AVIAN INFLUENZA:

A GUIDE TO

PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

FOR WORKERS AND EMPLOYERS

WORKING WITH OR AROUND

POULTRY OR WILD BIRDS

November 06, 2006

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Agencies That Assisted in the Development of this Document

Ministry of Labour
Ministry of Health and Long Term Care
Ministry of Agriculture, Food and Rural Affairs
Ministry of Government Services
Ministry of Natural Resources
Canadian Food Inspection Agency
University of Guelph

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Farm Safety Association
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SECTION 1

INTRODUCTION

1.1 Purpose and Background

This document has been created to provide an overview of the personal protective clothing and equipment recommended for Ontario workers who work with or around poultry or wild birds at various degrees of risk of exposure to highly pathogenic avian influenza (HPAI). With or without the presence of HPAI, workers involved in the handling of birds are at some risk of exposure to various potential health hazards (e.g. dust, bacteria, viruses etc.), for which routine precautions should be taken. Notwithstanding such routine hazards, this document focuses on the reduction of risk of worker exposure to HPAI viruses that may cause significant disease in humans.

Notwithstanding the recommendations contained in this report, employers under provincial jurisdiction have a duty to comply with the *Occupational Health and Safety Act* and under section 25(2)(h) must take every precaution reasonable in the circumstances for the protection of a worker. This includes developing policies and procedures to protect workers from the hazards of avian influenza.

Avian influenza infection in humans can potentially occur as a result of contact with infected birds, manure, bedding and litter containing high concentrations of virus, contaminated surfaces, or contact with contaminated vehicles, equipment, clothing and footwear at involved sites (e.g. infected poultry farms). Direct contamination of the mucous membranes by infectious droplets or inhalation of aerosolized viruses are other possible transmission routes.

To date, most human infections with the Asian H5N1 virus have been linked to the home slaughter and subsequent handling of infected birds prior to cooking. These practices represent the highest risk of human infection and are the most important to avoid.

In general, the risk to human health from wild birds infected with an avian influenza virus (both low and high pathogenic strains) is considered to be low.

1.2 Applicability and Disclaimer

This Guide may be applied to workers working with or around poultry or wild birds in Ontario, including the handling of live or dead birds, their feces, feathers, or bedding, the cleaning and disinfection of contaminated surfaces or equipment, in situations where HPAI is suspected, or in association with HPAI disease control zones in Ontario, as defined by the Canadian Food Inspection Agency (CFIA).

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1.3 Definitions

Low Risk Activities Requiring Routine Practices

For the purposes of this document, low risk activities are defined as work involving the handling of apparently healthy birds of unknown HPAI status, carcasses resulting from normal mortality, feces, feathers, and bedding that are either: a) at locations within the CFIA HPAI "Control Area", but beyond the CFIA "Restricted Zone" (i.e. greater that 10 km from a location of known HPAI infected birds), OR b) are at locations within a CFIA HPAI "Infected Zone" or "Restricted Zone" (i.e. less than 10 km from known HPAI infected birds), and that have been tested and declared negative for HPAI by the CFIA (i.e. have a known HPAI test-negative status), and remain free of signs indicative of HPAI. The appropriate hygiene practices and personal protective clothing and equipment for low risk activities are set out in Table 1.

Moderate Risk Activities Requiring Additional Precautions

For the purposes of this document, moderate risk activities are defined as work involving the handling of live or dead birds, their feces, feathers, or bedding, or the cleaning and disinfection of contaminated surfaces or equipment in workplaces that either: a) lie within a CFIA Restricted Zone (i.e. between 3 km and 10 km of known HPAI infected birds or premises) and where the HPAI infection status of the birds in the workplace is unknown, OR b) work activities associated with birds of unknown HPAI infection status that have clinical illness indicative of HPAI or are strongly suspected of having an epidemiological or ecological link with birds known to be infected with HPAI, regardless of their location, within or beyond CFIA control zones, or before, during or after CFIA control zones are declared by the CFIA. The appropriate hygiene practices and personal protective clothing and equipment for moderate risk activities are set out in Table 1.

High Risk Activities Requiring Additional Precautions

For the purposes of this document, high risk activities are defined as work involving the handling of live or dead birds, their feces, feathers, or bedding or the cleaning and disinfection of contaminated surfaces and equipment in workplaces where either: a) HPAI infected birds have been found (and the premises has not yet been declared cleaned and disinfected by the CFIA); OR b) that are of unknown HPAI infection status but that are considered by the CFIA to be high risk direct contacts of known positives; OR c) that are of unknown HPAI infection status and that lie within a CFIA Infected Zone (i.e. within 3km of

known HPAI infected birds or premises), and have not yet been tested by the CFIA. Additional precautions should be taken for these high risk activities**.** The appropriate hygiene practices and personal protective clothing and equipment for high risk activities are set out in Table 1.

1.4 Recommended Equipment, Measures, and Procedures

The information included in Table 1 is based on a review of the recommendations for personal hygiene and personal protective clothing and equipment developed and published by a number of organizations including the World Health Organization (WHO), the US National Institute for Occupational Safety and Health (NIOSH), the US Centers for Disease Control and Prevention (CDC), the US Occupational Safety and Health Administration (OSHA), the Canadian Food Inspection Agency (CFIA), Health Canada, and the US Department of Agriculture (USDA). A complete list of references is found at the end of the document. The information compiled in this Table represents currently available best practices as recommended by these organizations, current infection control practices, and current industrial hygiene practices. Where one or more organizations have recommended different equipment, measures, or procedures the more protective equipment, measures, or procedures have been adopted. Recommendations contained in this document do not preclude the need to consult on a case-by-case basis with a person having appropriate knowledge, training and experience on the selection of appropriate personal protective clothing and equipment and on the development and implementation of safe work practices and procedures.

1.5 Training

Employers should ensure that workers receive appropriate training in safe work practices and procedures used in the handling, disposal, or cleaning and disinfection of apparently healthy, ill, or dead birds, feces, feathers, bedding, feed, and contaminated surfaces, equipment, and vehicles. This includes the hazards associated with the use of cleaning and disinfecting agents, and inert gases or carbon dioxide (CO_2) that may be used to cull infected or potentially infected flocks.

Workers who wear personal protective clothing and equipment (PPE) should be trained in the selection, care, use, and cleaning and disinfection or disposal of the PPE. The training should include training in the donning of PPE and the safe removal of contaminated PPE and in personal hygiene practices to be followed, such as hand hygiene.

Training in the selection, care, and use of respirators should form part of a respiratory protection program. *CSA Standard Z94.4-02, Selection, Use and Care of Respirators* sets out the recommendations for the respiratory protection program, including fit testing, training, and determination of the worker's fitness to wear a respirator.

The use of personal protective clothing and equipment can impose significant physical burdens on the worker. Respirators add breathing resistance, interfere with communication and, in the case of full facepiece respirators, may fog up and interfere with vision. Goggles are also subject to fogging, and although anti-fogging coatings and lenses are available, they may be variably effective, especially in warm, humid weather. Since personal protective clothing and equipment is impervious, it increases the risk of heat related illness. Workers should be trained in the recognition and prevention of heat related illness, and in appropriate first aid measures. A hot weather plan should be prepared to support the prevention of heat related illness.

1.6 Policies and Procedures

The employer, in consultation with the worker representative and the Joint Health and Safety Committee, if any, should develop and implement a number of health and safety policies and procedures to support the selection, care, and use of personal protective clothing and equipment. These include:

- Respiratory Protection Program,
- Hot Weather Plan,
- Biological and Chemical Safety Training Program,
- Policies and Procedures for the Selection, Care and Use of Non-Respirator PPE, and
- Safe Work Practices and Procedures for Low, Moderate, and High Risk Work.

Advice for employers on developing training programs including implementing a respirator protection program may be obtained from the Farm Safety Association (www.farmsafety.ca), experienced private sector consultants and some respirator equipment manufacturers and suppliers.

SECTION 2
PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

TABLE 1

	Hygiene Precautions	Hand Protection	Respiratory Protection	Eye Protection	Protective Clothing	Foot Protection	Fall Protection
Low Risk Activities *(Routine Practices)*	Hand washing is recommended. Use soap and water, lathering for at least 15 seconds, then rinsing, or use alcohol-based hand sanitizers if hands are not visibly soiled. Alternatively, if hands are soiled and running water is not available, a moist towelette can be used to remove visible soil, followed by application of an alcohol-based hand sanitizer. No eating, drinking, or smoking where there is risk of contamination. Clean then disinfect equipment and work surfaces before leaving workplace where appropriate. Touching or washing (If needed) face only after hand hygiene has been performed	Routine industry precautions	Respiratory protection is not normally recommended unless there is a risk of generating significant aerosols or airborne particulate. NIOSH-approved disposable N95 particulate respirators for operations that generate dusts or aerosols. Higher levels of protection may be needed to address other inhalation hazards in the workplace: Although the minimum recommendation is a NIOSH-approved particulate respirator for operations that generate dusts or aerosols, a powered air-purifying respirator (PAPR) may be the preferred level of protection under various conditions. If culling is performed using CO_2 or inert gas a supplied-air respirator may be recommended.)	Safety glasses or face shield may be recommended while handling birds. (see section 3.4 below for further details)	Separate work clothes are recommended. Impervious aprons may be recommended for some activities. (see section 3.5 below for further details)	Separate foot wear is recommended Boot covers or rubber boots may be recommended for some activities (see section 3.6 below for further details)	Take reasonable precautions to protect workers required to work at heights, e.g.: on ladders or elevated work platforms. (see section 3.7 below for further details)
Moderate Risk Activities *(Additional Precautions)*	As above	Disposable latex or nitrile gloves or reusable heavy duty rubber gloves that can be cleaned and then disinfected (see section 3.2 below for further details)	NIOSH-approved disposable N95 particulate respirators for operations that generate dusts or aerosols. As above concerning PAPR	Tight-fitting goggles are recommended to prevent contact between conjunctiva and potentially infectious airborne particulate.	Impervious coveralls with head coverings and preferably covered zippers and impervious aprons as needed.	Boot covers or rubber boots that can be cleaned and then disinfected.	As above
High Risk Activities *(Additional Precautions)*	As above In addition: Clean then disinfect equipment, vehicles, work surfaces, and clothing before leaving workplace.	Disposable latex or nitrile gloves or reusable heavy duty rubber gloves that can be cleaned and then disinfected. (see section 3.2 below for further details)	NIOSH-approved disposable N95 particulate respirators for all high risk activities. As above concerning PAPR	As above In addition: A full face piece PAPR, if used, would provide eye protection and eliminate the need for goggles.	As above. In addition: Covered zippers and taping of wrist cuffs are recommended.	As above In addition: Taping of ankle cuffs is recommended. Taping of boot covers is recommended to eliminate tripping hazard	As above

SECTION 3

PERSONAL PROTECTIVE EQUIPMENT DESCRIPTORS

3.1 Hygiene Precautions

- Lather all surfaces of the hands vigorously with soap and warm running water for at least 15 seconds. If hands are not visibly soiled, clean with an alcohol-based hand sanitizer. Apply one to two pumps of the sanitizer and follow manufacturer's recommendation for use. Both methods are effective against influenza viruses. Alternatively if hands are dirty and running water is not available, moist towelettes can be used to remove visible soil prior to applying the alcohol-based hand sanitizer.
- Hand hygiene should always be done after removal of PPE and prior to eating, drinking or smoking.
- If disposable or reusable half facepiece respirators are worn in dusty workplaces, wash the face following removal of the respirator, after washing/sanitizing hands, to prevent inhalation or ingestion of contaminated material.
- Cleaning with common cleaning agents such as detergents removes viruses found on contaminated surfaces. Disinfection inactivates disease-producing micro-organisms, and can be achieved by using one part household bleach mixed with 9 parts water, 70% alcohol, or commercial disinfectants. Visibly dirty surfaces should be cleaned with detergent and water prior to use of disinfectants.
- All contaminated equipment and surfaces should be cleaned and then disinfected as appropriate before leaving low or moderate risk workplaces.
- All equipment, surfaces, vehicles, and clothing should be cleaned and then disinfected before leaving high risk workplaces.
- Clothing and shoes used while carrying out moderate and high-risk activities that cannot be cleaned and disinfected at the workplace should be sealed in plastic bags until they can be cleaned and disinfected or disposed of in accordance with local regulations.

3.2 Hand Protection

- Disposable latex or nitrile gloves, or heavy duty rubber gloves that can be cleaned and then disinfected, should be worn when handling birds, feathers, feces, bedding or contaminated equipment and materials in moderate and high risk situations. Latex and nitrile gloves have lower failure rates and provide better protection than vinyl gloves. Caution should be used when assigning latex gloves because of the risk of latex allergy Disposable gloves should be removed, without touching the outer surfaces, and discarded before touching uncontaminated surfaces. Reusable gloves should be cleaned and then disinfected and stored in

sealed plastic bags before touching uncontaminated surfaces. Gloves should be inspected before and during use and discarded immediately if they are torn or visibly deteriorated. Gloves should be taped to coveralls when working in high risk workplaces.

3.3 Respiratory Protection

- Workers who wear respirators should be trained in the selection, care, and use of the respirator assigned to them. They should be fit-tested and a respiratory protection program should be developed and implemented in the work place. CSA Standard Z94.4-02 sets out the recommendations for a respiratory protection program.
- Respiratory protection should not normally be recommended in low risk work places unless there is a risk of generating aerosols or airborne particulate. Work practices should be designed to minimize the risk of generating aerosols or significant concentrations of airborne dust. A disposable NIOSH-approved N95 respirator is the minimum protection recommended for activities that may generate dusts or aerosols such as washing down surfaces, or removing soiled bedding or feed. Higher levels of protection may be needed, because of the presence of other hazards in the workplace, such as spores, bacteria or parasites that may be present in airborne dust, and carbon dioxide or inert gases that may be used in culling operations. Decisions concerning personal protective clothing and equipment should be made in consultation with a person having appropriate knowledge, training and experience, taking into account the risk that the work activities may produce high airborne dust concentrations or require the use of carbon dioxide or inert gases.
- A disposable N95 half face piece respirator is recommended if there is a risk of generating aerosols or airborne particulate, regardless of the risk category. Alternately, for greater protection in dusty environments, a hood or helmet style powered air-purifying respirator (PAPR) equipped with high-efficiency particulate filters or a full facepiece powered or non-powered air-purifying respirator can be used. Powered air-purifying respirators are generally better tolerated than non-powered respirators, especially during work in hot environments. This is partly because of lower breathing resistance and partly because of the cooling effect of the air blown across the face. Workers who require corrective lenses may have to be provided with facepieces equipped with spectacle hangers or equivalent devices.
- Workers who wear tight-fitting respirators should be clean-shaven where the facepiece seals to the skin. Those who are unable to shave for religious or medical reasons, or who cannot achieve a proper seal between the respirator and the skin of the face because of scarring or other facial irregularities, should be accommodated using a hood or helmet style PAPR.

- If culling is performed using carbon dioxide or an inert gas, oxygen may be displaced and workers may require the use of a supplied-air respirator or self-contained breathing apparatus. Employers and workers should obtain advice on the selection and use of respiratory protection from a person having appropriate knowledge, training and experience.

3.4 Eye Protection

- Safety glasses or a face shield provide protection against physical injury and restrict contact between potentially contaminated gloves and the eyes. They do not provide adequate protection against significant concentrations of dusts or mists and should not be used in moderate or high risk operations where viruses may come in contact with the conjunctiva of the eyes.
- Tight-fitting non-vented goggles or a full facepiece respirator should provide adequate eye protection against airborne viral material. Directly vented goggles should not be used in high risk work places. Goggles and respirator facepieces may fog up and interfere with the worker's vision. Anti-fogging lenses or coatings are available, but they may be variably effective.

3.5 Protective Clothing

- Impervious aprons may be recommended for work at any time in which workers' clothes are likely to become significantly wet (e.g. cleaning and disinfecting equipment, working directly with wet birds etc.).
- Disposable protective clothing may not be recommended for other activities such as banding apparently healthy wild birds, or bird rehabilitation, but work clothing should be washed at the end of the work day, and should be changed and washed as soon as possible if it becomes heavily soiled.
- The minimum recommendation for protective clothing for moderate risk activities is an impervious disposable coverall with a hood. Impervious disposable coveralls with covered zippers and a hood are recommended for use during high risk activities. Gloves and boot covers should be taped to the coverall for carrying out high risk activities. Impervious aprons may be recommended for activities such as cleaning and disinfection of equipment and surfaces, or post mortem examination of infected birds.

3.6 Foot Protection

- Impervious rubber boots or boot covers may be recommended for some work activities in low risk work places. One example would be the cleaning and disinfection of floors and other surfaces and equipment. Protective footwear may not be recommended for some other activities such as bird banding or bird rehabilitation.

- Boot covers or impervious rubber boots that can be cleaned and then disinfected should be worn in moderate or high risk work places.
- When boot covers are worn, consideration should be given to taping them to the coverall to reduce the tripping hazard.

3.7 Fall Protection

- Cleaning and disinfection of all surfaces in a workplace following a cull may involve work at heights. The employer should consult the regulatory agency having jurisdiction over the workplace with regard to the requirements for fall protection and take every precaution reasonable in the circumstances for the protection of a worker.

SECTION 4

GLOSSARY

List of Acronyms

CDC	US Centers for Disease Control and Prevention
CFIA	Canadian Food Inspection Agency
CO_2	Carbon Dioxide
CSA	Canadian Standards Association
FSA	Farm Safety Association
HC	Health Canada
H5N1	An avian influenza virus, type “A” with a subtype of H5N1
HPAI	Highly Pathogenic Avian Influenza
LPAI	Low Pathogenic Avian Influenza
OSHA	US Occupational Safety and Health Administration
N95	Not resistant to oil, 95% filter efficiency
NIOSH	US National Institute for Occupational Safety and Health
PAPR	Powered air-purifying respirator
PHAC	Public Health Agency of Canada.
USDA	US Department of Agriculture
WHO	World Health Organization

Glossary of Terms

Additional Precautions are required when routine practices (see below) are not sufficient to prevent transmission of certain micro-organisms.

Aerosols are fine solid or liquid particles suspended in a gas (such as the air).

Air-Purifying Respirators are respirators that force contaminated air through a filtering element to remove contaminants. These respirators include: negative-pressure respirators which use mechanical filters and chemical media; and positive-pressure units such as powered air-purifying respirators (PAPRs).

Air-Supplied Respirators are respirators that provide the wearer with an alternate supply of fresh air.

Alcohol-Based Hand Sanitizers are liquids or gels that can be used as an alternative to washing hands with soap and water. The Ontario Provincial Infectious Diseases Advisory Committee considers alcohol hand sanitizers to be an equal alternative to soap and water for hand hygiene when hands are not visibly dirty.

Avian Influenza (AI) is a contagious viral infection caused by the influenza virus Type "A", which can affect several species of food producing birds (chickens, turkeys, quails, guinea fowl, etc.), as well as pet birds and wild birds.

AI viruses can be classified into two categories: low pathogenic (LPAI) and high pathogenic (HPAI) forms based on the severity of the illness caused in birds, with HPAI causing the greatest number of deaths in birds. Most AI viruses are low pathogenic and typically cause little or no clinical signs in infected birds. However, some low pathogenic viruses are capable of mutating into high pathogenic viruses. There are many influenza subtypes, two of which include H5 and H7. Historically, only the H5 and H7 subtypes are known to have become high pathogenic in avian species.

The disease occurs worldwide. While all birds are thought to be susceptible to infection with avian influenza viruses, many wild bird species carry these viruses with no apparent signs of illness.

Some strains of avian influenza viruses can infect people, although transmission from birds to humans is relatively rare. Of the hundreds of strains of avian influenza A viruses, only four are known to have caused human infections (H5N1, H7N3, H7N7 and H9N2).

Biological and Chemical Safety Training Program is designed to ensure that workers receive enough information about biological or chemical substances that exist in their workplace to enable them to handle them safely. Worker access to toxic substances must be controlled and all toxic substances in the workplace must be clearly identified.

CFIA Control Area is a geographical area, that is legally declared by the Federal Minister of Agriculture under the Federal *Health of Animals Act,* to be subject to specific controls that are designed to contain and/or eradicate outbreaks of serious animal diseases, such as HPAI. The control area includes Infected Zone(s), Restricted Zone(s) and often an area beyond Restricted Zone(s). It may include large portions of the province to facilitate movement controls while maintaining industry integrity, and to allow additions and changes to the boundaries of Infected, Restricted or Surveillance Zones.

CFIA Infected Zone is a geographic area, within a Control Area, that contains the premises where infected birds were found. The perimeter of the infected zone can extend a minimum of 3 km beyond all known infected premises and follows, when possible, natural barriers and roadways to facilitate implementation of disease control procedures. There may be more than one infected zone in a Control Area.

CFIA Restricted Zone is a geographic area, within a Control Area, that is between 3 km and 10 km of known infected birds or premises, with boundaries that, when possible, follow natural barriers and roadways to facilitate implementation of disease control procedures.

Cleaning The physical removal of organic matter or debris from objects, usually done using water, detergent and friction. This process removes micro-organisms primarily by mechanical action but does not destroy those remaining on the object.

Clinical Illness is where an individual/animal displays all or some of the symptoms normally attributable to the disease.

Conjunctiva is a mucous membrane of the eye that covers the white part of the eye and lines the inside of the eyelids. Infectious diseases can be transmitted through the conjunctiva. Dirt or infectious agents are introduced to the eye either directly (e.g. aerosols from a dusty environment) or from touching the eyes with contaminated hands or other contaminated objects such as gloves.

Culling of animals is one of the control measures used to eradicate and prevent further spread of serious animal diseases, such as HPAI. For HPAI, it involves the destruction of poultry flocks that meet the CFIA case-definition for disease control purposes. It may also involve pre-emptive culling of birds declared to be high risk by the CFIA.

Disinfection is a process that kills or destroys most disease-producing micro-organisms, with the exception of bacterial spores.

Ecological link in this document refers to environmental links between groups of infected birds.

Epidemiological link in this document refers to birds that have confirmed contact with other birds infected with HPAI.

Face shields provide general protection to the wearer's face and front of the neck from aerosols. Face shields do not enclose the eyes and where necessary should be worn in conjunction with safety glasses or goggles.

Fit-testing ensures that the masks wearers are using are properly fitted to their faces. Fit testing improves the effectiveness of masks.

Goggles are used to provide protection for the eyes against splashes, sprays, and aerosols. Goggles do not provide splash or spray protection to other parts of the face. Goggles must fit tightly against the face of the wearer and enclose the wearer's eyes. Prescription glasses are not a substitute for goggles. Goggles should be indirectly ventilated.

H5N1 is a group of type "A" influenza viruses, some of which cause Low Pathogenic Avian Influenza (LPAI) disease in birds, some of which cause High Pathogenic Avian Influenza (HPAI) in birds, and some of which cause mild or severe disease and death in humans. The Asian strain of HPAI H5N1 influenza virus is of particular concern because it has caused high mortality in wild and farmed birds. In humans, the Asian strain of H5N1 has caused the greatest number of cases of severe disease and the greatest number of deaths of all

avian strains known to have caused human infection. It is highly contagious among birds. To date, transmission from birds to people has been relatively rare and has been mostly limited to people who had direct contact with infected birds.

Hand Hygiene A process to remove or destroy micro-organisms on the hands. Can be done with soap and running water or an alcohol-based hand sanitizer, provided hands are not visibly soiled.

High Pathogenic Avian Influenza (HPAI) see Avian Influenza above.

Hot Weather Plan is designed to prevent heat related illness in the workplace. Plans should be prepared by employers whose employees are working in hot and/or humid work environments. Plans involve modifying the work or work environment to lessen the heat related stress that their workers experience. Some examples of measures that an employer could use as part of a hot weather plan include: more frequent breaks, providing air conditioned rest areas, cooler personal protective equipment.

Hot Zone a demarcated area of a work place immediately around and including known or strongly suspected HPAI infected or contaminated birds or materials, in which PPE is to be worn.(e.g. area immediately around and including a barn with birds known to be infected or strongly suspected of being infected with HPAI)

Impervious Aprons or **Impervious Coveralls** prevent fluids or organic matter from reaching the wearer's clothing. The type of impervious clothing used will vary depending on the protection needed.

Industrial Hygiene Practices are practices which control chemical, physical or biological hazards in the workplace that could cause disease or discomfort.

Inert gases are gases that are not reactive under normal circumstances. Inert gases and CO_2 may be used to cull commercial poultry flocks during an avian influenza outbreak.

Joint Health and Safety Committee is a committee who represents the workers and the employer at a workplace. Their primary role is to identify workplace health and safety problems and bring them to the attention of the employer.

Low Pathogenic Avian Influenza (LPAI) see Avian Influenza above.

N95 Particulate Respirator is a High Efficiency Particulate Air (HEPA) filter mask or respirator capable of filtering very small particles and some micro-organisms. N stands for "not resistant to oil" and 95 refers to the efficacy of the mask. A N95 mask removes 95% of the particles that are 0.3 microns in size or larger from the air.

Personal Hygiene Practices are practices used by individuals to prevent or reduce the risk of contracting diseases and can include hand washing and avoiding contact with contaminated surfaces.

Personal Protective Equipment (PPE) refers to specialized clothing or equipment worn by an individual for protection against infectious materials. (Reference: OSHA)

Protective footwear protects the wearer from any health and safety hazards. The nature of the hazard will determine what type of protective footwear should be worn.

Respirators are devices designed to protect the wearer from inhaling harmful dusts, fumes, vapours, and/or gases. Respirators come in a wide range of types and sizes.

Respiratory Protection Programs are established in workplaces to assess workplace hazards, identify which respirators should be used, what training is provided, and to establish the roles and responsibilities for all parties involved with the use and care of the respirators.

Routine Practices: The Health Canada/Public Health Agency of Canada term to describe the system of infection prevention and control practices recommended in Canada to prevent and control transmission of micro-organisms. These practices describe infection prevention and control strategies recommended for use at all times.

Safety glasses provide impact protection but do not provide the same level of splash or droplet protection as goggles. Safety glasses should have shatter-resistant plastic lenses. Unlike goggles, safety glasses do not tightly fit against the wearer's face.

REFERENCES

1. Avian Influenza: Protecting Poultry Workers at Risk. Safety and Health Information Bulletin, U.S. Department of Labour, Occupational Safety and Health Administration, Directorate of Science, Technology & Medicine, Office of Occupational Medicine, SHIB 12-13-2004.
2. Histoplasmosis: Protecting Workers at Risk, Revised Edition. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, National Center for Infectious Diseases. DHHS (NIOSH) Publication No. 2005-109.
3. ECDC guidelines to minimize the risk of humans acquiring highly pathogenic avian influenza from exposure to infected birds or animals. European Centre for Disease Prevention and Control, Version December 21st 2005.
4. An Analysis of Gloving Materials. Ansell Continuing Education. 2001.
5. Wildlife Health Bulletin #05-03: Interim Guidelines for the Protection of Persons Handling Wild Birds With Reference to Highly Pathogenic Avian Influenza. USGS National Wildlife Health Center, August 29, 2005.
6. Interim Guidance for Protection of Persons Involved in U.S. Avian Influenza Outbreak Disease Control and Eradication Activities. Department of Health and Human Services, Centers for Disease Control and Prevention, February 17, 2004.
7. Precautions (“Biosafety Practices”) when handling wild birds. Canadian Wildlife Service National Site, National Wildlife Research Centre.
8. Wild Bird Plan, U.S. Department of Agriculture.
9. Hand Washing, Cleaning, Disinfection and Sterilization, 1998, available at the PHAC website, under Guidelines, Infection Control
10. Best Practices for Cleaning, Disinfection and Sterilization in All Health Care Settings, PIDAC March 2006
11. Human Health Issues Related to Avian Influenza in Canada, September 2006, publication is in process by PHAC
12. Epidemic and Pandemic Alert and Response, World Health Organization, December 5, 2005
13. Best Practices for Cleaning, Disinfection and Sterilization, Provincial Infectious Disease Advisory Committee, April 30, 2006
14. Canadian Food Inspection Agency www.inspection.gc.ca/english/anima/heasan/disemala/avflu/avflue.shtml