

# NEWS LETTER



ENVIRONMENTAL EDUCATION

## TRAINING OF TRAINERS WORKSHOP

20 - 21 APRIL 2019

8AM - 5PM | INFORMM, USM PENANG

**BEGINNER SESSION**  
**RM300/PAX**  
(include meals and manual)

**EARLY BIRD 20% OFF**  
(payment received within first 10 days of registration, by 20 March)

**30% OFF**  
Senior Citizens & Students (with valid ID)  
 Group Registration (3 pax & above)

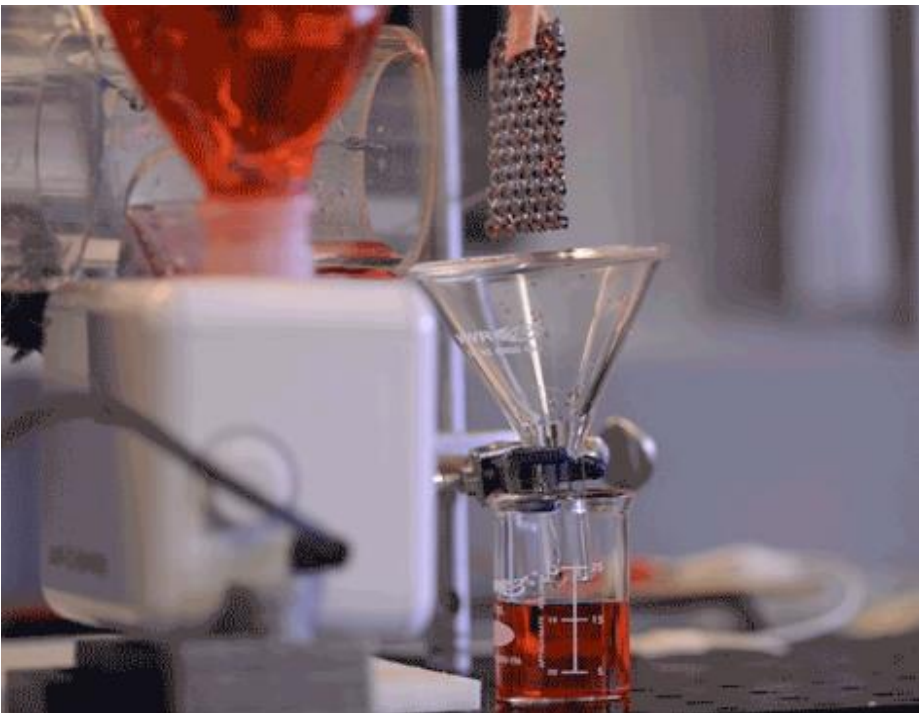
**Focus Topic:**  
 Knowledge on Climate Change, Waste and Energy.

**Activities:**  
 Classroom Lecture / Group Learning,  
 Problem-Solving with Given Scenarios,  
 Promote Critical Thinking, Group Discussion.

**Target group:** Suitable for adult learner (above 18 y/o) who want to have understanding at introductory level for selected environmental topics.

› **Trainers:** PGC in-house HRDF-certified trainers

› **Target group size:** 20- 25



## This Innovative Technology Harvests Water from Cooling Towers

Water-scarce cities could get a new source of the precious resource through a simple and cost-effective technology.

*By David C. Wagman*

**T**o a researcher like Kripa Varanasi, an associate professor of mechanical engineering at MIT, a big nuclear power plant similar to the one that generates electricity near Cape Town, South Africa, is a fountain of water just waiting to be tapped.

The 1,800-megawatt Koeberg Station drinks in water from the nearby Atlantic Ocean and uses it as part of its thermal cooling cycle. Just as in other industrial settings, cooling towers are an inherent part of the power plant's steam cycle. As the reactor heats ultra-pure water to create steam to spin a turbine and generate electricity, a cloud forms and rises from the cooling towers, akin to the plume of "steam" that wafts from the brim of a hot cup of coffee.

And with Cape Town—a city of more than 4 million people—facing a nearly existential crisis due to a drought that began in 2015 and that could see the city run out of potable water as soon as next year, Varanasi sees an opportunity for his remarkably simple technology.

He and colleagues from a new startup plan to demonstrate later this year at MIT's main power plant that much of the vapor plume can be captured and turned into drinking water. The technology is expected to work at a low cost both in terms of capital equipment and energy.

The idea of capturing water droplets from the plume of fog is nothing new. Existing systems tend to consist of little more than a screen door-type mesh structure stretched across the path of a fairly reliable fog bank. But these passive systems capture only a frustratingly small amount of water, as little as 1 to 3 percent of the plume, Varanasi says. That's because moisture-laden air currents tend to travel around and not through the mesh screen material, carrying precious water droplets with them.

The innovation from Varanasi's MIT lab applies a small electrical current to ionize the air and cause the droplets to be attracted to the mesh. Once captured, the water drains into a beaker in the lab or a cistern at much larger scales. Varanasi claims that once at full scale, the approach can be efficient, productive, and able to pay for itself in as little as two years.

"We want to become a water company," Varanasi says of his startup, Infinite Cooling. In that sense, he and his co-founders want to use industrial cooling towers as something akin to a farm where they will harvest otherwise lost water. Once captured, the water could be sold back to a host power plant and reused. Or, in a water-starved place like Cape Town, the distilled water could be delivered to a municipal water system for drinking and other domestic use.

Varanasi's work at MIT focuses on nano-engineered surface, interface, and coating technologies. Already, he has co-founded two startups, LiquiGlide to commercialize super-slippery coatings, and DropWise, to commercialize an advanced coating material that increases efficiency in power plant desalination and refrigeration systems.

**His latest startup, Infinite Cooling, is working to raise around \$2.5 million to scale up the water capture technology from the laboratory to commercial deployment.**

The capture system is described in a paper published 8 June in the journal *Science Advances*. It was co-authored by Varanasi and Maher Damak, one of his PhD students. Both are among Infinite Cooling's co-founders.

Varanasi and his partners point out that the electric power sector is second only to agriculture in terms of how much water it draws from lakes, rivers, and streams. For instance, he says, a 600 megawatt (MW) combined cycle gas-fired power plant with a 55-percent capacity factor drinks in the same amount of water each year as a city of 100,000 people.

To be sure, most of that water is used for "once-through cooling" and then is dumped back into the source. In practice, water flows in at one end of the plant, cools condensing equipment and other systems critical to the steam cycle, and exits at the plant's other end.



Lotte Mart, one of the three biggest supermarket chains in Vietnam is using banana leaves instead of plastic bags to wrap its vegetables. PHOTO: LOTTE MART VIETNAM / FACEBOOK

## Vietnam supermarkets turn to banana leaves to wrap vegetables

PUBLISHED APR 3, 2019, 1:56 PM SGT, STRAITSTIMES ASIA

HANOI (DPA) - Several supermarkets in Vietnam have joined a campaign to use non-plastic products to wrap vegetables in a bid to protect the environment, state media reported on Wednesday (April 3). The three biggest supermarket chains in Vietnam - Lotte Mart, Saigon Co-op in Ho Chi Minh City and Big C in Hanoi - have started using banana leaves instead of plastic bags to wrap vegetables, the online newspaper Vnexpress reported.

Shoppers at a Lotte Mart outlet in Ho Chi Minh City were recently surprised to see scallions, okra and other vegetables wrapped in banana leaves, the newspaper reported, adding that the company will expand the use of banana leaves to the entire chain in the country later this year, following a trial period in the southern city.

The measure is part of an effort to switch to environmentally friendly products, not just for vegetables but also for fresh meat, the newspaper said.

The Ho Chi Minh City Lotte Mart was also selling paper straws and food boxes made from sugarcane waste, while eggs were contained in paper packages instead of plastic boxes.

Big C is offering shoppers completely biodegradable bags made with corn powder.

Vietnam generates about 2,500 tonnes of plastic waste a day, according to official figures. The country ranks fourth globally for the amount of plastic waste dumped into the ocean, according to the United Nations Environment Programme.



Source : spectrum.ieee.org

“If you truly love nature , you will find beauty everywhere”

Van Gogh

## From Monkey Mind To Mindfulness



### 7 Tips for Taming Your Monkey Mind and Becoming More Productive

Ever feel like you are in an energy slump and can't get motivated or accomplish anything? Those times when you just cannot focus, no matter what?

You're probably familiar with the usual slump-inducing culprits – lack of sleep, nutrition that doesn't nourish, and not enough exercise, among others. But there's also an underlying player that often goes undetected – it's what we in yoga call "The Monkey Mind."

Here are a few ideas to get that monkey under control. What the heck – give a few of these things a try! Again, in yoga, we believe everything you do matters.

#### Smile.

Yup – even that much helps. Not even kidding – there is science to back this up.

#### Roll a tennis ball under each foot for at least 1 minute.

If you find a tender-ish spot, roll a bit longer in that area. Might as well breathe consciously while you are at it – see if you can inhale as you roll the ball forward and exhale as you roll the ball backward.

#### Go outside and walk for at least 5 minutes.

And, for heaven's sake – WITHOUT A HANDHELD DEVICE. Just focus on your breathing – see if you can take 5 breaths without losing your focus. The minute your mind starts to wander, just come right back and start counting over again until you get 5 breaths undistracted.

#### Stand up and stretch your arms over your head.

Keep your arms over your head and lift one foot off the ground. Balance as long as you can and switch sides. Oh yeah – and breathe deep, slow inhalations and faster exhalations while your foot is lifted.

**Any type of forward-folding stretch** is extraordinary for invigorating the brain. And, yes – still breathing – deep, slow inhale and quick exhales.

**Twisting stretches are also good to refresh the spine** (for folks with lower back issues, these should be done with extra care and instruction).

**come down on all four's** – pick up your right leg and cross over the left foot. Keeping the right leg straight, turn and look to the left in order to see your right foot. This one is bound to mix up the monkey and help get your mind off of random things.