

POULTRY FARM ODOURS

INTRODUCTION

Odour management is becoming a serious challenge for the B.C. poultry industry. It is becoming more important as urban development increases in and around agricultural areas.

This factsheet provides information about air quality legislation and suggests an appropriate response if you receive a complaint of odour emanating from your poultry farm. It describes when odour is considered pollution and discusses how the courts have interpreted B.C. air quality legislation. The factsheet also points out where odour will likely originate on poultry farms; what it consists of; its impact; and what can be done to reduce the odour inside and outside the barn.

This factsheet is not intended to be a legal document, however it does provide information that will assist producers in understanding the relevant legislation and its implications.

WHEN IS ODOUR CONSIDERED POLLUTION?

The Ministry of Water, Land and Air Protection's (MWLAP) *Waste Management Act* defines pollution as "the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment" and defines air contaminant as "a substance that is emitted into the air that:

- a) injures or is capable of injuring the health or safety of a person,
- b) injures or is capable of injuring property or any life form,
- c) interferes or is capable of interfering with visibility,
- d) interferes or is capable of interfering with the normal conduct of business,
- e) causes or is capable of causing material physical discomfort to a person,
- f) damages or is capable of damaging the environment."

The *Waste Management Act* applies to all regions of B.C. The Greater Vancouver Regional District (GVRD) is responsible for maintaining air quality in the GVRD region. The GVRD air quality bylaws and definitions are pursuant to MWLAP's legislation and definitions.

INTERPRETING AIR QUALITY LEGISLATION

A review of instances where odour complaints resulted in legal action provides an indication of how the courts in B.C. interpret and make decisions on air legislation. The length and repetition of the complainants' discomfort as well as the consequences and the character of the affected neighbourhood are considered in deciding whether the discomfort experienced by complainants is sufficient to conclude that "air contamination" is present.

The nose is accepted by the court as the instrument of detection. There are no scientific instruments to determine the presence of an **odour**.

Poultry FACTSHEET



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Whether the substance causes, or is capable of causing, a material physical discomfort, or substantially alters or impairs the usefulness of the air, is determined by considering the number of people affected, the neighbourhood, the degree of the physiological effect, the length of time over which the substance is present, the quantity, the method used to record the odour and considerations of any bias in the collection of data. The court relies heavily on evidence given by people who experience the odour and its effect on them. The courts find it sufficient if the complainants (witnesses) say that the odour causes them physical discomfort and that odour is present on particular days. The physical discomfort must be material. It must have a physiological effect or be **capable** of that. It is not enough that the odour is unpleasant.

The presence of odour is not enough to substantiate pollution: there must be an associated material discomfort or capacity to cause discomfort. Witnesses who testify that the odour makes them have one or more of the following symptoms; nausea, gagging, coughing, eyes watering, headaches or an aggravation of an existing asthma condition, are considered by the courts as providing valid evidence of material discomforts.

A determining factor in judgements in these cases is whether a neighbour can maintain the use of his/her property while odours are present without experiencing material physical discomfort.

ODOUR PERCEPTION

Non-farming public who have relocated from a city or town may perceive agriculture differently from farmers or people who have lived for years in rural areas. Their sensitivity to farm odours will differ from people who have worked or lived on and around farms for several years. Hobby farmers or commercial farmers of other commodities which do not have identical odours associated with their commodity type are sometimes the complainants.

Responses to odours vary and non-poultry farmers legitimately experience symptoms such as headaches, stomach cramps and other disorders due to odours even though family members and staff at the poultry farm do not experience similar symptoms. In general, people have highly variable responses to odours.

People also vary in their sensitivity to odours. For example, two per cent of the population is highly sensitive to odours in their environment and approximately two per cent appear to have very little sensitivity to odours. The other 96 per cent have average sensitivity.

Complaints about farming practices are often resolved using programs that are currently in place. However, continued public complaints and concerns with respect to odour emissions from poultry operations are leading to increased pressure for more environmental regulation on the poultry industry. The industry therefore, must be pro-active in controlling odours and odour containing dust emissions from their operations so as to minimize impact on the environment and on neighbours.

THE FARM PRACTICES PROTECTION (RIGHT TO FARM) ACT

Question: Does the *Farm Practices Protection (Right to Farm) Act* Supersede the *Waste Management Act*?

Answer: No! If the odour from a farm is considered by MWLAP / GVRD to be pollution the farmer is not protected by the *Farm Practices Protection (Right to Farm) Act*.

When pollution occurs the incident is outside of the jurisdiction of the Farm Practices Board. Whether normal farm practices are being followed or not.

For a farm nuisance description of odour please refer to the BCMAFF "Farm Practices in B.C. Reference Guide" under "Farm Nuisance – Odour".

RESPONDING TO A CONCERN OR COMPLAINT

If an odour problem leads to a concern or a complaint, the farmer should immediately determine whether the complaint is legitimate and, if found necessary, take immediate action to improve the situation. Research has shown that the attitude of the farmer to a complaint is an important determining factor in the willingness of the complainant to tolerate annoying odours and inconveniences from odours. If the complainant feels that the farmer is doing everything possible to reduce odours from the farm and is putting a sincere effort into reducing the nuisance then the complainants tend to be more tolerant. When the attitude of the farmer, for example, was to say 'go back to the city', the researchers found that conflict escalated and the complainants' reaction was to dig in his/her heels and take the complaint further.

SOURCE AND COMPOSITION OF ODOURS FROM POULTRY FARMS

Waste management systems can generally be classified as aerobic or anaerobic. Aerobic systems exist where there is adequate oxygen available during waste decomposition while anaerobic systems exist where there is inadequate oxygen available. Most poultry operations with litter operate with waste in an aerobic condition, however wet areas can become anaerobic. A few layer operations and several duck operations on floors over liquid holding tanks operate a mainly anaerobic system.

The smell of aerobic poultry manure comes largely from ammonia. Most people can detect ammonia in the air in the neighbourhood of 15 to 25 parts per million (PPM). However, when manure decomposes anaerobically, hydrogen sulphide, skatole, indole, amines and mercaptans and other sulphur containing gases are produced. Some of these chemicals are very offensive and can be detected at levels over one million times

less concentrated than for ammonia. Odours generated in anaerobic conditions tend to generate more complaints and are usually perceived to be more unhealthy than odours from aerobic conditions.

Odours vary with the birds' diet, the method of manure storage, the method of spreading and the age of the manure. Moisture buildup caused by leaking waterers or poorly insulated houses can lead to wet litter, and more ammonia and other odorous gas release. Ambient temperature, relative humidity, litter pH and method of litter management also affect litter ammonia concentration.

DUST AS AN ODOUR CARRIER

High dust levels contribute to odours. Odours, particularly carbonyl compounds and phenols, are carried by airborne particles. Odourants on dust particles are many times greater than found in an equal volume of air with no dust. When litter is double cycled, as is sometimes practiced in the broiler industry during summer, odour containing dust and feather emissions to the environment may be higher. An important step to controlling odours is to control dust emissions from the barn. (See Management of Dust in Broiler Operations, BCMAFF, Dec 1999).

Old litter tends to release more odour containing dust than new litter, and older flocks produce more ammonia because of their higher total protein consumption, hence there are higher volumes of nitrogen in the waste compared to that of younger flocks.

The highest levels of ammonia and odour containing dust occur during catching operations. It is not uncommon for ammonia to reach 40 to 50 PPM in the barn during catching, litter removal and cleaning the poultry house. Litter rototilling, which is sometimes done to mix feces, spilled food and spilled water into the litter results in especially high concentrations of airborne dusts and gases.

IMPACT OF HIGH ODOUR LEVELS ON POULTRY

In general, high levels of ammonia or odours from anaerobic conditions can lead to respiratory infections in all poultry, and lower feed intake, lower weight gain and poorer feed efficiency in broilers. Ammonia has negative effects on laying capacity and egg quality in layers. Field monitoring of air quality in turkey barns has shown that increased dust and ammonia are associated with greater processing condemnations from air sacculitis.

WHAT CAN BE DONE TO REDUCE ODOUR OUTSIDE THE BARN?

The following list outlines some of the steps a producer can take to reduce odour outside the barn before a complaint is registered.

- 1) Keep litter/manure dry and aerobic.
- 2) Apply litter treatments inside the barns.
- 3) Maintain appropriate bird densities as laid down by best management practices, animal welfare guidelines and marketing board regulations.
- 4) Ensure appropriate ventilation.
- 5) Reduce emitted dust levels.
- 6) Vent exhaust from barns down towards the ground using fan hoods.
- 7) Consider putting hedging cedars around the vent fan outlets.
- 8) Locate manure storage facilities as far from public view as possible and in compliance with the Agricultural Waste Control Regulation (AWCR).
- 9) Maintain trees and shrubs between your farm and neighbour's homes.
- 10) Consider the prevailing winds when locating new production operations.
- 11) Maintain appropriate litter moisture conditions when treating litter with litter amendments.
- 12) Ensure your neighbours feel that they can contact you if they are having a planned outdoor event. This way you can avoid spreading manure during the event.
- 13) Apply manure to land when prevailing winds are in a favourable direction or when wind is at a minimum. Apply manure in the morning when warm air is rising, not in the evening when cool air is settling. Apply manure in compliance with the AWCR.
- 14) Where applicable, incorporate manure into the soil as soon as possible after application.
- 15) Duck operations should use loading equipment that minimizes spillage and leakage or excessive agitation and splashing of the slurry when it is loaded. Use a sealed truck to transport the slurry manure.
- 16) Handle mortalities according to the Agriculture and the Environment: Reference Guide for Livestock Producers in B.C. and the Waste Management Act and the AWCR.
- 17) Use feeding strategies to reduce nitrogen output in the wastes and therefore ammonia production from the manure.

CONTACTS:

For further information on odour management on poultry farms, Farm Practices Protection (Right to Farm) Act, or odour complaint resolution contact the following British Columbia Ministry of Agriculture, Food and Fisheries staff:

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