



# ► Biological hazards in the working environment

International Labour Conference  
112th Session, 2024

## **Attention**

This report contains a questionnaire which, in accordance with article 46 of the Standing Orders of the International Labour Conference, calls for a reply from Governments, after consultation with the most representative organizations of employers and workers.

**The replies to the questionnaire will form the basis of the background report for the Conference discussion. They must reach the Office no later than 31 July 2023.**

Report IV(1)

## ▶ **Biological hazards in the working environment**

Fourth item on the agenda

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## ► Biological hazards in the working environment

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### What is at stake?

1. The promotion of safe and healthy working environments has been a constant objective of the International Labour Organization (ILO) since it was founded in 1919. The ILO has adopted a significant body of international instruments and guidance documents to promote the safety and health of workers and assist constituents in strengthening their capacities to prevent and manage workplace hazards and risks.
2. An important step forward in this respect was taken during the 110th Session (2022) of the International Labour Conference when the Occupational Safety and Health Convention, 1981 (No. 155), and the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187), were recognized as fundamental Conventions within the meaning of the ILO Declaration on Fundamental Principles and Rights at Work.<sup>1</sup> Accordingly, all ILO Members, even if they have not ratified the Conventions in question, have now an obligation, arising from the very fact of membership in the Organization, to respect, to promote and to realize, in good faith and in accordance with the Constitution, the principles concerning the fundamental rights which are the subject of those Conventions.
3. The coronavirus disease (COVID-19) pandemic has highlighted the potentially devastating global impact of uncontrolled biological hazards. Other diseases, such as severe acute respiratory syndrome (SARS), influenza A (H1N1) and Ebola fever have also been sources of international concern. Exposure to the viruses that cause contagious diseases is but one of numerous biological hazards workers may be exposed to. In workplaces such as hospitals and laboratories, cattle-producing factories and grain silos, in sewage maintenance facilities, collection of waste and many other activities, workers may be exposed to biological hazards including bacteria, viruses, parasites, fungi, prions, DNA material, bodily fluids as well as other microorganisms and their associated allergens and toxins. These biological hazards may not only cause, impact or exacerbate communicable diseases such as COVID-19, but also non-communicable diseases such as allergies.
4. Compared to occupational injuries, available data on occupational diseases is more limited. In a 2008/09 global survey, the World Health Organization (WHO) found that although half of WHO Member States had data on diseases, occupational infectious diseases was one of the least-covered topics in those that had a national disease profile.<sup>2</sup> The WHO has identified the workplace as being well-suited to the prevention and control of global health threats such as HIV/AIDS, malaria and influenza as well as tuberculosis, which is one of the most pressing infectious disease problems, be it occupationally or community acquired.<sup>3</sup>
5. The European Agency for Safety and Health at Work (EU-OSHA) has highlighted the persistent lack of knowledge and awareness of exposures to biological agents and related health problems,

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<sup>1</sup> ILO Declaration on Fundamental Principles and Rights at Work (1998), as amended in 2022.

<sup>2</sup> WHO, *WHO Global Plan of Action on Workers' Health (2008–2017): Baseline for Implementation: Global Country Survey 2008/2009 – Executive Summary and Survey Findings*, April 2013, 4.

<sup>3</sup> European Centre for Disease Prevention and Control and WHO Regional Office for Europe, *Tuberculosis Surveillance and Monitoring in Europe 2020: 2018 Data*, 2020 and WHO, *Global Tuberculosis Report 2019*, WHO/CDS/TB/2019.15, 2019.

and the lack of a systematic approach to workplace prevention of these risk factors.<sup>4</sup> This is also emphasized in research according to which biological hazard analyses at the workplace to securely recognize the harmful factors with biological basis are desperately needed.<sup>5</sup>

6. As precise data regarding the impact of biological hazards in the working environment is not available, a study was commissioned for this report seeking to estimate impact. It follows from this study that work exposure to contagious and non-contagious biological risks in 2021 is estimated to account for 550,000 fatalities. This represents 9.8 per cent of all estimated work-related fatalities. Translated into economic terms, the same study estimates that the global annual economic costs caused by poor prevention of biological diseases and injuries is 0.58 per cent of the global gross domestic product, which equals US\$548 billion based on data from the International Monetary Fund.<sup>6</sup>
7. Although one of the very first international labour standards – the Anthrax Prevention Recommendation, 1919 (No. 3) – already addressed the need for protection against the biological threat of anthrax in the working environment, the Governing Body of the ILO has noted a regulatory gap in standards concerning biological hazards. In approving the recommendations of the Standards Review Mechanism Tripartite Working Group after its third meeting in 2017, the Governing Body, at its 331st Session (October–November 2017) requested the Office to prepare, for consideration of inclusion at the earliest dates in future agendas of the International Labour Conference, proposals for a possible standard-setting item on biological hazards recognizing the regulatory gaps identified in that regard.<sup>7</sup> The Tripartite Working Group had agreed that Recommendation No. 3 should be classified as requiring further action to ensure continued relevance and that follow-up action should be taken to revise it through an instrument addressing all biological hazards, and to publish technical guidelines on biological hazards. In 2007, the Meeting of Experts to Examine Instruments, Knowledge, Advocacy, Technical Cooperation and International Collaboration as Tools with a view to Developing a Policy Framework for Hazardous Substances had noted that “biological hazards in the workplace include hazards arising from biotechnology (various bacteria and toxins, allergens), agriculture (anthrax, allergens) and health-care services (infectious agents, toxins, genotoxic drugs, hospital wastes, etc.) among others. The subject is therefore sufficiently complex in terms of the diversity of hazards, types of exposure and assessment and prevention methodologies that they should be dealt with separately”.<sup>8</sup>
8. The Governing Body decided in 2017 that a standard-setting item on biological hazards should be placed on the agenda of the Conference, and in 2021 to include the item on the agenda of the 112th (2024) and 113th (2025) Sessions of the Conference.<sup>9</sup> The need to cover the normative gap was underscored by the COVID-19 pandemic. The ILO is now proposing to develop a comprehensive and forward-looking legal framework for the respect, promotion and realization of the right to a safe and healthy working environment in respect of biological hazards. Such an instrument or instruments would address all biological hazards based on a thematic integration of instruments regulating biological hazards.

<sup>4</sup> Aleksandra Jedynska et al., *Biological Agents and Work-Related Diseases: Results of a Literature Review, Expert Survey and Analysis of Monitoring Systems – European Risk Observatory Literature Review* (EU–OSHA, 2019).

<sup>5</sup> Kyung-Taek Rim and Cheol-Hong Lim, “Biologically Hazardous Agents at Work and Efforts to Protect Workers’ Health: A Review of Recent Reports”, *Safety and Health at Work* 5, No. 2 (June 2014): 43–52.

<sup>6</sup> Jukka Takala et al., *Global Estimates on Biological Risks*, commissioned by the ILO, forthcoming.

<sup>7</sup> GB.331/PV, para. 723 and GB.331/LILS/2.

<sup>8</sup> ILO, *Background Information for Developing an ILO Policy Framework for Hazardous Substances*, MEPFHS/2007, para. 7.

<sup>9</sup> GB.331/PV, para. 723 and GB.341/PV, para. 50(b).



9. Promoting international policy coherence in the prevention of diseases caused by biological hazards will promote workers' health and business sustainability. It will not only protect workers at risk of infection but also contribute to containing the spread of infection, including across borders, sustaining the key services on which societies and economies rely, and preventing business disruption during a pandemic.
10. With this proposal, the ILO also demonstrates its commitment to contribute to the United Nations (UN) Sustainable Development Goal (SDG) 8 to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all as well as target 8.8 to protect labour rights and promote safe and secure working environments of all workers, including migrant workers, particularly women migrants and those in precarious employment. The ILO's commitment includes SDG 3, to ensure healthy lives and promote well-being for all, at all ages, including target 3.3 which attributes particular relevance to biological hazards and occupational health.

## What are biological hazards?

11. There are numerous agents, substances and circumstances which can constitute biological hazards in the working environment and there are different methods to determine which they are. National methods include providing for a definition of biological hazards for a classification of biological agents where certain categories are considered hazardous to human health. The latter systems are complemented with lists specifically identifying the agents or substances at issue. Such lists call for updating in line with the development of science and technology. Other national methods include listing certain agents of substances defined as hazardous.
12. The classification method is used, for example, within the European Union (EU), in line with Directive 2000/54/EC which lays down minimum requirements for the health and safety of workers exposed to biological agents at work.<sup>10</sup> This method has been used and adapted to national conditions and practice in several countries outside the EU. The EU Directive defines "biological agents" to mean "micro-organisms, including those which have been genetically modified, cell cultures and human endoparasites, which may be able to provoke any infection, allergy or toxicity", a "micro-organism" to mean "a microbiological entity, cellular or non-cellular, capable of replication or of transferring genetic material" and "cell culture" to mean "the in-vitro growth of cells derived from multicellular organisms". The Directive further classifies biological agents into four risk groups, according to their level of risk of infection: a group 1 biological agent means a biological agent that is unlikely to cause human disease; group 2 refers to biological agents that can cause human disease and might be a hazard to workers, but that are unlikely to spread to the community and for which there is usually effective prophylaxis or treatment available; a group 3 biological agent means one that can cause severe human disease and present a serious hazard to workers, and may present a risk of spreading to the community, but for which there is usually effective prophylaxis or treatment available; and a group 4 biological agent means one that causes severe human disease and is a serious hazard to workers, may present a high risk of spreading to the community, and for which there is usually no effective prophylaxis or treatment available.

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<sup>10</sup> European Parliament and the Council of the European Union Directive 2000/54/EC on the protection of workers from risks related to exposure to biological agents at work and EU-OSHA, 2000, Annex III: Listing agents known to infect humans, was revised and replaced by Directive 2019/1833 amending Directive 2000/54/EC. By a further amendment thereto (Directive 2020/739) the virus, "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2), was classified in group 3 of the biological agents.

13. In response to the Governing Body request, a Meeting of Experts was convened from 20 to 24 June 2022 to consider the development of technical guidelines in this area and adopted the *Technical guidelines on biological hazards in the working environment* (hereinafter the “*Technical guidelines*”).<sup>11</sup> According to the guidelines, biological hazards include “any microorganism, cell, or other organic material that may be of plant, animal, or human origin, including any which have been genetically modified, and which can cause harm to human health. This may include, but is not limited to bacteria, viruses, parasites, fungi, prions, DNA materials, bodily fluids, and any other microorganisms and their associated allergens and toxins. Health impacts could include infectious and non-infectious diseases and injuries. Biological hazards in the working environment can also be considered to include biological vectors or transmitters of disease.” Such vectors are living organisms that transmit infectious agents from an infected animal to a human or another animal. Vectors or transmitters of diseases can be mosquitoes, ticks, flies, fleas and lice.<sup>12</sup>
14. Dangerous goods, including biological agents and substances, are subject to international transport, workplace, storage, consumer and environment protection regulations, to prevent accidents to persons, property or the environment, to other goods or to the means of transport employed. To ensure consistency between all these regulatory systems, the United Nations has developed mechanisms for the harmonization of hazard classification criteria and communication tools, and for transport conditions for all road, rail and inland waterways transport of dangerous goods. These mechanisms include the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), a United Nations technical standard initiated by the ILO following the adoption of the Chemicals Convention, 1990 (No. 170), to replace the various hazardous material classification and labelling schemes previously used around the world. Core elements of the GHS include universal warning pictograms, and harmonized safety data sheets which provide users of dangerous goods with safety information.<sup>13</sup> The following three pictograms are prescribed in different contexts to label biological materials that carry a significant health risk.



Source: United Nations, *Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*.

## Emerging biological hazards, hazard anticipation and preparedness

15. Many factors drive the development of biological hazards. Major shifts in atmospheric and weather conditions have numerous occupational impacts which need greater attention, and whereas heat-related morbidity and mortality risks are most evident in agriculture, many other

<sup>11</sup> [GB.346/INS/17/3](#).

<sup>12</sup> European Centre for Disease Prevention and Control, “[Vector-borne Diseases](#)”, accessed 14 July 2022.

<sup>13</sup> See United Nations Economic Commission for Europe (UNECE), “[About the GHS](#)”.

outdoor occupational sectors are also at risk, including construction, transportation, landscaping, firefighting and other emergency response operations.<sup>14</sup> Another driver is the overuse of antimicrobials in medicine. Antimicrobial-resistant organisms pose a particular risk to workers in contact with animals.<sup>15</sup> Drug-resistant organisms lead to severe infections that would not occur otherwise and to more failures in treatment.<sup>16</sup>

16. Many diseases are zoonoses which originate from human interaction with animals. There are over 200 known types of zoonoses. They represent a major public health problem around the world due to our close relationship with animals in agriculture, as companions and in the natural environment. Zoonoses can also cause disruptions in the production and trade of animal products for food and other uses. Zoonoses comprise a large percentage of all newly identified infectious diseases, as well as many existing ones.<sup>17</sup> The most recent COVID-19 pandemic was caused by the zoonotic virus SARS-CoV-2. New strategies for continuous dissemination of multidisciplinary research findings related to zoonotic bacterial diseases are needed.<sup>18</sup>
17. The spread of diseases is fuelled by global mobility and interaction and is driven by globalized movements of goods and persons including tourism, as well as business-related travels.<sup>19</sup>
18. Scientific research and evolving biotechnology, including genetic engineering and infection control, also affect the development of biological hazards.<sup>20</sup> New genetically modified plant or animal life forms are continually being developed for use in agriculture, horticulture, the food industry, medical research and the pharmaceutical industry. While such genetically modified organisms (GMOs) have the potential to advance human development, attention is required, from a legislative perspective, to provide guidance regarding the impact of GMOs both from a biodiversity perspective and the extent to which GMOs may affect human health in general and workers directly exposed thereto in particular.<sup>21</sup>
19. At the global, public health level, it is important to predict, prevent, detect and respond to global health threats such as the COVID-19 pandemic. The "One Health" approach supported by the WHO, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme and the World Organization for Animal Health, is an integrated, unifying approach to balance and optimize the health of people, animals and the environment. This approach mobilizes multiple sectors, disciplines, and communities at varying levels of society to

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<sup>14</sup> Katie M. Applebaum et al., "An Overview of Occupational Risks From Climate Change", *Current Environmental Health Reports* 3, No. 1 (March 2016): 13–22; Jesse E. Bell et al., "Changes in Extreme Events and the Potential Impacts on Human Health", *Journal of the Air & Waste Management Association* 68, No. 4 (April 2018): 265–87; and Max Kiefer et al., "Worker Health and Safety and Climate Change in the Americas: Issues and Research Needs", *Rev Panam Salud Publica* 40, No. 3 (2016): 6.

<sup>15</sup> WHO, *Global Plan for Insecticide Resistance Management in Malaria Vectors*, WHO Global Malaria Programme, 2012, 131; and Isabelle Dusfour et al., "Management of Insecticide Resistance in the Major Aedes Vectors of Arboviruses: Advances and Challenges", ed. Hans-Peter Fuehrer, *PLOS Neglected Tropical Diseases* 13, No. 10 (10 October 2019): e0007615.

<sup>16</sup> EU-OSHA, *Factsheet 68 – Expert Forecast on Emerging Biological Risks Related to Occupational Safety and Health*, 9 June 2007.

<sup>17</sup> WHO, *Zoonoses*, Fact Sheet 28, 2020.

<sup>18</sup> Leon Cantas and Kaya Suer, "Review: The Important Bacterial Zoonoses in 'One Health' Concept", *Frontiers in Public Health* 2 (2014).

<sup>19</sup> Derek R. Smith and Peter A. Leggat, "Occupational Travel Medicine: Protecting the Health and Safety of Those Who Regularly Travel Overseas for Work", *Annals of the ACTM: An International Journal of Tropical and Travel Medicine* 11, No. 1 (2010): 8–11; Lin H. Chen et al., "Business Travel-Associated Illness: A GeoSentinel Analysis", *Journal of Travel Medicine* 25, No. 1 (1 January 2018): tax097; and Mary H. Ross et al., "Travelling for Work: Seeking Advice in South Africa", *Travel Medicine and Infectious Disease* 6, No. 4 (July 2008): 187–89.

<sup>20</sup> Ana Cláudia Coelho and Juan García Díez, "Biological Risks and Laboratory-acquired Infections: A Reality that Cannot be Ignored in Health Biotechnology", *Frontiers in Bioengineering and Biotechnology* 3 (28 April 2015).

<sup>21</sup> University of St. Andrews, *Guidance on Chemical and Biological Safety*, June 2011.

work together. This way, new and better ideas are developed that address root causes and create long-term, sustainable solutions. The “One Health” approach is particularly relevant for food and water safety, nutrition, the control of zoonoses, pollution management and combating antimicrobial resistance.<sup>22</sup>

20. The COVID-19 pandemic has heightened the awareness for an increased need for emergency preparedness and hazards anticipation, not only internationally, but also nationally and at the enterprise level,<sup>23</sup> recalling that preventive action should be based on experience, knowledge and information about work situations, action undertaken by governments and the effective discharge of duties and responsibilities at the workplace level. Emergency preparedness and hazard anticipation require seeking to prevent or mitigate negative outcomes related to situations where sufficient information may not be available. In paragraph 1.1.3 of the recently adopted *Technical guidelines*, it is provided that “[w]here sufficient information is not available, the competent authority should elaborate guidelines, procedures and precautionary measures, when indicated and applicable.” The precautionary principle enables decision-makers to adopt certain measures when scientific evidence about an environmental or human health hazard is uncertain and the stakes are high.<sup>24</sup> It has been enshrined in a number of environmental treaties but is a principle that divides opinion: it is seen as being either unscientific or as a recommended approach to best protect human health and the environment.<sup>25</sup>
21. Emergency preparedness and hazard anticipation may also call for increased recourse to early warning systems such as the sentinel approach.<sup>26</sup> Sentinel and alert systems is an umbrella term for timely surveillance systems that collect information on diseases to initiate health interventions and prevention measures. Detecting new work-related risks and diseases requires additional instruments to those already used for monitoring known occupational diseases and requires a comprehensive approach that uses several complementary methods depending on the type of disease and its prevalence in the (at-risk) population.<sup>27</sup>

## Epidemiological data on exposures to biological hazards in the working environment

22. Epidemiological data on exposures to biological hazards in the working environment is difficult to obtain and must rely on estimations. The study commissioned for this report is based on key items of the methodology used in past estimates, as well as the 2022 estimate of the International Commission on Occupational Health.<sup>28</sup> Accordingly, work exposure to biological risks in 2021

<sup>22</sup> Cantas and Suer.

<sup>23</sup> WHO, *A Strategic Framework for Emergency Preparedness*, 2017.

<sup>24</sup> P.F. Ricci and J. Zhang, “Benefits and Limitations of the Precautionary Principle”, *Encyclopedia of Environmental Health* (2011): 276–85; Jaydee Hanson, “Precautionary Principle: Current Understandings in Law and Society”, *Encyclopedia of the Anthropocene* (2018): 361–66.

<sup>25</sup> European Parliament, *The Precautionary Principle: Definitions, Applications and Governance*, 2015.

<sup>26</sup> ILO, *Technical and Ethical Guidelines for Workers’ Health Surveillance*, Occupational Safety and Health Series No. 72, 1998, 9.

<sup>27</sup> Jelena Bakusic et al., *Alert and Sentinel Approaches for the Identification of Work-related Diseases in the EU* (EU–OSHA, 2018); and ILO, *National System for Recording and Notification of Occupational Diseases: Practical Guide*, Programme on Safety and Health at Work and the Environment (SafeWork), 2013.

<sup>28</sup> Jukka Takala et al., *Global Estimates on Biological Risks*, forthcoming; Päivi Hämäläinen, Jukka Takala and Tan Boon Kiat, *Global Estimates of Occupational Accidents and Work-Related Illnesses 2017* (Singapore: Workplace Safety and Health Institute, September 2017); Jukka Takala et al., “Comparative Analysis of the Burden of Injury and Illness at Work in Selected Countries and Regions”, *Central European Journal of Occupational and Environmental Medicine* 23, Nos 1–2 (2017): 26; and Päivi Hämäläinen et al.,

were estimated to account for 550,000 fatalities. According to this study, this number is likely to be an underestimate for several reasons including the fact that, in many countries, most workers are employed informally in factories and businesses, where there is no record of their work-related injuries or illnesses, let alone any programmes in place to prevent injuries or illnesses. Addressing this huge burden of disease, economic cost and long-term loss of human resources from unhealthy workplaces is a formidable challenge for countries, economic sectors and health policymakers and practitioners.<sup>29</sup>

23. The table below from the study commissioned by Dr Takala<sup>30</sup> provides details of the estimated deaths caused by diseases, disorders and injuries. The biggest component for the year 2021 was COVID-19 (230,000 work-related deaths), which increased the number of deaths by an exceptionally high amount. This component may continue to be exceptionally large for an uncertain period in the future. It may also be replaced by an increase in other viral infections such as those of the common influenza.
24. According to the same study, regarding some traditionally covered disease groups, one can notice a favourable trend since 2007 with a reduced total number of deaths. Several rapidly developing Asian countries have reduced considerably their mortality and morbidity caused by communicable diseases. This favourable trend has, however, been eclipsed by an increase in mortality and morbidity due to occupational hazards and risks caused by biological factors, concentrating in low-income countries which, so far, have not been well covered from the prevention point of view. Furthermore, in many low-income countries, workers' compensation systems coverage is often low or does not exist at all, and as such temporary or permanent disabilities caused by exposure to biological hazards are commonly an aggravating source of poverty and social inequality.
25. As noted in the study, a sizeable number of biological hazards and diseases caused by these have not yet been estimated or are only partly covered by estimates due to a lack of reliable data sources. These include tuberculosis and pneumococcal diseases; allergenic and toxic infectious agents forming bioaerosols; agents causing vector-borne zoonoses (including emerging or re-emerging diseases such as hantaviral diseases, avian and swine influenza, Q fever, leptospirosis and staphylococcal diseases caused by the methicillin-resistant staphylococcus aureus strains), and diseases caused by parasitic protozoa; further zoonotic agents, which could be a cause of allergic and/or immunotoxin diseases of respiratory organs; conjunctivitis and dermatitis in exposed workers; agents causing tick-borne diseases such as Lyme borreliosis, anaplasmosis, babesiosis and bartonella; exposure of workers in tropical zones to mosquito bites causing malaria;<sup>31</sup> blood-borne human hepatitis and immunodeficiency viruses; bacteria-causing legionellosis in people occupationally exposed to droplet aerosols, mainly from warm water; and cancers where occupational biological hazard factors constitute a major pathogenesis factor.<sup>32</sup>

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"Comparative Global Estimates on the Work-Related Burden of Accidents and Diseases", *Safety and Health at Work* 13 (January 2022): S130.

<sup>29</sup> Joan Burton, *WHO Healthy Workplace Framework and Model: Background and Supporting Literature and Practices* (WHO, 2010).

<sup>30</sup> See footnote 28, above.

<sup>31</sup> While malaria is the most prevalent vector-borne disease in the world, it is not easy to make a distinction as to when the malaria is caused by work, for example in a wet rice cultivating field, or during free time or sleeping in the nearby area.

<sup>32</sup> It should be noted, however, that cancers are often multifactorial and caused by the interaction of genetic, environmental, infectious and mode-of-life factors that are complex.

## ► Estimated deaths attributed to biological hazards at work

Diseases and injuries	No. of deaths, working age 20–60 years		Estimated % attributed to biological hazards		No. of deaths attributed to biological hazards		
	Men	Women	Men	Women	Men	Women	Total
Infectious diseases without COVID-19 and influenza	798 062	537 504			64 424	179 519	243 943
Tuberculosis and pneumococcal diseases	499 852	292 749	3.05	20.7	33 500	154 139	187 639
Malaria	80 377	60 186	10.37	10.37	8 335	6 241	14 576
Diarrhoeal disease	116 048	117 131	10.37	10.37	12 034	12 146	24 180
Other infectious diseases	90 287	53 393	10.37	10.37	9 363	5 537	14 900
Neglected tropical diseases <sup>1</sup>	11 498	14 045	10.37	10.37	1 192	1 456	2 648
Influenza associated respiratory deaths		294 000	3.0	3.0	n/a	n/a	8 820
COVID-19 annual average 2020–21, excess morbidity WHO		7 455 000	3.0	3.0	n/a	n/a	223 650
<b>Communicable diseases</b>		9 084 586		5.24			476 413
Respiratory diseases	2 060 322	1 597 439	1.83	0.7	37 700	11 200	48 900
Chronic obstructive pulmonary disease by organic dusts, fumes, aerosols	1 855 560	1 366 670	1.8	0.6	33 400	8 200	41 600
Asthma	204 762	230 769	2.1	1.3	4 300	3 000	7 300
Animal contact: venomous /non-venomous	22 944	17 352	10.0	10.0	2 290	1 740	4 030
Animal injuries, extrapolated <sup>2</sup>	201 272	110 778	2.58	2.58	5 193	2 858	8 052
<b>Non-communicable diseases and injuries <sup>3</sup></b>	2 284 538	1 725 569	1.9	2.2	43 667	34 980	78 647
<b>Total</b>				n/a		n/a	<b>555,060</b>

<sup>1</sup> Including Chagas' disease, leishmaniasis, schistosomiasis, dengue fever, yellow fever, Ebola. <sup>2</sup> Animal-related injuries were based on United States statistics and extrapolated from there. <sup>3</sup> Cancer deaths caused by biological risk factors are not specifically estimated included/available. Selected cancer deaths caused by biological risks are already covered by all occupational cancer estimates of 2021 rising to 842,800 deaths.

## Workplaces at risk and vulnerable workers

26. Workers in certain sectors, workplaces and working environments may be particularly at risk of exposure to biological hazards.<sup>33</sup> The *Technical guidelines* noted work activities involving contact with humans or human-related products, animals or animal products and biological waste, plants and food provides for a non-exhaustive list of biological hazards associated with the following work activities: work in food production plants; work in agriculture, forestry, horticulture, animal food and fodder production; work in healthcare and community services; work in laboratories; work in metal-processing, wood-processing and the mining industry; work in refuse-disposal plants and sewage purification installations; work in areas with air conditioning systems and high humidity (for example, in the textile and print industries and paper production); work in archives, museums and libraries; and work in the building and construction industries, processing of natural materials such as clay, straw and reed, and building redevelopment.
27. According to another study commissioned for this report, a systematic review was carried out of published reviews to obtain an overview of the population of workers most frequently exposed to biological hazards. According to this study, the sectors so identified were healthcare, laboratories, agriculture (including animal, vegetable and grain sectors) and the waste sector. The most frequently reported health outcomes were infections and respiratory distress symptoms. According to this study, preventive measures were usually well defined and controlled in the healthcare and laboratory sectors, while this was not the case in the agriculture and waste sectors. According to the study, it is important to consider exposure to biological hazards in many working environments, to characterize these hazards in terms of tasks at risk and exposure determinants, and to investigate all health effects. It was also noted that further studies were necessary to quantify the risk to be able to establish occupational exposure limits and help to implement prevention measures that apply to all work situations, including new emerging risks.<sup>34</sup>
28. It was also noted that special attention may be needed for the protection of certain vulnerable or marginalized groups of workers which may include pregnant and breastfeeding women; young workers; older workers; workers with high levels of exposure; persons with disabilities; workers medically predisposed to infections or allergy, including immunosuppressed workers; and migrant workers.

## ► Occupational safety and health principles and standards relevant to biological hazards

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### The ILO framework for occupational safety and health

29. The protection of the safety and health of workers has been a key task of the ILO since its inception in 1919. The Preamble to the ILO Constitution specifically provides that “the protection of the worker against sickness, disease and injury arising out of his employment” is a fundamental element of social justice. The obligation of the Organization to promote safe working conditions was reaffirmed in the 1944 Declaration of Philadelphia, and the ILO Declaration on Social Justice

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<sup>33</sup> Juanita A. Haagsma et al., “Infectious Disease Risks Associated with Occupational Exposure: A Systematic Review of the Literature”, *Occup Environ Med* 69, (2012): 140–146.

<sup>34</sup> Alexis Descatha, Anne Oppliger, Halim Hamzaoui and Jukka Takala, *Biological Hazard, Occupational Health and Safety: Systematic Overview of Published Reviews*, commissioned by the ILO, forthcoming.

for a Fair Globalization (2008), as amended in 2022, which recognize healthy and safe working conditions as a key element of the Decent Work Agenda. In 2019, the International Labour Conference declared that “safe and healthy working conditions are fundamental to decent work”.

30. During the 110th Session (2022) of the Conference, the ILO Declaration on Fundamental Principles and Rights at Work, 1998, was amended to provide that the obligations and commitments that are inherent in membership of the ILO also include a safe and healthy working environment and that Conventions Nos 155 and 187 are recognized as fundamental Conventions. Accordingly, all Members, even if they have not ratified the Conventions in question, have an obligation, arising from the very fact of membership in the Organization, to respect, promote and realize, in good faith and in accordance with the Constitution, the principles concerning the fundamental rights which are the subject of those Conventions, which thus include a safe and healthy working environment.

## Principles contained in Conventions Nos 155 and 187

31. The principles contained in Convention No. 155 include provisions which comprehensively regulate substantive aspects of a prescribed national policy on occupational safety and health (OSH), as well as the actions required at the national and enterprise levels which include duties to develop prevention and mitigation strategies to eliminate hazards, and substitute, control or reduce risks, so far as is reasonably practicable. Convention No. 155 is complemented by Convention No. 187 which stresses, in addition to the required national policy, the importance of assessing occupational risks or hazards, combating these at source and developing a national preventative safety and health culture, including through a national OSH programme and the establishment and progressive development of a national system. The national policy and the risk management system should be built upon the concept of continuous improvement through a cycle of planning, implementing, reviewing and improving the processes and actions that are undertaken for achieving the goals.

## Scope of application

32. The scope of application of Convention No. 155 is broadly defined to include all branches of economic activity and all workers in these branches of activity all while providing for the possibility of temporarily excluding certain branches or limited categories of workers, subject to consultations with the most representative organizations of workers and employers concerned.

## Definition of biological substances and agents

33. While the corpus of international labour standards, including Convention No. 155, contains references to biological agents and substances, current standards do not contain any definition thereof.

## National policy

34. Central provisions in Convention No. 155 include the requirements that each Member shall, in the light of national conditions and practice and in consultation with the most representative organizations of employers and workers, formulate, implement and periodically review a national OSH policy, which should be a cyclical process to ensure a progressive improvement of OSH. The policy shall be formulated, implemented and periodically reviewed according to defined principles; take account of defined spheres of action; ensure that certain functions are progressively carried out; and provide for defined rights and duties.



35. Convention No. 187 stresses the importance of assessing occupational risks or hazards, combating these at source and developing a national preventative safety and health culture. This is defined as a culture in which the right to a safe and healthy working environment is respected at all levels, where government, employers and workers actively participate in securing a safe and healthy working environment through a system of defined rights, responsibilities, and duties and where the principle of prevention is accorded the highest priority.
36. In line with Article 5 of Convention No. 155, national policies should take account of the following main spheres of action as far as they affect OSH and the working environment: (a) controlling the material elements of work – including chemical, physical and biological substances and agents; (b) adapting machinery, tools and working equipment to the needs of the workers; (c) providing training, including necessary further training, qualifications and motivations of the persons involved; (d) ensuring communication and cooperation at all levels of society; and (e) protecting workers and their representatives from disciplinary measures as a result of actions properly taken by them to protect health and safety.
37. Convention No. 155 provides that the national policy shall indicate the respective functions and responsibilities in respect of OSH in the working environment of public authorities, employers, workers and others, taking account of both the complementary character of such responsibilities, and of national conditions and practice.
38. The Convention also calls for a review of the national situation regarding OSH at appropriate intervals, either overall or in respect of particular areas, with a view to identifying major problems, developing effective methods for dealing with them and priorities for action, and evaluating results. This review requirement, which emphasizes the cyclical nature of the national policy process, is further emphasized and developed in Convention No. 187 as well as in the *Guidelines on occupational safety and health management systems, ILO-OSH 2001*.
39. Convention No. 155, in Article 11, sets out six functions that the national policy shall cover progressively. This Article reflects the flexible nature of Convention No. 155 and serves to help countries with less developed national OSH systems to be able to ratify it and progressively extend its scope of substantive application. Information on progress in this respect shall be provided in the context of the regular reports on the application of the Convention. The provisions of Article 11(c) on the establishment of procedures for the notification of occupational accidents and diseases and those of Article 11(e) on the annual publication of information on OSH policy measures taken, including statistical information regarding occupational accidents and diseases, have been reinforced by the *2002 Protocol to the Occupational Safety and Health Convention, 1981*.
40. Article 11(f) of Convention No. 155 specifically provides that one of the functions to be carried out is the introduction, taking into account national conditions and possibilities, of systems to examine chemical, physical and biological agents in respect of the risk to the health of workers.
41. Article 12 of Convention No. 155 articulates, as an essential element of the principle of prevention, that measures shall be taken, in accordance with national law and practice, with a view to ensuring that those who design, manufacture, import, provide or transfer machinery, equipment or substances for occupational use:
  - (a) satisfy themselves that, so far as is reasonably practicable, the machinery, equipment or substance does not entail dangers for the safety and health of those using it correctly;
  - (b) make available information concerning the correct installation and use of machinery and equipment and the correct use of substances, and information on hazards of machinery and

equipment and dangerous properties of chemical substances and physical and biological agents or products, as well as instructions on how known hazards are to be avoided;

- (c) undertake studies and research or otherwise keep abreast of the scientific and technical knowledge necessary to comply with subparagraphs (a) and (b) of this Article.

- 42. Article 13 of Convention No. 155 requires that national action be taken to protect workers against undue consequences if they remove themselves from a work situation when they have reasonable justification to believe that it presents an imminent and serious danger to their life and health. This provision is complemented by Article 19(f) which prescribes that there should be arrangements at the workplace requiring workers to report immediately to their supervisor any situations representing imminent and serious danger and that until the employer has taken remedial action, if necessary, workers cannot be required to return to a work situation where there is continuing imminent and serious danger to life and health. Read together with Article 5(e), these provisions represent a careful balance between the employer's interest in the proper management of the enterprise, on the one hand, and the protection of the worker's life and health, on the other.
- 43. Convention No. 155 also requires that measures be taken with a view to promoting the inclusion of OSH questions at all levels of education including higher technical, medical and professional education in a manner meeting the training needs of all workers.
- 44. In line with Convention No. 155, each Member should make arrangements to ensure the necessary cooperation between various authorities and bodies called upon to give effect to the Convention.
- 45. Convention No. 187 emphasizes the application of a systems approach to OSH and how the national systems and national programmes should be designed to promote continuous improvements. The right to a safe and healthy working environment shall be promoted and advanced at all levels as should basic principles such as assessing occupational risks or hazards, combating them at source and developing a national preventative safety and health culture that includes information, consultation and training. Convention No. 187 details how to apply the systems approach to OSH by developing national programmes that include objectives to be achieved within a predetermined time frame, priorities and means of action formulated to improve OSH, and means to assess progress, including using objectives, targets and indicators of progress.

## **Rights, duties and responsibilities of employers, workers and their representatives**

- 46. Convention No. 155 includes specific requirements regarding the rights, duties and responsibilities of employers, workers and their representatives at the enterprise level, coupled with a general requirement that management and workers should cooperate.
- 47. Articles 16 to 18 of Convention No. 155 place obligations on employers to ensure, so far as is reasonably practicable, that the workplaces, machinery, equipment and processes under their control are safe and without risk to health. They shall be required to ensure that, so far as is reasonably practicable, the chemical, physical and biological substances and agents under their control do not present a risk to health when appropriate measures of protection are taken. Where necessary, employers must provide adequate protective clothing and equipment to prevent, so far as is reasonably practicable, risk of accidents and adverse effects on health. OSH measures shall not involve any expenditure for the workers. Furthermore, when two or more undertakings

engage in activities at one workplace, they shall collaborate in applying the requirements of the Convention.

48. Pursuant to Article 19, workers and their representatives have a general duty to cooperate with the employer; representatives of workers are entitled to receive adequate information on OSH measures taken by the employer; and both workers and their representatives are entitled to be given appropriate training. Workers or their representatives, and in some cases, their representative organizations, have the right to enquire into and are to be consulted by the employer on all aspects of OSH. As noted previously, in Article 19(f), the reporting duty on situations presenting imminent and serious danger is coupled with a right to refuse to return to a work situation where such danger persists. According to Article 20 of Convention No. 155, cooperation between management and workers and/or their representatives within the undertaking is an essential element of OSH management.

## Further guidance

49. Further guidance regarding Conventions Nos 155 and 187 is provided in the [Occupational Safety and Health Recommendation, 1981 \(No. 164\)](#), the [Promotional Framework for Occupational Safety and Health Recommendation, 2006 \(No. 197\)](#), and the *Guidelines on Occupational Safety and Health Management Systems*.

## Specific references to biological hazards, substances or agents in international labour standards

50. While there is no comprehensive standard on biological hazards, the ILO has adopted the [Anthrax Prevention Recommendation, 1919 \(No. 3\)](#), which recommends that arrangements be made for the disinfection of wool infected with anthrax spores, and the [HIV and AIDS Recommendation, 2010 \(No. 200\)](#), which provides for guidance on the management of HIV and AIDS in the world of work.
51. In addition to the referenced instruments and Convention No. 155, the following other international labour standards include references to biological agents or substances at the workplace and related subject matters.

## Conventions

52. According to Article 11(5) of the [Plantations Convention, 1958 \(No. 110\)](#), the competent authority shall ensure that all necessary measures are taken for the acclimatization and adaptation of recruited workers and for their immunization against disease.
53. The [Employment Injury Benefits Convention, 1964 \[Schedule I amended in 1980\] \(No. 121\)](#), includes a Schedule of a list of diseases which should be recognized as occupational, and therefore be compensated in accordance with national systems for workers injury benefits. Schedule I of Convention No. 121 was amended in 1980. In the context of a renewed effort to update the list of occupational diseases, it was decided to introduce a simplified procedure. This resulted in the adoption of the [List of Occupational Diseases Recommendation, 2002 \(No. 194\)](#), which includes, in the Annex, a "List of occupational diseases (revised 2010)" and provides that "[t]he list as annexed to this Recommendation should be regularly reviewed and updated through tripartite meetings of experts convened by the Governing Body of the International Labour Office." This updated list refers, in 1.3, to "[b]iological agents and infectious or parasitic diseases". Biological hazards can also result in respiratory, or skin diseases listed under "Occupational diseases by target organ", or under "Occupational cancer". The list also includes in

paragraphs 2.1.12, 2.2.4, 3.1.21 and 4.2 provisions which provide for a case-by-case determination of the recognition of other diseases as occupational “where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the disease(s) contracted by the worker”.

54. Some biological hazards can cause cancer. Article 1 of the [Occupational Cancer Convention, 1974 \(No. 139\)](#), provides that “[e]ach Member which ratifies this Convention shall periodically determine the carcinogenic substances and agents to which occupational exposure shall be prohibited or made subject to authorisation or control, and those to which other provisions of this Convention shall apply.”
55. Article 28 of the [Safety and Health in Construction Convention, 1988 \(No. 167\)](#), provides that “[w]here a worker is liable to be exposed to any chemical, physical or biological hazard to such an extent as is liable to be dangerous to health, appropriate preventive measures shall be taken against such exposure.”
56. It should be recalled that Article 1(4) of the [Chemicals Convention, 1990 \(No. 170\)](#), provides that “[t]his Convention does not apply to organisms, but does apply to chemicals derived from organisms.”
57. Article 9 of the [Safety and Health in Mines Convention, 1995 \(No. 176\)](#), provides that where workers are exposed to physical, chemical or biological hazards the employer shall: “(a) inform the workers, in a comprehensible manner, of the hazards associated with their work, the health risks involved and relevant preventive and protective measures; (b) take appropriate measures to eliminate or minimize the risks resulting from exposure to those hazards; (c) where adequate protection against risk of accident or injury to health including exposure to adverse conditions cannot be ensured by other means, provide and maintain at no cost to the worker suitable protective equipment, clothing as necessary and other facilities defined by national laws or regulations; and (d) provide workers who have suffered from an injury or illness at the workplace with first aid, appropriate transportation from the workplace and access to appropriate medical facilities”.
58. Article 14 of the [Safety and Health in Agriculture Convention, 2001 \(No. 184\)](#), provides that “[n]ational laws and regulations shall ensure that risks such as those of infection, allergy or poisoning are prevented or kept to a minimum when biological agents are handled, and activities involving animals, livestock and stabling areas, comply with national or other recognized health and safety standards.”
59. The [Maritime Labour Convention, 2006, as amended](#), (MLC, 2006), provides in Guideline B4.3.1 that “[t]he assessment of risks and reduction of exposure on the matters referred to in paragraph 2 of this Guideline should take account of the physical occupational health effects, including manual handling of loads, noise and vibration, the chemical and biological occupational health effects, the mental occupational health effects, the physical and mental health effects of fatigue, and occupational accidents. The necessary measures should take due account of the preventive principle according to which, among other things, combating risk at the source, adapting work to the individual, especially as regards the design of workplaces, and replacing the dangerous by the non-dangerous or the less dangerous, have precedence over personal protective equipment for seafarers.”

## Recommendations

60. The [Nursing Personnel Recommendation, 1977 \(No. 157\)](#), provides in paragraph 24 of the Annex thereto that “[n]ursing personnel in respect of whom special measures such as those envisaged in Paragraphs 47, subparagraph (2), 49 and 50 of the Recommendation should be taken should include, in particular, personnel regularly exposed to ionising radiations or to anaesthetic substances and personnel in contact with infectious diseases or mental illness.”
61. The [Occupational Health Services Recommendation, 1985 \(No. 171\)](#), provides in Paragraph 24(a) that “[t]aking into account the organisation of preventive medicine at the national level, occupational health services might, where possible and appropriate (a) carry out immunisations in respect of biological hazards in the working environment”.
62. The [Safety and Health in Construction Recommendation, 1988 \(No. 175\)](#), provides in Paragraph 9 that “[c]onstruction work should be planned, prepared and undertaken in such a way that ... (e) working methods are employed which protect workers against the harmful effects of chemical, physical and biological agents”.
63. The [Maternity Protection Recommendation, 2000 \(No. 191\)](#), provides in Paragraph 6(3)(b) that measures should be taken to provide for alternative work in respect of “work involving exposure to biological, chemical or physical agents which represent a reproductive health hazard”.
64. The [Safety and Health in Agriculture Recommendation, 2001 \(No. 192\)](#), provides in Paragraph 4 that the competent authority should establish a national system for OSH surveillance which should include both workers’ health surveillance and the surveillance of the working environment, and that this system should include the necessary risk assessment and, where appropriate, preventive and control measures with respect to, inter alia: (a) hazardous chemicals and waste; (b) toxic, infectious or allergenic biological agents and waste; (c) irritant or toxic vapours; (d) hazardous dusts; (e) carcinogenic substances or agents; ... (i) transmissible animal diseases; (j) contact with wild or poisonous animals; ... and (n) risks from new technologies. Paragraph 8 on animal handling and protection against biological risks sets that “the measures for the handling of biological agents giving rise to risks of infection, allergy or poisoning, and for the handling of animals should comprise the following: (a) risk assessment measures in accordance with Paragraph 5, in order to eliminate, prevent or reduce biological risks; (b) control and testing of animals, in accordance with veterinary standards and national law and practice, for diseases transmissible to humans; (c) protective measures for the handling of animals and, where appropriate, provision of protective equipment and clothing; (d) protective measures for the handling of biological agents and, if necessary, provision of appropriate protective equipment and clothing; (e) immunization of workers handling animals, as appropriate; (f) provision of disinfectants and washing facilities, and the maintenance and cleaning of personal protective equipment and clothing; (g) provision of first aid, antidotes or other emergency procedures in case of contact with poisonous animals, insects or plants; (h) safety measures for the handling, collection, storage and disposal of manure and waste; (i) safety measures for the handling and disposal of carcasses of infected animals, including the cleaning and disinfection of contaminated premises; and (j) safety information including warning signs and training for those workers handling animals”.

## Guidelines and codes of practice

65. The ILO, as well as other international organizations, have adopted numerous codes of practice and guidelines of relevance in this context. According to Appendix III of the *Technical guidelines*, and in addition to the *Guidelines on occupational safety and health management systems, ILO-OSH*

2001, the main ILO and WHO references for the management of biological hazards in specific sectors include the following:

- ILO code of practice on safety and health in construction (2022);
- ILO code of practice on safety and health in textiles, clothing, leather and footwear (2022);
- ILO code of practice on recording and notification of occupational accidents and diseases (1996);
- ILO code of practice on safety and health in agriculture (2010);
- ILO: *Technical and ethical guidelines for workers' health surveillance* (1998);
- ILO working paper: *Occupational safety and health in the food and drink industries* (1993);
- WHO and ILO: *Caring for those who care: Guide for the development and implementation of occupational health and safety programmes for health workers* (2022);
- WHO: *Laboratory biosafety manual* (2020);
- Report of a joint FAO/WHO consultation: *Risk management and food safety* (1997).

## ► International and regional frameworks relevant for biological hazards

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### International frameworks

#### Transport of dangerous goods

- 66.** Dangerous goods are subject to transport, workplace, storage, consumer and environment protection regulations, to prevent accidents to persons, property or the environment, to other goods or to the means of transport employed. These agreements include: the United Nations Recommendations on the Transport of Dangerous Goods (Model Regulations), the International Maritime Organization's International Maritime Dangerous Goods Code, the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air and the Regulations concerning the International Carriage of Dangerous Goods by Rail.<sup>35</sup> To ensure consistency between all these regulatory systems, the United Nations has developed mechanisms for the harmonization of hazard classification criteria and communication tools and for transport conditions for all modes of transport. These mechanisms include, in particular, the GHS.<sup>36</sup>
- 67.** The United Nations Economic Commission for Europe (UNECE) also administers regional agreements for effective implementation of these mechanisms for road, rail and inland waterways transport of dangerous goods. These regional agreements include the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) which aims to protect human health and the environment against the adverse effects of hazardous wastes that include infectious substances, among others.<sup>37</sup>

<sup>35</sup> For further information see [UNECE home page](#).

<sup>36</sup> See para. 14 above.

<sup>37</sup> United Nations, [Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal](#), 22 March 1989.

68. The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement which makes provisions to regulate, manage or control risks associated with the transfer, handling and use of organisms and derived products resulting from modern biotechnology that may have adverse effects on conservation and sustainable use of biological diversity, taking into account risks to human health, focusing on their transboundary movement.<sup>38</sup>

## World Health Organization

69. The mandates of the ILO and the WHO are, in certain contexts, complementary. This has been recognized in several contexts and was undoubtedly the rationale behind the setting up of the Joint ILO/WHO Committee on Occupational Health in 1950 following the first World Health Assembly held in Geneva in July 1948. The Committee has held 13 meetings, most recently in 2003, during which the Committee has covered a variety of topics including education and training in occupational health, safety and ergonomics, scope and organization of occupational health, reporting of occupational diseases and occupational exposure assessment and establishment of permissible limits as well as the need to promote safety and health as an essential function of good management.<sup>39</sup>
70. The WHO has developed numerous publications in the area of its competence, in some cases in collaboration with the ILO including a laboratory biosafety manual providing that: preventive measures should be commensurate with the biosafety level of the laboratory; epidemiological surveillance and record keeping (especially of accidents involving biological agents) should always be in place; and the capacity of epidemiologic surveillance should be increased through networking or dedicated websites to collect and analyse data on accidents, injuries, infections or adverse events suffered by workers in research and development laboratories.<sup>40</sup> The manual encourages countries to accept and implement basic concepts in biological safety and to develop national codes of practice for the safe handling of pathogenic microorganisms in laboratories.
71. In 2022, the WHO published jointly with the ILO a Guide for the development and implementation of occupational health and safety programmes for health workers entitled *Caring for those who care*. It has also established a comprehensive webpage that features research, information and advice on the COVID-19 pandemic and has developed jointly with the ILO a brief on prevention and mitigation of COVID-19 at work identifying policy action points for the formulation of workplace-level policies.<sup>41</sup>

## Regional frameworks

### Southern Common Market

72. The Southern Common Market (MERCOSUR) has adopted an Agreement to facilitate the transportation of hazardous substances in Member States and a Technical Regulation for the

<sup>38</sup> Biosafety Unit, The Cartagena Protocol on Biosafety to the Convention on Biological Diversity, The Biosafety Clearing-House (BCH) (Secretariat of the Convention on Biological Diversity, July 2022).

<sup>39</sup> ILO and WHO, *Thirteenth Session of the Joint ILO/WHO Committee on Occupational Health: Report of the Committee*, JCOH/XIII/D.4, 2003.

<sup>40</sup> WHO, *Laboratory Biosafety Manual: Fourth Edition*, 2020.

<sup>41</sup> WHO, "Coronavirus Disease (COVID-19)"; and WHO and ILO, *Preventing and Mitigating COVID-19 at Work*, Policy Brief, May 2021.

transportation of infectious substances and biological agents in Member States.<sup>42</sup> In Argentina, Brazil, Paraguay and Uruguay, the implementation of the regulations at national level has been assigned to the ministries in charge of health.

## European Union

- 73.** The EU biocidal products Directive regulates procedures and principles regarding the production and importation of biocidal products, that is: active substances and preparations containing one or more active substances; are ready for sale; and that have a controlling effect on any chemical or biologically harmful organism or that limit its movement or removal, render it harmless or destroy it.<sup>43</sup>
- 74.** As noted above, the EU Directive 2000/54/EC<sup>44</sup> lays down minimum requirements for the health and safety of workers exposed to biological agents at work. It defines the terms “biological agents”, “micro-organism” and “cell culture” and classifies biological agents into four risk groups according to their level of risk of infection.
- 75.** In the case of activities involving exposure to several groups of biological agents, the risk must be assessed on the basis of the danger presented by all hazardous biological agents present. The assessment must be renewed regularly and when any change occurs in the conditions which may affect workers’ exposure to biological agents. The employer shall avoid the use of a harmful biological agent if the nature of the activity so permits, by replacing it with a biological agent which is not dangerous or is less dangerous to workers’ health. According to the Directive, other substantive requirements include the obligation of employers to reduce exposure of workers to biological agents, and where risk assessment results reveal a risk to workers’ health or safety, make available to the competent authority appropriate information, when requested. Employers must ensure hygiene and individual protection by prohibiting eating or drinking in working areas, providing protective clothing, providing appropriate toilet and washing facilities, and maintaining protective equipment properly. Moreover, workers and their representatives must receive appropriate training involving working with biological agents and be provided with written instructions and display notices of the procedure to be followed in case of a serious accident or the handling of biological agents of group 4. Employers must keep a list of workers exposed to group 3 and/or 4 biological agents for a minimum of 10 years following exposure (or 40 years following exposure resulting in an infection), indicating the type of work done and the biological agent to which they have been exposed (if possible). Prior notification must be given to the competent authority at least 30 days before the commencement of work with group 2, 3 or 4 biological agents.
- 76.** According to the Directive, Member States must establish arrangements for carrying out relevant health surveillance of workers both prior to exposure and at regular intervals thereafter. Effective vaccines must be made available free of charge for workers not already immune to the biological agent to which they are (or are likely to be) exposed. If a worker is found to be suffering from an infection or illness as a result of exposure, surveillance should be offered to other workers. Appropriate decontamination and disinfection procedures should be implemented for contaminated waste to be handled and disposed. Laboratories carrying out work involving group 2, 3 or 4 biological agents for research must determine the relevant containment measures

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<sup>42</sup> MERCOSUR and Consejo del Mercado Común, *Acuerdo para la facilitación del transporte de mercancías peligrosas en el MERCOSUR*, 2019; Aduanas, Reglamento Técnico MERCOSUR; and [Resolution No. 50/08](#).

<sup>43</sup> [EU Directive 98/8/EC](#).

<sup>44</sup> Please refer to footnote 10 above.



in order to minimize the risk of infection. A list of biological agents known to infect humans is included as Annex III to the Directive.

## ► National law and practice <sup>45</sup>

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### Introductory remarks

- 77.** Many issues related to the safe production, import, use and disposal of biological agents pertain to the public domain and aim at preventing exposure of the population at large. These include regulations related to biosafety and the management of waste. The borderline between prevention and protection in the public and workplace domains is not always clear-cut. It goes beyond the limits of this review to analyse this in greater detail. It can be noted, however, that legislation on biosafety has been adopted in at least the following countries: Benin, Burkina Faso, Fiji, France, the Gambia, Ghana, Guyana, India, Ireland, Kenya, Kiribati, Lesotho, Liberia, Luxembourg, Malawi, Mali, Mauritius, Namibia, Pakistan, Palau, Papua New Guinea, Philippines, Rwanda, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Samoa, Senegal, Seychelles, Solomon Islands, South Africa, Sudan, Switzerland, United Republic of Tanzania, Togo, Tonga, Trinidad and Tobago, Uganda and Vanuatu. In some countries, such as Angola and Bangladesh, laws on biosafety integrate certain work safety related requirements. In other countries, such as Mozambique and Ukraine, certain OSH provisions are regulated in laws primarily pertaining to the public domain such as sanitary requirements and public health.
- 78.** Exposure to biological hazards is in most countries legislated through implementing regulations to the labour law or framework OSH law. These regulations tend to mirror the framework OSH law or labour law by featuring the duties and rights featured in these general laws and explicitly acknowledging their applicability to biological hazards. In addition, specific laws and regulations often define details such as activities that may result in workers being exposed to biological hazards, hazard classification, provisions for health surveillance of workers, containment measures for work involving handling of biological hazards, and others.
- 79.** As noted above, the Basel Convention is a global control system for importing and exporting hazardous waste. Numerous countries that have adopted legislation on the handling of waste in line therewith including, at least: Barbados, Belize, Botswana, Côte d'Ivoire, France, Jamaica, Lesotho, Liberia, Malawi, Namibia, Nigeria, Papua New Guinea, Philippines, Saint Lucia, Saint Vincent and the Grenadines, South Africa, South Sudan, Switzerland, United Republic of Tanzania, Tuvalu, Vanuatu and Zambia. Rwanda has adopted a national policy on waste, and Chad had adopted a national plan regarding the handling of waste. It should be recalled that workers in the waste sector are among those most frequently exposed to biological hazards and that the waste sector employs a large number of workers including in refuse-disposal plants and sewage purification installations; cleaners and maintenance workers; and workers engaged in the management chain regarding garbage.

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<sup>45</sup> This review of national law and practice is limited to providing a non-exhaustive review of national regulations in a limited number of countries. It is focused on prevention from and protection against exposure to biological hazards and does not include an overview of national occupational safety and health requirements in general. It is based on information in the ILO Global Database on Occupational Safety and Health Legislation (LEGOSH), the ILO's database of national labour, social security and related human rights legislation (NATLEX) and publicly available government websites.

## Regulating biological hazards at the national level

### National policies

80. According to the 2009 General Survey, 31 States parties and an additional 25 non-States parties to Convention No. 155 reported having adopted a national policy.<sup>46</sup> Regarding the more specific requirements in Article 5 regarding the main spheres of action for the national policy, the Committee of Experts on the Application of Conventions and Recommendations noted that the information provided for the General Survey in most cases were of a general nature.<sup>47</sup> According to the 2017 General Survey on occupational safety and health instruments concerning promotional framework, construction, mines and agriculture, 55 countries reported having a national OSH policy, while such a policy was under way in an additional 8 countries.<sup>48</sup>
81. According to the information available in the present context, at least ten countries appear to have a reference to biological hazards in their national OSH policy or programmes.<sup>49</sup> These include Australia, the Bahamas, Guyana, Kenya, Malawi, Namibia, Oman, the Philippines, South Africa and the United Republic of Tanzania. Under Fiji's Occupational Health Services Strategy 2020–24, there is an activity to develop a code of practice on biological hazards/viruses (including COVID-19) in 2022. This is further supported under Fiji's draft National OSH Policy (2021–26), where the Ministry of Employment, Productivity and Industrial Relations and the Ministry of Health and Medical Services, are to work with tripartite specialists to develop best practice regulations and/or a code of practice on biological hazards under the Act, to cover COVID-19 and future biological hazards, and requirements under Article 14 of Convention No. 184. Fiji has also a strategy specific to occupational health services and there are plans to develop a specific strategy for the fishing sector in 2023–24.
82. Among the countries who have developed a national OSH profile according to the provisions in Recommendation No. 197, at least five refer to biological hazards. These include Montenegro, Mongolia, Nigeria, Uganda and Ukraine. In Peru, the framework<sup>50</sup> occupational safety and health law explicitly requires the establishment of governance OSH tools to cover specific hazards.
83. A number of countries, like Canada, Chile, and Spain have developed technical guidance in the form of technical notes and guidelines on discrete aspects such as data sheets and information to be provided to workers.

### Laws and regulations

84. While some OSH acts contain specific references to biological hazards or agents, as in Finland and the Republic of Korea, it is common not to mention biological hazards specifically. This is the case in Cambodia, Egypt, Japan, Morocco, Namibia, Norway, Panama, Paraguay and Uruguay, as well

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<sup>46</sup> ILO, *General Survey concerning the Occupational Safety and Health Convention, 1981 (No. 155), the Occupational Safety and Health Recommendation, 1981 (No. 164), and the Protocol of 2002 to the Occupational Safety and Health Convention, 1981*, ILC.98/III(1B), 2009, para. 60.

<sup>47</sup> ILO, *General Survey*, 2009, para. 65.

<sup>48</sup> ILO, *General Survey on the Occupational Safety and Health Instruments Concerning the Promotional Framework, Construction, Mines and Agriculture*, ILC.106/III(1B), 2017.

<sup>49</sup> For information regarding country policy responses to COVID-19, visit the ILO's [dedicated webpage](#). See also ILO, *An ILO Code of Practice on HIV/AIDS and the World of Work*, 2001.

<sup>50</sup> A framework OSH law is here used to denote a stand-alone OSH law that features the most important principles underpinning OSH management, applicable across all economic sectors and applies to all workers.

as in almost all countries in the sub-Saharan French speaking countries, such as Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Gabon, Mali, Niger, Senegal and Togo. In other countries, including Bulgaria, Cyprus, Denmark, Greece, Ireland, Latvia, Montenegro, Poland, Portugal, Spain, Sweden, Türkiye and South Africa, biological hazards in the working environment are regulated in implementing legislation.

85. In some countries legislation is specific, such as in Albania, Paraguay or Spain, where concrete regulations exist for exposure to legionella, infectious diseases, coronavirus, zoonosis and HIV. In other countries, including Argentina, Cambodia, Mozambique, Uruguay and Viet Nam, biological hazards in specific sectors or workplaces such as agriculture, mining or in laboratories are regulated.
86. National legislation on biological hazards usually provides for definitions; the role of public authorities; duties of manufacturers, suppliers and importers in relation to the safety and health of users; duties of transporters; employers obligations; and workers' duties and rights.

## Defining biological hazards

87. The methods used to identify biological hazards, agents and substances in national law and practice varies. In Australia, the national work health and safety and workers' compensation authority (Comcare) defines biological hazards as "organic substances that present a threat to the health of people and other living organisms".<sup>51</sup> In Namibia, regulations include a definition of hazardous substances with several components including exposure to human pathogens defined to mean "an organism liable to cause any human disease".<sup>52</sup> In Singapore hazard means "anything with the potential to cause bodily injury, and includes any physical, chemical, biological, mechanical, electrical or ergonomic hazard".<sup>53</sup> In Indonesia, risk assessments must be carried out in workplaces where there is a risk of exposure to: microorganisms and/or their toxins; arthropods and/or their toxins; invertebrate animals and/or their toxins; plant allergens and toxins; venomous animals; wild animals; and other hazardous animal and plant products.<sup>54</sup> In Japanese legislation, the term "pathogen" is preferred to the term "biological hazard". In Paraguay, biological products are classified in six categories: toxic pathogens; aflatoxic pathogens; products that destroy organs; products that have an inflammatory effect on organs; products that infect organs; and parasites. Given the existence of an EU Directive on the subject matter, EU Member States largely conform thereto and have adopted the narrower definition of biological agents, which has also been used in other countries such as Morocco, South Africa and Türkiye. Likewise, in the United Kingdom of Great Britain and Northern Ireland, the Health and Safety Executive (HSE) proposes an advisory list of biological agents which are classified according to the EU Directive.<sup>55</sup>

## The competent authority

88. In addition to regulating employers', workers' and their representatives' rights and duties, national laws and regulations may attribute national authorities with specific competencies regarding biological hazards. These authorities include ministries in charge of labour, health,

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<sup>51</sup> Australia, Comcare, "Biological Hazards".

<sup>52</sup> Namibia, Article 176 of the [Regulations relating to the Health and Safety of Employees at Work](#) (Government Notice No. 156 of 1997).

<sup>53</sup> Singapore, [Workplace Safety and Health \(Risk Management\) Regulations: Revised Edition 2007](#) (1 October 2007), para. 2.

<sup>54</sup> Indonesia, Minister of Manpower, Regulation No. 5 of 2018, Part 4, art. 22.

<sup>55</sup> United Kingdom, HSE, [The Approved List of Biological Agents: Advisory Committee on Dangerous Pathogens](#), 2021.

social protection/security and national health institutes. In Cuba, the Ministry of Science Technology and Environment is responsible for biological safety (including OSH). In some countries the competent authorities rely on a national committee, council or commission to provide technical advice. Such bodies may have been established to advise on labour issues in general, OSH issues more specifically and even more concretely on biological hazards such as the Hazardous Biological Agents Health and Safety Technical Committee in South Africa.

89. The competent authorities are often the authority to issue regulations. In Malaysia, Ukraine and Guyana, it is explicitly provided that the executive has the power to issue regulations on biological hazards.

## National registration

90. The registration of biological agents is sometimes a national requirement. In Ukraine, state registration comprises the establishment and maintenance of a unified State Register of Dangerous Factors listing names of hazardous biological agents, data on their properties, features, indication methods, biological effects, the level of danger for human health, behaviour in the environment, production, hygiene regulations of the application and so on. The legislation specifies that a hazardous agent may only be registered if hygiene regulations thereon have been laid down and subjects its use in the national economy and in everyday life, to a confirmed state registration.

## Regulating import and export and the production and sale of biological substances

91. The import and export of biological substances is subject to authorization in Paraguay. Thus, the import and export of biological products for human use and against zoonoses must be previously authorized by the Ministry of Public Health and Social Welfare. Paraguay also has procedures for the extraction, storage and supply of blood, plasma and derivatives, as well as specialized biological controls therefor, and establishments that produce veterinary or phytosanitary products must be registered with the Ministry. Similarly, in Uruguay, laboratories conducting clinical analyses are required to obtain authorization for operation from the Public Health Ministry. In Türkiye, employers are required to make a pre-notification to local authorities before the first use of biological harmful agents classified in groups 2, 3 and 4 (the same groups as in the EU Directive).

## Identifying occupational diseases caused by biological hazards

92. The occupational nature of diseases caused by biological hazards is the basis for compensation according to the national occupational injury benefit systems. National systems display a wide variety both in terms of how lists of such diseases are determined, adopted and updated in terms of their substantive content.
93. Several countries, including Albania, Barbados, Croatia, Finland, Latvia, Thailand, Trinidad and Tobago and Singapore have adopted lists of occupational diseases that incorporate diseases caused by biological hazards. Defining these lists is within the remit of the Ministry of Labour in Italy, Morocco, Norway, the Republic of Korea, Saudi Arabia, Thailand and Trinidad and Tobago, or within the remit of the Ministry of Health in Albania, Mozambique, Peru and the Russian Federation. In other countries, such as Algeria, Burundi, Colombia, Congo, Central African Republic, Eritrea, Gabon, Guinea, Kuwait, Senegal and Viet Nam, this is a shared competence between the Ministries of Labour, Health and Social Protection/Security or, adopted by the

Parliament by means of a law as in Croatia. In Burundi, Eritrea, Finland, Latvia, Mozambique, Singapore and the Bolivarian Republic of Venezuela, it is provided in law which are the diseases that could be considered occupational.

94. In countries such as Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Gabon, Mali, Niger, Senegal and Togo, national regulations specifically decide on the compensation of risks related to biological agents through national regulatory standards relating to the compensation of occupational diseases. In these countries, national rules or regulations regarding compensable diseases include, to a varying degree, biological agents such as brucellosis, viral hepatitis a, b, c, d and e; cutaneous mycoses, tetanus, spirochetosis hookworms, rickettsiosis, amoebiasis, poliomyelitis, rabies, tuberculosis and other mycobacteria, haemorrhagic fevers due to hantaviruses, tularaemia, ornithoses, psittacosis, streptococcus infections, onchocerciasis and Pasteurella. In Japan, national legislation lists certain diseases caused by pathogens such as bacteria and viruses including a few concrete diseases as well as a provision allowing for the recognition of other diseases as occupational if they are "clearly caused by work involving exposure to such pathogens".
95. In some countries such as Burundi, Congo and Italy, the competent authority has to consult an advisory commission for the development and periodic review of the list of occupational diseases. This could be the national OSH committee, or another body established specifically for that purpose. In Italy, for example, a scientific advisory commission for the development and periodic review of the list of occupational diseases is established by the Ministry of Labour and Social Policies, which shall propose the modification and integration of diseases to the list to the Ministry of Labour, in consultation with the Ministry for Health, after hearing the most representative national workers' organizations.
96. In some other countries a limited number of diseases caused by biological hazards are recognized as occupational. Barbados, Saint Lucia and Thailand include in their lists skin diseases caused by biological agents and infectious or parasitic diseases contracted in an occupation where there is a particular risk of contamination. In Japan, more specifically, the list of occupational diseases includes skin illness, conjunctivitis or respiratory illness such as rhinitis or bronchial asthma due to exposure at work to proteolytic enzymes. It also includes infectious diseases caused by treating or nursing patients; caused by handling of pathogens for research and other purposes; Weil disease due to work in damp places; and tsutsugamushi disease (scrub or bush typhus) due to outdoor jobs.
97. In Singapore, the list of occupational diseases caused by biological hazards includes anthrax, glanders, leptospirosis or its sequelae and tuberculosis. In Latvia, the list includes infectious and parasitic diseases such as amoebiasis, brucellosis, swine erysipelas, tick-borne encephalitis, yersiniosis, Lyme disease, leptospirosis, ornithosis, Q fever, tetanus, tuberculosis, tularaemia and viral hepatitis.
98. COVID-19 is considered an occupational disease in some countries.<sup>56</sup> In Colombia and Argentina, there is a presumption that COVID-19 is an occupational disease when contracted by essential workers. Within the EU, the EU Directive has been amended to classify SARS-CoV-2 in group 3 of the biological agents. It is thus considered an agent that can cause severe human disease and present a serious hazard to workers.
99. In line with Recommendation No. 194, and in case a disease is not recognized as occupational in any official list, it may be recognized as such if a direct link is established scientifically, or

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<sup>56</sup> See [State practice to address COVID-19 infection as a work-related injury](#), 2021.

determined by methods appropriate to national conditions and practice, between the exposure arising from work activities and the disease(s) contracted by the worker. This is possible, for example, in Singapore as well as in Türkiye.

## Employment injury insurance schemes

- 100.** The modalities for coverage of employment injury insurance schemes are normally regulated separately from OSH laws and the availability of such schemes globally varies. The coronavirus pandemic has demonstrated that it can be critically important to have employment injury schemes in place to support workers and contribute to halt the spread of the virus by infected workers unable to stop working due to lack of access to alternative income sources.
- 101.** National laws and regulations regarding employment injury schemes display a wide variety. Legislation may lay out requirements related to the identification of the entity that should pay benefits for work disability, criteria for entitlements, what the benefits should amount to and for what period, and others. In relation to COVID-19, for example, the Social Security Institute in Honduras is responsible for paying benefits for work disability. In Colombia, the occupational risks insurance entities are required to allocate 5 per cent of the contributions to preventive and promotional activities and 2 per cent to emergency interventions, purchase of personal protective equipment (PPE) and medical check-ups, for workers who are directly exposed to the coronavirus. In Slovenia, the health insurance law stipulates that workers who are ordered by the authorities to quarantine due to their high-risk status are entitled to full compensation of wages.

## Research

- 102.** The critical function to carry out research and develop national knowledge on biological hazards can be assigned to national health institutes that operate under the ministries in charge of health. In Colombia, for example, the National Health Institute functions as a central laboratory of reference and standardization in the OSH field and standardizes the techniques used to analyse environmental and biological agents to determine their effects on human beings. In Peru, the National Health Institute develops and disseminates scientific and technological research in occupational health and environmental protection, and biological production at regional and national levels. In Bulgaria, the functions of the National Centre of Public Health and Analyses include assessing the exposure of the population to biological hazards and their impact on the working environment.
- 103.** In other countries, public agencies, institutes and research centres specializing in OSH may conduct research on biological hazards, while this may not be specifically reflected in their statutes or laws governing their operations, such as in Brazil, Chile and Cameroon.<sup>57</sup> It is not uncommon that other entities and organizations conduct research on biological agents as well, such as universities, associations of OSH professionals and non-profit organizations.

## Qualifications for OSH professionals

- 104.** The qualifications of OSH professionals, including occupational physicians, occupational nurses, occupational safety engineers, occupational hygienists, ergonomists, occupational psychologists and OSH technicians issued by the competent authorities often include a specific requirement to have knowledge regarding biological hazards. This is the case in Cyprus, where a safety officer must complete a training that includes 6 hours on biological agents and in Belgium where the

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<sup>57</sup> See ILO Global Database on OSH Knowledge Agencies, Institutions and Organizations ([INTEROSH](#)).

training leading to the specialization in occupational hygiene should include knowledge of biological hazards (infections and allergies, bacteria (endotoxins), viruses, moulds) and their by-products.

- 105.** Most national legislation also requires employers to engage qualified OSH professionals. This may be achieved through the hiring of an individual expert, establishing an in-house OSH service, a joint OSH service for several undertakings, or contracting external services. Requirements often change depending on the workforce size and the nature of the activities performed by the undertaking. For example, Thailand requires that in biological laboratories employers assign a safety officer when there are more than 20 employees. In Spain, employers are to establish an internal preventive service in undertakings with 250 to 500 workers that perform hazardous activities, including those where there is exposure to biological hazards.

## Requiring and facilitating vaccination

- 106.** The COVID-19 pandemic has brought questions related to vaccinations to the fore. There are no provisions in international labour standards requiring vaccination, but in some instances, immunization is recommended as an effective measure for the protection of workers against exposure to biological hazards including for nurses according to Recommendation No. 157, and for workers in the agriculture sector (including plantations) especially in the context of animal handling.<sup>58</sup>
- 107.** While vaccination is generally not mandatory in national practice, it can, in some countries, be mandatory for work in certain sectors such as health, and in occupations more exposed to risk. In Azerbaijan, specific legislation outlines public vaccination measures and guarantees free, voluntary vaccination to all citizens. In Türkiye it is stipulated that, when necessary, effective vaccines shall be provided for those workers who are not already immune to the biological agent to which they are exposed or are likely to be exposed to. This shall be carried out in cooperation with the competent units of the Ministry of Health where the workplace is located, and workers shall be informed of drawbacks and benefits of vaccination and non-vaccination.<sup>59</sup>

## Ensuring enforcement and compliance

- 108.** National labour inspection services are organized and structured across countries in many ways. In some countries, a single labour inspectorate is responsible for administering and enforcing labour laws and OSH laws, such as in the case of Brazil, France, Madagascar, Portugal, Spain and Tunisia while in other countries there are various labour inspectorates with specialized functions such as in Australia, Belgium, the United Kingdom and the United States of America.
- 109.** While general rules apply, and typically are not specific in relation to the enforcement of rules and regulations in relation to biological hazards, some national laws do make specific reference to biological hazards when defining the prerogatives of labour inspectors. This is, for example, the case in France, where the labour inspector, under certain conditions determined by decree, shall require the employer to carry out technical controls, particularly to measure the exposure of workers to physical harm or to physical, chemical or biological agents. In Guyana, every inspector, shall have the power to conduct or take tests without unduly disturbing the workplace, of any biological agent, to take and carry away such samples as may be necessary subject to notification to the employer. In Norway, the law gives powers to the labour inspectorate in relation to

<sup>58</sup> See para. 58 above concerning Convention No. 184 and para. 64 concerning Recommendation No. 192.

<sup>59</sup> For further information, see ILO, "Country policy responses to COVID-19 and the world of work".

manufacturers, suppliers and importers. In particular, the Labour Inspection Authority may prohibit the manufacture, packaging, use or storage of hazardous chemicals or biological substances in certain undertakings. It may require that manufacturers or importers of chemicals or biological substances conduct inspections or submit samples for inspection to determine how hazardous the substance is. This authority may also prohibit the sale of a chemical or biological substance if a manufacturer or importer fails to observe his duty to report, to mark the substance or to provide additional information required. The Labour Inspection Authority may require that a product's supply or marketing is discontinued when such product may entail danger to life or health.

110. Laws and regulations addressing biological hazards usually foresee penalties in case of non-compliance. While general rules apply, penalties for violations of requirements related to exposure to biological hazards can also be found in laws and regulations that specifically address biological hazards. This is the case, for example, in Albania and South Africa.

## Regulating biological hazards at the level of the undertaking

### Duties and responsibilities of employers

#### Ensuring safe and healthy workplaces

111. The general duty of the employer to ensure safe and healthy workplaces includes protection against exposure to biological hazards. Laws regulating OSH may either refer to a general responsibility without specifying the different categories of hazards, or on the contrary, name the categories of hazards for which the employer must take preventive and protective measures. In Costa Rica, legislation adopts an all-hazard-encompassing general duty by stipulating that employers must adopt OSH measures at the workplace to protect workers' lives, safety, morals and physical integrity. In Lebanon, however, the legislation lists hazards requiring particular attention when setting up protection measures and requires that the employer shall take all the necessary measures of health protection in the workplace, especially in relation to safety, lighting, ventilation, aeration, drinking water, lavatories, evacuation of dust and smoke, accommodation of workers and hygiene measures to protect workers from pollution by pathological or biological factors.
112. It is not uncommon that OSH laws include specific requirements regarding pregnant and breastfeeding women, that is featuring lists of prohibited work or the requirement to conduct specific risk assessments. This is the case, for example, in the EU and Peru. Work with high-risk biological agents is commonly included in lists of prohibited activities for minors as it is considered to be hazardous child labour. For example, Jordan and Bulgaria prohibit persons who have not attained the age of 18 to engage in work involving biological hazards.

#### Setting up OSH management systems

113. An OSH management system is a logical and stepwise method based on the Deming cycle (Plan-Do-Check-Act) used to improve performance in the prevention of occupational hazards and monitor progress made. The adoption of an OSH management system is specifically required in some countries like Bahrain, Colombia, Denmark, El Salvador, Panama, Peru and Singapore. OSH management systems may be required for all workplaces or only for some workplaces depending on the workforce size and sector. In Thailand, for example, the requirement applies to biological laboratories employing more than 50 employees.



- 114.** Laws and regulations often have specific requirements in relation to emergency plans and first aid in case of accidental exposure to biological hazards, which may include qualified personnel able to provide first aid, medicaments and other material and equipment to provide immediate treatment and adequate facilities, as well as related information and training to workers. In Namibia, for example, article 190 of Government Notice No. 156 of 1997 requires the employer of workplaces where hazardous substances or toxic, corrosive or similar substances are used, handled, processed or manufactured to provide first-aid equipment, assign a first-aid attendant, make available suitable first-aid washing facilities, prepare and regularly review written plans and procedures, and regularly inform and train employees.

### Conducting risk assessments

- 115.** Risk assessments should take into account all occupational hazards to which a worker may be exposed, including biological hazards. OSH laws may therefore not specifically mention biological hazards when establishing the duty of the employer to conduct risk assessments. However, in some cases, legislation may explicitly specify that the risk assessment shall include biological hazards, in particular in relation to vulnerable workers. In the United Kingdom it is provided that in making or reviewing a risk assessment, an employer who employs or is going to employ a young person shall take particular account of, inter alia, the nature, degree and duration of exposure to physical, biological and chemical agents.
- 116.** Laws and regulations governing specifically biological hazards may establish special requirements on how to conduct a risk assessment of these hazards. These may include the type of information that employers have to take into consideration when completing the risk assessment, consultation with workers and their representatives, frequency of the risk assessment, the obligation to share the results and appropriate documentation and archive of the assessment. National legislation in South Africa contains detailed requirements regarding risk assessments. The EU Directive on biological agents indicates parameters to be considered when conducting an assessment like the classification of the hazard, recommendations from the competent authority, information on diseases that may be contracted as a result of exposure, potential allergenic or toxigenic effects and knowledge of a disease from which the worker is found to be suffering and which has a direct connection to his work.
- 117.** National laws often require the recording, investigation and notification of occupational injuries and diseases caused by exposure to biological hazards. In the United Kingdom, the Reporting of Injuries, Diseases and Dangerous Occurrences Regulation requires the responsible person to keep a record of exposure to carcinogens, mutagens and biological agents. In Cyprus, dangerous occurrences or near misses should be notified by the person who has the control of the workplace or the person who directs or conducts activities when these occurrences include the release of biological agents.

### Taking preventive and protective measures

- 118.** OSH laws often require the employer to follow a hierarchy of controls. In the hierarchy of controls scheme, the highest level of measures is the most efficient in managing risks, while the lower levels are applicable only when no higher-level measures are possible or when the effort and resources to implement higher-level measures would be disproportionate in relation to the expected result. However, in many cases, measures from higher levels may be supplemented by measures from lower levels. Laws and regulations governing biological hazards may lay out the specific measures that the employer shall take to protect workers from exposure to biological hazards and when exposure cannot be prevented, to minimize such exposure and the potential harmful health outcomes. For example, the EU Directive on biological agents requires employers

to replace hazardous biological agents by agents that are not dangerous or less dangerous. When this is not technically practicable, a set of measures should be followed such as: decreasing the number of workers exposed; designing work processes and engineering control measures to avoid or minimize release; collective protection measures complemented by individual protection; hygiene measures; the use of biohazards signs; drawing of plans to deal with accidents; testing for the presence of biological agents; the means for safe collection, storage and disposal of waste; and arrangements for safe handling and transport. In South Africa, employers – including the self-employed – are required to ensure that as result of their activities, exposure of persons to biological hazards in the working environment is either prevented or, where this is not reasonably practicable, controlled so that exposure is highly improbable. National legislation also prescribes several standard precautions that should be implemented to reduce the risk of transmission of hazardous biological agents from recognized and unrecognized sources of infection in a workplace. National provisions in Morocco, Namibia and Türkiye, also provide detailed requirements in this respect.

### Right to removal

**119.** The right to removal according to Article 13 of Convention No. 155 (coupled with the workplace requirements in Article 19(f)) is an essential right captured in national legislation by a majority of Member States who have ratified Convention No. 155, which also establishes the prohibition of employers from requiring workers to return to a work situation where there is a continuing imminent and serious danger to life or health. The Saskatchewan Province legislation in Canada expressly provides that workers in the mining industry have the right to refuse unusually dangerous work. In Paraguay it is explicitly provided that workers in industrial workplaces in contact with chemicals and biological products have the right to remove themselves from a situation that they have reasonable justification to believe presents an imminent or serious danger to their safety or health. In the Netherlands, the imminence of danger is regulated in the sense that the entitlement to stop work can be exercised only when the threat is so imminent that a supervisor cannot arrive in time to give orders for employees to leave. In countries like Australia, Israel and many of the Commonwealth of Independent States, persons entrusted with OSH responsibilities in the workplace, including trade union representatives, also have the right to issue instructions for the work to be stopped.

### Ensuring health surveillance of workers

- 120.** Subjecting workers to health monitoring when these are exposed to biological hazards is required by many national laws, including in Croatia, France, Latvia, Mexico, Mozambique, the Netherlands, Norway, Portugal, the Russian Federation, South Africa, Spain, Thailand, Türkiye, Uruguay and Zambia. These laws may explicitly place on the employer the obligation to provide their workers with medical surveillance that encompasses any hazard to which workers may be exposed including biological hazards. In practical terms this entails covering the associated cost and arranging for an internal or external occupational health service to carry out this surveillance.
- 121.** Some laws and regulations also lay down time-related requirements. For example, in the Netherlands, employers shall give employees the opportunity to undergo examinations at regular intervals with a view to preventing or limiting the risks posed to their health by their work to the greatest possible extent. It is also provided that every employee who is or might be exposed to biological agents, should also be given the opportunity to submit to an occupational health medical examination on commencing the activities which might create exposure; that every employee who sustains an infection or disease as a result of being exposed to a biological agent should in the interim also be given the opportunity to submit to an occupational health medical

examination; that every employee who is being exposed to the same biological agent which has resulted in another employee sustaining an infection or disease should in the interim also be given the opportunity to submit to an occupational health medical examination; and that at the request of the employer or the respective employee, the examination should be retaken. The result of the re-examination replaces the previous one. In Türkiye, health surveillance shall be provided at regular intervals. Some laws also require the employer to arrange for a health examination at the end of the employment relationship and when the worker comes back to work after a period of absence. This is the case, for example, in Peru, regarding workers carrying out high-risk activities. In Uruguay, all workers exposed to risk factors either biological or otherwise must be subject to medical check-ups on admission, periodically after returning to work and upon exit.

122. In some countries, the employer may be required to provide health surveillance for specific hazards and/or in specific sectors where these hazards are present. For example, in Mozambique, it is provided that in mining geological explorations, whenever the safety and health plan foresees workers' exposure to biological agents, the company must take measures conducive to ensuring surveillance and health monitoring of exposed workers. Likewise, in Thailand, a health check-up is required for workers who are exposed to specific hazards or risk factors related to work including toxic microbes which may be a virus, bacteria, fungus or other biological organisms.

### Providing personal protective equipment

123. National OSH laws usually place upon the employer the duty to provide workers with PPE with the caveat that such equipment should be the last resort in the hierarchy of controls, and thus should be provided only in those instances where more effective preventive measures cannot be applied or provided in addition to them. Some laws would explicitly require PPE for certain specific hazards such as biological hazards. When regulating PPE, various elements or requirements are often found in legislation, mostly referring to the obligation of the employer to provide workers with suitable PPE at no cost, to maintain the PPE in good condition (including decontamination), and to train the workers on how to use the PPE effectively. Laws may regulate in detail the decontamination and proper maintenance of PPE including what is needed for decontamination, such as providing receptacles to store any used and contaminated PPE and how such storage and decontamination should be handled, and the need to clean, repair and replace the PPE when necessary. In South Africa, national regulations include detailed provisions in this respect. In relation to respiratory PPE, Namibia provides detailed requirements regarding the selection, information and training, maintenance, medical clearance and further precautions, after clearly articulating the principle of hierarchy of controls by stipulating that it is only after it has been determined that effective administrative, technical or engineering control measures are not feasible, or while such measures are not in place, that an appropriate respirator shall be used by an employee. The EU Directive 2000/54/EC requires the employer to ensure that the clothing and protective equipment is removed on leaving the working area, kept separately from other clothing, decontaminated and cleaned or, if necessary, destroyed.

### Providing welfare facilities

124. Welfare facilities may be key when it comes to preventing biological risks as they provide a space for an appropriate hygiene routine allowing workers to change clothes and equipment which may be contaminated and dirty. Washing of hands is critical to prevent contamination and thus there should be adequate washing facilities including soap and/or hydroalcoholic disinfectant. It is also important to ensure that there are separate dining areas where biological agents are not present and thus food and beverages can be consumed without risk of contamination. This entails putting

measures in place to ensure that a contamination cannot be spread from the working area into the dining area. Moreover, it is critical to ensure that welfare facilities are regularly cleaned, disinfected and ventilated and that food and beverages are stored in conditions that prevent any possible contamination. The provision of welfare facilities in commerce and offices is regulated, inter alia, in the [Hygiene \(Commerce and Offices\) Convention, 1964 \(No. 120\)](#).<sup>60</sup>

## Providing information and training to workers

- 125.** Framework OSH laws usually establish the duty of the employer to provide training and information to workers about all risks that they may be exposed to. This implies biological risks whenever these are present at the workplace. Sometimes, laws may explicitly require that information and training is provided on biological risks, even when this is implicit in the employer's duty to provide information and training. This is the case in Lebanon, where it is stipulated that workers shall be given sufficient and appropriate information on the risks related to their work and that the employer shall provide information on risks related to biological factors, while in Cyprus, the obligations of employers include providing information and training to employees on potential risks to health.
- 126.** The duty to provide information about exposure to occupational risks may be further developed explicitly to require provision of information on incidents and accidents, the causes thereof and any measures that have been taken. This is the case in Portugal and Türkiye.
- 127.** While laws would usually lay down the overall duty to provide training and information on occupational risks, regulations may be much more specific about the type and content of training and information including on relevant laws and regulations, potential effects on health caused by exposure, preventive and protective measures that have been taken by the employer, PPE, medical surveillance, handling, labelling and disposal of biological agents, and emergency procedures in case of accidental exposure. South African regulations contain detailed and comprehensive provisions on training and information on biological hazards. The EU Directive on biological agents also foresees most of the above-mentioned elements as part of the content to be delivered through information and trainings.

## Rights and responsibilities of workers and their representatives

### Right to receive information and training

- 128.** The employer's obligations to provide training and information to workers is sometimes mirrored in the expression of the rights of workers to receive information and training. According to the EU Directive on biological agents, workers and their representatives must receive appropriate training on biological exposure and be provided with instructions and display notices of the procedures to follow in case of a serious accident or the handling of certain categories of biological agents. In Türkiye, workers have the right to get appropriate and sufficient training before carrying out the activities that include contact with biological agents. Training shall be renewed in accordance with changing and emerging risks and repeated periodically if necessary. The training should include, inter alia, training regarding potential risks to health, precautions to be taken to prevent exposure, how to wear and use protective equipment and clothing, and steps to be taken by workers in the case of incidents and to prevent recurrence.

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<sup>60</sup> See also *General Survey, 2017*, paras 395-404.

## Duty to report accidents and incidents

**129.** Usually the provisions regarding the right to removal addressed previously, would encompass the other elements that go hand in hand with this right, which are the obligation of workers to report situations of immediate and serious danger to the OSH professional or services responsible for managing OSH at the workplace, the OSH committee, the employer and the competent authorities, and the safeguarding of workers who exercise this right against unjustified consequences, depending on national legal provisions. Laws and regulations may require workers to immediately report to managers, OSH officers and/or the employer any incident or accident that involves exposure to biological hazards. This duty is laid down for example in the EU Directive on biological agents (Article 10.2). This is also the case in South Africa, where it is required that any person who is aware of any possible accidental exposure to hazardous biological agents at the workplace is required to report it immediately to the employer, the health and safety representative or self-employed person. The coronavirus pandemic has caused countries to extend their legislative OSH frameworks by incorporating specific requirements that are aimed at preventing the spread of the virus and which may be valid for any infectious disease. For example, in Honduras, workers who have COVID-19-related symptoms have to inform their employer about these circumstances, take leave, and provide evidence of their health status through a laboratory test or a statement issued by a health professional.

## Rights of workers' representatives on OSH

**130.** The law may explicitly lay down workers' representatives' entitlements and prerogatives including the right to request specific OSH measures including on biological risks and to appeal the employers' decisions when they consider that these are inappropriate. In Saint Lucia and Guyana, legislation requires that the OSH committee receives information concerning biological agents in the workplace. In South Africa, employers are required to consult with the OSH representatives or committee prior to discharging the duties to provide information and training and conducting risk assessment. In Portugal, employers need to consult and obtain the advice of OSH workers' representatives at least twice a year on all aspects of managing OSH, including biological hazards. These consultations need to be recorded in written form.

## Duty to follow the employers' instructions and prohibitions for workers

**131.** Workers' duty to cooperate with the employer can be explicitly and specifically provided in relation to work with biological hazards. This is the case in Türkiye, where workers have the duty to obey the rules set out by employers at the workplace. In some cases, workers are specifically prohibited from taking certain actions. Also in Türkiye, workers may not eat and drink in working areas where there is a risk of infection due to biological factors; workers should wear the protective clothing or other appropriate specific clothing provided by the employer; and workers shall use the washing and toilet facilities with appropriate and sufficient cleaning materials including eye washes and/or skin antiseptics which are provided for them.

## ► Towards an international labour standard on biological hazards

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### Purpose and scope of a new instrument or instruments on biological hazards in the working environment

- 132.** The ILO's long-standing efforts to promote health and safety in the working environment took an important step forward with the decision to recognize the fundamental significance of Conventions Nos 155 and 187. The present proposal to develop an instrument or instruments on biological hazards in the working environment is an opportunity for the ILO to address a gap in its normative framework and consider the required specificities that need to be addressed at the national and workplace level for the effective prevention and protection against biological hazards. This proposal is submitted against the background of the COVID-19 pandemic that is still raging in some parts of the world. In addition to the incalculable human suffering and economic downturns that has followed in its wake, the pandemic has jolted the international community into an awareness of the threats that biological hazards constitute for the global community as well as for workers and employers in the world of work.
- 133.** The subject matter of biological hazards is a technically complex matter, and the present proposal has been able to benefit from the work carried out by the Meeting of Experts for the tripartite validation of the technical guidelines on biological hazards from 20 to 24 June 2022. ILO guidelines and codes of practice, namely the codes of practice on safety and health in construction, 2022, and on safety and health in textiles, clothing, leather and footwear, 2022, have also informed the process.
- 134.** Against this background, the objective with this proposal is to close the regulatory gap in ILO standards concerning OSH with a comprehensive and forward-looking legal framework for the promotion and realization of the right to a safe and healthy working environment in respect of biological hazards which is to be thematically integrated among the ILO standards against specific risks.

### Form of the instrument or instruments

- 135.** International labour standards are most frequently adopted in the form of Conventions and/or Recommendations where the distinguishing feature between these two instruments is that the former is intended to become a legally binding international instrument, while the latter is not. Pursuant to the precedent set by the [Maritime Labour Convention, 2006, as amended \(MLC, 2006\)](#), the possibility of combining binding and non-binding elements in the same instrument could be envisaged.
- 136.** The structure of the MLC, 2006, differs from that of other ILO Conventions and is organized in three main parts: the Articles, placed at the beginning, setting out broad principles and obligations; the more detailed Regulations, which set out the basic requirements; and the Code, which is made up of two parts – mandatory standards and non-mandatory guidelines. It is the first time that an ILO instrument includes both mandatory and non-mandatory provisions.<sup>61</sup>

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<sup>61</sup> For more details, see the [Frequently asked questions on the MLC, 2006](#) (especially A9, A10, A11 and A12).

Guidance is required as to whether the precedent set by the MLC, 2006, would be suitable, appropriate and relevant in the present context.

## Title

- 137.** The title of the instrument or instruments needs to be determined. The item placed on the agenda of the Conference refers to “occupational safety and health protection against biological hazards” while the newly adopted *Technical guidelines* refer to “biological hazards in the working environment”. It would seem appropriate to align with the vocabulary in Article 4 of Convention No. 155 and with the *Technical guidelines*.

## Definition

- 138.** Biological hazards encompass numerous agents and substances which can cause both communicable and non-communicable diseases in the workplace. As biological substances, agents and hazards are not defined in current international labour standards, a future instrument or instruments could usefully include a definition thereof. Internationally, the precedents vary. Within the EU, the Members follow the directions set in the EU Directive on biological agents at work opting for a definition of biological agent rather than biological hazard. The same approach has been adopted in some other countries, while some Member States like Australia have defined biological hazard. In the *Technical guidelines*, a tripartite agreement was reached on a definition which could be used in a possible standard or standards.<sup>62</sup>

## Scope

- 139.** It would seem appropriate to provide for the same broad scope of the instrument or instruments as in Convention No. 155, as well as to provide for similar levels of flexibility and progressive extension of the scope as in Convention No. 155. Consequently, the instrument or instruments should cover all branches of economic activity and all workers in these branches of economic activity and include the possibility, after consultation with the representative organizations of employers and workers concerned, to exclude from the application of the instrument or instruments in part or in whole, particular branches of economic activity in respect of which special problems of a substantial nature arise or any limited category of workers in respect of which there are particular difficulties. Each Member availing itself of these possibilities should list such branches or limited categories in the first report submitted and indicate in subsequent reports any progress towards a wider application.

## Action at the national level

### National policy

- 140.** Although all Members of the ILO have an obligation, arising from the very fact of membership in the Organization, to respect, promote and realize, in good faith and in accordance with the Constitution, the principles contained in Conventions Nos 155 and 187, an instrument or instruments concerning biological hazards would serve to increase the awareness of the constituents to give appropriate attention to biological hazards at the national policy level. The overview of national law and practice demonstrates that there are only a few instances where this

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<sup>62</sup> See para. 13 supra.

is done in practice. Such a requirement would have to be adapted to national conditions and practice. In situations where a national OSH policy is still in a nascent stage, appropriate and adequate attention can be given to biological hazards from the outset in the development of the national policy and in the set up and management of the national system. In cases where there already is an effective and ongoing national policy process, a requirement to formulate, implement and periodically review a coherent national policy on biological hazards would serve to recall that appropriate attention must be given to biological hazards and to ensuring that the components of the national system are appropriately adapted to the management of biological hazards in the working environment.

141. The national policy requirement provided for in the *Technical guidelines* is modelled on Article 4 of Convention No. 155 with the exception that it provides for a comprehensive national policy and not a coherent national policy as provided in Convention No. 155. The two terms are different in that “comprehensive” addresses the scope of the national policy while “coherent” addresses how the different components of the national policy should relate to each other, and to the whole. While the instrument or instruments should be comprehensive and address relevant aspects concerning biological hazards in the working environment, the national policy should be aligned with the national policy requirements in Conventions Nos 155 and 187 and be “coherent”. This means that while the actual content and different components of a national policy will depend on the specific national conditions and practice, it must, however, be coherent in the sense that its components shall make up a consistent whole. A national policy is defined by its function and not by its form, and its effectiveness will depend on improvements achieved in preventing accidents and injury to health.
142. The *Technical guidelines* provide that the national policy should be on the protection from biological hazards in the working environment. Although it may be implicitly intended, it would seem appropriate that a national policy on biological hazards in the working environment should be expressly based on prevention.
143. Against this background, it could be provided that a national policy on biological hazards – whether developed separately or integrated in a general national OSH policy – should, fully in line with Convention No. 155, have the aim to prevent accident and injury to health arising out of, linked with or occurring in the course of work by minimizing, so far as is reasonably practicable, the causes of hazards in the working environment. As noted in the 2009 General Survey, in practice, all risks to health cannot be prevented and not all causes of hazards in the working environment can be eliminated and the qualifying term “so far as is reasonably practicable” was introduced with the aim to provide for some degree of flexibility in this respect.<sup>63</sup>

## Preventive and protective measures

144. It follows from the foregoing that while the general obligations under Conventions Nos 155 and 187 call upon Member States to provide for preventive and protective measures regarding OSH in general, it would seem appropriate that the present instrument or instruments would specifically call for action in relation to biological hazards, including developing, in consultation with the most representative organizations of employers and workers, preventive and protective measures regarding the exposure to biological hazards in the working environment. It would also be appropriate to provide that such measures should be based on sound scientific criteria and

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<sup>63</sup> *General Survey*, 2009, paras 54–59.



established practice which should be taken into account in the context of the review of the situation regarding OSH provided for in Article 7 of Convention No. 155.

145. Convention No. 155 provides in Article 11(e) for the publication, annually, of information on measures taken in pursuance of the national policy requirements. As regards preventive and protective measures regarding biological hazards, it could be required that such information should be provided at more frequent intervals and as appropriate in the practical situation at issue.
146. A related question is the stance to take in situations where sufficient information is not available. For such situations, the *Technical guidelines* reflect a tripartite agreement to take into account and include precautionary measures when indicated and applicable. There is no other precedent for a reference to precautionary measures in ILO standards. A precautionary approach is distinct from a preventive approach in that the former is specifically applied in a situation of imperfect knowledge but where the impact of not taking precautionary measures might be far-reaching.
147. Regarding preventive and protective measures on biological hazards in the working environment, it is of particular importance that employers, workers and their representatives are provided information regarding not only OSH measures, but also public health measures taken. It would therefore seem appropriate to provide that national authorities should be required to make available information on OSH and public health preventive and protective measures concerning biological hazards and provide support to employers, workers and their representatives in this respect. The provision of information at the national level would complement corresponding requirements regarding the employers' provisions of information at the workplace.
148. The management of OSH at the national level calls for action through several national authorities and Convention No. 155 emphasizes the need to make arrangements to ensure the necessary cooperation at the national level and that whenever circumstances so require, and national conditions and practice permit, these arrangements should include the establishment of a central body. Such a central body could be important, particularly in the context of the management of biological hazards.

## Emergency preparedness and hazard anticipation

149. The devastating and disruptive impact communicable diseases can have, not only from a public health perspective, but also in the workplace, has been emphatically demonstrated by the recent COVID-19 pandemic. The experiences gained from this pandemic include a radically increased awareness of the need for all parties concerned, both nationally and internationally, to cooperate and develop increased capacities to anticipate hazards and preparedness for future emergencies related to biological hazards. The literature is replete with warnings that factors such as climate change, scientific developments and international mobility is driving the development in hitherto unknown directions.
150. In a recent study it is emphasized that, although global pandemics may seem to be unpredictable risks, their impact can be minimized by proper preparedness and management. For example, upon becoming the first country outside of China to be hit by the COVID-19 outbreak, the Republic of Korea was able quickly to implement actions planned, following lessons learned from the

Middle East respiratory syndrome (MERS) outbreak in 2015. It was thus able to continue business at workplaces without the need for a hard national lockdown.<sup>64</sup>

151. While both Convention No.155 and Convention No. 187 are based on prevention, neither one of these instruments provide for specific action at the national level for “better prediction”. Measures for such better prediction could include improved national and international collaboration, in particular regarding research. Early warning systems, such as the sentinel approach, could also be a helpful tool. In terms of ILO precedents, Paragraph 4 of Recommendation No. 164 provides additional guidance concerning improved preparedness in cases of emergency. It should also be noted that the [Employment and Decent Work for Peace and Resilience Recommendation, 2017 \(No. 205\)](#), provides in Paragraph 41(b), under “Prevention, mitigation and preparedness”, that Members should take measures to build resilience through measures such as “risk management, including contingency planning, early warning, risk reduction and emergency response preparedness ...”.
152. In addition to the establishment of such emergency plans, measures to achieve improved preparedness could, in line with paragraph 7.5 of the *Technical guidelines*, include requiring plans for the availability of emergency human resources, hospital and material preparedness, ensuring the supply of vaccines, and the preparation or updating of regulations for management of emergencies.
153. Against this background, it could thus be provided that national governments, including across borders, in cooperation with employers, workers and their organizations, should contribute to preventing workplace impacts of emergencies and hazards through increased emergency preparedness and hazard anticipation, through cooperation and collaboration arrangements among the different authorities, including with health or industry authorities in charge of monitoring compliance with relevant legislation by manufacturers, suppliers and importers of biological agents in relation to the safety and health of users.
154. The instrument or instruments should provide further details regarding the type of measures taking into account what is provided in paragraph 7.5 of the *Technical guidelines*. Against that background such measures could include: preparation or updating of regulations for the management of such emergencies; the establishment of early warning systems; collaborative national and international efforts regarding research; the availability of appropriate emergency human resources; effective operation of healthcare facilities, and essential services; material preparedness; collaboration between relevant public health, water and waste authorities, occupational health, veterinary health and other partners; rapid public health response systems and real-time communication for expert advice to prepare for and manage outbreaks; and training of occupational health service providers in potential biological hazards, supported by clinical or laboratory-based surveillance.

## Measures for specific sectors and groups of workers

155. Exposure to biological hazards occur in many work activities but is particularly prevalent in work involving contact with humans or human-related products as in healthcare and laboratories; in agriculture, including in the animal, vegetable and grain sectors; and the waste sector.

<sup>64</sup> Jukka Takala et al., “Work-Related Injuries and Diseases, and COVID-19”, in COVID-19 and Recovery: The Role of Trade Unions in Building Forward Better, *International Journal of Labour Research* 2021 10, Nos 1–2 (Bureau for Workers’ Activities of the ILO, 2021): 42.

Paragraph 2.1 of the *Technical guidelines* includes a non-exhaustive list of biological hazards associated with nine different work activities including a reference to Recommendation No. 194.

- 156.** The ILO and other international organizations, such as the WHO and FAO, have developed technical guidance with respect to the management of biological hazards in several of these work activities. Appendix III of the *Technical guidelines* includes a list of six ILO codes of practice and four ILO, WHO and FAO publications.<sup>65</sup> Against this background it could be provided that specific measures and guidance should be adopted for sectors, occupations and work arrangements which are more exposed to biological hazards, such as: healthcare and laboratories; agriculture (including animal, vegetable and grain sectors); the waste sector; cleaners and maintenance workers; humanitarian workers; platform workers; temporary workers; informal sector workers; and migrant workers.

## Exposure of vulnerable workers to biological hazards

- 157.** In the context of recording and notification of occupational accidents and diseases, paragraph 6.2(b) of the *Technical guidelines* includes a requirement to identify safety and health problems for both women and men and young workers arising from exposure to biological agents at the workplace.
- 158.** Similarly, as regards exposure of workers, there is, in the literature, references to several other groups of vulnerable workers including pregnant and breastfeeding women, older workers, workers with high levels of exposure, persons with disabilities, workers medically predisposed to infections or allergy, including immunosuppressed workers, and migrant workers. It could be provided that such vulnerable groups require specific attention in the context of exposure to biological hazards in the working environment.

## Occupational health and occupational health services

- 159.** In line with the *Technical guidelines*, occupational health and occupational health services are of critical importance for the regular operation of workplaces and may also have a particular importance in the context of emergency preparedness and hazards anticipation. It would therefore be relevant to recall the importance of taking due account of the need to promote occupational health and provide for a progressive extension of effective occupational health services for all workers in all branches of economic activity and all undertakings in line with the Occupational Health Services Convention (No. 161) and Recommendation (No. 171), 1985. The COVID-19 pandemic has heightened the awareness regarding the impact of global health issues in the working environment. As extending occupational health services to all workers has been underscored on many occasions as an effective preventive tool, an explicit reference to the need to specifically promote occupational health seems warranted.

## Data collection, recording and notification of occupational accidents and diseases

- 160.** As noted previously, epidemiological data on exposures to biological hazards in the working environment is difficult to obtain and, in most cases, must rely on estimations. It is therefore important that Members be encouraged to develop procedures for the recording, notification and investigation of occupational diseases, accidents and, as appropriate, dangerous occurrences caused by biological hazards in the working environment; and to produce and publicize annual

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<sup>65</sup> See also para. 65 supra.

statistics on occupational diseases, accidents and, as appropriate, dangerous occurrences arising from biological hazards in the working environment.

161. It is also of critical importance to hold inquiries for cases of occupational accidents, occupational diseases or any other injuries to health which arise from occupational exposure to biological hazards that appear to reflect situations which are serious; and to publicize, annually, information on measures taken in pursuance of the national OSH policy, which arise from exposure to biological hazards in the working environment.
162. The instrument could also provide for the establishment by Members of a list of occupational diseases, including occupational diseases caused by exposure to biological hazards which should be reviewed periodically in light of recent scientific developments taking into consideration relevant international standards, namely Recommendation No.194.

## Employment injury benefits

163. In a similar vein, it is also important that the instrument or instruments provide that the workers who have been injured or incapacitated by biological hazards in the working environment, or have contracted illnesses or diseases caused, impacted or exacerbated by such biological hazards, which are considered to be an occupational injury by national law or an occupational disease in line with Recommendation No. 194 and national law, should be entitled to employment injury benefits as prescribed in the Employment Injury Benefits Convention [Schedule I amended in 1980] (No. 121) and Recommendation (No. 121), 1964. The instrument or instruments could provide that governments or social insurance bodies in collaboration with social partners should recognize and gradually enhance coverage of diseases and disorders that arise out of exposure to biological hazards in the working environment.

## Enforcement of laws and regulations

164. It would seem highly appropriate that the instrument or instruments should contain provisions in line with Article 9 of Convention No. 155 and Paragraph 5 of Recommendation No.164 where specific reference is made to the [Labour Inspection Convention, 1947 \(No. 81\)](#), and to the [Labour Inspection \(Agriculture\) Convention, 1969 \(No. 129\)](#). While this would imply a repetition of well-entrenched international labour standards, it could also be provided, as is done in the *Technical guidelines*, that labour inspectors and other officials should be specifically trained in identifying and assessing biological hazards in the working environment. It should also be noted that Conventions Nos 81 and 129 were both adopted before the concept of OSH management systems provided for in Conventions Nos 155 and 187 had been developed. In the present context it could therefore explicitly be provided that labour inspectorates should determine periodically whether adequate and effective systems for the management of biological hazards are in place.

## Action at the level of the undertaking

### Employers' duties and responsibilities

#### General duties and responsibilities

165. The instrument or instruments could lay down provisions concerning employers' duties and responsibilities with respect to prevention and protection in relation to biological hazards. Employers' general duties and responsibilities are laid down in Convention No. 155, Article 16, but

it seems warranted to repeat them here as there is a need specifically to provide for preventive and protective measures regarding biological hazards.

166. It would also be appropriate to include in the instrument or instruments provisions further detailing the type of protective and preventive measures that should be taken – in consultation with workers and their representatives as appropriate – that take due account of nationally and internationally recognized instruments, codes and guidelines, and, where appropriate, collective agreements.
167. Requirements to have systems in place to make, review and update, where necessary, risk assessments with regard to the safety and health of workers arising from biological hazards could take into account the vulnerable categories of workers provided for in national legislation or policy.
168. In taking the required measures to eliminate, control and minimize biological hazards in the working environment, it seems relevant to provide that due account should be taken of the hierarchy of controls as provided for in relevant ILO guidelines. The *Technical guidelines* include in Appendix II a model for applying the hierarchy of controls to biological hazards.
169. The instrument or instruments could also provide for a periodic review of the effectiveness and efficiency, and regular surveillance of the working environment and of workers' health; adequate and competent supervision of work processes; the provision of information, instruction and training, at suitable and periodical intervals, to managers, supervisors and workers, as well as to workers' safety and health representatives, on biological hazards in the working environment; ensuring that all workers are suitably informed about the biological risks associated with the tasks assigned to them and about the measures to be taken to prevent damage to their health, before the start of any work involving such risks; notice when there are changes in working methods and materials; and notice when new risks appear, and at periodic intervals thereafter, as necessary.
170. The instrument or instruments could also provide that the employers have a duty to investigate occupational accidents, occupational diseases, and dangerous occurrences, in cooperation with safety and health committees and/or workers' representatives, in order to identify all causes and take the necessary measures to prevent recurrences of similar events.
171. In addition, the instrument or instruments could also provide that, whenever two or more employers engage in activities simultaneously at one workplace, they should collaborate in applying the provisions regarding OSH and the working environment, including with respect to the management of biological hazards, without prejudice to the responsibility of each employer for the health and safety of its workers.

## Emergency preparedness and hazard anticipation

172. Article 18 of Convention No. 155 requires employers to provide, where necessary, measures to deal with emergencies and accidents, including adequate first-aid arrangements. Recommendation No. 164 provides no further guidance in this respect. As underscored previously, in the present context it appears essential to take measures to provide for and improve preparedness and hazard anticipation in cases of emergencies related to biological hazards in the working environment, including outbreaks of biological agent epidemics or pandemics. Chapter 7 of the *Technical guidelines*, "Preparedness and response to emergencies", refers to a need for public health authorities to define policies and action to be taken, in consultation with the most representative employers' and workers' organizations, which should then be referred to when employers develop, implement and evaluate outbreak response and management plans at the workplace.

- 173.** It could be provided that such measures should be aligned and coordinated with public health preparedness and response as well as national and international collaborative efforts regarding research; the provision of chemoprophylaxis and self-testing possibilities; and include the preparation or updating of workplace regulations for the management of emergencies related to biological hazards.

## Rights and responsibilities of workers and their representatives

- 174.** Convention No. 155 details in Article 19 the arrangements for workers and their representatives that should be in place in any workplace. Similarly, as in the case of employers' duties and responsibilities, it would seem relevant to restate these provisions in a new instrument or instruments on biological hazards in the working environment. Given the decision that "the protection of the worker against sickness, disease and injury arising out of his employment" is a fundamental element of social justice, and the definition in Convention No. 187 that a preventative safety and health culture is a culture which refers to the right to a safe and healthy working environment, it seems particularly relevant to articulate the rights and responsibilities of workers and their representatives in an express form.
- 175.** Against this background, the instrument or instruments could provide, in line with the *Technical guidelines*, that the workers' right to a safe and healthy working environment with respect to biological hazards should include a right to: be informed on the identity, properties and health effects related to the biological hazards to which they are exposed in the working environment, as well as on appropriate preventive and protective measures and their application; be consulted and involved on the identification of hazards and the assessment of risks to biological hazards that are conducted by the employer and/or by the competent authority; be consulted on measures to be taken to control any biological hazards in the working environment; be associated with the implementation of preventive and protective measures to protect themselves and other workers against biological hazards in the working environment; participate in investigations of accidents, dangerous occurrences and occupational diseases; receive, subject to the confidentiality rules for personal and medical data, reports on health surveillance and medical examinations; appeal to the competent authority if they consider that the measures taken, and the means used by the employer are inadequate for the purpose of ensuring a safe and healthy working environment; remove themselves from a work situation where they have reasonable justification to believe that there is an imminent and serious danger to their safety and health, without any undue consequences; ask for a full investigation and request that remedial actions are taken before commencing or continuing work when they have reasonable justification to believe that a work situation presents an imminent and serious danger to their lives or health due to exposure to biological hazards; be transferred to alternative work, where continued employment in a particular job is contraindicated for health reasons and under the advice of the occupational health services, if such work is available and if the worker concerned has the qualifications or can reasonably be trained for such alternative work; and receive rehabilitation.
- 176.** The instrument or instruments could also provide for workers' duties, in the light of national conditions and practice, with respect to biological hazards in the working environment and provide that workers should have the duty, in accordance with their training and the instructions and means given by their employers, to comply with prescribed OSH measures on the elimination or control of biological hazards to protect themselves and others, including through the proper care and use of the protective clothing, facilities and equipment placed at their disposal for this purpose; report promptly to their immediate supervisor or safety and health representative any working conditions which they believe could present a hazard or risk to their safety or health or that of others; and cooperate with the employer and other workers to adequately identify and

implement OSH measures addressing biological hazards following an OSH management system approach.

177. The instrument or instruments could also provide that workers' representatives should have the right to enquire into and be consulted by the employer on the appropriate aspects related to exposure to biological hazards in the working environment; and for that purpose, bring in technical advisers by mutual agreement; receive adequate information of measures taken by the employer; and be provided with appropriate training.

## Challenges

178. Exposure to biological hazards in the work environment is responsible for an important share of the global toll of work-related deaths, disability and economic losses. The state of knowledge of the extent of this problem is poor which hampers efforts to adequately address the problem. It is thus important to provide ILO constituents with the tools necessary to remedy this.
179. A further challenge is the constantly changing landscape. Biological hazards in the working environment are developing rapidly and it is a challenge for all concerned to anticipate hazards and foresee the future. There is a serious need to take further action to enhance prevention, anticipation, preparedness and resilience against biological risk factors in an attempt to minimize both the human suffering and economic costs involved.
180. The uneven spread of exposure to biological hazards in the world of work also represents a challenge. While workers in the health sector and in laboratory work are the hardest hit according to information available, these sectors are at the same time relatively well-regulated sectors. This is not the case, however, in the agricultural sector (including animal, vegetable and grain sectors) as well as the waste sector. The agricultural sector is one of the sectors that, according to the 2009 General Survey, appears to be excluded from the application of OSH protection in eight countries including, for example, India.<sup>66</sup> Furthermore, maintaining adequate and appropriate labour inspection services in the agricultural sector is a challenge, given the lack of adequate resources for labour inspectorates, including for transportation. The waste sector is, in itself, a challenging sector which would require further attention from a workplace perspective, and not only from an environmental perspective as in the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes.

## Value added of a new instrument or instruments

181. The value added of a new instrument or instruments on biological hazards in the working environment would be to provide ILO constituents with a comprehensive and forward-looking framework for the respect, promotion and realization of the right to a safe and healthy working environment in respect of biological hazards. It would not only fill a regulatory gap regarding ILO standards in the OSH area and serve as a comprehensive guide for the management of biological hazards in the working environment, but its requirements for emergency preparedness and hazard anticipation at the enterprise as well as at the national levels would also enhance the constituents' capacity to build resilience against future emergencies and hazards.
182. The new instrument or instruments would draw strength from the fact that Conventions Nos 155 and 187 are now fundamental Conventions and would contribute to a further articulation of a

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<sup>66</sup> *General Survey*, 2009, para. 36 and footnote 13.

worker's right to a safe and healthy working environment. It would also provide for a regulatory context for the *Technical guidelines* and codes of practice relevant in this area.

- 183.** Finally, the new instrument or instruments would, if adopted, constitute a significant contribution of the ILO and its constituents not only to UN SDG 8 and target 8.8 but also to SDG 3 and target 3.3.



## ► Questionnaire concerning a proposed instrument or instruments on biological hazards in the working environment

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At its 341st Session (March 2021), the Governing Body decided to place on the agenda of the 112th and 113th Sessions (2024 and 2025) of the International Labour Conference an item related to occupational safety and health protection against biological hazards (standard-setting – double discussion).<sup>1</sup>

The Governing Body noted a regulatory gap in standards concerning biological hazards. The impact of the COVID-19 pandemic has highlighted the strategic relevance of closing this gap. Promoting international policy coherence in the prevention of diseases caused by biological hazards will promote workers' health and not only protect workers at risk of infection but also contribute to containing the spread of infection, including across borders, sustaining the key services on which societies and economies rely, and preventing business disruption during a pandemic.

The purpose of this questionnaire is to request the views of Member States on the scope and content of the possible future instrument or instruments. As set out in article 45(1) of the Standing Orders of the Conference, governments are requested to consult the most representative organizations of employers and workers before finalizing their replies, which should reflect the results of that consultation, and to indicate which organizations have been so consulted. Such consultations are mandatory in the case of Members that have ratified the Tripartite Consultation (International Labour Standards) Convention, 1976 (No. 144). Governments are also reminded of the importance of ensuring consultations among all relevant departments when formulating their replies. The replies received should enable the International Labour Office to prepare a report for the Conference. In accordance with established practice, the most representative organizations of employers and workers may send their replies directly to the Office. Replies should reach the Office by 31 July 2023. Respondents are encouraged, where possible, to complete the questionnaire in electronic format and to submit their replies electronically to the following email address: [BIOLOGICALHAZARDS@ilo.org](mailto:BIOLOGICALHAZARDS@ilo.org). Respondents may also submit their replies in hard copy to the International Labour Organization, Labour Administration, Labour Inspection and Occupational Safety and Health Branch, Governance and Tripartism Department, Route des Morillons 4, 1211 Geneva, Switzerland.

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<sup>1</sup> ILO, *Minutes of the 341st Session of the Governing Body*, para. 50(b).

## I. Form of the international instrument or instruments

1. Should the International Labour Conference adopt an instrument or instruments concerning biological hazards in the working environment?

Yes     No

### Comments

Double click to type comments

2. If so, should the instrument or instruments take the form of:

(a) a Convention?

(b) a Recommendation?

(c) a Convention supplemented by a Recommendation, as two separate instruments?

(d) a Convention comprising both binding and non-binding provisions? <sup>2</sup>

### Comments

Double click to type comments

## II. Preamble

3. Should the instrument or instruments have a Preamble that:

(a) recalls the recent recognition of a safe and healthy working environment as a fundamental principle and right at work by the International Labour Conference at its 110th Session (2022)?

(b) emphasizes the need for improved emergency preparedness and anticipation of hazards and risks and comprehensive management of biological hazards in the working environment through coordinated efforts of all the actors in the world of work, as evidenced by the COVID-19 pandemic?

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<sup>2</sup>This model was adopted for the first time for the Maritime Labour Convention, 2006 (MLC, 2006). The structure of the MLC, 2006 differs from that of other ILO Conventions and is organized in three main parts: the Articles, placed at the beginning, setting out broad principles and obligations, followed by a Code which contains mandatory Standards and non-mandatory Guidelines. It is the first time that an ILO instrument includes both mandatory and non-mandatory provisions. For more details, see the [Frequently asked questions on the MLC, 2006](#) (especially A9, A10, A11 and A12).

- (c) stresses the importance of promoting international policy coherence and cooperation in the prevention of communicable as well as non-communicable diseases caused by biological hazards in the working environment?
- (d) recognizes the particular relevance of the Occupational Safety and Health Convention, 1981 (No. 155), and its Protocol of 2002, the Occupational Health Services Convention, 1985 (No. 161) and the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187), for the sound management of biological hazards in the working environment?
- (e) underlines the need to revise the Anthrax Prevention Recommendation, 1919 (No. 3), and to close the gap in coverage in relation to the regulation of other biological hazards in the working environment, notably in the light of scientific developments?
- (f) notes that the proposed instrument or instruments would constitute the first international instrument(s) comprehensively addressing biological hazards in the working environment?
- (g) addresses any other considerations? If so, please specify.

**Comments**

Double click to type comments

**III. Definitions**

4. Should the instrument or instruments include a definition of the term “biological hazard” to read: “any microorganism, cell or other organic material that may be of plant, animal or human origin, including any which have been genetically modified, and which can cause harm to human health. This may include but is not limited to bacteria, viruses, parasites, fungi, prions, DNA materials, bodily fluids, and any other microorganisms and their associated allergens and toxins”?<sup>3</sup>

Yes     No

**Comments**

Double click to type comments

5. Should the term “biological hazard” be considered to include biological vectors or transmitters of disease?

Yes     No

**Comments**

Double click to type comments

<sup>3</sup>Technical guidelines on biological hazards in the working environment, adopted by the Meeting of Experts for the tripartite validation of the technical guidelines on biological hazards, Geneva, 20–24 June 2022, MEBH/2022/1, p. 6, Purpose and scope.

6. Should any other terms be defined in the instrument or instruments? If so, please specify.

Yes  No

**Comments**

Double click to type comments

## IV. Purpose and scope

7. Should the instrument or instruments provide that it aims at providing a comprehensive and forward-looking legal framework for the respect, promotion and realization of the right to a safe and healthy working environment in respect of biological hazards?

Yes  No

**Comments**

Double click to type comments

8. Should the instrument or instruments apply to all workers and to all branches of economic activity?

Yes  No

**Comments**

Double click to type comments

9. Should the instrument, if it takes the form of a Convention, provide that Members may, after consultation with the representative organizations of employers and workers concerned, exclude from the scope of the Convention, in part or in whole, particular branches of economic activity or limited categories of workers in respect of which its application would raise special problems of a substantial nature?

Yes  No

**Comments**

Double click to type comments

10. Should the instrument, if it takes the form of a Convention, provide that Members that avail themselves of the possibility of excluding from its scope particular branches of economic activity or limited categories of workers shall, in their first report on the application of the Convention under article 22 of the Constitution of the International Labour Organization, list any branches and categories of workers thus excluded, giving the reasons for such exclusion and describing any measures taken to provide adequate protection to excluded workers, and, in subsequent reports, indicate any progress made in applying the instrument more widely?

Yes  No

**Comments**

Double click to type comments

11. Should the scope of the instrument or instruments include any other elements? If so, please specify.

Yes  No

**Comments**

Double click to type comments

## V. General provisions

### National policy

12. Should the instrument or instruments provide that each Member should, in consultation with the most representative organizations of employers and workers, formulate, implement and periodically review a coherent and comprehensive national policy on the prevention of and protection from biological hazards in the working environment?

Yes  No

**Comments**

Double click to type comments

13. Should the instrument or instruments provide that when formulating, implementing and periodically reviewing the national policy, Members should take account of relevant international labour standards, including the Occupational Safety and Health Convention, 1981 (No. 155), and its Protocol of 2002, the Occupational Health Services Convention, 1985 (No. 161) and the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)?

Yes  No

**Comments**

Double click to type comments

14. Should the instrument or instruments provide that, where appropriate, the national policy on biological hazards should be integrated into the national occupational safety and health policy, where one exists?

Yes  No

**Comments**

Double click to type comments

### Preventive and protective measures

15. Should the instrument or instruments provide that the competent authority, in consultation with the most representative organizations of employers and workers, should establish preventive and protective requirements based on an occupational safety and health management systems approach and develop guidelines and procedures regarding exposure to biological hazards in the working environment based on sound scientific criteria and established practice?

Yes  No

**Comments**

Double click to type comments

16. Should the instrument or instruments provide that where information regarding exposure to biological hazards in the working environment is insufficient, the competent authority should, in

consultation with the most representative organizations of employers and workers, consider developing precautionary measures?

Yes  No

**Comments**

Double click to type comments

17. Should the instrument or instruments provide that the competent authority should make available information on preventive and protective measures, where appropriate, regarding exposure to biological hazards?

Yes  No

**Comments**

Double click to type comments

18. Should the instrument or instruments provide that the competent authority should provide appropriate support to employers, workers and their representatives regarding relevant public health and occupational health measures?

Yes  No

**Comments**

Double click to type comments

19. Should the instrument or instruments provide that measures should be taken, in accordance with national law and practice and taking into account the *Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*, with a view to ensuring that those who design, manufacture, import, provide or transfer biological substances for occupational use:

(a) satisfy themselves that, so far as is reasonably practicable, such substances do not entail dangers for the safety and health of those using them correctly?

(b) make available information concerning the correct use and dangerous properties of such substances, including in the form of safety and health data sheets if such are available, as well as instructions on how known hazards are to be avoided?

(c) undertake studies and research or otherwise keep abreast of the scientific and technical knowledge necessary to comply with subparagraphs (a) and (b)?

(d) comply with international requirements concerning the transport of hazardous goods?

**Comments**

Double click to type comments

## Emergency preparedness and anticipation of hazards and risks

20. Should the instrument or instruments provide that the national policy should include measures to ensure preparedness for and effective management of national health emergencies and anticipation of new or emerging biological hazards and risks in the working environment?

Yes     No

### Comments

Double click to type comments

21. Should the instrument or instruments provide that such measures should include:

(a) the preparation or updating of regulations for the management of such emergencies?

(b) the establishment of early warning systems?

(c) the establishment of measures to be taken at the workplace and in the working environment in case of outbreaks of biological agent pandemics or epidemics?

(d) the establishment of mechanisms of coordination and information with public health authorities?

(e) national and international collaboration on research?

(f) provision for appropriate emergency human resources?

(g) the effective operation of healthcare facilities and essential services?

(h) material preparedness?

(i) collaboration between relevant public health, water and waste, occupational health and veterinary health authorities, and other partners?

(j) rapid response systems in public health and real-time communication of expert advice to prepare for and manage outbreaks?

- (k) training of occupational health service providers on potential biological hazards, supported by clinical or laboratory-based surveillance?

**Comments**

Double click to type comments

## Measures for specific sectors and groups of workers

22. Should the instrument or instruments provide that Members should develop, in consultation with the most representative organizations of employers and workers, specific measures and guidance for workers in sectors, occupations and work arrangements in which they are more exposed to biological hazards, such as:

- (a) workers in healthcare and laboratories;

- (b) agricultural workers (including in the animal, vegetable and grain sectors);

- (c) workers in the waste sector;

- (d) cleaners and maintenance workers;

- (e) humanitarian workers;

- (f) platform workers;

- (g) temporary workers;

- (h) workers in the informal economy;

- (i) migrant workers?

**Comments**

Double click to type comments

23. Should the instrument or instruments provide that Members should develop guidance addressing the needs of specific groups, such as pregnant and breastfeeding women; young workers; older workers; workers with disabilities; and workers medically predisposed to infections or allergies, including immunosuppressed workers?



Yes  No

**Comments**

Double click to type comments

**24.** Should other sectors or groups of workers be mentioned? If so, please specify.

Yes  No

**Comments**

Double click to type comments

**25.** Should the instrument or instruments provide that, in developing specific measures and guidance, Members should take due account of available, internationally agreed technical and practical guidance developed by the International Labour Organization and other international organizations regarding the management of biological hazards?

Yes  No

**Comments**

Double click to type comments

## Occupational health and occupational health services

**26.** Should the instrument or instruments provide that, in taking preventive and protective measures regarding biological hazards in the working environment, Members should:

(a) take due account of the need to promote occupational health?

(b) progressively extend occupational health services to all workers, in all branches of economic activity and all undertakings, in line with the Occupational Health Services Convention (No. 161) and Recommendation (No. 171), 1985?

(c) ensure the coordination and efficient use of national health and labour infrastructures, expertise and resources for the provision of occupational health services to workers?

**Comments**

Double click to type comments

## Data collection, recording and notification of occupational accidents and diseases

**27.** Should the instrument or instruments provide that the competent authority should establish, implement and regularly review, in the light of national conditions and in consultation with the most representative organizations of employers and workers, procedures for:

(a) the reporting, recording, notification and investigation of occupational diseases, accidents and, as appropriate, dangerous occurrences, caused by biological hazards in the working environment?

- (b) the production and publication of annual statistics on occupational diseases, accidents and, as appropriate, dangerous occurrences, caused by biological hazards in the working environment?
- (c) the holding of inquiries for cases of serious occupational accidents, occupational diseases or any other injuries to health caused by exposure to biological hazards in the working environment?
- (d) the annual publication of information on measures taken under the national occupational safety and health policy which address exposure to biological hazards in the working environment?

**Comments**

Double click to type comments

**28.** Should the instrument or instruments provide that Members should:

- (a) include occupational diseases caused by exposure to biological hazards in their national list of occupational diseases?
- (b) periodically review the list in the light of recent scientific developments?
- (c) take into consideration relevant international standards, including the List of Occupational Diseases Recommendation, 2002 (No. 194)?

**Comments**

Double click to type comments

## Employment injury benefits

**29.** Should the instrument or instruments provide that workers who have been injured or incapacitated by biological hazards in the working environment, or have contracted illnesses or diseases caused, impacted or exacerbated by such biological hazards, should be entitled to employment injury benefits or compensation, in accordance with national law and practice?

- Yes     No

**Comments**

Double click to type comments

## Enforcement of laws and regulations

**30.** Should the instrument or instruments provide that Members should ensure the enforcement of national laws and regulations concerning biological hazards in the working environment through an adequate and appropriate system of inspection and, where applicable, other mechanisms for ensuring compliance?

Yes  No

**Comments**

Double click to type comments

31. Should the instrument or instruments provide that the competent authority should ensure that labour inspectors and other competent officials, as appropriate, undergo specific training on biological hazards in the working environment?

Yes  No

**Comments**

Double click to type comments

32. Should the instrument or instruments provide that, in discharging their duties, labour inspectors should assess compliance with national laws and regulations requiring that effective occupational safety and health management systems regarding biological hazards in the working environment are in place?

Yes  No

**Comments**

Double click to type comments

33. Should the instrument or instruments provide that Members should apply adequate penalties for violations of national laws and regulations concerning biological hazards in the working environment?

Yes  No

**Comments**

Double click to type comments

## VI. Duties and responsibilities of employers

### General duties and responsibilities

34. Should the instrument or instruments provide that employers should, so far as is reasonably practicable, take appropriate and necessary preventive and protective measures to ensure that biological substances and agents under their control are without risk to health?

Yes  No

**Comments**

Double click to type comments

35. Should the instrument or instruments provide that employers' duties and responsibilities with respect to biological hazards in the working environment should include preventive and protective measures, based on an occupational safety and health management systems approach, that take due account of nationally and internationally recognized instruments, codes and guidelines, and, where appropriate, collective agreements, and that include:

- (a) adequate and appropriate systems to identify biological hazards in the working environment, in consultation with workers and their representatives?

- (b) requirements to have systems in place to conduct, review and, where necessary, update, assessments of the risks to the safety and health of workers arising from biological hazards, taking due account of specific sectors and groups of workers?
- (c) requirements to take all reasonable and practicable measures to eliminate, or if this is not possible, control and minimize, biological hazards in the working environment, taking due account of the hierarchy of controls provided for in relevant ILO guidelines?
- (d) the provision of adequate and appropriate personal protective equipment, free of charge for workers, where a residual biological hazard cannot be controlled through other measures?
- (e) requirements to arrange for the periodic review of the effectiveness and efficiency of personal protective equipment, regular surveillance of the working environment and of workers' health, and adequate and competent supervision of work processes?
- (f) requirements to ensure the provision of information, instruction and training, at suitable and regular intervals, to managers, supervisors and workers, as well as to workers' safety and health representatives, on biological hazards in the working environment?
- (g) requirements to make the necessary arrangements to ensure that all workers are suitably informed of the biological risks associated with the tasks assigned to them and the measures to be taken to prevent damage to their health, before they start any work involving such risks, when there are changes in working methods and materials, when new risks appear, and at regular intervals thereafter, as necessary?
- (h) the investigation of occupational accidents, diseases and dangerous occurrences, in cooperation with occupational safety and health committees or workers' representatives, in order to identify all causes and take the necessary measures to prevent recurrences of similar events?

**Comments**

Double click to type comments

36. Should the instrument or instruments provide that whenever two or more employers engage in activities simultaneously at one workplace, they should collaborate on applying the provisions regarding occupational safety and health and the working environment, including with respect to the management of biological hazards, without prejudice to the responsibility of each employer for the health and safety of its workers?

Yes     No

**Comments**

Double click to type comments

## Emergency preparedness and anticipation of hazards and risks

37. Should the instrument or instruments provide that employers' duties and responsibilities with respect to biological hazards in the working environment should include taking measures to ensure preparedness for effective management of health emergencies related to biological hazards in the working environment, including outbreaks of infectious diseases?

Yes     No

### Comments

Double click to type comments

38. Should the instrument or instruments provide that such workplace measures should:

(a) be aligned and coordinated with public health preparedness and response plans?

(b) include the preparation or updating of workplace regulations on the management of emergencies related to biological hazards?

(c) provide for chemoprophylaxis and self-testing possibilities?

### Comments

Double click to type comments

## VII. Rights and responsibilities of workers and their representatives

39. Should the instrument or instruments provide that workers, in line with national conditions and practice, have the right to:

(a) be informed of the biological hazards to which they are exposed in the working environment, and appropriate preventive and protective measures and their application?

(b) be consulted on the identification of biological hazards and assessments of risks to biological hazards that are conducted by the employer or the competent authority?

(c) be consulted on measures to be taken to control any biological hazards in their working environment?

(d) be involved in the implementation of preventive and protective measures to protect themselves and other workers against biological hazards in the working environment?

(e) participate in investigations of accidents, occupational diseases and dangerous occurrences?

- (f) receive, subject to the confidentiality rules for personal and medical data, reports on health surveillance and medical examinations, including as regards biological hazards?
- (g) appeal to the competent authority if they consider that the measures taken and the means used are inadequate for the purpose of ensuring a safe and healthy working environment?
- (h) remove themselves from a work situation without any undue consequences, where they have reasonable justification to believe that there is an imminent and serious danger to their safety and health due to exposure to biological hazards, and should inform without delay their immediate supervisor and the workers' representative?
- (i) request a full investigation and remedial action before they begin or continue their work, where they have reasonable justification to believe that a work situation presents an imminent and serious danger to their lives or health due to exposure to biological hazards?
- (j) be transferred to alternative work, where continued employment in a particular job is contraindicated for health reasons due to exposure to biological hazards and under the advice of the occupational health services, if such work is available and if they have the qualifications or can reasonably be trained for such alternative work?
- (k) receive rehabilitation in the event of an injury, illness or disease caused, impacted or exacerbated by biological hazards in the working environment?

**Comments**

Double click to type comments

40. Should the instrument or instruments provide that workers' representatives have the right to enquire into, and be consulted by the employer on, all aspects related to exposure to biological hazards in the working environment, receive adequate information on measures taken by the employer and be provided with appropriate training?
- Yes     No

**Comments**

Double click to type comments

41. Should the instrument or instruments provide that workers, in the light of national conditions and practice, have the responsibility to:
- (a) comply, in accordance with their training and the instructions and means provided by their employers, with prescribed occupational safety and health measures on the prevention of and protection from biological hazards to themselves and others, including through the proper care and use of the protective clothing, facilities and equipment made available to them for this purpose?

- (b) report promptly to their immediate supervisor or safety and health representative any working conditions which they believe could present a biological hazard or risk to their safety or health or that of others?

- (c) cooperate with the employer and other workers to adequately identify and implement occupational safety and health measures addressing biological hazards, following an occupational safety and health management system approach?

**Comments**

Double click to type comments

## VIII. Methods of application

42. Should the instrument, if it takes the form of a Convention, provide that it could be applied by means of national laws and regulations, as well as through collective agreements or other measures consistent with national practice?

Yes     No

**Comments**

Double click to type comments

## IX. Other issues

43. Are there any other aspects not covered by the present questionnaire that ought to be taken into consideration when drafting the instrument or instruments? If so, please specify.

Yes     No

**Comments**

Double click to type comments

## ► Appendix

### Excerpt from the *Technical guidelines on biological hazards in the working environment*

#### ► Non-exhaustive list of biological hazards associated with work activities <sup>1</sup>

List of activities	Possible hazards and risks
Work in food production plants	<ul style="list-style-type: none"> <li>• allergies and other diseases caused by moulds/yeasts, bacteria and mites;</li> <li>• organic dusts of grain, milk powder or flour contaminated with biological agents;</li> <li>• toxins such as botulinus toxins or aflatoxins; and</li> <li>• antimicrobial-resistant pathogens.</li> </ul>
Work in agriculture, forestry, horticulture, animal food and fodder production	<ul style="list-style-type: none"> <li>• bacteria, fungi, mites and viruses transmitted from animals, parasites and ticks;</li> <li>• respiratory problems due to microorganisms and mites in organic dusts of grain, milk powder, flour and spices;</li> <li>• specific allergic diseases, such as farmer's lung and bird breeder's lung;</li> <li>• diseases caused by specific risks, such as green tobacco sickness, monkey fever, bites, stings, venom and vector-borne diseases; and</li> <li>• antimicrobial-resistant pathogens.</li> </ul>
Work in healthcare and community services	<ul style="list-style-type: none"> <li>• viral and bacterial infections, including but not limited to HIV, hepatitis or tuberculosis, as well as antimicrobial-resistant pathogens;</li> <li>• diseases and accidents caused by sharps and needlestick injuries;</li> <li>• direct contact with contaminated surfaces or persons; and</li> <li>• airborne transmission of viral bacteria and fungal pathogens as well as substances and structures produced by them.</li> </ul>
Work in laboratory	<ul style="list-style-type: none"> <li>• viral and bacterial infections, including but not limited to HIV, hepatitis or tuberculosis, as well as antimicrobial-resistant pathogens;</li> <li>• diseases and accidents caused by sharps and needlestick injuries;</li> <li>• direct contact with contaminated surfaces or persons;</li> <li>• airborne transmission of viral bacteria and fungal pathogens as well as substances and structures produced by them;</li> <li>• infections and allergies caused by handling microorganisms and cell cultures, especially of organic tissues; and</li> <li>• accidental spills.</li> </ul>

<sup>1</sup> Recommendation No. 194.



List of activities	Possible hazards and risks
Work in metal-processing industry, wood-processing industry, mining industry	<ul style="list-style-type: none"> <li>• skin problems due to bacteria and bronchial asthma due to gram-negative bacteria and their endotoxins, moulds/yeasts in circulating fluids used in industrial processes such as grinding, fluids used in pulp factories, and metal- and stone-cutting fluids; and</li> <li>• bacteria and enzymes in manufacturing.</li> </ul>
Work in refuse-disposal plants, sewage purification installations	<ul style="list-style-type: none"> <li>• infections and allergies caused by organic components of biowastes, including bacteria and their fragments, fungi and their spores and mycotoxins, viruses and prions, parasites and vector-borne diseases;</li> <li>• airborne transmission of viral bacteria and fungal pathogens and the substances and structures produced by them;</li> <li>• antimicrobial-resistant pathogens;</li> <li>• infections caused by wounds due to contact with contaminated sharp objects;</li> <li>• respiratory diseases such as tuberculosis, COVID-19 and influenza; and</li> <li>• direct contact with contaminated objects or persons.</li> </ul>
Working areas with air conditioning systems and high humidity (for example, textile industry, print industry and paper production)	<ul style="list-style-type: none"> <li>• allergies and respiratory disorders due to moulds/yeasts, legionella.</li> </ul>
Work in archives, museums, libraries	<ul style="list-style-type: none"> <li>• moulds/yeasts and bacteria causing allergies and respiratory disorders; and</li> <li>• non-specific adverse health outcomes.</li> </ul>
Work in building and construction industry; processing of natural materials such as clay, straw, and reed; building redevelopment	<ul style="list-style-type: none"> <li>• airborne transmission of viral bacteria and fungal pathogens and the substances and structures produced by them;</li> <li>• infections caused by wounds due to contact with contaminated sharp objects, such as HIV;</li> <li>• respiratory diseases such as tuberculosis, COVID-19 and influenza;</li> <li>• direct contact with contaminated objects;</li> <li>• moulds (allergenic, pathogenic, toxigenic), bacteria and fungi due to deterioration of building materials; and</li> <li>• exposure to animal waste, leptospirosis and Weil's disease.</li> </ul>