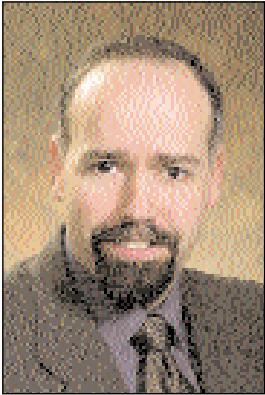


# Biorecurity now

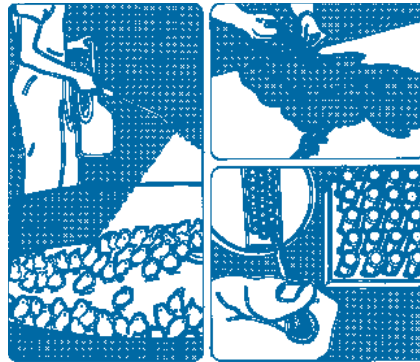


*Poultry health is the focus of this month's specially commissioned feature to celebrate POULTRY INTERNATIONAL's 40th birthday. Although technological advancements will certainly mark the next decade, it is people-related issues that will have the most significant impact on our ability to biosecure the poultry industry.—Dr Jean-Pierre Vaillancourt*

In his review (POULTRY INTERNATIONAL, January 2002) of predictions made by experts in this publication 15 years ago, the magazine's past editor, David Martin, stated, "they were correct that, in health control, the emphasis would be on high levels of biosecurity including regular health status monitoring and flock profiling". Mr Martin was writing from the UK. While it is true that biotechnology is offering us new and more accurate tests to assess health, high biosecurity and proper monitoring are still wishful thinking in many areas of intensive poultry production. Indeed, although we have had the knowledge and the means to achieve good biosecurity for decades, the new millennium has, so far, been witness to a very uneven application of biosecurity measures within the poultry industry. For example, differences in cleaning and disinfection protocols in France and the UK compared to the United States show not only a major divergence in attitudes between American and European producers but also how each group is regulated. One unifying point is that all members of the industry now recognise that some level of biosecurity is essential. If we use history as our guide, going back to basics will be in vogue over the next several years. One significant shift however can be expected. The industry, traditionally reactive, will become more proactive.

[Issues defining biosecurity today and tomorrow](#)

The past 40 years have seen a tremendous growth in the poultry industry, mainly in developed countries, but also in emerging economies such as those in Latin America. Integration of the industry has offered the economy of scale and ability to respond quicker and better to market demands, which are essential, as the industry faces



ever-narrowing profit margins. This has led dense concentration of poultry farms in some relatively small areas. Birds on these farms have better growth performance thanks to improved genetics and nutrition, but their immune system has not necessarily followed the same trend. At the same

time, scientists are discovering numerous immunosuppressive microbes. A comparison between commercially raised poultry and sister flocks grown under high levels of biosecurity and management suggests that we rarely achieve the genetic potential of modern poultry breeds under current commercial conditions.

The health status of poultry, and even its microbial status in absence of disease, has also become a key trade issue under a global market economy. Consumers are now demanding risk-free food. Animal rights advocates are learning to use public health concerns to press forward with their own agenda. Finally, the events of September 2001 in the United States have raised the likelihood of bioterrorism, if not in fact, at least in perception. These are turbulent times.

[How can we respond?](#)

Antibiotics won't provide an adequate shield given current concerns over antibiotic resistance and the preponderant role of viruses. Vaccines will always be useful and necessary but it takes time to develop them and we have had remarkable failures with agents such as turkey coronavirus. Many viruses also produce variants that keep us off balance. Even when available, trade issues or political considerations will

make it impossible to vaccinate our way out of disease problems.

Primary breeders could produce resistant poultry lines but given the spectrum of microbes invading our flocks, this won't be the solution. Transgenic birds could be produced, but consumers won't be receptive - at least, not for many years to come.

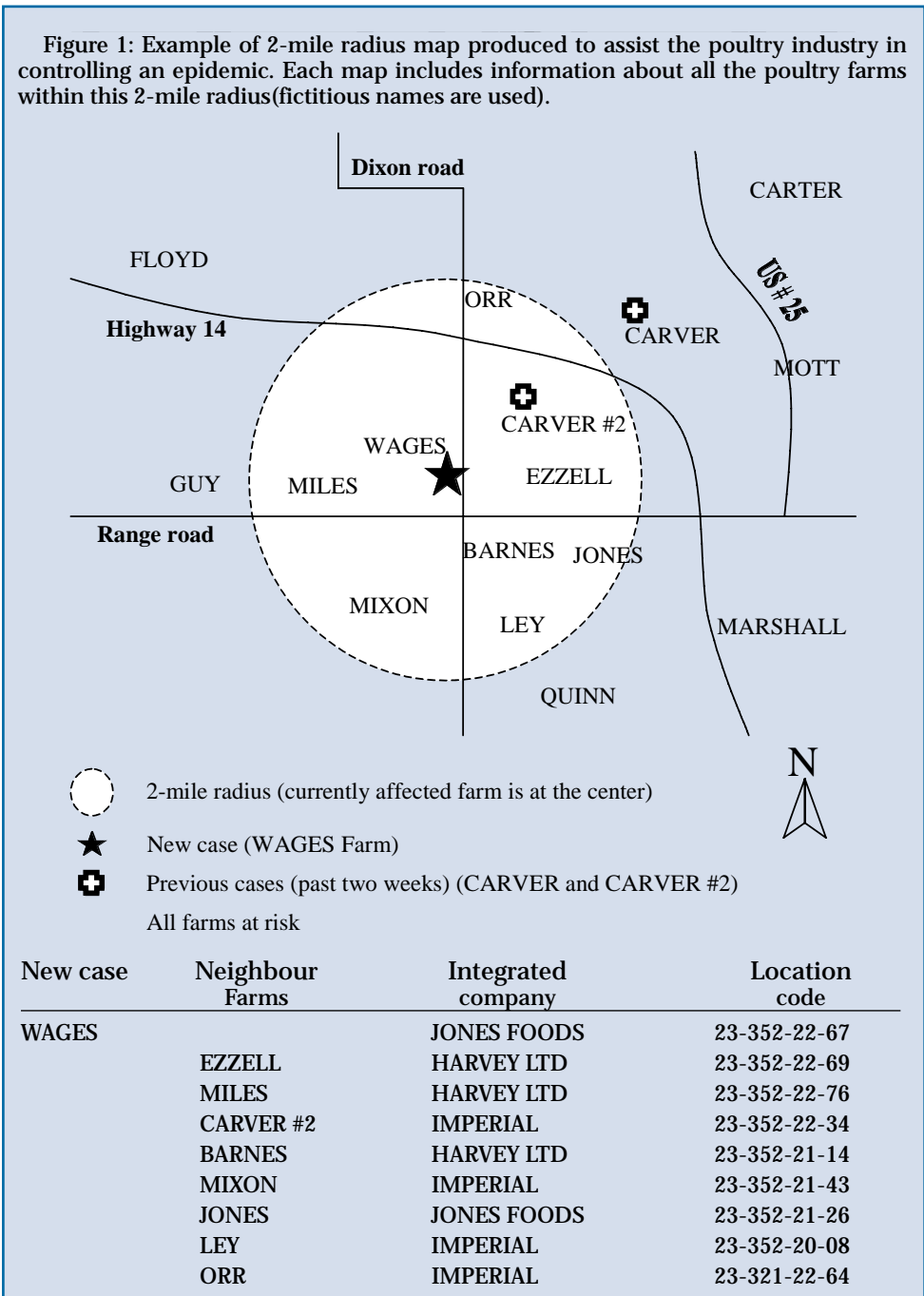
We simply cannot accept to live with many infectious agents, mainly those with the potential to affect human health. Hence, without neglecting these previous options, we must realise that biosecurity offers the only acceptable generic approach to face infectious challenges.

This is nothing new. Fumigation was recommended in Athens about 24 centuries ago and the Bible documents that soldiers returning from war were required to flame equipment and to plunge garments in boiling water. What's different today, however, is how we assess risks and how we will manage them if we are to be successful over the next 10 to 15 years.

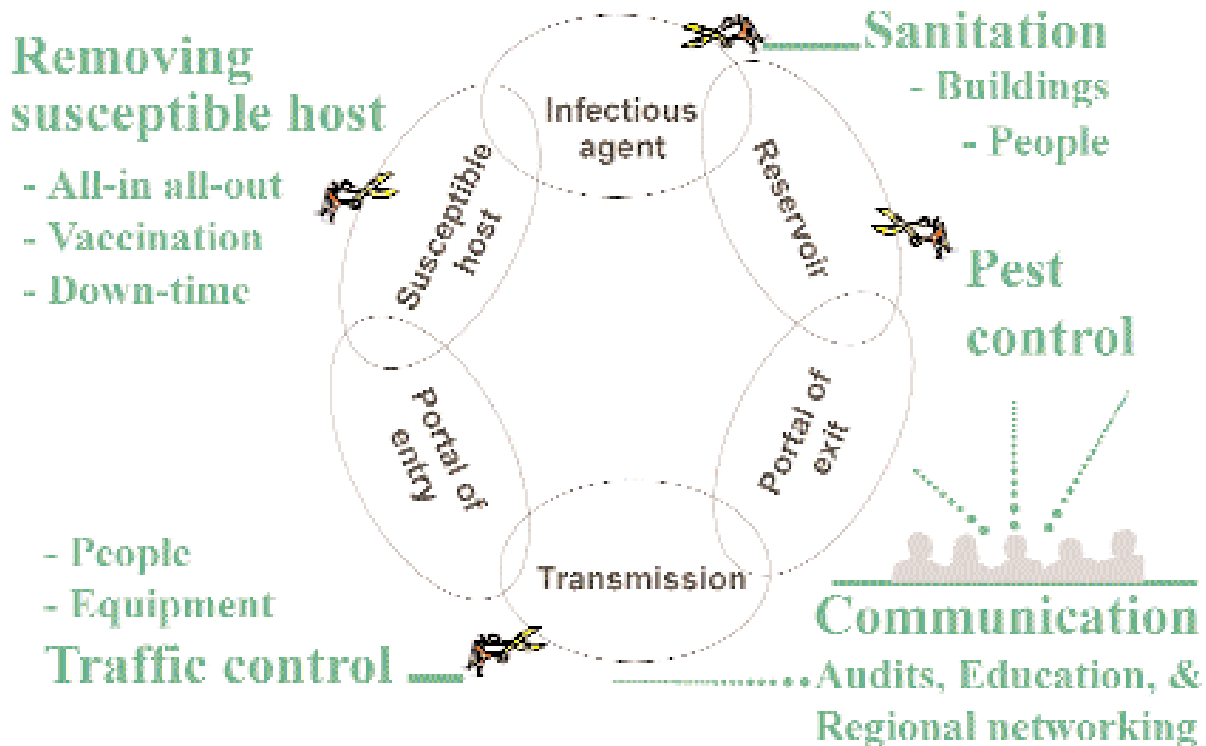
Risk assessment

Currently, the industry knows a lot about costs but has limited valid data on many factors that may affect the economics of poultry production. Current

and new generations of hardware and software programs will help capture and evaluate environmental and management factors in light of productivity and economic output. It will be possible to evaluate on an ongoing basis several factors at a time. These will include flock and feed characteristics, health status based on serologic and even metabolic profiles, vaccination records, sanitation procedures, litter condition, air quality, etc. Company and regional considerations such as number of farms in the area, and presence of endemic and epidemic diseases will also be taken into account for the design and application of biosecurity programs adapted to specific farm circumstances. Regions of the world tightly regulated for management and sanitation practices will see more of the same. However, a "one-size-fits-all" approach will not prove to be more effective unless compliance is far superior with this model.



## Top biosecurity measures to break the chain of infection



### Back to the basics

At the beginning of the previous century, cleanliness was the keyword. Effective cleaning and disinfection protocols already exist. However, many buildings are not designed to be easily cleaned. The need for low cost poultry housing in the United States means that dirt floors are the norm for grow-out facilities; porous materials such as wood are used for walls; the insulation material in the ceiling is not protected; and many buildings do not have an anteroom providing shelter for clean footbaths and facilities to wash hands. It will take time - certainly more than 10 years - but current facilities will be revised. Low-cost water- and detergent-resistant coating material appropriate for the inside of poultry houses will become available. Replacing used litter between flocks is a standard practice worldwide but it will not gain acceptance in the United States. However, litter management will improve, including the application of products allowing a more efficient recycling. Environmental and economic considerations will always dictate progress in this area. However, unless new federal regulations force drastic changes, nothing spectacular should be

expected. Instead, emphasis will be on washing and making sure that everything is allowed to dry thoroughly between flocks. Traffic control is another component of biosecurity that will receive prime attention.

### Compliance

The next decade will see an increase in procedures designed to assure that biosecurity measures are applied consistently. Companies will conduct regular audits to make sure that sanitation, traffic control and pest control are properly implemented. Penalties for non-compliance, such as product refusal, will serve as strong incentives. This will be in line with current efforts to bring HACCP to the farm. However, more positive approaches to compliance will be used as well. For example, education of all personnel will be a priority. Reward systems already in place in other corporate worlds will be adapted to the reality of the poultry industry. In other words, nothing spectacular or expensive but an effort will be made to recognise employees who consistently comply with company rules.

### Better communication

Improvement in biosecurity will parallel improvement in communication within and between companies. The stigma attached to having an infectious disease is real and often leads people to keep this information from others. Just being suspected of having a diseased flock may be enough to stop exports or affect business agreements. Silence has been shown to be even more costly. Although liability will always be a concern, pointing fingers has never been an effective disease control strategy and companies sharing a region will learn to also share the necessary information needed to contain contagious diseases.

E-mails, conference calls and video conferencing will be the main communication tools to support face-to-face meetings and disease control efforts. Key poultry leaders and decision-makers from local governments will be receiving the epidemiological information needed to act quickly if an epidemic emerges. Geographical information systems (GIS) will be commonly used out of the necessity to quickly determine the location of infected or diseased flocks (Figure 1).

This technology will serve several purposes:

- 1) it will be used primarily by industry to determine at-risk areas and to establish the best routes to avoid infected flocks or to avoid at-risk farms with contaminated material or infected birds;
- 2) it will also be useful to assess the geographical distribution of epidemics;
- 3) it will determine clustering and permit statistical evaluation of flock health status associated with proximity to specific sites;
- 4) it will be a powerful investigative tool when coupled with molecular techniques providing critical information on spread of disease agents.

This is not new technology but its acceptance and use will only grow over time.

### Regional perspective: acting quickly and accurately

All the above are in response to the need to take action faster and better. If we have learned anything from disasters such as the Foot-and-Mouth epidemic in the UK or the Avian Influenza outbreaks in Italy, it is that time is of the essence. The success of the modern poultry industry has also created an environment very favourable to highly contagious agents. In this environment, the window of opportunity to contain an epidemic is very narrow. The next 10 years will see the development of effective strategies for disease control that can be put in place in a region within hours.

### The future of biosecurity

The biosecurity ahead will not be much different than what we have now. However, it will be implemented based on better surveillance conducted by the industry. Computer based technologies will feed the information needed in a timely manner for decision-makers. Local governments will also play a significant support role by providing diagnostic expertise and better laboratory capacity in times of needs. It will even house and maintain geographical information systems, as is already the case in North Carolina. Local governmental institutions, including universities, will play a greater role because they offer a relatively stable environment for a specialised work force very much needed by industry for disease surveillance and control. Although technological advancements will certainly mark the next 10 years, it is people-related issues that will have the most significant impact on our ability to biosecure the poultry industry. — *Jean-Pierre Vaillancourt DVM, MSc, PhD, Poultry Health Management Group, College of Veterinary Medicine, North Carolina State University, USA*