

A gentle and easy death?

An examination of animal welfare issues during the 2004
avian influenza outbreak in British Columbia

[Addendum added January 30th, 2005]



Vancouver Humane Society

303 – 8623 Granville Street

Vancouver, BC

V6P 5A2

- January 2005 -

Supported by



**VANCOUVER
FOUNDATION**

**Funding for this project was generously provided by the Vancouver
Foundation**

Euthanasia: a gentle and easy death
- The Oxford English Dictionary

Executive Summary

The outbreak of avian influenza in British Columbia's Fraser Valley in 2004 necessitated the culling of millions of chickens and other birds, but there are doubts over whether the cull methods used were the most humane available. There are also doubts over the scope of the cull, which included backyard hobby flocks, pets and specialty birds.

The Canadian Food Inspection Agency (CFIA) appeared to be unprepared for conducting a mass poultry cull, initially using CO₂ gas, then switching to a clearly inhumane method (a portable electrical stunning chute which resulted in "inconsistent kill"), then switching back to CO₂ gas for the remainder of the outbreak. As no dedicated equipment was available, CFIA officials described the process as "making do."

There is considerable scientific doubt over the application of CO₂ gas as an effective method of euthanasia for animals, including poultry. Some studies have found that it causes irritation and is strongly aversive. A number of scientists and regulatory bodies believe other gases or gas mixtures may be more humane. This information was brought to the attention of the CFIA during the outbreak but the agency continued to use CO₂ gas, following American Veterinary Medical Association guidance based on a single study involving euthanasia of day-old chicks by CO₂ gas.

During the outbreak the CFIA refused to appoint a representative of the BC Society for the Prevention of Cruelty to Animals or an independent veterinarian to observe any part of the culling process. Neither would the agency agree to videotape the cull. This means there was no independent evaluation of the methods used and no independent record of whether humane death was achieved.

Due to frustration over the handling of the outbreak, there have been alarming suggestions from poultry industry representatives that, in cases of future poultry disease outbreaks, the industry would conduct culls without the involvement of the CFIA. The absence of any regulatory or independent scrutiny in such cases could result in an animal welfare disaster. Lack of veterinary training among farmers and the pressure of economic imperatives could lead to inhumane measures being employed.

The scope of the cull included backyard hobby flocks, specialty bird collections and pets. Questions and complaints from the owners of these birds have not been fully addressed, leading to uncertainty over the necessity of some aspects of the cull.

Without a review of the cull's methods and scope, important lessons will go unlearned. This would prevent the development of operational procedures to ensure future mass culls are carried out humanely. While public health and economic impacts are priorities during major animal disease outbreaks, there is considerable public interest in ensuring animals are properly and humanely euthanized. It is important that this concern is not dismissed while other issues are addressed.

Introduction

The outbreak of avian flu in British Columbia's Fraser Valley in the spring of 2004 created an economic crisis for poultry farmers and a potential public health disaster for the wider community. Consequently, there has been much public discussion of these two central aspects of the outbreak.

Less discussed is the death of 17 million chickens and other birds in the "depopulation" ordered by the federal government during the crisis. More specifically, two questions regarding the depopulation have not been fully addressed:

- Was the cull of poultry carried out humanely and with appropriate scrutiny to ensure this was the case?
- Were all aspects of the cull necessary, especially in relation to specialty birds, pets and hobby flocks?

Since the outbreak, the poultry industry, the Canadian Food Inspection Agency (CFIA) and other relevant bodies have held meetings and forums to discuss lessons learned from the experience of dealing with the outbreak. These have understandably focused on issues such as biosecurity, compensation for farmers and public health. There has been virtually no mention of the methods of depopulation (in terms of effectiveness or with regard to animal welfare). There has also been little reference to complaints about unnecessary culling, which emerged during the outbreak.

While it is recognized that public health and economic disruption must be key priorities for government and industry, there is a legitimate public concern over animal welfare in animal disease emergencies such as BC's avian flu outbreak.

This concern can only be heightened, given continued questions and criticism of the handling of the outbreak by industry, media, politicians, the public and animal welfare groups. Such criticism, centering on a lack of attention to the human health risks of the virus, does not engender confidence in the handling of other aspects of the outbreak. A natural suspicion emerges: if the threat to human health was not dealt with efficiently, what chance was there that animal welfare was addressed appropriately?

Such suspicions and concerns could easily be allayed if the depopulation were reviewed and discussed in the same way that other outbreak issues have been. Methods of depopulation, such as the choice of gassing with carbon dioxide, could be evaluated, alternatives examined and research needs identified. More humane culling could be one of the "lessons learned" in addition to better biosecurity or better diagnostics.

The inclusion of animal welfare considerations in official discussions of the avian flu outbreak and an open approach to concerns over humane culling, would do much to restore public faith in the bodies responsible for animal disease emergencies.

The public *does* care about how animals are killed, even in an emergency where public health, food supply and economic issues are the foremost priorities. Excluding animal welfare from an examination of the outbreak could preclude better preparations for any future animal disease response.

This report reviews some of the animal welfare questions arising from the outbreak and, where possible, examines alternative approaches. Its intention is not to provide definitive answers to all the questions regarding the fate of the culled poultry but to draw attention to concerns, generate discussion, identify knowledge gaps and point the way to potential improvements.

The depopulation – concerns over methodology

On February 20, 2004, following news of the initial outbreak of avian flu at a broiler-breeder barn in Matsqui, the Vancouver Humane Society (VHS) contacted the CFIA to ask what method of euthanasia was being used to depopulate the barn. VHS was informed that the barn would be “fumigated” with CO₂ gas and that, as no dedicated equipment was available to conduct the gassing, the CFIA was “making do.”¹

As the outbreak escalated, so too did the challenge of depopulation. There was uncertainty over methodology during the response to the first two barns affected, as reported in a presentation to the National Meeting on Poultry Health and Processing:

“The methods of euthanasia and depopulation of the two barns on the index farm, as well as the subsequent 2nd infected farm, had never been attempted before in Canada and posed significant challenges. On the index farm, barns were not completely sealed off as carbon dioxide gas was pumped in and fans continued to ventilate both before and after euthanasia, which may have assisted any airborne spread of the virus onto adjacent roadways. With the initial intention for on-farm composting, the dead birds were ground up uncovered in a mobile industrial feed mixer and open loads were moved by tractor into an outside dairy feed bunker. Capacity was reached at 60% of the birds so the remaining carcasses were placed into sealed totes in reefer trucks and transported 200km away for incineration. An alternative method of euthanasia was utilized on the second affected farm, 1.5km away, which became positive approximately 2 weeks following the depopulation efforts on the index farm. The second farm, with 4 barns containing a total of 24,000 broiler breeders, was depopulated by conveying birds outside in the open air into a portable electrical stunning chute designed to dispatch spent fowl prior to rendering. This method was unsatisfactory due to the awkward inconsistent kill and the significant feather-fly generated as evidenced by the feather debris settling on the nearby

¹ Telephone conversation between VHS Executive Director Debra Probert and Dr. Doug Aitken, CFIA, Feb. 20, 2004

parked cars. This method of euthanasia was consequently abandoned with a return to the more efficient in-barn CO₂ gassing.”²

While the description of biosecurity lapses is perhaps most alarming, the reference to “inconsistent kill” illustrates the failure of this method to kill birds humanely. Moreover, its use (and the switching back and forth between methods) suggests a lack of preparedness to implement effective and humane slaughter strategies. Indeed, it appears that no operational procedures were in place to automatically ensure humane methods would be used. The failure to completely seal off the barn before CO₂ was pumped in also suggests the need for detailed operational procedures for humane depopulation in such circumstances.

Detailed operational procedures for humane culling are vital. They need to encompass a variety of situations likely to arise, including coping with the types of poultry and poultry housing involved. For example, broiler chickens kept on barn floors would likely require a different approach to egg-laying hens stacked high in battery cages.

Use of Carbon Dioxide

After this initial hesitation, the CFIA settled on CO₂ gas to euthanise poultry for the remainder of the outbreak. CFIA officials expressed confidence that this method was humane:

“CO₂ has been recognized by many agencies and countries as a good method of euthanasia for poultry and hogs. It is humane, painless and relatively easy to acquire. Administration is simple and this does not frighten the birds. Evidence from humans that have had accidental exposure and lost consciousness and been resuscitated back to life reported no pain or discomfort, just a feeling of fainting. Veterinarians that have observed the administration of the gas report no evidence of struggle or discomfort visibly from the birds. The birds will have a slight change in vocalizing for a short time before passing out.”³

Yet there is scientific and regulatory opinion that CO₂ *can* cause discomfort and is aversive. For example:

- A paper by Dr. Mohan Raj, Senior Research Fellow at the Department of Clinical Veterinary Science, University of Bristol, states: “Carbon Dioxide is an acidic gas and is pungent at high concentrations. It is also a potent respiratory stimulant that can cause breathlessness before the loss of consciousness.”⁴

² Highly Pathogenic Avian Influenza, The Canadian Experience, Presentation to National Meeting on Poultry Health and Processing by Dr. Victoria Bowes, Avian Pathologist, BC Ministry of Agriculture, Food & Fisheries, Ocean City, MD, Oct. 7, 2004

³ Email to Stephanie Brown, Canadian Coalition for Farm Animals, from Dr. Jim McClendon, CFIA, April 10, 2004.

⁴ Raj ABM 1998a, Welfare during stunning and slaughter of poultry, Poultry Science 77: 1815-9

- A report by the European Union Scientific Committee on Animal Health and Welfare states: "...while CO₂ is able to stun or kill, it is also irritant, for example, to mucous membranes of the nose and mouth due to the formation of carbonic acid."⁵
- Poultry euthanasia guidelines of the Center for animal Welfare at the University of California-Davis state, "CO₂ is aversive."⁶
- Canadian Council on Animal Care guidelines for euthanasia of research animals state: "Carbon dioxide also stimulates the respiratory centre in the brain and in low concentrations of up to 10% of inspired gas is considered a potent respiratory stimulant causing a tenfold increase in the ventilation rate and a feeling of profound respiratory distress."⁷
- A study by the Animal Welfare Foundation of Canada into Controlled Atmosphere Stunning (CAS) of poultry excluded the use of CO₂ at high concentrations: "The use of high concentrations of CO₂ was dismissed due to the pungency of this gas at lethal levels and the induced laboured breathing efforts associated with its use."⁸

The doubts over the use of CO₂ gassing as a humane method of euthanasia have prompted several bodies to consider various gas mixtures as an alternative. For example:

- In the UK, The Welfare of Animals (Slaughter or Killing) Regulations require birds to be killed by gas mixtures of either:
 - (a) a maximum of 2% total oxygen by volume and 90% argon (or other inert gas) by volume in atmospheric air; or
 - (b) 25% to 30% carbon dioxide by volume and 60% argon (or other inert gas) by volume in atmospheric air.⁹
- The World Organization for Animal Health (OIE) has studied the advantages and disadvantages of a range of euthanasia methods, including CO₂/air and inert gas/CO₂ mixtures. It states that, "CO₂ in combination with an inert gas produces

⁵ The use of Mixtures of the Gases CO₂, O₂, and N₂ for Stunning or Killing Poultry - Report of the Scientific Committee on Animal Health and Animal Welfare, June 1998

⁶ Euthanasia of Poultry – Considerations for Producers, Transporters and Veterinarians, Center for Animal Welfare, College of Agricultural and environmental Sciences, University of California, Davis

⁷ Guide to the use and care of experimental animals, Vol. 1, CCAC, 1993.

⁸ Field Study of Control of Atmosphere Stunning in Poultry, AWFC, 1997

⁹ The Welfare of Animals (Slaughter or Killing) Regulations 1995, Statutory Instrument 1995 No. 731

an increased rate of induction of unconsciousness” but advises some gas mixtures may be aversive. It suggests: “Pigs and poultry appear not to find 30% by volume of carbon dioxide strongly aversive, and therefore, a mixture of nitrogen and/or argon with up to 30% by volume of carbon dioxide has been used for stunning/killing pigs and poultry.”¹⁰

- The EU Scientific Committee report also looked at various gas-mixture euthanasia methods, concluding: “From the scientific evidence available, it would appear that argon has fewer adverse effects than methods involving CO₂. It may therefore be more profitable to concentrate on improving the research methods that are based on argon in all species.”¹¹
- New Zealand’s National Animal Welfare Advisory Committee, while allowing broiler chickens to be euthanized with at least 70% CO₂ gas, also allows the alternative of a mixture of CO₂ (70%) and argon gas (30%).¹²

While research on the welfare advantages and disadvantages of CO₂ and other gases or gas mixtures appears to be inconclusive, there would seem to be ample evidence to warrant concerns over the use of CO₂ gassing for euthanasia of poultry. Such concerns were expressed directly to the CFIA during the outbreak by Dr. Ian Duncan, Professor of Poultry Ethology at the University of Guelph.

In a communication in April 2004 with a CFIA official about the cull methods being used, Dr. Duncan stated: “The most recent research suggests that CO₂ gas is not the most humane gas – see example, Raj (1996). Argon is much better. More recently nitrogen has also been shown to be more humane than CO₂... I would suggest to you that the process would be much more humane if nitrogen rather than CO₂ was used.”¹³

This advice (and similar communications from animal welfare groups) was ignored by the CFIA, which continued to use CO₂ for the duration of the outbreak. The CFIA position¹⁴ was based on a report by the American Veterinary Medical Association, which recommends CO₂ for poultry euthanasia.¹⁵ However, the AVMA recommendation cites only a single poultry study – concerning the euthanasia of day-old chicks – to support its conclusion.¹⁶

¹⁰ Report of the first meeting of the OIE ad hoc group on the humane killing of animals for disease control purposes, 2003

¹¹ The use of Mixtures of the Gases CO₂, O₂, and N₂ for Stunning or Killing Poultry, SCAHAW, 1998

¹² Animal Welfare (Broiler Chickens: Fully Housed) Code of Welfare 2003, National Animal Welfare Advisory Committee, New Zealand

¹³ Email from Dr. Duncan to Dr. J. McClendon, CFIA, April 12, 2004

¹⁴ As explained to the VHS executive director by Dr. J. Clark, CFIA senior veterinary officer, meeting, Oct 28, 2004

¹⁵ 2000 Report of the AVMA Panel on Euthanasia

¹⁶ Jaksch W. Euthanasia of day-old male chicks in the poultry industry, *Int J Stud Anim Prob* 1981: 2-203-213

It must be acknowledged that the CFIA was acting in an unprecedented emergency situation, without time to reflect fully on alternative methods available to ensure the most humane cull. It should also be acknowledged that there is unclear, sometimes conflicting evidence and advice concerning euthanasia methods. However, the post-outbreak period provides an ideal opportunity to review the use of CO₂ and study the evidence for improved approaches. There is also an opportunity to commission research where knowledge is insufficient for decision-making in cases of mass euthanasia in animal disease outbreaks. It is disturbing that that no such review, study or plan for improved euthanasia methods has been announced.

Without a re-examination of the cull methodology, no lessons can be learned for future outbreaks. Specifically, there will be no animal welfare elements in any development of new operating procedures for mass euthanasia of diseased animals. Arguably, it is the lack of such procedures that led to the confusion over choice of methods at the start of the outbreak and to the disturbing questions over the use of CO₂ gas. While such questions remain, so will a lack of public confidence that future outbreaks will be handled safely, efficiently and humanely.

Independent oversight of culls

During the outbreak, the Canadian Coalition for Farm Animals requested that the CFIA appoint a representative of the BC Society for the Prevention of Cruelty to Animals to observe the culling process (or to appoint an independent veterinarian recommended by the BC SPCA). This request was refused, as the CFIA claimed it had the mandate to regulate humane handling, transportation and slaughter under federal legislation.¹⁷ While this may be technically true, the refusal to allow independent observation of the cull only raised further doubts about how it was being carried out. The CFIA also refused to videotape the culling process and make such tapes publicly available.¹⁸ Independent, qualified opinion, along with more openness and transparency would have served to either boost confidence in the methods chosen, or to identify weaknesses that would have served as lessons for the future. Nothing was gained by avoiding independent scrutiny. On the contrary, confidence in the CFIA's commitment to animal welfare was eroded.

Put industry in charge of culling?

Even more alarming than the prospect of unimproved CFIA standards for mass euthanasia, is the proposal by poultry industry leaders that the industry take responsibility for depopulation in the event of future disease outbreaks. The president of the BC Chicken Growers Association has publicly stated the industry's intention to undertake its own pre-emptive cull without the knowledge of the CFIA.¹⁹ Given the economic

¹⁷ CCFA/CFIA email correspondence, April 10, 2004

¹⁸ It has emerged that the CFIA did videotape the gassing of one barn. The tape, obtained by VHS through the Access to Information Act, is inconclusive in determining whether humane slaughter was achieved.

¹⁹ Canadian Press report quoting Rick Thiessen, president, BCCGA, Sept. 10, 2004

pressures on farmers, the absence of veterinary training, and the likely absence of any oversight by independent observers, such a move could result in an animal welfare disaster. (It has been suggested to VHS by credible sources, in confidence, that some farmers would simply “turn the fans off” - allowing chickens to suffocate in the resulting high temperature. While this is mere speculation, it is an entirely possible scenario should there be no regulatory presence.) Whatever shortcomings may be attributed to the CFIA, it is a public agency and is therefore accountable for its actions. Leaving unaccountable private industry to carry out the destruction of millions of animals in secret would surely be unacceptable to the Canadian public.

A cull too far?

A second aspect of the BC avian flu depopulation, beyond methodology, was the scope of the cull. As the outbreak progressed the depopulation effort was expanded to include not only intensive commercial operations and backyard flocks, but also specialty birds and pets.

During and since the outbreak there have been complaints from backyard poultry farmers and specialty and pet bird owners that their birds were unnecessarily killed.

In a submission to a poultry industry forum on the outbreak, the Backyard Farmers Association claimed the scope of the cull had not been justified by the CFIA, stating that: “Never was there clear consistent communication with sound scientific basis for the decision to depopulate more than 500 flocks, most, without prior testing.”²⁰

Uncertainty over the credibility of the CFIA’s figures for the number of infected backyard farms has also fuelled concern over whether these backyard operations were targeted unnecessarily. The CFIA claims that 11 back yard flocks were infected with the virus, yet HPAI (Highly Pathogenic Avian Influenza) was only recovered from one backyard flock.²¹

Reports from individual pet owners about how their birds were euthanised added to disquiet over the cull. For example, one family in Surrey was told by CFIA officials that their pet emu had to be killed, only to be told days later by another CFIA official that it should not have been killed.²² Press reports of such stories amplified the perception that animals were being killed unnecessarily.

Along with animal welfare issues, the concerns of backyard farmers and pet owners appear to have been overlooked in the aftermath of the outbreak. The financial welfare of

²⁰ Backyard Farmers Association submission to Canadian Poultry Industry Forum, Oct 27-28, 2004

²¹ Highly Pathogenic Avian Influenza, The Canadian Experience, presentation to the National Meeting on Poultry Health and Processing by Dr. Victoria Bowes, Avian Pathologist, BC Ministry of Agriculture, Food & Fisheries, Oct 2004.

²² Written statement from Terry & Simon Shackleton, Surrey, BC, June 2004

the poultry industry and the controversy over the outbreak's handling with regard to public health have overshadowed these important aspects of the emergency.

Conclusion

It is clear that the potential threat to public health during BC's avian flu outbreak should be the prime focus of any review of the emergency. Many would argue that protecting the poultry industry and compensating affected farmers are also priority issues. But this does not mean less high-profile matters should be ignored. Millions of chickens, ducks, turkeys and birds (ranging from peacocks to emus) were killed during the outbreak and there are reasonable doubts about how and why they were killed. There are doubts about the CFIA's preparedness for humane mass cull; there are doubts about the ultimate choice of methodology (CO2 gas) used for culling and there are doubts about the scope of the cull (pets, specialty birds and some backyard flocks).

These doubts deserve to be addressed openly through a comprehensive examination of what took place and what alternative approaches might have been employed. The aim of such an examination would not be to point fingers or to apportion blame, but to learn lessons and gather knowledge for the development of protocols and operating procedures for future animal disease responses.

The development of such procedures, through an open and transparent process, would do much to satisfy public concerns over animal welfare when mass euthanasia is deemed necessary. Moreover, the risk of millions of animals suffering unnecessarily could be reduced and their chances of dying a humane death might be enhanced. This is surely an aim that would attract the support of the Canadian public.

References

Infection Control Issues of the Avian Influenza Outbreak in Abbotsford, BC, April 14, 2004, report by Linda Kingsbury, Infection Control Consultant, Health Canada, 2004.

Lambooij, E., M.A. Gerritzen, B. Engel, S. J. W. Hillebrand, and C. Pieterse. 1999. Behavioural responses during exposure of broilers to different gas mixtures. *Appl. Anim. Behav. Sci.* 62:255-265

Gerritzen, M.A., B. Lambooij, H. Reimert, A. Stegeman, and Spruijt. 2004. On-farm euthanasia of broiler chickens: Effects of different gas mixtures on behavior and brain activity. Poultry Science Association, Inc.

Hoer T., J Lankhaar. 1999. Controlled Atmosphere Stunning of Poultry. *Poultry Science* 78, 287-289.

A.B. Webster and D.L. Fletcher. 2001. Reactions of laying hens and broilers to different gases used for stunning poultry. Poultry Science Association, Inc.

Coenen, A.M.L., Smit, A.S., Zhonghua, L., & Van Luijtelaar, E.L.J.M. 2000. Gas mixtures for anaesthesia and euthanasia in broiler chickens. *World's Poultry Science Journal*, 56 (3), 225-234.

The killing of animals for disease control purposes. Report of the Scientific Veterinary Committee (EU), 1997.

Gerritzen, M.A., E. Lambooij, S.J.W. Hillebrand, J.A.C. Lankhaar, and C. Pieterse. 2000. Behavioral responses of broilers to different gaseous atmospheres. *Poultry Science* 79:928-933

The Need for Legislation and Elimination of Electrical Immobilization. Report by United Poultry Concerns. Karen Davis, PhD. 2002.

The Case for Controlled-atmosphere killing of poultry in transport containers prior to shackling as a means for more humane slaughter rather than electrical stunning. Report by the People for the Ethical Treatment of Animals. October, 2003.

Animal welfare problems in UK slaughterhouses – A report by Compassion in World Farm Trust, July 2001.

Addendum

Witness statements to Parliamentary Standing Committee on Agriculture and Agri-food

On January 18-19, 2005 the Parliamentary Standing Committee on Agriculture and Agri-food held a public hearing in Abbotsford, BC, to determine the facts of the Fraser Valley avian flu outbreak. Witnesses made statements to the committee alleging inhumane treatment of poultry and other birds by the CFIA during failed attempts to cull chickens and ducks.

Ken Falk, representing the BC Specialty Bird Association, told the committee that the CFIA had gassed up to 100,000 ducks on his farm with CO₂ gas three to four times before they died:

“They had to gas some of our barns three or four times to get the birds to die, as they kept reviving... Instead of stopping they forged ahead and gassed them again and again... The CFIA suffocated approximately 100,000 ducks and geese. They did so knowing that it wasn’t working while watching the animals suffer and kept on going... Keep in mind that these are not uneducated people who made the decision to kill the birds in this fashion – these are veterinarians.”

Rob Donaldson, owner of Bradner Farms Ltd., stated to the committee that similar problems had occurred with the CFIA’s efforts to gas chickens. He described one case in which 60 per cent of the chickens survived gassing with CO₂, adding that these were then “clobbered with sticks.”

Other witnesses gave statements alleging that the CFIA shot pet peacocks out of trees with shotguns (killing some and wounding others); unnecessarily killed specialty pigeons (which avian pathologists confirmed cannot transmit avian flu); and failed to kill an emu with a lethal injection on the first attempt, requiring a second injection.

This evidence and additional findings are expected to be published in full when the standing committee releases its on the outbreak report in March 2005.