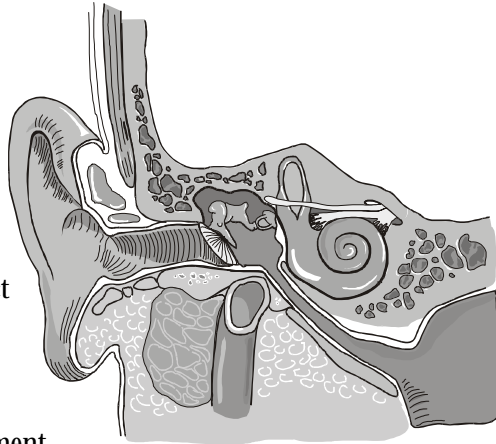


Management of Noise on Poultry Farms

This fact sheet is intended to provide information about noise produced on poultry farms; its potential impact on neighbors; and methods to reduce the impact of noise from production operations on neighbors.

An important challenge facing the poultry industry is noise control. As urban development abuts agricultural areas, the demand for effective noise control in poultry operations increases. Noise emitted from fans, feeders, farm equipment, and trucks delivering inputs and removing outputs from the poultry farm can be an annoyance to neighbors and if severe enough can lead to complaints. While poultry operations that use normal farm practices are protected under the *Farm Practices Protection (Right to Farm) Act*; protection under this legislation requires that a producer be reasonable and responsible in minimizing noise impact upon neighbors.



WHAT IS SOUND?

Sound is a pressure variation in air that the human ear can hear. If pressure variations in the air occur more than 20 times a second then they can be heard and are called sound.

The number of pressure variations per second is called frequency and the unit frequency is measured in is called Hertz (Hz). Normally people hear in the range of 20 Hz to 20,000 Hz.

The units for measuring the loudness of the noise are called decibels or dB. Walking deep in the woods we would experience a sound of 10 to 20 dB; the sound level in a library might be closer to 30 to 40 dB, a business office has a level of 60-70 dB; a heavy truck would generate 90 to 100 dB; a pneumatic road chipper 100 to 150 dB and a jet liner taking off 120 to 130 dB. The threshold of hearing is at 0 dB and the threshold of pain can be over 130 dB. Although an increase of 6dB represents a doubling of the sound and pressure, humans perceive an increase of about 10 dB in sound to be twice as loud. The smallest change we can distinguish is about 3 dB.

WHAT IS NOISE?

Noise is sound that is unpleasant or unwanted by the listener. People's sensitivity to and perceptions of noise depends upon sound pressure and frequency. The human ear is most sensitive to sounds between 2000 Hz and 5000 Hz. The level of annoyance depends on the loudness, frequency and the listener's attitude to the sound. Finger nails scratching on a board have little volume but may be very

Poultry FACTSHEET



BRITISH
COLUMBIA

Ministry of
Agriculture and Food
Abbotsford Agriculture Centre
1767 Angus Campbell Road
Abbotsford, BC
V3G 2M3
Phone: (604) 556-3001
Fax: (604) 556-3030

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annoying to some people. On the other hand, the volume of sound from a race car is large but is likely considered to be music to the ears of racing car enthusiasts. Similarly, attitude plays a large part in public perceptions of noise on poultry farms.

Sound can also be damaging to the human ear. Annoyance caused by sound is nearly impossible to measure but damages caused by sound can be measured. While there is little risk of a neighbors ears being damaged from noise from a poultry farm, farm workers, exposed to equipment noise are at risk and should wear appropriate noise protection gear.

WHAT ARE THE KEY SOURCES OF NOISE ON POULTRY FARMS?

Fans, feeders and birds contribute to a large extent to the noise inside the barns. The arrival, operation and departure of feed trucks, loading trucks, and clean out equipment contribute to noise levels outside the barn. Unattended alarms which go off due to the poor farm management can be another source of annoyance to neighbors.

WHAT ARE NORMAL NOISE LEVELS ON POULTRY FARMS?

Scientific measurements of poultry farm noise were carried out in California, Idaho, Oregon and Texas in 1980. Noise levels on 51 poultry farms consisting of 37 cage layer farms, 3 floor layer farms with floor pens, 7 broiler farms and 4 turkey farms were measured. Readings taken outside the houses 15 to 20 meters from the buildings ranged from 44 to 63 dB. These measurements were during normal farm operation. Turkey farms had slightly higher than average sound levels and broiler farms had slightly lower than average sound levels. Sound levels inside the house ranged between 50 dB and 90 dB during the daytime. In one layer breeder house the sound levels rose from 66 dB to 83 dB when the roosters crowed.

The noise from feed trucks, poultry loading equipment and clean out equipment can result in noise levels during poultry loading, feed delivery and clean out of well over 90 dB for extended periods of time. Noise from fork lifts can contribute significantly to noise levels. Use of such equipment on farms is considered normal.

MEASURING SOUND ON A POULTRY FARM

If you ever wish to have sound measured on your operation it is important to get a trained sound engineer or sound technician to take these measurements. Many environmental factors can influence the readings on a sound meter including wind, humidity, temperature, barometric pressure, vibration and background noise. It may be necessary for the technician to identify and subtract out background noise from the readings taken on a poultry farm to accurately determine the contribution of the poultry farm production unit to the environment. Noise engineers can also map the noise levels around your production operation and identify areas where noise levels are high. This will allow for proper ear protection of workers and provide the basis for sound mitigation.

WHAT IS THE IMPACT OF SETBACK DISTANCE ON NOISE LEVELS HEARD BY NEIGHBORS?

Increasing setback distances is one method of reducing the impact of noise on neighbors.

There is a 6 dB decline when the distance between the poultry house and neighbors doubles if there are no obstacles in the way, such as walls, trees, etc.) If you are 1 meter away from the barn and move to 2 meters, the sound will drop by 6 dB, if you then move to 4 meters away the sound will decline by 12 dB. If the noise levels 1 meter from trucks and equipment is over 90 dB then the noise 128 meters away will still be 48 dB. Increasing the distance between you and your neighbors helps but is not the total solution. For specific measurements on your farm consult an acoustical engineer.

CREATING BARRIERS TO NOISE TRANSMISSION.

Sound is reflected and absorbed by obstacles between the poultry house and the neighbors. Generally, the rule is that to block sound the object acting as a sound barrier must be bigger than 1 wavelength. At frequencies like 10,000 Hz the wavelength is 3 to 4 cm and hence is easily blocked, but at 100 Hz the wavelength

is 3 to 4 meters and blocking the sound is difficult. It is the base sound that moves through your house walls when the young audiophile passes by with their car stereo on at high volume. We have all experienced the “base response” coming from more than a block away and neither trees or houses can block this. It is generally known however that high frequency sounds are more annoying than low frequency sounds.

WHAT CAN POULTRY FARMERS DO TO REDUCE COMPLAINTS FROM NEIGHBORS REGARDING NOISE FROM POULTRY OPERATIONS?

- 1) Site fans, loading and unloading areas on the side of barns furthest from neighbors where possible.
- 2) Eliminate or reduce noise by seeking quieter equipment when replacing equipment.
- 3) Chain feeders which are coated to reduce noise can be used rather than those that are metal on metal.
- 4) Build new production units far enough from property lines so that farm noises are minimized to neighbors. You may wish to increase setbacks to 90 to 100 meters (approximately 300 to 330 ft) or more from the property line even though municipal zoning calls for less.
- 5) Feed delivery trucks should be scheduled during the day to minimize impact of noise on neighbors.
- 6) Clean-out should be scheduled during times when impact on neighbors is minimal.
- 7) Truck drivers should be instructed not to use engine brakes in the neighborhood and should drive directly to the nearest trucking route from the farm.
- 8) Truck engines should be turned off while birds are being loaded.
- 9) All equipment should have mufflers on the motors where possible.
- 10) Workers should be instructed not to create additional noise by excessive and unnecessary yelling.
- 11) 24 and 36 inch fans should be hooded to restrict noise through the fans.
- 12) Bells can be removed from security systems and replaced with flashing strobe lights and auto dialers that contact the farm manager or specific individuals in the area who can rectify any problems.
- 13) Build sound barriers to block sound transmission. These can be trees, walls, insulation, coatings on walls, berms, and fences.
- 14) Some farmers have experienced the fact that if the person next door does some work on the farm the complaints from the neighbors are less likely. If the neighbors see a direct personal benefit of employment from your farm, particularly for their teenagers, they tend to become more tolerant. However, realize there are significant other factors to consider in hiring and possibly laying off a neighbor.

SENSITIVITY

People from the city may perceive agriculture differently than farmers and/or people with a history of living in the country. When they move to the country, many city people expect to find poultry raised in a more traditional manner, perhaps in small flocks and even on pasture. Their view of agriculture production may be based on a historical perspective. Many are not aware of the housing, technology and investment associated with modern poultry operations. They may perceive modern poultry production units as non-agricultural operations or industrial operations on agriculture land. They may see large fans as industrial equipment; and the feeding, cleaning and loading trucks and equipment as commercial/industrial equipment. While allowable night time sound levels in the city may be as much as 50 dB on average, people who have moved to the country are sensitive to the “new “ sounds and noises of the farm. As loading and clean-out does not occur on an everyday basis it is not easy for the neighbors to become ‘habitualized” or “accustomed to” the noise. Noises from clean-out are not like a train that goes by at night, every night at

2:00 am in the morning – an experience that many people simply get used to and block out. Therefore, when neighbors complain about noise assume that the complainants are sincere and make a real effort to deal with their concerns.

The basis of agriculture classification of land is for food production and modern food production is a commercial industrial process. It is common to use modern equipment in the production of poultry. Complaints about farming practices can be resolved using programs that are currently in place. However, continued public complaints and concerns with respect to noise emissions from poultry operations may lead to increased regulatory pressure on the poultry industry. The poultry industry, therefore, must be proactive in controlling noise emissions from production operations so as to minimize impact on the workers and neighbors.

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CONTACTS:

For further information on noise management, Farm Practices (Right to Farm) Act, or noise complaint resolution contact the following BCMAF staff:

Stewart Paulson, P.Ag
Poultry Industry Specialist,
Email: Stewart.Paulson@gems8.gov.bc.ca
Phone: 604-556-3083

Bert van Daltsen, P Eng
Mechanization Engineer
Email: Bert.vanDaltsen@gems4.gov.bc.ca
Phone: 604-556-3109