ODORIENT

TREATMENT

Biological Waste Water Treatment Bacteria

BIOORIENT

Biotechnology

www.bioorient.com.tr

www.bioorient.com.tr

ODORIENT-TREATMENT

ODORIENT-TREATMENT is a specially produced bacteria culture that provides the treatment of organics which are difficult to be treated.

In Biological Waste Water Treatment Plants;

- Increases efficiency of waste water treatment,
- Removes malodor of waste water treatment plants,
- Speeds up putting into use,
- Enriches activated sludge in aeration tanks,
- Decreases amount of sludge discharged from the waste water treatment plansts.
- Specifically produced bacteria culture that treat organics with high BOI.

USAGE AREAS

ODORIENT-TREATMENT is chosen from amongst hundreds kinds of bacteria. They were tested one by one in;

- Municipal waste water treatment plants,
- Milk industry waste water treatment plants,
- Textile industry waste water treatment plants,
- Food industry waste water treatment plants,
- Paper industry waste water treatment plants,
- Leather industry waste water treatment plants,
- Waste water treatment systems which contain high amount of salt,
- Waste water treatment plants which have high level of nitrogen.

Our product is a mixture of bacteria which have been specifically chosen due to their high performance.

In the laboratory, bacteria, that our product contains, have been chosen especially from the ones, which have the highest treatment capacity and have been produced without performing any genetic modification.

It has been proven that **ODOR**IENT-TREATMENT ingredient bacteria are not harmful to enviroment, human beings and animals by genetic and toxilcological tests.

ACTIVE SLUDGE PROCESSES AND BACTERIA

Active sludge processes-also called biological treatment-simply, is a process of treatment that dissolved organic material is digested by microorganisms.

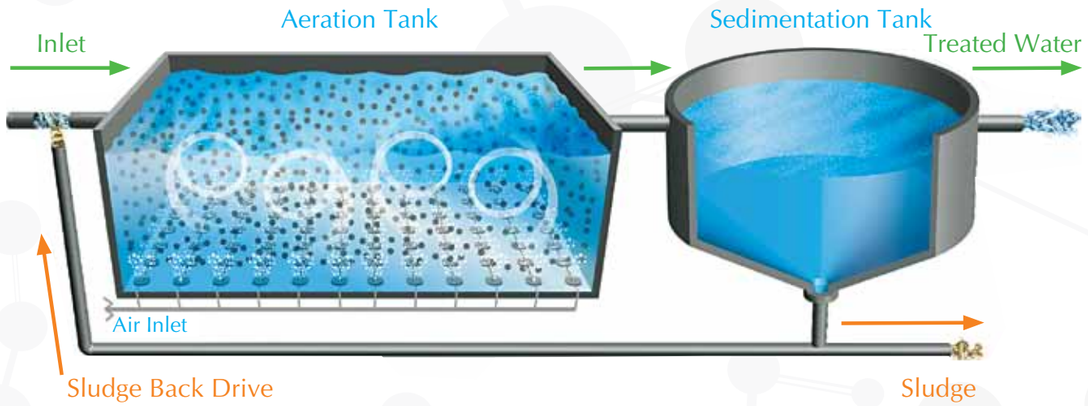
These plants have sensitive but modifiable parameters, work in the existence of smaller bacteria ranges from (2-3 micrometre) to living microorganisms from (1-2 centimeter). 95% percent of an efficient sludge is composed of bacteria and the rest 5% is much bigger living microorganisms.

The microorganisms in the active sludge develop regarding their specifications in nature and the properties of water they treat and they supply their continuation of survival as in food chain in nature.

These sensitive balances could be destroyed by reasons such as seasonal changes, the change of waste water character, sudden changes in capacity, chemicals that contaminate waste water system by mistake and mechanical defects.

This change causes malfunctioning of activity of microorganisms in sludge. Change in sludge activity lead to fall in treatment efficiency, increase in parameters which have been in the range before or malodor.

Aeration step is the most important step in active sludge process. Reduction of organics by bacteria is achieved by aeration. An ideal aeration system makes the treatment go on efficiently by holding the amount of dissolved oxygen in determined ranges. This activity is the highest cost item in biological waste water treatment systems and causes decrease in efficiency if the aeration system doesn't work well.



TREATMENT BACTERIA

These organisms that make up of 95% of active sludge are single-celled life forms which can not be observed with eyes.

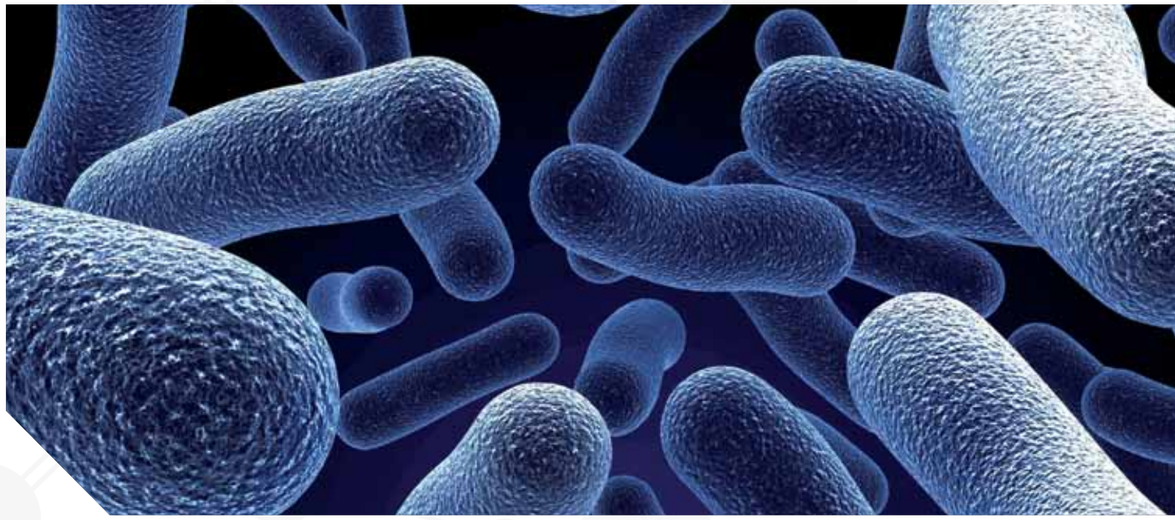
99% of these organisms we live within are in our internal organs, on our skin, even in our mouth or every surface that we touch and they are not harmful and live with us in harmony.

Bacteria reproduce quickly. Therefore, they quickly adapt to the environmental changes. Due to this adaptation skill, bacteria can exist even in the most difficult conditions that mankind can imagine. Bacteria can be often seen in 90 ^{o}C environments and in pH 1 gastric acid.

These organisms are the smallest constituents of ecosystem which are the most important element of waste recycling in nature.

In waste water treatment plants, it is not always easy to reach enough sludge amount (bacteria amount) which will treat the waste water efficiently. Thus, high volume of sludge is transferred from waste water treatment plants whose character is different or it is tried to reach enough sludge volume by adding chemicals such as molasses, sugar, urea, and manure in waste water treatment plants.

This is a hard and long period with an uncertain result. The efficiency of sludge which produced in this way is not sufficient most of the time and this situation can end up with unnecessary extra costs like high energy consumption or high amount of excess sludge.



ODORIENT-TREATMENT BACTERIA

Due to developments in microbiology area, bacteria, which play an important role in active sludge processes, have been characterised and studied.

Our bacteria, selected thoroughly from nature and different kinds of waste water treatment plants by the **BIOORIENT** Biotechnology experts (Microbiologists and Environmental engineers). After their genetical identification, they are classified regarding their function and thorough field trials have conducted.

Since 2007 our firm **BIOORIENT** Biotechnology designed products which solve many problems about biological waste water treatment.

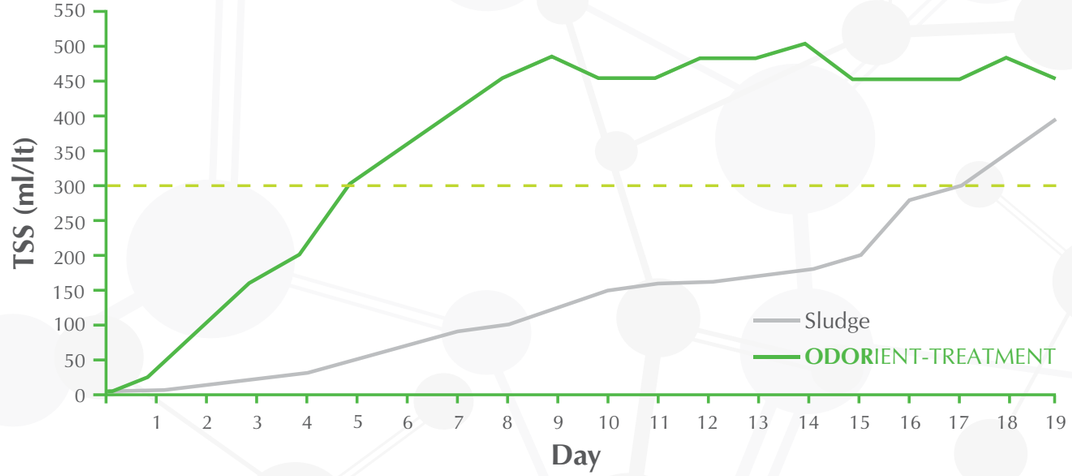
During this period, more than 300 bacteria types are isolated from a variety of waste water treatment plants and waste water itself and their types have been genetically identified and their laboratory tests are conducted. More than 50 types of bacteria, that are tested and approved in the laboratary, have been commercially produced and reached to the end users. These bacteria have been tested in the field for a long time under the inspection of our customers. Also they are tested and reported in privileged universities and laboratories.

ODORIENT-TREATMENT PUTTING INTO USE

Putting into use of a new waste water treatment plant takes approximately a period of 15-20 days. In this period, the plant produces its own sludge and treatment process can not take place.

To shorten this period, sludge is transferred from a different waste water treatment plant or additional chemicals are added such as urea, molasses, sugar, manure etc. to the waste water. However, these methods are ineffective. Because these added chemicals will affect the waste water character and suitable sludge for the plant will not be able to form, which will cause a decrease in efficiency or an increase in plants costs.

ODORIENT-TREATMENT bacteria, even in low carbon and oxygen amount, have a potential of digesting a variety of organics. The number of bacteria in our special formula is much higher than half dead or aged sludge in any plant and have the potential of reproducing fast.



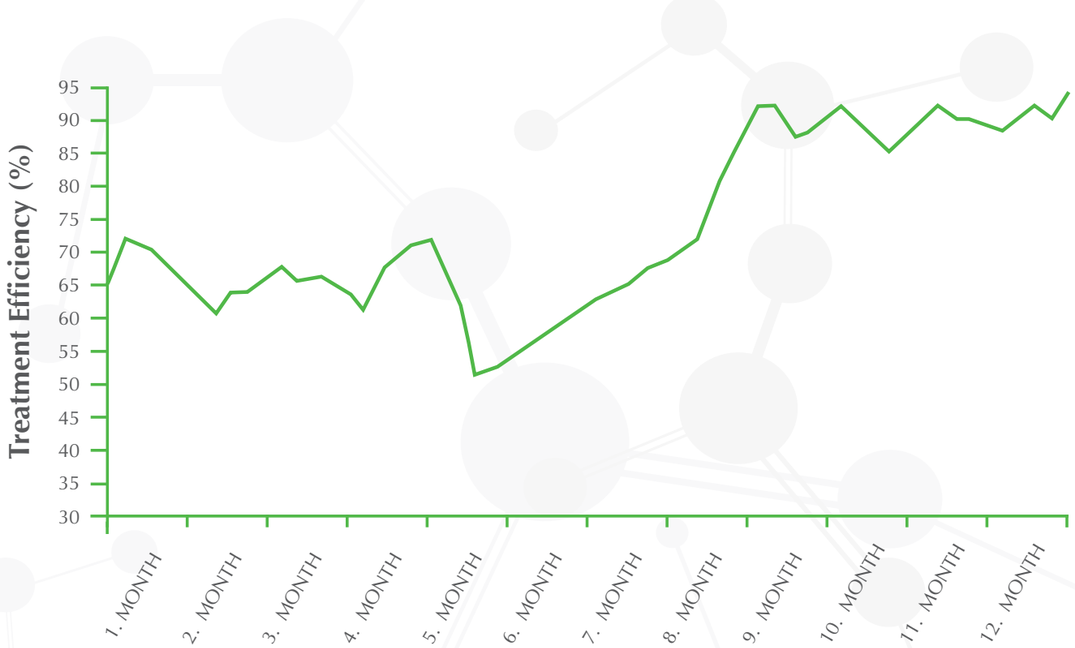
In graphic above, sludge received from a different plant and **ODOR**IENT-TREATMENT applied plant, shows in two different tanks putting into use and mesurements are done in terms of “solid matter”. According to Imhoff values, with **ODOR**IENT-TREATMENT efficiency is sufficient on the 6th day, but transferred sludge reached to same level on the 16th day.

ODORIENT-TREATMENT AND SLUDGE EFFICIENCY

Although sludge level is important in biological waste water treatment processes, the most important part is doing more treatment with less sludge. This provides to spend less energy for aerating the sludge in addition to save waste sludge costs.

Because **ODOR**IENT-TREATMENT special microorganisms can treat waste water even in low oxygen levels, getting high efficiency from low sludge amount is possible.

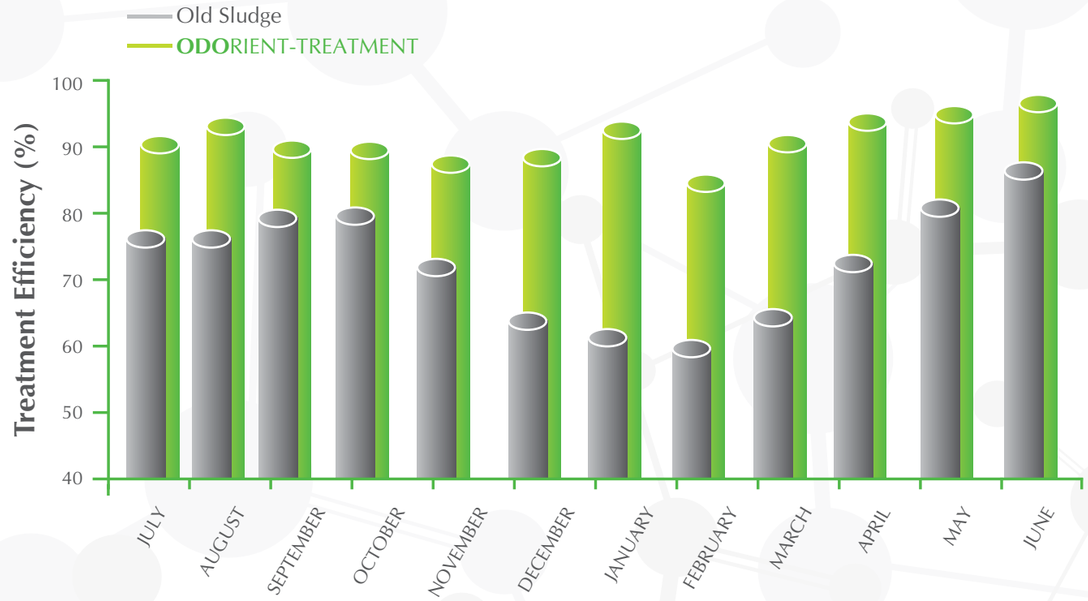
It is difficult to get high efficiency from waste water treatment plants at which the waste water character changing constantly. This also decreases the sludge amount in the process. Microorganisms of **ODOR**IENT-TREATMENT which selected as to be adapted fast to every condition, holds plants efficiency in the highest level.



In graphic above, you can see that treatment efficiency did not go up to 72% until 5th month, after using **ODOR**IENT-TREATMENT it reached to 90% and with constantly usage it has been fixed in this level.

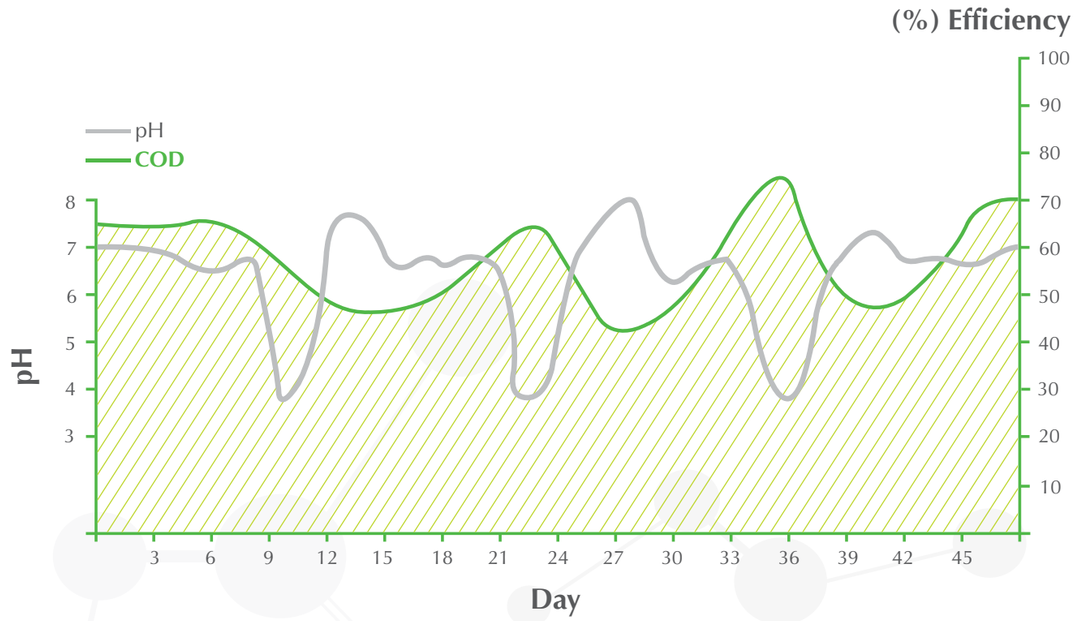
ODORIENT-TREATMENT bacteria that settled in treatment sludge in time, finding place for themselves in the ecosystem of sludge and continue to reproduce. Products regular usage increases their strength and makes them permanent in treatment.

Many plants may be effected due to seasonal changes. This may occur not only because of weather changes but also changes in factory production or population differences in some particular regions.

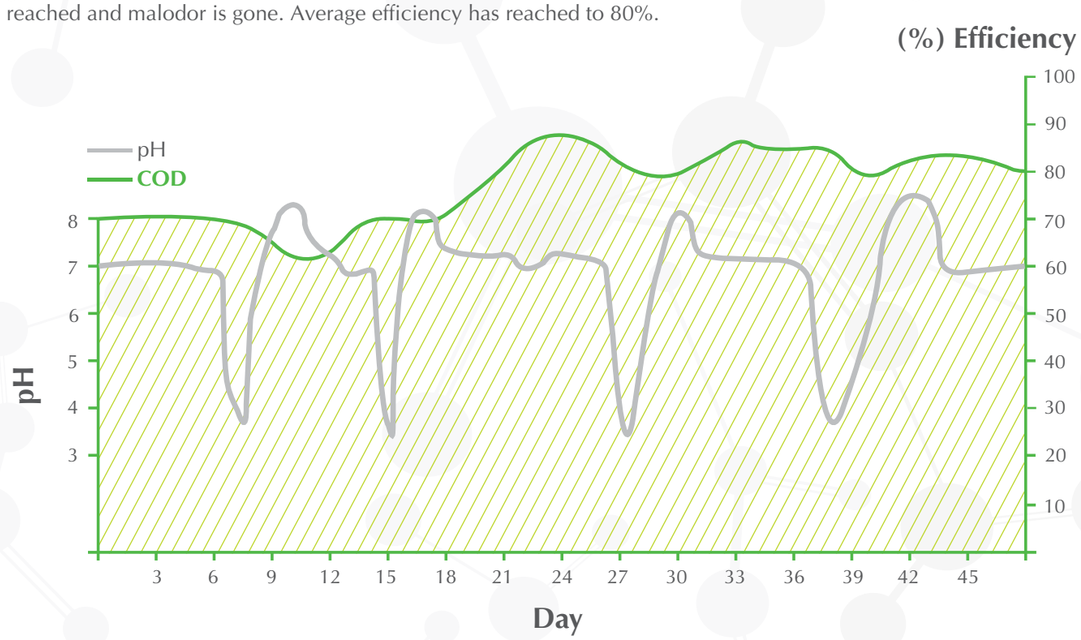


In the graphic above, you can see that a treatment plant which has a decrease in efficiency in the winters, in the following years with the regular usage of **ODOR**IENT-TREATMENT there is no loss in efficiency, malodor has gone, and discharge standards can be reached easily.

In the graphic below, it is observed that efficiency loss and sludge loss due to high COD and low PH of waste water that feed the treatment plant. Before **ODOR**IENT-TREATMENT usage average efficiency was between 55-60%.



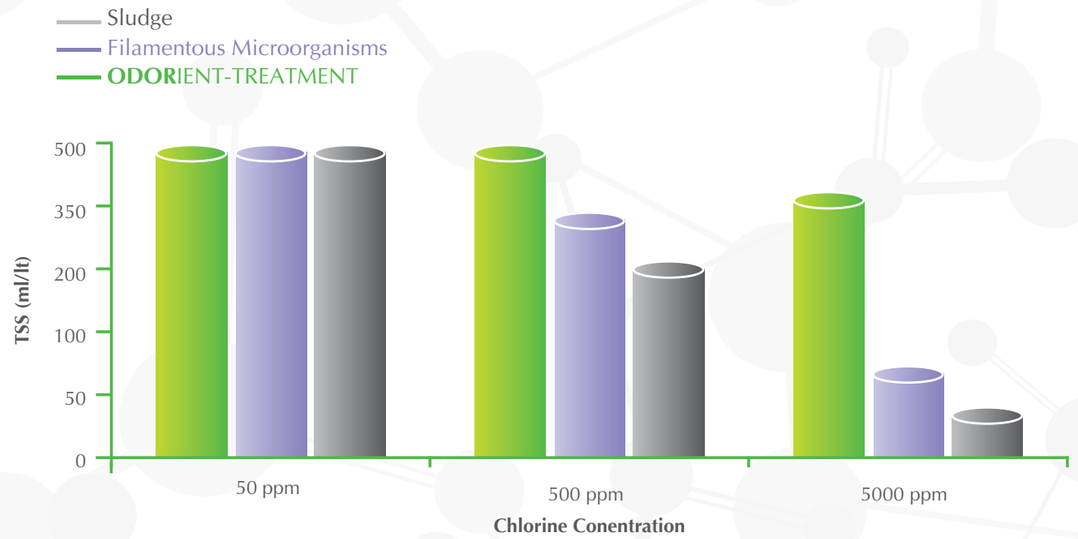
In the graphic below, these problems are solved by using **ODOR**IENT-TREATMENT. Treatment plant efficiency is guaranteed despite the fact that hardly treatable waste waster is still mixed to the system. Discharged standards are reached and malodor is gone. Average efficiency has reached to 80%.



RESISTANCE OF **ODOR**IENT-TREATMENT AGAINST TOXIC CHEMICALS

Thanks to fast adaptation ability of **ODOR**IENT-TREATMENT bacteria, under many difficult conditions, like toxic chemicals mixed with waste water, treatment efficiency never decreases.

Bacteria named *Nocardia*, that causes sludge not to precipitate or cause gray permanent foam, may supress treatment plants since it can esaily reproduce in low level oxygen. Since **ODOR**IENT-TREATMENT bacteria can work even in low oxygen levels easily, it prevents the reproduction of microorganisms which are harmful to treatment plants.



When filamentous microorganisms cause sludge expansion, chlorination method is practiced. **ODOR**IENT-TREATMENT protects the sludge amount even when this method is used in high doses. Also the efficiency is stil high as you can see in the graphic above.

ODORIENT-TREATMENT

- **It prevents the malodors derive from treatment plants.**
- **It increases treatment efficiency.**
- **It increases sludge quality.**
- **It decreases waste sludge amount.**
- **It provides energy saving.**
- **It stops sludge loss in waste water character change.**
- **It increases nitrogen and sulphur treatment.**
- **It prevents forming harmful foam.**
- **It provides the treatments to run even in the most difficult conditions.**

ODORIENT
TREATMENT

Biological Waste Water Treatment Bacteria

BIOORIENT
Biotechnology

İkitelli Organize Sanayi Bölgesi ESKOOP San. Sitesi B2-86 Başakşehir/İstanbul-Türkiye
T. +90 (212) 671 88 49 - F. +90 (212) 671 78 83
info@bioorient.com.tr - www.bioorient.com.tr