, background concentrations have to be considered as cumulative with additional emissions (N), but research on the effects of cumulation is insufficiently extended to unprotected nature and the health of the environment. In addition, the effects of climatechange will also affect the potential impact of contaminants on the well-being of the environment.

**Therefor the West-Flemish Environmental Federation is of the opinion that this cannot be left without a political answer. With this document, the West-Flemish Environmental Federation wants to address the governments concerned, to act and give political answer on pertinent demands, being research and social dialogue. The rapid evolution of resistance genes in zoonoses and the growing insights demand quick response.**

Please open Dutch report for references (last pages).