

Interim Guidelines on Use of Personal Protective Equipment in Settings Where Workers May be Exposed to Birds Infected With Zoonotic Avian Influenza

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The following table contains minimum recommendations for personal protective equipment (PPE) for employees who may be exposed to birds or other animals potentially infected with avian influenza (AI) that can cause human disease (zoonotic infection)¹. PPE is an important method of reducing zoonotic AI risks to employees, and should be included in a comprehensive infection control program that includes biosecurity measures, engineering and work practice controls, and medical surveillance. Although an attempt is made to recommend equipment based on projected exposures and associated risks, employers and site safety officers should continuously evaluate the information about the disease and the specific circumstances of exposure in order to determine whether the recommended level of protection is adequate.

The recommendations below are based on assumptions about the likelihood that zoonotic disease is present, ventilation in the area, and the amount of aerosol likely to be present. In addition, the selection of personal protective equipment must be based on the work activities to be conducted, the site safety plan, compatibility with decontamination procedures, and other health and safety concerns such as heat stress. Where feasible, the employer should attempt to minimize exposure through work practices, such as the inverted bag technique for collecting and disposing of dead birds, the use of dust suppression methods in cleaning and handling of waste, mechanized methods that reduce employee exposure, and providing ventilation to indoor operations (the exhaust may need to be filtered for infection control purposes). All employees must be trained in infection control practices that apply to their work operations, use of PPE, and decontamination procedures. Additional training recommendations are included in the table.

The recommendations below address hazards associated with avian influenza and related culling and disposal operations. The recommendations are triggered by an increased likelihood of exposure to infected animals, animal products, or waste. Employers with operations that are potentially affected by avian influenza need to prepare before infection is detected, so that operations can continue with minimal disruption. For example, employers should identify employees who will need to use respiratory protection, so that they can be medically evaluated, trained, and fit-tested for the equipment. Employers should ensure that their washing and clothes changing facilities will provide for adequate sanitation and decontamination. Also, in order to facilitate medical surveillance in the event of an AI outbreak, employers should establish a system to log persons entering into potentially contaminated areas. In addition employers should provide seasonal influenza vaccine to exposed workers.

Normal poultry operations may expose workers to other hazards, including exposures to organic dusts and hazardous substances that can cause chronic respiratory problems. These hazards should be addressed through the employer's Injury and Illness Prevention Program (T8 CCR 3203) and related safety programs.

1. The Asian H5N1 avian influenza viruses, circulating during 2004-2006 are an example of a zoonotic AI strain.

Respiratory Protection: (T8 CCR 5144)

Employees who use respirators to protect against AI, including N-95 filtering facepiece respirators, must be included in a Respiratory Protection Program as required by Cal/OSHA regulations. This includes evaluation of the hazards and appropriate respirator selection, maintenance and use. Although single-use filtering facepiece respirators, such as N95 respirators, may be appropriate for some of the tasks listed in this table, they do not provide protection against chemical hazards, and they are not approved for use in environments where oil-mists are present. In addition, the respirator may not provide adequate protection in high moisture and high concentration environments, such as mass culling, eradication and disposal operations conducted in poultry houses. In those cases, a minimum of an elastomeric facepiece respirator or powered air-purifying respirator (PAPR) is recommended, with appropriate combination cartridges that include a P-100 or HEPA² filter and protection against gases and vapors likely to be present, such as ammonia. **None of these air-purifying respirators have a separate air supply for the user, and therefore cannot be used in oxygen deficient atmospheres.** Therefore, if carbon dioxide or other asphyxiants are used for euthanasia, the atmosphere must be monitored prior to workers entering the area, to ensure that carbon dioxide does not exceed the permissible exposure limits, and that the oxygen content is above 19.5 percent. Atmosphere supplying respirators must be used in oxygen-deficient atmospheres.

Respirator users must be provided with a medical evaluation for respirator use, training, and fit-testing for all respirators except loose-fitting respirators such as hoods and helmets. Fit testing is necessary to ensure that the respirator can properly seal to the wearer's face. Training must address the circumstances under which respirators should be used and the proper use of the respirator, and its limitations. Detailed information on respiratory protection programs is provided at:

http://www.dir.ca.gov/dosh/dosh_publications/respiratory.pdf,
www.osha.gov/SLTC/etools/respiratory/index.html and
<http://www.cdc.gov/niosh/npptl/topics/respirators/>.

Eye Protection: (T8 CCR 3382)

Handling animals can result in injuries to the eye, and contact with dusts and mists can also cause eye irritation. Some disinfectants are also corrosive or severely irritating to the eye. Eye contact with avian influenza virus may cause eye infections, and there is some evidence that it may also cause systemic AI infection. Therefore, eye protection is recommended for all operations where there is a risk of eye injury or infection. Full facepiece respirators and some PAPRs provide eye protection. Where separate eye protection is required, a minimum of indirectly vented goggles should be used if there is a hazard of exposure to infectious aerosols. Eye protection and full facepiece respirators should be of an anti-fog type, and/or anti-fog products should be used. More information on eye protection for infection control can be found at <http://www.cdc.gov/niosh/topics/eye/eye-infectious.html>.

² High Efficiency Particulate Aerosol

Hand Protection: (T8 CCR 3384)

Gloves are recommended where they are necessary to prevent injuries to the hand, and also as an infection control measure. Thin disposable gloves do not provide protection against mechanical injury and are also not suitable for prolonged contact with hazardous substances. If there is a need to protect against bites or other mechanical injuries, for example when dealing with live wild birds, puncture resistant gloves which can either be decontaminated or disposed of, should be used. Site operations or decontamination procedures may require the use of a thicker outer glove, and an inner nitrile or PVC glove. Latex should be avoided due to potential sensitization. Employees should be instructed not to touch any part of the exposed body (especially the face) with gloved hands. If gloves are torn, they should be immediately removed. Hands should be washed thoroughly with soap and water, or alcohol-based gel when it is not feasible to provide water. Employees should then don a fresh pair when their hands are dry.

Coveralls/disposable suits and head coverings: (T8 CCR 3383)

Protective clothing provides a barrier to infectious dusts, and a means of containing contamination on site. Clothing should be chosen to be compatible with the biosecurity and decontamination procedures. Protective clothing increases the risk of heat illness, so where protective clothing is used, the employer should implement additional heat stress reduction measures, including providing for the safe drinking of water, frequent rest periods, scheduling of work during the cooler periods of the day, and cooling of the work area, where feasible. (T8 CCR 3395) Cooling vests may also reduce heat stress. Where there are significant concentrations of potentially infectious aerosols or significant amounts of potentially infectious debris on clothing, employees should carefully remove contaminated outer clothing and shower before entering a clean area to change into clean clothes. Shower rooms must include soap and individual clean towels (T8 CCR 3367). All water for drinking and washing, as well as soap and towels, should be protected from contamination (T8 CCR 3366).

Boots: (T8 CCR 3385)

Rubber boots or other boots that are compatible with decontamination solutions are recommended for all employees who work in contaminated areas, and are an essential part of biosecurity protocols. Boots should be left on site. Boot covers are not usually durable enough, and do not provide a sufficiently stable walking surface, for most work operations, but may be appropriate for visitors.

Donning, Doffing, and Decontamination: (T8 CCR 3380)

Personal protective equipment must be put on (donned), taken off (doffed), and cleaned or disposed of (decontaminated) in a systematic manner. While the specific method of donning and doffing depends on the equipment used, some general principles apply. For example, protective clothing should be rolled off or otherwise removed in a manner to minimize releasing material from the outer surface. Respirators should be removed last to protect employees during the doffing process. For this reason, respirators should not be worn over head coverings. (Wearing respirators over head coverings also interferes with the facepiece seal.) Re-usable equipment must be appropriately decontaminated prior to re-use, so leather and similar materials should be avoided. Disposable personal protective equipment should be handled as little as possible, and should be disposed of in accordance with Cal/EPA regulations and recommendations.

AI STATUS	ACTIVITY	Hazards	PPE ³	OTHER RECOMMENDATIONS
Zoonotic avian influenza not detected in North America	Collecting single/several dead birds ⁴ (wild)	Zoonotic diseases including AI, carcass rupture	<ul style="list-style-type: none"> • Hand Protection: disposable PVC or vinyl gloves. • Eye protection: if carcass is bloated, indirectly vented goggles. • NIOSH approved particulate respirator, N95 or better, if significant concentrations of aerosols are present⁵ • Disposable or washable protective clothing, rubber boots or boot covers, with appropriate decontamination procedures, if significant amount of debris is present. 	Appropriate work practices and methods of disposal, including bagging techniques, which minimize contact and generation of airborne material.
Zoonotic avian influenza not detected in North America	Handling sick birds (wild or domestic)	Zoonotic diseases including AI, scratches and bites.	<ul style="list-style-type: none"> • Hand Protection: disposable PVC or vinyl gloves; puncture-resistant outer gloves when necessary to protect against bites or scratches. • Eye protection: safety glasses at a minimum to protect against mechanical injury. Indirectly ventilated goggles if infectious aerosols are likely to be present. • NIOSH approved particulate respirator, N95 or better, if infectious aerosols are likely to be present.⁵ • Disposable or washable protective clothing, rubber boots or boot covers, with appropriate decontamination procedures. 	Remove PPE in a manner to minimize exposure to infectious aerosols.

³ PPE is recommended for the described activity/AI status combination

⁴ Does not apply to birds for which the cause of death is reasonably suspected not to be AI, such as birds killed by hunters.

⁵ Training should include how employees can assess whether infectious aerosols are likely to be present

AI STATUS	ACTIVITY	Hazards	PPE ³	OTHER RECOMMENDATIONS
No zoonotic avian influenza alert applicable to premises	Normal poultry operations	Exposures to dusts and other contaminants, routine biosecurity precautions	Rubber boots or boot covers, gloves, outer clothing such as coveralls and hair covers as necessary for sanitation and biosecurity.	Injury and Illness Prevention Program should include evaluation of biosecurity measures currently in use or that may be implemented in an AI alert, and their impact on employee health and safety. (e.g. Biosecurity procedures may increase exposures to chemical hazards, such as disinfectants; use of protective clothing may contribute to heat illness.) Change rooms with separate areas for clean and dirty clothing should be provided, as well as washing facilities, which should be available prior to restroom use, meal periods, and at the end of shift. Equipment should be appropriately decontaminated, and employees must be trained in decontamination procedures and chemical hazards.
Zoonotic avian influenza suspected or confirmed in North America	Handling wild birds ⁴ , sick or apparently healthy, for surveillance, veterinary or response operations	Exposure to AI by aerosols or eye contact; scratches and bites	<ul style="list-style-type: none"> • Hand protection: PVC or nitrile for infection control; puncture-resistant outer gloves where necessary to protect against bites or scratches • Eye protection: safety glasses at a minimum to protect against mechanical injury. Indirectly ventilated goggles if infectious aerosols are likely to be present. • NIOSH approved respirator, N95 or better if infectious aerosols are likely to be present, and in all operations in areas in which AI infection has been detected. • Disposable or washable protective clothing, rubber boots or boot covers, with appropriate decontamination procedures. 	Remove PPE in a manner to minimize exposure to infectious aerosols. Consider the method of decontamination in selection of glove materials.

AI STATUS	ACTIVITY	Hazards	PPE ³	OTHER RECOMMENDATIONS
<p>Zoonotic avian influenza alert from CDFA or USDA⁶, or employer voluntarily increases biosecurity due to enhanced AI risk</p>	<p>Poultry operations (includes veterinary services and animal inspections)</p>	<p>Exposure to AI by aerosols or eye contact</p>	<ul style="list-style-type: none"> • Hand protection: PVC or nitrile gloves, with puncture-resistant outer gloves where necessary to protect against bites or scratches. • Eye protection: Indirectly vented goggles, at a minimum. • NIOSH approved respirator, N95 or better for entry into indoor or enclosed areas or any area where aerosol concentration is high. • Disposable or washable protective clothing, rubber boots or boot covers, with appropriate decontamination procedures. 	<p>Implement site safety plan including a designated site safety officer and increased biosecurity measures to prevent contamination into or out of each poultry house. Log personnel entering into poultry areas, or areas where there is contact with animal waste and debris. Change rooms with showers between clean and dirty areas. Dirty clothing, boots, etc. left on site or bagged and labeled prior to leaving site. If contaminated clothing is to be laundered and reused, it should be laundered separately, using an appropriate disinfectant. Laundry employees must be protected against exposures. Employees trained in decontamination procedures and chemical hazards. Medical surveillance, provision of immunizations and antiviral medications as recommended by the CDC, CDHS or local health officer.</p>
<p>Wild birds: zoonotic avian influenza suspected or confirmed in North America. Poultry: Zoonotic avian influenza alert from CDFA or USDA⁶, or employer voluntarily increases biosecurity due to enhanced AI risk</p>	<p>Small scale cleaning and disinfection of equipment possibly contaminated with material containing AI.</p>	<p>Exposure to AI by aerosols or eye contact</p>	<ul style="list-style-type: none"> • Hand protection: gloves must provide protection for cleaning agents and disinfectants being used. • Eye protection: indirectly ventilated goggles if necessary to protect against chemical splash or aerosol. Provide face shields as necessary for splash hazards to the nose and mouth. • NIOSH approved respirator N95 or better. Use cartridge respirators if necessary for chemical contaminants. • Disposable or washable protective clothing, rubber boots or boot covers, with appropriate decontamination procedures. 	<p>For disinfection, use material from the list of disinfectants approved for AI by EPA. Employees trained in decontamination procedures and chemical hazards. Medical surveillance, provision of immunizations and antiviral medications as recommended by the CDC, CDHS or local health officer.</p>

⁶Applies when CDFA or USDA issue a related regional quarantine that mandates enhanced biosecurity by restricting bird, equipment and material movement for an aerosol-transmitted zoonotic disease. These protective measures can be reduced if testing acceptable to the agency placing the restriction determines that the premises is free from infection, and is no longer at increased risk, although movement restrictions effecting the premises may remain.

AI STATUS	ACTIVITY	Hazards	PPE ³	OTHER RECOMMENDATIONS
<p>Zoonotic avian influenza infection suspected or confirmed.</p>	<p>Culling and euthanasia of poultry or wild bird flocks (including associated veterinary and animal inspection operations)</p>	<p>Exposure to AI by aerosols or eye contact. Exposure to hazardous atmospheres or other hazards relating to culling/ euthanasia operations</p>	<ul style="list-style-type: none"> • Hand protection: PVC or nitrile inner gloves plus puncture-resistant outer gloves. • Eye protection: indirectly vented goggles or eye protection provided by respirator. • NIOSH approved respirator, either half facepiece elastomeric respirators with goggles, full-facepiece respirators, or PAPR. Use P100 or HEPA combination cartridge (to protect against chemical contaminants and infectious aerosols). Atmosphere supplying respirators required for oxygen deficient atmospheres. • Protective clothing ensemble to include disposable coveralls, and head covering, and rubber boots. 	<p>Implement a written site safety plan, including a designated site safety officer, and site control to include logging of all entrants into contaminated areas and contaminant reduction zone. Employees should have additional training in hazards such as euthanasia methods, heat illness, hazardous atmospheres, waste sumps, physical hazards and emergency procedures. Direct reading instruments for hazardous atmospheres including oxygen deficiency, carbon dioxide, etc. as appropriate. <u>Note: air purifying respirators including N95, full facepiece, and PAPR do not provide oxygen and cannot be used in oxygen deficient atmospheres.</u> See respiratory protection discussion. Reduce risk of heat illness by providing feasible cooling facilities or equipment, access to drinking water, and frequent rest periods. Provide formal decontamination for employees and equipment, including shower facilities. Medical surveillance, provision of immunizations and antiviral medications as recommended by the CDC, CDHS, or local health officer.</p>

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AI STATUS	ACTIVITY	Hazards	PPE ³	OTHER RECOMMENDATIONS
Zoonotic avian influenza infection suspected or confirmed	Treatment and disposal of culled poultry or large numbers of dead wild birds (including associated veterinary, animal inspection and environmental oversight operations)	Exposure to AI by aerosols or eye contact. Exposure to other pathogens. Exposure to hazardous substances.	<ul style="list-style-type: none"> • Hand protection: PVC or nitrile inner gloves, with thicker chemical resistant outer glove. • Eye protection: indirectly vented goggle or eye protection provided by respirator. • NIOSH approved respirator, either half facepiece elastomeric respirators with goggles, full-facepiece respirators, or PAPR. Use P100 or HEPA combination cartridge (to protect against chemical contaminants and infectious aerosols). Atmosphere supplying respirators required for oxygen deficient atmospheres. • Protective clothing ensemble to include disposable coveralls, and head covering and rubber boots 	<p>Implement a written site safety plan, including a designated site safety officer, and site control to include logging of all entrants into contaminated areas and contaminant reduction zone.</p> <p>Employees should have additional training in hazards such as treatment methods, heat illness, hazardous atmospheres, waste sumps, physical hazards and emergency procedures.</p> <p>Direct reading instruments for hazardous atmospheres including oxygen deficiency, methane and other byproducts of decomposition, carbon monoxide (from internal combustion engines operated indoors), etc. as appropriate. <u>Note: air purifying respirators including N95, full facepiece, and PAPR do not provide oxygen and cannot be used in oxygen deficient atmospheres.</u> See respiratory protection discussion.</p> <p>Reduce risk of heat illness by providing cooling facilities or equipment, access to drinking water, frequent rest periods, as feasible.</p> <p>Provide formal decontamination for employees and equipment, including shower facilities.</p> <p>Medical surveillance, provision of immunizations and antiviral medications as recommended by the CDC, CDHS, or local health officer.</p> <p><u>Note: drivers of vehicles used to transport carcasses and employees of the waste site receiving carcasses must be provided with training and personal protective equipment that will minimize their exposure to the waste. This includes provision for decontamination.</u></p>
Zoonotic avian influenza infection suspected or confirmed	Cleaning and disinfecting houses and areas containing animal wastes after culling	Same as culling plus hazards posed by the method used for disinfection	Same as above plus protection for other hazards posed by disinfection procedure and materials.	Same as above as well as training for employees on cleaning and disinfection procedures, and on chemical hazards. Note: level of protection and procedures will depend on assessment of hazards in areas to be cleaned.