Ye. M. Kryvokhyzha, O. M. Zhukorskiy, O. V. Nykyforuk, O. B. Lesyk. Environmental risks of sanitary processing of dairy and milking equipment in personal peasant farms

The goal of the work was the study of efficiencyof sanitary processing of milking and dairy equipment in private household farms and evaluation of ecological risks of use of different detergent-disinfectants.

Research methods used. Comparative assessment of the effectiveness of sanitary processing of milking and dairy equipment in private household farms was conducted using commercially available in Ukraine detergent-disinfectants: domestic, alkaline – Hlorantoin (active ingredients –sodium carbonate, sulphonol, sodium tripolyphosphate and corrosion inhibitor) and foreign, neutral – Eco des, (cationic surfactants). Imported acid detergents, including: Eco cid, Hipracid and Acid XD and acid detergent TDS, developed by scientists of Ternopil Experimental Station IVM NAAS, were used. The sanitary-hygienic and ecological estimation for the use of differentdetergent- disinfectants was conducted in private household farms of Chernivtsi region. All the detergent-disinfectants were used in concentrations and at temperature according to the instructions for use. Cow's udder before milking was sanitized with disposable wipes moistened with0,5% solution of Kenopur produced by "Cid Lines" company. Milking machines, bucketsfor milk and glass jars storing freshly drawn milk before transfer to procurement rural assembly point are subjected to sanitary processing. The sanitary processing of milking machines was conducted at once after completion of milking of cows in the automatic mode and dairy utensils (bucket for milk and glass jars) after pouring off milk was carried out by hand with the use of a brush.

The scheme of sanitary processing of dairy utensils included next operations: previous rinsingof milking and dairy equipment from residue of milk with water at temperatures +35–45 ºC in an amount of 8 litres; processing with the investigated solution of detergent-disinfectants at temperatures +50–60 ºC during 2 minutes (in an amount of 10 litres); rinsing of milking and dairy equipment from the remnants of alkaline or neutral detergentswith water at temperatures +35–45 ºC in an amount of 8 litres. For milking machines additionally, it was conducted: processing with acid detergentsolution at temperatures +50–60 ºC during 2 minutes (in an amount of 10 litres) and rinsing of milking machines from the remnants of acid detergentswith waterat temperature of +35–45 °C in an amount of 8 litres. Bacterial sampling and samples of obtained milk were conducted before and after realization of sanitary processing of portable milking machines from the internal surface of milking rubber, milk collector to the hose, tank of milking machines. Bacterial sampling from the internal surface of bucket for milk and glass jars and also milk, obtained from glass jars, was conducted for the analysis of the sanitary state of dairy utensils. Determination of the number of bacterial colonies from swab of sample and milk was carried outby cup method. Sowing was cultivated in a thermostat at temperatures +30 °C during 72 hours.

Basic conclusions of this study. Use of detergent-disinfectant Eco des for the sanitary processing of dairy utensils in the private household farms by hand way reduces bacterial contamination, on average by 99,8 %, compared with the level of bacterial contamination before processing. Efficiency of application of Eco des washigher by 9,3 % compared with Hlorantoin and allows to support dairy utensils in the proper sanitary state. Using such detergent-disinfectants as Eco des and TDS for the sanitary processing of milking machines is more effective compared with Hlorantoin and Acid XD and allows to reduce microbial contamination, on average, by 99,5 %, that provides an opportunity to get milk with the high microbiological indicators of quality.

Analysis of ecological risks of realization of sanitary processing in 80 private household farms with a total of 100 cows for the use of detergent-disinfectant Eco des showed decreasing residuals of detergent-disinfectants incoming into the environment, including phosphates by 2956,5–4161,0 kg/year and sulphonol by 1095,0–1642,5 kg/year. Domestic acid detergent TDS provides excellent destruction of milk stone and doesn’t contain phosphoric acid. Its use decreases the amount of nitrogen incoming into the environment by 40% compared with imported detergentAcid XD. The use of detergent-disinfectants such as Eco des and TDS for sanitary processing of milking and dairy equipment in the private household farms reduces the probability of violation of natural biocenoses.

Keywords: **environmental risks, detergent disinfectant mean, sanitary processing, milking and dairy equipment, natural environment**