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DEVELOPMENT OF METHODS OF ANALYSIS AND IMPROVEMENT OF CONTROL SYSTEM OF CONTENT OF CONTEMPORARY PESTICIDES IN FOOD PRODUCTS, ENVIRONMENT IN KAZAKHSTAN

Intensive use of chemical plant protection products in agriculture in many countries of the world raises the need to identify the levels of pollution by them of environmental objects and food products; Assessment of their potential danger to establish real and safe levels of exposure to pesticides on humans using different technologies for processing crops. Particular danger from the point of view of widespread pollution of the environment is persistent organic pollutants, which have high toxic properties, resistance to decomposition and increased bioaccumulation.
Keywords: *pesticide, environment, hygiene, agriculture, health*

Introduction. Pesticides have been specifically designed to combat pests and plant diseases. However, these artificially synthesized substances, destroying pests, cause and cause significant harm to many useful organisms; undermine the health of biosensors and the ecosystem as a whole. Residual quantities of persistent organic pollutants are recorded on all continents and in all regions representing the main climatic and geographical areas of the world.

No less dangerous are modern pesticides, which in themselves are less stable and easily decomposed during application. At the same time, the products of their decomposition have not been studied sufficiently, and in some cases are more toxic than the original preparation. Therefore, the issues of studying and optimizing the existing environmental and hygienic monitoring of the application of modern priority pesticides with an assessment of the risk of their impact on public health are relevant and timely.

Materials and methods of research. The analysis of environmental pollution by modern pesticides has shown that highly effective methods for their determination have been developed and are actively used internationally. It should be pointed out that in international practice, the development and improvement of methods for analyzing pesticide residues in human habitat facilities is assigned to various ministries and departments, and not to pesticide manufacturers (manufacturers). Supervises this issue of the International Council for Cooperation in the field of analytical chemistry of pesticides (CIPAC). To date, 9 collections of techniques have been published. Once every four years the International Congress on Plant Protection Chemistry is held (until 2002 - the Congress on Pesticide Chemistry) under the auspices of the International Union of Pure and Applied Chemistry (IUPAC), which is an important milestone in the work of specialists from different countries in the synthesis, use and control of chemical Means of plant protection[1].

More than a dozen modern technical regulations are harmonized with international requirements in the Republic of Kazakhstan. One of them is the Technical Regulations "On Requirements for the Safety of Pesticides". Based on the analysis and evaluation of known, the developed modern methods for determination of residual amounts of pesticides in various environmental objects and food products are given, which allow to determine chemical substances at the level of international hygienic standards. They can rightfully serve as an example of unifying the methods of analysis, that is, their harmonization with international requirements [2].

Results. Based on the obtained results of the analysis of selected water samples, soil from cereal fields, green plants and grain yield, it was established that residual amounts of applied pesticides are present in virtually all samples tested. However, as a rule, their concentration is much lower than the maximum permissible standards. The exception is the disproportionately large values obtained in the analysis of several samples, which, apparently, is due to non-compliance with safety rules when working with pesticides in their application.

At the same time, the analysis of pollution of environmental objects (water, soil, plants) and grain yield in the study areas of Akmola and North Kazakhstan provinces made it possible to conclude that there is contamination with modern pesticides, while small concentrations of these can have a negative impact on The state of health of the population permanently residing in these regions.

Analysis of contamination of food products and food raw materials on the territory of region Aktobe and Kyzylorda revealed a high rate of detection of positive findings. It is known that the concentration of pesticides in food products may depend on the concentration of the preparation, the form of its use, the multiplicity, the processing time and the time elapsed from the last treatment to the removal of the crop. Therefore, judging by the increased percentage of positive pesticide findings in samples of food raw materials and foodstuffs since 2013, some of the listed links in protecting food products from pesticide contamination have been violated. This fact can not but alarm, as in this case pesticides "fall on the consumer's table".

Based on a detailed analysis of the literature on pollution of environmental objects, the residual quantities of modern pesticides and harmonization documents developed in our country, taking into account international standards, have chosen the best research methods used in various countries of the world for use in the Republic of Kazakhstan. New modern methods for the determination of some modern pesticides in environmental objects that are currently used in the studied regions and areas of the Republic of Kazakhstan have been developed [3].

According to specially developed maps, data were collected on the consumption of pesticides (in kilograms of commodity forms of preparations) and the size of the arable areas of the regions studied for the period 2013-2015. When analyzing the obtained materials, the total annual loads of all the assortment of pesticides used per study area per unit of agricultural area were calculated. The average annual level of pesticide consumption by districts and in the whole region per unit area has been calculated. An analysis of the data obtained showed that the intensity of application of pesticides in the regions studied is uneven. The northern regions experience a somewhat larger average annual pesticide load than the southern regions [4].

For a preliminary assessment of the possible adverse impact of environmental contamination of pesticides on the health of the rural population, data were collected on the primary incidence of rural population living in the studied regions by the

class of diseases for the period 2013-2015. (According to the official statistical reporting of the Ministry of Health of the Republic of Kazakhstan).
For the purpose of in-depth study of the health status of residents of the study areas of the Akmola region (Akkolsky, Atbasarsky, Zerendinsky and Shchuchinsky), morbidity rates were studied according to the data of the requestability (report form No. 18) for disease classes for the period 2015-2016. The structure and incidence rate of the population according to the appeal for 1000 rural population of the corresponding age are calculated in the following groups: children from 0 to 14 years; Adolescents - 15-17 years; Adults 18 years and over
Conclusion. The results obtained allowed to determine the overall picture of the effect of drugs on the health of the population of these regions. However, a more accurate simulation of the revealed links shows that it is necessary to investigate a larger number of parameters characterizing the study areas and the ecological and social situation in them. Expanding the number of observed parameters, in turn, requires an increase in the study time and more detailed mapping and appropriate data rationing.
Thus, based on the studies carried out, the following conclusions can be drawn:
- the intensity and range of applied pesticides in different agricultural regions of Kazakhstan differ;
- The average annual load in the areas studied is estimated as average;
- the tendency of increase in volumes of application of modern highly active pesticides with low norms of the charge is marked;
- indicators of the incidence of rural population living on the territory of intensive use of pesticides correlate with territorial pesticide loads; The most sensitive classes of diseases in relation to the use of pesticides in agriculture in the rural areas studied were diseases related to the following classes of diseases: blood diseases, hemopoietic organs and certain disorders involving the immune mechanism; Diseases of the nervous system; Diseases of the circulatory system; Diseases of the skin and subcutaneous tissue.
Minimizing the impact of pesticides and modern pesticides on human health and habitat is an integral part of national environmental policy, one of the priorities is the monitoring, control and management of persistent organic pollutants, which will generally have a positive impact on the country's further social and economic development [5].
Therefore, monitoring of pesticide residues in food and agricultural raw materials in Kazakhstan is the main component of the quality control system for food and raw materials of vegetable and animal origin.
Discussion and conclusions. It was found that the total specific weight of the samples of food products, food raw materials, vegetables and fruits studied averages 75-76% in the total structure of the investigated objects for residual amounts of pesticides. However, analysis of more than 50% of samples of food products and food raw materials is aimed at the search for "global" pollutants (heptachlor, hexachlorobenzene, aldrin, etc.), and the share of samples examined for residues of priority pesticide agricultural regions is less than 30%.
It should be noted that a number of existing regulations, departmental orders and regulations on the basis of which food products and food raw materials are monitored for pesticide residues, require revision in accordance with modern requirements.
Proceeding from the foregoing, it is necessary to ensure a purposeful and effective state sanitary and epidemiological surveillance of the content of residual amounts of pesticides and their dangerous metabolites in food products and food raw materials both produced in the territory of the Republic of Kazakhstan and imported from near and far abroad.
To conduct sanitary and epidemiological examination of food products on the basis of information on the use of specific pesticides in the production of food raw materials with indication of their name and end date of use.
Do not allow the import, use and turnover of food raw materials of vegetable and animal origin that do not have information on the use of pesticides during its manufacture and the date of the last treatment by them [6].
To improve the regulatory and methodological base, first of all, it is necessary to develop, adapt and introduce into practice the work of sanitary and epidemiological surveillance of modern guidelines for the determination of micro-quantities of pesticides in environmental objects with the annual publication of reference manuals detailing the methods of control.
It is necessary to update the analytical park of all sanitary and epidemiological laboratories with their respective accreditation for the right to analyze pesticide residues in environmental objects and food products. At the same time, the obligatory stage of ensuring quality control of pesticide residues in environmental objects and food products must be the laboratory's compliance with the following requirements:
- conditions and rules for sampling, their delivery and sample preparation should be unified and strictly observed, as one of the features of determining pesticide residues is the possibility of contamination of the samples under study at all stages of selection and analysis;
- to determine the residual quantities of pesticides in environmental facilities, equipment that has passed state tests and entered in the Register of the State System for Ensuring the Unity of Measurements of the Republic of Kazakhstan should be used;
- the terms of metrological verification of all used measuring instruments must be strictly observed, as well as the quality, conditions and terms of storage of reagents and reference standard samples.
- availability of qualified personnel trained in highly effective methods for determining pesticides in food and environmental objects, not only in the territory of the country, but also beyond its borders.
It is necessary to increase the exactingness to individual entrepreneurs and legal entities engaged in the production and sale of agricultural products [7].

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ҚОРШАҒАН ОРТАДАҒЫ ЖӘНЕ ТАМАҚ ӨНІМДЕРІНДЕГІ ПЕСТИЦИД МӨЛШЕРІН БАҚЫЛАУ ЖҮЙЕСІН ДАМЫТУ МЕН ТАЛДАУ ӘДІСТЕРІН ӨҢДЕУ

Түйін: Көптеген елдерде ауыл шаруашылығында химиялық өсімдік қорғау өнімдерінің қарқынды пайдалану қоршаған ортаны ластағаны нысандар мен азық-түлік деңгейлерін анықтауын қажет етеді; түрлі өсімдік өңдеу технологияларын пайдалана отырып, адам туралы пестицидтермен қауіпсіз экспозиция деңгейдегі нақты және сәйкестігін анықтау үшін, олардың қауіпті деңгейін бағалау да қажет.
Түйінді сөздер: пестицид, қоршаған орта, гигиена, агрокультура, денсаулық

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РАЗРАБОТКА МЕТОДОВ АНАЛИЗА И СОВЕРШЕНСТВОВАНИЕ СИСТЕМЫ КОНТРОЛЯ СОДЕРЖАНИЯ СОВРЕМЕННЫХ ПЕСТИЦИДОВ В ПРОДУКТАХ ПИТАНИЯ, ОКРУЖАЮЩЕЙ СРЕДЕ В КАЗАХСТАНЕ

Резюме: Интенсивное использование химических средств защиты растений в сельском хозяйстве многих стран мира порождает необходимость выявления уровней загрязнения ими объектов окружающей среды и продуктов питания; оценки их потенциальной опасности для установления реальных и соблюдения безопасных уровней воздействия ядохимикатов на человека при использовании различных технологий обработки сельскохозяйственных культур.
Ключевые слова: пестицид, окружающая среда, гигиена, агрокультура, здоровье