North American Plan

For Avian & Pandemic Influenza

Developed as Part of the
Security and Prosperity Partnership of North America

August 2007

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List Of Acronyms

AI	Avian Influenza
CFIA	Canadian Food Inspection Agency
CI/KR	Critical Infrastructure/key Resource
CIP	Critical Infrastructure Protection
CIPG	Critical Infrastructure Protection Group
CISEN	Center For Investigation And National Security (Mexico)
CONOP	Concept Of Operations
DFAIT	Department Of Foreign Affairs And International Trade (Canada)
DHS	Department Of Homeland Security (U.S.)
DOD	Department Of Defense (U.S.)
DOS	Department Of State (U.S.)
DOT	Department Of Transportation (U.S.)
EOC	Emergency Operations Center
FAO	Food And Agriculture Organization
GCCP	General Coordination For Civil Protection (Mexico)
GDP	Gross Domestic Product
GOC	Government Operations Centre (Canada)
HA	Hemagglutinin
HHS	Department Of Health And Human Services (U.S.)
HPAI	Highly Pathogenic Avian Influenza
HPNAI	Highly Pathogenic Notifiable Avian Influenza
HSPD	Homeland Security Presidential Directive (U.S.)
ICAO	International Civil Aviation Organization
IHR	International Health Regulation
IVPI	Intravenous Pathogenicity Index
LPAI	Low Pathogenic Avian Influenza
LPNAI	Low Pathogenic Notifiable Avian Influenza
MOA	Ministry Of Agriculture (Mexico)
MOFA	Ministry Of Foreign Affairs
MOH	Ministry Of Health (Mexico)
MOI	Ministry Of Interior (Mexico)
NAFTA	North American Free Trade Agreement
NAI	Notifiable Avian Influenza
NCHS	National Committee For Health Security (Mexico)
NGO	Non-governmental Organization
NOC	National Operations Center (U.S.)
NRP	National Response Plan (U.S.)
OIE	World Organization For Animal Health
PHAC	Public Health Agency Of Canada
PS	Public Safety Canada
SPP	Security And Prosperity Partnership Of North America
UN	United Nations
USD	U.S. Dollars
USDA	United States Department Of Agriculture
USG	United States Government
WHO	World Health Organization
WTO	World Trade Organization

Executive Summary

Canada, Mexico and the United States face a growing threat posed by the spread of avian influenza and the potential emergence of a human influenza pandemic. The highly pathogenic (HPAI) H5N1 avian influenza virus, which re-emerged in Asia in late 2003, has already spread to Europe, the Middle East and Africa. Although the virus has not yet reached North America, Canada, Mexico and the United States must be prepared for the day when it—or some other highly contagious virus—does.

At the March 2006 Security and Prosperity Partnership of North America (SPP) summit in Cancun, the leaders of Canada, Mexico and the United States committed to developing a comprehensive, coordinated and science-based North American approach to prepare for and manage avian and pandemic influenza.

The North American Plan for Avian and Pandemic Influenza outlines how Canada, Mexico and the United States intend to work together to combat an outbreak of avian influenza or an influenza pandemic in North America.

The Plan complements national emergency management plans and builds upon the core principles of the International Partnership on Avian and Pandemic Influenza, the standards and guidelines of the World Organization for Animal Health (OIE), the World Health Organization (WHO)—including the revised International Health Regulations, as well as the rules and provisions of the World Trade Organization (WTO) and the North American Free Trade Agreement.

The North American Plan will enhance collaboration in order to:

- detect, contain and control an avian influenza outbreak and prevent transmission to humans;
- prevent or slow the entry of a novel strain of human influenza to North America;
- minimize illness and deaths; and
- sustain infrastructure and mitigate the impact to the economy and the functioning of society.

This Plan outlines a collaborative North American approach that recognizes controlling the spread of avian influenza or a novel strain of human influenza, with minimal economic disruption, is in the best interest of all three countries. Coordination among Canada, Mexico and the United States will be critical in the event of an avian influenza outbreak or pandemic. The Plan, therefore, describes the organizational emergency management frameworks in each of the three countries and how they intend to coordinate their activities. In particular, the three countries recognize the importance of communicating effectively with the public about avian and pandemic influenza in a cooperative and coordinated matter.

Both animal and public health issues are addressed in the Plan, including notification, zoning and compartmentalization, surveillance, epidemiology, laboratory practices, vaccines and antivirals, personnel, stockpiles and public health measures.

The Plan also addresses border and transportation issues, including containment measures for air travel, maritime travel and land border crossings. A series of layered, collaborative measures among the three countries could slow the spread of a novel strain of influenza, providing valuable time to mobilize resources, coordinate responses, and mitigate morbidity and mortality.

Maintaining critical infrastructure and services will be essential during a pandemic. While influenza cannot physically damage critical infrastructure, a pandemic could weaken it by diverting essential resources or removing essential personnel from the workplace. This Plan, therefore, extends beyond the health sector to include a coordinated approach to critical infrastructure protection, including the importance of business continuity planning and recognition of interdependencies among sectors.

Taken together, the measures outlined in this Plan to address both avian and pandemic influenza, as well as related border and critical infrastructure issues, are intended to provide a comprehensive, coordinated North American approach to managing avian and pandemic influenza.

Chapter 1: Introduction

Canada, Mexico and the United States face a growing threat posed by the spread of avian influenza and the potential emergence of a human influenza pandemic. The highly pathogenic H5N1 virus, which re-emerged in Asia in late 2003, has already spread to Europe, the Middle East and Africa. While the virus has not yet reached North America, the three countries must be prepared for the day when it—or some other highly contagious virus—does.

The North American Plan for Avian and Pandemic Influenza (Plan) outlines a collaborative North American approach that recognizes that controlling the spread of avian influenza or a novel strain of human influenza, with minimal economic disruption, is in the best interest of all three countries. It outlines how Canada, Mexico and the United States intend to work together to prepare for and manage avian and pandemic influenza.

The Avian And Pandemic Influenza Threat

An influenza pandemic occurs when a new influenza virus emerges against which the majority of the human population has no immunity. It spreads easily from person to person, causes serious illness, and can sweep across the country and around the world in a very short time.

Although a pandemic influenza virus, by definition, causes disease in humans, it can arise from mutations in an animal virus, such as avian influenza. Wild waterfowl are the natural reservoir for influenza A viruses, which generally do not cause disease in the birds that are infected. When these viruses are passed to domestic chicken and turkey populations, however, they may mutate and become more pathogenic.

The H5N1 Eurasian strain of the influenza A virus has infected birds in over 59 countries and jurisdictions and has resulted in the deaths, through illness and culling, of over 240 million birds. The virus is now endemic in parts of Southeast Asia, present in long-range migratory birds, and unlikely to be eradicated in the short term.

The H5N1 virus is capable of infecting a wide range of hosts, including humans. Although the virus has not yet shown an ability to transmit efficiently among humans, there is concern that it will acquire this capability through genetic mutation or exchange of genetic material with a human influenza virus. If this does not happen with the currently circulating H5N1 viruses, history suggests that another novel influenza virus will emerge and cause the next influenza pandemic.

Influenza pandemics have occurred intermittently over the centuries. The last three influenza pandemics, in 1918, 1957 and 1968, killed approximately 40 million, two million and one million people worldwide, respectively. Although the timing of an influenza pandemic cannot be predicted, history and science suggest that the world will face at least one influenza pandemic this century. A worldwide outbreak of a new influenza virus could result in hundreds of thousands of deaths, millions of hospitalizations, and hundreds of billions of dollars in direct and indirect costs to North American economies.[1]

North American Cooperation To Address The Threat

In March 2006, the leaders of Canada, Mexico and the United States agreed to advance the agenda of the Security and Prosperity Partnership of North America (SPP)[2] by addressing the threat of avian and pandemic influenza. Cooperation on avian and pandemic influenza is one of five major priorities outlined by the leaders to be addressed within the SPP.

Since the social and economic health of the three countries is closely intertwined, political leadership and cooperation at all levels is needed. The security and

1 U.S. National Strategy for Pandemic Influenza, November 2005

2 In March 2005, the Prime Minister of Canada, the President of Mexico and the President of the United States announced the establishment of the Security and Prosperity Partnership of North America (SPP) to increase security and enhance prosperity among the three countries through greater cooperation and information sharing. The leaders met again in March 2006 to assess the progress of the SPP and to reaffirm their commitment to enhancing the security, prosperity and quality of life of citizens within North America. The SPP continues to establish leader-level priorities for trilateral and bilateral initiatives, give existing efforts additional momentum, and create new programs and initiatives where necessary and appropriate.

prosperity of the three countries are interdependent and complementary.

While recognizing the differences in respective legal and governmental frameworks among the three countries, their governments acknowledge the need to work collaboratively and with all levels of government, the private sector and among non-governmental organizations to combat avian and pandemic influenza.

The three leaders set out a framework for cooperation on avian and pandemic influenza, which includes a series of principles to guide collaboration. The leaders also announced their intent to establish an avian and pandemic influenza Coordinating Body to follow up on commitments. The development and implementation of the North American Plan works in conjunction with other trilateral mechanisms and ongoing efforts under the SPP to fulfill the vision set out by the leaders.

Principles for Cooperation

At the March 2006 meeting in Cancun, Mexico, the leaders of Canada, Mexico and the United States determined that the following principles are to guide collaboration on all stages of avian or pandemic influenza management:

- Share information among our governments in an open, timely and transparent manner;
- Adopt an integrated and comprehensive approach that incorporates animal and public health aspects in managing avian influenza outbreaks and influenza pandemics;
- Ensure coordination within our respective national governments on all aspects of emergency management for an avian influenza outbreak or a human influenza pandemic, by building on existing mechanisms of cooperation and strengthening these mechanisms as required;
- Coordinate actions and leverage our respective capacities to ensure that rapid and effective steps are taken to deal with avian influenza outbreaks or a human influenza pandemic in North America;
- Advise one another in advance of making any decision that could seriously affect the other countries;
- Base our actions on the best available science and evidence-based decision making;
- Agree that the imposition and removal of veterinary or public health measures on the movement of people, animals and goods, under our national laws and international obligations, will not be more restrictive or maintained for a longer period than necessary to achieve the veterinary or public health objective, so as to avoid unnecessary interference with the movement of people and goods within North America;
- Ensure that the business continuity plans of our respective governments consider the highly interconnected nature of our economies; and
- Strive to utilize clear and consistent messaging to the public and international organizations that is proactive, timely and accurate.

A Comprehensive Approach

Given the broad health, social and economic impacts of an avian influenza outbreak or influenza pandemic, the three countries recognize that their approach must be comprehensive. Preparing for such an emergency requires coordinated action nationally, internationally and by all segments of society. The purpose of this Plan is to enhance collaboration among Canada, Mexico and the United States in order to:

- Detect, contain and control an avian influenza outbreak and prevent transmission to humans;
- Prevent or slow the entry of a novel strain of human influenza to North America;
- Minimize illness and deaths; and
- Sustain infrastructure and mitigate the impact to the economy and the functioning of society.

Although influenza will not physically damage critical infrastructure, systems may be weakened by the absence of essential personnel in the workplace or the diversion of resources. This Plan, therefore, extends beyond the health and medical sectors to include provisions in relation to critical infrastructure and the movement of goods and services across our borders.

The North American Plan for Avian and Pandemic Influenza provides a framework for:

- The basic structure and mechanisms for trilateral emergency coordination and communication;
- Collaboration on the prevention, control and eradication of highly pathogenic strains of avian influenza;
- Collaboration on a North American approach to pandemic influenza preparedness and response, including border monitoring and control measures to stop or slow the spread of a novel human influenza virus; and
- Collaboration on a North American approach to keeping critical infrastructure and essential systems functioning properly in the event of an influenza pandemic.

The Plan recognizes and builds upon the core principles of the International Partnership on Avian and Pandemic Influenza (International Partnership), the standards and guidelines of the World Organization for Animal Health (OIE), the World Health Organization (WHO)—including the International Health Regulations (IHRs) as well as the rules and provisions of the World Trade Organization (WTO)—and the North American Free Trade Agreement (NAFTA). It also considers the role of the United Nations Food and Agriculture Organization (FAO) in coordinating global strategies for the control and eradication of highly pathogenic avian influenza, as well as the role of the United Nations (UN) System Influenza Coordinator in ensuring cooperation and coordination within the UN system on initiatives to address the avian influenza epidemic and threat of a human pandemic.

The International Partnership was launched at the UN General Assembly in September 2005. The goals of the partnership include:

- Elevating the avian influenza issue on national agendas;
- Coordinating efforts among donor and affected nations;
- Mobilizing and leveraging resources;
- Increasing transparency in disease reporting and improving surveillance; and
- Building local capacity to identify, contain and respond to an influenza pandemic.

The WHO has developed international guidance on pandemic preparedness and response, including a series of six pandemic phases.[3] The WHO efforts are intended to improve international coordination, transparency and management of risk in responding to such threats. The WHO's international guidance formed much of the basis for the three countries' planning for North American pandemic preparedness and response.

OIE provides guidelines, advice and standards to prevent, diagnose and respond to outbreaks of notifiable avian influenza (NAI) within the Terrestrial Animal Health Code (2006) and the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (2004). These documents also provide standards and guidelines outlining how countries should provide international notification and continue to trade in poultry and poultry products prior to, during and following an outbreak.

Similarly, the FAO's role in combating highly pathogenic avian influenza is to facilitate direct technical and resource assistance to help national governments align their prevention, control and response efforts with OIE guidelines. The FAO channels support to infected countries to assist their efforts to control the disease and provides assistance to countries at risk of introduction of the disease. These efforts are now augmented by a rapid response capability through the newly established FAO-OIE Crisis Management Center.

This Plan is not intended to replace existing arrangements or agreements. As such, each country's laws are to be respected and this Plan is to be subordinate and complementary to domestic response plans, existing arrangements and bilateral or multilateral agreements.

3 http://www. who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5/en/index.html

Chapter 2: Emergency Coordination & Communications

Canada, Mexico and the United States intend to coordinate their emergency management activities, including public communications. The three countries share a common approach based on the four pillars of emergency management: prevention and mitigation, preparedness, response and recovery. Canada, Mexico and the United States intend to work collaboratively in each of these areas to manage the threat of avian and pandemic influenza.

- **Prevention and mitigation** activities are directed at minimizing the effects of an avian or pandemic influenza, including direct outcomes (e.g., illness and death) and indirect associated effects (e.g., economic and social impacts). The three countries intend to implement these activities in a series of steps that would be coordinated to the greatest extent possible.
- **Preparedness** requires that national contingency plans be in place for activities associated with an outbreak, including surveillance, detection, containment and response efforts. Training and regular joint exercises with stakeholders to practice and test these plans are essential.
- **Response** activities will depend on the characteristics of the avian or pandemic virus (virulence, attack rate, groups at highest risk, patterns of transmission), which cannot be known in advance. If necessary, the three countries intend to implement activities such as animal or public health measures, information sharing and non-pharmaceutical interventions (hand washing, isolation of the sick, etc.) apply them consistently and regularly, and assess their efficacy to determine whether adjustments to a planned response are necessary.
- **Recovery** activities enable the restoration of "normal" or pre-pandemic service levels. The three countries intend to initiate these post-event activities as soon as possible, recognizing that they may start at different times across the continent as the pandemic waves move through geographic areas.

Overview of Federal Emergency Management Structures

Canada, Mexico and the United States each have designated organizations, plans and facilities in place, consistent with their governmental structures and authorities, to manage these activities during an outbreak of avian influenza or an influenza pandemic.

Canada

Emergency management responsibilities in Canada are shared by federal, provincial and territorial governments and their partners, including individual citizens who have a responsibility to be prepared for disasters. Provincial and territorial governments have responsibility for emergency management within their respective jurisdictions. The federal government exercises leadership at the national level relating to emergency management responsibilities in its exclusive fields of jurisdictions and on lands and properties under federal responsibility.

Key Federal Organizations

- **Public Safety Canada** is the federal department that coordinates the overall federal government's domestic response efforts and provides support to government and key national players in responding to events of national significance. Within Public Safety Canada, the Government Operations Centre (GOC) operates around the clock as a mechanism to communicate and coordinate with federal, provincial and territorial emergency operations centers.
- **The Canadian Food Inspection Agency (CFIA)** is mandated to take the lead role in responding to animal health emergencies and has developed many detailed plans and procedures in collaboration with the Public Health Agency of Canada, WHO and others. The CFIA is the primary agency responsible for prevention, preparation and response to an avian influenza outbreak, supported by Public Safe-

ty Canada. The CFIA has collaborative agreements with federal and provincial government partners that outline roles and responsibilities prior to and during an avian influenza outbreak.

- **The Public Health Agency of Canada (PHAC)** monitors the international and domestic influenza situation and has developed *The Canadian Pandemic Influenza Plan for the Health Sector* in collaboration with provincial/territorial representatives. PHAC is the primary federal agency addressing pandemic influenza preparedness and response, supported by Public Safety Canada and Health Canada.

- **Health Canada** engages and coordinates efforts among domestic and international health partners. The department is also responsible for supporting preparedness and response efforts in First Nations on reserve and Inuit communities; ensuring regulatory preparedness, including accelerated approval of a pandemic influenza vaccine; and spearheading federal workplace health initiatives.

- **The Department of Foreign Affairs and International Trade (DFAIT)** is responsible for the coordination of Canada's international response, including international efforts to contain the spread of a pandemic virus; communicating with foreign governments and international organizations; and managing foreign offers of assistance. DFAIT is also responsible for providing travel advice and responding to the consular needs of Canadians in distress.

Emergency Plans

The Canadian Pandemic Influenza Plan for the Health Sector. The aim of this guidance document is to support health sector planning at the facility, local, regional, provincial/territorial and federal level. It covers prevention, preparedness and response activities including surveillance, vaccine programs, use of antivirals, health services, public health measures and communications.

Notifiable Avian Influenza Hazard Specific Plan. This plan outlines the response to be undertaken by the Canadian Food Inspection Agency (CFIA) when there is suspicion of a developing outbreak of notifiable avian influenza (NAI) or when an outbreak occurs.

The Government of Canada Coordination Contingency Plan for Avian and Pandemic Influenza. The aim of this "whole of government" plan is to coordinate responsibilities across the federal government and other agencies.

An Emergency Management Framework for Canada. The aim of this framework document is to enable consolidation of federal, provincial and territorial collaborative work and ensure more coherent, complementary action among the different federal, provincial and territorial government initiatives.

Mexico

Key Organizations

- **The Ministry of Health of Mexico (MoH),** as the head of the **National Committee for Health Security (NCHS),** is the lead agency for coordinating national preparedness and response activities related to public health emergencies such as an influenza pandemic, supporting the development and implementation of plans at the federal, state and local levels. The NCHS includes all the federal areas of responsibility relevant to the response to a pandemic (civil Protection, health sector, armed forces, agriculture, environment, communications and transportation, law enforcement). The MoH directly carries out epidemiological surveillance and laboratory confirmation, as well as health care services organization, regulation and provision. The preparedness and response activities to an influenza pandemic are stated in the *National Preparedness and Response Plan for Pandemic Influenza,* first published in September 2005.

- Emergency management of any kind in Mexico is coordinated by the **General Coordination for Civil Protection (GCCP) of the Ministry of the Interior.** The GCCP distributes available resources for emergency response and operates through a network of municipal and state civil protection agencies. In case of an influenza pandemic, the NCHS and the National Committee for Civil Protection will work together for addressing the threat.

- Since 1996, Mexico has had a strong avian influenza eradication campaign led by the **Ministry of Agriculture (MoA),** which is the federal agency

responsible for protecting poultry production in the country. The MoA works closely with the **Ministry of the Environment (MoE),** which is responsible for monitoring disease activity in migratory and other wild bird species that could endanger the poultry industry. Disease surveillance, laboratory diagnosis, inspection of farms and other facilities, and regulation of importation and exportation are among MoA activities.

- The **Secretariat of Foreign Affairs** will be responsible for coordinating interactions of Mexico with other foreign governments and international organizations at senior levels, and will also direct the overall flow of international cooperative efforts. Furthermore, it will make assistance and guidance available to ensure consular protection to the Mexican population living or travelling abroad during a pandemic.

Emergency Plans

The *National Preparedness and Response Plan for Pandemic Influenza* establishes the general principles for mitigating the impact of a pandemic in the country and serves as guidelines for the development of state, local and institutional preparedness plans. It includes activities to be carried out by the institutions of the NCHS in six lines of action: health promotion and risk communications, coordination, epidemiological surveillance and laboratory, health care provision, strategic stockpile, and research and development.

United States

Key Organizations

- **The Department of Homeland Security (DHS)** is responsible for the coordination of the federal government's operations and resources, the establishment of reporting requirements and the conduct of ongoing communications for domestic incident management. In the context of a pandemic, as with any other domestic incident in which more than one department is involved, the Secretary of Homeland Security is responsible for providing overall coordination as the Principal Federal Official, in accordance with the *National Response Plan*. DHS will coordinate actions with regard to overall non-medical support and response. DHS will also ensure necessary support to public health and medical emergency response efforts coordinated by the Department of Health and Human Services. Within DHS, the **National Operations Center (NOC),** a standing 24-hour, seven-days-per-week interagency organization that fuses law enforcement, national intelligence, emergency response and private sector reporting, is the primary national hub for domestic incident management, operational coordination and situational awareness. The NOC facilitates homeland security information sharing and operational coordination with other federal state, local, tribal and non-governmental emergency operations centers.

- **The Department of Health and Human Services (HHS)** will lead federal efforts with regard to public health and medical response efforts to a pandemic influenza. The HHS Secretary will be the principal federal spokesperson for public health and medical issues, coordinating closely with DHS on public messaging pertaining to the pandemic. HHS published a *Pandemic Influenza Plan* in November 2005 and the *HHS Pandemic Influenza Implementation Plan* in November 2006, both of which serve as blueprints for HHS pandemic influenza preparedness planning and response activities.

- **The Department of State (DOS)** coordinates the federal government's international engagement to promote development of global capacity to address pandemic influenza. DOS also coordinates the federal government's international efforts to prepare for and respond to a pandemic, including facilitating the interagency process to identify countries requiring U.S. assistance, identifying priority activities and ensuring federal government assistance reflects those priorities.

- **The Department of Defense (DOD)** will support primary federal departments (DHS, HHS, and DOS) and state governments in limiting the impact of pandemic influenza and sustaining critical infrastructure functionality. DOD will work with the Canadian Department of National Defence and the Mexican Ministry of Defense and military organizations to ensure a cooperative effort in applying military resources to prepare for and

contain a pandemic influenza. DOD will respond to requests for assistance from the United States Government and will apply available resources with approval of the Secretary of Defense.

- **The Department of Agriculture (USDA)** works together with federal, state and industry partners to protect the United States against the rapid spread of highly pathogenic H5N1 avian influenza. Safeguards include trade restrictions; wild bird monitoring; federal, state and industry testing of poultry; federal inspection procedures at slaughter and processing plants; and rapid response plans. USDA also participates in coordinated overseas efforts to slow the spread of avian influenza in poultry.

- **The Department of Transportation (DOT),** in cooperation with other key domestic (e.g., HHS, DHS and DOS) and international partners (e.g., Mexico's Secretariat of Communications and Transportation), is responsible for the coordinated development and implementation of transportation-focused plans to slow the spread of an avian influenza outbreak or influenza pandemic. DOT also works with these key stakeholders on preparedness, prevention, response, mitigation and recovery efforts intended to sustain the U.S. transportation system, as well as counterpart systems in partner countries. Recognizing the special challenges posed by the global aviation system, DOT's Federal Aviation Administration (FAA) is particularly active in working with its domestic partners, as well as with its Canadian and Mexican counterparts, on the above efforts.

Emergency Plans

- The White House released the *National Strategy for Pandemic Influenza* and subsequently the *Implementation Plan* for the strategy. These documents guide the U.S. Government's efforts to prepare for and respond to avian and pandemic influenza.

- The *National Response Plan (NRP)*, administered by DHS, is the core plan for managing domestic incidents. It details the federal coordinating structures and processes used during incidents of national significance, including the federal pandemic response. It also defines federal departmental responsibilities for sector-specific responses and provides the structure and mechanisms for effective coordination among federal, state, local and tribal authorities, the private sector and non-governmental organizations (NGOs).

International Legal Framework

Canada, Mexico and the United States are States Parties to the International Health Regulations (2005)[1], or IHRs, and, as member countries of the World Organization for Animal Health (OIE), observe the guidelines and standards provided in the OIE *Terrestrial Animal Health Code (2006).*

In the event of an outbreak of avian influenza, each country would advise the OIE on confirmation of the isolation and identification of a virus described in the *Terrestrial Animal Health Code* as notifiable avian influenza, and implement contingency plans to control and/or eradicate the virus from domestic poultry operations.

In the event of an influenza pandemic, the IHRs provide a legal framework under which States Parties and the WHO secretariat are to work together to protect against and control the international spread of disease while avoiding unnecessary interference with international traffic and trade. The IHRs establish a transparent process to be followed by the WHO and IHR States Parties in response to public health emergencies of international concern. Provisions in the IHRs obligate States Parties to:

- Notify the WHO of all potential public health emergencies of international concern that occur within their territories;

- Develop, strengthen, and maintain core capacity for surveillance, reporting, and response; and

- Establish a national focal point as the contact point for the WHO on all IHR matters.

1 Prior to the IHRs' entry into force, the WHO's 59th World Health Assembly in 2006 adopted a resolution that called upon WHO Member States to "comply immediately, on a voluntary basis, with provisions of the International Health Regulations (2005) considered relevant to the risk posed by avian influenza and pandemic influenza." Canada, Mexico and the United States voluntarily implemented relevant provisions of the IHRs.

North American Coordination

Canada, Mexico and the United States have established the senior level Coordinating Body on Avian and Pandemic Influenza[2] to facilitate planning and preparedness within North America for a possible outbreak of avian and/or human pandemic influenza. This Coordinating Body is to serve as the contact group in the event of an outbreak of highly pathogenic avian influenza or a novel strain of human influenza. It is to convene to support rapid and coordinated decision making, facilitate information sharing and address other coordination issues. Because the trilateral Coordinating Body includes senior officials from most of the key agencies that would be involved in supporting the response to an avian influenza outbreak or pandemic influenza, it is intended to play a significant role in promoting coordination among the three countries at senior official levels.

Each country intends to use existing emergency management structures for decision making at the national level. Canada, Mexico and the United States are to review existing emergency coordination and communication mechanisms and enhance the exchange of detailed operations plans.

Emergency Response Assistance

The provisions according to which Canada, Mexico or the United States may request emergency response assistance of one another include:

- When national human or material resources are overextended;
- When an avian or pandemic influenza event in any of the three countries poses a potential threat to either of the other two countries; or
- When an avian or pandemic influenza outbreak requires robust coordination of the North American response in order to minimize the risk to animal and public health, minimize damage, and provide the basis for long-term social and economic recovery.

Joint Exercises And Training

Canada, Mexico and the United States intend to work to enhance the interface among their respective emergency management/response structures through joint exercises and training. The three countries should make every effort to:

- Implement multilateral, scenario-driven exercises involving internal and external stakeholders to test planning actions;
- Continually assess preparedness activities to adjust objectives, effects and actions based upon changes in the economic and social environments; and
- Continuously assess planned response and recovery actions so that they remain the best projected actions to achieve success.

Specifically, the authorities of Canada, Mexico and the United States intend to conduct trilateral or bilateral exercises to assess and strengthen their emergency response and contingency plans. In addition, each country intends to design and deliver training to maximize the effectiveness of its respective emergency response and contingency plans. Wherever possible, training and exercises should be designed to maximize stakeholder involvement.

Avian and Pandemic Influenza Communications

Accurate and timely information before and during an outbreak of avian or pandemic influenza will be critical to the successful management of the situation. The public, governments and their key stakeholders need appropriate information to make effective and timely decisions.

This purposeful exchange of information among governments, the public and stakeholders, designed to prompt appropriate action, is generally referred to as "risk communications." A common understanding of and approach to the subject of risk communications can help reduce the consequences of an outbreak of disease, including loss of life, serious illness, and social and economic disruption.

2 The Terms of Reference for the Coordinating Body on Avian and Pandemic Influenza can be found in Annex 2

Coordinated risk communications planning should:

- Create strong communications networks (nationally and internationally);
- Define clear expectations of what governments will communicate during an outbreak of avian or pandemic influenza; and
- Develop consistent and coordinated messages.

Effective communications to manage a potential risk involve more than the sharing of information in response to an outbreak of disease. Individuals require information in advance of an event to develop an understanding of the potential effects of an outbreak in either humans or birds and to take appropriate action. Once an outbreak has begun, individuals may have limited ability to absorb and respond to new information.

The three countries, therefore, recognize the importance of risk communications and believe they should be incorporated in avian and pandemic preparedness planning as a key mitigation strategy.

Risk communications activities that the three countries may pursue include:

- Consulting with key organizations to solicit input and advice;
- Gauging the level of knowledge and concern among individuals and groups and the barriers to adopting appropriate behavior; and
- Disseminating information advising how people can protect themselves if an outbreak of avian or pandemic influenza were to occur, (e.g., information on personal protective measures).

Coordinated Communications

Canada, Mexico and the United States intend to communicate effectively about avian and pandemic influenza in a cooperative and coordinated manner, as described below:

- All three countries recognize that collaboration on communications efforts at all stages of avian and pandemic influenza management will minimize the possibility of conflicting information or contradictory messages;
- Every effort should be made to cooperate and communicate openly in order to help instill confidence in the North American response and recovery strategies and activities;
- Each country recognizes that the challenges to be faced will differ in each stage of response to avian or pandemic influenza. The three countries intend to work together to focus on common elements for informed decision making and actions;
- The objectives of each country's communications efforts should focus on coordinating actions and pursuing common approaches to achieve proactive, timely and accurate communications.

To achieve these goals, the three countries intend to:

- Meet regularly on communications issues and seek opportunities to work together on communications planning and messaging;
- Establish procedures and pathways to exchange pre-release information during the event;
- Identify appropriate communications point persons from each country to maintain regular contact, share information, and identify and address emerging issues;
- Develop plans for communications coordination during the actual event of an outbreak of avian or pandemic influenza;
- Undertake the development of risk communications strategies to provide stakeholders with information on disease prevention, disease recognition, bio-security procedures and their responsibilities in the event of an incursion of avian or pandemic influenza;
- Pursue the development of risk communications strategies in relation to pandemic influenza to help decision makers and individuals make well-informed decisions and take appropriate actions on health risk issues to help reduce mortality, morbidity and socio-economic disruption;
- Develop key messages related to avian and pandemic influenza for the specific use of senior officials;

- Pursue the development of communications messages for avian influenza and both pre-pandemic and pandemic periods. Messages would focus on core themes such as efforts to control spread of avian influenza, import/export measures, border measure, etc.;
- Share best practices and identify gaps in behavioral research;
- Develop a research agenda based on this information;
- Develop procedures and pathways for how communications networks will operate during the event (e.g., regular conference calls, etc.); and
- Commit to developing opportunities to exercise the planned response.

Chapter 3: Avian Influenza

Avian influenza (AI) is an infectious and contagious viral infection affecting most species of wild and domestic birds. Infrequently, the virus has been found to cross into and cause disease in unrelated species including pigs, cats, dogs, ferrets, martens and humans. Transmission of the virus from one bird to another occurs primarily through direct contact – typically through contact with respiratory secretions or feces. Airborne transmission may occur if birds are in close proximity and with appropriate air movement. Infection with the virus may result in asymptomatic birds , as is found in many waterfowl and shorebird species, or a diversity of disease manifestations, as seen in domestic poultry, varying from sub-clinical disease, mild respiratory disease and loss of egg production to an acute and highly fatal disease. Most AI viruses found in birds do not appear to pose any significant health risk to humans.

Since 1955, virtually all highly pathogenic outbreaks in domestic poultry have been attributed to viruses of the H5 and H7 subtypes. These subtypes have repeatedly demonstrated the tendency to mutate from low pathogenicity strains to highly pathogenic forms while circulating within poultry populations.

Since 2003, trade in domestic poultry and the movement of migratory birds has resulted in the spread of the H5N1 Eurasian strains to numerous countries in Asia, Africa, the Middle East and Europe. Although the number of human infections remains low, the mortality rate in those infected is high. To date, there has been no sustained, efficient human-to-human transmission of the H5N1 Eurasian strains, so direct contact with infected birds (mainly poultry) remains the greatest risk of human infection. Of particular concern is the possibility of re-assortment of genetic material between human and avian influenza viruses when they simultaneously infect the same swine or human host. This re-assortment could result in the formation of a new influenza virus subtype with pandemic potential.

The World Organization for Animal Health (OIE) sets international standards for the prevention, control and eradication of animal diseases of significance. It manages the "world animal health information system" based on the commitment of member countries to notify the OIE of listed "notifiable" diseases. Canada, Mexico and the United States are OIE member countries. Consistent with OIE guidelines under the *Terrestrial Animal Health Code,* each country has a legal framework that requires the suspicion of a notifiable avian influenza (NAI) virus to be reported immediately to the competent veterinary authority. Veterinary infrastructure should be sufficient so that the competent veterinary authority can isolate and characterize the avian influenza virus, immediately investigate the suspicion of disease and respond to, control or eradicate the disease. The basis of response to any detection of NAI in poultry is contained within the OIE's *Terrestrial Animal Health Code.*

Notifiable Avian Influenza

The conditions under which avian influenza viruses are subject to OIE notification are set out in Chapter 2.7.12 of the OIE *Terrestrial Animal Health Code.* The competent veterinary authority of a country may choose to include more AI virus subtypes within its domestic notification protocols, but is encouraged to follow the OIE notification conditions in its dealings with its North American trading partners.

The competent veterinary authority of each country should notify its counterparts of any new NAI infections using pre-established contacts in the respective governments.

Zoning And Compartmentalization

In the event of an incursion of NAI virus into North American poultry, the three countries, as WTO Members, must comply with Article 6 of the *Agreement on the Application of Sanitary and Phytosanitary Measures (WTO SPS Agreement)*, including Article 6.2 which requires that WTO Members "shall, in particular, recognize the concepts of pest- or disease-free areas and areas of low pest or disease prevalence." This could

entail the implementation of "zoning" or "compartmentalization,"[1] per OIE guidelines.

When establishing a zone or compartment, the competent veterinary authority of the affected country should clearly define and document the basis for its claim that the subpopulation is a distinct zone or compartment. It should provide for sufficient human and financial resources for the maintenance of such a zone or compartment and see that the veterinary and industry infrastructures have the required technical capacity. The birds belonging to a zone or compartment should be clearly recognizable as such and measures taken for the identification of the subpopulation should be documented in detail. Confirmation of the disease-free status of a zone or compartment should be maintained through effective monitoring as well as active and passive surveillance.

Where zoning or compartmentalization has been established for the purposes of maintaining international trade, the competent veterinary authority of the exporting country should provide the importing country with the necessary documentation to confirm that the zone or compartment is epidemiologically closed and that an appropriate surveillance and monitoring system is in place to verify its disease-free status. The competent veterinary authority of the importing country may then conduct a science-based risk assessment based on the information provided by the exporting country and provide, within a reasonable period of time, written notification to the exporting country of its recognition of the zone/compartment, a request for further information or its rejection of the zone/compartment.

The following commercial poultry compartments have been identified in Canada and the United States. The commercial poultry compartments for Mexico are pending signature of the Chief Veterinary Officers' Memorandum of Understanding Regarding Compartmentalization:

- Broiler, turkey or layer breeder production flocks;
- Duck breeder and upland game breeder flocks;
- Commercial (grow out) broiler and turkey flocks (meat-type birds);
- Commercial duck and goose meat-type production flocks;
- Pullet production flocks;
- Commercial layer (table egg) flocks; and
- Commercial poultry flocks used for the production of other commercial products such as feathers (down) and foie gras.

Surveillance/Epidemiology

Surveillance for NAI should be aimed at demonstrating the absence of NAI virus in the poultry sectors while also acting as an early detection system for incursions of NAI in poultry and highly pathogenic NAI (HPNAI) incursions in wild waterfowl. The competent veterinary authority of a country may choose to expand its surveillance program to include the identification of more AI virus subtypes than required by the OIE. The data collected should support the risk assessment process and substantiate the rationale for all biosecurity measures in place. The surveillance system should be under the direction of the competent veterinary authority in each country.

The competent veterinary authority of each country should promote the establishment of a formal and ongoing system for detecting and investigating suspected NAI infection. Procedures should be established so that all suspected cases of NAI are sampled rapidly, that the samples collected are appropriate for the species under investigation, that there is a mechanism in place to rapidly transport the samples to an approved NAI diagnostic laboratory and that the integrity of the samples is maintained at all times. The competent veterinary authority should promote the establishment of an effective system in place for the recording, managing and analyzing of diagnostic and surveillance data. Access to real-time data is of particular importance in an outbreak situation, since it will drive the control and prevention strategies. Methodologies used should be based on the best available information that is in accordance with cur-

1 As stated in the current Chapter 1.3.5 of the OIE Terrestrial Animal Health Code – 2006, 'Compartment' means one or more establishments under a common biosecurity management system containing an animal sub-population with a distinct health status with respect to a specific disease or specific diseases for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade. 'Zone/region' means a clearly defined part of a country containing an animal sub-population with a distinct health status with respect to a specific disease for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade. (http://www.oie.int/eng/normes/mcode/en_chapitre_1.1.1.htm#terme_compartiment)

rent scientific thinking and should be fully documented, referenced to the scientific literature and supported by expert opinion. All processes should be transparent for the purpose of fairness, the rationality and consistency of decision making, and to facilitate ease of understanding. The surveillance systems used should be subject to periodic auditing so that all of the systems' components are functioning according to the design criteria.

Surveillance programs should include imported poultry and birds for the pet trade, as well as birds for research and zoological display purposes.

Poultry Surveillance

The surveillance program for poultry should include both active and passive data collection for all levels of the production, marketing and processing chain, and all compartments within the poultry population. Ideally, it should include all susceptible poultry species but may be targeted to poultry populations at specific risk due to types of production, contact with wild birds, trade patterns or other significant factors. Active surveillance should occur at a frequency of at least six months, or according to recognized and established national surveillance program requirements, e.g., USDA's National Poultry Improvement Plan. Surveillance methods should include both random and targeted approaches using virological, serological and clinical methods with known and validated sensitivity and specificity.

In countries, zones or compartments where vaccination has been used to prevent the spread of HPNAI, surveillance programs should utilize virological and serological testing regimens that verify the absence of AI virus circulation as set out in Article 3.8.9.7 of the *OIE Terrestrial Animal Health Code.*

Wild Bird Surveillance

Effective wild bird surveillance provides an early warning system for potential or real threats that may exist in the wild bird population. Surveillance would allow an appreciation of changes in the types of AI viruses circulating in wild birds and detect any H5/H7 subtypes present that could result in the emergence of a highly pathogenic strain in domestic poultry. Advance warning would enable the poultry sector to adopt enhanced biosecurity measures and allow poultry surveillance programs to be targeted to those populations or compartments at increased risk.

The competent veterinary authority should collaborate with wildlife agencies, universities and others to increase surveillance of wild birds, with an emphasis on waterfowl and shorebirds migrating from other mainland continents. Wild bird surveillance should be conducted at least annually during the periods when the movement or entry of migratory wild birds may pose an increased risk to domestic poultry. Wild bird surveillance programs should include active and passive methodologies and should include live and dead bird sampling.

Border Control Measures Associated With Notifiable Avian Influenza

Each country should apply proper and proportional import health measures when NAI is confirmed and reported. These measures are intended to maintain the animal health status of the importing country while minimizing the impact on the trade of poultry, poultry products and other products from avian species among Canada, Mexico and the United States. Import measures applicable to NAI should be based on the *OIE Terrestrial Animal Health Code,* including chapters on NAI and Zoning and Compartmentalization, and consistent with the WTO Agreements, particularly the WTO SPS Agreement and the NAFTA, particularly Chapter Seven, Part B (Sanitary and Phytosanitary Measures).

To enable a common approach that is both consistent and uniform among the countries, Canada, Mexico and the United States recognize that conditions for regional trade should be established to minimize unnecessary trade disruptions among the three countries. This is reflected in the understanding entitled *Agreement Between the Chief Veterinary Officers (CVO) of the United States and Canada For Reporting and Applying Measures When Notifiable Avian Influenza Is Confirmed in Each Respective Country (2006),* contained in Annex 3. Mexico and the United States are developing a similar understanding based on OIE guidelines. Mexico's measures are pending trilateral discussion on the CVO's Memorandum of Understanding.

The competent veterinary authorities in each country should establish links with their respective border control

agencies to develop procedures to control legal imports and to detect illicit imports.

When a highly pathogenic variety of avian influenza exists outside North America, each of the three countries should enhance inspection methods to detect illicit trade in animals and commodities from the affected countries. Regulatory enforcement information related to the detection of illegal trade should be shared among Canada, Mexico and the United States.

Laboratory Practices

The laboratories conducting testing for the avian influenza virus should be authorized or certified by the country's Reference Laboratory to perform these test methods, and should follow the tests and procedures recommended in the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.* These include serological tests, virus identification/isolation and virus characterization. Reporting to OIE should be based on the "recognized standard," which includes virus isolation, complete subtyping of any H5/H7, the genetic sequencing of the hemagglutinin (HA) cleavage site and Intravenous Pathogenicity Index (IVPI) testing in chickens. All viral isolations and characterizations should be confirmed at a Reference Laboratory.

Procedures should be developed so that adequate supplies of diagnostic materials/reagents are available in the event of an NAI outbreak. These procedures should include provisions for the import/export of diagnostic materials/reagents among Canada, Mexico and the United States, as well as contingencies for the rapid cross-border movement of diagnostic specimens and isolates.

Contacts should be established among animal health, avian-influenza-virus testing laboratories in the three countries to recognize the methodologies, proficiency and equivalence of methods used for the diagnosis of avian influenza. Linkages should be established/strengthened between the animal health and the public health laboratory systems in each country to improve the exchange of information and to enhance public health surveillance. Information technologies should be examined to identify opportunities that would enhance rapid data transfer.

Avian Influenza Vaccines

Vaccination is recognized as a valuable tool and as part of an overall comprehensive management strategy to control and eradicate avian influenza in the affected and at-risk avian populations. Although vaccination has been shown to increase resistance to infection and reduce virus shedding, it is understood that the virus is still able to infect and replicate in clinically healthy vaccinated birds. Countries employing vaccination should be able to differentiate infected from vaccinated animals, or determine the absence of NAI virus through comprehensive surveillance programs that include environmental sampling, in accordance with the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.*

Each country should develop and implement a vaccination strategy that is effective within the scope of its disease control methodologies. This strategy should include a reliable system of monitoring and surveillance to identify rapidly any serious problems arising from the use of vaccines.

The competent veterinary authorities of the three countries intend to develop protocols to harmonize the circumstances under which vaccines would be employed. International arrangements or agreements should be developed to provide for an adequate supply of avian influenza vaccine in the event of a North American outbreak, including a mechanism for the rapid cross-border movement of vaccines.

Personnel

The three countries should regularly assess the capacity of their operational and laboratory systems to provide for sufficient capacity for the performance of routine surveillance as well as of expanded surveillance during an NAI isolation in domestic poultry or wild birds. The competent veterinary authority should have emergency disease response contingency plans in place and the capacity to deploy properly trained staff to manage and direct disease eradication and control measures when required.

The three countries may seek the assistance of staff with skills and experience from international sources to respond to an avian influenza outbreak. Contingency plans to expand the available resource base should be in

place in the event that current resources are exceeded, and should be shared among Canadian, Mexican and U.S. veterinary authorities. Procedures that would allow rapid entry and deployment of emergency responders across international, provincial and state jurisdictional boundaries should be considered within the contingency plans of each country. The competent veterinary authorities should identify and address barriers to the movement of animal health/veterinary personnel across international, provincial and state jurisdictional boundaries. Countries should have well-developed health and safety protocols for personnel that may be exposed to the virus, including the use of influenza vaccines and antiviral medications where necessary. Contingencies should include the possibility of exposure to NAI strains, which have the potential to result in human-to-human transmission.

Avian Health Information Sharing and Notification

The three countries should strive for open communication and sharing of information regarding the occurrence of NAI virus in domestic poultry so that proper, responsible and proportional import health measures can be applied by each country when NAI virus is confirmed and reported. When requested, Canada, Mexico and the United States intend to share with one another information on their isolates of NAI virus in poultry and highly pathogenic avian influenza (HPAI) virus in wild birds, and in birds other than poultry. Confirmation of NAI should include virus isolation, H5/H7 complete subtyping and genetic sequencing of the HA cleavage site of the HA protein. Notifications of any NAI should follow OIE guidelines as well as chief-veterinary-officer-to-chief-veterinary-officer agreements, and should occur between the corresponding import/export staff of each country. These notifications should minimize the impact such measures would have on the trade of poultry, poultry products and other products from avian species among the countries.

Avian and Human Health Interface

The emergence of the highly pathogenic H5N1 viruses has demonstrated the potential zoonotic impacts of certain strains of HPAI viruses given a coincident combination of epidemiologic factors – susceptible host, agent and environment – according to the principles of the epidemiological triad. Two of the most effective methods of protecting human populations from exposure to NAIs are by prevention and control of any exposure to domestic poultry of NAIs and by rapid containment and eradication of NAI-infected birds should an introduction occur. Prevention of domestic poultry exposure can be best achieved through the implementation of comprehensive surveillance programs, biosecurity protocols and adoption of effective import controls. Prevention of human exposure can be best achieved by adopting procedures to protect the health of individuals working in environments where HPAI virus may be found and by organizing public education programs on the importance of good hygiene and sanitation practices. Human health authorities should develop contingency plans that identify the risk to human health of low pathogenicity and highly pathogenic avian influenza viruses in wild and domestic birds, and should adopt appropriate response measures to manage the potential risks for the human population at risk.[2]

Human health authorities in Canada, Mexico and the United States should share best practices in occupational health, infection control and personal protective measures to reduce potential risk to human populations.

The competent veterinary authorities in the three countries should establish the appropriate contacts within their respective public health sectors for the purpose of consistency in the approach to public communications. Regular meetings should be held to review the communications framework, to identify emerging issues and to share communication products, where appropriate.

2 The Public Health Agency of Canada has developed guidelines entitled "Human Health Issues Related to Avian Influenza in Canada," available at http://www.phac-aspc.gc.ca/publicat/daio-enia/pdf/nat-ai-guide-2006_e.pdf

Chapter 4: Pandemic Influenza

Canada, Mexico, and the United States recognize that controlling the spread of a novel strain of human influenza with minimal economic disruption is in the mutual best interest of all three countries. This chapter, therefore, assumes that a focus on preventing or delaying the spread of a novel strain of human influenza or mitigating the impacts of pandemic influenza must serve public health, social and economic goals. Likewise, this chapter and any resulting measures that may ensue are to be based on sound science and recognize that decision making on public health questions also needs to reflect cultural, ethical, legal, economic, logistical and political considerations.

Recognizing the mutual benefits of a coordinated response to an outbreak of pandemic influenza, the three countries intend to assist one another in domestic and international pandemic influenza preparedness efforts. They intend also to work together to implement appropriate public health measures at the shared borders. Health officials from the three countries intend to meet regularly to:

- Identify new areas and build on existing areas of collaboration;
- Identify challenges to the implementation of the North American Plan;
- Identify areas where the three countries need additional assistance; and
- Identify opportunities to exercise pandemic influenza preparedness and response planning.

Surveillance, Epidemiology And Laboratory Practices

Objectives for strengthening surveillance, epidemiology and laboratory practices among the three countries include the following:

- Enhancing epidemiological, surveillance and laboratory capabilities;
- Improving rapid detection of infection with influenza strains that have pandemic potential;
- Promoting collaboration on the epidemiological and laboratory assessment of infection with influenza strains that have pandemic potential; and
- Enhancing timely communication on surveillance, epidemiological and laboratory data.

Surveillance and Epidemiology

Canada, Mexico and the United States intend to share non-nominal epidemiological and surveillance data and information as appropriate. To this end, the three countries intend to:

- Develop operating procedures/processes for the sharing of human influenza epidemiological and surveillance information before and during an emergency, including:
    * Examining information technologies to identify opportunities that would enhance rapid data transfer, and
    * Sharing surveillance protocols and data interpretations;
- Establish and test mechanisms for communication among institutions according to specific functions for exchanging epidemiological information;
- Align with the WHO case definitions;
- Share regular situation reports with essential epidemiological data, in the event of a pandemic;
- Identify areas of technical assistance needed for laboratory, surveillance and outbreak response;
- Provide technical assistance through cross-border projects to bolster surveillance efforts for seasonal and pandemic influenza; and
- Establish approaches to collaborating on North American outbreak investigations, and collaborate on investigations and response efforts, as feasible and appropriate.

Laboratory Practices

The cross-border transport of specimens and isolates by federal, provincial and state laboratories in the three countries before and during a pandemic can facilitate diagnosis and contribute to the development and/or evaluation of reagents, tests, vaccines and antiviral drugs. The three countries should review and improve procedures to permit these materials to cross their borders without delay or payment of customs duties or fees. The three countries should continue to develop and exercise mechanisms for border security officials to facilitate the rapid exchange of laboratory samples, reagents, supplies and specimens. They should also improve chain-of-custody protocols for the proper and safe handling of the sample and reagents. The three countries should share existing procedures so that adequate supplies of diagnostic materials/reagents are available in the event of a pandemic influenza outbreak.

Building on the existing capacity, Canada, Mexico and the United States intend to collaborate on the following activities:

- Continue technical review and the sharing of assay methods, reagents and virologic data related to human cases of influenza; and
- Strengthen operating procedures/processes for the sharing of laboratory information before and during an emergency, including:
    * Examining information technologies to identify opportunities that would enhance rapid data transfer;
    * Sharing data, data analyses, and data interpretations;
    * Enhancing laboratory-to-laboratory communication; and
    * Assessing the need for and providing additional training in laboratory diagnostics.

Pandemic Influenza Vaccines And Antivirals

Objectives related to pandemic influenza vaccines and antivirals include:

- Establishing information exchange on pandemic influenza vaccine and antiviral research; and
- Identifying regulatory issues that affect the assessment and approval of a pandemic vaccine and antiviral drugs.

Research and Development

Each SPP country recognizes the need for improving the capacity to produce pandemic influenza vaccines. As such, experts from the three countries should share their strategies for securing supply, including building domestic vaccine production capacity. In addition, these experts should also establish linkages and share information on research and development related to human influenza vaccines. To the extent possible, the three countries intend to use existing international fora for these discussions.

To the extent possible, the three countries should do the following:

- Support basic and applied research on influenza vaccines and antivirals;
- Communicate future research needs and areas of interest specific to seasonal and pandemic influenza;
- Provide the scientific community with access to information including genome sequence information;
- Share information with the research community through presentations, scientific publications, and discussions at international scientific meetings and workshops; and
- Share information, as appropriate, regarding clinical trials of vaccines and therapeutics for influenza.

Regulatory Issues

To the extent possible, the three countries intend to work to develop compatible regulatory approaches for developing and approving pandemic influenza vaccines, through existing international efforts.

Personnel And Materials

The extent to which the three countries would be able to share personnel and materials across borders during a pandemic depends on unknown factors, such as the severity, phase and duration of a pandemic. The three countries intend to work domestically with appropriate jurisdictions as well as together to facilitate the rapid exchange of epidemiological, laboratory and medical personnel during a pandemic. In the case of medical personnel exchange, licensure issues should be addressed.

SPP objectives related to the sharing of personnel and materials in a public health emergency include the following:

- Facilitating the ability to provide personnel assistance in a pandemic;
- Establishing public health liaisons; and
- Enhancing information sharing on stockpile planning.

Mutual Assistance

In accordance with SPP deliverables and throughout the North American Plan, Canada, Mexico and the United States intend to plan for and provide personnel and material assistance, to the extent possible. The countries intend to continue to:

- Identify the roles of federal, state/province and local governments during a public health emergency;
- Identify legal and regulatory challenges to the exchange of medical personnel, countermeasures and supplies in the event of a public health emergency; and
- Identify possible federal solutions to allow the three countries to more effectively and efficiently assist one another during a public health emergency, where state, provincial and local jurisdiction is limited.

Personnel Exchange

It is possible that a state or province will request additional health care personnel through its national government to respond to an emergency. Because each state or province in the United States and Canada, respectively, controls the licensure of health professionals, the national government should encourage its states or provinces to develop procedures for the exchange of licensed personnel that may include the temporary, rapid recognition of existing licenses or certificates. In the case of the Mexican states, the Federal Labor Law governs licensure. Thus, movement of personnel among and within the Mexican states and municipalities requires no additional procedures. Issues such as liability, indemnification and proper documentation necessary to work in the other countries should be addressed through relevant national, state or provincial authorities.

Canada, Mexico and the United States intend to establish protocols for the exchange of appropriate public health liaison officers. Each country, at the request of one of the other countries, should deploy a liaison officer to the public health department/agency of that country on an ongoing basis. The public health liaison officer should act as a liaison for the other national public health department/agency, facilitate communications among emergency operations centers (EOCs) and be a point of contact for the officer's particular national public health agency. The countries intend that the public health liaison officer do the following:

- Facilitate the exchange of comprehensive descriptions of response systems within their federal governments, including key functions and updated lists of key contact personnel for each country's public health emergency management teams; and
- Share information, including surveillance and epidemiology data, and standard operating procedures for the response to pandemic influenza.

Stockpiles

While the three countries may have different goals for their respective pandemic influenza medical stockpiles, they should work together to do the following:

- Share information on their strategies to stockpile materials related to pandemic influenza, in particular:
    - Share their publicly available stockpiling goals for pandemic influenza countermeasures and other pandemic influenza medical materials, and

    * Where possible, share their planning and/or modeling assumptions used when determining the contents of their pandemic influenza medical stockpiles;

- Cooperate with one another in the development of their stockpiles of material related to pandemic influenza:
    * Identify areas in which they need technical assistance in the development of national stockpiles, and
    * Meet annually to identify areas in which they need additional cooperation;
  - Share shelf-life extension strategies;
  - Share strategies on the mass distribution of stockpile material:
    * Share their methods for distributing stockpile material, and
    * Identify distribution challenges and alternative distribution strategies; and
  - Share best practices on the current use of, and issues related to, stockpiles:
    * Share allocation strategies for the use of a pandemic influenza vaccine and antivirals, as developed and updated, and
    * Share antiviral strategies for containing an initial focus of novel influenza virus of pandemic potential, as developed and updated.

Public Health Measures

Canada, Mexico and the United States will attempt to contain a novel strain of human influenza at its source, slow its spread to and reduce its impact in North America. These efforts should allow the appropriate movement of people and cargo across mutual land borders and ports of entry in a way to achieve the public health objective with minimal social and economic impact. Each country should gauge the severity of the influenza pandemic and implement public health measures and/or community-based interventions accordingly.

In the absence of scientific efficacy data for many of the potential public health measures, this Plan is intended to help facilitate a coordinated approach to community disease control. This should reduce the need to explain and justify divergent approaches at the time of a pandemic and may also optimize public confidence at a time of much uncertainty. Many of the recommendations are contingent upon local triggers; therefore, the timing of their implementation would not necessarily be simultaneous across the countries. Ideally, however, the types of measures and public health messages should be consistent. In general, the three countries concur that when persons infected with a novel virus first appear, aggressive measures may be valuable in slowing its spread, attenuating the impact or possibly containing an evolving pandemic. Once the virus is widespread in North America, mitigation measures may be modified based on considerations with respect to any benefit they may have.

The three countries recognize that issues of feasibility, logistics, impact, acceptability and compliance in implementing public health measures are shaped by the context in which they would be implemented.

To the extent possible, and in the context of local epidemiology, the countries intend to use the WHO phases as "triggers" to inform implementation of public health measures. The countries intend to share information on their planned approaches to public health measures such as the following:

- Public education (e.g. on hand washing, staying home from work, workplace infection control);
- The use of antivirals and vaccines;
- The use of personal protective equipment (e.g. masks and personal respirators);
- Social distancing measures, including school closures and the prohibition of community gatherings;
- Travel and border public health measures; and
- Isolation and quarantine.

Travel and border public health measures should be compatible with the revised IHRs (2005), should be tailored to the status of pandemic disease within North America and the level of public health risk associated with cross-border movement, and should recognize the mutual benefits of ongoing trade and economic activity.

Chapter 5: Border Monitoring & Control Measures Associated with Pandemic Influenza

If a novel strain of human influenza emerges outside North America, the three countries intend to work together to slow the introduction of the virus to the continent by preventing infected individuals from entering Canada, Mexico or the United States. There will also be a WHO containment effort to contain the spread of the virus at its source. Emphasizing a *North American approach,* rather than individualized approaches among Canada, Mexico and the United States, may be the best way to slow the spread of a novel strain of human influenza into our respective countries. Strong disease surveillance systems coupled with appropriate screening at all North American airports, seaports and regional perimeters may further delay the entry of a novel strain of human influenza.

Because the specifics of how a novel strain of human influenza will enter North America and how an epidemic will actually play out are unknown, the implementation of a North American response must remain flexible and adaptable to a pandemic as it unfolds. Nevertheless, certain unifying principles regarding a North American strategy on border protection are evident. Canada, Mexico and the United States intend to develop cooperative measures to 1) slow the entry of a novel strain of human influenza to North America; 2) mitigate disease, suffering and death; 3) coordinate appropriate border measures that will give due consideration to free trade; and 4) mitigate impacts to the economy and the functioning of our societies.

All countries have the sovereign right to control the movement of people and goods across their borders. However, in the event of a widespread pandemic, highly restrictive measures to control the movement of people and goods might initially delay but would not stop the eventual spread of a novel strain of human influenza to North America, and could have significant negative social, economic and foreign policy consequences. Less restrictive measures could potentially provide similar control benefits with fewer significant negative consequences. Such measures include appropriate restrictions on air, land and maritime passenger travel; restrictions on trade in animals and animal products that may carry the influenza virus; and other similar measures.

Individual traveler screening for influenza-like illness and risk of exposure to a novel strain of human influenza of all persons entering North America may help slow the arrival of pandemic disease to the continent. However, such screening may not detect asymptomatic infected individuals, and individuals with influenza-like illness may not be infected with a pandemic strain. Because some asymptomatic travelers who are incubating influenza may become symptomatic while en route, overall screening effectiveness may be improved by adopting a layered approach that includes pre-departure, en route and arrival screening measures, with appropriate isolation and quarantine measures for individuals suspected of being infected and contacts who may have been exposed.

Air Travel

Pre-Departure Measures for Flights from Affected Countries to North America

Effective host-country health screening of all individuals prior to departure may reduce the risk of infected travelers exposing fellow travelers, aircraft and vessel crews, and others upon arrival. This is consistent with WHO guidance and with the newly revised IHRs (2005).

- It is expected that travelers departing for North America from affected countries will be screened prior to departure in accordance with guidance

from WHO and the International Civil Aviation Organization (ICAO).[1]

- Canada, Mexico and the United States intend to coordinate travel restrictions from affected countries with the collective understanding that many factors would drive the decision to implement such restrictions, including case fatality rates, transmission characteristics of the virus and the efficacy of a source country's exit-screening program.
- Canada, Mexico and the United States intend to pursue cooperative arrangements with the international community to encourage voluntary travel restrictions for non-essential travel from any affected country.

Pre-Departure Measures for Flights from North America to Affected Countries When Disease Does Not Exist in North America

Canada, Mexico and the United States intend to coordinate public messaging to travelers departing North America for affected countries. Messaging should be consistent among the three countries and may include information such as location of outbreaks, steps to reduce one's risk of infection and public health measures that may be performed on flights arriving from affected countries.

Pre-Departure Measures for Flights from North America When Disease Exists in North America

Exit screening of travelers departing North America should employ a risk-based approach[2] and be performed in accordance with WHO and ICAO guidance. Per the IHRs, the countries should be responsible for

performing exit screening on departing passengers once community-wide outbreaks of pandemic influenza are prevalent within their borders. The three countries expect affected countries to implement exit screening measures until WHO determines that exit screening is no longer effective at slowing the international spread of pandemic disease.

En Route Measures

Given the short incubation period of influenza and the length of some international flights, one can assume that some travelers with influenza will develop their first symptoms during the journey. It is possible that additional training of flight and cabin crews to detect and manage ill travelers may decrease the risk for others on board, as well as at the point of arrival in North America. When combined with pre-departure exit screening, appropriate application of existing en route screening measures may help detect those who have developed signs of illness en route.

- Canada, Mexico and the United States intend to coordinate to determine best practices for the in-flight management of ill travelers based on symptoms and existing reporting requirements.
- All three countries intend to coordinate efforts and engage the international community and industry to establish protocols and minimum requirements for en route screening and reporting on flights bound for North America.
- Canada, Mexico and the United States are developing protocols, through the North American Aviation Trilateral[3], to coordinate the dynamic management of inbound international flights in high-risk situations.

Arrival Measures

Arrival or entry screening of passengers should serve as an important supplement to host country exit screening. Travelers with influenza-like illness should be isolated and required to undergo appropriate public health-

1 ICAO recently adopted guidelines regarding communicable disease/avian influenza that include provisions for exit screening of international travelers from affected areas. These guidelines can be found at http://www.icao.int/icao/en/med/guidelines.htm.

2 Measures that are applied to individual travelers to determine the likelihood of infection with a pandemic influenza virus and that may include assessment of signs/symptoms of illness and potential exposure (travel and activity history).

3 The North American Aviation Trilateral established a common concept of operations (CONOPS) to enhance shared situational awareness and operational coordination among the three countries on containment efforts related to pandemic influenza that involve the North American aviation system. The CONOPS outlines common objectives, principles, communication mechanisms and protocols, and coordination requirements and processes that have been developed in accordance with Canadian, Mexican and U.S. national pandemic influenza plans, as well as guidance from ICAO and WHO.

related diagnostic testing, while travelers who could potentially have been exposed to pandemic influenza may be quarantined, as appropriate.

Canada, Mexico and the United States intend to employ a risk-based approach to screening and intend to collaboratively establish common criteria and protocols for entry screening of all travelers on flights bound for North America during a pandemic. The three countries intend to minimize arrival screening measures and maintain existing pre-clearance arrangements employed for air travelers within North America to the extent practicable.

Maritime Travel

Although maritime crew and passenger transport today represents a small fraction of total entries to North America, and longer transit times in the maritime environment may help to clarify public health risk when compared with air and land border environments, there are features of maritime travel that are important to consider. Maritime spread has been significant in past pandemics, and the close contact that occurs on board ships creates an epidemiological setting where influenza outbreaks may occur. Overall, reducing risk in a maritime setting is an important component of comprehensive efforts to delay a pandemic in North America.

- Canada, Mexico and the United States intend to apply a risk-based approach to the screening of passengers and crew in the maritime environment.
- All three countries intend to coordinate to establish criteria and protocols similar to those used in aviation for exit, en route and entry screening for all travelers (passengers and crew) on ships bound for North America, as well as exit screening, when appropriate, for ships departing North America.

Land Borders

Once disease exists in one North American country, the others will likely experience outbreaks soon thereafter. Canada, Mexico and the United States intend to coordinate on land border issues to enhance the North American approach and best serve their respective populations:

- Canada, Mexico and the United States intend to employ a risk-based approach to the screening of travelers entering the North American region by land, consistent with entry screening in the aviation and maritime environments.
- Canada, Mexico and the United States intend to share and coordinate common triggers, criteria and protocols for screening of travelers at land borders when certain conditions are met. These triggers, criteria and protocols should be balanced against the necessity to maintain the flow of persons, cargo and trade across North American borders.
- Canada, Mexico and the United States intend to coordinate public messaging to be employed at land border crossings once disease exists in North America. Messaging should be consistent among the three countries and may include information such as location of outbreaks, steps to reduce one's risk of infection and public health measures that may be performed at ports of entry:
- Once pandemic disease is common in all three North American countries, Canada, Mexico and the United States mutually understand that exit screening at our shared land borders may no longer be necessary. In accordance with WHO guidance and the IHRs, exit screening should continue, however, at all airports, seaports and ground crossings along North American regional borders.

Information Sharing

As discussed in Chapter 2, robust emergency coordination between Canada, Mexico and the United States will be critical during a pandemic. A successful North America border-containment strategy will benefit from efficient information sharing among SPP member countries. This coordination is especially relevant to monitoring and surveillance, as well as to collaborative land-border public health measures.

Chapter 6: Critical Infrastructure Protection

Canada, Mexico and the United States share much of their critical infrastructure. Although a pandemic threatens the health of workers, as opposed to causing physical damage to systems, worker absenteeism could disrupt the efficient flow of critical goods and services. For example, critical workers sustain the flow of electricity as well as natural gas and petroleum. These critical goods and services are part of a vast, interconnected system serving all of North America. Beyond energy and power, other critical infrastructure and key resource (hereafter, critical infrastructure) sectors, from manufacturing operations to transport, banking systems to food delivery service, could also be affected. Moreover, a pandemic could significantly interrupt the ability of private and government-owned businesses to sustain critical infrastructure.

To reduce the negative effects of a pandemic on North American critical infrastructure, Canada, Mexico and the United States intend to make every reasonable effort to coordinate before, during and after a pandemic; to establish a mutually supportive operating environment; and to assist one another in improving the resiliency of critical infrastructure in the face of the pandemic threat. Once established, this operational framework is intended to be applicable to critical infrastructure sectors, as well as to all publicly and state-owned businesses in general.

Business continuity planning is recognized internationally as a key method of providing for the continuous delivery of essential services and products during disruptions and is vital to the building of resilient infrastructure. All critical infrastructure sectors, and indeed all enterprises, large and small, public and private, including government institutions, should strive to maintain critical operations during an influenza pandemic. The three countries intend to promote business continuity planning in their public and private sectors as a key method of mitigating the impacts of pandemic influenza, providing for continuous service delivery and laying the groundwork for rapid recovery.

While the potential impacts of an avian influenza outbreak may not be on the same scale as pandemic influenza, contingency plans should be developed to minimize and limit the economic consequences. The ability to control animal movement, eliminate infected and exposed susceptible populations and do more effective general surveillance allows authorities responsible for animal health to respond more effectively to disease outbreaks and minimize the risk to the human population.

The SPP Framework

A collaborative North American approach emphasizing and supporting critical infrastructure planning, preparedness, response and recovery processes is fundamental to the proper functioning of these essential systems within and across borders during a pandemic. This Plan is intended to be consistent with the efforts undertaken as part of the North American emergency management framework "to develop a common approach to critical infrastructure protection, [and] to coordinate responses to cross-border incidents."[1]

Major interdependencies among Canada, Mexico and the United States include the following:

- Canada and the United States are each other's largest trading partners, moving over $1.9 billion (USD) worth of goods and services across the border every day;[2]
- Mexico is the United States' third-largest trading partner, with nearly $300 billion in bilateral trade between the two countries;[3]
- Every year, the United States supplies Mexico with millions of gallons of water from the Colorado

1 http://www.whitehouse.gov/news/releases/2006/03/20060331.html or http://www.pm.gc.ca/eng/media.asp?id=1085

2 http://geo.international.gc.ca/can-am/washington/trade_and_investment/trade_partnership-en.asp

3 www.census.gov/foreign-trade/balance/c2010.html#2006 and http://mexico.usembassy.gov/mexico/trade_info.html

River and the Rio Grande, while Mexico provides the United States with water from six Mexican tributaries to the Rio Grande;[4]

- Canada provides approximately 85 percent of U.S. net natural gas imports[5], and the United States and Canada supply nearly all of each other's electricity imports, and; [6]
- U.S. imports of Canadian agricultural/food products total more than 20 percent of total U.S. agricultural/food imports, while Canadian imports of U.S. agri-food products account for more than 70 percent of Canadian agri-food imports.

Critical Infrastructure Sectors

Critical infrastructure encompasses those systems and assets so vital to a country that interruption or destruction would have a debilitating impact on national security, economic security, and/or national public health, safety or collective morale. Critical infrastructure protection entails all the activities, including prevention/mitigation, preparedness, response and recovery, directed at enhancing the resilience of people, systems and physical infrastructure associated with the operations of those critical infrastructure sectors and their provision of essential goods and services. As federal states, each country organizes its infrastructure and its critical infrastructure sectors differently, and each therefore has a unique relationship with the privately and government-owned critical infrastructure businesses within these sectors. The United States has formally detailed the identification and protection of what it refers to as critical infrastructure and key resource (CI/KR) sectors. Currently, Canada and Mexico are finalizing similar approaches. Identification of critical infrastructure sectors is based on a practical understanding of how these systems work and their critical importance to a given country's national economic and social stability.

United States

In the United States, the private sector owns and operates an estimated 85 percent of the country's critical infrastructure. Therefore, sustaining the operations of critical infrastructure during a pandemic, as well as the operations of those businesses that support the nation's CI/KR, will depend largely on each individual organization's development and implementation of business continuity plans tailored to pandemic-related impacts, including potentially severe staffing shortages, supply-chain disruptions and the degradation of essential services.

The U.S. Government[7] identifies 13 critical infrastructure sectors and four key resource sectors, 17 CI/KR sectors in all, that are essential to U.S. security as well as to economic and social stability:

Critical Infrastructure

Banking & Finance
Chemical & Hazardous Materials
Defense Industrial Base
Emergency Services
Energy
Food & Agriculture
Information Technology
National Monuments & Icons
Postal & Shipping
Public Health and Healthcare
Telecommunications
Transportation
Water

Key Resources

Commercial Facilities
Dams
Government Facilities
Nuclear Power Plants

4 www.ibwc.state.gov/html/colorado_river.html

5 http://geo.international.gc.ca/can-am/main/right_nav/natural_gas-en.asp

6 http://geo.international.gc.ca/can-am/main/right_nav/electricity-en.asp

7 As part of the U.S. Government's pandemic preparedness strategy, the Department of Homeland Security (DHS) helps support the public and private CI/KR sectors in developing and implementing their essential pandemic contingency plans. The Pandemic Influenza Preparedness, Response and Recovery Guide for Critical Infrastructure and Key Resources was developed to assist business owner-operators and their contingency planners with enhancing their pandemic planning. The primary purpose of this CI/KR guide is to encourage the U.S. private sector to act now. With this CI/KR guide, DHS has provided a comprehensive tool for the 17 CI/KR sectors in the United States, and for business and industry in general.

Canada

Canada's critical infrastructure consists of the physical and information technology facilities, networks, services and assets essential to the health, safety, security or economic well-being of Canadians, or to the effective functioning of government. Disruptions of these critical infrastructures could result in catastrophic loss of life, adverse economic effects and significant harm to public confidence. As in the United States, most of Canada's critical infrastructure is owned and operated by the private sector, which therefore bears primary responsibility for the development and implementation of business continuity plans tailored to pandemic-related impacts, including potentially severe staffing shortages, supply-chain disruptions and the degradation of essential services. The provinces and territories also have a significant jurisdictional role in critical infrastructure protection and emergency management, as well as a role as owners and regulators of critical infrastructure.

As the approach to critical infrastructure protection varies across federal/provincial/territorial jurisdictions with respect to the laws and plans that are in place, so too does the classification of critical infrastructure by sector. While recognizing that each province and territory structures its critical infrastructure program as it deems appropriate, Canada classifies critical infrastructure within 10 sectors. This approach allows critical infrastructure partners to have a stronger awareness of risks and interdependencies, which will lead to better risk management. Critical infrastructure partners are able to collectively respond to risks and target limited resources to the highest priority areas.

The 10 sectors are as follows:

- **Energy and Utilities** (e.g., electrical power, natural gas, oil production/transmission)
- **Information and Communications Technology** (e.g., telecommunications, broadcasting systems, software, hardware and networks including the Internet)
- **Finance** (e.g., large-value payments system, securities clearing and settlement systems)
- **Health Care** (e.g., hospitals, blood-supply facilities and pharmaceutical manufacturers)
- **Food** (e.g., safety, distribution, agriculture and food industry)
- **Water** (e.g., drinking water and wastewater management)
- **Transportation** (e.g., road, rail, marine, and aviation)
- **Safety** (e.g., chemical, biological, radiological and nuclear safety, dangerous goods, search and rescue, emergency services and dams)
- **Government** (e.g., services, facilities, information networks and key national monuments)
- **Manufacturing** (e.g., defense industrial base, chemical industry)

Mexico

The *U.S.-Mexico Border Partnership Declaration,* signed on March 22, 2002, in Monterrey, Mexico, provided both countries with the basis to develop the *Framework of Cooperation for Critical Infrastructure Protection (CIP).*

Under this framework, the governments of Mexico and the United States share the commitment to protect their populations and critical infrastructure from terrorist attacks, natural disasters and any another eventuality that may compromise their integrity and operation. The protection of the critical infrastructure network on the border – taking into consideration the interdependency between the two countries, and vulnerabilities – represents challenges and opportunities for both countries.

Even though Mexico and Canada do not share a border, these two countries recognize that critical infrastructure protection is important in a North American context. For this reason, both countries will explore opportunities for collaboration through the Mexico-Canada Working Group.

For the purposes of the Plan, Mexico defines critical infrastructure as those assets, services and networks that are indispensable to the support and maintenance of the well-being of the Mexican population. Following the concept stated by the U.S.-Mexico CIP, Mexico has established sectoral working groups to evaluate and improve the protection of critical infrastructure within its territory.

In this context, Mexico's approach includes eight sectoral working groups: Energy, Telecommunications, Transportation, Water and Dams, Public Health, Food & Agriculture, Cyber Security and Strategic Facilities.

To protect its critical infrastructure and with an eye to taking advantage of existing programs and resources, the eight sectoral working groups correspond to each CIP sector identified.

- **Energy** (e.g., Storage and Generating Facilities & Distribution Networks)
- **Telecommunications** (e.g., Telecommunication Networks)
- **Transportation** (e.g., Ports of Entry)
- **Water and Dams** (e.g., Hydraulic Infrastructure and Bridges)
- **Public Health** (e.g., Epidemiological Surveillance)
- **Food & Agriculture** (e.g., Animal Health & Epidemiological Surveillance)
- **Cybernetic Security** (e.g., Communication and Information Networks)
- **Strategic Facilities** (e.g., Physical Protection of Strategic Facilities)

Improving Critical Infrastructure Resiliency

Sustaining interdependent critical infrastructure operations demands commitment, mutual support and collaboration from all relevant public and private sector critical infrastructure protection partners. The input of the private sector will be vital in Canada and the United States, where up to 85 percent of critical infrastructure is owned and operated by the private sector. While businesses and local communities are at the forefront of the response to and recovery from a pandemic, governments should maintain situational awareness of critical infrastructure to identify potential problems. Where appropriate, governments should coordinate timely national, regional and local support among appropriate public and private sector resources.

Canada, Mexico and the United States are to endeavor over the medium term and within the context of current resources to accomplish the following objectives. Reasonable efforts should be made to include the expertise of private sector infrastructure owners and state/provincial/territorial governments.

Joint Assessments of Risks and Interdependencies

In each country, critical infrastructure sectors depend on one another for sustaining the flow of essential goods and services. For example, the U.S. water sector is indispensable to most, if not all, other sectors, but it, too, relies entirely on the energy sector to power its equipment operations, the transportation sector to deliver critical supplies and the chemical sector to treat the water supply. Given these interdependencies, disruptions to critical infrastructure lead to cascading consequences that may rapidly escalate within a sector (e.g., the August 2003 North American blackout[8]) and may cause significant cross-sector disruptions. In a pandemic situation, understanding these critical infrastructures and interdependencies among sectors will be fundamental to providing a coordinated cross-sector response.

The countries intend to develop mutually acceptable risk, vulnerability and interdependency assessment procedures and methodologies. The countries also intend to undertake joint and/or coordinated risk assessments. An important output of these assessments would be the identifications of interdependencies, potential chokepoints and potential single-point failures within and across critical infrastructure sectors. Occurring within individual businesses or small numbers of like businesses, single-point failures can be triggered when a component on which a system or an operation depends fails and has no alternate component to back it up or take its place. Any number of vulnerabilities, including those caused by interdependencies and single-points of failure, may increase the probability for cascading consequences across sectors. To the greatest extent possible, any joint risk, vulnerability and interdependency assessment should occur prior to a pandemic outbreak to enhance compatibility and to share knowledge of differences in each country's approach to critical infrastructure protection.

8 The 2003 North American Electrical Blackout: An Accidental Experiment in Atmospheric Chemistry, www.atmos.umd.edu/~russ/BlackoutFinal.pdf

Publicly And Privately Owned Businesses With International Operations

The countries are to make every reasonable effort to examine essential North American critical infrastructure businesses with international operations. With the enactment of the *North American Free Trade Agreement (NAFTA),*[9] the three countries formed a free-trade area with a total gross domestic product (GDP) of more than $11 trillion (USD) in 2004. NAFTA has also resulted in growing numbers of companies located in the United States,[10] Canada and Mexico operating key facilities within the borders of one of the other two countries. These North American businesses increasingly function as a "borderless" North American commercial network. They represent another element of strength and vulnerability, since disruptions of these businesses could lead to cascading effects across each country.

Borders

The three countries are to make reasonable efforts to coordinate border actions to sustain critical infrastructure. Borders represent a significant vulnerability to the countries' interdependent critical infrastructure sectors because where cross-border movement is restricted, supply chain and personnel movements can be significantly disrupted. Thus, they may represent chokepoints that may negatively affect international commerce. Given the significant degree of North American integration, the agri-food sector is particularly vulnerable to disruptions in cross-border trade, as there is significant cross-border movement in key farm inputs, intermediate agricultural products and final food products.

Impact of Disease versus Impact of Border Disruptions

The three countries' border actions should be well coordinated and communicated with critical infrastructure businesses, and should be carefully managed for the health and safety of citizens while minimizing economic disruption to the extent possible, given legal requirements relating to animal health, plant health and food safety.

9 NAFTA: www.ustr.gov/Trade_Agreements/Regional/NAFTA/Section_Index.html

10 NAFTA: A Decade of Strengthening a Dynamic Relationship, www.ustr.gov/assets/Trade_Agreements/Regional/NAFTA/asset_upload_file606_3595.pdf

Critical Infrastructure Pandemic Preparedness and Response Management

The following are priority measures necessary to establish a mutually supportive environment and to improve the resiliency of the three countries' publicly and privately owned critical infrastructure businesses during a pandemic:

- **Critical Infrastructure Pandemic Preparedness and Planning:** Canada, Mexico and the United States should promote the development, implementation and sharing of planning processes to bolster critical infrastructure resiliency and preparedness among all critical infrastructure sectors, as well as among the appropriate public and private sector businesses that support these sectors.

- **Pandemic Contact Lists:** The countries should develop contact lists of all appropriate key critical infrastructure public and private sector partners in order to improve coordination among all partners domestically and internationally during a pandemic. These lists should be updated regularly, perhaps annually, and should also include clearly established communications roles and responsibilities.

- **Shared Pandemic Risk Communications:** The three countries should facilitate the coordination of shared pandemic risk communications strategies among all public and private sector critical infrastructure security partners within their own countries. The need for timely, accurate, credible and consistent information that is tailored to specific audiences is extremely important and is described more fully in Chapter 2.

- **Collaborative Monitoring and Information Sharing for Pandemics:** The three countries should carry out appropriate actions for collaborative monitoring and effective information sharing for pandemics. Government officials and business leaders cannot now effectively predict or quickly identify the options to prevent single-point failures or cascading consequences. Canada, Mexico and the United States should explore the existing information-sharing mechanisms and develop a new collaborative system to monitor the most critical

elements of the critical infrastructure. To protect sensitive information, the three countries intend to seek proper information-sharing protocols that respect existing protocols and legislative provisions.

- **Shared Pandemic Exercises and Training:** To the best of their abilities, the three countries are to endeavor to include an array of relevant public and private sector critical infrastructure partners and appropriate public health officials in their pandemic preparedness training and exercises to help uncover potential weaknesses in established systems and to forge bonds among personnel. The SPP countries are to make reasonable efforts to conduct bilateral and trilateral training and exercises related to pandemic preparedness and response with representatives of critical infrastructure sectors.

ANNEX 1: Major Tasks

In accordance with the North American Plan for Avian and Pandemic Influenza and in furtherance of the goals set forth therein, the governments of Canada, Mexico and the United States intend to continue to work together to accomplish the following actions within the timeframes indicated below. While not an exhaustive list, this annex will help decision-makers such as the SPP Coordinating Body for Avian and Pandemic Influenza follow up on efforts to put the Plan into action.

	Tasks	**Target Date**	**Lead Agency** (Canada, U.S., Mexico)
Chapter 2: Emergency Coordination and Communications			
A	Review existing emergency coordination and communication mechanisms and enhance the exchange of detailed operations plans.	December 2007	PS HHS MoH, MoA
B	Conduct trilateral or bilateral exercises to assess and strengthen their emergency response and contingency plans.	December 2008	PS, HHS, DHS MoFA, MoH, MoA
C	Develop plans for communications coordination during the actual event of an outbreak of avian or pandemic influenza.	September 2007	PS HHS MoH
D	Undertake the development of risk communications strategies to provide stakeholders with information on disease prevention, disease recognition, biosecurity procedures and their responsibilities in the event of an incursion of avian or pandemic influenza.	October 2007	CFIA, PHAC HHS MoH, MoA
E	Develop key messages related to avian and pandemic influenza for the specific use of senior officials.	October 2007	PS HHS MoH, MoA
F	Pursue the development of communications messages for avian influenza and both pre-pandemic and pandemic periods.	September 2007	PS HHS MoH, MoA
G	Share best practices regarding risk communications and identify gaps in behavioral research.	September 2007	PS HHS MoH
H	Establish procedures and pathways to exchange pre-release information during an event. [	September 2007	PS HHS MoH
I	Develop procedures and pathways for how communications networks will operate during an event (regular conference calls, etc.).	June 2007	PS DHS MoH
J	Develop opportunities to exercise the planned response. [p.15]	November 2007	PS, PHAC, CFIA HHS MoH, GCCP

Tasks		Target Date	Lead Agency (Canada, U.S., Mexico)
Chapter 3: Avian Influenza			
A	Develop international arrangements or agreements to provide for an adequate supply of avian influenza vaccine in the event of a North American outbreak, including a mechanism for the rapid cross-border movement of vaccines.	October 2007	CFIA USDA MoA
B	Put in place and share contingency plans to expand the available personnel resource base in the event a nation's current personnel resources are exceeded.	October 2007	CFIA USDA MoA, MoH
C	Share best practices in occupational health, infection control and personal protective measures to reduce potential risk to human populations.	September 2007	CFIA, PHAC, HC HHS MoA, MoH, MoA

Tasks		Target Date	Lead Agency (Canada, U.S., Mexico)
Chapter 4: Pandemic Influenza			
A	Identify opportunities to exercise pandemic influenza preparedness and response planning.	September 2007	PHAC DHS, HHS MoH
B	Identify areas of technical assistance needed for laboratory, surveillance and outbreak response.	September 2007	PHAC HHS MoH
C	Establish and test mechanisms for communication among institutions according to specific functions for exchanging epidemiological information.	September 2007	PHAC HHS MoH
D	Provide technical assistance through cross-border projects to bolster surveillance efforts for seasonal and pandemic influenza.	December 2007	PHAC HHS MoH
E	Establish approaches to collaborating on North American outbreak investigations, and collaborate on investigations and response efforts, as feasible and appropriate.	December 2007	PHAC HHS MoH
F	Strengthen operating procedures/processes for the sharing of laboratory information before and during an emergency.	December 2007	PHAC HHS MoH
G	Facilitate the ability to provide personnel assistance in a pandemic.	September 2007	PHAC HHS MoH, MoFA
H	Establish public health liaisons.	December 2007	PHAC HHS MoH, MoFA
I	Enhance information sharing on stockpile planning.	December 2007	PHAC HHS MoH, MoFA

Tasks		Target Date	Lead Agency (Canada, U.S., Mexico)
Chapter 5: Border Monitoring and Control Measures Associated with Pandemic Influenza			
A	Determine best practices for the in-flight management of ill travelers based on symptoms and existing reporting requirements.	December 2007	PHAC DHS MoFA, MoH,
B	Engage the international community and industry to establish protocols and minimum requirements for en route screening and reporting on flights bound for North America.	December 2007	PHAC DOS, DHS MoH, MoFA, MoT
C	Establish common criteria and protocols for entry screening of all travelers on flights bound for North American during a pandemic.	June 2008	PHAC DHS MoH, MoFA, MoT
D	Establish criteria and protocols similar to those used in aviation for exit, en route and entry screening for all travelers (passengers and crew) on ships bound for North America, as well as exit screening, when appropriate, for ships departing North America.	June 2008	PHAC, CBSA DHS MoFA, MoT, MoH
E	Share and coordinate common triggers, criteria and protocols for screening of travelers at land borders when certain conditions are met.	June 2008	PHAC DHS MoH, MoFA, MoT
F	Coordinate public messaging to be employed at land border crossings once disease exists in North America.	January 2008	PHAC, CBSA MoFA, MoT, MoH

Actions		Target Date	Lead Agency (Canada, U.S., Mexico)
Chapter 6: Critical Infrastructure Protection			
A	Develop mutually acceptable risk, vulnerability and interdependency assessment procedures and methodologies.	December 2009	PS DHS CISEN
B	Undertake joint and/or coordinated risk assessments.	December 2009	PS DHS CISEN
C	Develop contact lists of all appropriate key critical infrastructure public and private sector partners.	June 2008	PS DHS CISEN

ANNEX 2: Terms of Reference for the Coordinating Body On Avian and Pandemic Influenza

Overview

Canada, the United States and Mexico have established a senior level Coordinating Body to facilitate the effective planning and preparedness within North America for a possible outbreak of avian and/or human pandemic influenza under the Security and Prosperity Partnership (SPP). This Coordinating Body will serve as the senior level contact group in the event of an outbreak of highly pathogenic avian influenza or a novel strain of human influenza outbreak and, as such, could be used as a model for regional collaboration.

Mandate

The Coordinating Body will support and facilitate the coordination of SPP-related activities in North America with a bearing on planning and preparedness for avian and pandemic influenza, much of which will be incorporated into the North American Plan for Avian and Pandemic Influenza including:

- Ensuring the development and implementation of a comprehensive, coordinated and science-based North American approach to plan for and manage the threat of an outbreak of highly pathogenic avian influenza and/or human pandemic influenza;
- Ensuring the development and implementation of standard operating procedures (SOPs) to strengthen North America's ability to prevent and mitigate, prepare for, respond to and recover from an outbreak of highly pathogenic avian influenza or a human pandemic influenza;
- Ensuring that previous tasks related to avian influenza and human pandemic influenza, SOPs, policies, protocols and any subsequent actions reflect the principles outlined in the North American Cooperation on Avian and Pandemic Influenza agreement and the principles agreed to by the leaders in the March 2006 Cancun Summit;
- Ensuring the completion in a timely manner of all tasks agreed to by leaders in Cancun and any subsequent tasks;
- Identifying and prioritizing additional activities, gaps or areas of collaboration required to ensure North American preparedness;
- Promoting cross-sectoral integration of preparedness activities (e.g. human health, animal health, transportation, borders, communications, surveillance, emergency response, etc.);
- Encouraging the exchange of information on each government's avian and pandemic influenza plans and intentions; and
- Encouraging the development of comprehensive, multi-sectoral business continuity plans that address North American considerations.

Chairs

- The chair of the SPP Coordinating Body will rotate between each national authority on a yearly basis.

Membership

- Membership will include senior officials from the following departments and agencies:

Canada:

- Public Safety Canada
- Department of Foreign Affairs and International Trade
- Public Health Agency of Canada
- Canadian Food Inspection Agency

United States:

- U.S. Department of State
- U.S. Department of Health and Human Services
- U.S. Department of Homeland Security
- U.S. Department of Agriculture

Mexico:

- Ministry of Agriculture
- Ministry of Health
- Ministry of Foreign Affairs

Representatives from other agencies/departments can join future discussions in accordance with the agenda.

Working Groups

- Where possible, existing SPP working groups, governmental structures or trilateral/bilateral mechanisms will conduct the analysis and develop policies and procedures that inform all levels of government in their ability to deal with the North American, cross-sectoral impacts of avian and pandemic influenza, avoiding where possible duplicating efforts

Administrative Support

- Administrative and logistical support for the SPP Coordinating Body is the responsibility of each national authority.

Frequency of Meetings

- Quarterly or as called by the chairs; in person or by teleconference.

ANNEX 3: Chief Veterinary Officers Agreement

June 19, 2006

Agreement between the Chief Veterinary Officers of the United States and Canada for Reporting and Applying Measures when Notifiable Avian Influenza (NAI) Virus is Confirmed in each Respective Country

I. INTRODUCTION

To ensure appropriate levels of protection for animal and public health and to provide a framework to mitigate against unwarranted disruption of trade, the Chief Veterinary Officers (CVOs) of Canada and the United States developed a process for communicating and applying balanced science based import health measures that will be implemented when Notifiable Avian Influenza (NAI) is confirmed in domestic poultry and reported in their respective countries.

II. OBJECTIVE

The principal objective of this agreement is to openly share information on the occurrence of NAI virus in domestic poultry in each country and to ensure that proper and proportional import health measures are applied by each country when NAI virus is confirmed and reported while minimizing the impact such measures have on the trade of poultry, poultry products, and other products from avian species between the countries.

III. GENERAL GUIDELINES

To ensure a common approach that is both consistent and uniform between the countries, the United States and Canada will abide by and follow the World Animal Health Organization's (OIE) guidelines and recommendations outlined in the Code Chapter for Notifiable Avian Influenza (http://www.oie.int/eng/normes/mcode/en_chapitre_2.7.12.htm). While the long-term goal is to bring trade conditions for poultry, poultry products, and other products from avian species into line with the provisions of the OIE Code, it is recognized that conditions for regional trade should be established to minimize unnecessary trade disruptions between the two countries.

IV. REPORTING AND COMMUNICATING FINDINGS OF 'NAI' VIRUS BETWEEN EACH COUNTRY

The United States and Canada will share with each other any and all confirmations of NAI virus. Confirmation testing for NAI includes virus isolation, H5/H7 complete sub-typing, and HA cleavage site amino acid sequence. Our notifications will follow the OIE guidelines for NAI and will occur between the corresponding import/export staff of each country.

A. Low Pathogenicity Notifiable AI (LPNAI) reporting: Confirmation of H5/H7 LPNAI in commercial flocks (as defined in the USDA/Veterinary Services Memo 565.14) is an uncommon occurrence and any finding of H5 and H7 will be reported immediately to the OIE. However, finding LPNAI subtypes in backyard poultry flocks is not uncommon because the biosecurity of such flocks may be sub-optimal, and separation from wildlife is often neither feasible nor practical. Therefore, reporting such findings to the OIE *may* be made, but only in the Annual Report.

1

Waterfowl and shorebirds are the natural reservoir for the AI virus and findings in these wild birds are not uncommon and actually expected. Such findings of low pathogenicity H5 and H7 strains detected in wild birds will not be reported to the OIE.

B. High Pathogenicity Notifiable Avian Influenza (HPNAI) Reporting: All strains of HPNAI confirmed in commercial flocks, backyard flocks, live bird marketing systems (LBMS), and wild birds will be reported to the OIE. In all HPNAI outbreak situations an initial communication between the U.S. CVO to the Canadian CVO will ensure that our respective organizations are sensitized to the ramifications of any public announcements and notification of OIE. A timely courtesy communication between the U.S. and Canada will occur if HPNAI is confirmed in wild birds.

V. MEASURES TO BE APPLIED

A. Processed poultry products

Trade will occur unimpeded regardless of the subtype and of the pathogenicity of the strain reported for properly treated poultry and poultry products. Proper treatment will include 'fully cooked' poultry meats and commercially pasteurized egg products.[1]

B. For H5 and H7 Low Pathogenicity Notifiable AI (LPNAI) viruses

1. **LPNAI H5 and H7 confirmed in wild birds**
    a. No restrictions will be applied to the trade of poultry, poultry products, and other products from avian species.

2. **LPNAI H5 and H7 confirmed in backyard flocks**
    a. No restrictions will be applied to the trade of poultry, poultry products, and other products from avian species.
    b. Additional surveillance may be conducted in neighboring backyard poultry flocks and any neighboring commercial flocks. The need to place restrictions and conduct surveillance should be tied to the epidemiological investigations associated with the index flock. In remote locations with low density and proximity of commercial or backyard flocks and no established contacts domestically within the critical incubation period, there may be little reason to conduct surveillance. Each country's experts will determine the appropriate approach.

3. **LPNAI H5 and H7 confirmed in the Live Bird Marketing System (LBMS)[2]**
    a. No restrictions will be applied to the trade of poultry, poultry products, and other products from avian species.
    b. The need to place restrictions and conduct trace-out surveillance should be tied to the epidemiological investigations associated with the index flock or case. Each

[1] Based on the Code of Federal Regulations (CFR) and US policy and on Canadian regulations, each country's staffs should develop a list of products and their proper treatment.
[2] The Live Bird Marketing System (LBMS) is composed of 3 principle compartments to include the supplier (producer), the distributor (wholesaler), and the retail markets.

country's experts will determine the appropriate approach based on existing national disease containment and response regulations for the LBMS.

4. LPNAI H5 and H7 confirmed in commercial flocks

a. The following compartments are defined as commercial flocks:
   - **i.** Broiler, turkey, or layer breeder production flocks
   - **ii.** Duck breeder and other upland game breeder flocks
   - **iii.** Commercial (grow-out) broiler and turkey flocks (meat type birds)
   - **iv.** Commercial duck and goose meat-type production flocks
   - **v.** Pullet production flocks
   - **vi.** Commercial layer (table-egg) flocks
   - **vii.** Commercial poultry flocks used for the production of other commercial products such as feathers (down) and *foie gras*.

b. Restrictions will be applied on poultry and raw (untreated) poultry products from the affected and epidemiologically linked flocks only (this is consistent with OIE recommendations and is proportionate to the known risk)

c. Trade in poultry, poultry products, and other products from avian species will continue unimpeded on unaffected flocks and flocks not linked by epidemiologic investigation to the index flock.

d. Additional surveillance will be conducted in backyard poultry flocks and any existing commercial flocks within at least a 3 Km radius of the detection in the index commercial flock

e. If vaccination is considered as an option, then a written plan for use must be in place with proper controls and provisions for official approval of any use of vaccine. The vaccination plan will contain an exit strategy.

f. If the affected flock/s is destroyed by immediate depopulation, and the premises are cleaned and disinfected (C&D), restrictions on the affected flock/s will be lifted after 21 days following the C&D and the premises has tested negative for AI virus through placement and monitoring of sentinel birds or monitoring of the replacement flock.

g. If controlled marketing is used, the flock must test virus negative before leaving the premise for slaughter and processing. Once the entire flock is marketed, the premises are cleaned and disinfected (C&D) before being repopulated with surveillance of the replacement flock.

C. For High Pathogenicity NAI (HPNAI) strains

1. HPNAI confirmed in wild birds

a. In the unlikely occurrence that HPNAI is confirmed in wild birds, domestic poultry producers and other stakeholders in the affected regions should be notified through an outreach and education program.

b. Active surveillance in commercial poultry may be conducted as necessary if mortalities associated to HPNAI in the wild birds are found close to a densely populated poultry region.

c. Import restrictions will be applied to hunter harvested wild birds and wild bird products from affected flyways. Restrictions will be removed 3 months after the last confirmed case.

2. HPNAI confirmed in backyard, show birds, game fowl

a. Initially restrict all live avian and unprocessed avian products from the Province/State/zone where the confirmation was made.

b. Determine extent of problem by conducting the required epidemiological investigation and surveillance around a 10 Km radius of the index and epidemiologically-linked flocks, and depopulate the infected birds followed by cleaning and disinfection of the premises according to established in-country protocols.

c. If no commercial flocks are determined to be affected, the HPNAI infection is restricted to the backyard component, and the integrity of the commercial compartment can be demonstrated, then restrictions should be lifted on commercial poultry in unaffected compartments and zones.

3. HPNAI confirmed in the LBMS

a. Initially restrict all live avian and unprocessed avian products from the Province/State/zone where the confirmation was made.

b. Determine extent of problem by conducting the required epidemiological investigation and surveillance within a 10 km radius around the index production flock and any epidemiologically-linked flocks, and depopulate the infected birds followed by cleaning and disinfection of the premises according to established in-country protocols.

c. If no commercial flocks are determined to be affected, the HPNAI infection is restricted to the LBMS component, and the integrity of the commercial compartment can be demonstrated, then restrictions should be lifted on commercial poultry in unaffected compartments and zones.

4. HPNAI confirmed in commercial flocks

a. Initially restrict all live avian and unprocessed avian products from the Province/State/zone where the detection was made

b. Determine extent of problem by conducting the required epidemiological investigation and surveillance within 10 km radius of the index flock and any epidemiologically-linked flocks, and depopulate the infected birds followed by cleaning and disinfection of the premises according to established in-country protocols.

c. Once the extent of the outbreak is defined and contained, and depopulation and C&D is ongoing, trade restrictions will be modified based on OIE compartmentalization and zoning guidelines.

d. Restrictions on any zones/compartments are lifted 3 months after the last infected flock is depopulated and C&D is conducted according to OIE guidelines.

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