laboratory of chemical technology of the Belgorod State National Research University we developed the technological fundamentals of the combined treatment process of citrogypsum and CO_2 emissions, at the end of which we obtain 2 useful chemical products, ammonium sulphate and nanostructural component fertilizer and calcium carbonate filler.

Feather waste from poultry factories in Belgorod also require utilization and treatment. In the laboratory of chemical technology we created a treatment technology which consists in the thermohydrolytic fission of keratic structures of the feather waste with the presence of inorganic bases. By adding to the obtained hydrolisate a minimal amount of sulphated polyglycol alkylphenol ethers and non-saturated aliphatic sulphonates, it is possible to successfully use such a low-cost composition as a foaming agent for foam-concrete structures.

A reduction of the environmental risk can be achieved by creating safe future technologies. Such approaches towards the environment of the future already exist. It is known that sulfonation and sulfation of organic substances is connected to the presence of gas emissions containing toxic SO_3 and SO_2. In order to neutralise them, it is necessary to use bulky and costly gas purification systems. We have developed a direct-flow many-step technology and an equipment design of the sulfonation process of organic substances by a gaseous SO_3. With this simple technology, the formed gas emissions are of no environmental danger and costly purification facilities are not needed at all. The only necessary thing is a light afterpurification with the help of filters from polyvinylchloride material and mylar felt.

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ENVIRONMENTAL ASPECTS OF THE CLAY USE IN INDUSTRIAL AND AGRICULTURAL PRODUCTION

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In the course of the last 10 years the scientists from the Chair of General Chemistry of the Belgorod State National Research University have been carrying out an active research in the development of efficient sorbents on the base of native montmorillonite clays in the region in order to purify natural and industrial waters.

Experimental sorbents obtained by means of enrichment and modification of the natural clay (its acidic, alkaline and salt treatment) are not worse, and, in some cases, are even better than the traditionally applied sorbents such as charcoal and activated charcoal for the purification of water from heavy metal ions (lead, cadmium, copper, chrome, iron etc.), oil products and fats.

The suggested technological solutions of the implementation of the sorbents mentioned above have been successfully tested in municipal and industrial water treatment facilities.

We also obtained encouraging results in the purification of water from radionuclides Caesium-137 and Strontium-90, the content of which has been monitored on the

radiologically contaminated territories after the Chernobyl disaster of 1986. The half-life of Strontium-90 is 29 years, that of Ceasium-137 – 30 years.

Another direction of our work was the use of clay in agriculture. Sorbents obtained on the basis of modified montmorillonite clays showed high activity in the prevention and treatment of intestinal infections of chicken and pigs.

The use of modified montmorillonite clays in the ration of livestock enables obtaining ecologically clean products of animal origin which can be later used for baby or diabetic food.

A combined prescription of the unified natural sorbents and antibacterial drugs reduces the recovery time and increases the therapeutic action of the specific medicines, because minerals containing montmorillonite have an anti-adhesive effect on the agent of disease and binds bacterial and other toxins created during digestion function disorder in livestock.

Laboratory animals showed good results when treated from experimentally infected wounds by means of combined medicine based on montmorillonite-containing clays which also included medicinal herbs sap.

Several scientific developments and the corresponding technological solutions provided the basis for the organisation of the small innovative company "Nanosorbent-Belgorod State University", which produces feed additives for livestock, adsorbents for water purification, complex mineral and organomineral fertilizers, the implementation of which suppresses the growth of unhealthy microflora.

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ENVIRONMENTAL FRIENDLINESS OF URBAN AREAS: THE ANALYSIS

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Big industrial cities of the Russian Federation have low levels of environmental friendliness (EF). This situation cannot be changed soon due to lack of large investments and readiness of the local and federal governments for such changes. However, existing international examples should be taken into account. Raleigh (USA) is a big city (300 km^2) with over 500,000 inhabitants. Founded in 1792, it was being developed in pre-ecological era of human knowledge. Thus, its high EF may be explained in terms of conventional wisdom of city planners and competency of chief city architects. I consider nine components of the city infrastructure accounting for its high EF.

The 1st component is related to preserving patches of natural landscapes within the city limits. Natural ravines, water bodies surrounded by wetlands and flood-plain forest corridors, and streams were not destroyed in the course of the city development, which accounts for an excellent drainage and provides for the variety of rare plant and animal species occurring and breeding in the city.

The 2nd component translates into clean urban environment as a result of spatial