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Monitoring of atmospheric air in Ukraine: the state and problems in connection with military operations

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SUMMARY

In the article the normatively-legal and theoretical aspects of monitoring of atmospheric air in Ukraine taking into account experience of EU, whole systems of monitoring, state of government control and obstacle are considered for his practical input. Importance of actions of public organizations, that will realize commercial projects and scopes of research of quality of atmospheric air, is analysed, forming a request for access to the indexes of ecological situation with the input of communication strategy of results of estimation. The described programmatic foods are in industry of guard of atmospheric air of Ukraine. Direct and indirect influence of battle actions is appraised in Ukraine on the state of contamination of atmospheric air, consequences from that will have long-term negative influence. It is marked the necessity of development for the post-war period of the national automated network of the stations of monitoring of quality of atmospheric air in Ukraine.

Introduction

One of priority national interests of Ukraine there is providing ecologically and technically safe terms for life of society, so as an ecological situation that is folded presently characterized as a crisis. Threats carry that external character direct-coupled with safe vital functions populations and states on the whole in case of origin of war or local armed conflicts, origin be what technogenic ecocatastrophes that carry after itself global character outside Ukraine and can inflict negative influence on a population and territory. Internal threats are usually the emergencies of technogenic and natural character. Ecolaw that for today operates in Ukraine (a century of 33 Laws of Ukraine is "About the guard of natural environment") as sees the factors of safety of natural environment the special norms of ecological safety, such as: maximum possible extrass and upcasts of contaminating chemicals in an environment, limits of possible negative influence on him of physical and biological factors et al.

Materials and research methods

Materials for research a normatively-legal base on the ecolaw of Ukraine and monitoring researches of public organization served as "Founding "Open society", these Ministries of defence of environment and natural resources of Ukraine.

Results

Monitoring of atmospheric air is watching his state. The monitoring system pursues such aims: a 1) determination of levels of pollutants in different environments, their distribution in space and in time; 2) determinations of sizes and speeds of distribution of streams of contaminents, possible ways of their transformation; 3) decisions of problem of compatibility of results of the analyses conducted by different laboratories; 4) providing of the interested users information necessary for making decision in relation to the removal of contaminations on different levels. In Ministry of Health of Ukraine ratified by an order from November, 21 in 1997 № 336 the envisaged norms internalss of atmospheric air, that is presented by the norms of concentrations of contaminents in atmospheric air, approximately by the safe levels of influence of contaminents in atmospheric air of the inhabited places. General organization and co-ordination of subjects of monitoring of atmospheric air in Ukraine are carried out by Ministry of energy and defence of environment of Ukraine. Monitoring of quality of atmospheric air in Ukraine is carried out by government hydro meteorological service, where watching is conducted his state in 53 cities of Ukraine, 162 stationary and 2 rout posts of supervisions, 2 stations of transfrontal transfer. The tests of quality of atmospheric air take in set time and compare with maximum possible concentrations. Tests take in the hand mode, and to execute such work in the conditions of military operations not always maybe. Besides, on regulation of verification of atmospheric air comes true on content only of certain harmful substances (to the dust, dioxide of sulphur, oxide of carbon, dioxide of nitrogen and lead). However yet to beginning of military operations in Ukraine the activists of public organizations paid attention to absence of monitoring of content of particulate matters, that are very insalubrious people. Also not fixed by regulation and not watched off type contaminents substances that is distinguished from the explosions of bombs or rockets are certain.

On the basis of analytical researches of GO "Founding "Open Society" that worked within the framework of under back from global philanthropic organization of Luminate was educed that basic problems from monitoring of quality of atmospheric air of Ukraine are: absence of the systematic financing; absence of strategy of development of monitoring possibilities; absence of communication strategy (Koltsov & Shevchenko, 2018). At national level distinguish a few problems that create obstacles on the way of realization of the system of monitoring of quality of atmospheric air in Ukraine : a 1) Ministry of ecology and natural resources practically is not plugged in the system of monitoring, as basic suppliers of data (Ukrainian hydro meteorological center) submits to Ministry of

internal affairs; 2) methodological to imperfection, in particular, aggregating of data takes place at regional level that does impossible access to basic data. Process of development of the systems of monitoring of quality of air at regional level in Ukraine began only. Yes, at the end of 2017 in the Dnepropetrovsk area started the system of monitoring of level of contamination of atmospheric air in the test mode.

Table 1 *Programmatic foods are in industry of guard of atmospheric air (from data of Ministry of defence of environment and natural resources of Ukraine)*

Name software product	Version	Setting
EOL	version 3,5	Program of calculation of contamination of atmosphere
EOL - FON	version 4,3	Program of calculation of contamination on EOM + calculation of base-line concentrations
PLENER	version 1,25	Program of calculation of contamination on EOM
EOL +	version 5	Program of calculation of contamination on EOM
EOL - 2000	version 3,1	Program of calculation of contamination on EOM
TANDEM	version 1	Consulting model PGO
EXPERT	version 1	Stowage of bank of data of PGO
TAKING OF INVENTORY		The system is for processing of data of taking of inventory of sources of extrass
NEORIST	version 1	Calculations of dustborne extrass of contaminents

Ukraine signed an agreement about introduction of legislation of EU in industry of guard of environment that opened for her new possibilities in relation to introduction of standards in the field of given, takes place within the limits of eight sectors and regulated by 29 sources of right - Directives and Regulations of EU (Koltsov & Shevchenko, 2018). The important results of monitoring are given by YourAirTest is the system of monitoring of quality of atmospheric air, that collects, processes and gives to the users the tested and actual information about composition and quality of atmospheric air in any point of the world in accordance with the international standards of AQI. In EU the General research center (Joint Research Center) of the European commission is work out Catalogue of measures on the improvement of quality of atmospheric air, that contains the best practices of countries of EU. Taking into account these practices of Ministry of defence of environment and natural resources of Ukraine worked out Methodical recommendations in relation to maintenance and order of development of plans of improvement of quality of atmospheric air and short-term plans of actions in Ukraine. Exactly their stowage is envisaged by Directive of EU of 2008/50/EU about quality of atmospheric air and more clean air for Europe. In July, 2019 by Government of Ukraine Resolution № 827 was approved "Some questions of realization of the state monitoring in industry of guard of atmospheric air". On implementation of the marked resolution by the orders of Ministry of environment of Ukraine № 267 from 01.08.2022 and № 268 from 01.08.2022 the orders of development of short-term plans of actions and plans of improvement of quality of atmospheric air were ratified accordingly (About claim of Methodical recommendations.., 2023).

Presently public organizations that will realize commercial projects and scopes of research of quality of atmospheric air operate in Ukraine, separate IT- create foods that head for an improvement in the sphere of informing of quality of air. One of successful projects that will be realized by public organizations there is a project of EcoInfo in Ukraine. However a problem question is that in him the not marked methodology in relation to the indexes of measuring of quality of atmospheric air (Koltsov & Shevchenko, 2018). Other successful projects are Making Sense, EcoCitizens. Work is

conducted from development of mobile additions that allow to get actual state information atmospheric air. By the source of data for the marked reflection given official state monitoring. Public organizations form a request for access to the indexes of ecological situation, confirming actuality of development of the state system of the ecological monitoring together with of communication strategy of results of estimation.

To beginning of the intruding to Ukraine, the main source of contamination of atmospheric air were extrass of industrial enterprises, that presented 65 percents of all harmful substances that got in air. However for every separate city of source of contamination differed substantially. However for every separate city of source of contamination differed substantially. For example, industry entailed most contamination of air in such cities, as Mariupol, Zaporizhzhya, is Crooked pir, while in Kyiv main reason of contamination of atmospheric air was a motor transport.

The conducts of active battle actions in Ukraine result in considerable contamination of atmospheric air, consequences from that will have long-term negative influence on a health of people. The state of atmospheric air gets worse as a result of battle actions in direct and indirect methods. Direct influence of battle actions is detonation of projectiles, use of artillery weapon and drop bombs. In particular, very harmful compounds - carbon and brown monoxide, dioxide of nitrogen appear during detonation of rockets and projectiles, formaldehyde and others like that. In some cases rockets get in compositions of live ammunition, that detonate too. Bits and pieces of projectiles contain sulphur, copper, iron and carbon. At a hit in soil they contaminate water that results in poisoning of people and animals. Indirect influence of battle actions is fires in ecosystems, explosions of petroleum bases, attack on industrial objects and compositions of hazwastes. In particular, from fires on petroleum bases heavy metals, dioxide of sulphur, are thrown out in atmospheric air, nitric oxides and others like that. They harm to the health of people, and pollutants that get in soil worsen quality of underground and superficial waters. From military operations in Ukraine also fires became more frequent in forest arrays. They are dangerous not only the extrass of pollutants in an atmosphere but also destruction of ecosystems (by the loss of vegetation that took in carbon dioxide during photosynthesis; by the loss of biovariety that negatively influences on firmness of the system). From data of Ministry of environment of Ukraine, presently the volumes of extrass from spunking of the forests, petroleum bases and other objects are presented by the 182 million tons of harmful substances in Ukraine. A ministry marks that the volume of extrass of harmful substances in atmospheric air in times of military operations equals for today the volume of extrass of one metallurgical enterprise for the whole year of work also (Ministry of Environmental Protection and Natural Resources, 2023). In Ukraine the worked out map of quality of air is from SaveEcoBot.

On the modern stage military operations accelerate the processes of change of climate not only in Ukraine but also in it to the North hemisphere. In particular, scale fires in the forests, petroleum bases, compositions of live ammunition is so considerable, that their smokes are able to walk up high distance in an atmosphere, with clouds to spread to the considerable area. All in the wild closely and military operations destroy our planet mercilessly.

The state ecological inspection of Ukraine is carry out the first counts of the losses inflicted by a country-aggressor as a result of contamination of atmospheric air. Proofs of crimes against the environment of Ukraine will be used in further for the penalty of reparation. The real estimation of the inflicted harm can be done only on completion of active battle actions. In a post-war period it is necessary also to develop the national automated network of the stations of monitoring of quality of atmospheric air in Ukraine, as the state of air has direct influence on a health.

Conclusions

Thus, the normatively-legislative and theoretical aspects of monitoring of atmospheric air are analysed in Ukraine, having regard to experience of EU with the input of communication strategy of co-operating with public organizations. In a post-war period it is necessary also to develop the national automated network of the stations of monitoring of quality of atmospheric air in Ukraine, as the state of air has direct influence on a health.

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