Several applications with the same procedure, using a panchromatic suspension of Silver Ions are registered for storing a specially configured electromagnetic field and then using the material for non-invasive / non-chemical treating:

- Applications to increase shelf life of solid and liquid food by decreasing the total microbial count.
- Application to decrease microbial contamination of liquids like fresh water or waste water.
- Applications to increase growth rate and reduce mortality rate of animals.
- Applications to reduce microbial contamination of meat.
- Applications to increase shelf life of natural produce and fruit.
- Application to decrease inconvenient smell for farming.

Introduction

The treatment of waste water or other contaminated water does include chemical and/or physical treatment. The invention here does, in a non-invasive / non-chemical manner, decrease the growth rate and even decreases the total count of microbial contamination in organic systems or in water.

The importance of electromagnetic fields on biological systems is evaluated in the biophotonic field of research. The organization of the system and the high degree of coherence is shown in a number of works.[1][2] Photons as quantum effects of electromagnetic fields and their importance in biological systems are discussed in several works from Prof. F.-A. Popp and others.[3][4][5] Also the interaction of electromagnetic fields and the regulation of growth in organic systems are discussed in this field of research.[6] The connecting network that regulates the chemical and physical reactions in biological systems is therefore controlled by electromagnetic fields.

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[1] Adey, William Ross / Lawrence, Albert F. (eds.): Nonlinear Electrodynamics in Biological Systems. Plenum Press, New York and London 1984.

[2] Bajpai, P.K. / Bajpai, R.P.: Biophotonic emission as a potential probe of the organizational structure. Annals of Applied Information Sciences, Vol.17, No.1-2 (1991), pp.49-57.

[3] Popp, F.A.: The ultraweak photon emission from biological systems. Bio-Photon-Physics Vol.1, No.2 (1978).

[4] Popp, F.A.: Biophotons - background, experimental results, theoretical approach and applications. Res. Adv. in Photochem. & Photobiol., Vol.1 (2000), pp.31-41.

[5] Popp, F.A.: Quantum Phenomena of Biological Systems as Documented by Biophotonics, in: A. Elitzur, S. Dolev, N. Kolenda(eds.): Quo Vadis Quantum Mechanics? Springer, New York 2004, pp.371-396.

[6] Popp, F.A. / Klima, H. / Schmidt, H.G.: Aspects of growth regulation in biological systems. Bio-Photon-Physics Vol.1, No.3 (1979)

The processes of morphogenesis, growth, differentiation, and regeneration are also explained by the structuring and regulating activity of electromagnetic fields, including fluctuations at a low frequency with a rate of several hertz.

The invented technology interacts and causes a reaction on biological functions, cell growth and differentiation in living tissues. The local electromagnetic field is controlled to generate the deterministic interaction with the surrounding matter.

Instead of single photon emission it takes account of rather refined interference patterns of electromagnetic fields, where the spatial-temporal resolution may range over many orders, from nanometers to meters, and from nanoseconds to seconds and even longer time intervals.

The technology uses a panchromatic suspension to gain the effects on biological systems. The suspension is a gel containing Silver Ions. It has a solid or paste-like appearance. The material is exposed to and then stores a specially designed electromagnetic field. The electromagnetic field is configured to the specific application and implementation covering the needs at the site of production. After exposing the material to the electromagnetic field, the material has to be treated, to store the effect for a longer time.

Invention / Applications

Several applications are already confirmed from independent laboratories. These laboratories are not involved in the production of the material; they used samples of the material provided by the inventors to confirm the proposed effects. Applications can be carried out by using the material itself or by using water that has been treated by the material. The water has no measurable chemical difference from untreated water.

- Applications to decrease microbial contamination of liquids, e.g. fresh water or waste water:
  The stored electromagnetic field decreases the total microbial count in water, especially the coliform germs in wastewater. The smell of the water due to ammonia levels is significantly decreased. The effect has a spatial impact of up to several meters during treatment. The material does not to be in direct contact to the water. The local electromagnetic field and its fluctuation generates vibrations on the molecular level in the water, so the treated water itself will have some similar effect on surrounding water for several minutes. The method allows achieving long term control of algae and bacteria without over treatment. The bacterial action of a typical treatment system is enhanced.

When the fluctuation of the electromagnetic field penetrates a bacterial cell wall and membrane, it acts on the sites of DNA, proteins, and metabolic enzymes, disrupting the proliferation of bacteria, including the proteolytic bacteria which are responsible for producing ammonia, hydrogen sulfide and other harmful gases. Conventional methods involve treating for algae after a bloom occurs, resulting in the need for high treatment levels and damage to non-target species. This technology allows long term control and prevents blooms from reoccurring without buildup of Bacteria or undesired Micro- Organisms on the bottom. This is achieved environmentally friendly and non-toxic to humans or fis

Entry 8-17-05:

Water temperature at 10:15 a.m. was (78° F). Dilution was 75mL Distilled H2O – 25mL River H2O.

RESULTS:

SAMPLE	# COLONIES	% DIFFERENCE
B1	189	--
CCT-3	95*	-50%
P2A-3-A	13*	B1= -93% CCT= -86%
P2A-3-B	4*	B1= -98% CCT= -96%
P2C-3	28*	B1= -85% CCT= -70.5%
MEAN % DIFFERENCE:		B1= -92%
		CCT= -84%

 Decrease in General Coliform Colonies

Entry 8-18-05:

Today's water tests were repeats of the ones conducted on 8-17-05. This test was run to confirm the validity of the results achieved yesterday.

Water temperature: 2:45 p.m. C (79° F)
Dilution: 75mL Distilled H2O
25mL River H2O

RESULTS:

SAMPLE	# COLONIES	% DIFFERENCE
B1	150	--
CCT-3	148	-1%
P2A-3-A	80*	B1= -47% CCT= -46%
P2A-3-B	2*	B1= -99% CCT= -99%
P2C-3	0*^	B1= -100% CCT= -100%
MEAN % DIFFERENCE:		B1= -82%
		CCT= -82%

* Decrease in General Coliform Colonies
^ No Coliform Colonies Present

Overall the results look great. For the second consecutive time the P2A-3-B sample showed decreases in the 90% range. The P2C sample was good, too. However yesterday the results for that sample were around 85%, which is still good. The P2-C sample had no Coliform colonies whatsoever, *E. coli* or General. I plan on testing these

devices at least 2 more times in order to get statistically significant information.

Entry 1-19-05:

Today's tests were a continuation of the series of tests with the P2 CST devices. The testing, dilution, and plating procedures were identical to the previous tests.

Water temperature: 1:30 p.m. (78° F)

Dilution: 75mL Distilled H2O

25mL River H2O

RESULTS:

SAMPLE	# COLONIES	% DIFFERENCE
B1	71	--
CCT-3	65	- 8.50%
P2A-3-A	35*	B1= -51% CCT= -46%
P2A-3-B	0*^	B1= -100% CCT= -100%
P2C-3	33*	B1= -53.5% CCT= -49%
MEAN % DIFFERENCE:		B1= -68%
		CCT= -65%

* Decrease in General Coliform Colonies ^ No Coliform Colonies present

Entry 8-20-05:

Today I ran two sets of river water tests with the P2 CST devices. The first set used left- over water from the tests conducted on 8-19-05. The second test used water that I collected from the river at the boat ramp downtown. The dilution for both tests were 75mL Distilled H2O – 25mL river H2O.

RESULTS: TEST 1

SAMPLE	# COLONIES	% DIFFERENCE
B1	66	--
CCT-3	60	-9%
P2A-3-A	22*	B1= -67% CCT= -63%
P2A-3-B	0*	B1= -100% CCT= -100%
P2C-3	5*	B1= 92% CCT= -92%
MEAN % DIFFERENCE:		B1= -86%
		CCT= -85%

* Decrease in General Coliform Colonies

The test results look great. The P2A-3-B again had no *E. coli* colonies present on the plate, although there were 3 General Coliform colonies.

RESULTS: TEST 2:

SAMPLE	# COLONIES	% DIFFERENCE
B1	72	--
CCT-3	79	10%
P2A-3-A	41*	B1= -43% CCT= -48%
P2A-3-B	1*	B1= -99% CCT= -99%
P2C-3	39*	B1= -46% CCT= -15%
MEAN % DIFFERENCE:		B1= -86%
		CCT= -85%

* Decrease in General Coliform colonies

Again the test results look good, although the *E. coli* levels are a bit higher in both the P2A-3-A and P2-C samples. Again the P2A-3-B sample is in the >99% decrease range for the 5th time in a row.

The Technology is easy to implement, and according several results it could help to use considerable less amount of Chemicals to achieve the desired results.
We would have to understand the problem, and then test in site.

The Technology is very cost effective, it does not require maintenance. It is scalable.

The Technology would initially make the Bio-Flocculants more effective and interact with any other Flocculants by lowering the use of Chemicals.

Tested and validated by:

- Waggeningen University (Netherlands)
- Silliker Inc.
- Mc Graw Environmental Laboratory Inc.
- Prof Kurtz Lab GmBh, under EU standards (Germany)
- Koch Water Management Inc.