

Guidelines with respect to Highly Pathogenic Avian Influenza (HPAI) in Antarctica and the Southern Ocean

With a focus on biosecurity, precautions and mitigation measures for field work, reporting, sample collection and disposal of potentially infectious waste

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Introduction

The increasing intensity of highly pathogenic avian influenza (HPAI) virus H5N1 clade 2.3.4.4b outbreaks have had a substantial global impact on poultry, wildlife and notably birds and marine mammals. The virus poses a risk to animal health, public health, and biodiversity. Wild bird movements have underpinned the rapid spread of this virus that swept across all continents (except Oceania). During the 2023/2024 Antarctic summer season, the virus reached first the Subantarctic islands (Falkland Islands, South Georgia) and at the end of the season, confirmed HPAI cases were reported from the Antarctic Peninsula area. A map of the suspected and confirmed cases can be found at <https://scar.org/library-data/avian-flu>.

Compared to previous HPAI virus subtypes and clades, HPAI H5N1 2.3.4.4b has a significantly enhanced replication rate in wild birds and led to a shift in infection dynamics within a broad range of avian species and marine mammals (especially seals). In addition to their role as viral spreaders, wild birds are suffering huge losses following mass mortality events. Reports suggest that infected birds have a particularly high virus load around the beak areas but also on their feathers (due to cleaning). HPAI outbreaks with mass mortality events in South American sea lions, Antarctic fur seals and elephant seals have been reported from the coasts of South America and South Georgia. Recently first evidence was found reported on an elephant seal at Robert Island (Coppermine Peninsula), South Shetland Islands. Although so far only a few humans have contracted avian influenza and suffered mostly mild symptoms, all HPAI including H5N1 strains should be considered to pose some zoonotic risks (including the spread to humans), especially for those handling wildlife and/or working in close proximity to wildlife.

It should also be noted that there are indications that H5N1 viruses in dead animals or faeces can remain infectious for many weeks, under extreme cold conditions (-20°C) maybe even for a year or longer. This means that scavengers (e.g. Skuas) feeding on carcasses of animals, which died on HPAI in the last summer season, could still contract and subsequently transmit the virus in the new summer season.

For your fieldwork in Antarctica and the Southern Ocean it is therefore important to detect the presence and outbreaks of HPAI as early as possible, initiate immediate notification, and respond appropriately with relevant biosecurity measures in order to not spread the virus further and protect animals, biodiversity and humans as good as possible.

Here, we provide important guidance for researchers and logistic personal, working in Antarctica and the Southern Ocean (including work on vessels and research stations) during the expedition season 2024/25.

IMPORTANT:

These guidelines provide the minimal actions and mitigation measures that are mandatory for all expeditions and field work in Antarctica and the Southern Ocean permitted by the German Environment Agency and for all work at AWI infrastructures (e.g. the German Neumayer III research station and onboard RV Polarstern).

Modifications (e.g. in form of special permit conditions) according to site specific conditions, situations and operations are possible (see also box on page 7), but require detailed documentation and prior approval by the HPAI Task Force and UBA respectively the national competent authority.

General recommendations and precautions

The HPAI situation requires **increased awareness and regular observations** from every person to detect potential HPAI cases and outbreaks.

Prior to your departure to Antarctica, you should:

1. Contact the operator(s) of the facility(ies) or vessel(s) you will be using - especially if these are operated by other Antarctic Treaty Parties or by tourist operators - about:
 - a. their HPAI rules, regulations or requirements. Any such rules and regulations have to be followed in addition to the precautions and measures set out here in the HPAI guidelines. In case of any contradictions, please inform the HPAI Task Force (HPAI@awi.de) for advice;
 - b. whether some of the disinfection materials and Personal Protection Equipment (PPE) mentioned in the HPAI Mitigation and Action Plan below is available / will be provided at the facility or on the vessel.
2. Inform yourself on the SCAR website (<https://scar.org/library-data/avian-flu>) about any confirmed or suspected cases of HPAI (or unusual mortality events) in the area you are going to visit for your work. This information is required in order to know, whether sections 2, 3 or 4 of the HPAI Mitigation and Action Plan apply to your planned fieldwork, and whether / what disinfection materials and PPE you have to bring with you.

Please note that personnel working on AWI infrastructures (Neumayer Station III, RV Polarstern) under a permit issued by another Antarctic Treaty Party have to adhere not only to the HPAI rules and regulations set out in their permit, but also to the mandatory precautions and measures set out here in the HPAI guidelines. Again, in case of any contradictions, please contact the HPAI Task Force (HPAI@awi.de) for advice.

People working with or close to wildlife should assume that HPAI is present in sub-Antarctic and Antarctica and **take precautions** to protect themselves and to prevent HPAI transmission between wildlife aggregations. New research has shown that the H5N1 virus can easily be transferred to humans via eyes and nose, so please **disinfect your hands regularly and try to avoid touching your eyes and nose**.

It is important to **observe wildlife for signs of HPAI** (see section 1 of the HPAI Mitigation and Action Plan below). This is especially required before approaching wild animals. Colonies and high wildlife density areas must not be entered unless there is a scientific purpose for doing so and for which a permit has been issued.

If you detect signs of HPAI in wildlife, the reporting requirements (see section 5 of the HPAI Mitigation and Action Plan below) **apply**. If possible, you should take photos or videos from a distance of affected animals. Such photos or video footage are very helpful for experts to help determine whether or not the observed signs are HPAI related. **The HPAI Task Force will advise you whether and under what conditions you can continue your research in the area.**

If you suffer from a viral infection (human influenza, COVID) you are not allowed to carry out

field work, which requires handling or touching birds and marine mammals in order to avoid a potential mix of viruses. **If you show symptoms of an HPAI infection** (see links under section 10 below) after having worked in close proximity or direct contact with HPAI infected or potentially infected wildlife, then contact the nearest medical doctor and the HPAI Task Force immediately.

Please note that bird feathers as well as bird and seal faeces may contain infectious viruses. **Any contact with feathers and faeces should be avoided**, therefore you should not sit or kneel on the ground or on snow / ice to avoid that feathers stick to your clothing or faecal matter soils your clothing. Feathers can be transported over long distances by wind drift, even into buildings. Contact of equipment with feathers and faeces should also be avoided as far as possible. The precautions and mitigation measures set out under sections 2, 3 and 4 below apply.

IMPORTANT

Do not touch dead, sick or dying birds or marine mammals. Taking samples from sick or dead birds or marine mammals and the HPAI testing of these samples require prior approval by the HPAI Task Force. A prior permit from the responsible national competent authority is also required for any taking of birds or mammals.

The HPAI Mitigation and Action Plan

The HPAI Mitigation and Action Plan is based on the advice by international experts on surveillance, monitoring and response to HPAI in Antarctica and the Southern Ocean. Further information on these issues can be found at <https://scar.org/library-data/avian-flu> and <https://www.comnap.ag/heightened-risk-of-hpai-in-antarctica>.

The HPAI Mitigation and Action Plan contains 4 sections, with sections 2-4 being marked in form of a traffic light colour scheme:

| | |
|------------|---|
| Section 1: | Regular observations to detect potential HPAI cases and outbreaks |
| Section 2: | Fieldwork in areas with no signs of HPAI and without previous reports of HPAI outbreaks |
| Section 3: | Fieldwork in areas with potential signs of HPAI or suspected presence of HPAI |
| Section 4: | Fieldwork in areas with clear indication of HPAI or verified HPAI outbreaks |

Please note that the general recommendations and precautions set out above apply in all cases.

All personnel, who are required to wear PPE during their fieldwork in accordance with these guidelines, should be fully trained in the donning and removal of PPE. The World Health Organisation provides an approx. 15-minute online training course, which demonstrates the correct way to put on and remove PPE and to perform hand hygiene with an alcohol-based hand rub. You can enrol for this online training for free at <https://openwho.org/courses/IPC-PPE-EN?locale=en>.

IMPORTANT

The HPAI Mitigation and Action Plan set out in these guidelines might not be suitable or well-fitting to all conditions, situations and operations, which will be experienced or take place in the Antarctic.

For example, on Cape Legoupil (Schmidt Península), where the German GARS O'Higgins station is located in immediate vicinity of the Chilean Base General Bernardo O'Higgins, a number of bird and penguin species breed in-between station buildings, which means that (a) bird feathers and faeces are found on all pathways between the station buildings and (b) the minimum distances set out in the sections 2-4 below cannot be met when operating the GARS O'Higgins station. In addition, all HPAI actions and mitigation measures will have to be closely coordinated with the Chilean partners regarding the logistical operations of both stations.

Please contact the HPAI Task Force for advice, if you will face (or are facing) conditions, situations and operations, where the HPAI Mitigation and Action Plan cannot (or only partially) be applied. UBA experts are members of the HPAI Task Force and can issue (if appropriate) with a revised or amended permit.

Section 1 Regular observation requirements to detect potential HPAI cases and outbreaks

Due to the HPAI situation there is a need for increased awareness and regular observations when carrying out fieldwork in Antarctica to detect potential HPAI cases and outbreaks. To detect potential HPAI cases and outbreaks and reduce the risk of transmissions and infections, **observations are necessary before entering any field sites**. If wildlife is present at the site, the following observations are key to identify the presence of HPAI:

- **Dead animals, and notably a sudden increase in dead animals at sites (especially adult animals), or clusters of 2-4 or more dead adult animals (e.g. near the coast or freshwater bodies) or in a splayed/twisted position (see Figure 1).**

Note: In penguin colonies it is not uncommon to find dozens or even hundreds of dead chicks in the course of a breeding season. This chick mortality is often linked to a shortage of food resources at sea, resulting in chick starvation and death, and not necessarily caused by an HPAI outbreak.



Figure 1. HPAI H5Nx positive Brown skua from Antarctica (image: Meagan Dewar)

- **Birds with the following behavioural signs:**
 - **Neurological issues such as loss of coordination and balance**
 - **Trembling head and body, twisting of the head and neck, seizures**
 - **Lethargy, unresponsiveness, lying down, drooping wings, dragging legs**

Note: The behavioural signs above apply mainly to skuas, petrels, gulls, terns, albatrosses and shags. For penguins, some / most of those behaviours and postures are unfortunately fairly common. If in doubt, take photos or video clips and send these to HPAI@awi.de.

- **Marine mammals (seals) with the following behavioural signs :**
 - **Lethargy, heavy breathing, mucus around mouth and nose**
 - **Seizures**

Note: Seals are commonly infected with lung parasites, which can also cause mucus and foam around mouth and nose, but these signs are usually not combined with lethargy and heavy breathing. If in doubt, take photos or video clips and send these to HPAI@awi.de.

IMPORTANT

Please report (see section 5 and Annex) immediately, if you observe any of these signs during your fieldwork.

Section 2 Fieldwork in areas with no signs of HPAI and without previous reports of HPAI outbreaks

Not all wildlife infected with HPAI (especially in the early stages of the infection) show signs of the disease, but still can transmit the virus. The precautions and measures to be taken in areas with no signs of HPAI and without previous reports of HPAI outbreaks have therefore been categorised into three groups. If the minimum distances to wildlife required by UBA (see Fig. 1 below) can be met, no specific disinfection measures and Personal Protection Equipment (PPE) are required. If there is a risk that the minimum distances cannot be adhered to and if your fieldwork requires the handling / touching of birds and seals or the entry into areas, which have been or are occupied by colonies and/or large number of individuals, then PPE has to be worn.



Source: German Environment Agency 2016

Figure 1: Minimum distances to wildlife recommended by the German Environment Agency

| Precautions and mitigation measures | |
|---|---|
| Fieldwork unrelated to animals. Minimum distances to wildlife as set out in the UBA Visitor Guidelines for the Antarctic will be adhered to. No or very low risk that boots/shoes or equipment gets into contact with faeces. | Fieldwork can be conducted according to the permits and following the General Recommendations and Precautions as well as the Regular Observation Requirements set out above. |
| Fieldwork where the minimum distances might not be adhered to, but there is no contact with birds and seals. Boots and equipment might get into contact with faeces. | Changing and/or regular disinfection (using e.g. chlorinated water) of clothing (including boots/shoes) and equipment, especially prior to entering a new research location or going inside a station or vessel, is key to avoid transmission and potential infections. All soiled material must be removed from boots/shoes and equipment before disinfection. Disinfection solutions will not work on dirty surfaces. When changing, ensure that your hands are disinfected and that the new clothing |

(including boots/shoes) does not come into contact with those worn in the field.

- 1) Aerosol spray with disinfection solution
- 2) Hand disinfection creme/solution
- 3) Disinfection bath/mat/foams for boots/shoes



Research which requires handling / touching of birds and seals or the entry into colonies. High risk that boots/shoes and equipment get into contact with faeces.

In addition to the above the following additional PPE has to be worn:

- 4) Face mask (please note this should be at least FFP2, with or without breathing valve)
- 5) whenever possible eye protection (close fitting UV-protection glasses, e.g. snow goggles)
- 6) whenever possible nitrile gloves (or similar)
- 7) between handling different animals, disinfection of gloves or hands is required



FFP 2



Section 3 Fieldwork in areas with potential signs of HPAI or suspected presence of HPAI

Fieldwork in areas with potential signs of HPAI or suspected presence of HPAI can only be conducted if permitted by the responsible national competent authority and in accordance with the permit conditions. You should inform the station/vessel management and the expedition leader prior to undertaking your fieldwork. **You have to comply meticulously with all requirements set out in the permit and in the advice/rules given by the station/vessel management and the expedition leader (e.g. Neumayer Station III Field Operation Manager, Polarstern Chief Scientist etc.).** Please report (see section 5 and Annex) immediately if you observe during your field work any signs of HPAI related sickness or mortality in birds and marine mammals.

Fieldwork in areas with potential signs of HPAI or suspected presence of HPAI work requires disinfection materials and basic Personal Protection Equipment (PPE). **Please contact the HPAI Task Force prior to deploying with RV Polarstern or to Neumayer Station if your research does include the risk of being exposed to HPAI.** Parts of the necessary PPE and equipment might be available on these sites. For all other expeditions and in general please organize all necessary PPE and disinfection materials prior to your expedition, as there is no guarantee that all stations/vessels will have or can provide these for you.

| Precautions and mitigation measures | |
|--|--|
| Fieldwork unrelated to animals and with distance > 50 m to potentially infected wildlife | <p>Changing and/or regular disinfection (using e.g. chlorinated water) of clothing (including boots/shoes) and equipment, especially prior to entering a new research location or going inside a station or vessel, is key to avoid transmission and potential infections. All soiled material must be removed from boots/shoes and equipment before disinfection. Disinfection solutions will not work on dirty surfaces. When changing, ensure that your hands are disinfected and that the new clothing (including boots/shoes) does not come into contact with those worn in the field.</p> <ol style="list-style-type: none"> 1) Aerosol spray with disinfection solution 2) Hand disinfection creme/solution 3) Disinfection bath/mat/foams for boots/shoes |



Fieldwork involving work in very close proximity (distance < 50 m) to potentially infected wildlife and fieldwork involving work with animals, i.e. when animals are being handled, touched etc.

In addition to the above, the following additional PPE has to be worn:

- 4) Face mask (please note this should be at least **FFP2**, with or without breathing valve)
- 5) Eye protection (close fitting UV-protection glasses, e.g. snow goggles)
- 6) Nitrile gloves (or similar)¹
- 7) between handling different animals, disinfection of gloves or hands is required



FFP 2



¹ If the nitrile (or similar) gloves are to be worn over other gloves, you should order at least 2-3 sizes larger than your normal glove size.

Section 4 Fieldwork in areas with clear indication of HPAI or verified HPAI outbreaks

Fieldwork in areas with clear indication of HPAI or verified presence of HPAI can only be conducted if permitted by the responsible national permit authority and in accordance with the permit conditions. You should inform the station/vessel management and the expedition leader prior to undertaking your fieldwork. **You have to comply meticulously with all requirements set out in the permit and in the advice / rules given by the station/vessel management and the expedition leader (e.g. Neumayer Station III Field Operation Manager, Polarstern Chief Scientist etc.).** Please report (see section 5 and Annex) immediately if you observe during your field work any signs of HPAI related sickness or mortality in birds and marine mammals.

Prior to working in an area with HPAI outbreaks, you must inform the HPAI Task Force about the work you want to carry out, the necessity of this work and your experience in working under virus infectious conditions.

Fieldwork in areas with HPAI outbreaks requires Personal Protection Equipment (PPE) and regular disinfection of equipment, boots/shoes and clothing to avoid transmission between animals and potential infections. **Please buy and pack all necessary PPE and disinfection materials prior to your expedition,** as there is no guarantee that all stations/vessels will have or can provide these for you.

IMPORTANT:

Fieldwork with affected animals or within proximity to affected animals (seabird colonies with clinical symptoms, increased mortality in seabirds or marine mammals) **can only be conducted by personnel approved by the HPAI Task Force and under high biosecurity measures** (see precautions and mitigation measures in Table below).

Sampling of sick or dead animals requires prior approval by the HPAI Task Force. The HPAI Task Force will inform the responsible permitting agency about this sampling in order to obtain a permit for this work. In addition, you have to inform the station/vessel management and the expedition leader prior to undertaking any sampling. **You have to comply meticulously with all requirements set out in the permit and in the advice / rules given by the station/vessel management and the expedition leader.**

Please report (see section 5 and Annex) immediately if you observe during your field work any signs of HPAI related sickness or mortality in birds and marine mammals.

Precautions and mitigation measures

Fieldwork unrelated to animals and without wildlife interference (with distance > 100 m to wildlife)

Equipment and samples require disinfection prior to entering any facilities, such as stations, tents etc. Special depositories are necessary outside the facility to store clothing and boots/shoes that may have been in direct contact with HPAl.

Changing and/or regular disinfection (using e.g. chlorinated water) of clothing (including boots/shoes) and equipment is key to avoid transmission and potential infections. All soiled material must be removed from boots/shoes before disinfection. Disinfection solutions will not work on dirty surfaces. When changing, ensure that your hands are disinfected and that the new clothing (including boots/shoes) does not come into contact with those worn in the field.

- 1) Aerosol spray with disinfection solution
- 2) Hand disinfection creme/solution
- 3) Disinfection bath/mat/foams for boots/shoes
- 4) Face mask (please note this has to be **FFP3**)
- 5) Eye protection (close fitting UV-protection glasses, e.g. snow goggles)
- 6) Gloves which can be disinfected, or nitrile gloves (or similar)¹



FFP 3

Fieldwork unrelated to animals and without wildlife interference (with distance < 100 m to wildlife) and fFieldwork involving work with animals, i.e. when animals are being

In addition, the following precautions are mandatory:

- 7) Full body suits (with hood) that can be washed down and disinfected in an easy and complete manner²
- 8) Double nitrile gloves (second layer above suit). Gloves should extend over wrists (no gaps between

² Please note that these full body suits (example and supplier in section 6) have to be worn over the standard FXR / Tempex suits or the survival suits. If you have confection size L, you should order an XXL full body suit. If you have confection size XL, you should order an XXXL full body suit.

handled, touched etc.

- suit and gloves)
9) Between handling different animals, disinfection of hands or gloves is required



Section 5: Reporting

Rapid reporting and correct transfer of HPAI related information and observations is very important. If you observe during your field work any signs of HPAI related sickness or mortality in birds and marine mammals, you have to immediately inform:

1. your expedition leader and/or the station/vessel management;
2. the HPAI Task Force (HPAI@awi.de);
3. the German Environment Agency (UBA) respectively the national permit authority in accordance with your permit conditions.

For reporting you should use the SCAR Antarctic Wildlife Health Network - Southern Ocean Highly Pathogenic Avian Influenza Monitoring Form attached as an Annex to these guidelines.

Under "Other relevant information" at the end of the form you should make short notes:

1. whether your observations were made in or near animal aggregations or colonies;
2. what measures (especially safety and biosecurity measures) were taken.

Please send the completed form then asap to the HPAI Task Force. It would be very helpful if you could also make photos or videos from a distance of your observations and transfer these (if possible) to the HPAI Task Force.

Depending on the assessment of the information / report provided, the HPAI Task Force will give you advice on the continuation of your fieldwork. The HPAI Task Force might also ask you to continue with the observations and to provide further reports. The HPAI Task Force will also inform the AWI Directorate, SCAR and COMNAP as appropriate.

If you are working at a facility (or staying onboard a vessel) operated by another Antarctic Treaty Party or by a tourist operator, the management of the facility / vessel might want to report your observations also to their respective contacts and networks. In this case, please inform the HPAI Task Force about the actions taken by the facility / vessel management in order to avoid duplication of efforts and confusion.

IMPORTANT

Social media, press, outreach

Working in areas of potential virus outbreaks is a sensitive issue. Pictures of dead or dying animals can be disturbing and may cause problematic feedback if transported or made publicly available without context. We ask all colleagues and collaboration partners to be careful with content that may show dead/dying animals, as well as colleagues working with animals in the context of HPAI (e.g. in full protective gear). All AWI personnel and those working at AWI infrastructures (e.g. at Neumayer Station III or onboard RV Polarstern) are required to follow the AWI social media guidelines (link in section 10 below). Any (social-) media activity/postings from AWI-led expeditions, which are relevant or in relation to HPAI, have to be approved by AWI and by the expedition leader or by the facility / vessel management.

Section 6: HPAI Sampling and Testing

Taking samples from sick or dead birds and marine mammals for HPAI tests and the HPAI testing of these samples require prior approval and advice by the HPAI Task Force. To prevent the spread of the virus and reduce the risk of transmissions and infections, **no sick or dead birds and marine mammals are allowed to be transported to RV Polarstern or to the Neumayer Station III.** Only HPAI samples taken in accordance with the advice by the HPAI Task Force are allowed onboard RV Polarstern or in the Neumayer Station III, as these samples do not contain live virus. Specific HPAI testing equipment (qPCR) is available on RV Polarstern and at Neumayer Station III in order to confirm cases or discuss potential clearing (returning to the general recommendations and precautions and the measures set out in section 2 above). Used samples and testing equipment is to be disposed of as medical waste.

Section 7: Samples taken for (non-HPAI) research purposes, which might contain the H5N1 virus

There is a risk, that samples taken from birds and seals (e.g. blood samples, faeces, feathers, hairs / vibrissae) for research purposes might contain the H5N1 virus, regardless where these samples were taken (i.e. in green, yellow or red areas - see above). Therefore, all samples, including sample containers, are to be thoroughly disinfected (e.g. with disinfection solution) immediately after sampling to ensure their safe further handling (incl. transport / shipment). Where disinfection of the sample itself cannot be done (e.g. blood samples, faeces), the HPAI Task Force should be contacted for advice. Please note that if samples, which cannot be disinfected, are classified as biohazard, they will not be allowed to be brought into Neumayer Station III or onboard RV Polarstern, and their shipment back to Germany or other countries might fall under special transport and customs rules and procedures.

Section 8: Disposal of dead animals and waste

Dead animals should be photographed from a distance but not touched, except for HPAI sampling, testing (see section 6 above) and disposal.

Following the reporting of dead animal(s) in accordance with section 5 above, the HPAI Task Force will give you advice on whether the carcass should be disposed of and how best to carry out this disposal. This depends, *inter alia*, on the location and the availability of appropriate Personal Protection Equipment (PPE). Unless there is different advice by the HPAI Task Force:

- sick or dead animals found on deck of RV Polarstern should be tested (if possible). After taking the samples the body should be disposed of overboard, wearing a face mask (FFP3), eye protection and nitrile gloves (or similar).
- Individual sick or dead adult animals found in the vicinity of Neumayer Station III (and the established tracks around the station) and at Atka Bay should be tested (if possible). After taking the samples, the carcasses found on the ice shelf should be buried at least 50 cm deep in the snow / firn, wearing a face mask (FFP3), eye protection and nitrile gloves (or similar). The location where such carcasses are buried is to be marked by GPS coordinates and a flag and reported to the expedition leader and the HPAI Task Force. Carcasses found on the fast ice at Atka Bay should be disposed (if possible) in fast ice / sea ice cracks. Carcasses found on the sea ice at Atka Bay should be covered with snow (if possible) but not touched and otherwise left alone.

Waste created by fieldwork (sections 2-4), HPAI sampling and testing (section 6) and samples taken for (non-HPAI) research purposes (section 7) will create waste, which has to be disposed off in an appropriate manner to reduce the risk of HPAI transmissions and infections.





At Neumayer Station III, there will be appropriate disinfection equipment outside the station as well as a container for storing disinfected Personal Protection Equipment (PPE), such as clothing / overalls and boots/shoes. For heavily soiled equipment, which cannot be disinfected, a special biosecurity bin will be provided.

At RV Polarstern, similar disinfection equipment and storage or disposal containers will be provided for people returning from work outside the vessel (e.g. returning from work on the sea ice via the gangway). Personnel returning from work on the sea ice via helicopter have to take appropriate disinfection and storage equipment with them, so that disinfection and storage or disposal of clothing / overalls and boots/shoes can take place on the sea ice prior to boarding the helicopter for the return flight to RV Polarstern.

If you plan to carry out field work by using facilities and vessels operated by another Antarctic Treaty Party or tourist operators, it cannot be guaranteed that these will have similar disinfection equipment and storage / disposal containers. It is therefore recommended to contact the operators of the facilities and vessels prior to your expedition whether they can provide similar disinfection equipment and storage / disposal containers, or whether you have to bring your own.

Section 9: Resources

This section gives some examples of where and what to buy when preparing for an expedition to Antarctica and the Southern Ocean in order to adhere to the recommendations and mandatory measures set out in the HPAI Mitigation and Action Plan. A limited amount of the PPE equipment listed below will be available at Neumayer Station III or RV Polarstern for medical use and, if necessary, for the disposal of dead animals. A 'no' in the last column of the table below means it is mandatory for the researcher / the research groups to organise and bring with them the equipment themselves. The package leaflets will give advice on how to use the disinfection materials, e.g. the chlorine powder. If in doubt, contact the HPAI Task Force.

| Item | | Order information | Available at/on |
|-------------------|---|---|----------------------------------|
| Nitrile gloves |  | https://www.fishersci.de/shop/products/kimtech-opal-nitrile-gloves-5/17387659#?keyword=handschuhe%20nitril AWI Shop: S: 1209451 M: 1209452 L: 1209453 XL: 1209454 | Neumayer: no Polarstern: no |
| Hand-Disinfectant |  | https://www.fishersci.de/shop/products/sterillium-classic-pure-hand-disinfectant/p-8000891#?keyword=desinfektion AWI Shop: 9803901 | Neumayer: yes Polarstern: yes |
| FFP2 Masks |  | CRD Light CRDFFP2 Feinstaubmaske ohne Ventil FFP2 25 St. EN 149:2001 + A CRDFFP2 Lieferantenartikelnummer: 2348002-BP EAN-Nummer: 4064161288369 Hersteller: CRD Light Herstellerteile Nr: CRDFFP2 | Neumayer: no Polarstern: no |
| FFP3 Masks |  | https://www.fishersci.de/shop/products/ffp3-disposable-respirator-face-mask-2/16639422#?keyword=ffp3 AWI Shop: 4046719487332 | Neumayer: no Polarstern: no |

| Item | | Order information | Available at/on |
|--|---|--|----------------------------------|
| Boots/Shoes disinfection tubs with brushes |  | https://www.farmshop.de/schwein/desinfektion-stallhygiene/desinfektionswanne-50-x-60-cm-poly https://matten.center/produkt/sani-trax-desinfektionsmatte-mit-gummifingern | Neumayer: yes Polarstern: yes |
| Chlorine powder (for disinfection of boots/shoes and clothing) above 0° C temperatures |  | https://tomodachi-koifutter.de/teichhygiene-wasserpflge/virenbekaempfung-bakterienkiller/188/halamid/chloramin-t-gegen-bakterien-viren-pilze-und-giardien-1kg-eimer (Different volumes) | Neumayer: yes Polarstern: yes |
| Alcohol disinfection (for boots/shoes, clothing etc.) below 0° C temperatures |  | https://www.farmshop.de/schwein/desinfektion-stallhygiene/desinfektionsmittel/b-33-schnelldesinfektion-10-l | Neumayer: yes Polarstern: yes |
| Spray bottle (for disinfection of clothing with e.g. chlorinated water) |  | https://www.fishersci.de/shop/products/pressure-sprayer-turn-n-spray/16535200 AWI Shop: 1AA4.1 | Neumayer: yes Polarstern: yes |
| Full body suit |  | https://www.engelbert-strauss.de/arbeitsoverall/flexi-stretch-overall-3130109-77656-9.html?itemorigin=SEARCH | Neumayer: no Polarstern: no |

Section 10: Useful links

Bird flu symptoms and treatment in humans

In German: <https://www.tk.de/techniker/krankheit-und-behandlungen/erkrankungen/behandlungen-und-medizin/infektionen/vogelgrippe-2022226?tkcm=ab>

In English: <https://www.nhs.uk/conditions/bird-flu/>

WHO training course for the correct donning and removal of PPE

enrol for free at <https://openwho.org/courses/IPC-PPE-EN?locale=en>

Scientific Committee on Antarctic Research (SCAR)

<https://scar.org/library-data/avian-flu>

Council of Managers of National Antarctic Programs (COMNAP)

<https://www.comnap.ag/heightened-risk-of-hpai-in-antarctica>

Robert Koch Institute (RKI)

<https://www.rki.de/DE/Content/InfAZ/Z/ZoonotischeInfluenza/Vogelgrippe.html>

European Centre for Disease Prevention and Control (ECDC), Factsheet on Highly pathogenic avian influenza virus A(H5N1)

<https://www.ecdc.europa.eu/en/zoonotic-influenza/facts/factsheet-h5n1>

AWI social media guidelines (available only for AWI personnel)

https://intranet.awi.de/fileadmin/Presse/Social_Media/SocialMedia_Guidelines_final.pdf

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Annex

Antarctic Wildlife Health Network - Southern Ocean Highly Pathogenic Avian Influenza Monitoring Form

| | |
|--|---------------|
| Date and Time Outbreak Observed | |
| Location Information | |
| Region (please circle relevant) | |
| Antarctica | Sub-Antarctic |
| Location (site name, lat/long) | |
| Site Name: | |
| Latitude: | |
| Longitude: | |
| Can this outbreak be listed on our website or is this information confidential | Yes: No: |
| Observer Details | |
| Reporting Organisation | |
| Name and Contact Details of Person Reporting Incident. Please provide details of Liaison person AHWN can contact for further information | |
| Name of Observer(s) | |
| Name of Vessel (if applicable) | |
| Observation Details | |
| Details of Outbreak | |
| Length of Observation | |
| Species affected (common name and scientific name) | |
| Age class affected | |
| Extent of Spatial area (or percent of colony) affected | |
| Estimated number(s) of individuals sick | |
| Estimated number(s) of dead individuals | |
| Behavioural signs noted (if sick animals present). Provide as much / enough information as possible | |
| Outbreak Status | |
| Suspected | |
| Confirmed (lab test) | |
| If confirmed, please provide details on what tests were conducted. | |
| Other relevant information Note - Please provide here info: <ul style="list-style-type: none"> whether your observations were made in or near animal aggregations or colonies; what measures (especially safety and biosecurity measures) were taken; whether photos or videos were taken. | |