Rationale for necessity of production enterprises entering in zones of residential development, borders of settled points, by example of “plemennoe” swine complex in Zavodoukovsk city of Tyumen region

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Abstract. The article deals with the problem of protecting the population and the environment from the negative impact of an agricultural enterprise built on the territory of a settlement prior to the enactment of land and urban codes. The enterprise under consideration refers to hazardous production facilities of the third hazard class. In accordance with the urban development plan for the city of Zavodoukovsk, the enterprise was in the residential development zone. Taking into account that, since the establishment of the company, not only the production capacities but also the area allocated for the land plot have increased, there is an urgent need to resolve the issues of its future activities on the territory of the settlement in accordance with the current legislation.

1. Introduction
In accordance with Article 1 of the RF Town Planning Code, zones with special conditions for the use of territories are security, sanitary protection zones, zones for the protection of cultural heritage sites (monuments of history and culture) of the peoples of the Russian Federation, protective zones of cultural heritage sites, water protection zones, flooding zones, flooding, sanitary protection zones of sources of drinking and domestic water supply, zones of protected objects, near-aerodrome territories, other zones established in accordance with legislation in Russian Federation.

The legal regime of such zones is regulated not only by town planning and land legislation, but also by legislation in the field of electric power industry (security zones of electric grid facilities and guard zones of electric power production facilities), legislation in the field of industrial safety (security zones of main pipelines and security zones of gas distribution networks), legislation on railway transport (guard zones of railways), legislation on sanitary-epidemiological skom welfare of the population (sanitary protection zones), natural resources legislation (water protection zones, flooding zones and flooding, fisheries protection zone and fishery conservation areas, woodland areas and green spaces, etc.) and other sectors of the Russian legislation [1].

The research topic is of interest for the territory of settlements in order to ensure sustainable development of the territory.
The diversified nature of zones with special conditions for the use of territories predetermines the features of their legal regime, the order of establishment, the definition of boundaries and the set of requirements to be established [2].

2. Normative regulation of the establishment of zones with special conditions for the use of territories and their legal regime

Around the objects of industry, transport, communications, broadcasting, space support, defense and agricultural production, which are sources of impact on the environment and human health, special areas with a special regime of use - sanitary protection zones (SPZ) are established. These zones are created to protect the population from the influence of harmful production factors (noise, dust, gaseous and other harmful emissions), as well as to protect the environment of the adjacent territory from the negative impact of such an object [3].

With regard to water bodies, water protection zones are established in accordance with the water code (Article 65 of Federal Law No. 54) - territories adjacent to the coastline of the sea, the river, stream, canal, lake, reservoir. In these territories, a special regime for the implementation of economic and other activities is established to prevent pollution, clogging, siltation of water bodies, depletion of their waters, and the preservation of the habitat of aquatic biological resources and other objects of the animal and plant life. Within the boundaries of water protection zones, coastal protective strips are established that are adjacent to the shoreline of the seas, rivers, streams, canals, lakes, reservoirs. Additional restrictions on economic and other activities are introduced on the territory occupied by the coastal strip, i.e. these territories have the most stringent mode of use. The width of water protection zones is established in accordance with the water code. All land allotments in such zones are carried out in coordination with specially authorized bodies of management for the use and protection of water fund facilities [4].

Sanitary protection zones of industrial enterprises, as a town-planning measure for preventing harmful effects on public health, have existed for a long time: in France and England from the 13th century, in Russia since the 19th century. As the technology of production and methods of cleaning emissions into the atmosphere improves, the role of the SPZ as an air protection measure has significantly decreased. However, technological improvement does not ensure the complete elimination of pollutants. Now and in the future, the organization of the SPZ as a method of dispersing surface concentrations to the normative values does not lose its relevance [5].

Sanitary norms and rules establish hygienic requirements for the size of the SPZ, depending on the sanitary classification of enterprises, the requirements for their organization and improvement, the grounds for revising their size. For existing enterprises, the SPZ project should be an obligatory document. The SPZ organization project includes justification of the proposed boundary of the sanitary protection zone, measures for protecting the atmospheric air, proposals for landscaping and improvement of the territory of the facility, as well as the formation of proposals to reduce the negative impact of an economic or industrial facility on a nearby residential development. The boundary of the SPZ is a line that limits the territory beyond which the normalized environmental impact factors do not exceed the established hygienic standards. It is not allowed to place in the SPZ [6,7]:

- residential development, including individual residential buildings,
- landscape and recreational zones,
- recreation areas, resorts, sanatoriums and rest homes,
- the territory of horticultural partnerships and cottage development, collective or individual dacha and horticultural plots,
- other territories: sports facilities, playgrounds, educational and children's institutions, public health treatment and prevention facilities.

Within the boundaries of the SPZ of an industrial facility or the production of a building and a structure, it is allowed to locate facilities for servicing the workers of the said facility and to ensure the operation of the industrial facility (production) [8,9].

The boundaries of the territories having a SPZ are indicated on the ground by special information signs (the size of the zones) or reflected in the projects.

In accordance with Federal Law No. 116-FZ of 21.07.97 "On Industrial Safety of Hazardous Production Facilities", all hazardous production facilities, depending on the degree of danger to life and health of people and the environment, are divided into 4 hazard classes of PBO:

I hazard class - objects of extremely high danger;
II hazard class - high hazard objects;
III hazard class - medium hazard facilities;
IV hazard class - low hazard facilities [10].

The approximate size of the SPZ is determined by SanR&S 2.2.1 / 2.1.1.1200-03 during the design and commissioning of the facility, depending on the hazard class of the enterprise. For each class, the minimum size of the SPZ is set:

- industrial facilities and of the first class production I - 1000 m;
- industrial facilities and of the second-class production II - 500 m;
- industrial facilities and of the third-class production III - 300 m;
- industrial facilities and of the fourth-class production IV - 100 m;
- industrial facilities and of the fifth-class production V - 50 m.

Currently, in the territories of settlements there is a huge number of industrial facilities that were built before the adoption of land, town planning codes and other federal laws. With intensive development of territories of settlements these objects found themselves in recreational zones or zones of residential development. Therefore, today much attention is paid to the issue of such facilities in the territory that do not belong to recreational zones in urban planning zoning and are not subject to residential development [11].

3. Object of the research - pig-breeding enterprise ZAO “Plemennoye”, Zavodoukovsk city, Tyumen region

The article discusses the problem of the existence of a pig farm in Zavodoukovsk, which, due to the circumstances, found itself in the center of residential development. The pig complex is the property of the agricultural enterprise ZAO "Plemennoye" and is located in the Tyumen region, Zavodoukovsk, ul. Ishimskaya 6 (see Figure 1). As an agricultural enterprise, the pig complex belongs to the regime-forming objects around which it is necessary to establish a special regime of land use (nature management) – SPZ [12].

The main activity of the enterprise is the breeding of pigs. Additional activities: construction of buildings and structures, retail trade, except trade in motor vehicles and motorcycles; repair of household goods and personal items [13].

The agricultural enterprise ZAO "Plemennoye" was supposedly built on the territory of Zavodoukovsk in 1962 on the outskirts of the city and did not fall into the residential development zone.

Since the 90s, when the variety of forms of ownership of real estate appears on the territory of Russia, the process of corporatization of enterprises and registration of rights to land plots under them begins.

In accordance with the Law "On State Registration of Rights to Immovable Property and Transactions with It" (No. 122-FZ of June 17, 1997), the joint stock company "Plemennoye" was registered in the Unified State Register of Rights (EGRP) on 18.03.1998. The land plot under it was put on cadastral records and registration of the right to it in the state land cadastre later. Further, the land was included in the system of the state real estate cadastre, as the previously registered land plot [14] (see Figure 2).
In accordance with the master plan of the city around the existing pig complex is established SPZ, in the boundaries of which the zone of flooding by the Begil River falls. In addition, this area includes residential development, communal and storage facilities, as well as water objects around which water protection zones are installed (see Figure 3).

The SPZ is established by the authorities of the city of Zavodoukovsk around the territory of the pig breeding complex of ZAO "Plemennoye" when developing and adopting the city master plan and the Zavodoukovsk land use and development rules in 2007 [15].

According to departmental norms of VNTP 2-96 [16] pigs produce heat, moisture vapor, carbon dioxide, ammonia, hydrogen sulphide and other gases that accompany the formation of dust and the
reproduction of microbes. The solid industrial waste includes undivided manure, solid fraction of manure after separation [17], wastewater sediments, slaughterhouses, dead pigs, spent fuel and lubricants, etc. Waste received as a result of the economic activities of the operating personnel should be attributed to household and household. The amount of household solid wastes is determined by the number of workers and standards for these wastes [18]. More significant in terms of volume are liquid wastes in the form of a liquid fraction of manure after separation, surface-storm water and effluents, disinfecting solutions. To the same waste should include household drains from showers, toilets, canteens and laundries. Special wastes include effluents from sanboen and bioreactors. These wastes are recycled and disposed of separately from the rest.

In addition to the impact of the pig farm on the environment through gaseous, liquid and solid pollutants, it is affected by the object itself by changing the landscape, relief, vegetation and subsoil waters. This occurs as a result of soil compaction due to the laying of roads, collectors, ditches, construction of buildings and structures. Sanitary rules [19] establish 5 hazard classes for pig farms, requirements for the size of sanitary protection zones, their organization and improvement, as well as requirements for sanitary rupture of hazardous communications. The criterion for determining the size of the sanitary protection zone is not to exceed the maximum permissible concentrations (MPCs) of contaminants on its external border and beyond its limits. In the sanitary protection zone, accommodation of residential buildings, recreation areas, gardening and garden plots, sports facilities, children's playgrounds and medical and sanitary establishments is not allowed. It is allowed to place buildings and structures within the boundaries of the sanitary protection zone to ensure the activity of this facility.

The investigated pig breeding enterprise contains about 2,500 animals. Referring to the provisions of SanR&S 2.2.1/.2.1.1.1200-03 and departmental norms of VNTP 2-96, the enterprise is assigned a third hazard class and a sanitary protection zone with a size of 300 m should be installed. From the master plan of Zavodoukovsk (Fig. 3) it can be seen that the sanitary protection zone established by the authorities in the development of town planning documentation, currently falls on the residential development zone and the protection zone of water bodies. That is, land plots falling into this zone are imposed burdens and restrictions in their use.

Minimal zoo veterinary ruptures between pig enterprises and other objects

In accordance with the current legislation, for enterprises of this type, in the development of design documentation for construction, the SPZ Project, including the rationale for the proposed boundary of the sanitary protection zone, measures for the protection of atmospheric air, proposals for gardening
and improvement of the territory of the facility, as well as the formation of proposals to reduce the negative impact on the environment [20].

4. Results of the study
At this enterprise, the draft boundary of the SPZ was not developed, as previously it was not envisaged by the current regulatory and legal acts, and to date it is not allowed by the norms of the existing legislation, the enterprise has appeared in a zone of a housing estate. Therefore, the existence of the enterprise "ZAO" Plemennoye"in the Zavodoukovsk city is possible only if:

- reduction in the number of livestock, and, accordingly, a decrease in the sanitary protection zone;
- the removal of the main activity from abroad, and the existing site should be used in accordance with additional activities, when developing master plans for settlements today, decisions are made to remove industrial facilities that have a negative impact on the environment, either in sparsely populated areas or outside the settlement.

Taking into account that not only residential development gets into the zone of negative influence of the enterprise, but also the zone of flooding by the Begil River, the issue of the enterprise's removal to the uninhabited territory is quite acute, and it requires a decision to exclude the negative impact of the pig complex on human health.

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