UDC 351.84 (614.4)

D.O. Kaidaniuk, M.M. Baranovskyy, Dr. of A. Sc., prof.
(National Aviation University, Ukraine)

Prospects for development of biosafety in Ukrainian aviation

Consideration of existing biosafety mechanisms in airports and airlines of the world and prospects for their application in Ukrainian aviation in order to prevent biorisks and ensure the stability of the aviation industry in the epidemiological crisis.

Introduction

Today in Ukraine there is almost no biosafety in aviation. The results can be seen in the context of the COVID-19 crisis, namely the catastrophic reduction in the number of air traffic, both passenger and cargo. Of course, the situation is critical for airlines around the world, but in our country this area has been completely frozen for some time. It should also be noted that if sanitary and epidemiological measures at airports and ships were sufficiently developed and involved at the beginning of the spread of COVID-19, further deterioration of the situation and, as a consequence, the spread of the virus could be avoided and thus provide additional time for the preparation of epidemiological facilities in Ukraine. Therefore, we offer promising mechanisms for the development of biosafety to ensure overcoming the crisis in an important area of air transport, the introduction of modern methods and analyzes for the inspection of ships and airports that will meet international standards.

The aim and tasks

The main purpose of this work is to determine the current prospects for the development of biosafety in Ukrainian aviation for their further implementation through the proposed mechanisms.

The main tasks are:

- to consider and analyze national and international principles for biological, virological and bacterial safety in the aviation sector;
- in accordance with the considered principles to offer mechanisms of introduction of modern means of methods, rules and constitutions for improvement of an epidemiological condition already today.

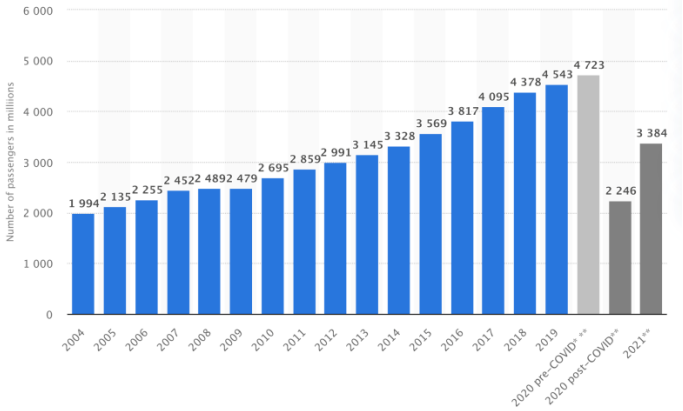
The object of research is biosafety in Ukrainian aviation.

The subjects of investigation are the mechanisms of epidemiological safety development, prospects for the implementation of international principles of biosafety and others.

Analyzing the state of air transportation

Despite the continuing economic and infrastructural crisis caused by the COVID-19 epidemic, air travel in the world began to increase in the first quarter of 2021, the data can be seen in the graph 1. At the same time, due to the inability to ensure safe epidemiological conditions in aircraft and airports, Ukraine still cannot begin to restore this area. This is another confirmation of the fact that our country needs to implement mechanisms to ensure aviation biosafety. ICAO also emphasizes the application of various actions to overcome biorisks, namely, at one of the conferences of this international organization, specific aspects of combating

biological, chemical and radiological risks were identified. Namely, it was determined about the need to create standards for the practical application of biosafety, the creation of regulatory strategies in the event of these threats. It is also necessary to develop measures to ensure biological, chemical and radiological safety at the national and international levels. Among the practical tips was the training of airport and aerodrome staff in the sequence of actions in cases of potential threats, namely the creation of training courses to prevent such situations.



Graph 1. Number of scheduled passengers boarded by the global airline industry from 2004 to 2021

World experience of biosafety in aviation

In order to determine the necessary changes in the biosafety of Ukrainian aviation, it is necessary to identify the main manifestations of biosafety in aviation of the world's leading countries. For example, in Australia, the Biosafety Act of 2015 requires those responsible for the air transport of goods with biorisks to report to the Department of Agriculture and Water Resources with statements on the biosafety of the goods and the responsibility for potential biological or chemical incidents. Also, in most developed countries, surveillance activities take place in areas of the airport, in places of potential biorisks, such as luggage storage. There are also managers and inspectors for environmental protection and biosafety at the airports, to whom each passenger can turn if there is a suspicion of danger of the specified origin. If the danger is confirmed, a special emergency service will be called.

Another example is the United States, where today there are special measures at airports to prevent the spread of COVID-19. For example, IATA recommends a temporary multi-layered approach during restart for the health and safety of passengers and crew in order to prevent the transmission of COVID-19.

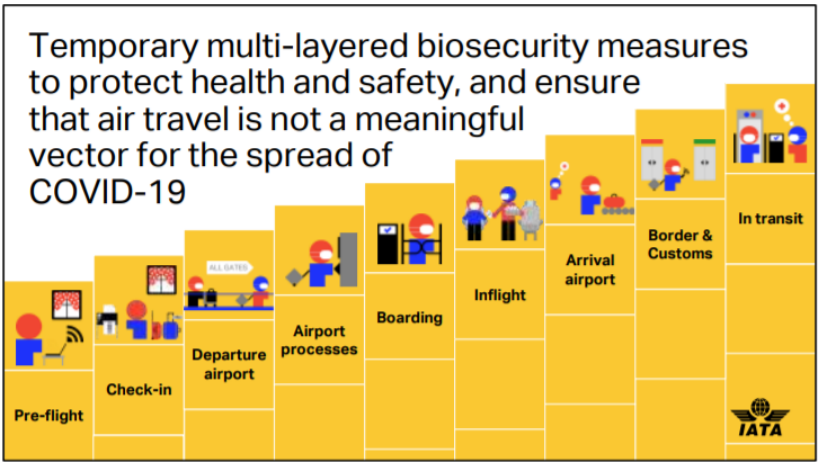


Fig. 1. Steps to prevent the spread of COVID-19 at US airports

Another example of biosecurity is the initial response and purification procedures in case of spills. Most often, these can be accidental spills of toilet waste or other biowaste that are subject to biosecurity, as this can either disguise the bioweapon or simply not investigate the routes of infection with microorganisms or viruses. Therefore, airports have special kits for waste disposal of various natures.

The last main presented mechanism of biosecurity at airports is to prevent the transportation of various potentially dangerous organisms, so it is forbidden to transport various lizards, spiders, insects, snakes, frogs, birds and also other animals. It depends primarily on the country, for example, it is forbidden to transport the Eurasian sparrow to Australia, because it is considered a pest in this country, and from a biological point of view will not be controlled by other organisms. Therefore, the transportation of animals is prohibited both in order to prevent the spread of various diseases and for the specific purposes of different states. Also, in order to disinfect staff and passengers in epidemiological areas, aircraft undergo various stages of disinfection.

Adaptations of biosecurity mechanisms in Ukrainian aviation

Thus, taking into account the presented mechanisms to ensure biological and chemical safety, we can identify options that may be used in Ukraine in the near future. Given the difficult economic situation in our country, it should be noted that the full application of all methods and rules requires investment. And to improve the situation now, it is necessary to pay attention to less cost-effective prospects, such as providing all airports with recycling systems. Conducting biosafety courses for aviation employees. It is also important to note the importance for legislative initiative, namely the implementation of laws on compliance with biosafety standards not only in aviation but also in other areas.

Conclusions

In conclusion, it can be noted that the Ukrainian aviation industry is in crisis today, due to the COVID-19 epidemic. But focus on biosecurity at airports and aircraft can significantly improve the situation both immediately and in the future. Of course, the economic capacity of our country does not involve significant investment in the field of aviation biosafety, but the involvement of international organizations, investors and creditors could provide finance for the implementation of at least the most important mechanisms identified earlier, such as airport disposal systems and restrictive laws and biosafety literacy for airport and aircraft personnel. After all, with the gradual resumption of air transportation, this area will continue to develop and pay off, which will also have a positive impact on the further development of aviation biosafety. Especially if we take into account the recently adopted course of the President of Ukraine to increase the number of both domestic and foreign air traffic and the reconstruction and construction of new airports and airfields. Therefore, using the proposed mechanisms, there are prospects for the transition of biosecurity in Ukrainian aviation to international standards.

References

1. Darwin international airport. Biosecurity incident response procedures. 2015. Australia. 9 pages.

2. Biosecurity for Air Transport Nick Careen Senior VP Airport, Passenger, Cargo and Security A roadmap to restarting aviation. IATA. 19 May 2020. 19 pages.