

EM Technology® For Better Life

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**Our Proposal**  
**For Fundamental Solution**  
**To Wastes From Livestock Farms With EM**  
**- Zero Discharge System -**

All kinds of animal farms are accused of environmental pollution. Especially the waste water from the farms are contaminating the water channels and threatening the public health. Many of them are seriously trying to solve the problems but have failed in finding fundamental methods so far. Even such methods are available they may be too expensive to be employed.

Some of the accused farms are appealing to DOE (Department Of Environment) "*We have tried all sorts of technologies available economically in the markets but failed to achieve the target you insist us to follow. Therefore please introduce us the best technology we can use for fundamental solution.*" There will be no answer from DOE except for "*If you can't follow our guideline you have to shut down your farm.*"

Actually this is not a joke at all. In Sabah one palm oil mill which belongs to a very famous large corporation was forced to shut down because they could not meet the guideline for the water discharged from the mill. How they can afford to waste their investment amounting to as much as RM 100 million ?

Here we are discussing about the wastes from livestock farms, not from palm oil mills but such strict action by DOE against palm oil mills is a clear warning against livestock farms. Especially hog farms are faced with rather delicate situation in Malaysia due to religious issues.

Now, *Natural Resources Defense Council* from USA comments in their home page on the dangers against environment potentially caused by livestock

industries as follows. This is a rather long article but it is worthwhile for us to read it.....

### **Facts about Pollution from Livestock Farms**

*Giant livestock farms, which can house hundreds of thousands of pigs, chickens, or cows, produce vast amounts of waste -- often generating the waste equivalent of a small city. While a problem of this nature -- and scale -- sounds almost comical, pollution from livestock farms seriously threatens humans, fish and ecosystems. Below are facts and statistics that tell the story.*

#### **Livestock pollution and public health**

- *California officials identify agriculture, including cows, as the major source of nitrate pollution in more than 100,000 square miles of polluted groundwater.*
- *In Oklahoma, nitrates from Seaboard Farms' hog operations contaminated drinking water wells, prompting the U.S. Environmental Protection Agency to issue an emergency order in June 2001 requiring the company to provide safe drinking water to area residents.*
- *In 1996 the Centers for Disease Control established a link between spontaneous abortions and high nitrate levels in Indiana drinking water wells located close to feedlots.*
- *High levels of nitrates in drinking water also increase the risk of methemoglobinemia, or "blue-baby syndrome," which can kill infants.*
- *Animal waste contains disease-causing pathogens, such as Salmonella, E. coli, Cryptosporidium, and fecal coliform, which can be 10 to 100 times more concentrated than in human waste. More than 40 diseases can be transferred to humans through manure.*
- *In May 2000, 1,300 cases of gastroenteritis were reported and six people died as the result of E. coli contaminating drinking water in Walkerton, Ontario. Health authorities determined that the most likely source was cattle manure runoff.*
- *Manure from dairy cows is thought to have contributed to the disastrous Cryptosporidium contamination of Milwaukee's drinking water in 1993, which killed more than 100 people, made 400,000 sick and resulted in \$37 million in lost wages and productivity.*
- *In this country, roughly 24 million pounds of antibiotics -- about 70 percent of the nation's antibiotics use in total -- are added to animal feed every year to speed livestock growth. This widespread use of antibiotics on animals contributes to the rise of resistant*

*bacteria, making it harder to treat human illnesses.*

➤ *Large hog farms emit hydrogen sulfide, a gas that most often causes flu-like symptoms in humans, but at high concentrations can lead to brain damage. In 1998, the National Institute of Health reported that 19 people died as a result of hydrogen sulfide emissions from manure pits.*

### **Livestock pollution and water pollution**

➤ *Huge open-air waste lagoons, often as big as several football fields, are prone to leaks and spills. In 1995 an eight-acre hog-waste lagoon in North Carolina burst, spilling 25 million gallons of manure into the New River. The spill killed about 10 million fish and closed 364,000 acres of coastal wetlands to shellfishing.*

➤ *From 1995 to 1998, 1,000 spills or pollution incidents occurred at livestock feedlots in 10 states and 200 manure-related fish kills resulted in the death of 13 million fish.*

➤ *When Hurricane Floyd hit North Carolina in 1999, at least five manure lagoons burst and approximately 47 lagoons were completely flooded.*

➤ *Runoff of chicken and hog waste from factory farms in Maryland and North Carolina is believed to have contributed to outbreaks of *Pfiesteria piscicida*, killing millions of fish and causing skin irritation, short-term memory loss and other cognitive problems in local people.*

➤ *Nutrients in animal waste cause algal blooms, which use up oxygen in the water, contributing to a "dead zone" in the Gulf of Mexico where there's not enough oxygen to support aquatic life. The dead zone fluctuates in size each year, extending over 5,800 square miles during the summer of 2004 and stretching over 7,700 square miles during the summer of 1999.*

➤ *Ammonia, a toxic form of nitrogen released in gas form during waste disposal, can be carried more than 300 miles through the air before being dumped back onto the ground or into the water, where it causes algal blooms and fish kills.*

The above article is discussing about the case of USA but it could be applied to Malaysia as well. There are many points to be considered with this article but using large quantity of water at livestock farms for washing away the dung and urine would be the biggest contribution to the problems. Therefore, if we can eliminate the washing exercise at the farms we can safely say that 90 % of environmental problems at the livestock farms can be solved.

Having said so, since we can not stop eating livestock we have to find a way to solve the problems fundamentally by all means and with our EM Technology we can achieve it very economically !

## **Zero discharge of waste at hog farm**

Normally environmental problems arising from the waste water are found at hog farms. We find less cases with cow and goat farms and almost none at chicken farms.

All the hog farms were open long time ago in Malaysia at places with little population. Now, following the growth of townships more people started living near the farms and farm owners are faced with serious protests by the communities. Of course, they wish to continue their business at their place with good harmony with the community. How we can do it ?

## **How EM works for solution ?**

This system is not a new but has been practised in Japan for quite some time. Recently, following the growth of popularity of EM Technology in the world it was introduced to China and now spreading very fast as a means to solve the environmental problems at the livestock farms fundamentally. It was understood that the Deputy Prime Minister in China declared " This system with EM Technology is a revolution !"

Now, the basic method is as follows :

- ◆ We ferment organic wastes such as saw dust/rice husk etc with EM and place it on the floor of the pen. Due to fermentation the bed will be always warm. Babies of hogs/chickens would be very happy to stay there thanks to the warm temperature of the bed.
- ◆ After certain time later the bed will become thinner and thinner and therefore it would be better for the farm to keep applying fermented saw dust/rice husk etc additionally.
- ◆ EM should be applied regularly to the bed to maintain a good condition at the bed.
- ◆ Due to fermentation of the bed speed of evaporation of moisture will be very fast. Animals on the bed will feel cool thanks to the evaporation of the moisture.
- ◆ If the surface of the bed becomes too dry dust will start floating from the bed in the air and may affect the respiratory organs of the livestock. To avoid this potential problem farm is advised to keep spraying mist from the ceiling so that the surface of the bed is always wet. Spraying mist from the ceiling will keep the livestock comfortable. Mist should be always mixed with EM.
- ◆ Droppings of the livestock will be fermented on the bed automatically and

finally mixed with the materials of the bed. Foul odor will be much less or even eliminated completely. You will hardly see flies and mosquitoes eventually. There will be no ammonia and methane emission from the bed once the bed is fully fermented. As such, subject to successful application of a new methodology to United Nations we may be able to claim carbon credit through elimination of green house gases which are usually emitted from the waste water treatment ponds at livestock farms.

- ◆ The bed can be removed after the harvest and used as fertilizer with high quality but if they wish they can maintain the bed without removing from the pen forever. They can continuously use it by adding materials and in fact we believe keeping the bed would be better for the livestock since the bed is full of EM.
- ◆ While livestock stay on the fermented bed farm is advised to mix EM in the drinking water and Bokashi additive with the feed. With these application methods all kinds of drugs including antibiotic can be eliminated, thus substantial cost down can be achieved. They will be healthy enough and therefore can fight against any diseases without medicines.
- ◆ Mortality rate will be down substantially and FCR (Feed Conversion Ratio) will be improved as well. With those merits we expect about 10 % of cost saving from the total operational cost.
- ◆ Thanks to EM and elimination of drugs quality of the meat of livestock will be improved and become very tasty. For example ordinary broiler meat will be similar to rural chicken. Fat will be reduced to half and cholesterol will be down to 1/3. As such, value of the products will be enhanced and appeal better to health conscious consumers.
- ◆ With all those merits, subject to marketing strength, farms should be able to make a lot of profit by selling at premium price. Exporting those good quality of products will be easier than before.
- ◆ Eating such healthy products will help improve our physical condition as well and reduce our medical bills in due course.



**Fermented saw dust**



**At a hog farm in China with Dr.Higa,  
inventor of EM Technology**



**We do not need this kind of treatment pond anymore**



**Zero discharge  
Cow Farm**

**Zero Discharge  
Goat Farm**



**We should not  
use this kind of  
hut anymore to  
avoid  
environmental  
pollution.**



**Double deck  
chicken hut.  
We can use both  
upstairs and  
downstairs. Bed  
can be kept until  
harvest or even  
permanently.**



**We strongly believe that our system is the most effective and economical as a fundamental solution to the environmental problems at livestock farms, enabling us a sustainable operation.**

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