BACTerm develops innovative biotechnology and uses already existing in nature, useful bacteria for Environmental Protection, including:

- Bioremediation - Through decomposition and neutralization of hazardous substances from soils, slag heaps, waste and landfills as well as water reservoirs
  - biodegradation of toxic compounds constituting contamination (e.g. petroleum compounds, components of creosote oil);
  - deactivation of heavy metals;
- Wood cleaning (from old railway sleeprs and utility poles) protected with toxic creosote oil;
- Improving the productivity of crops in agriculture with a significant reduction of toxic spraying and an decrease of mineral soil fertilization;
- Elimination from crops toxic compounds derived from herbicides
- Reclamation of degraded (e.g after herbicide use) and sterilized soil (e.g after a forest fire);
- Creation the right microflora soil when growing crops in an unusual environment (e.g in the desert).

Our company uses patented bacterial bio preparations that can be modified in
depending on your needs.

Bio preparations (formulations) are safe for the environment, as they do not contain toxic substances, synthetics or genetic modifications. They are also rapid in their use. The bacteria used in the composition of bio preparations are not pathogens to people, animals or plants. Bio preparations have been thoroughly tested and have the required approvals.

Bio preparations are based on the synergistic interactions of the bacteria that produce the specific enzymes necessary for the process to be complete.
When using bio preparations we have the ability to monitor the effects of their work and control the pace of the process.

<u>Granted patents:</u>
Polish Patent PL 219151 B1
Interniational application PCT/IB2013/001060
European Patent EP 2788512B1
USA Patent US 9,012,200
Ukraine Patent P11868636UA
Russian Patent P-967/04RU
China Patent ZL 201380028059.5

Company of the University of Warsaw
BACTrem sp. z o.o.
02-096 Warszawa
ul. I. Miecznikowa 1

Cleansing the environment of petroleum contamination.

The patented technology allows for the removal of contaminations from soils, heaps, waste and landfills and water reservoirs.

Depending on the needs and natural conditions it is possible purifying at the site of contamination (*in situ*) or outside it (*ex situ* - then the contaminated ssoil is selected, then transported to a safe place and purified on remediation plate).
As a result, we obtain a clean soil or a water reservoir, and harmful substances are decomposed to neutral carbon dioxide and water.

Deactivation of heavy metals

In the case of contamination of the area with heavy metals, BACTrem uses selected bio preparations, enabling conversion of these pollutants into a form non-absorbable by plants, animals and people.
Thus making it harmless to the environment.

Cleansing of old railway sleepers and utility poles (e.g electric pillars) protected with toxic creosote oil

Creosote oil (containing anthracene, fluorene (diphenylamine), phenanthrene, benz[a]anthracene and benzo[a]pyrene) used for the impregnation of pillars and railway sleepers, is considered a non-threshold carcinogen. It is classified as a very toxic and carcinogenic substance.
According to the regulations, secondary use for other purposes (e.g construction or burning in ovens) wood protected with toxic creosote oil is prohibited. As it is a hazardous waste.

BACTrem's technology allows for completely safe extraction of creosote oil from wood, then it is biodegraded and transformed into neutral carbon dioxide and water. As a result, we obtain practically clean wood, which qualifies for secondary use as safe fuel or for other utility purposes.

Saving and improving the efficiency of food crops in agriculture significantly limiting the use of toxic spraying and mineral soil fertilization.

Using BACTrem biopreparation decreases mineral fertilizers use by approximately 20 to 40% - depending on soil category, crops and weather conditions. Mineral fertilizers constitute a significant amount of the cost in agricultural production (about 20 - 25% of total costs), thus it allows for a huge decrease of production costs in agriculture.
In addition, crops growing on the rich microflora soil, stimulated with strains of beneficial bacteria, statistically are more than a dozen percent larger than plants grown on soil using only mineral fertilizers.

Farmers commonly use herbicides. After applying them in the soil, fungi, pathogens and bacteria act adversely on plants.
Addition of BACTrem bio preparations to such soil completely eliminates these negative factors. As a result, farmers can reduce the use of pesticide spraying - means that destroys all bacteria and fungi, which drastically degrades and sterilizes the cultivated field.

Elimination from crops toxic compounds derived from herbicides

One of the very serious problems is the penetration of toxic compounds derived from herbicides into food. The use of appropriate BACTrem bio preparations allows effective degrading of harmful compounds before they get into the crops. As a result, safe and environmentally friendly substances are created.

Reclamation of the correct microflora in degraded soils (e.g after application herbicides) and sterilized after forest fires

After applying the herbicide the soil is degraded - the life practically dies in it.
In the naturally occurring soil, every gram of it contains about 10^{10} bacteria. After applying the herbicide it remain ok. 10^{3} bacteria. In the soil sterilized with the herbicide there are no microflora responsible for the fertility and biological productivity of soils, i.e. necessary for proper plant growth. The addition of appropriate bacterial strains produced by BACTerm to such soil, restores the natural microflora and enables the proper growth of plants. A special use of the bio preparation is to apply them in areas sterilized by fires. In this case, the natural properties of the soil and vegetation are very quickly restored.

Creation the right microflora soil when growing crops in an unusual environment (e.g in the desert)

The extraordinary possibilities this technology allows cultivation of plants in an unusual and extreme environments such as deserts. It makes possible to create a cultivating field under conditions that until now were completely unsuitable - literally on the sand. Using of the bacteria will create an appropriate microflora, which in combination with appropriate fertilizers and nutrients will allow the development of vegetation in a short time.

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