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MESSAGE FROM THE SYMPOSIUM CHAIR

Prof. Dr. T. Hikmet Karakoc
Symposium Founding Chair
On Behalf of the Organizing Committee

It is my great pleasure to see you at the First International Symposium on Sustainable Aviation (ISSA-2017) in Kyiv, Ukraine.

Environmental problems, especially global warming, has gain importance because of its increasing effects like climate change and drought. It is big part of the sustainability and the sustainable development. Other big part of the sustainable development is the economical concerns. These two parameters are connected closely with the energy consumption. Fossil fuels provide the most of the World's energy need. However, these fuels not only expensive but only very harmful to environment, in addition, they are going to be depleted in near future. According to the reasons it will be referred above, alternative and renewable energy sources must be searched and used instead of fossil fuels.

As it well known, aviation is the one of the biggest industry and very significant amount energy is consumed in it. Result of these, aviation industry is important part of the sustainable development and the environmental damages that are caused by fossil fuels used as energy source. Therefore, aviation should be handled in detail respect to new technologies, environmental effects, economical and sustainability.

7 keynote presentations, special sessions, oral and poster sessions are found in the ISSA-2015. In addition to that, some of the most important aviation companies.

As it already known, Kyiv is the one of the most beautiful cities of the World. It is an old, culturally developed province and capital city of Ukraine. It has a population of about 2,888,000. Kyiv has rich historical and cultural places and is welcomed to people all around the World.

We are very keen on making this Symposium a great success with its technical program and social events, which could be possible with your kind participation. We wish you a fruitful symposium.

Best wishes,

T. Hikmet Karakoc

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FEATURES OF THE CONTROL AND LAND PROTECTION OF THE AVIATION TRANSPORT

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The issues of ensuring control over the use and protection of land of aviation transport are considered. It has been established that the protection of land of aviation transport has several directions: the ecological, economic, legal and revealed essence of these directions. The system of protection of land of aviation transport both in the operating period and after the operation of the airport has been investigated. It has been confirmed that, as a result of the damage caused to the construction of airports and aerodromes on large areas, according to Article 168 of the Land Code of Ukraine, the land of the land is subject to special protection.

Keywords: control, transport, law, aviation, land, protection

The first task for today is necessary to establish and bring into force the current legislation for ensuring control over the use and land protection of aviation transport, with clear scheme of combating the illegal use of land. Land is a national treasure under special protection of the state according to 14th Article of the Constitution of Ukraine. There are land of aviation transport under state's protection also. Land protection is a system of legal, organizational, economic and other measures that are aimed at the rational use of land the prevention of unjustified removal of agricultural land, reproduction against harmful anthropogenic influences, and increase of soil fertility, increase of productivity of forest land lands, provision of a special regime for the use of lands of nature conservation, recreation, recreation and historical and cultural purposes according to 162 Article of the Land Code of Ukraine. In turn, the rational use of land is the achievement of maximum effect in the realization of land use goals, taking into account the useful interaction of land with other natural factors. Unfortunately, the concept of "rational use of land" is not explained at the legislative level.

Land Protection of aviation transport has several directions:

- Ecological direction is the protection of soils during the construction of airports, airfields, runways and the land protection of aviation transport with adjacent land plots during the operation of aviation transport facilities;
- Economic direction is based on the justified economic use of land for the purpose of obtaining profits;
- The legal direction is based on the normative fixing of the procedure for the use of land of aviation, transport and legal liability for violation of legislation in this area.

Aviation land need protection, both before and after the operation of the airport. There are soil damages on large areas when the airports and airfields are being built. Therefore, soil is subject to special protection according to 168 Article of the Land Code of Ukraine. Carrying out earthworks for the construction of airfields and excavation work for the construction of highways is largely different. The distinction of organization of

aerodrome - construction works is that they are held on relatively wide (up to 1 km.) And short (up to 4-5 km.) Squares. The complex of ground works at the aerodromes includes work with soil. These works are carried out in three stages:

- removal of the soil and its temporary movement;
- restoration of soil;
- agrotechnical works on the sites after the restoration. In order to increase the provision of land and environment protection against the adverse effects of aviation, the ICAO airspace division divides land use around airports at:
 - compatible (industrial, commercial use, etc.);
 - incompatible (building of residential buildings, schools, etc.)

The legal regulation of the use and protection of land in Ukraine, unfortunately concerns mainly agricultural lands, with regard to the land of Ukraine's air transport, it is almost absent and requires further elaboration and new developments in accordance with world standards.

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MODELING OF ECOLOGICAL SYSTEMS BY METHODS OF THE THEORY OF RADIOCAPACITY AND RELIABILITY WITH APPLICATION OF GIS TECHNOLOGIES

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SUMMARY

Mathematical models and analytical GIS models for migration and accumulation of radio nuclides have been constructed. Models' verification for real objects and prognosis of radioecological processes on corresponding territories have been realized.

Keywords: modeling of radioecological processes, radiocapacity of ecosystems, counter-measures

After accidents on the Chernobyl nuclear power plant and Fukushima-1 mass field researches on levels of radionuclide contamination of natural habitats – atmosphere, soil, plants and animals – began to be conducted. These extensive investigations have needed systematization and formalization by special algorithms and models. Among mathematical methods of radionuclide transport modeling the method of chamber models (box models) is widely applied. Development of geographical informational systems (GIS) leads to wider application of mathematical-cartographic methods in ecological investigations, which combine cartographic models reflecting spatial differentiation of ecosystem components' states and mathematical models of system's dynamics. The GIS concept itself includes comprehensive possibilities of collecting, integration and analyses of data distributed in space or attached to concrete territory. Due to this GIS-technologies are used successfully in ecological investigations, in particular, for creation of maps of main environmental parameters.

We proposed chamber models for agricultural ecological system for trophic chain "soil" - "fodder plants" - "cattle" - "food" - "human". On the basis of software ERSI ArcGIS analytical GIS model was constructed which allowed analyzing and forecasting migration of radio nuclides in ecosystems.

A model must satisfy two requirements: to reflect those features of the investigated object which are under research and to be adequate to the investigated original. According to these requirements the modeling process can be divided into four steps: qualitative analysis, mathematical realization, verification on the basis of field data and analysis of the model. In our investigation constructed chamber models were verified for real ecosystem of the village Galuzia (Volynska oblast) which was exposed to radiation load after Chernobyl accident. The model includes all 137Cs radionuclide flows. As a result of modeling assessments and prognosis of expected pollution of food (milk, meat) by 137Cs radionuclide have been obtained. It was reflected in values of collective dose load for people. Results of modeling showed that in such villages as Galuzia essential dose load had been formed not immediately after the accident but only in 1992-1994. Such territories are

characterized by essential accumulation of collective dose for people during 30-40 years after the accident which is provided by 1% of 137Cs radionuclide in the given ecosystem.

On the basis of proposed analytical GIS model maps of radiocapacity indices for the sanctuary "Lisnyky" in Korocha-Zaspa (near Kyiv) were received. They allow assessing and predicting migration of radio nuclides in the landscape. By using parameters which affect on redistribution of radio nuclides, maps of initial uniform contamination of territory by 137Cs and the maps of radio nuclides redistribution after 10, 20 and 30 years after accident have been constructed. Investigation shows strongly marked concentration of radio nuclides in zones of landscape fall (for given territory it corresponds to swamps).

Proposed methods of modeling of radioecological processes allow assessing reliability of ecosystem's components. This approach can be used for estimation of efficiency of different types of counter-measures for decreasing radiological contamination of given territories.

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