

THE TECHNOLOGY OF EFFECTIVE MICROORGANISMS – BENEFICIAL IMPACT ON GLOBAL ENVIRONMENTS

**By
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The Current Problem of the environment

We humans today have become very concerned about our environment - and say that it is polluted - our lands, water sources and oceans. However if we really think about it - do we not cause this pollution ourselves? Are we not responsible? Can we do something about it without drastically changing our lifestyles - in a small way beginning from our houses and place of work to reduce the level of pollution? This would reduce the adverse effects of our activities on the environment significantly.

Let us for a minute consider the reasons as to why we are concerned about the environment - The principal cause is the odor of solid wastes - and water quality. The causal organisms are Microorganisms - which we do not see but are a vital component in our lives and in the recycling and waste management. If we can change the populations of these microbes from the putrefactive species to beneficial species, we have solved over 75% of the problems of environmental damage, caused by us.

The Technology of Effective Microorganisms (EM)

The technology of EM was developed by me in the very early 1980s, due to my personal negative experiences with pesticides, as a professional horticulturist. While working with different mixtures of microbes used for fermenting food in Japan, it was possible to come across a combination that could breakdown organic wastes through a fermentation process more efficiently and effectively, and without developing foul odors. The developments made thereafter enabled its very successful use in agriculture, especially for the cultivation of crops and management of livestock without the use of polluting chemicals and also for waste management from these enterprises to enable

successful recycling. The success paved the way for using EM in environmental management, both solids and liquids, especially water.

There are other areas in which EM is also used today - ranging from industry to health, but it is my belief that today we need to concentrate on using this simple technology for managing our environment, which is being discussed in all the presentations today.

The technology of EM began with small resources, and was spread to the world through presentations and books - The conferences on nature farming held from 1989 to 2001 in all continents, the papers and even sessions at the International Federation of Organic Agriculture Movements (IFOAM), other scientific and public meetings, books written by me and through scientific papers by fellow workers. The presentations made at the World Water Forum in Japan held two years ago were a significant event to prove that EM helps in water management, a resource that is fast being depleted around the globe. Therefore today, EM is used in over 120 nations, including the United States of America, in all continents, and is made in over 50 nations, using the relevant microbial species from their own environments. The successes achieved in the different continents will also be presented to you by my colleagues during this seminar to demonstrate the versatility of this simple technology.

Mode of activity of EM

The method of activity of EM is very simple - It has three principal species found in all environments - Lactic Acid bacteria, Phototrophic bacteria and yeast, blended together in a sugar based medium at a low pH. These microbes enhance the populations of beneficial organisms in the environment when applied and thus facilitate the management of the problems of odor, putrefaction and decay. The science of the mode of action has been identified, but I will not bore you with details - and research is still being conducted – What is more important is that its use, although still being criticized by conventional scientists,

has been very successful in large scale applications, while some controlled studies have proven otherwise. This has been its success, its acceptance by the users at the grass roots level where the problems really are.

Application of EM in environmental

The use of EM in environmental management is simple - EM is available in the form of a solution, which can be inoculated into solids such as bran of cereal and legume seeds, fermented animal manures and even soil. These can be added to organic wastes and waste water to enhance the populations of beneficial organisms. The methods of application are all well known and available in print as guidelines, even for the United States of America. It is simple and inexpensive to use, due to the possibility of extending the solution by anyone prior to use. It can be and has been blended with household items such as soaps and detergents and normal chemicals that are being used for daily living, with no harm to the microbes, and its use is not restricted to organic systems. Thus its application is versatile and easy. This is why even in countries such as Australia and many nations of Europe, Asia and even in Japan, there are EM based household and industrial waste management products, used very successfully. Although the science of this is being evaluated, people are using it and the demand is rising - This alone shows its success in their primary activity of cleansing and also in reducing putrefactive microbial populations in waste waters. Other products are also being developed by many organizations for waste water and soils waste management systems.

The progress of EM in the World

As stated earlier, the successful use of EM in different parts of the world will be presented by my colleagues, who have been diligently working with the technology for many years at the grass root level. However it is my intention to present a short overview of the developments.

EM was first presented to the world through Asia in 1989, and then to different continents. The first was for successful alternative agricultural systems. The developments expanded into both the developed and developing nations and today countries ranging from Australia to Zimbabwe use EM for many purposes, by governments, private organizations and non governmental organizations. If I am to quote some successes, I could take examples from Japan, where streams, rivers, lakes, even sea beaches and sewage plants have been treated successfully with EM. There are cases from Australia, where EM was used for a sewage treatment project in Mackay city and in holiday resorts on the Great Barrier Reef. EM is used in water treatment and environmental sanitation in the biggest slum in Kenya – the Kibera slum, for city waste management in Vietnam, Thailand and a host of other nations, and there are case studies even in California, the details of which can easily be accessed via the EM Technology Network, based in Tucson, which is represented here. The most recent has been the very successful mitigation of smell in the recent natural disaster in Asia, the Tsunami, which struck on the day after Christmas last year. EM was used in almost all countries affected, but especially in Thailand and India. In Thailand, the Government, especially the Royal Thai Army, airlifted large volumes of EM to the affected regions for odor control and sanitation management. In India and Sri Lanka, many non governmental organizations used EM, again for odor control of putrefying organic debris. Some of these operations were highlighted in the US Press too, which you have seen. The success of these projects did not develop automatically - it was because they had many successful experiences with EM earlier in natural disaster management in Taiwan and Japan.

The future of EM

The technology of EM was developed by me for the world using nature and it's my wish that these natural organisms be used to help and nurture nature- It has been given to many developing nations at no cost - and to developed nations to earn some funds for its sustainability - and not for personal profits or exploitation. It is a technology and not a marketing product. The markets were

developed for humankind. The technology has come to stay - although there are many against it due to many irrelevant reasons and many imitation products, even here in the USA. However the real EM when used properly gives success. It has gone through the phases of ridicule and curiosity and has been accepted now throughout the world. The success stems from its use by many volunteers - who care for the future of humankind. They have worked with EM with diligence to bring about this earth saving revolution as I call it and it has been successful in many nations across the globe. Unfortunately, here in the USA, the progress has been slow, but EMRO USA has been very diligent in maintaining standards and has made much progress in most states across this nation. The work is supported by the EM Technology Network. The information is available and we are willing to share it with all interested.

It is my belief that we make our future. Human misdeeds in the past have made the problems of our environment and we can solve these simply. EM is one of the best solutions as it can be easily used with any other technology, is inexpensive and effective. Hence I do take this opportunity to request all of you to test EM - gather information, which is on the web, read scientific papers abstracted in many international indexes and then adopt EM along with whatever other technologies that you are using. I also hope you will begin, with small attempts and make the public aware of the success you have had. This as shown in most nations will work to make our environment cleaner and sustainable for ourselves and the future generations.