

## Airborne Contaminant Reduction Strategies for Improving Health of Pig Producers

Animal production facilities are reservoirs for large amounts of airborne dust, odours and gases that can have potentially harmful effects on producers. Concentrations of airborne contaminants may be affected by the level of animal activity, ventilation rates, feeding practices, bedding materials, flooring type, waste handling practices and microorganisms. One of the AgriSafety Program projects – Air Quality in Canadian Pig Buildings – is currently researching the effects of airborne contaminants on pig producers and examining contaminant reduction strategies for commercial production buildings.

### Effects of Production Environments

Apart from infectious diseases, producers may experience respiratory symptoms associated with an inflammatory or toxic response towards airborne contaminants. These symptoms are directly correlated with the number of hours spent working in production facilities. The effects of airborne contaminants can result in both acute and chronic conditions.

### Current Reduction Strategies

Reduction strategies for airborne contaminants are needed to reduce the risk of exposure to producers and workers in the pig production industry in Canada. With the pig production industry growing producers are spending increased hours per day working inside production facilities that house thousands of animals. Current airborne contaminant reduction strategies include:

- Oil sprinkling to reduce dust emissions
- V-shaped gutters designed to separate liquid and solid wastes
- Biotrickling filters that reduce ammonia

#### Acute Effects

- Cough
- Excess sputum and phlegm production
- Wheezing
- Irritation of the nose and throat

#### Chronic Effects

- Reduced respiratory function
- Chronic wheezing
- Bronchitis
- Asthma

The above methods have been associated with decreased concentrations of airborne dust, odours and gases. Among other strategies, these methods are currently being evaluated by the Institut de recherche et de développement en agroenvironnement (IRDA) and the Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec (CRIUCPQ) for their effectiveness in reducing airborne microorganisms and certain potential human disease-causing agents. Both institutes are also examining a possible synergistic effect on reducing airborne contaminants by combining different types of technologies. Preliminary test results show that there is a greater reduction in exposures when two or more methods are used in conjunction. Additional testing will be carried out in commercial buildings at the beginning of Year 4 of the project.

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*Reference (complete reference list available upon request)*

The *Air quality in Canadian pig buildings* project, is one of two projects in the Animal Housing Environment priority area, under Agrivita Canada Inc.'s Canadian AgriSafety Applied Research Program, led by a national team of researchers from the Institut de recherche et de développement en agroenvironnement (IRDA), and Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec at the Université Laval (CRIUCPQ), University of British Columbia, the Canadian Centre for Health and Safety in Agriculture (CCHSA) and the Canadian Agricultural Safety Association (CASA).

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