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The impact of low-quality veterinary medicines processing and feed additives on the environment

V. Vischur[1], V. Velychko[2], O. Hentosh[1], B. Gutyj[1]
v.vishchur@gmail.com

[1]Lviv national university of veterinary medicine and biotechnologies named after S. Gzhytskyj, Pekarska Str., 50, Lviv, 79010, Ukraine;
[2]State Scientific–Research Control Institute of Veterinary Medicinal Products and Feed Additives, Donetska Str., 11, Lviv 79019, Ukraine

Considering the requirements of the European Union for the quality and safety of veterinary drugs, feed and fodder additives and contamination of the environment with waste production, topical issue is the waste of utilization veterinary products of not quality: veterinary drugs and feed additives. Conducted analysis of waste utilization methods of veterinary drugs, feed and fodder additives will help manufacturers of veterinary products to use such methods of destruction of defective raw materials and drugs, which increase the culture of production and promote the fight for the health of animals and poultry, and therefore are safe for human health, is practical and economically feasible, not causing the environmental damage, make it possible to destroy the waste to the extent of their education.

Key words: *veterinary drugs, feed additives, environment, recycling.*

Вплив переробки неякісних ветпрепаратів та кормових добавок на стан довкілля

В.Я. Віщур[1], В.О. Величко[2], О.П. Гентош[1], Б.В. Гутий[1]
v.vishchur@gmail.com

[1]Львівський національний університет ветеринарної медицини та біотехнологій імені С.З. Ґжицького, вул. Пекарська, 50, м. Львів, 79010, Україна;
[2]Державний науково-дослідний контрольний інститут ветеринарних препаратів та кормових добавок, вул. Донецька, 11, Львів, 79019, Україна

Враховуючи вимоги Європейського союзу до якості та безпечності ветеринарних препаратів, кормів та кормових добавок і забруднення природного середовища відходами виробництва, актуальним є питання утилізації відходів неякісної ветеринарної продукції: ветеринарних препаратів та кормових добавок. Проведений аналіз методів утилізування відходів ветеринарних препаратів, кормів та кормових добавок допоможе виробникам ветеринарної продукції використовувати такі методи знищення неякісної сировини та препаратів, які підвищують культуру виробництва продукції та сприяють здоров'ю тварин і птиці, а відповідно є безпечними для здоров'я людей, є практичними та економічно доцільними, не наносять шкоди навколишньому середовищу, дають можливість знищувати відходи в міру їх утворення.

Ключові слова: *ветеринарні препарати, кормові добавки, довкілля, переробка.*

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Влияние переработки некачественных ветпрепаратов и кормовых добавок на состояние окружающей среды

В.Я. Вищур[1], В.А. Величко[2], О.П. Гентош[1], Б.В. Гутый[1]
v.vishchur@gmail.com

[1]Львовский национальный университет ветеринарной медицины и биотехнологий имени С.З. Гжицкого, ул. Пекарская, 50, г. Львов, 79010, Украина;
[2]Государственный научно-исследовательский контрольный институт ветеринарных препаратов и кормовых добавок, ул. Донецкая, 11, г. Львов, 79019, Украина

Учитывая требования Европейского союза к качеству и безопасности ветеринарных препаратов, кормов, кормовых добавок и загрязнения внешней среды отходами производства, актуален вопрос утилизации отходов некачественной ветеринарной продукции: ветеринарных препаратов и кормовых добавок. Проведенный анализ методов утилизации отходов ветеринарных препаратов, кормов, кормовых добавок даст возможность производителям ветеринарной продукции использовать такие методы уничтожения некачественного сырья и препаратов, которые повышают культуру производства продукции и способствуют здоровью животных и птицы, практичны и экономически целесообразны, не приносят вреда внешней среде, дают возможность уничтожать отходы по мере их образования.

Ключевые слова: *ветеринарные препараты, кормовые добавки, окружающей среды, переработка.*

Contamination of the environment with waste production, poses a threat to animal health, according deteriorating and quality indicators of products. Therefore bad quality drugs and waste products technology of emissions with the release of veterinary drugs, feed, feed additives and premixes is the most harmful waste group. According to the Basel Convention (1998), waste production and processing of pharmaceutical products, pharmaceuticals, medicines and drugs, which did not found sales, waste production, obtaining and use of biocides and phyto-pharmaceuticals belong to the so-called Yellow list, and all without exception are defined as hazardous. The real question is, that the waste products are formed and accumulated (the poor quality, unsafe products, production whose shelf life is over) and fall to landfills for household waste to landfill or municipal sewage collectors.

Waste products are dangerous of pharmaceutical products for veterinary medicine, as possible the environmental pollutants with bioactive chemicals. Environmental pollution by technological elements, and therefore the products are dangerous to human health.

During the last years is observed the tendency to a rapid increase in the number and assortment of veterinary drugs, feed and feed additives. At the same time there was a problem of increasing the waste production. So the question of utilization and processing of waste of veterinary drugs is extremely an actual problem today.

Problematic to ensure ecological balance of environment is veterinary medicines of dubious quality, are not registered in Ukraine, ie not tested for quality and safety, counterfeit and falsified. So, by 2016 veterinary inspectors, veterinary medicine GNIKI veterinary preparation and fodder additives and in circulation was detected 241 drug, unregistered in Ukraine, which accounted 8.6% of the total species of veterinary products, presented at the Internet market. Besides the 5 drugs, namely Tactics (Bipin) manufacturer PE «Famaton», Vetrimxine-50 manufacturer Ltd. «Seva Sante Animal», Trisulfon LLC «KRKA» powder and suspension and so on were falsified.

Utilization of poor quality, unsafe products manufacturing of veterinary products, feed and fodder additives is carried out by various methods, including: by the method of purging, encapsulation, autoclaving, dilution with water and sink to the central collector and method of high-temperature incineration.

Encapsulation method consists in the process of transformation into a monolith of substandard drugs in a closed volume by using the binders.

Inertization method is the process of converting in monolith of poor quality and stale veterinary preparations, feed and feed additives using binding materials with subsequent crushing and dispersal.

The method of autoclaving consists in the performed of physical and chemical processes for 239 at high pressure and high temperature.

Method of dilution with water and drain to the central collector consists in diluted with water of dosage forms having dosage form as solutions and syrups in the ratio of 1 to 200 and in a gradual drain into collector.

High-temperature combustion method consists in utilization of any organic waste through the use of industrial furnaces for the manufacture of cement, coal power plants, foundries and special-waste crematorium.

Each method has a right to exist. However, there is a risk factor of environmental pollution utilization. This especially concerns the method of dilution and discharge into municipal collector. The fact is that treatment plants are not designed for this type of pollution. Existing technological scheme of wastewater treatment can not provide sufficient level of cleaning of bioactive chemical pollutants that in turn leads to deterioration of ecological safety of the environment.

After analyzing the effectiveness of methods of disposal the low quality hazardous waste products for veterinary medicine, as well as feed and feed additives, the most expedient method is to use high-temperature incineration. The so-called of pyrolysis – controlled process of decomposition of organic compounds under the effect of high temperatures. When using this method, are destroyed all organic components of waste. It should be noted that when using high-temperature incineration, all poor quality

and stale veterinary drugs, feed, feed additives and premixes, as well as the toxic products become absorbed slag product. Incineration process is conducted in industrial furnaces, temperature of which reaches 1200–20000 C. Neutralization of waste occurs at a temperature within a few seconds.

Modern heat boilers are offered on the market of Ukraine – crematorium of wide model range, which allows you to set furnace depending on the needs and volumes of utilization.

For utilization of especially hazardous waste is advisable to use utilizers – crematorium, completed with a secondary combustion chamber and exhaust gases cleaning system. The data heat boilers-crematorium are certified according to ISO 9001–2000.

An important factor in their application are:
- biosafety;
- practicality and autonomy;
- the use of energy from waste;
- no smoke and odor;
- disposal of waste as far as their education.

An essential factor is the price component. The method of high-temperature incineration of waste by modern crematoria is much cheaper from other methods of waste disposal. This method complies with the requirements of environment safety and utilization, well as control emissions of hazardous substances into the atmosphere according to GOST 17.2.3.02 and DSP201-97, protection of soil from the contamination of household and industrial waste according to SanPiN 42-128-4690.

Taking into account the experience of individual enterprises on utilization of poor quality production can be regarded as high-temperature combustion method is effective and feasible in the use and complies with the environmental, technological and technical requirements of waste disposal, of poor quality and stale products of veterinary medicine, substandard feed, feed additives and premixes.

Conclusions

After a thorough analysis of methods of disposal hazardous waste products of low quality for veterinary medicine, as well as the feed and feed additives, the most expedient method for using is a method of high-temperature incineration. In the application 240 of this method, all organic waste components are destroyed and toxic substances become absorbed by slag product. Very important is that the high-temperature combustion method complies with the requirements of environmental pollution from domestic and industrial waste.

*Perspectives of further research***.** Further study of issues relating to the utilization of poor quality production for veterinary medicine. Preparation of information material for the utilization for manufacturers and consumers of products for veterinary medicine.

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