

The Approved List of biological agents

Advisory Committee on Dangerous Pathogens



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The Control of Substances Hazardous to Health Regulations 2002 (COSHH) refer to an 'approved classification of a biological agent', which means the classification of that agent is approved by the Health and Safety Executive (HSE). This list is approved by HSE for that purpose.

This edition of the Approved List has effect from 11 September 2023. On that date the previous edition of the list approved by the Health and Safety Executive on the 12 July 2021 will cease to have effect. The Approved List will continue to be reviewed periodically.

The Advisory Committee on Dangerous Pathogens (ACDP) prepares the Approved List included in this publication. ACDP advises HSE, Ministers for the Department of Health and Social Care and the Department for the Environment, Food & Rural Affairs and their counterparts under devolution in Scotland, Wales & Northern Ireland, as required, on all aspects of hazards and risks to workers and others from exposure to pathogens.

The guidance in this document accompanies the Approved List.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance, you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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Notice of Approval

The Health and Safety Executive has on 11 September 2023 approved the publication of this document, *The Approved List of biological agents*, for the purposes of the Control of Substances Hazardous to Health Regulations 2002 (SI 2002/2677).

This edition of the Approved List shall have effect from 11 September 2023.

On that date, the previous edition of the list approved by the Health and Safety Executive on 12 July 2021 shall cease to have effect.

Signed

A handwritten signature in black ink, appearing to read 'Sarah Newton', with a large, sweeping initial 'S'.

Sarah Newton
Chair of the Health and Safety Executive

Preface

This is the fifth edition of the Approved List since it was first published in the *Categorisation of biological agents according to hazard and categories of containment* in 1995.

This edition includes the following changes:

- previously unlisted viruses have been classified and added to the list:
 - Aporé virus has been classified as Hazard Group 3;
 - Novel coronavirusidae have been classified as Hazard Group 3;
 - Black Creek Canal orthohantavirus has been classified as Hazard Group 3;
 - Cabassou virus has been classified as Hazard Group 3;
 - Cano Delgadito orthohantavirus has been classified as Hazard Group 3;
 - Choclo orthohantavirus has been classified as Hazard Group 3;
 - El Moro Canyon orthohantavirus has been classified as Hazard Group 3;
 - Laguna Negra orthohantavirus has been classified as Hazard Group 3;
 - Seoul orthohantavirus has been classified as Hazard Group 3;
 - Usutu virus has been classified as Hazard Group 2;
 - Xapuri virus has been classified as Hazard Group 2.
- previously unlisted bacteria have been classified and added to the list:
 - *Brucella inopinata* has been classified as Hazard Group 3;
 - *Mycobacterium caprae* has been classified as Hazard Group 3;
 - *Orientia tsutsugamushi* has been classified as Hazard Group 3;
 - *Rickettsia africae* has been classified as Hazard Group 3;
 - *Rickettsia heilongjiangensis* has been classified as Hazard Group 3*;
 - *Rickettsia japonica* has been classified as Hazard Group 3;
 - *Rickettsia sibirica* has been classified as Hazard Group 3.
- a previously unlisted fungi has been classified and added to the list:
 - *Blastomyces gilchristi* has been classified as Hazard Group 3.
- a previously unlisted helminth has been classified and added to the list:
 - *Echinococcus oligarthus* has been classified as Hazard Group 3*.

- previously unlisted protozoa have been classified and added to the list:
 - *Leishmania guyanensis* (*Viannia guyanensis*) has been classified as Hazard Group 3*;
 - *Leishmania infantum* (*Leishmania Chagasi*) has been classified as Hazard Group 3*;
 - *Leishmania panamensis* (*Viannia panamensis*) has been classified as Hazard Group 3*;
 - *Plasmodium knowlesi* has been classified as Hazard Group 3*.
- a previously unlisted laboratory strain of transmissible spongiform encephalopathy (TSE) has been classified and added to the list:
 - Proteopathic seeds have been classified as Hazard Group 2.
- the hazard group classification for existing agents has been reviewed and reclassified following updated advice on available vaccines:
 - Far-Eastern tick-borne encephalitis virus has been reclassified as Hazard Group 3;
 - Kyasanur Forest disease virus has been reclassified as Hazard Group 3;
 - Omsk haemorrhagic fever virus has been reclassified as Hazard Group 3.

Note: Hazard Group 3 agents with an asterisk (*) are biological agents which may be used at less than minimum containment conditions (for further information see page 10 and Annex 1).

Enquiries relating to the Approved List should be sent to bioagents@hse.gov.uk.

What is the Approved List?

- 1 The Control of Substances Hazardous to Health Regulations 2002 (COSHH), make reference to the 'approved classification' of a biological agent, which is defined as the classification of that agent approved by HSE. The Approved List is the list of classifications of biological agents approved by HSE for this purpose. Biological agents are bacteria, viruses, parasites and fungi which can cause harm to human health, usually due to infection (some are toxic or can cause an allergy).
- 2 COSHH requires employers to control substances that are hazardous to health, including the protection of workers from risks related to exposure to biological agents at work. This requires the UK to classify biological agents that are or may be a hazard to human health.
- 3 The Approved List is relevant to risk assessment for work with biological agents and the application of appropriate control measures. Your risk assessment under COSHH of work likely to expose any employees to biological agents should include consideration of the approved classification of any biological agent (regulation 6(2)(k)). The risk assessment must identify the steps you will take to adequately control exposure to biological agents (where it is not reasonably practicable to prevent exposure), taking into account the hazard(s) that they present (regulations 6 and 7).
- 4 The Approved List is intended to be used by people who work with biological agents, especially those in research, development, teaching or diagnostic laboratories and industrial processes, and people working with animals or humans who are, or who are suspected of being, infected with such an agent.
- 5 The classifications in the Approved List assign each biological agent listed to a hazard group according to its level of risk of infection to humans, where Hazard Group 1 agents are not considered to pose a risk to human health and Hazard Group 4 agents present the greatest risk. The full definition of each hazard group is in the Information Box (see page 9). Only agents in Groups 2, 3 and 4 are listed.
- 6 ACDP has made the relevant classification of a biological agent having considered evidence as to:
 - the likelihood that it will cause disease by infection or toxicity in humans;

- how likely it is that the infection would spread to the community;
 - the availability of any prophylaxis¹ or treatment.
- 7 The Approved List indicates in the taxonomy/notes column which biological agents are toxigenic or an allergen, or for which a vaccine was readily available at the time of publication.
- 8 ACDP only considers the risks to human health when deciding appropriate classification. Some listed agents can also cause disease in animals (zoonoses) and have also been assigned a hazard classification under the Specified Animal Pathogens Order (SAPO) (there are separate Orders for England, Scotland and Wales). For ease of reference, the list now indicates if an agent is also classified under SAPO at the time of this list being published. You should refer to the relevant SAPO guidance for the current SAPO classification and appropriate control measures.
- 9 If more than one species in any particular genus is known to be pathogenic to humans, these are generally named. There may also be a wider reference ('spp') indicating other species of the same genus may be hazardous. However, if a whole genus is indicated in this way, it is implicit that species and strains which are non-pathogenic to humans are excluded.

How biological agents are added to the list

- 10 Over time, new biological agents emerge which are found to cause disease in humans and new treatments are developed. ACDP, in consultation with other experts, periodically reviews the list. Its review considers any evidence for the addition of new agents and for any changes² to the classification of agents already listed. Also, taxonomic changes may be made to agents. Where new species names now exist, recently-used previous names are also included in the Taxonomy/notes column with the relevant cross-reference.
- 11 In the event of a significant new biological agent requiring an urgent classification, ACDP can make provision for a review and an initial classification to be made. However, this would only be appropriate where the indications are that the initial classification will be in Hazard Group 4 or Hazard Group 3, and for which significant, urgent research is required by multiple users. Where this is done HSE will publish this classification. Also see paragraphs 23-25 for guidance on classifying a new biological agent.

1 Treatment which will prevent infection and/or may reduce the effect of an exposure or an infection. This will include vaccines.

2 The name and identity of the specific biological agent, according to recognised biological classification systems.

- 12 Genetically modified biological agents do not appear in the Approved List, although the wild-type species from which many of them are derived will be listed. Guidance on aspects of work with genetically modified micro-organisms is given in *The SACGM Compendium of Guidance* available on HSE’s [biosafety web pages](#).

Information box: Hazard group definitions When classifying a biological agent it should be assigned to one of the following groups according to its level of risk of infection to humans.	
Group 1	Unlikely to cause human disease.
Group 2	Can cause human disease and may be a hazard to employees; it is unlikely to spread to the community and there is usually effective prophylaxis or treatment available.
Group 3	Can cause severe human disease and may be a serious hazard to employees; it may spread to the community, but there is usually effective prophylaxis or treatment available.
Group 4	Causes severe human disease and is a serious hazard to employees; it is likely to spread to the community and there is usually no effective prophylaxis or treatment available.

Using the Approved List to carry out risk assessments and apply control measures

- 13 The *Approved List of biological agents* should be read in conjunction with COSHH and ACDP guidance, available on HSE's [biosafety web pages](#).
- 14 COSHH requires employees and any other person working with biological agents in Hazard Groups 2, 3 and 4 to assess the risk of exposure to those biological agents. One of the matters to take into account in such a risk assessment is the approved classification of the relevant biological agents. COSHH specifies four containment levels for activities which involve working with biological agents. These correspond to the classification of biological agents into Hazard Groups 1 to 4, ie Hazard Group 2 biological agents should be handled at Containment Level 2 (CL2) (see paragraph 3(4) in Part I of Schedule 3 of COSHH). The containment measures required at each containment level are set out in tables in COSHH, Schedule 3, Part II and Part III.
- 15 In addition to applying the containment measures appropriate to the containment level, the risk assessment and the control measures selected should consider the other matters set out in regulation 6(2) of COSHH.
- 16 In allocating human pathogens to a hazard group, no account is taken of particular effects on those whose susceptibility to infection may be affected, for example because of pre-existing disease, medication, compromised immunity, differential impacts (eg related to ethnicity), pregnancy or breastfeeding. Any additional risks, and whether it is possible to rely on the standard containment measures to provide adequate protection for such employees, should be considered as part of the general risk assessment required by COSHH. In the case of new or expectant mothers, the Management of Health and Safety at Work Regulations 1999 specifically sets out requirements for assessing the risks to the mother, or to her baby, from biological agents.

Biological agents which may be used at less than minimum containment conditions

- 17 Certain Hazard Group 3 biological agents have been identified within the list of Community Classifications of biological agents as presenting a limited risk of infection for workers because they are

not normally infectious by the airborne route. Those intending to work with any of these agents may not necessarily need to use all the containment measures normally required at Containment Level 3 (CL3) because of the nature of the specific activity and the quantity of the agent involved. HSE and ACDP have produced accepted procedures for reducing the containment measures for these agents. In the Approved List, the agents for which this is relevant are indicated in the hazard group column with an asterisk (*) and are listed in Annex 1.

- 18 Dispensing with control measures from CL3 does not imply that the work can be carried out at CL2, it simply allows certain physical containment requirements (particularly those aimed at controlling airborne infection) normally expected at CL3 to be dispensed with. All other aspects of the work, in particular supervision and training, should reflect the high standards expected at CL3.
- 19 There may be other circumstances or types of work involving biological agents not specified in the list or Annex 1 where full containment measures may not be appropriate. A specific example is work where, although there is a strong indication or likelihood that certain Hazard Group 3 agents might be present, the work will not lead to an increase in the risk of exposure to the agent. For example, blood-borne viruses (BBVs) are unlikely to infect by an airborne route during diagnostic procedures not involving propagation or concentration of the virus (eg haematology), testing of blood donations or transfusion, serology and drug assays. Providing appropriate precautions are taken, not all the stated CL3 measures may be required.
- 20 Where your risk assessment indicates that it is appropriate to dispense with the standard containment requirements, you should follow the guidance on selecting the most appropriate containment measures set out in the publications/web pages listed under further information.

Reclassifying an agent

- 21 Where a biological agent has an approved classification, but you have reason to believe the specific strain to be used presents a different risk of infection from the agent listed because it is attenuated or has lost known virulence genes, then that agent should be reclassified as if it were a new biological agent (see paragraph 23). Suitable control and containment can then be selected accordingly.
- 22 You should also take into account the type of work to be carried out, the quantity of material to be handled and the degree of exposure when determining the most appropriate control and

containment measures for such agents. **You will need to consult and agree with HSE that a suitable and sufficient risk assessment has been performed prior to locally reclassifying an agent, unless HSE guidance indicating what to do in specific circumstances has been published.**

Work with biological agents which have not been assigned a classification in the Approved List

- 23 If a new biological agent does not have a hazard group classification, you should not assume it is Group 1 (unlikely to cause human disease). COSHH requires that a provisional hazard grouping must be determined by the person intending to work with the biological agent, by considering any available evidence and applying the most appropriate hazard group definition (see Information Box on page 9), taking into account the relevant factors used in carrying out the risk assessment. If you are in doubt as to which of two alternative groups is most appropriate, you should use the higher of the two. If the agent subsequently appears in a later edition of the Approved List, the classification given to it in that edition takes priority.
- 24 All viruses which have been isolated from humans, but which do not have an approved classification, should be classified in Hazard Group 2 as a minimum, unless and until there is evidence that they are unlikely to cause disease in humans.
- 25 When you have classified a new biological agent you will need to consider what you need to do to comply with your duties under COSHH in relation to work involving that agent, eg consider whether the notification requirements in Schedule 3 will apply.

The Approved List of biological agents

Biological agent	Human pathogen hazard group	Taxonomy / notes
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Bacteria

<i>Acinetobacter baumannii</i>	2	
<i>Actinomadura madurae</i>	2	
<i>Actinomadura pelletieri</i>	2	
<i>Actinomyces gerencseriae</i>	2	
<i>Actinomyces israelii</i>	2	
<i>Actinomyces spp</i>	2	
<i>Aggregatibacter actinomycetemcomitans</i> (formerly <i>Actinobacillus actinomycetemcomitans</i>)	2	
<i>Alcaligenes spp</i>	2	
<i>Anaplasma spp</i>	2	
<i>Arcanobacterium haemolyticum</i> (<i>Corynebacterium haemolyticum</i>)	2	
<i>Arcobacter butzleri</i> (formerly <i>Campylobacter butzleri</i>)	2	
<i>Bacillus anthracis</i>	3	Toxigenic Classified under SAPO Vaccine available
<i>Bacillus cereus</i>	2	
<i>Bacteroides fragilis</i>	2	
<i>Bacteroides spp</i>	2	
<i>Bartonella bacilliformis</i>	2	
<i>Bartonella quintana</i> (formerly <i>Rochalimaea quintana</i>)	2	
<i>Bartonella spp</i> (formerly <i>Rochalimaea spp</i>)	2	
<i>Bordetella bronchiseptica</i>	2	
<i>Bordetella parapertussis</i>	2	
<i>Bordetella pertussis</i>	2	Vaccine available
<i>Bordetella spp</i>	2	
<i>Borrelia burgdorferi</i>	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Borrelia duttonii</i>	2	
<i>Borrelia recurrentis</i>	2	
<i>Borrelia</i> spp	2	
<i>Brachyspira</i> spp (formerly <i>Serpulina</i> spp)	2	
<i>Brucella abortus</i>	3	Classified under SAPO
<i>Brucella canis</i>	3	
<i>Brucella inopinata</i>	3	
<i>Brucella melitensis</i>	3	Classified under SAPO
<i>Brucella suis</i>	3	Classified under SAPO
<i>Burkholderia cepacia</i>	2	
<i>Burkholderia mallei</i> (formerly <i>Pseudomonas mallei</i>)	3	Classified under SAPO
<i>Burkholderia pseudomallei</i> (formerly <i>Pseudomonas pseudomallei</i>)	3	
<i>Campylobacter fetus</i>	2	
<i>Campylobacter jejuni</i>	2	
<i>Campylobacter</i> spp	2	
<i>Cardiobacterium hominis</i>	2	
<i>Cardiobacterium valvarum</i>	2	
<i>Chlamydia abortus</i>	2	
<i>Chlamydia caviae</i>	2	
<i>Chlamydia felis</i>	2	
<i>Chlamydophila pneumoniae</i>	2	
<i>Chlamydophila psittaci</i> (avian strains)	3	
<i>Chlamydophila psittaci</i> (non-avian strains)	2	
<i>Chlamydophila trachomatis</i>	2	
<i>Clostridium botulinum</i>	2	Toxigenic
<i>Clostridium perfringens</i>	2	Toxigenic
<i>Clostridium</i> spp	2	
<i>Clostridium tetani</i>	2	Toxigenic Vaccine available
<i>Clostridioides difficile</i> (formerly <i>Clostridium difficile</i>)	2	Toxigenic

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Corynebacterium diphtheriae</i>	2	Toxigenic Vaccine available
<i>Corynebacterium minutissimum</i>	2	
<i>Corynebacterium pseudotuberculosis</i>	2	Toxigenic
<i>Corynebacterium</i> spp	2	
<i>Corynebacterium ulcerans</i>	2	Toxigenic
<i>Coxiella burnetti</i>	3	
<i>Edwardsiella tarda</i>	2	
<i>Ehrlichia</i> spp	2	
<i>Eikenella corrodens</i>	2	
<i>Elizabethkingia meningoseptica</i> (formerly <i>Flavobacterium meningosepticum</i>)	2	
<i>Enterobacter aerogenes</i>	2	
<i>Enterobacter cloacae</i>	2	
<i>Enterobacter</i> spp	2	
<i>Enterococcus</i> spp	2	
<i>Erysipelothrix rhusiopathiae</i>	2	
<i>Escherichia coli</i> (except for non-pathogenic strains)	2	
<i>Escherichia coli</i> , verocytotoxigenic strains (eg O157:H7 or O103)	3*	Toxigenic
<i>Fluoribacter bozemanae</i> (formerly <i>Legionella bozemanae</i>)	2	
<i>Francisella hispaniensis</i>	2	
<i>Francisella tularensis</i> subsp. <i>holarctica</i>	2	
<i>Francisella tularensis</i> subsp. <i>mediasiatica</i>	2	
<i>Francisella tularensis</i> subsp. <i>novicida</i>	2	
<i>Francisella tularensis</i> subsp. <i>tularensis</i>	3	
<i>Fusobacterium necrophorum</i> subsp. <i>funduliforme</i>	2	
<i>Fusobacterium necrophorum</i> subsp. <i>necrophorum</i>	2	
<i>Fusobacterium</i> spp	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Gardnerella vaginalis</i>	2	
<i>Haemophilus ducreyi</i>	2	
<i>Haemophilus influenzae</i>	2	Vaccine available
<i>Haemophilus</i> spp	2	
<i>Helicobacter pylori</i>	2	
<i>Helicobacter</i> spp	2	
<i>Klebsiella oxytoca</i>	2	
<i>Klebsiella pneumoniae</i> subsp. <i>ozaenae</i>	2	
<i>Klebsiella pneumoniae</i> subsp. <i>pneumoniae</i>	2	
<i>Klebsiella pneumoniae</i> subsp. <i>rhinoscleromatis</i>	2	
<i>Klebsiella</i> spp	2	
<i>Legionella pneumophila</i> subsp. <i>fraseri</i>	2	
<i>Legionella pneumophila</i> subsp. <i>pascullei</i>	2	
<i>Legionella pneumophila</i> subsp. <i>pneumophila</i>	2	
<i>Legionella</i> spp	2	
<i>Leptospira interrogans</i> (all serovars)	2	
<i>Leptospira interrogans</i> spp	2	
<i>Listeria ivanovii</i> subsp. <i>ivanovii</i>	2	
<i>Listeria invanovii</i> subsp. <i>londoniensis</i>	2	
<i>Listeria monocytogenes</i>	2	
<i>Moraxella catarrhalis</i>	2	
<i>Morganella morganii</i> subsp. <i>morganii</i> (formerly <i>Proteus morganii</i>)	2	
<i>Morganella morganii</i> subsp. <i>sibonii</i>	2	
<i>Mycobacterium abscessus</i> subsp. <i>abscessus</i>	2	
<i>Mycobacterium africanum</i>	3	Vaccine available
<i>Mycobacterium avium</i> subsp. <i>avium</i> (<i>Mycobacterium avium</i>)	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Mycobacterium avium</i> subsp. <i>paratuberculosis</i> (<i>Mycobacterium paratuberculosis</i>)	2	
<i>Mycobacterium avium</i> subsp. <i>silvaticum</i>	2	
<i>Mycobacterium bovis</i>	3	Vaccine available
<i>Mycobacterium bovis</i> (BCG strain)	2	
<i>Mycobacterium caprae</i>	3	
<i>Mycobacterium chelonae</i>	2	
<i>Mycobacterium chimaera</i>	2	
<i>Mycobacterium fortuitum</i>	2	
<i>Mycobacterium intracellulare</i>	2	
<i>Mycobacterium kansasii</i>	2	
<i>Mycobacterium leprae</i>	3	Vaccine available
<i>Mycobacterium malmoeense</i>	3	
<i>Mycobacterium marinum</i>	2	
<i>Mycobacterium microti</i>	3*	
<i>Mycobacterium pinnipedii</i>	3	
<i>Mycobacterium scrofulaceum</i>	2	
<i>Mycobacterium simiae</i>	2	
<i>Mycobacterium szulgai</i>	3	
<i>Mycobacterium tuberculosis</i>	3	Vaccine available
<i>Mycobacterium ulcerans</i>	3*	
<i>Mycobacterium xenopi</i>	2	
<i>Mycoplasma hominis</i>	2	
<i>Mycoplasma pneumoniae</i>	2	
<i>Mycoplasma</i> spp	2	
<i>Neisseria gonorrhoeae</i>	2	
<i>Neisseria meningitidis</i>	2	Vaccine available
<i>Neorickettsia sennetsu</i> (formerly <i>Ehrlichia sennetsu</i> , <i>Rickettsia sennetsu</i>)	3	
<i>Nocardia asteroides</i>	2	
<i>Nocardia brasiliensis</i>	2	
<i>Nocardia farcinica</i>	2	
<i>Nocardia nova</i>	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Nocardia otitidiscaviarum</i>	2	
<i>Nocardia</i> spp	2	
<i>Orientia tsutsugamushi</i> (formerly <i>Rickettsia tsutsugamushi</i>)	3	
<i>Pasteurella multocida</i> subsp. <i>gallicida</i> (<i>Pasteurella gallicida</i>)	2	
<i>Pasteurella multocida</i> subsp. <i>multocida</i>	2	
<i>Pasteurella multocida</i> subsp. <i>septica</i>	2	
<i>Pasteurella</i> spp	2	
<i>Peptostreptococcus anaerobius</i>	2	
<i>Peptostreptococcus</i> spp	2	
<i>Plesiomonas shigelloides</i>	2	
<i>Porphyromonas</i> spp	2	
<i>Prevotella</i> spp	2	
<i>Proteus mirabilis</i>	2	
<i>Proteus penneri</i>	2	
<i>Proteus vulgaris</i>	2	
<i>Providencia alcalifaciens</i>	2	
<i>Providencia rettgeri</i>	2	
<i>Providencia</i> spp	2	
<i>Pseudomonas aeruginosa</i>	2	Toxigenic
<i>Rhodococcus hoagii</i> (formerly <i>Rhodococcus equi</i>)	2	
<i>Rickettsia africae</i>	3	
<i>Rickettsia akari</i>	3*	
<i>Rickettsia australis</i>	3	
<i>Rickettsia canadensis</i> (formerly <i>Rickettsia canada</i>)	3*	
<i>Rickettsia conorii</i>	3	
<i>Rickettsia heilongjiangensis</i>	3*	
<i>Rickettsia japonica</i>	3	
<i>Rickettsia montanensis</i> (formerly <i>Rickettsia montana</i>)	3*	
<i>Rickettsia prowazekii</i>	3	
<i>Rickettsia rickettsii</i>	3	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Rickettsia sibirica</i>	3	
<i>Rickettsia</i> spp	3	
<i>Rickettsia typhi</i> (formerly <i>Rickettsia mooseri</i>)	3	
<i>Rochalimaea</i> spp	2	
<i>Salmonella enterica</i> (<i>choleraesuis</i>) subsp. <i>arizonae</i> (formerly <i>Salmonella arizonae</i>)	2	
<i>Salmonella enterica</i> serovar <i>enteritidis</i>	2	
<i>Salmonella enterica</i> serovar <i>typhimurium</i>	2	
<i>Salmonella paratyphi A</i>	3*	Vaccine available
<i>Salmonella paratyphi B/java</i>	3*	Vaccine available
<i>Salmonella paratyphi C/Choleraesuis</i>	3*	Vaccine available
<i>Salmonella</i> spp	2	
<i>Salmonella typhi</i>	3*	Vaccine available
<i>Shigella boydii</i>	2	
<i>Shigella dysenteriae</i> (other than Type 1)	2	
<i>Shigella dysenteriae</i> (Type 1)	3*	Toxigenic
<i>Shigella flexneri</i>	2	
<i>Shigella sonnei</i>	2	
<i>Staphylococcus aureus</i>	2	Toxigenic
<i>Streptobacillus moniliformis</i>	2	
<i>Streptococcus agalactiae</i>	2	
<i>Streptococcus dysgalactiae</i> subsp. <i>equisimilis</i>	2	
<i>Streptococcus pneumoniae</i>	2	Toxigenic Vaccine available
<i>Streptococcus pyogenes</i>	2	Toxigenic
<i>Streptococcus</i> spp	2	
<i>Streptococcus suis</i>	2	
<i>Treponema carateum</i>	2	
<i>Treponema pallidum</i>	2	
<i>Treponema pertenu</i>	2	
<i>Treponema</i> spp	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Trueperella pyogenes</i> (formerly <i>Actinomyces pyogenes</i>)	2	
<i>Ureaplasma parvum</i>	2	
<i>Ureaplasma urealyticum</i>	2	
<i>Vibrio cholerae</i> (including <i>El Tor</i>)	2	Toxigenic Vaccine available
<i>Vibrio parahaemolyticus</i>	2	
<i>Vibrio</i> spp	2	
<i>Yersinia enterocolitica</i> subsp. <i>enterolitica</i>	2	
<i>Yersinia enterocolitica</i> subsp. <i>palaearctica</i>	2	
<i>Yersinia pestis</i>	3	
<i>Yersinia pseudotuberculosis</i>	2	
<i>Yersinia</i> spp	2	

Fungi

<i>Aspergillus flavus</i>	2	Allergen
<i>Aspergillus fumigatus</i>	2	Allergen
<i>Aspergillus</i> spp	2	
<i>Blastomyces dermatitidis</i> (<i>Ajellomyces dermatitidis</i>)	3	
<i>Blastomyces gilchristii</i>	3	
<i>Candida albicans</i>	2	Allergen
<i>Candida dubliniensis</i>	2	
<i>Candida glabrata</i>	2	
<i>Candida parapsilosis</i>	2	
<i>Candida</i> spp	2	
<i>Candida tropicalis</i>	2	
<i>Cladophialophora bantiana</i> (formerly <i>Xylohypha bantiana</i> , <i>Cladosporium bantianum</i>)	3	
<i>Cladophialophora modesta</i>	3	
<i>Cladophialophora</i> spp	2	
<i>Coccidioides immitis</i>	3	Allergen
<i>Coccidioides posadasii</i>	3	Allergen

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Cryptococcus neoformans</i> var <i>gattii</i> (formerly <i>Filobasidiella bacillispora</i>)	2	Allergen
<i>Cryptococcus neoformans</i> var <i>neoformans</i> (formerly <i>Filobasidiella neoformans</i> var <i>neoformans</i>)	2	Allergen
<i>Emmonsia parva</i> var. <i>crescens</i>	2	
<i>Emmonsia parva</i> var. <i>parva</i>	2	
<i>Epidermophyton floccosum</i>	2	Allergen
<i>Epidermophyton</i> spp	2	
<i>Exophiala</i> spp	2	
<i>Fonsecaea pedrosoi</i> (formerly <i>Fonsecaea compacta</i>)	2	
<i>Fusarium</i> spp	2	
<i>Geotrichum</i> spp	2	
<i>Histoplasma capsulatum</i> var <i>capsulatum</i> (<i>Ajellomyces capsulatus</i>)	3	
<i>Histoplasma capsulatum</i> var <i>duboisii</i>	3	
<i>Histoplasma capsulatum</i> var <i>farcinimosum</i>	3	Classified under SAPO
<i>Lichtheimia corymbifera</i> (formerly <i>Absidia corymbifera</i>)	2	
<i>Madurella grisea</i>	2	
<i>Madurella mycetomatis</i>	2	
<i>Malassezia</i> spp	2	
<i>Microsporum</i> spp	2	Allergen
<i>Nannizzia</i> spp	2	
<i>Neotestudina rosatii</i>	2	
<i>Paracoccidioides brasiliensis</i>	3	
<i>Paracoccidioides lutzii</i>	3	
<i>Paraphyton</i> spp	2	
<i>Rhinocladiella mackenziei</i> (formerly <i>Ramichloridium</i>)	3	
<i>Rhizomucor pusillus</i>	2	
<i>Rhizopus microsporus</i>	2	
<i>Saksenaia vasiformis</i>	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Scedosporium apiospermum</i> (formerly <i>Pseudallescheria boydii</i>)	2	
<i>Scedosporium proliferans</i> (<i>inflatum</i>)	2	
<i>Scopulariopsis brevicaulis</i>	2	
<i>Sporothrix schenckii</i>	2	
<i>Talaromyces marneffe</i> (formerly <i>Penicillium marneffe</i>)	3	Allergen
<i>Trichophyton rubrum</i>	2	Allergen
<i>Trichophyton tonsurans</i>	2	Allergen
<i>Trichophyton</i> spp	2	
<i>Trichosporon</i> spp	2	

Helminths

<i>Ancylostoma duodenale</i>	2	
<i>Angiostrongylus cantonensis</i>	2	
<i>Angiostrongylus costaricensis</i>	2	
<i>Anisakis simplex</i>	2	Allergen
<i>Ascaris lumbricoides</i>	2	Allergen
<i>Ascaris suum</i>	2	Allergen
<i>Brugia malayi</i>	2	
<i>Brugia pahangi</i>	2	
<i>Brugia timori</i>	2	
<i>Capillaria philippinensis</i>	2	
<i>Capillaria</i> spp	2	
<i>Clonorchis sinensis</i> (<i>Opisthorchis sinensis</i>)	2	
<i>Clonorchis viverrini</i> (<i>Opisthorchis viverrini</i>)	2	
<i>Contracaecum osculatum</i>	2	
<i>Dicrocoelium dendriticum</i>	2	
<i>Diphyllbothrium latum</i>	2	
<i>Dracunculus medinensis</i>	2	
<i>Echinococcus granulosus</i>	3*	Classified under SAPO
<i>Echinococcus multilocularis</i>	3*	Classified under SAPO
<i>Echinococcus oligarthus</i>	3*	
<i>Echinococcus vogeli</i>	3*	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Enterobius vermicularis</i>	2	
<i>Fasciola gigantica</i>	2	
<i>Fasciola hepatica</i>	2	
<i>Fasciolopsis buski</i>	2	
<i>Heterophyes</i> spp	2	
<i>Hymenolepis diminuta</i>	2	
<i>Hymenolepis nana</i>	2	
<i>Loa loa</i>	2	
<i>Mansonella ozzardi</i>	2	
<i>Mansonella perstans</i>	2	
<i>Mansonella streptocerca</i> (formerly <i>Dipetalonema streptocerca</i>)	2	
<i>Metagonimus</i> spp	2	
<i>Necator americanus</i>	2	
<i>Onchocerca volvulus</i>	2	
<i>Opisthorchis felineus</i>	2	
<i>Opisthorchis</i> spp	2	
<i>Paragonimus</i> spp	2	
<i>Paragonimus westermani</i>	2	
<i>Pseudoterranova decipiens</i>	2	
<i>Schistosoma haematobium</i>	2	
<i>Schistosoma intercalatum</i>	2	
<i>Schistosoma japonicum</i>	2	
<i>Schistosoma mansoni</i>	2	
<i>Schistosoma mekongi</i>	2	
<i>Schistosoma</i> spp	2	
<i>Strongyloides</i> spp	2	
<i>Strongyloides stercoralis</i>	2	
<i>Taenia saginata</i>	2	
<i>Taenia solium</i>	3*	
<i>Toxocara canis</i>	2	
<i>Toxocara cati</i>	2	
<i>Trichinella nativa</i>	2	
<i>Trichinella nelsoni</i>	2	
<i>Trichinella pseudospiralis</i>	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Trichinella spiralis</i>	2	Classified under SAPO
<i>Trichostrongylus orientalis</i>	2	
<i>Trichostrongylus</i> spp	2	
<i>Trichuris trichiura</i>	2	
<i>Wuchereria bancrofti</i>	2	

Protozoa

<i>Acanthamoeba castellanii</i>	2	
<i>Acanthamoeba</i> spp	2	
<i>Babesia divergens</i>	2	
<i>Babesia microti</i>	2	
<i>Babesia</i> spp	2	
<i>Balamuthia mandrillaris</i>	3	
<i>Balantidium coli</i>	2	
<i>Blastocystis hominis</i>	2	
<i>Cryptosporidium hominis</i>	2	
<i>Cryptosporidium parvum</i>	2	
<i>Cryptosporidium</i> spp	2	
<i>Cyclospora cayetanensis</i>	2	
<i>Cyclospora</i> spp	2	
<i>Cystoisospora belli</i> (formerly <i>Isospora belli</i>)	2	
<i>Dientamoeba fragilis</i>	2	
<i>Encephalitozoon cuniculi</i>	2	
<i>Encephalitozoon hellem</i>	2	
<i>Encephalitozoon intestinalis</i>	2	
<i>Entamoeba histolytica</i>	2	
<i>Enterocytozoon bieneusi</i>	2	
<i>Giardia lamblia</i> (<i>Giardia intestinalis</i>)	2	
<i>Leishmania aethiopica</i>	2	
<i>Leishmania brasiliensis</i>	3*	
<i>Leishmania donovani</i>	3*	
<i>Leishmania guyanensis</i> (<i>Viannia guyanensis</i>)	3*	
<i>Leishmania infantum</i> (<i>L. Chagasi</i>)	3*	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Leishmania major</i>	2	
<i>Leishmania mexicana</i>	2	
<i>Leishmania panamensis</i> (<i>Viannia panamensis</i>)	3*	
<i>Leishmania peruviana</i>	2	
<i>Leishmania</i> spp	2	
<i>Leishmania tropica</i>	2	
<i>Naegleria fowleri</i>	3	
<i>Plasmodium falciparum</i>	3*	
<i>Plasmodium knowlesi</i>	3*	
<i>Plasmodium</i> spp (human & simian)	2	
<i>Sarcocystis sui hominis</i>	2	
<i>Toxoplasma gondii</i>	2	
<i>Trichomonas vaginalis</i>	2	
<i>Trypanosoma brucei brucei</i>	2	Classified under SAPO
<i>Trypanosoma brucei gambiense</i>	2	
<i>Trypanosoma brucei rhodesiense</i>	3*	
<i>Trypanosoma cruzi</i>	3*	

PRIONS – unconventional agents associated with transmissible spongiform encephalopathies (TSEs)

Human TSEs

Sporadic forms of human TSE:		
Sporadic Creutzfeldt-Jakob disease agent	3*	
Sporadic fatal insomnia agent	3*	
Variably protease-resistant prionopathy agent	3*	
Genetic forms of human TSE:		
Familial Creutzfeldt-Jakob disease agent	3*	
Fatal familial insomnia agent	3*	
Gerstmann-Sträussler-Scheinker syndrome agent	3*	
Acquired forms of human TSE:		
Variant Creutzfeldt-Jakob disease agent	3*	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Iatrogenic Creutzfeldt-Jakob disease agent	3*	
Kuru agent	3*	
Animal TSEs		
Bovine spongiform encephalopathy (BSE) agent and other related animal TSEs	3*	
H-type BSE agent	3*	
L-type BSE agent	3*	
Scrapie and scrapie-related agents	2	
Atypical scrapie agent	2	
Chronic Wasting Disease agent	2	
Laboratory strains of TSEs		
Any strain propagated in primates, mice expressing PrP gene or mice encoding human familial mutations in PrP	3*	
Human strains propagated in any species	3*	
Proteopathic seeds	2	

Viruses

<i>Family Adenoviridae</i>		
<i>Order Rowavirales</i>		
Adenoviridae	2	
<i>Family Anelloviridae</i>		
<i>Order Unclassified</i>		
<i>Genus Alphatorquevirus</i>		
Torque teno virus (formerly known as Transfusion Transmitted virus (TTV))	2	
<i>Family Arenaviridae</i>		
<i>Order Bunyavirales</i>		
<i>Genus Mammarenavirus</i>		
Allpahuayo virus	2	
Aporé virus	3	
Bear Canyon virus	2	
Brazilian mammarenavirus (formerly known as Sabia virus)	4	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Cali mammarenavirus (formerly known as Pichinde virus)	2	
Chapare virus	4	
Cupixi, virus	2	
Flexal virus	3	
Guanarito virus	4	
Ippy virus	2	
Argentinian mammarenavirus (formerly known as Junin virus)	4	
Lassa fever virus	4	
Latino virus	2	
Lujo virus	4	
Lymphocytic choriomeningitis virus LCMV (all strains other than Armstrong)	3	
Lymphocytic choriomeningitis virus LCMV (Armstrong strain)	2	
Machupo virus	4	
Merino Walk virus	2	
Mobala virus	3	
Mopeia virus	2	
Oliveros virus	2	
Paraguayan mammarenavirus (formerly known as Parana virus)	2	
Piritai virus	2	
Serra do Navio mammarenavirus (formerly known as Amapari virus)	2	
Tamiami virus	2	
Whitewater Arroyo virus	2	
Xapuri virus	2	
<i>Family</i> Astroviridae		
<i>Order</i> Stellavirales		
Astroviridae	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
<i>Family</i> Bornaviridae		
<i>Order</i> Mononegavirales		
<i>Genus</i> Bornavirus		
Mammalian 1 Orthobornavirus (also known as Borna disease virus, BoDV-1)	3	
Mammalian 2 Orthobornavirus (also known as Borna disease virus, BoDV-2)	3	
<i>Genus</i> Rhadinovirus		
Human gammaherpesvirus 8 (also known as Kaposi's sarcoma-associated herpesvirus and Human herpesvirus)	2	
<i>Family</i> Caliciviridae		
<i>Order</i> Picornavirales		
<i>Genus</i> Norovirus		
Noroviruses (also known as calicivirus, human calicivirus)	2	
<i>Genus</i> Sapovirus		
Sapporo virus (also known as Human calicivirus NLV)	2	
Other Caliciviridae known to be pathogenic	2	
<i>Family</i> Coronaviridae		
<i>Order</i> Nidovirales		
<i>Genus</i> Alphacoronavirus		
Human Coronavirus 229E, OC43, NL63 and HKU1	2	
<i>Genus</i> Betacoronavirus		
Middle East respiratory syndrome-related coronavirus (MERS)	3	
Severe acute respiratory syndrome-related coronavirus 1 (SARS-CoV-1)	3	
Severe-acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2)	3	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Novel coronaviridae (eg bat coronaviruses WIVI or SHC011)	3	Excludes close genetic related versions of known coronaviruses. New genetically related versions of known coronaviruses should be handled at the ACDP level assigned to the related prototype virus.
<i>Family Filoviridae</i>		
<i>Order Mononegavirales</i>		
<i>Genus Ebolavirus</i>		
Bundibugyo ebolavirus	4	
Reston ebolavirus	4	
Sudan ebolavirus	4	
Tai Forest ebolavirus (formerly known as Ebola Cote d'Ivoire virus)	4	
Zaire ebolavirus	4	
<i>Genus Marburgvirus</i>		
Marburg virus	4	
<i>Family Flaviviridae</i>		
<i>Order Amarillovirales</i>		
<i>Genus Flavivirus</i>		
Absettarov virus	3	
Central European tick-borne encephalitis virus	3	
Dengue virus	3	
Far Eastern tick-borne encephalitis virus (formerly Russian spring-summer encephalitis virus)	3	Vaccine available
Hanzalova virus	3	Vaccine available
Hypr virus	3	Vaccine available
Israel turkey meningitis meningoencephalomyelitis virus	3	
Japanese encephalitis virus	3	Classified under SAPO Vaccine available
Kumlinge virus	3	
Kyasanur Forest disease virus	3	Vaccine available
Louping ill virus	3*	
Murray Valley encephalitis virus	3	
Negishi virus	3	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Omsk haemorrhagic fever virus	3	Vaccine available
Powassan virus	3	
Rocio virus	3	
Sal Vieja virus	3	
San Perlita virus	3	
Siberian tick-borne encephalitis virus	3	Vaccine available
St Louis encephalitis virus	3	Classified under SAPO
Usutu virus	2	
Wesselsbron virus	3*	
West Nile fever virus	3	Classified under SAPO
Yellow fever virus	3	Vaccine available
Zika virus	2	
Other flaviviruses known to be pathogenic	2	
Genus Hepacivirus		
Hepacivirus C virus (also known as HCV) (formerly known as Hepatitis C virus)	3*	
Genus Pegivirus		
Pegivirus C (formerly human pegivirus)	3*	
Other Flaviviridae known to be pathogenic	2	
Family Hantaviridae		
Order Bunyavirales		
Genus Orthohantavirus		
Andes orthohantavirus	3	
Bayou orthohantavirus	3	
Black Creek Canal orthohantavirus	3	
Cano Delgadito orthohantavirus	3	
Choclo orthohantavirus	3	
Dobrava-Belgrade orthohantavirus (formerly known as Belgrade (Dobrava) virus)	3	
El Moro Canyon orthohantavirus	3	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Hantaan orthohantavirus (formerly known as Hantaan virus)	3	
Laguna Negra orthohantavirus	3	
Prospect Hill orthohantavirus	2	
Puumala orthohantavirus	2	
Seoul orthohantavirus	3	
Sin Nombre orthohantavirus	3	
Other hantaviruses known to be pathogenic	2	
<i>Family Hepadnaviridae</i>		
<i>Order Blubervirales</i>		
<i>Genus Orthohepadnavirus</i>		
Hepatitis B virus	3*	Vaccine available
Hepatitis D virus	3*	Vaccine available
<i>Family Hepeviridae</i>		
<i>Order Hepelivirales</i>		
<i>Genus Hepevirus</i>		
Orthohepevirus A (formerly known as Hepatitis E virus)	3*	
<i>Genus Simplex virus</i>		
Macacine alphaherpesvirus 1 (formerly Herpesvirus simiae, Herpes B virus)	4	
Human alphaherpesvirus 1 (HHV-1)	2	
Human alphaherpesvirus 2 (HHV-2)	2	
<i>Genus Varicellovirus</i>		
Human alphaherpesvirus 3	2	
<i>Genus Cytomegalovirus</i>		
Cytomegalovirus (also called CMV or Human betaherpesvirus 5 or HHV-5)	2	
<i>Genus Roseolavirus</i>		
Betaherpesvirus 6A (also known as Human herpesvirus type 6 – HHV6)	2	
Betaherpesvirus 6B (also known as Human herpesvirus type 6 – HHV6)	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Human herpesvirus type 7 – HHV7	2	
<i>Genus Lymphocryptovirus</i>		
Epstein-Barr virus (formerly Human gammaherpesvirus 4)	2	
<i>Genus Rhadinovirus</i>		
Human gammaherpesvirus 8 (also known as Kaposi's sarcoma-associated herpesvirus and Human herpesvirus)	2	
<i>Family Nairoviridae</i>		
<i>Order Bunyavirales</i>		
<i>Genus Ortonairovirus</i>		
Crimean-Congo Haemorrhagic fever orthonairovirus (formerly known as Crimean/Congo haemorrhagic fever virus)	4	
Hazara orthonairovirus	2	
Dugbe orthonairovirus	2	
Nairobi sheep disease orthonairovirus (Ganjam virus)	2	
Other nairoviruses known to be pathogenic	2	
<i>Family Orthomyxoviridae</i>		
<i>Order Articulavirales</i>		
<i>Genus Alphainfluenzavirus</i>		
Human Seasonal influenza A Viruses strains (e.g H1N1 H1N1_A/England 195/09 or A/New Caledonia/20/99 & H3N2 A/Wisconsin/67/2005).	2	Human H1N1 virus to which the population has cross reactive immunological responses. Vaccines available.
Historical human influenza A viruses of pandemic potential (eg H1N1 A/New York/1/18, H2N2 A/Singapore/1/57).	3	Historical human influenza viruses to which the current population has little cross-reactive immunological response (excluding well characterised lab adapted strains eg A/PR/8/34 and A/WSN/1933). Antivirals available.
Highly pathogenic avian influenza viruses (eg H5Nx, H7N7) and low pathogenic avian influenza viruses that have caused severe human disease (eg H7N9).	3	Classified under SAPO. Antivirals available.

Biological agent	Human pathogen hazard group	Taxonomy / notes
Low pathogenic avian influenza viruses that have not caused disease in humans.	2	Antivirals available
Swine influenza A viruses (eg H1N1, H1N2, H3N2)	2	Viruses to which current population has some cross-reactive immunological response. Antivirals available
Equine and Canine lineages of influenza A viruses (eg H3N8)	2	Antivirals available
<i>Genus Betainfluenzavirus</i>		
Influenza B virus	2	Vaccines and antivirals available.
Genus Deltainfluenzavirus		
Influenza D virus	2	
Genus Gammainfluenzavirus		
Influenza C virus	2	
Genus Thogotovirus		
Dhori virus	2	
Thogoto virus	2	
Family Paramyxoviridae		
Order Mononegavirales		
Genus Avulavirus		
Avian avulavirus 1 (formerly Newcastle disease virus)	2	Classified under SAPO
Genus Henipavirus		
Hendra henipavirus (also known as Hendra virus)	4	Classified under SAPO
Nipah henipavirus (also known as Nipah virus)	4	Classified under SAPO
Other nairoviruses known to be pathogenic	2	
Genus Morbillivirus		
Measles morbillivirus (also known as Measles virus)	2	Vaccine available
Genus Respirovirus		
Human Respirovirus 1 (formerly Human parainfluenza virus Type 1)	2	
Human Respirovirus 3 (formerly Human parainfluenza virus Type 3)	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Genus Rubulavirus		
Mumps rubulavirus (also known as Mumps virus)	2	Vaccine available
Human Rubulavirus 2 (formerly Human parainfluenza virus Type 2)	2	
Human Rubulavirus 4 (formerly Human parainfluenza virus Type 4)	2	
Genus Metapneumovirus		
Human metapneumovirus	2	
Genus Orthopneumovirus		
Human orthopneumovirus (also known as Human respiratory syncytial virus)	2	
Family Papillomaviridae		
Human papillomaviruses	2	
Family Parvoviridae		
Order Piccovirales		
Genus Bocaparvovirus		
Primate bocavirus 1 (human bocavirus 1 and 3)	2	
Primate bocavirus 2 (human bocavirus 2 and 4)	2	
Genus Erythroparvovirus		
Primate erythroparvovirus 1 (Formerly known as Human parvovirus, B 19 virus)	2	
Genus Tetraparvovirus		
Primate parvovirus (formerly Human parvoviruses 4)	2	
Family Peribunyaviridae		
Order Bunyavirales		
Genus Orthobunyavirus		
Akabane orthobunyavirus	2	
Bunyamwera orthobunyavirus	2	
Bunyavirus orthobunyavirus germiston	3	
California encephalitis virus	2	
La Crosse virus	3	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Ngari virus	3	
Oropouche virus	3	
Snowshoe hare virus	3	
Other orthobunyaviruses known to be pathogenic	2	
<i>Family Phenuiviridae</i>		
<i>Order Bunyvirales</i>		
<i>Genus Phlebovirus</i>		
Punta Toro virus	2	
Rift Valley fever virus	3	Classified under SAPO
Sandfly fever Naples virus (also known subspecies Toscana virus)	2	
Other phleboviruses known to be pathogenic	2	
<i>Genus Bandavirus</i>		
Bhanja bandavirus	3	
Dabie bandavirus (formerly known as Severe fever with thrombocytopenia syndrome virus)	3	
<i>Family Picornaviridae</i>		
<i>Order Picornavirales</i>		
<i>Genus Cardiovirus</i>		
Cardiovirus B (Saffold virus)	2	
<i>Genus Cosavirus</i>		
Cosavirus A	2	
<i>Genus Enterovirus</i>		
Enterovirus D, Human Enterovirus type 70	2	Synonyms: Coxsackievirus CA24 (A24); Enterovirus 70
Human Enterovirus A also known as Coxsackieviruses (A)	2	
Enterovirus B (which includes the sub-species Echoviruses and the coxsackieviruses)	2	
Human enterovirus C type 1 (also known as Poliovirus)	2	Poliovirus Vaccine available
Human enterovirus C type 2 (also known as Poliovirus)	3	
Human enterovirus C type 3 (also known as Poliovirus)	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Human rhinovirus A	2	
Human rhinovirus B	2	
Human rhinovirus C	2	
Genus Hepatovirus		
Hepatitis A virus (human enterovirus type 72)	2	Vaccine available
Genus Parechovirus		
Parechoviruses A	2	
Parechoviruses B (formerly Ljungan virus)	2	
Family Polyomaviridae		
Order Sepolyvirales		
Genus Betapolyomavirus		
Human polyomavirus 1 (formerly known as BK virus)	2	
Human polyomavirus 2 (formerly known as JC virus)	2	
Human polyomavirus 3 (also known as KI polyomavirus)	2	
Human polyomavirus 4 (also known as WU polyomavirus)	2	
Macaca mulatta polyomavirus 1 (also known as Simian virus 40)	2	
Family Poxviridae		
Order Chitovirales		
Genus Molluscipoxvirus		
Molluscum contagiosum virus	2	
Genus Orthopoxvirus		
Vaccinia virus including strains (Buffalopox, Elephantpox, Rabbitpox and Cowpox).	2	
Mpox virus (formerly known as Monkeypox virus)	3	Vaccine available
Variola virus (major and minor)	4	
Genus Parapoxvirus		
Orf virus	2	
Pseudocowpox virus (Milker's nodes virus)	2	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Genus Yatapoxvirus		
Tanapox virus	2	
Yaba monkey tumor virus	2	
Family Reoviridae		
Order Reovirales		
Genus Orbivirus		
Orbiviruses	2	
Genus Rotavirus		
Human rotaviruses A, B and C	2	Vaccine available for group A
Genus Seadornavirus		
Banna virus	3	
Genus Coltivirus		
Colorado tick fever virus	2	
Genus Orthoreovirus		
Mammalian orthoreoviruses 1 to 3	2	
Family Retroviridae		
Order Ortervirales		
Genus Deltaretrovirus		
Primate T-cell lymphotropic viruses types 1	3*	
Primate T-cell lymphotropic viruses types 2	3*	
Genus Gammaretrovirus		
Xenotropic murine leukaemia virus-related virus	2	
Genus Lentivirus		
Human immunodeficiency viruses type 1	3*	
Human immunodeficiency viruses type 2	3*	
Simian immunodeficiency virus	3*	
Family Rhabdoviridae		
Order Mononegavirales		
Genus Lyssavirus		
Australian bat lyssavirus	3	Classified under SAPO Rabies vaccine provides protection

Biological agent	Human pathogen hazard group	Taxonomy / notes
Duvenhage virus	3	Classified under SAPO Rabies vaccine provides protection
European bat lyssaviruses 1	3	Classified under SAPO Rabies vaccine provides protection
European bat lyssaviruses 2	3	Classified under SAPO Rabies vaccine provides protection
Lagos bat virus	3	Classified under SAPO
Mokola virus	3	Classified under SAPO
Rabies virus	3*	Classified under SAPO Vaccine available
Other Lyssavirus species not listed above	3	Classified under SAPO
Genus Vesiculovirus		
Piry Vesicular virus (formerly Piry virus)	3	
Vesicular stomatitis virus	2	Classified under SAPO
Vesicular stomatitis Alagoas	2	Classified under SAPO
Vesicular stomatitis Indiana	2	Classified under SAPO
Vesicular stomatitis New Jersey	2	Classified under SAPO
Family Togaviridae		
Genus Alphavirus		
Bebaru virus	2	
Cabassouvirus	3	
Chikungunya virus	3*	
Eastern equine encephalomyelitis encephalitis virus	3	Classified under SAPO
Everglades virus	3*	
Getah virus	3	
Mayaro virus	3	
Middelburg virus	3	
Mucambo virus	3*	
Ndumu virus	3	
Onyong-nyong virus	2	
Ross River virus	2	
Sagiyama virus (a sub-species of Ross River Virus)	3	

Biological agent	Human pathogen hazard group	Taxonomy / notes
Semliki Forest virus	2	
Sindbis virus	2	
Tonate virus	3*	
Venezuelan equine encephalitis virus	3	Classified under SAPO
Western equine encephalitis virus	3	Classified under SAPO
Other known alphaviruses known to be pathogenic	2	
Genus Rubivirus		
Rubella virus	2	Vaccine available

Annex 1: Biological agents which may be used at less than the minimum containment conditions

This annex provides a list of biological agents that are human pathogens which may be used at less than the minimum containment conditions required by COSHH.

Whether any of the applicable containment measures can be dispensed with in relation to work with the biological agents listed will depend on the activity undertaken. Please refer to guidance paragraphs 17–20 for further information.

Bacteria

- *Escherichia coli*, vero-cytotoxigenic strains (eg O157:H7 or O103)
- *Mycobacterium microti*
- *Mycobacterium ulcerans*
- *Rickettsia akari*
- *Rickettsia heilongjiangensis*
- *Rickettsia canadensis*
- *Rickettsia montanensis*
- *Salmonella typhi*
- *Salmonella paratyphi* A, B, C
- *Shigella dysenteriae* (Type 1)

Unconventional agents associated with TSEs

- The agent of bovine spongiform encephalopathy (BSE) and other related animal TSEs
- The agents of Creutzfeldt-Jakob disease
- The agents of variant Creutzfeldt-Jakob disease

Viruses

- Chikungunya virus
- Everglades virus
- Hepatitis B virus
- Hepatitis C virus
- Hepatitis D virus
- Orthohepevirus A (formerly known as Hepatitis E virus)
- Human immunodeficiency viruses
- Primate T-cell lymphotropic viruses
- Louping ill virus
- Mucambo virus

- Rabies virus
- Simian immunodeficiency virus
- Tonate virus
- Wesselsbron virus

Parasites

- *Echinococcus granulosus*
- *Echinococcus multilocularis*
- *Echinococcus oligarthus*
- *Echinococcus vogeli*
- *Leishmania braziliensis*
- *Leishmania donovani*
- *Leishmania guyanensis* (*Viannia guyanensis*)
- *Leishmania infantum* (*L. Chagasi*)
- *Leishmania panamensis* (*Viannia panamensis*)
- *Plasmodium falciparum*
- *Plasmodium knowlesi*
- *Taenia solium*
- *Trypanosoma brucei rhodesiense*
- *Trypanosoma cruzi*

Annex 2: SARS-CoV-2 Work at Containment Level 2

Work that may be conducted at CL2

Routine laboratory blood tests can be carried out in auto-analysers using standard practices and procedures at CL2, but only after a suitable and sufficient risk assessment has been conducted which considers the potential for the generation of infectious aerosols. Auto-analysers should be disinfected following local procedures after sample processing and before scheduled maintenance in accordance with manufacturers' recommendations.

Some auto-analyser protocols for routine laboratory tests may require specimen tubes to be opened first, or initial processing of the sample to be performed. Evidence suggests that capping and uncapping of samples is not a high-risk aerosol generating procedure which is dependent on the cap and tube design. These factors must be considered in a suitable and sufficient risk assessment which also considers if the sample needs to be centrifuged, vortexed or pipetted manually. The risk assessment must include consideration of whether a microbiological safety cabinet (MSC) needs to be used.

The following work may also be conducted at CL2 following standard laboratory precautions, where this is consistent with the terms of the local risk assessment for those activities:

- diagnostic assays using whole blood, serum and plasma, including routine biochemistry and haematology, unless there is a risk of generating aerosols;
- assays using virus-inactivated specimens, including molecular testing of inactivated specimens;
- examination of bacterial or fungal cultures;
- staining and microscopy of heat-fixed or chemically-fixed smears;
- centrifugation of routine blood samples. However, where there is infectious potential, samples must be centrifuged using sealed centrifuge rotors or sample cups which are loaded and unloaded in an MSC.

Work that may be conducted within an MSC at CL2

Following completion of a suitable and sufficient risk assessment, the following work with samples potentially containing SARS-CoV-2 may be conducted in an MSC at CL2:

- preparation of specimens for molecular testing (for example respiratory virus PCR) prior to sample inactivation;
- division, aliquoting, or diluting of respiratory tract specimens, faecal specimens, urine specimens, and tissue specimens in which virus has not been inactivated;
- inoculation of bacterial or fungal culture media from high-risk patients;
- urine antigen testing (such as for detection of *Legionella pneumophila* or *Streptococcus pneumoniae*).

Note: if the above is not possible (for example, testing instrument does not fit inside the CL2 MSC), carry out a local risk assessment:

- rapid antigen tests of respiratory tract specimens;
- processing of any non-inactivated specimen that might result in the generation of aerosols;
- preparation and fixing (chemical or heat) of smears for microscopy;
- haematological or immunological work;
- rapid diagnostic tests for malaria parasites.

Where risk assessment has identified that work should be conducted within an MSC at CL2 the following still applies to work activities:

- only fully trained and competent staff must carry out the work; in addition to this the level of training provided should be appropriate to the level of risk and the complexity of the procedures being undertaken;
- inactivation methods must be in place before removal of the sample from an MSC; these methods must be validated to ensure effectiveness of the method (for example through use of a surrogate marker);
- effective emergency procedures, including methods for dealing with spillage, are in place;
- waste routes for samples are appropriate for HG3 samples.

Work to be conducted at CL3

The following work must be conducted at CL3:

- any propagation, culturing or deliberate work on SARS-CoV-2 for diagnostic or research purposes.

Further information

HSE and ACDP publications give advice on various aspects of work with biological agents. General and sector-specific guidance for work with biological agents published by HSE, ACDP and with links to guidance from other government departments is available on HSE website at:

www.hse.gov.uk/biosafety/information.htm

The Protect COVID-19 National Core Study on transmission and environment Partnership for Research in Occupational, Transport and Environmental COVID Transmission.

[The Project Covid-19 National Core Study on transmission and environment](#)

Research and analysis - Ethnicity and COVID-19: 2 June preliminary meeting for SAGE, 2 June 2020

<https://www.gov.uk/government/publications/ethnicity-and-covid-19-preliminary-meeting-for-sage-2-june-2020/ethnicity-and-covid-19-2-june-preliminary-meeting-for-sage-2-june-2020>

Guidance that should be consulted, as appropriate, when deciding on containment measures:

Minimise transmission risk of CJD and vCJD in healthcare settings

<https://www.gov.uk/government/publications/guidance-from-the-acdp-tse-risk-management-subgroup-formerly-tse-working-group>

Blood-borne viruses (BBV) web pages

www.hse.gov.uk/biosafety/blood-borne-viruses/index.htm

Management and operation of microbiological containment laboratories

<https://www.hse.gov.uk/biosafety/management-containment-labs.pdf>

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This Approved List is available online at

<https://www.hse.gov.uk/pubns/misc208.htm>