

How Canada Plans to Stay Free of Foreign Animal Disease

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■ Introduction

Last June a computer simulation exercise called 'Dark Winter' was run in which smallpox virus was introduced into three shopping centres in Oklahoma, Georgia and Pennsylvania. In the nine days required to diagnose the first case, this infectious virus had spread to such an extent that vaccine stocks were insufficient for the affected areas. By the end of the second week there were 2000 cases in 15 states, the US borders were closed, all vaccine stocks had been exhausted. In the third week, the medical system had collapsed as 1600 cases were confirmed. The computer predicted 300,000 cases. Martial law was proposed.

We have all read about the fatal cases of anthrax which may have been introduced by terrorist organizations and about the panic that follows. People, specifically those working in governmental departments, were stocking up on respirators and antibiotics.

No less devastating to a country's economic health are infectious diseases, which affect livestock. In Alberta, current management practices include the rapid movement of animals into and out of and through the length and breadth of the province. If Foot and Mouth Disease (FMD) were introduced into an Alberta farm before animals were taken to an auction market or swine assembly point it could be spread from Vancouver to Rapid City within a couple of days. In the County of Lethbridge there would be three quarters of a million animals at risk.

Anyone not familiar with the costs to the economy of Great Britain caused by FMD must have been locked in his basement. And anyone who cannot imagine the cost in human emotional health of the mass slaughter and disposal of carcasses, has never raised livestock.

■ How can disease enter Canada?

We know that disease can enter maliciously. But why do terrorists do it? Envy of the easy life of those living in a developed country? Fear of the power to influence their particular way of life or system of beliefs? As vengeance for past wrongs, either real or perceived? Maybe all of these and maybe none but we should try to determine what the act was meant to achieve. In the case of the September 11th attack we must assume that it was to disrupt an already faltering economy and to cause panic. Risk over which one has no control assumes a much greater dimension than risks over which one thinks he has and is therefore more likely to cause panic. The anthrax attacks achieved further panic and had an economic effect as well. In addition to the sheer cost of the investigations, mail service is still important to most businesses as well as to private citizens and this service was disrupted in the United States.

The recent attempt by a newsman in an American city to show how easily contamination of the water supply might be accomplished was instructive. Cameras running, he slithered under the boundary fence, while being watched by some puzzled security officers, and showed that this facility could be penetrated quickly and easily. Some of the effect of this demonstration was lost when it was pointed out that he had actually got into the city's sewage treatment plant. If terrorists are as ill informed as the news media maybe we have little to fear. Don't depend on it.

Enough of terrorism. Much more easily accomplished would be the introduction of a livestock disease into a susceptible population. As mentioned above it would devastate the economy, tie up agriculture department personnel and resources so they could deal with nothing else, and likely extend into the defence forces of the country as they lent assistance to the civilian authority. We saw it happen, recently, in Great Britain.

More than half of Canadian agricultural production is exported. One out of every two calves born in Canada is exported. If an outbreak of a serious livestock disease, such as FMD, were to occur in Canada we would be served a crippling blow to the economy. In a simulated exercise conducted in a concerted effort by animal health officials of the United States and Mexico, the cost of containing and eradicating the disease was in excess of \$10 billion. An earlier Minnesota study supports this estimate indicating a similar cost accrued. One feature of this economic analysis that caught my eye was the ultimate reduction in the standard of living of the American people by an estimated 15%, in perpetuity. Could this not excite terrorists and achieve the goal in mind? And that is in the United States who exports about 10% of their agricultural production and could, if necessary, eat their way out of a surplus. Canadians could not.

A serious animal disease such as FMD, classical swine fever, avian influenza or rinderpest could enter the country in the personal effects of an innocent traveller. However, at the height of the FMD disease outbreak in the UK, a parcel containing sausage was mailed from England to a Canadian resident. Now the sender must have been living under a rock if he was unaware that he could be endangering the very people he thought he was being kind to, but these things happen. In this case, the package was picked up at the postal centre and destroyed.

There is the other kind of person who is not quite so innocent. This is the person who doesn't believe that safety precautions apply to him. For example, in Calgary, one incoming traveller avoided walking over the disinfectant mat by sliding along a railing. What he didn't realize was that the area beyond the obvious mat was also soaked with disinfectant. The other thing he didn't realize was that he was observed and his subsequent examination by the customs officials was a little more detailed than was comfortable.

A disturbing thought: Does this person raise livestock?

Then we have contraband. The Port of Vancouver handles in excess of 1.3 million containers per year. It is the most efficient port on the west coast of North America and receives freight from some of the most risky, from a disease standpoint, and the most corrupt countries in the world. About 25% of these contain articles of interest to our personnel. Settlers' effects arrive and the containers are generally sent inland under bond for examination at destination. This takes some pressure off some severely overworked port inspection personnel but the situation is still critical.

One example is the case of a container full of dried mushrooms from China. This shipment arrived in a refrigerated container and this naturally raised the suspicions of the inspector because dried mushrooms don't need refrigeration. Inside the container were 50 cases of hams completely ignored in the shipping manifest or any other documents. What disease agents could have come with those hams? FMD virus, hog cholera virus, swine vesicular disease virus, pseudorabies, who knows? Where was it going? To an ethnic restaurant or food store? Where would the resulting garbage, packaging and spoiled product go? To a landfill to be picked up by rodents or birds? Or to a garbage/swill feeder?

There are other examples of contraband and we have no illusions about being able to pick up and seize everything. What if the hams had arrived in a container labelled as frozen fish? We never would have had a suspicion and there are tons of frozen fish coming from Asian countries.

■ **What are we doing to prevent entry of disease organisms into Canada?**

First of all, from what I have told you already you can see that we are aware of how a foreign animal disease might enter Canada and the devastating effect it could have on Canadians. Not to mention the inhumane aspect of what it would represent in the affected animals.

The outbreak of FMD in Great Britain served a useful purpose although one is never very comfortable observing lessons learned at such terrible expense. The purpose it served was to clearly show veterinary authorities all over the world that a serious epidemic could enter any country. The horror of the outbreak drove home to, not only the veterinary authorities, but also to their political masters and to the public at large that this must not be permitted to happen here.

Canada has prepared for such an outbreak by conducting exercises designed to point out the weaknesses in the plans to fight a disease once it enters Canada. Therefore Canada has heightened surveillance of incoming travellers, immigrants and freight. Our inspectors, and the folks at Canada Customs and Revenue, are more alert and questioning about incoming people and goods. The airline companies have cooperated in showing in-flight videos produced by the Canadian Food Inspection Agency showing the danger of bringing in animal products such as meat and dairy products. Printed material is also available.

Upon arrival in Canada, travellers must complete a document which indicates what they are bringing into the country and also which countries they have visited prior to arrival. If they declare commodities which could carry disease agents, or if they have visited a farm during their travels, or intend to visit a farm in Canada during the first 14 days of arrival, Customs officials are cooperating by referring them to a CFIA inspector who will interview them to either confiscate material not permitted entry, or to advise them on safety precautions to take if they are deemed to be a risk in themselves.

Additional money has been provided to the Canadian Food Inspection Agency to employ more inspectors so that a higher percentage of incoming freight is being examined. We have trained, and placed in Canadian airports, additional "sniffer dogs". These are probably our most effective inspectors at discovering, animal products such as meat and cheese, live rodents and bird pets as well as plant products. I understand that a further four dogs are currently in the training program so that we should see a dog at every major international airport in Canada. These dogs work on both carry-on bags and checked luggage. Violators are ticketed at the airport and repeat offenders are levied a heavier fine. The presence of the dog, aside from picking up contraband, also serves as a deterrent.

Powerful X-ray machines are also in use that can detect dangerous contraband and they are set so that metal shows up as one colour, organic material such as paper and cloth as another colour, and plant and animal material as another. This makes detection quite easy and the machine works as the conveyer belt carries the bags and boxes along.

Canada's regulation of imports is critical to the effort to keep disease out of Canada. Before it is permitted into the country any product must have been processed using a method that meets the strict specifications of CFIA. Countries affected with FMD or classical swine fever, for instance, are not permitted to export to Canada any live animals or any product derived from susceptible species unless it is cooked. That is why for so many years the only meat product from Argentina or Brazil that you were able to find on grocery shelves was corned beef or tinned pork products. When Argentina was declared free from FMD they were permitted to export uncooked product. As soon as they detected and reported FMD, the Canadian border was closed to those products. Meat on the open sea was directed to Halifax for inspection of the date of production. Only the meat that had been processed prior to the earliest date that the disease could have entered the Argentina was permitted into Canada.

We were not the only people concerned about the outbreaks in Argentina. They occurred mostly in the Buenos Aires and Cordoba regions in the north of the country. Patagonia was free and very concerned about spread by domestic travellers. They established a '*cordon sanitaire*' preventing entry of livestock and animal products but felt more was required. I received a phone call asking me if we could provide one of the 'machines' we used to screen passengers. I had to admit that our machine was a dog! "Well, can you send us a dog then?"

Another initiative which was undertaken during the FMD outbreaks in Europe and South America was to send inspectors through the ethnic areas in a few of the major cities in Canada looking for contraband meat. Much of the contraband is fairly recognizable; foods not considered edible among most Canadians, but considered a delicacy, or folk medicine in Asian or African communities. CFIA inspectors in these areas were able to remove quite a lot of this material from grocery shelves. The problem is that as soon as surveillance is apparent, the product goes under the counter and is then very difficult to find.

One of the most important things that we have done is to create a public awareness of the danger of foreign animal disease. We can control live animal and animal product entry from infected or suspicious countries. We enlist the aid of the public to stop contraband as there are too many routes of entry for disease and limited staff working limited hours in predictable locations. With the public on our side we have a much better chance of preventing entry of this type of risk.

■ Risk Assessment

Speaking of risk, before a commodity which has not previously been imported into Canada, or if it is being imported from a country with no previous record of exporting that commodity to Canada, we do what is called a quantitative risk assessment. This takes into account the risk that the commodity might have been exposed to the disease agent, that it could carry the agent with it, and that it might become exposed to a susceptible animal. You can easily see that if one of these elements is absent, the chain of risk is broken and the commodity can be safely permitted entry.

With respect to FMD, classical swine fever, Aujeszky's disease and some others, we know that the live pig, if the disease occurs in the country, could have been exposed, and if exposed could carry the disease into Canada, and then would almost certainly transmit it to Canadian livestock because they would come into contact with them. The same is true of meat and other products such as semen and embryos. In the case of FMD disease and classical swine fever, we feel the risk is so great that we do not permit the animal or the product to enter Canada unless it is thoroughly cooked. This is of little help for someone who desires genetic material.

The safety feature here depends wholly upon the ability and the honesty of the exporting country to diagnose and report the disease when it occurs in their territory. About 145 countries are members of the Office International des Epizooties (OIE), based in Paris, France. This organization provides a list of very serious diseases such as FMD, African swine fever and other serious diseases of animals or of animals and humans that is designated as List A. Canada does not have any list A diseases. Another list of less serious but economically important diseases is designated List B and this list includes anthrax, rabies and Aujeszky's disease.

They also produce information, based on the reports received from member countries, of the diseases that occur within their territories. All members are required to report immediately any confirmed diagnosis of a List A disease. This information is then transmitted to every member country. This information can be obtained on the internet at <http://www.oie.int/>.

For diseases of lesser potential economic impact, List B diseases, we can employ mitigating measures such as quarantine and testing of animals prior to export and/or quarantine and retesting after importation into Canada. For semen we require that all the animals in the center are free from the disease as certified by a testing and observation regime. Embryos are a safer commodity because they can be washed free from certain diseases but in some circumstances we do impose quarantine restrictions on the recipients until we are sure that no infection occurred.

The measures that are taken are determined by the risk assessment considering the likelihood that each disease of concern might exist in the country and at what level, what is the disease situation in the herd of origin, how sensitive and specific is any test that might be applied and how likely the imported animal or product is to come into contact with a susceptible animal, and how many animals or shipments are likely to occur. The result is expressed in a numerical fashion such as the disease might enter Canada once in 433 years based on the information provided. The model was largely developed in Canada and is used by many progressive countries.

■ Exposure to Susceptible Animals

Probably the critical key to keeping out disease is ensuring that materials that pose a risk of transmitting disease are prevented from contacting a susceptible animal. When I started out in this business about 25% of the Canadian public were involved in agricultural production. Now it's less than 4%. The likelihood that a traveller will contact Canadian livestock is far less than it used to be. Additionally, the public is much more aware of the danger. What we are concerned about is what the traveller brings with him, or ships to Canada. Will that commodity get into the animal food chain?

We still have in Canada, at the time of writing, a number of licensed garbage feeders. This is not called garbage, or swill as they call it in England, it goes by a more palatable name, edible residual material. In order to be safely fed to pigs it must be boiled and our inspectors do not issue a permit to feed this material unless all the equipment necessary to ensure adequate heating is available. However, they are not there all the time to ensure that it is properly used on each occasion. This is exactly the problem that occurred at Haddon-on-the-wall in England, the material was collected from a variety of establishments, which might have obtained meat that had been illegally imported, and the operator of the farm was a particularly poor operator.

Since the outbreak swill feeding in the European Community has been outlawed. Should it be banned in Canada? What are the economic benefits of garbage feeding? Environmentally it is desirable to utilize this material, but do economic benefits outweigh the risks? I understand that a large part of the economic benefit to the farm operator in some cities is in the premium he gets for hauling the garbage away so it is really not such a benefit to the industry at all. Of course the risks are substantial in that the pig is so susceptible to several serious foreign animal diseases and the chance that contraband meat or dairy products could be present in the refuse collected from some inner city restaurants or stores.

The Health of Animals Regulations contains a list of diseases which are called reportable diseases. Every livestock owner and every veterinarian is compelled by law to report to CFIA every suspicion of a foreign animal disease on that list. Only by rapid reporting can we respond rapidly to the threat of a foreign animal disease. If we don't receive information that an outbreak may be underway we will be behind the eight ball just as the veterinary authority of Great Britain was. And you heard how they were struggling to get abreast of the disease for weeks before they could hope to get ahead of it. Compare that to the speed with which The Netherlands was able to deal with the same infection and you will appreciate the value of prompt reporting.

■ What more can we do?

We can, with your support, deal with the garbage feeding issue, if we haven't already. We can ensure that our guard doesn't slip and that we make sure we do the best job we can to prevent entry of disease. We can keep up the information flow to the industry and to the public. We can support you, the industry, in your attempts to protect your livestock.

We will continue to develop plans to allow us, and whomever we can get to assist us, to deal with a foreign animal disease should it ever enter the country. We have been working on this for decades and gradually are getting a better handle on how to deal with such a disaster. We sent our personnel to the Netherlands to assist them in their battle against classical swine fever, we sent others to Great Britain to assist them. In doing so we gave them an opportunity to learn about the diseases and the best way to deal with an emergency.

We also learned a couple of things that we should not do. We know that our personnel cannot deal alone with an outbreak of foreign animal disease but must have agreements in place with other government agencies and departments, both federal and provincial, to assist us. Many of these have essential authorities and skills that we do not. They have people who in the event of such a disaster will not have a job to go to and will be able to bring to the battle knowledge and assistance without which we would struggle unnecessarily. We are bringing into the equation industry representatives who can assist us in persuading their colleagues to do what is necessary to contain the outbreak. We know we can't do it alone but this is not the subject we are dealing with. We are dealing with prevention, and that is by far the most efficient way to deal with the threat.

■ What can you do?

Eradication of an animal disease and prevention of its occurrence in a country is very difficult if not impossible if the people raising the livestock are not progressive and aware. It is easier if the livestock are raised by comparatively few people who have a sizeable investment in them, in the infrastructure, and in the industry. It is nearly impossible if the livestock population consists almost entirely of small backyard herds and flocks, which a person can lose without a great deal of financial pain. It is nearly impossible to reach those producers and to inform them of the risk and of better ways to manage their operations or provide adequate biosecurity.

Fortunately we are in a good position in this country. Most pigs and cattle are raised in fairly large, well run groups by owners who have a lot to gain by doing things right and more to lose if they don't. More than that, you are in a position now to hear more about how you can protect your own livestock by employing good sanitation and biosecurity measures. I cannot leave you without telling you again, we will do our best to keep out disease bearing animals and animal products. Some products will slip by us and you must do your part to make sure that any that do, never reach your farm to infect your livestock and destroy what you and in many cases, your fathers and grandfathers have spent lifetimes building. You alone have jurisdiction over who visits your farm and who gets to come into contact with your livestock. You are the front line in disease prevention.