HAZARDS AND RISKS OF EMERGENCIES IN BELGOROD REGION

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Annotation
Hazards and risks of emergency are considered in the Belgorod region, time-space regularity of the hazard nature and technogenic process are analyzed.

Key words
emergency, chemical risk, hydrodynamic risk, wilderness flre, elemental calamity, environmental threat.

With the developing of modern society the influence of hazard technogenic and natural process and the human and flnancial loss is increased. It is considered with the overpopulating, because of people should expand new territory, where the environmental conditions and processes are less favorable to life. The global climate change conditions the increasing of frequency and intensity of natural and hazard phenomenon in environment.[1]

In view of technogenic development the growth of the hazardous natural phenomenon make for the great amount of the plants, factories, filing stations, farming and live-stock dressing complex The most open to injury districts can be irreversibly destroy by technogenic process. It can make pollution of environment and natural disaster. The result is the lowing of economic, social and ecological potential of the region.

Every region has its own natural hazards.

Belgorod region has developed producing, social infrastructure. Agribusiness industry is the most popular today.

The limited fact of the security situation of the population and ecologic-economic region development is showing separate or complex natural or technogenic phenomenon. That is why we need to classify this process and divide the regularity and valuation of their influence on the environment of the region and vital-activity of population.

The object of the research is dangerous technogenic and natural process of Belgorod region.

The subject of investigation time space regularity of manifestation of dangerous technogenic and natural process in Belgorod region

The main works objective to analyze danger of the technogenic and natural process in Belgorod region and to value the danger level.

The Belgorod region is located in the Central part of the Russian plain and stretches from North to South at a distance of 190 km, from West to East - 270 km. Most of the territory is located in forest-steppe and South-Eastern part is in the steppe zone. Its flat surface, dissected by numerous river valleys and dense gully network is in General wavy-beam or wavy rolling characteristics [4].

Through the population density (55 of people per square meter) region is in the 18 place, through the population size (1,5 mln. people.) is in the 34 place, through the territory (27 thousand square km) is in the 74 place among the constituent entities of the Federation.

The region takes up leading position in ore production, cement producing, asbestos-cement production, house, cultural and welfares buildings, gasification, community redevelopment, construction of roads, developing of agribusiness industry.

At the same time plowed fields (up to 80%), the high concentration of agriculture and industry objects, mining industry and buildmg industry, engineer and transportation links, main gas line, petrol-pipe, ammonia pipe, boarder area position of the region, active dispersal movements is the reason of the anthropogenic and technogenic loading .

There are 414 objects at the region which are important for the life-supporting and hazardous for population, including 2 water basins, 141 emergency hydrosystems, 57 chemical hazardous plants, 141 fire hazardous objects, 15objects of the electrical energy industry, 5main pipe-lines, 3 explosive objects.[2]

In compliance with the Concept of safety of the Belgorod region objects of forecasting are emergencies as complex of different characteristics, sources (objects, phenomenon and process), origin and developing and risks which are linked with them.

Emergencies are subdivided through the 3 categories: technogenic, natural, biology-social. Technogenic situations are transport accidents, wildflres, the explosion and collapse of building, chemical and radioactive accidents, hydrodynamic accidents in the water basin. Biology-social situations are overflowing, air pollution, natural waters and soils, developing of soil-erosive, karst, subsoil erosion, waterloggmg, acidification, salting.[3]

In concordance with the amount of injured persons, financial damage, scale of damage zone emergencies are classifled as local, topical, territorial, regional, federal, trans-boader. The most popular emergencies are local, topical and territorial in Belgorod region.

Forecasting of affections and destructions is realized for:

a) Overflowing – for objects which can be damaged by waterlogging, when hydroelectric complex is bursted, for objects which are in zone of seasonal overbank and rainfall fiooding

b) Wildfires- forest area with forest massif square area more than 20 square meters

c) Storms and hurricanes – for districts where natural phenomenon characteristics exceed critical moments.

d) Acts of terror through the dangerous objects and objects of life-sustaining activity and heavily trafficked facilities.

e) Extremism – in the places with difficult extremism situation, this has economic and social origin.

The high-level of danger of natural and technogenic emergencies saves in the Belgorod region. The tendency of growing amount and scale of emergencies consequences keep in Belgorod region too

The danger of the technogenic emergencies for population and territory originates from accidents:

- At the critical infrastructures, where the inflammable and highly explosive, hazardous chemicals (radioactive) and biology substances are produced, recycled, kept and transported
- At different plants, storage facilities, engineer facilities and communication lines, damaging can breach normal life-sustaining activity (water, gas , heat conveying,

electric power supplying, house- bullding overflowing), damaging of canalization and disposal of sewage .

There are 5 towns in the region with very dangerous chemical situation. The towns with the first class danger are Belgorod, Stariy Oskol, Schebekino; Gubkin, Alekseevsky are of the second class danger. There are fifty seven chemically dangerous objects among them there are 35 of the first, second and third class of danger. The total number of used and kept emergency stocks is 30264 tones which includes 93,6 t. of chlorine, 1553 tons of ammonia. If an emergency situation appeases the area of possible chemical pollution can be 675, 5 square km. Where 392,12 thousand of people live, it can lead to total loss of 234,4 thousand people. There are 3 explosion hazardous objects. They are storage facilities of explosive compounds of Lebedinskiy and Stoylenskiy mining and concentration complexes, Yakovlevskiy mining. There are 191 hazardous facilities. [2]

The number of potential big fires is 20 and the total are of potential complete fires is 10 sq. km. Explosive objects of the last war can be dangerous too. 2000 of them are found and destroyed every year.

Tank-farm facilities, fuel stations, gas-stations, gas feeling stations, 295 thousand resedentional flats and houses with gas in cities and towns, 186 thousand houses in the country and enterprises using oxygen in their work are partly locally dangerous too.

There is a petrol pipe, an ammonia pipe 3 gas pipes in the region. Belgorod- Summy petrol pipe has been working since 1996, it is length is about 148 km, the diameter is 273 mm, working pressure is 64 atm.

Transport fuel is petrol and diesel fuel oll. The production is 135-150 cubic meters per hour.

Voronezh pipe-line has been working since 1985. The length of it on the territory of our region is 153 km, the diameter 426 mm, the working pressure id 64 atm. Transport fuel is petrol and diesel fuel oll. The production is 400-450 cubic meters per hour. If the pipe line is damaged about 1 thousand tons can be injected. The area of pollution can be 0,07 sq. km., up to 500 people will be in the damage area. Tolyatti – ammonia pipe has begun it is work in 1960. Its length on the territory of our region is 82,2 km. The diameter is 355,6 mm, the working pressure is 83 atm., it has 2 delivering stations and 12 sectionalizing.

The distribution of the ammonia pipe its temporary storage in container is from the delivering stations which are situated in the village of Svistovka Rovenky district and the village of Koponky of Veydeleevskiy district.

In a case of extremal situation the number of released substances in atm. can be up to 5 thousand tons, about 10,4 thousand people can supper on the possible area of pollution up to 10 sq. km.

The other main gas pipe is Schebelinka- Belgorod- Bryansk- Moscow which is put to use in 1957, the length of it on the territory is 97 km, the diameter 800 mm, the highest possible pressure atm. The main gas pipe Schebelinka -Ostrogozhsk- Alekseevka-Nikitovka-Gerasimovka is put to use in 1961, the length of it is 106 km. The diameter is 800 mm, the highest possible pressure is 55 atm.

The gas pipe Stavropol- Ostrogozhsk-Gubkin-Moscow is put it to use. Its length on the territory of our region is 103 km, its diameter is 800 mm, the highest possible pressure 55 atm.

The carrying capacity of the three gas pipes is 7, 5 cubic meters per year. There three delivering centers.

There are no atomic objects in the region. The radiological pollution is possible in the case of an accident on Kursk and Voronezh nuclear power stations. The total area of radiological pollution can be 17.529 square km. There are 919 towns and villages with the population of 745,6 thousand people on this territory. There are 14 enterprises in towns of Belgorod, Gubkin, Stariy Oskol. They have 1200 radioactive sources and substances in balance which are dangerous.

There are dangerous hydrodynamic objects in the region. They are 423 pounds and storage lakes. Their cubical contents are above 100 thousand cubic meters. They have hydro technical constructions, there are two water storage tanks with capacity 10 milllon cubical meters among them; 111 water storage tanks with the capacity from 1 to 10 mllllon cubical meters; 100 ponds with the capacity from 0,5 1 million cubical meters. They were mainly bulld in the period from 1965 to 1994 for the irrigation and the land erosion control. All the water projects, water storage tanks and ponds are dangerous, especially in the spring high water and if there is much rain. Besides, there are 141 ponds, its hydrotechnic construction are in critical and pre-accident condition. There are 71 masterless ponds. There can be huge floodings of the region as the result of the emergency cases at the hydrotechnic constructions. If there is a break at the Stariy Oskol dam on the river Oskol Their can me a zone of a fiooding with the total area of 455 sq. km, one city, 13 villages and the population of 19, 6 thousand can be damaged.

The main environmental treatments are:

- Critical air condition, growing of concentration of chemicals substances (nitrogen oxide, sulfur, carbonic oxide and etc.) city airspace
- Water body pollution and ground water pollution by waste water
- Exceeding amount of the concentration of the dangerous to health substances in food stuff(toxic chemical, nitrates, heavy metals and etc.)
- As for prerequisites, which cause environmental treatment, they are:
- Disregard for the environmental legislation, lack of control for the gas-cleaning installation and system of exploitation.
- Using technologies which are unsaved for environment
- Growing amount of motor transport with high-level of exhausted air.

There are 302 tons of unfit and forbidden pesticides, toxic chemicals in the agribusiness industry of the region which are dangerous for population and environment.

Principal hazardous natural process of the region are overflowing, wildfires. Overflowing arises from raimfall fiood (august- September). Maximum water level achieves 6,77 meters. 12 % of the territory is under the overflowing.

Danger of fire level is medium (3,6). Average number of the wildfires is 7, average square score of wildfires in the year is 0,23-1,16 hectare , average lack of forestland in the year .

Earth flow is very dangerous natural process. Developing of earth flow process links saturation, selection of wailing. Earth flows are produced on banks because of laying motorway. Earth flow process show great influence on ecological state of Belgorod region. They damage roadways, house-bulldings and economic entities.

What is more, there is prevalence of morbidity which is conditioned by natural- focal infection. Group and isolated case of Siberian plague is observed in Veidelevskiy and

Chernyanskiy district,l eptospirosis is in Belgorod, Novooskolskiy, Schebekenskiy districts, hemorrhagic fever is inBorisovskiy, Krasnogvardeyskiy districts, tick-borne encephalitis is in Alekseevskiy, Novooskolskiy, Prochorovskiy, Schebekinskiy, Yakovlevskiy districts.

So, according to the characteristic of the dangerous natural and man-maid processes we can make a conclusion that to preserve a good ecological situation in the region is necessary to develop and perfect the system of reduction and monitoring of these processes, to perfect the system of commuhications and introduction of advanced technology and engineering teachers for warning and liquidation of dangers. The maim document which regulates the legislation in this sphere is the resolution of the 29 of Mai, 2007, number 476 “About the approval of the consecution of the Belgorod safety”.

The realization of this conception leds to put in to practice the temporary monitoring of the territory of Belgorod region, predict the risks of appearing the emergencies and to develop ad put in to practice the system of measures which can anticipate liquidate emergency situations. It can also help to protect population from emergencies accidents, natural disasters, extremist and terroristic cases.

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