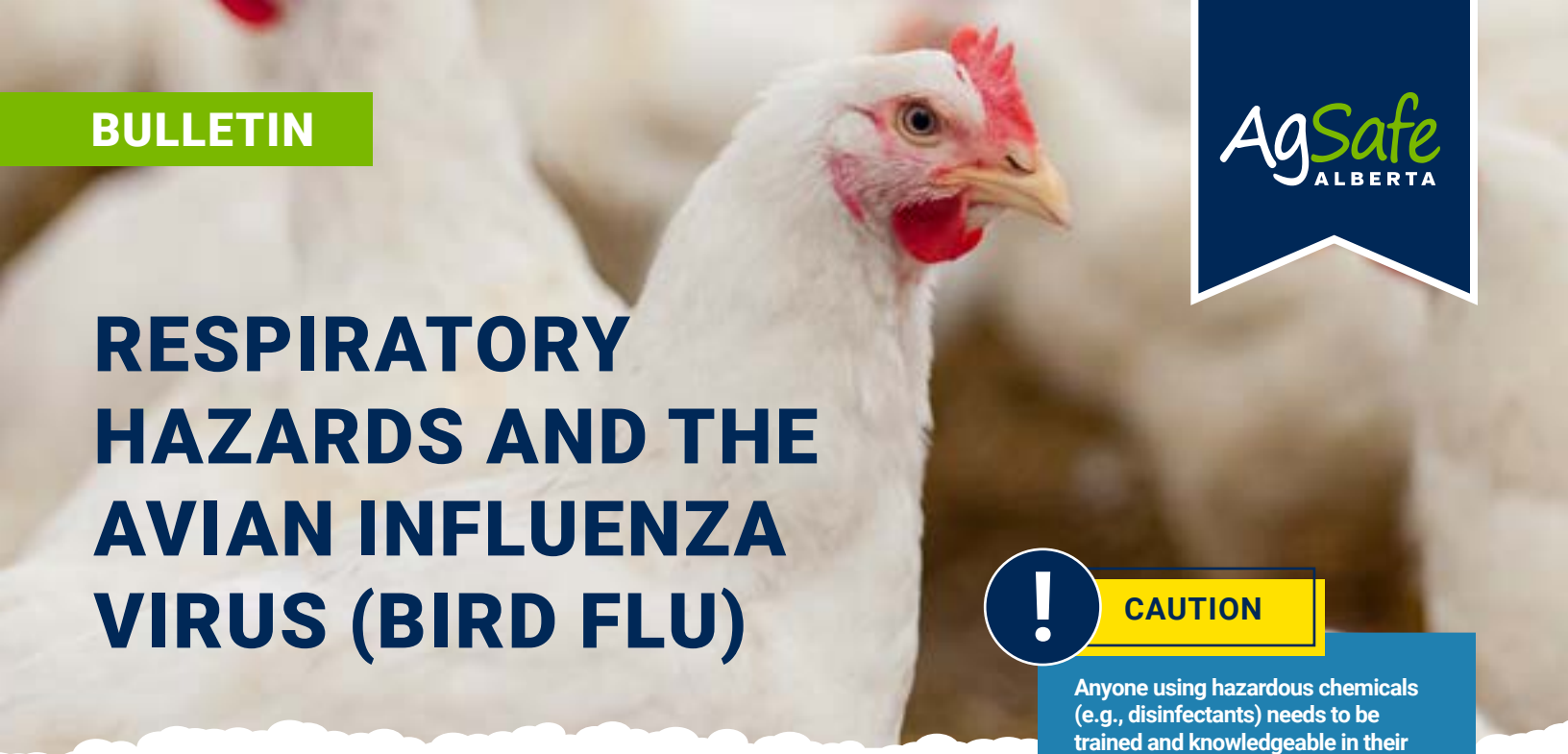


BULLETIN

RESPIRATORY HAZARDS AND THE AVIAN INFLUENZA VIRUS (BIRD FLU)

INTRODUCTION

Farming is filled with respiratory hazards, and this is especially true when a poultry barn is affected by the avian influenza virus. During an outbreak, efforts to stop the spread of the disease can increase the risk of workers being exposed to different types of respiratory hazards. These respiratory hazards include dusts and dander, mists and sprays from disinfecting chemicals, and potentially even highly toxic or low oxygen environments. As for the virus, it is spread through contact with fecal matter, saliva and nasal discharges of infected birds,[1] and when these particles become airborne, they can be inhaled by workers. It is important to note that avian influenza A viruses do not typically infect humans, and while isolated cases have been reported[2], appropriate hazard control measures should still be taken.

RESPIRATOR BASICS

A respirator is a type of personal protective equipment worn by the respirator user. It protects them from breathing in airborne contaminants and/or inhaling a hazardous atmosphere. Respirators must be approved by the National Institute for Occupational Safety and Health (NIOSH), or another similar organization approved by Alberta Labour.

The Centers for Disease Control and Prevention (CDC) recommends the use of NIOSH-approved air-purifying respirators with a particulate filter that is rated N95 or higher for workers who have contact with the bird flu.[4] The farm will need to assign someone to ensure the right type of respiratory protective equipment is selected.

Respirators should be part of a complete respiratory protection program, as anyone using a respirator will need to be:

- **Pre-screened and receive a health care provider's approval, if required**
- **Trained in the respirator's use, care and maintenance**
- **Fit tested**
- **Viewed as competent by the farm to both use the respirator and perform the work that requires respiratory protective equipment**
- **Found to have the necessary ability, knowledge and skill to both use the respirator effectively and perform the job or task safely**

CAUTION

Anyone using hazardous chemicals (e.g., disinfectants) needs to be trained and knowledgeable in their safe use, handling and storage, as well as in WHMIS 2015. Always read the product label and safety data sheet and follow the manufacturer's directions before use. Something as simple as mixing a product containing bleach with ammonia can have deadly consequences.

DID YOU KNOW?

While most of us are familiar with the presence of ammonia in a poultry barn, we may not understand what it does to our health. Ammonia is an irritant to both the eyes and respiratory tract and can be quite damaging to the body. When breathed in, ammonia hinders the flow of mucus and the function of the tiny hair like structures (called cilia) that line and protect the upper part of the respiratory tract, making the person or animal more easily affected by airborne pathogens and contaminants.[3]

[1] Upper Midwest Agricultural Safety and Health Centre. (March 2022). Avian Influenza Personal Protective Equipment (PPE) Guidelines. umash.umn.edu. Accessed April 18, 2022, from http://umash.umn.edu/wp-content/uploads/2022/03/Avian-Influenza-PPE.pdf.

[2] Centers for Disease Control and Prevention. (May 2017). Avian Influenza. www.cdc.gov. Accessed April 14, 2022, from https://www.cdc.gov/niosh/topics/avianflu/default.html .

[3] Jester, R.C., Malone, G.W. (Unknown). Respiratory Health on the Poultry Farm. Accessed April 14, 2022, from https://nasdonline.org/197/d000146/respiratory-health-on-the-poultry-farm.html

[4] Centers for Disease Control and Prevention. (March 2022). Recommendations for Worker Protection and Use of Personal Protective Equipment (PPE) to Reduce Exposure to Novel Influenza A Viruses Associated with Severe Disease in Humans. www.cdc.gov. Accessed April 18, 2022, from https://www.cdc.gov/flu/avianflu/h5/worker-protection-ppe.htm

GENERAL OVERVIEW OF RESPIRATOR SELECTION

STEP 1

Assess the hazards

Many conditions and factors need to be considered when selecting the right type of respiratory equipment. These considerations include, but are not limited to, whether the respirator is going to be used for IDLH or emergency conditions. The farm will need to look at the jobs and tasks performed on it and complete hazard assessments for them, paying close attention to the potential respiratory hazards and risk involved.

STEP 2

Control the hazards

If the respiratory hazards cannot be eliminated or brought down to a reasonable level through other hazard controls methods (substitution, engineering or administrative), or if other hazard controls measures are not found to be reasonable or practical, the farm will use the completed hazard assessments to help determine the right type of respirator.

CAUTION

Respirators are your last line of defense against a hazard and should only be used in combination with other hazard control measures, such as effective ventilation.

STEP 3

Selecting the right type of respirator[5]

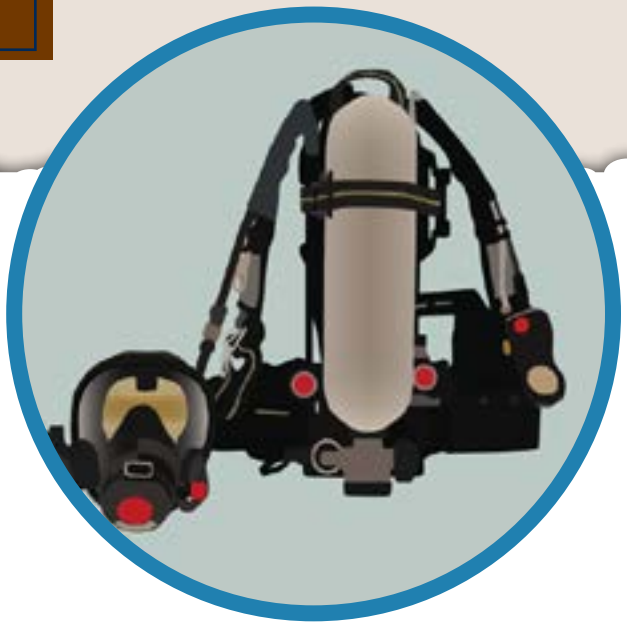
Using the completed hazard assessments, a qualified person will also need to consider:

- **The characteristics of the respiratory hazard(s)**
- **The actual or likely concentration of the respiratory hazard(s)**
- **The actual or likely length of time of the worker's exposure**
- **How dangerous or toxic the respiratory hazards are**
- **The amount of oxygen in the work area**
- **The warning properties of the respiratory hazards, if any**
- **The need for emergency escape**

ONLINE *Filtering Facepiece Respirators Found on Farms*

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH) ATMOSPHERES

Oxygen deficient (low oxygen) atmospheres contain less than 19% oxygen (normal air contains almost 21% oxygen). These low oxygen work environments can be caused by oxidation (e.g., rusting metal), sources of combustion (e.g., a running generator), and situations where the oxygen has been moved out of an area (displaced) by other gases. Atmospheres with low oxygen levels or that contain highly toxic chemicals are considered immediately dangerous to life or health (IDLH). IDLH atmospheres may be found in a poultry barn, such as when depopulation is occurring. Special measures are required for these high risk environments and tasks, especially when it comes to respiratory protective equipment. If you require support in this area, please contact AgSafe Alberta at info@agsafeab.ca.

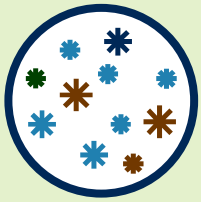


Centers for Disease Control and Prevention. (September 2019). Types of Respiratory Protection. www.cdc.gov. Accessed April 28, 2022 from https://www.cdc.gov/niosh/npptl/pdfs/RespProtectionTypes-508.pdf

[5] Alberta Government. (March 2020). Respiratory Protective Equipment: An Employer's Guide. Open.alberta.ca. Accessed April 18, 2022 from https://open.alberta.ca/dataset/fc7d7a8d-973d-488f-b3bf-9a3fdeac9ffb/resource/003f4e0c-5c37-4c4c-8165-347d919718fa/download/lbr-respiratory-protective-equipment-guide-2020-03.pdf .

FILTERS, CARTRIDGES, AND WARNING PROPERTIES

Filtering facepiece respirators will be most common on farms. Some types of filtering facepiece respirators need to be used with air-purifying filters or cartridges designed to remove specific contaminants from the air, such as:



PARTICULATE FILTERS

- Trap the particles in the air that the respirator user is inhaling
- When filters become clogged, the risk of contaminated air entering the respirator around the seal increases

CARTRIDGES

- Can be multi-purpose gas and vapour cartridges or combination gas and vapour cartridges with particulate filters
- When cartridges become wet or saturated, they can stop working and may result in *breakthrough exposure* to the gas and/or vapour

Gas and vapour cartridges can only be used if the contaminant they are protecting the respirator user from has acceptable warning properties. Warning properties can be used tell the respirator user that the cartridge is no longer working before it is scheduled to be changed out. This occurs when the respirator user:

- Is able to **SMELL** the contaminant (odour)
- Is able to **TASTE** the contaminant
- Can **FEEL IRRITATION** in their respiratory tract

CAUTION

The use of warning properties (waiting for a breakthrough exposure to occur) is not an acceptable way to find out that it is time to change a cartridge. An appropriate change out schedule for filters and cartridges will need to be created by a qualified person.

DID YOU KNOW?

Most people will recognize ammonia at levels of 20 to 30 ppm. Individuals with frequent exposure to recognizable ammonia gas levels lose their sensitivity to it and may no longer detect high levels of ammonia (50 to 100 ppm)[6]. These individuals will not be able to sense breakthrough exposure and special measures will need to be taken to ensure they are protected.

END-OF-SERVICE LIFE INDICATORS (ESLI)

Different contaminants will have different warning properties, and some may have poor warning properties. Cartridges ***should not*** be used for contaminants with poor warning properties unless the cartridge used has an end-of-service-life indicator (ESLI). End-of-service-life indicators are designed for use with contaminants that have poor warning properties. These devices change colour to show when a cartridge has been used up, is no longer effective and needs to be changed.

Air-purifying respirators may only be used for contaminants with poor warning properties (e.g., cannot be smelled) if they are equipped with an end-of-service-life indicator. When a contaminant has poor warning properties and an end-of-service-life indicator is not possible, an air-supplying respirator (e.g., SCBA) must be used.

[6] Fabian, E.E. (March 2019). Detecting Ammonia in Poultry Housing Using Inexpensive Instruments. Extension.psu.edu. Accessed April 18, 2022 from https://extension.psu.edu/detecting-ammonia-in-poultry-housing-using-inexpensive-instruments

AgSafe ALBERTA

Be sure to visit

www.AgSafeAB.ca

for more information.

For more information on types of filtering facepiece respirators commonly found on farms, click here.

No matter the size of your operation or where your farm is at with safety,

WE ARE HERE TO HELP YOU.

Go to **www.AgSafeAB.ca** for more tools and resources to support safety on your farm or ranch:

- **Manuals & workbooks**
- **Online learning**
- **Quickstart guides**
- **Bulletins**
- **Toolbox talks**
- **Webinars**

Call us at **1.833.924.7233** to:

- **Get incident support**
- **Find answers to your safety related questions**
- **Have an advisor visit you on your farm**
- **Have courses and workshops delivered on your farm or in your community**

COMING SOON

Respiratory Protective Equipment Awareness Training by AgSafe Alberta!

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