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Construction

DRAFT

**EFFECTIVE
MICROORGANISMS:
CURING SICK BUILDING
SYNDROME**

Applications of EM in Construction

Approximately one year after we first started using EM in Barns, one farmer involved in livestock told me the following: "My cattle and pigs have become much healthier, and I've been able to reduce the amount of feed I use by 15%. I can understand how EM has accomplished this. The one thing I don't understand is why the concrete floor which had softened through exposure to animal waste, is now much harder." This was in 1991. Today, I can say this was due to the antioxidation properties of EM, but at the time, I just took in what the farmer told me, without giving it much thought.

The next year, I was appointed chair of a committee set up in the Okinawa office of the federal government to investigate a proposal put forward to use pulverized dirt produced at rock crushing plants. The proposal called for using this waste dirt in concrete and as surfacing in construction and road paving. We looked into the pluses and minuses but eventually shelved the proposal. During our discussions, though, I recalled what the farmer had shared with me, and I began to look into the surface-bonding power of EM.

I discovered that EM can work as a very powerful non-ionic activator. In simple terms this means EM acts as a surficant, which makes paint adhere better, clay more pliant, and if mixed with concrete it strengthens molecular bonding, increasing the total strength of the concrete. As chair of the committee mentioned above, I collected various data, and tried mixing EM experimentally with a number of materials. I found that EM added as 1-2% of the total volume to soil, will dramatically increase the surface bonding power of the material, and if only 8-10% cement is added, it will produce soil cement as hard as rock with no cracks whatsoever. I considered how this technology could be used in agriculture, for reservoirs and irrigation canals, and in non-aggregate roadbed pavements, and other construction materials. I had hoped the opportunity would arise to put this into actual practice.

In the summer of 1993, Mr. Okuma, the vice-head of the Thailand headquarters of the religious organization Sekai Kyusei Kyo, who had heard me speak on the subject, reported that they were planning to build, as quickly as possible, a 3000-person capacity training hall and that they would like to make use of EM in the construction. I was greatly pleased, sure that this would prove to be a major breakthrough in the applied use of EM. I told Mr. Okuma to add 2% EM-1 to the concrete, 3% EM to all the paint, and to spray a 1:500 mixture of EM and water on all the interior walls and ceilings. The outcome was tremendous. The driveway hardened so quickly that cars were able to drive on it the following day. They were able to remove the form used around the roof in only 3-4 days, and the entire construction, originally planned to take over six months, was completed in three months. Numerous volunteers from all over Thailand participated in the construction of the hall. There were not accommodations for all of them,

therefore, many slept at the construction site. Many people who slept at the construction site reported that sleeping there made them feel totally rested and ready for work. I was encouraged by this news. The final step in the construction was the interior painting. The day this was completed, many people spent the night in the newly painted rooms. They discovered that EM had greatly reduced odors from paint thinner and formaldehyde. The power of EM is amazing, they reported.

Building Healthy Homes with EM

These successes in Thailand encouraged me, and I spoke of these experiences in all my lectures afterwards. Specialists in the construction field completely discounted what I said. If only they'd try it, I thought, they'd see how it works. But of course in many cases there are laws and regulations that make it difficult to put ideas into practice quickly. People involved in design and construction tended to reject outright the idea of adding microbials to cement. They were worried because they were not sure of the results. As always, I continued, without any particular data, to promote the application of EM in construction. For me, the results seen in the construction of the 3000-person capacity hall in Thailand speak for themselves, and data was somewhat beside the point. EM technology has always developed in this way, based first and foremost on the results from the field, which are then further refined and developed.

At first, people in the construction industry rejected the use of EM. However, individual supporters of EM have shown a great interest in the use of EM in the construction of their own homes, and we have provided them with as much information as possible. In my own home, for instance, when it came time to repaint, we mixed EMX and EMX ceramics at 3% in the paint. The whole house now feels more comfortable, with no more mold or house mites. Furthermore, the bookworms that were destroying some of my old books have completely disappeared. It has been shown that applying EM to the interior of houses greatly increases the LFA and MRA immuno-vibration [*hudo*] indices. Using EMX and powdered EMX ceramics raises these indices even higher. It is clear that these results are both stable and long lasting.

At Hotel Niigata we pioneered the use of EM in existing structures. And in 1994, the long-awaited first "EM House," owned by Mr. Tadao Higa, was completed. After this, many EM houses were built all over Japan, beginning with one in Nishio City in Aichi Prefecture. Farther, the Hikari Hirakata Building in Tokyo and the Urasaki Building in Sapporo have proven the feasibility of EM used for major concrete constructions.

EM and the "Sick Building" Syndrome

EM has been applied to building materials and interior materials throughout Japan. Earlier, I introduced Mr. Aida and Mr. Hirakata, pioneers in this field. They claim significant results, and

have also been unstinting in providing information to many people regarding the use of EM in construction and interior finish work.

Through the uses of EM I've introduced above, I believe it is possible for EM technology to completely resolve the problems associated with the so-called "Sick Building" syndrome. [Translator's note: This is a term used for the health problems associated with the use of various chemicals in building materials, household paints, etc.] The use of EM-1, EMX, and EMX powder (all high vibration materials) added to building materials, interior materials, and paint, with EMX sprayed as a final step, and EM used in everyday house cleaning, can together be an effective remedy to the "Sick Building" syndrome. Moreover, living in such a house will promote the maintenance of good health, and such houses will be more permanent and durable.

Even existing older houses can be transformed into regenerative-type, healthful houses through the application of EM and EMX ceramic powder under the floors, in gardens, and on walls. By rubbing EMX and EMX ceramic powder on pillars and floors, preservatives such as formaldehyde used in building materials, and organic solvents used in paints and adhesives can be quickly broken down and neutralized through the antioxidation properties of EM. Much has been said of the mechanisms involved in this, but it's possible to see this as the prevention, catalytically, of injurious reactions produced by oxygen-reduction. Since the effects are long lasting, only once-a-year application of EM is necessary to achieve results far exceeding one's expectations.

For the past several years, we have had the goal of actively promoting the use of EM technology to resolve the "Sick Building" syndrome, while conducting research into the uses of EM in construction. The leader of this has been Mr. Nobumasa Chinen, formerly head librarian of the Gushikawa Library and now chief of the Building Department of Gushikawa city. When he took this new post for the city, Mr. Chinen began to promote the comprehensive use of EM in public works construction such as swimming pools and schools. In addition, Mr. Chinen formed a research group to study these areas, which on January 22nd of this year became the EM Construction Research Association. The Okinawa Association of Architects has fully supported this with over half of the architects in Okinawa as members, actively supporting the association's activities.

As I have said on numerous occasions, the destruction of the environment, the deterioration of materials, and illnesses, are all the result of strong oxidation. The amazing phenomenon of EM, which one might say goes beyond science, has the power to prevent oxidation. Moreover, through its vibration catalytic effects, it can revitalize materials that are already oxidized. I truly believe that our society of the future must be based on the everyday application of EM.

(Excerpt from an article by Dr. Teruo Higa in Eco Pure magazine, No. 24, June 1, 1998, pp. 41-43. Translation Department, EM Technologies, Inc.)

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Applications of EM in Construction

There are many cases now of EM being used in building and construction, though at present these application methods are not fixed. Below we have compiled, from several sources, some basic recommendations regarding these architectural applications of EM; these basic guidelines were compiled to be used in Gushikawa City when companies submit bids for public works projects.

Materials used at present	Gushikawa City	EM no Sekai to Mirai (Japanese book)	Our building	EM System Network, Inc.
<i>Concrete</i>				
Extended EM	0.2% (0.5-1%)	1 - 2%	0.1%	
EMZ	0.1% (none)		0.01%	
EMX Ceramic Powder	0.1% (0.1-0.2%)	0.1 - 1%		0.1 - 0.2%
<i>Foundation pre-treatment</i>				
Extended EM	(100 cc/m ²)		saturate as much as possible	100 cc/m ²
EM (Extended EM and EM mother solution)	5cc/m ²			
EMX Ceramic Powder	20g/m ²	15 - 30g/m ²		
<i>Paint</i>				
EMX Ceramic Powder	3% (1% is OK) (0.1 - 2%)		0.3%	0.1 - 2%
<i>Adhesive Materials</i>				
EMX Ceramic Powder	3% (1% is OK) (0.1 - 2%)		0.3%	0.1 - 2%

The figures given in parentheses above are based on recommendations given by Prof. Higa. Please note that when concrete is treated with the recommended amount of EM materials given above, the amount of EM materials mixed with paint and adhesive materials may be reduced to the figures given in parentheses.

[Source: EM Research Organization, Okinawa, Japan. Translated by Translation Department, EM Technologies, Inc., Tucson, Arizona, USA.]

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