



## ООО «НПО Кинематика»

Россия, 420061, Республика Татарстан, Казань,  
ул. Н.Ершова, д.29 А Тел.: +7 (495) 680-0878  
info@npo-kinematika.com; npo-kinematika.com

## SIA Kinematics Go LTD

29 A, N. Ershova str, Kazan,  
Tatarstan Republic, Russia, 420061 Tel.: +7 (495) 680-0878  
info@npo-kinematika.com; npo-kinematika.com

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### **The technology of utilization of sludge residues, organic pollution.**

The most urgent problem of megacities and large cities is the utilization of ever increasing accumulations of mud residues at sewage treatment plants. The existing treatment facilities require huge investments in modernization and expansion.

One of the key factors affecting the growth of waste accumulation is the change in the structure of urban sewage. The use of household chemical detergents, preservatives, antibiotics, etc. has risen sharply in recent decades. All this had a catastrophic effect on the biocenosis, which previously coped with this problem.

The innovative technology of information-wave method (IW Method) of activating the processes of intercellular communication with the use of information molecules for bacteria (IM-preparation) was developed by "SIA Kinematics" Go Ltd. Studies have shown that the best result is achieved by activating of bacteria cultivated directly in the object of decontamination.

Controlled activity of indigenous (aboriginal) bacteria allows to ensure the utilization of waste at brand new level, in much less expensive ways including:

1. Technology of forced fermentation of sludge and excrement.
2. Partial elimination of odor (odor blocking).
3. Preparation of feed additives from neutralized waste.
4. Remediation of soils with the improvement of carcass-essential microelements.

The use of the IM-product does not require capital construction, the rate of neutralization (fermentation) of organic masses increases by 15–20 times.

# 1. Technology of forced fermentation of sludge

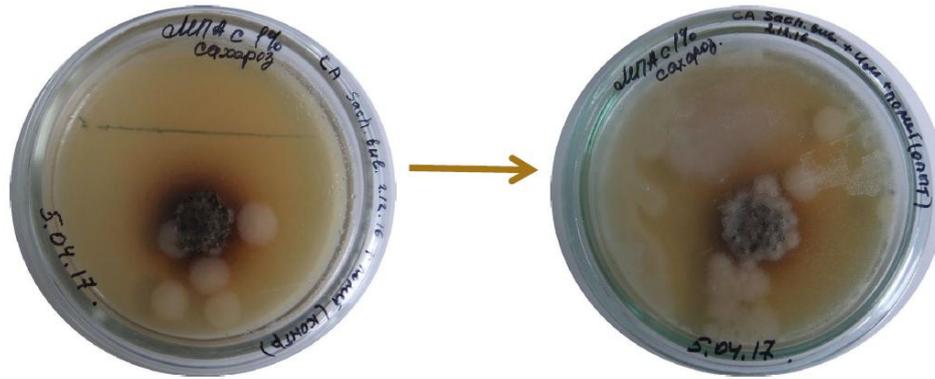


Fig. 1. Change in the intensity of growth and activity of indigenous (aboriginal) bacteria as a result of the introduction of an information molecule. The rate of processing of organic waste has increased 15–20 (or more) times.

Treatment of sludge residues, excrement with IM-product can be conducted directly at the places of their formation (at treatment facilities, in animal and bird maintenance areas). During fermentation, pathogenic micro flora is a source of nutrition of activated bacteria. All of the above has a favorable effect on the environment. The residual sludge and excrement treated with the IM-preparation, does not require long periods of curing. The fermentation process can continue directly on the fields, without exerting a negative impact on the environment.

## 2. Elimination (blocking) of odor

control group (without IM)	group with the introduction of IM in a concentration of 1: 100 000	group with the introduction of IM in a concentration of 1: 1 000 000	group with the introduction of IM at a concentration of 1: 10 000
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Three days of incubation formed only three colonies of active microorganisms	After the introduction of IM, the activity of bacteria changes dramatically, the growth of colonies occurs in a geometric progression, the intensity of their influence increases depending on the concentration of IM
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Fig. 2. Dynamics of activity of indigenous (aboriginal) bacteria under the influence of an immune stimulant.

Additionally, unsplit protein and increased acidity / alkalinity are the source of unpleasant odor. Quashing molecular bonds allows the IM-product to reduce the intensity of odor to point 1 or 2.

### 3. Preparation of feed additives from neutralized waste

The innovative technology of activating the processes of intercellular communication in information molecules of bacteria with the help of the information-wave method makes it possible to convert hydrocarbons into nitrobacteria and nitroso bacterial forms, fixation of nitrogen and mineralization of organic residues, and ultimately to fertilizers or protein forms, for example, protein.

### 4. Remediation of soils with the improvement of essential microelements

IM-products can effectively eliminate the consequences of the negative impact of unauthorized placement of organic waste. After liquidation measures, the contamination site is treated with a certain type of IM-product. The type of IM-product depends on the type of waste and the amount of contamination. IM-product is applied to a depth of 15–20 cm, followed by harrowing the contaminated area.

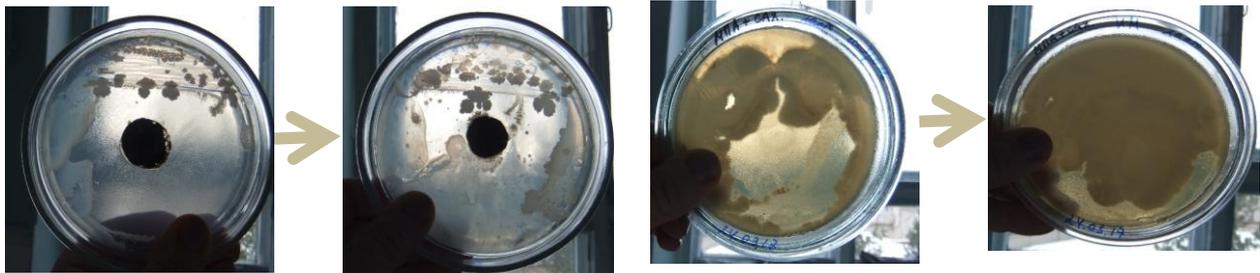


Fig. 3 Laboratory tests have shown a considerable growth of colonies of *Arthrobacter* species, as well as *Rhodococcus* species, and the bacteria started to process and consume the oil slick after interacting with Information Molecule (IM).

Indigenous (aboriginal) microorganisms with an appropriate IM-product can be sprayed from the air by drone in the case of complex terrain or remote areas with extensive contamination.

The IM-product may be applied upon the transition from one cultivated crop to another, or it may be applied preventively to restore and increase fertility of soil. The IM-product contributes to the faster accumulation of highly active biological compounds, enzymes that increase the formation of green mass of plants, compounds useful for perennial microflora.

Technical conditions and technological regulations for production (cultivation) have been developed for each type of IM-product.

### 5. Sludge accumulators. The price formula.

1. Household sewage, for every 100 tons / year — \$160.

Annual maintenance (once a year) — \$3.

2. Industrial wastewater 100 tons / year — \$300.

Annual maintenance (once a year) — \$6.

The rate of utilization of organic accumulations increases 15–20 times.