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Analysis of veterinary and sanitary inspection in Russian Federation Subjects

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SUMMARY

The paper represents the analysis of the key parameters specifying the food safety system in the Russian Federation as of January 1, 2020. Such issues as competence of the veterinary experts and laboratories in the field of veterinary and sanitary inspection as well as availability of the necessary equipment including equipment for radiometric tests were particularly considered. Implementation of the internal audit procedure by the veterinary and sanitary testing laboratories was assessed. Data on the availability of the slaughterhouses and slaughter units/facilities for emergency slaughter as well as their staffing with the veterinarians are demonstrated. The study results indicate that 39% of the laboratories are not equipped with the necessary laboratory equipment; 8% of the laboratories perform tests using non-calibrated laboratory equipment, and only 2/3 of the laboratories are covered by the regular internal audits. Evidence of insufficient control over the attestation of the veterinarians involved in the veterinary and sanitary expertise was identified. Moreover, insufficient number of slaughter facilities and veterinary and sanitary testing laboratories in the regions of the country was highlighted as well as inadequate staffing of the laboratories with the veterinarians responsible for the official control of the compliance with the veterinary rules and technical regulations and for the veterinary and sanitary inspections. Therefore, in some regions of the country the national veterinary services lack any capacities necessary to perform the emergency slaughter of the diseased and suspect animals in the isolated and controlled environment with the subsequent on-site storage and decontamination of the slaughter products or their disposal or destruction. The study results demonstrate a number of gaps in the veterinary and sanitary inspection system thus indicating the need for corrective actions to be taken both on the federal and local levels.

Keywords: food safety, veterinary and sanitary testing laboratory, veterinarians, slaughter facilities

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Анализ организации ветеринарно-санитарной экспертизы в субъектах Российской Федерации

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РЕЗЮМЕ

В статье представлен анализ наиболее важных показателей, характеризующих организацию системы обеспечения безопасности пищевых продуктов в Российской Федерации по состоянию на 1 января 2020 г. В частности, рассмотрены вопросы компетентности ветеринарных специалистов и лабораторий ветеринарно-санитарной экспертизы, обеспеченность лабораторий необходимым оборудованием, в том числе и радиометрическим, проведена оценка

реализации процедуры внутреннего аудита лабораторий ветеринарно-санитарной экспертизы. Представлены данные об обеспеченности субъектов Российской Федерации убойными и убойно-санитарными пунктами/площадками, а также их укомплектованность ветеринарными специалистами. Результаты исследования свидетельствуют о том, что 39% лабораторий ветеринарно-санитарной экспертизы не укомплектованы необходимым лабораторным оборудованием, 8% лабораторий применяли для проведения исследований неповеренное лабораторное оборудование и только 2/3 лабораторий были охвачены периодическими внутренними аудитами. Выявлены факты недостаточного контроля за аттестацией ветеринарных специалистов, осуществляющих ветеринарно-санитарную экспертизу. Кроме того, отмечена недостаточная обеспеченность регионов страны местами убоя животных и лабораториями ветеринарно-санитарной экспертизы, а также неполная укомплектованность их ветеринарными специалистами, в задачи которых входит проведение государственного надзора за соблюдением требований ветеринарных правил и технических регламентов, проведение ветсанэкспертизы. Таким образом, в некоторых регионах страны у государственной ветеринарной службы отсутствует возможность убоя больных и подозреваемых в заболевании животных в изолированных контролируемых условиях с последующим хранением и обеззараживанием продуктов убоя, или их утилизацией, или уничтожением на месте. Полученные результаты исследования показывают наличие ряда пробелов в организации системы ветеринарно-санитарной экспертизы, что свидетельствует о необходимости введения корректирующих мер как на федеральном, так и на региональном уровне.

Ключевые слова: безопасность пищевой продукции, лаборатория ветеринарно-санитарной экспертизы, ветеринарные специалисты, места убоя животных

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INTRODUCTION

Food product safety – is the state of food products, indicating the absence of unacceptable risk associated with harmful effects on humans and future generations. A harmful effect on humans is caused by factors associated with the presence of contaminants in food products: radionuclides, toxins, pathogens that threaten human life or health [1]. According to the World Health Organization, food safety should be a priority public health issue [2].

The safety of food products of animal and plant origin can't be ensured without establishing the system of veterinary and sanitary inspection (VSI system) the basis of which are veterinary specialists and veterinary and sanitary laboratories fit with equipment.

Assessment of the organization and effectiveness of the VSI system in the country is part of the assessment of the organization of the national veterinary service, carried out within the framework of international trade, as well as within the framework of regionalization [3, 4].

Today official information on the state of the veterinary and sanitary inspection system and its assessment is unavailable in the Russian Federation that is why it is impossible to objectively reflect the actual situation in the regions of the country.

In this regard, the investigation was aimed at collection of information regarding the most significant parameters (availability of slaughterhouses and slaughter units/facilities for emergency slaughter, staffing with veterinary specialists, material and technical equipment of laboratories for veterinary and sanitary inspection, etc.) and a comprehensive analytical assessment of VSI system in the Russian Federation regions.

MATERIALS AND METHODS

The practical basis for the analysis of how the RF National Veterinary Service ensures veterinary and sanitary safety of food products was the information entered into the 'Assol.Express' operational reporting system by the executive veterinary authorities of the country's Subjects as of January 1, 2020, according to the primary data collection form developed by the FGBI "ARRIAH".

The study used generally accepted methods and techniques for data analysis: generalization and formalization of information, the method of comparative analysis.

RESULTS AND DISCUSSION

Food safety processes should address the entire food chain, from production to consumption. One of the official regulation measures aimed at ensuring food quality and safety is the adoption of Customs Union technical regulations that establish safety requirements (including sanitary and epidemiological, hygienic, and veterinary) for regulated products, as well as forms and procedures or assessing (confirming) the conformity of the regulated products to the requirements of technical regulations.

According to the current legislation, the VSI is one of the variants confirming compliance of the food products with the CU Technical Regulations and is the only and final way to confirm compliance and safety of non-processed food products of animal origin [5].

Fig. 1. Diagram of the food safety system

As can be seen from the presented diagram (Fig. 1), food safety is ensured by a set of various systems interacting with each other.

This paper addresses the VSI system in terms of parameters having a key impact on food safety, affecting all stages of the food product supply chain from 'farm to fork':

– availability of slaughterhouses and slaughter units/facilities in the Subjects of the Russian Federation;

– sufficient number of veterinary specialists performing VSI of products of animal and plant origin;

– sufficient number of veterinary service specialists at livestock farms;

– VSI equipment and facilities, availability of a quality management system;

– the competence of the veterinary specialists of the VSI service and the availability of a medical certificate of admission to work with food products.

Veterinary and sanitary inspection at slaughterhouses. Meat and meat products shall be produced in compliance with hygienic as well as veterinary and sanitary requirements as well as considering the risk arising at all the stages of the technological process.

The necessary level of slaughter hygiene can be achieved by proper veterinary assistance, lairaging, antemortem veterinary inspection, the slaughter process itself, and other factors influencing the quality and safety of the finished products [6]. The statutory regulated requirements for meat and meat product manufacturing can be complied with only at special slaughterhouses controlled by the National Veterinary Service and having passed the official registration procedure.

To assess the effectiveness of the VSI at slaughterhouses, the availability of slaughterhouses and slaughter units/facilities in the RF Subjects as well as the sufficient number of qualified veterinary specialists was taken into account.

As a result of the analysis, it was found that only 28 RF Subjects are provided with slaughter sites (slaughter units/facilities) designated for the needs of the residents in full, in 9 Subjects no slaughter sites are available, in other Subjects the situation appears to be diverse (Fig. 2).

The business operators in the RF Subjects are not provided with a sufficient number of slaughter units/facilities: only 41 Subject is completely provided with them, in 2 Subjects no slaughter units/facilities are available and in the rest of the Subjects the need in them is satisfied 1–99% (Fig. 2).

Slaughter units/facilities in 68 RF Subjects are staffed by veterinary specialists engaged in official control for compliance with veterinary rules and technical regulations and VSI. In three RF Subjects the slaughter sites are not staffed by veterinary specialists at all. In the rest of the Subjects this parameter varies a lot – from 1–99%.

Only 35 RF Subjects demonstrate a sufficient number of slaughter units/facilities, in 24 Subjects such sites are not available and in the rest of the Subjects their amount varies from 1–99%. So, in most of the RF Subjects the National Veterinary Service lack isolated facilities for slaughtering diseased and disease suspected animals under controlled conditions with subsequent storage and decontamination of slaughter products or their disposal or on-site destruction.

It should be noted that proper veterinary services rendered to the animal farm involving daily comprehensive control predetermine the quality and safety of the products. However, the results of the analysis performed show that more than half (51%) of animal farms in the country, not including small-scale farms, don't have their own veterinary service.

The absence of available slaughter units/facilities results in uncontrolled slaughter on small-scale farms without

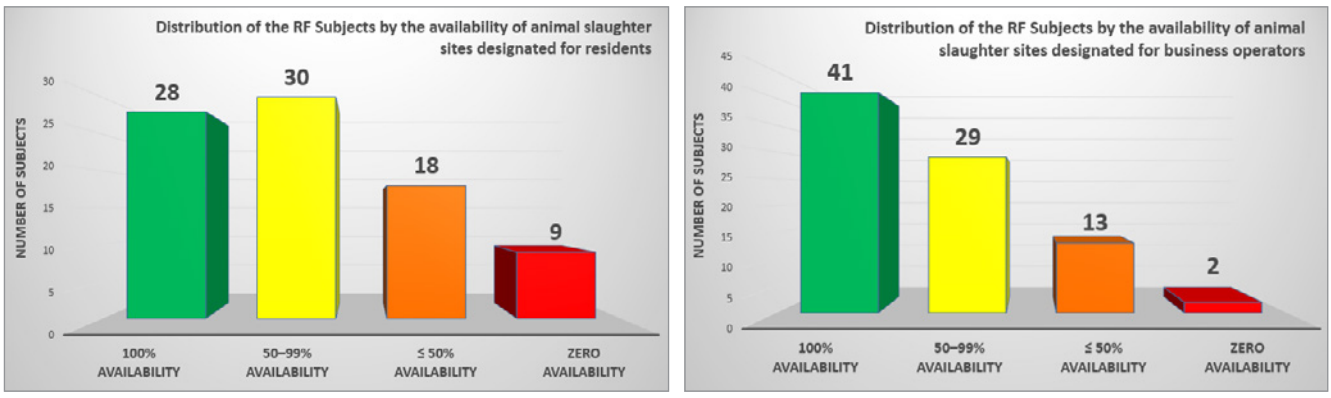

Fig. 2. Distribution of the RF Subjects by the availability of the slaughter facilities

veterinary and sanitary inspection of animal slaughter products. Besides, there's a possibility of slaughtering animals with unknown animal health status due to the absence of proper veterinary control and lack of VSI specialists on animal farms. This circumstance creates a high risk of consuming unsafe food products and infection of the staff with zooanthroponoses.

VSI laboratories. It is known that veterinary and sanitary inspection of animal products is performed at slaughterhouses and VSI laboratories located at the institutions of the National Veterinary Service and trade enterprises, including food markets. 40 RF Subjects are self-sufficient in VSI laboratories, 35 Subjects are 50–99% self-sufficient and 10 Subjects are 50% self-sufficient (Fig. 3).

Even though the VSI laboratories shall be organized in markets selling food products of animal and/or plant origin according to the law [7], 102 out of 1,703 food markets in the RF Subjects lack such laboratories, and this situation has persisted over the past few years. The specified facts are considered as a violation of the law and contribute to the threat of the emergence and spread of infectious and invasive diseases transmitted to humans from animals since the safety of food products sold in these markets has not been confirmed. The situation is aggravated by the fact that trade enterprises that are not legally regulated by the above legislation (for example, shopping centers) are not Subject to the obligation to organize VSI laboratories. However, such outlets often sell non-commercial food products and unprocessed products of animal origin, the safety of which in veterinary and sanitary terms has not been confirmed due to the absence of VSI laboratories.

The Customs Union (CU) legislation establishes that both unprocessed food products of animal origin and non-commercial products shall comply with the requirements of the CU technical regulations which is to be confirmed through VSI. In this case, the VSI laboratory (or veterinary expert) is the only link in confirming the safety of regulated food products, and in fact, these laboratories perform the functions of testing laboratories. Based on their reports food products are eligible for free marketing. Under the current legislation, VSI laboratories are not Subject to compulsory accreditation, therefore, competency assessment was not carried out for any of the laboratories in the country.

In this research, the competence of VSI laboratories was determined according to the following criteria:

– availability of necessary measuring instruments and their technical condition, verification of measuring instruments;

– availability of normative and methodological documents regulating testing;

– internal audit of VSI laboratories conducted by institutions subordinate to the veterinary executive authorities.

The results of the analysis based on these criteria demonstrate that:

– 1,097 out of 2,795 (39%) VSI laboratories cannot fully carry out mandatory veterinary sanitary inspection of all food products (meat, milk, eggs, feed, etc.), which contradicts to the current legislation of the Russian Federation [8], and in 5 Subjects none of the VSI laboratories has a full range of necessary laboratory equipment. Therefore this service is not fully available for the residents. Due to this fact, the products not having undergone this procedure are likely to enter the food production chain;

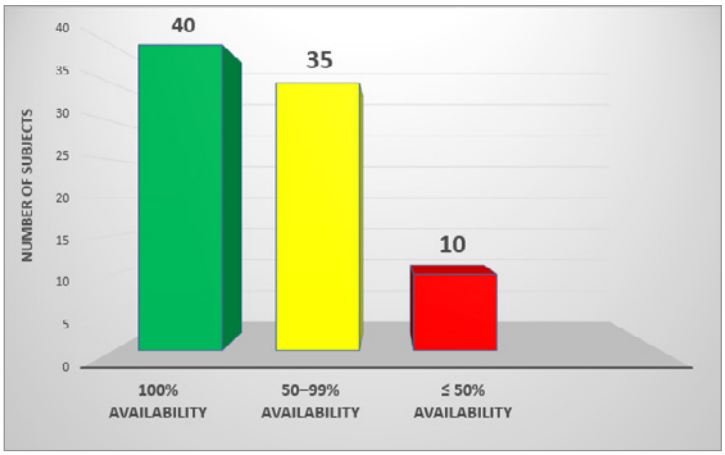

Fig. 3. Distribution of the RF Subjects by the availability of the veterinary and sanitary testing laboratories

– in the reporting period (2019), 247 out of 2,795 (9%) VSI laboratories conducted research using non-calibrated laboratory equipment which casts doubt on the objectivity of the measurement results obtained using this equipment, and, therefore, conclusions on compliance of food products with current regulatory requirements;

– 125 out of 2,795 (4.5%) VSI laboratories are not fully provided with regulatory and methodological documents for veterinary and sanitary inspection;

– in 1,763 out of 2,795 (63%) VSI laboratories in 29 RF Subjects, an internal audit procedure has been introduced and is being implemented. It includes periodic internal inspections for assessing the performance of laboratories and their technical condition. The introduction of such audits into the practice can increase the effectiveness of control over the activities of VSI laboratories under the current legislation, including research.

Since the VSI laboratories function as testing laboratories and ensure the veterinary and sanitary safety of food products, all tests must be carried out properly and ensure the reliability of the results. In testing laboratories, this is confirmed by accreditation, which is the evidence of competence and ability to obtain reliable results [9]. Since the accreditation procedure for VSI laboratories is not regulated at the legislative level, it is necessary to apply this practice in respect of these laboratories. One of the possible ways to implement this may be the inclusion of VSI laboratories in the structure of veterinary diagnostic laboratories, after which they will be included in the scope of accreditation of the head institution. This practice is currently partially implemented in the reference centers and interregional veterinary laboratories of the Russian Federal Service for Veterinary and Phytosanitary Surveillance (Rosselkhoznadzor), and previously it was used for a long time in the USSR.

Radiation control of food products. The activities of VSI laboratories for conducting radiation control of products of animal and plant origin are worth noting. Under the current legislation of the Russian Federation, the National Veterinary Service shall perform dosimetric control of all products to be sold in marketplaces

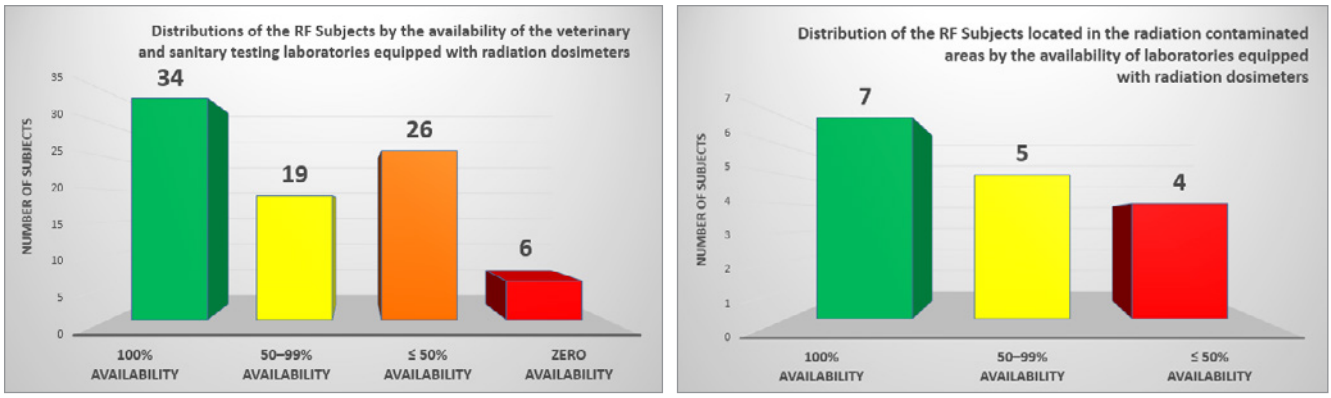

Fig. 4. Distributions of the RF Subjects by the availability of the veterinary and sanitary testing laboratories equipped with radiation dosimeters

and twice a year radiometric control of each product type [10]. Despite this, the VSI laboratories are fully equipped with dosimeters-radiometers in only 34 Subjects, in 6 Subjects none of them are provided with this equipment, and in other RF Subjects, 1–99% of laboratories are provided with such equipment. In total, only 1,787 out of 2,795 (64%) VSI laboratories are equipped with the specified radiometric equipment. Only in 7 out of 16 RF Subjects, the territories of which are included in the list of areas affected by radioactive contamination as a result of the disaster at the Chernobyl nuclear power plant and the accident at FSUE "Mayak Production Association", the VSI laboratories are fully equipped with dosimeters-radiometers, in 5 Subjects only 50 to 99% laboratories are self-sufficient in such equipment and 4 Subjects – less than 50% (Fig. 4) [11, 12].

Thus, only 319 of 439 VSI laboratories (73%) located on the territory of 16 Subjects in areas affected by radioactive contamination are provided with appropriate radiometric equipment. The current situation hinders the performance of radiation control the framework of veterinary and sanitary inspection and creates a risk of marketing potentially radiation-contaminated products which is critical for the specified above areas affected by radioactive contamination.

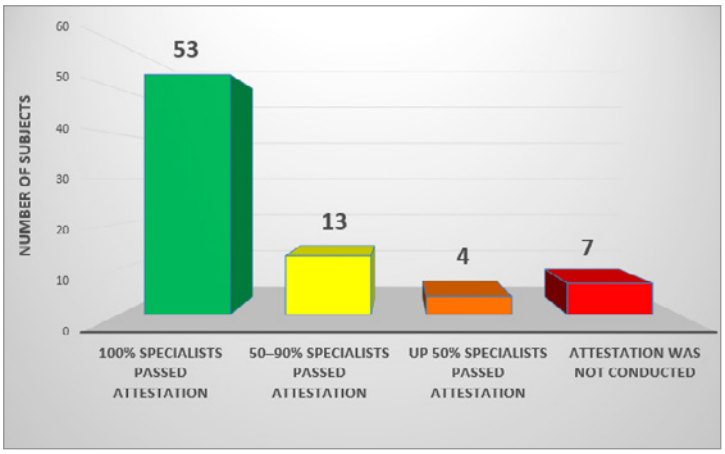

Fig. 5. Distribution of the RF Subjects by the level of attestation of the veterinarians involved in veterinary and sanitary inspections

Competence of veterinary specialists engaged in the veterinary and sanitary inspection. The leading role in performing veterinary and sanitary inspection lies with veterinary specialists having professional skills and knowledge in this field of activity. Special attention shall be given to the competence of the veterinary specialists at slaughterhouses where they ensure the safety of food products on their way to the customer. Under the current legislation, the qualification level of the VSI specialists is checked during periodical attestation [13–15]. The analysis demonstrated that only 3,704 out of 4,301 VSI specialists passed attestation (Fig. 5).

Herewith in 24 Subjects of the country, 597 veterinarians haven't been subjected to attestation to check the conformity of food products with the established requirements. Therefore, the results of the veterinary and sanitary inspection performed by these VSI specialists cannot be considered 100% reliable and objective which can affect the safety of food products.

Of little significance in ensuring food safety is control of the specialist's health status in regards to food-borne diseases. The health status is examined during periodical health checks the results of which are recorded in their medical cards. The study performed demonstrates that only 7,875 out of 11,666 veterinarians and laboratory technicians (67.5%) contacting with food products undergo health checks and have individual medical cards. In 7 Subjects of the country, none of the specified above specialists has undergone health checks which are indicative of the systemic RF law violation [16]. Thus, 3,791 veterinarians ensuring food safety have not passed the medical examination and shall not contact food products. Similar situations contribute to favourable conditions for food product contamination and increase the risk of toxicoinfections.

CONCLUSION

The analytical study performed allows concluding that as of January 1, 2020, there are certain gaps in the food safety management system due to imperfect legislation as well as VSI system functioning at the regional level. In particular, lack of the slaughter sites designated for public needs, as well as slaughter units/facilities; insufficient number of VSI laboratories and their competence; in most cases improper management of VSI laboratory activities as

well as insufficient control for the competence of the veterinarian performing the veterinary and sanitary inspection.

The current state of the system of VSI-based food product safety confirmation arises the necessity to implement corrective actions both on the federal and regional levels. These corrective actions include:

– legislative recognition of the VSI laboratory competence through accreditation;

– legislative recognition of the ban to issue accompanying veterinary documents for slaughter products by slaughterhouses not serviced by veterinarians (meat inspectors) and having no certificate confirming compliance of the facility and production processes with technical regulations, subsequent updating of the existing FGIS "VetIS" registers;

– creating a list of the veterinarians certified for performing veterinary and sanitary inspection using FGIS "VetIS", thus blocking access of non-certified veterinarians to the option of issuing accompanying veterinary documents in FGIS "VetIS" 'MERCURY' for slaughter products;

– inclusion of the List of the accredited VSI Laboratories to FGIS "VetIS" 'CERBERUS'.

We suppose that the implementation of the specified measures will contribute to more effective control of food product safety within the entire production cycle and prevent the marketing of dangerous and poor quality food products.

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