TOXICS DISPATCH

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FOR PRIVATE CIRCULATION ONLY

Toxics Link
for a toxics-free world

MEDICAL WASTE-THE RIGHT DIRECTION

(This article tries to take a sneak peek at some of the issues and concerns in medical waste management in India.)

Over a decade back, when we started our campaign on safe Bio-medical waste management, little did we think that it would pull us much deeper on the issue. The issue in 1996 was of incinerators, which were polluting machines capable of producing cancer causing substances. But now with the advancement of medical science, the waste stream of the hospital is full of carcinogens, teratogens, allergens and endocrine disrupting and many other hazardous substances.

Our short lived memories have been a long standing problem and have led to many critical issues remain unaddressed. Police raids on illegal godowns of Bio-medical waste is nothing new, it happened in 2004, 2009, 2010 and now the latest in the series was a raid in Delhi in 2013. Bio-medical waste mismanagement is here to stay. Sion Hospital in Mumbai reported the death of a resident doctor who contracted multi-drug resistant TB in the hospital, and the hospital has seen 15 doctors catching such infections last year.

Modasa district in Gujarat, where medical waste reuse led to a Hepatitis B outbreak killing hundreds in a week's time, has been a blatant example of our callousness. Everyone seems to be sleeping a deadly sleep. WHO reports that 23 million **new Hepatitis B, Hepatitis C and HIV cases** happen annually due to use of contaminated syringes. These figures should bother us, because 60% of the syringes in India are known to be reused and the sero-prevalence of these diseases in India is quite high (38 HBV positive people in 1000 population).

IN THIS ISSUE

EDITORIAL

(Un) Sustainable Industry?

Last month, Toxics Link took two large industry sectors to Court. It was an unusual act for Toxics Link to undertake, since over the past 15 years it had always believed in change from the ground up, as participatory and which needs change of practices. This was not unsuccessful. Even when pushing major industry sectors for improving products or hospitals complying with environmental norms, it never had to resort to mediation by Courts.

In this case, it seems we have hit a cul-de-sac. The Electronics Industry, despite supporting the need for the E Waste law in 2011, has only been interested in scuttling its implantation, even after 3 years. Not only have they not complied, infact it is even hard to see any attempt to comply on their part. Using their strength as large industry to block any action by environmental regulatory bodies, it is clear that all talk of greening industry falls by the wayside, when it comes to real action. In this case the actions sought are not voluntary, but mandatory under law.

The result is that as a consumer, one has no place to deposit used electronic and electrical devices, and that the informal sector continues to be exposed to the mostvile toxics from such products. In fact e-waste recyclers who were meant to be part of a green chain, have made hay, through obtaining licenses to operate, with little or no capacity to recycle. The word is out, that these licenses are used to channelize waste back to the informal sector. It is business as usual, and the industry, which was to play the key role in creating a green e-waste recycling channel and infrastructure, is squarely responsible.

The other sector is the lighting industry. India is now one of the largest global markets for CFL lights. The only problem is Indian lamps contain mercury several times in excess of international standards. For years now, the Bureau of Indian standards has refused to revise this situation, despite clear evidence on the harmful impact of such mercury on consumers and waste pickers, besides the environment in general. Again, despite years of negotiation with them and several reports later, the industry is shamelessly silent. Not only has it blocked the lowering of mercury levels in Indian lamps (which needs a technology production upgrade) despite them following this practice in the US and Europe (smaller markets than India), but have also refused to put in end of life collection and recycling system in place.

All talk of sustainable industry is nice. It sounds good. However at the end of the day it needs to be translated into action and real change on the ground. Industry in India, irrespective of its origins or global character, has taken shelter of regulatory weaknesses here to carry on business as usual. This cannot last. Hopefully, but sadly maybe only the Courts will make them see light!

Ravi Agarwal

Multi – drug resistance, spread of infectious and communicable diseases, increased rates of hospital acquired infections, spread of cancer causing agents and endocrine disruption are just a few effects of medical waste mismanagement.

Hospitals should take complete charge of their waste. A surgeon should not be concerned about a successful operation/ procedure; he should be interested in a successful surgery. And a successful surgery can happen only if the entire hospital team works in tandem, from the surgeon to the housekeeper. World Health Assembly claims that 'Safe Surgery Saves Lives' and recently many surgeries have failed because patients have succumbed to Hospital Acquired Infections (HAIs). Managing Bio-medical waste and a good needle and sharps waste disposal strategy are amongst the first five do's to reduce HAIs

But all is not bad, there is light after each dark tunnel, and the hope in bio-medical waste management are the numerous inspired champions in various states and healthcare facilities who have taken upon themselves to change the situation.

Every year Toxics Link works with 2-3 NGOs and around 10 hospitals to set up model waste management protocols. Till now we have worked with around 18 states of the country and have seen that if the systems are well planned and monitored they can sustain even after the intervening agency is not around. In each of our intervention thus we look for some champions and a lot of drivers. By the end of the intervention the drivers are carefully knitted in the process so that it is able to sustain even without any champion. For instance making permanent provision for budget in the budgetary allocations; a committee for waste management in the hospital; yearly training of the staff, etc., have worked well in many systems.

Now, let's move from the issue of infections to the issue of environment. Though most of the hospitals still shy away from taking onus of their waste, there are handfuls that care about the environment. Some of the hospitals have invested a lot of time and energy in optimizing their systems to make them environmentally sound. Their consciousness of **carbon footprint and green house gases** led them to innovate and reduce their footprints tremendously.

A big hospital managing its waste wisely can reduce its carbon footprint by 1300 $MTCO_2$/yr (Metric tons Carbon di-oxide emissions per year). Some hospitals segregate their plastic waste, disinfect and mutilate it and send it for recycling. All this is completely under the ambit of the Rules. The aim to start the system was to ensure that plastic waste did not leave the hospital without being mutilated.

Some hospitals have tried to maximize environmental gains by understanding the needs of the recycling sector. After disinfection, plastic waste is segregated into 6-7 different categories and then this segregated plastic is shredded. This is being done on the advice of the recyclers who showed

constraints of picking up mixed plastic waste (if plastic from autoclaves is directly shredded, the mixed plastic has very little recycling value). India's medical sector would end up saving 272,132MTCO_2/ yr emissions in the environment, by recycling its plastics; remember REUSE is out of question.

Innovations and futuristic approaches adopted by some hospitals should be appreciated by the authorities and they should try to understand and reward innovations, and not shirk them. These Indian hospitals are islands of excellence, which need to be studied and replicated. Within the ambit of the rules these hospitals are trying to follow the tenets of ESM, and things like resource recovery are most laudable in context of Climate Change. The larger goal of the BMW Rules is to safeguard environment and these indirect strategies and opportunities cannot be missed out.

Last but not the least, innovations and advancement in the medical sector is pumping in more toxic chemicals into the waste stream. Studies on hospital waste water have proved that it is mutagenic. Thus segregation of both solid and liquid waste is warranted in a hospital scenario. The government now needs to gear up and make detailed and stringent guidelines on liquid waste management in hospitals with focus on segregation.

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UPDATES

CREATE TO INSPIRE SCHOOL PROGRAMME

Environmental challenges are increasing every day and damage caused to it through our action and choices are becoming clearer in recent times. With issues of climate change, loss of biodiversity, water scarcity, etc., becoming real; we not only need to create awareness among the present citizens but also ensure that the future leaders and citizens are sensitized and understand the concept of sustainable development. School time, being the formative years, is the best phase to initiate critical thinking amongst young populace and to establish the link between choices they make and its effect on the environment. These formative years are

influenced a lot by lessons and learning that we receive from our teachers. Teachers being the key influencer in life of the students can transform their thought process and align them towards sustainable lifestyle.

In this endeavor, Toxics Link in association with Microsoft is organizing Create to Inspire School Programme across the country. The programme objective is to equip the teachers with tools to make environment education fun, exciting, creative and most importantly effective to students. The focus of the programme, conceptualized by Microsoft, is to build capacity and provide guidance to teachers on 5 themes namely Biodiversity, Urban Transportation, Energy, E-waste and Water. It shall help in bringing about a change in understanding of topics related to environment and aid the creation of environmental campaigns.

Through these campaigns, students are encouraged to enroll and inspire their peers, parents, relatives, and communities to evaluate and consider the environmental impacts from existing lifestyles and take steps which are in-line with sustainable living. **The programme is designed as 'step outside the classroom'** and aims to go beyond the formal textbook pedagogy approach and engage students more practically and creatively.

The programme will be conducted in 7 cities in India namely, Bhubaneswar, Ghaziabad, Kanpur, Lucknow, Madurai, Noida and Patna covering around 500 schools. The programme also aims to create ecosystem partners in these cities, thereby increasing the reach and impact.

E-WASTE AWARENESS AND COLLECTION DRIVE

Toxics Link in collaboration with HRA E-waste Private Limited organized an 'E-waste Awareness and Collection Drive' in Pavitra Appartment, Vasundhara Enclave on 5th June 2014, (World Environment Day). The programme was supported by Department of Environment, Govt. of Delhi.

The idea behind the campaign was to make residents aware about e-waste concerns and also provide them an option to be 'green citizens' by disposing their old electronics in an environmentally sound manner. The event was organized with the help of Resident Welfare Association that showed great enthusiasm in working on the cause. Highlight of the programme was the active involvement of children in managing the event.

Prior to the event, a ten children group was formed within the building complex, which spearheaded the drive-visiting every home to invite and convince the residents to be part of the programme, making e-waste collection bins and urging residents to discard their old electronics in a safe manner. The event started in the morning with various competitions for the society children such as slogan and poster making on e-waste, and waste crossword. The programme continued in the evening with lectures and talks on e-waste hazards and impacts of improper disposal on environment, which was followed by a lively discussion on citizens' role and responsibilities in improving e-waste management. The e-waste posters, which were put on display, were also highly appreciated by the residents. At the end of the programme, children who took initiative in organizing the campaign along with winners of the competitions were felicitated with certificates and prizes.

An e-waste bin was also placed in the Community centre of the society by HRA E-waste Pvt. Ltd (an authorized collection agency) for a week, which provided residents an opportunity to dispose off their e-waste in proper manner.

This was a small but effective step towards a sustainable future!

KOLKATA FACES GROWING E-WASTE MENACE

West Bengal is one of leading E-waste generating states in the country, with studies suggesting an annual generation of around 35000 tonnes of this toxic waste. Kolkata is not only the highest generating point in the state but is also an eastern hub for E-waste recycling. Waste is processed mainly by informal sector in unsafe way, causing health and environmental damage. Even after two years of E-waste Rules in force, there has been little change in the city. Hence, it was time to discuss the needs of the region as a whole, and find common solutions on collection and recycling infrastructure.

With the above objective, Toxics Link organized a day long workshop for various important stakeholders on E-waste Management in Kolkata. Toxics Link has been working in Kolkata for the last four years, under the European Commission funded project on "Establishing E-Waste Channels to Enhance Environment Friendly Recycling (WEEE Recycle)", to build the capacity of unorganized sector and create opportunities for livelihood. The project also aims at creating a clean channel by involving all stakeholders.

Three panel discussions were organized as a part of the workshop:

- Rules and Guidelines: Are we on the right path?
- Challenges of the formal and informal recycling.
- Are stakeholders fulfilling the responsibilities?

Inaugurating the workshop, Mr Ravi Agarwal, Director, Toxics Link, pointed out the current e-waste scenario in the country with the focus upon sustainable living. The inaugural panel which also included Dr Rachna Arora, GIZ ASEM and Mr Satish Sinha, Toxics Link, highlighted the efforts to integrate informal sector and to set up clean channel in various cities. They also pointed out the current gaps and the need to take collective action.

The panelists, which included senior experts from this field, spoke about dismal implementation of E-waste Rules in the region and also stressed on the need for urgent corrective action. Senior officers from Central Pollution Control Board and Assam Pollution Control Board were present and shared the viewpoint and efforts of regulatory agencies. Producers, recyclers and bulk consumers were also part of the panel. The audience, which comprised of various stakeholders, including IT companies, PSUs, educational institutions, raised their concerns and queries to the panelists.

Some of the key recommendations which came forth from the discussion were:

- Inventorization of e-waste should be the first step towards effective implementation of rules.
- State Pollution Control Boards should facilitate and promote setting up for e-waste collection, dismantling, recycling facilities in the state. Also formalization of informal sector can be the key to solving the problem.
- Producers need to be active and come up with proper systems in the eastern region.
- SPCB's, producers and other civil society organizations should create awareness among general public regarding e-waste for better implementation of rules.

Live performance by a group from Microsoft "Create to Inspire" was also staged during the workshop.

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BMW MANAGEMENT IN BIHAR – A MIX OF GOOD & BAD PRACTICES

As the age old saying goes, no one is perfect; we are just striving for perfection. The same holds true for Bio-medical waste management system in different states of the country. Some states have mastered one skill while other state is better at another. The need of the hour is to collate model practices in the country and make one comprehensive manual so that all of us can learn from each other.

We started our journey to Bihar with the intention of documenting the transportation model, where the State Pollution Control Board has undertaken a commendable initiative of making a strong and effective transportation network to link the government healthcare facilities to the Common Bio-Medical Waste Treatment Facilities (CBWTF), in order to ensure sound treatment & disposal of medical waste.

Though overall the initiative is a success we did find laxity at some of the fronts. For instance, the private hospitals are yet to come under the ambit of current CBWTF system. According to a source, approximately 5000 – 7000 beds in private healthcare facilities are still not registered with the CBWTFs.

The State Pollution Control Board and the State Health Society of Bihar have adopted a PPP model with three operators of CBWTFs for the collection, handling and disposal of bio-medical waste from government healthcare system, which reaches to the lowest level of rural healthcare set up, i.e. a PHC. The entire system is established under the scheme of National Health Mission and is being monitored by District Health Manager, who is the nodal person at each respective district across the state.

However, here comes the issue of integration of processes by the regulatory agencies. Despite the existing infrastructure and well developed set up, individual healthcare facilities are still struggling with the basic waste segregation practices at source. The hospital staff including doctors, nurses and paramedics are neither aware of medical waste disposal, nor do they follow the proper colour coding practices for waste disposal. One of the major reasons behind it is the lack of stringent monitoring mechanisms by the hospital authority and also by the regulatory bodies. According to an interview conducted with Bihar PCB, lack of man power is one serious concern behind this grave situation.

Lack of manpower with the regulators coupled with lack of training of the healthcare personnel is augmenting the challenges even further. Though the State Health Society and Bihar PCB had conducted training twice on the issue of medical waste in last two years, it has hardly penetrated the concerned section, which directly deals with waste collection and handling.

Presence of non-registered clinics and healthcare establishments is another major hurdle in the current waste management scenario of Bihar. This has worsened the situation as the PCB finds it really difficult to monitor these units. These units do not exist on paper but ironically they are generating huge quantum of medical waste.

The dismal operation of some CBWTFs adds to the menace of waste management. Though the pollution control board and state health department have adopted a unique system of waste treatment through CBWTFs, few of its operators are often following illegal practices. This is not only hampering the bio- medical waste disposal of the state, but also damaging the image of other operators that are following best practices.

Nevertheless, as always, whenever there is a problem, there is a solution and to add to it, there is a scope for improvement through adaptation of appropriate solution. The state has recently adopted Clinical Registration Act, which will ensure registration of all the healthcare facilities irrespective of their sizes, which will eventually reduce the problem of unaccountability. The PCB has also initiated inventorisation of medical waste, which will help in assessing the need for further increase in the number of treatment facilities. Moreover, the PCB has also given approval to two more CBWTFs, which will soon be in place, so as to streamline the bio medical waste management system in the state.

So, here are best wishes to Bihar in all its endeavours in managing waste, which has become one of the gravest challenges of our times.

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FEATURE

FACTS & FICTION: THEIR GRAVE IMPACTS ON POLICIES

Facts and figures have a special place in every field; with respect to environment it plays a significant role in planning and formulating measures to stop environment degradation. Any problem during planning stage can cause huge environmental loss, leading to loss in human health and negative impact on growth indices.

Government policies are sometimes based on the results of statistics and data provided by researchers. Most of the researchers in turn depend on the baseline data provided by the government agencies. But if we fail to get the baseline authentic, the entire research activity becomes futile. The first & the most important question arises here is the source of this data - where do we get it from! Nowadays there are number of websites available which provide data for almost every field, however their authenticity is a big question mark.

As a norm we assume that any data coming from the government is authentic. In the environment sector, most of the data which we need to do our research is available with the government departments like the Ministry of Environment, Forests & Climate Change, CPCB at the national level or state level health departments or SPCBs. In most of the cases, data provided is really doubtful till it is verified through a field survey, which is practically not viable every time.

The Annual data from CPCB on the compliance of BMW is one critical area where such apathy is quite evident. Biomedical waste mismanagement is directly linked to the spread of HIV, HBV and HCV in India, and may also lead to spread of other deadly diseases like TB meningitis, etc. But over the years while the healthcare sector has shown a growth of 8%, the waste generation has been consistent, which is almost impossible. Many hospitals claim that the infectious waste generation per bed has increased by almost 100%, the government data on the contrary shows a drop of 85% in waste generation.

All the more shocking is the compliance report managed by the states; India has consistently progressed from 50% compliance in 2006 to 92% in 2012. But a casual round in the hospital corridors shows dismal state of affairs.

Medical waste management may be a matter of numbers to some, but Modasa tragedy in 2009 is a brutal reminder of how dreadful these numbers can be. With very high sero-prevalance of HIV and HBV in the country this number game is not a child's play

To give an example, we can talk about the data differences given by two such government agencies in Bihar. We came across a very strange data on CPCB website about the bed strength of hospitals in this state. The state is one of the most populated in the country with 38 districts. According to the CPCB in the year 2012, total bed strength in Bihar was around 4099, whereas the data provided by State Health Society showed 22000. This huge discrepancy causes confusion as what to be believed & what should not be. In this case where the government agencies are not in consensus with each other, then how can one expect an authentic data from private agencies. Even if CPCB gets away with the excuse that this data is given to them by the Bihar SPCB, it is their duty to verify it before publishing it into public domain.

In another example of similar nature, data given by the same organization i.e. CPCB on same issue of Bio-medical waste management status of healthcare facilities (HCFs) and Central bio-medical waste treatment facilities (CBWTFs/CTFs) does not match for the year 2012. According to BMW status 2012, in Bihar the number of HCFs is 117 and for the same year number of HCFs utilizing CTF is 1165. How is it possible that the latter number is higher than the former which gives the total number of HCFs in the State? In the same state, waste treated by all the HCFs of state is given as 623.9 Kg according to BMW status but according to CBWTF status waste treated by CTFs alone is 4055 Kg for the same year. And to put things into perspective, our estimates suggest that the waste generated in the state would be somewhere near 20,000 kgs. Such a huge difference raises questions on the accuracy of the data given by such a big government organization.

Adding to the above discrepancy, another data on number of CTFs in BMW status & CBWTF status 2012 for Jammu & Kashmir, Chandigarh, Odisha and Uttarakhand, does not match with each other. In 10-15 states the number of HCFs covered by a CTF given by both BMW & CBWTF status is different.

In a place like Delhi, capital of this country where BMW management is claimed at about 99.9 %, data on number of beds covered by a CTF does not match in both the above mentioned lists.

A very strange data is also represented for this place i.e. on the quantity of waste generated & treated. According to this, waste treated is more than waste generated which is not possible. This shows the level of carelessness shown by a renowned organization towards such an important issue. These kinds of mistakes can lead to so many confusions among those who are really working hard towards the issue of BMW management in this country and trying to make relevant policies for addressing its related problems. But if the foundation of the policy will be so weak then what kind of impact can we expect from it.

This issue really needs to be addressed, as such data and statistics have an important role in the field of environment as they are the building blocks for any kind of policies related to this field. The government needs to take some serious steps and should adopt necessary methodologies to avoid confusion in data generation, as unauthentic data lead to fictions, and policies are made on facts.

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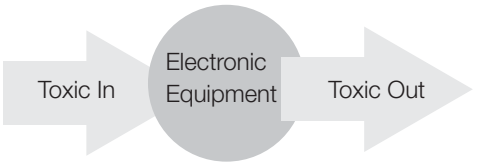
ELECTRONICS MAY STILL CARRY TOXINS

Prevention is better than cure! We have heard this phrase around us often - in different contexts, mainly health. This phrase has been lately also gaining significance in the world of environment, as we are beginning to comprehend that often the damage caused to environment may be irreversible, and hence prevention might be a better strategy to follow.

Reduction in the use of Hazardous Substances (RoHS) in the E-waste Rules in India is also based on this principle. Electronics contain lot of toxic material like lead, mercury, cadmium, halogenated flame retardants, etc. These toxins are well contained in the product during use, but the problem arises when these equipment reach end of life or become e-waste. If we put toxic material during the manufacturing of electronic equipments, what we will get at the end of life is also toxic material. A framework like RoHS is meant to prevent this hazard by reducing the toxics, which go into product manufacturing. This also makes the product easier to recycle.



RoHS is part of the E-waste Rules which were notified in 2011 and which became effective from May 2012. RoHS in India focuses on six substances and allows their usage to a certain concentration (see box 1). The onus to ensure that the electronic equipments (covered under the Rules) do not contain these substances beyond this limit lies on the Producers. The Rules clearly state that imports or placement of electronic equipments shall be permitted only for those products which are compliant with RoHS. The RoHS component of the Rules was given an additional two years to come into effect, as it was assumed that the change in materials may require some time. So, May 2014 is when the RoHS became enforceable in the country.

Now it's almost end of October 2014 and unfortunately still there is no sign of RoHS coming into action!

Electronic equipments with high quantities of the hazardous substances are still flooding the market and there is no one to check or stop that. The Central Pollution Control Board (CPCB), which is the agency responsible for implementing this part of the Rules, has not issued any guideline till date and therefore no action has been taken against any defaulters. With no instructions issued by implementing agency, the complying Producers are also in the dark about how do they prove conformity to the Rules.

In the current circumstances, the Producers have hardly any obligation towards fulfilling the RoHS provisions or to demonstrate that they have indeed looked at greening their products. There is also little incentive to comply as the non conforming producers continue to thrive unabashedly. To make the Producers conform, there is a need for progressive penalties which is enforced strictly. Customs authorities can also have a crucial role, as electronic products are regularly imported in the country and the ports can be the first barrier point.

Even if the producers are willing to comply, lack of laboratories which can test products for RoHS has been a critical bottleneck and needs to be addressed immediately. There has to be clarity on approved processes, certification, etc.

Box1: Substances and the maximum concentrations allowed

Lead (Pb)	1000 ppm
Cadmium (Cd)	100 ppm
Mercury (Hg)	1000 ppm
Hexavalent Chromium (Cr6)	1000 ppm
Polybrominated Biphenyles (PBB)	1000 ppm
Polybrominated Diphenyle Ether (PBDE)	1000 ppm

Is RoHS going to rely on Self Declaration for conformity or will there be other processes? Will the regulatory agencies carry out market surveillance to check if the products in the market meet the required standards? Will there be random technical tests for these products? Who will carry out these tests and who will bear the cost for these detailed testings? Till date, RoHS implementation has many unanswered questions. Like Producers, the implementing agency also had two years to prepare for the RoHS roll out and provide clarity on many of these answers. But sadly we are still where we were in 2011 when these rules were notified. Not even a step forward in 3 years!!

One important element is to distinguish compliant and non- compliant products. A labeling system can be very advantageous, as it will not only help the regulatory agencies to carry out market surveillance, but will also help consumers in identifying the greener products and opt for them.

There can probably be many more measures, but the important question is - when do we take them and why there is so much delay. We need to act fast to ensure that electronic equipments are not a burden but only a resource.

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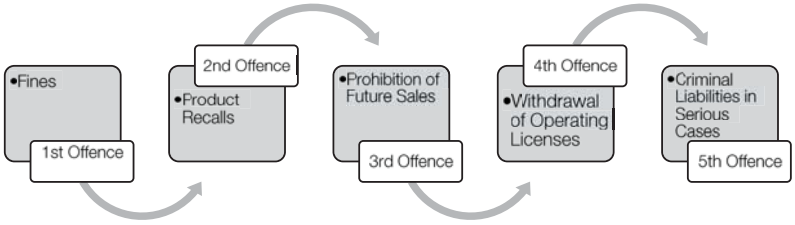

PHOTO FEATURE

CONNECTING DELHI RIDGE WITH PEOPLE

The Ridge is a stunning natural forest in the midst of Delhi, stretching from Gurgaon-Faridabad border in southwest to University of Delhi in the north. Many people may have heard or seen it on way to work, but only few may have been inside. It is a playground for the local children, a field of study for naturalists, a bypass route for laborers, a 'historical' place of worship for some encroachers, a source of fuelwood and animal feed for the villagers, and simply an empty land for construction for the government and commercial developers.

Photo Feature by
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Cricketers: India's favorite sport pulls people to the ridge but sometimes this doesn't go in favor of the foliage and nesting birds.

Cyclists: Off-road cyclists enjoy a hilly terrain in the middle of their city.

Dargah: Various people visit places of worship that have come up in the ridge over the years.

Health: You will always find people running, stretching, or doing yoga.

Fuelwood: Neighborhood villagers collect fuelwood; Vilayiti Keekar (Prosopis Juliflora) is their favorite!

Guards: For interesting stories about the Ridge, stop for a conversation with a security guard.

Kids: The water bodies of the Ridge rescue local kids from the scorching summer heat.

Weekend Visitors: Some skip the shopping spree and movie shows for a nice stroll with their loved ones.

Scholar: A PhD student spotted a peculiar movement in a water body, later found they were daphnia.

Urban Researchers: This temple baba did his best yoga moves for an urban researcher studying the Ridge.

NEED FOR MANDATORY STANDARDS FOR MERCURY FREE HEALTHCARE INSTRUMENTS

Mercury pollution is a severe global environmental and human health problem. The spread and use of mercury undermines efforts to improve health conditions in communities. Many instruments used in hospitals, health care facilities and laboratories contain mercury. Some of the commonly found instruments carrying mercury are thermometers, blood pressure measuring device, laboratory thermometers and dental amalgams. Besides these, mercury has **around 3000 other industrial applications**

There has been a dedicated and unified effort led by the United Nations Environment Programme (UNEP) towards an international treaty designed to protect human health and environment from anthropogenic emissions and releases of mercury and mercury compounds. This treaty, known as the Minamata Treaty, is now final and a lot of countries have **signed** it. India too, has recently signed the treaty.

As an aftermath, the demand for mercury free healthcare instruments will increase manifold. So, let us analyse how India is placed to tackle this situation.

The issue of quality:

A preliminary survey on the ground by Toxics Link suggests that government hospitals that are initiating the process of shifting to digital equipments are facing issues of ascertaining quality of such products in absence of any requirement of mandatory standardisation of these products. The government hospitals tend to go for the cheaper products available and as we all know, cheaper don't necessarily mean 'better'.

The mercury thermometers and sphygmomanometers are mandated for standardisation owing to health and safety considerations but the same logic has not prompted relevant authorities to make standardization of digital equipments mandatory. Thermometers and Sphygmomanometers are indeed very critical part of medical diagnosis and should have mandatory certification.

Moreover, 3 states and 1 municipality in India (including Delhi, Manipur, Punjab, Hubli- Dharward) have already issued orders and directives to phase out mercury based equipments in their jurisdiction. Many healthcare facilities in other states too are shifting to alternatives, but are facing similar situation of being unable to ascertain product quality for use in hospitals.

The issue of availability:

The problem has a different dimension in a few other states. Even if the hospitals are willing to spend for the procurement of the best available products, it is proving to be very hard to do so.

The issue of cost:

The tendency to cite cost as the reason for not phasing out mercury based products can be attributed to 'short sightedness' from the part of the relevant authorities. A study by Toxics Link, titled: Estimation of mercury usage and release from healthcare instruments in India - (2011), has proved that the average breakage of mercury thermometers in a healthcare facility is so high that switching to alternatives is an economically viable option as well. Besides, a lot of hospitals across the country have successfully phased out mercury from their hospitals and this is a testament to the fact that if there is conviction among the concerned authorities, phasing out mercury is no herculean task

What is leading to this situation?

A particular set of mercury free product manufacturers, who insist on the quality of the products, are not being able to compete with manufacturers who are not necessarily concerned with it. The lack of mandatory standards for mercury free products means that there is no yardstick with which products can be compared and contrasted. This situation is dangerous in multiple ways.

It could lead to:-

- Faulty diagnosis and affiliated issues
- Healthcare practitioners blaming mercury free products for the lack of accuracy

How can this be resolved?

Mercury free medical equipments are the future technology as the Minamata convention on mercury (adopted in October 2013) clearly indicates a phase out date for such products by 2020. The Health Ministry's intervention would help make reliable products available to the healthcare industry and simplify the procurement process by making the existing BIS standards mandatory for such products.

It is up to the Ministry to initiate the process of making the BIS standards for fever thermometers and sphygmomanometers (non Mercury) mandatory so that the hospitals have access to quality products and improve healthcare delivery.

It is time that all the stakeholders gear up to tackle the challenge to make India mercury free as aspired by our Prime Minister.

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INTERVIEW

Dr. Vijay Agarwal is the **Executive Director at Pushpanjali Crosslay Hospital, Ghaziabad-UP. He is also a Member**, Advisory committee on Bio-medical Waste Management, Government of Delhi. Dr Agarwal is a pioneer of the mercury free campaign in India and has been part of several capacity building programs on phasing out mercury from the country. Following is an interview of him on mercury usage, impacts and policies related to it.

Q.1. What are the usage patterns of mercury in the healthcare sector?

Dr. Agarwal: Many instruments used in hospitals, health care facilities and laboratories contain mercury. The most common use is in thermometers, blood pressure measuring device and in dental fillings. Residues of dental amalgam mixtures are one of the biggest contributors of mercury content in municipal sewer water. Of late, owing to increasing awareness and emerging laws, mercury equipments are being replaced by safer alternatives.

Q.2. In the health care sector what is their utility that makes them so indispensable - is it the price/abundance or any specific quality?

Dr. Agarwal: Mercury is not indispensable in the healthcare sector. Fortunately, there are safe, cost-effective non-mercury alternatives for nearly all health care processes that use this harmful element The availability of safer and accurate instruments has progressively declined the need for mercury equipments in the healthcare sector. This may not be true in each and every pocket of the country. But the movement for a mercury free healthcare sector has gained enough momentum already.

Q.3. How good are the alternatives to mercury? Are there issues with accuracy for these instruments?

Dr. Agarwal: Some medical professionals still consider mercury-based devices such as thermometers and blood pressure measuring device to be more accurate than their digital counterparts. A number of peer-reviewed studies show that the mercury bias has no real scientific bearing.

Sphygmomanometers use the most amount of mercury in current medical use. Much like thermometers, mercury-based and non-mercury blood pressure devices provide accurate measurement as long as the instruments are properly calibrated. Studies conclude that whether a sphygmomanometers is digital or not has no real bearing on its accuracy.

Q.4. What are the environment related impacts of mercury?

Dr. Agarwal: Mercury, which is released in to the environment, from both natural and manmade sources, make its way in to water bodies where it Bio-accumulates and Bio-Magnifies across the system. Human beings who consume the produce from these water bodies are prone to exposure to mercury.

Mercury that contaminates bodies of water and moist earth will turn into highly toxic organic mercury. Even small amount of this substance will harm the brain, and the rest of the nervous system. Organic mercury also accumulates in the bodies of exposed animals.

Q.5. What are the health related impacts?

Dr. Agarwal: Mercury is a notorious heavy metal of global concern and known to be a potent poison of the human nervous system. The lives of millions of people, from small-scale and artisanal gold miners and their families to pregnant mothers and their babies stand to benefit from the elimination of mercury from the planet.

Discarding mercury quickly, without inappropriate processing, provides only temporary peace of mind. We may not see it, but the hazards are definitely present. At room temperature, significant amounts of mercury can turn into gas. Exposed workers or patients may get exposed to highly toxic fumes.

Health care is a considerable source of mercury pollution. The United Nations Environment Program (UNEP) identifies certain health care-related products and procedures as "important sources of anthropogenic releases" of mercury. These include fluorescent lamps, manometers, thermometers, and other instruments; dental amalgam fillings; waste treatment and incineration of products containing mercury; landfills; and cremation.

Q.6. Can you please share the initiatives being taken on reducing mercury in health care sector?

Dr. Agarwal: The UNEP Governing Council, representing all UN represented countries, made reducing methyl mercury accumulation in the global environment a major global priority.

In February 2009, the Governing Council of UNEP adopted a decision on the development of a global legally binding instrument on mercury. At the Conference held from 9 to 11 October 2013 in Minamata and Kumamoto, Japan, the "Minamata Convention on Mercury" was formally adopted and opened for signature by States and regional economic integration organizations. India has signed this instrument recently and now the onus

is on us as a country to come up with effective strategy to handle this situation.

Q.7. Is there any Indian policy/ regulation on its import and use?

Dr. Agarwal: The states of Delhi, Punjab and Manipur have issued orders asking their healthcare sector to phase out mercury based instruments in a time bound manner. The state of Delhi has reached maximum success in this endeavor and others are following suit. A lot of healthcare facilities in other states have already shifted to non mercury alternatives. Making the availability of a strict mercury management regime a part of the accreditation process of healthcare facilities would do a world of good in shaping a positive scenario.

Q.8. Besides the regulations do you think an extensive awareness and capacity building drive is required in the hospitals across the country. Any plans that you can share.

Dr. Agarwal: Considering the fact that India has signed the Minamata treaty on mercury, it is imperative that we need to come up with a National Implementation Plan (NIP) for the successful elimination of mercury. This process has to be inclusive and regional realities are to be taken in to consideration for it to be implementable. Awareness generation among various stakeholders on the health hazards of mercury and the need for its elimination is a key to the success of this campaign. The authorities need to initiate this process as early as possible.

We also need to come up with answers for issues related to storage of phased out mercury and mercury based products from the healthcare sector.

MERCURY

Effects of Mercury

Mercury is one of the most toxic substances known to humans. It can pass through skin, blood-brain & placental barrier and can cause devastating effects on the function and growth of brain in the growing foetus. Mercury bio-accumulates and biomagnifies, which makes it unmanageable.

Mercury Usage

- The health care sector is a major consumer of mercury. Some of the instruments that use mercury are: Thermometers, Sphygmomanometers, Dental amalgam, Feeding tubes, Gastrointestinal tubes, X-Ray machines, Barometers, etc. Current manufacturing of thermometer & sphygmomanometer in India is 8.32 million and 0.225 million units per year, respectively.
- Alternatives to mercury thermometers include electronic, infrared, chemical strip, and alcohol/spirit thermometer. Mercury BP apparatus cuffs can be replaced by aneroid and electronic blood pressure gauges.
- Other mercury products include electronic devices, batteries, CFLs & other lighting equipment, paints & cosmetics, traditional Ayurveda & Siddha medicines & cultural products.

Mercury Import & Emissions

- Mercury is not mined or produced in India, but imported completely. The imported mercury is also exported from India. Total import & export of elemental mercury is 165 tons & 45 tons, respectively, in 2012-13.
- Total mercury emissions from anthropogenic sources in India is 161.05 tons/yr with stationary combustion (coal fired thermal power plant) being the major contributor (140 tons/yr). Annual mercury waste generation from CFL and Chlor-alkali sector is 8.3 tons and 296 tons,respectively, totaling to 304.3 tons/yr (approx).

Mercury Management in India

- In India, the Ministry of Environment, Forests & Climate Change is the nodal agency for planning, promoting and coordinating any environmental programmes across the country. Ministry of Health and Family Welfare (MoHFW) ensures the availability of quality and toxic-free products in healthcare setup in India. Central Pollution Control Board is a statutory authority attached to the Ministry of Environment, Forests & Climate Change and is accountable for the industrial pollution prevention and control.

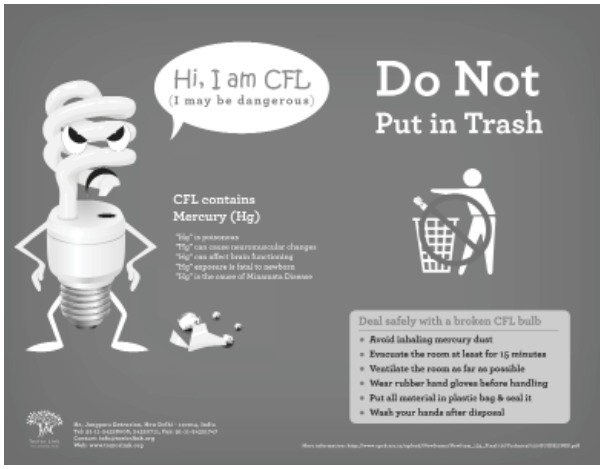
Minamata Convention

- The treaty was adopted in October 2013 at a diplomatic conference in Japan. However, it will be implemented once 50 countries ratify it. Major focus of the Treaty is to control and regulate mercury trade; reduce supply and usage control; lessen mercury emissions and releases; ensure mercury waste handling in safe and environmentally sound manner.
- Recently, India signed the Minamata Treaty.

RESOURCES

Poster – CFL

Toxics link took out a poster highlighting the dangers of using CFLs, and the caution one needs to take with broken CFL bulbs. CFL contains mercury which is one of the most dangerous chemicals known to mankind. It can lead to neuromuscular changes, effect brain functioning, cause Minamata disease, and may be fatal to the new born. One should be extra careful in dealing with broken CFLs; such as avoid inhaling mercury dust, evacuate the room for 15 minutes, use rubber glove before handling, and wash hands before disposal.

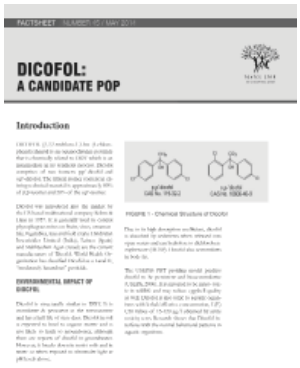


Factsheet- Bisphenol & Dicofol

Toxics Link regularly publishes factsheets that are helpful to a variety of stakeholders including the environmental activists, advocacy groups, civil society organizations, researchers, news media, and also the common people. Through these factsheets we try to decode complex toxic elements, which are present in most of our daily-use products and explain their harmful effects.

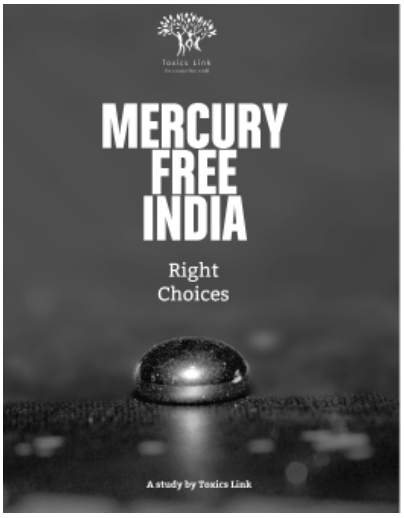
During the last quarter we published two factsheets: Dicofol and Bisphenol. Dicofol is an organochlorine pesticide chemically related to DDT, which is an intermediate in its synthesis process. It is generally used to control phytophagous mites on fruits, vines, ornamentals, vegetables, teas and field crops. Exposure to Dicofol can lead to nausea, dizziness, weakness, vomiting; and its chronic effects can be coma and even death from respiratory failure.

Bisphenol Bisphenol A (BPA) is a carbon-based synthetic compound belonging to the group of diphenylmethane derivatives and bisphenols. BPA is primarily used as a monomer in manufacturing polycarbonates - a high performance transparent rigid plastic. Its health impact include: altered brain development & behavior, endocrine disruption, reproductive effects, immune response, cardiovascular diseases, besides several others. To know more about Dicofol and BPA, please go through the factsheets.

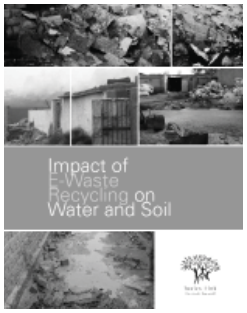


Report: Mercury Free India

Toxics Link released a well researched & grounded policy report "Mercury Free India-Right Choices". The exhaustive report based upon decade old advocacy initiatives and research by the organization, focuses on existing mercury usage and provides framework for policy formulation and control, to reduce its use in the country. Mercury is one of the most toxic metals known to mankind, and yet it is very commonly used in the country. Besides several issues, the report highlights the fact that its persistent nature slowly affects central nervous systems, kidneys, etc., of adults, children and also the foetus. At present, India does not produce any mercury, and all its domestic demands are met through imports. It is expected that the exhaustive report will help in bringing more depth on issues relating mercury, and help in enriching discussions and formulating policies on its usage in India.



Report: Impacts of E-Waste Recycling on Soil and Water

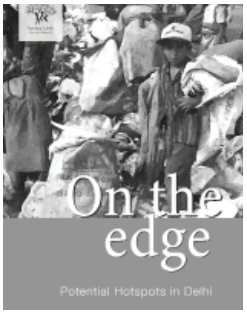


Toxics Link released a report titled "Impact of E-waste Recycling on Water and Soil" that scientifically shows how toxic elements such as mercury, lead, zinc, etc., along with acids and chemicals released during e-waste recycling, are contaminating soil and water in Loni and Mandoli areas of Delhi's National Capital Territory. Besides providing data on increased levels of zinc, lead, and other toxic elements and chemicals, the study also scientifically examines electrical conductivity, hardness and turbidity in the selected samples of Mandoli and Loni. The exhaustive report is among few in India that scientifically corroborates damage to soil and water through toxics from e-waste.

Report: Time to Reboot

Toxics Link released a report "Time to Reboot" that examines how far electronic and electrical equipment companies in India have adhered to their responsibilities mentioned in the country's E-waste Rules. Shockingly the study reveals that 16 out of 50 leading companies (31 multinational and 19 national) were found to be wanting in their role on E-waste management and fared very poorly. The study, which was conducted during May-December, 2013, followed a well laid out methodology for evaluation; the brands were rated on basis of 5 criteria: sufficiency of information on website; ease of accessibility of information; take back system; number of collection points; and information on customer care or helpline provided. The study also examined the efficacy of the agencies responsible for the regulating e-waste in India.

Report: On the Edge – Potential Hotspots in Delhi



Toxics Link published a study report "On the Edge-Potential Hotspots in Delhi" that highlights polluting industrial sites dotting the entire city and that are probably putting Delhites at a huge health risk. 18 sites were identified as potential 'hotspots' in this first of the kind study in Delhi. The sites were examined during this study on parameters such as: industrial processes, use of chemicals, discharge and emissions, disposal methods, and occupational health & safety. Notably, Delhi is one of the most polluted cities in the world. This is the first time any report has done exhaustive mapping of Delhi's polluting units. Such hotspots probably exist all over the country and more such studies need to be undertaken - as most of cities currently are, or will be facing similar challenges in the future.

NEWS

Electronic companies and pollution boards flout e-waste rules: Report

Source: *Times of India, New Delhi, 1 July 2014*

Most reputed electronic and electrical equipment companies—both Indian and multinational have failed grossly in fulfilling their responsibilities under extended producer responsibility (EPR) as defined under the e-waste management rules 2011, according to a report released by Toxics Link, an environmental NGO recently. The report titled "Time to Reboot" names and shames 50 well-known electronics including mobile phone, laptop, electronics, camera brands for not taking back their products after 'end of life' or after they turn into e waste, not having enough collection centers and other drawbacks.

The report also exposes the state pollution control boards that have not been carrying out their functions of taking inventory of e-waste manufacturing units, ensuring storage facility for e-waste, authorizing e-waste recycling plants and laying out a procedure for storage of e-waste. Andhra Pradesh (4268.42 MT) and West Bengal (34,124 MT) were the highest e-waste generating states in 2011-12, the study found.

Out of 50 companies examined in the study, as many as 16 fared very poorly. They got extremely poor, in most cases a zero in the four categories they were assessed for: sufficiency of information on website on disposing end of life products, ease of accessibility to information, take back system, number of collection points and information on take back policy with customer care or the helpline provided.

Read the full news report: http://timesofindia.indiatimes.com/Home/Environment/Pollution/Electronic-companies-and-pollution-boards-flout-e-waste-rules-Report/articleshow/37584922.cms

E-waste recycling turns water, soil toxic

Source: *The Hindu, New Delhi, 29 July 2014*

Lab testing of soil and water samples from the Loni and Mandoli areas of Delhi reveals high contamination of both with heavy metals and other impurities. Shockingly, even the drinking water at both the locations contained high amount of toxic metals.

The report, "Impact of e-waste Recycling on Water and Soil", released on Monday by non-government organisation Toxics Link, revealed that toxic elements including mercury, lead, zinc, along with acids and chemicals are released during e-waste recycling and are contaminating soil and water in the surrounding areas.

"Our neighbourhoods are at great risk of being permanently damaged by toxins from e-waste," noted the study.

Read the full news report: http://www.thehindu.com/todays-paper/tp-national/tp-newdelhi/ewaste-recycling-turns-water-soil-toxic/article6259404.ece

Industrial waste affecting groundwater, health of residents, finds NGO study

Source: *Indian Express, New Delhi, 14 Aug 2014*

Industrial pollution, in varying forms ranging from lead acid battery recycling to landfill sites, has been affecting Delhi's residents in adverse ways, as noted by a study of pollution hotspots by NGO Toxics Link.

The most worrying aspect, the study notes, is the manner in which such pollutants seep into the soil, lacing groundwater with heavy metals and other pollutants.

Pollution-generating industries, examined in the study — such as lead acid battery recycling, landfill sites, dyeing industries operating without effluent treatment plants, thermal power plants — were all found to have an adverse impact on ground water. For instance, the study notes that during recycling of lead acid battery in Prem Nagar, "the acid was haphazardly dumped on the ground in a waste pile or into the nearest water body," leading to chances of percolation of lead oxide into ground water.

Read the full news report: http://indianexpress.com/article/cities/delhi/industrial-waste-affecting-groundwater-health-of-residents-finds-ngo-study/

Capital chokes on toxic industry: Study finds 18 'hotspots' where small businesses are causing a health risk

Source: *Daily Mail & India Today, New Delhi, 12 Aug 2014*

A study by an NGO has identified 18 'potential hotspots' in Delhi from where unorganised small scale industries are contaminating the city's environment by releasing toxic pollutants.

There are at least one lakh industrial units still operating out of non-confirming zones, according to Delhi-based NGO Toxics Link's report on industrial pollution.

Nearly 1.30 lakh industrial units dot the landscape of Delhi. Of these, only 25,000 to 30,000 are located in the planned industrial areas. The remaining industries are located in residential areas and they are not considered as 'safe' units to be operated in such areas.

Of the 51 sites reviewed in the first of its kind study titled "On the Edge", Toxics Link identified 18 'potential hotspots'. These hotpots were found to be causing unacceptable environmental impacts. These 'potential hotspots' are spread from Samaypur and Badli in the north to Mayapuri and Okhla in the south; and Nazafgarh in the northwest to Mandoli in east. The parameters for determining the hotspots were industrial processes, use of chemicals, discharge and emissions, disposal methods, and occupational health and safety. Wazirpur has been identified as one of the city's dirtiest areas by the researchers. It has around 1,200 small units, a large number of them involved in pickling, classified as hazardous industrial activity and not allowed within the city limits.

Read the full news report: http://indiatoday.intoday.in/story/delhi-unorganised-industrial-units-pollution/1/376781.html

NGO report backs Govt move to rid India of mercury

Source: *Daily Pioneer, New Delhi, 30 September 2014*

In the wake of excitement on the Indian Government's decision on becoming mercury free, NGO Toxics Link's report "Mercury Free India-Right Choices", highlights the fact that once mercury is released into environment, it bio-accumulates and bio-magnifies up food chain, and easily enters human body passing through skin, blood-brain & placental barrier.

Its persistent nature slowly affects central nervous systems, kidneys, etc., of adults, children and also the foetus; and the symptoms show up as abnormal brain development, kidney damage and many other fatal diseases. Toxics Link works for the ban of various hazardous wastes in the country pitching for ban in mercury in India and elsewhere.

According to the study, the country at present, does not produce any mercury, and all its domestic demands are met through imports. It imported 165 tons of mercury in 2012-13, out of which 45 tons were exported to other countries in the same year, which reflects the rest is being used for internal product manufacturing.

The study notes that this dangerous metal has nearly 3,000 industrial applications. Besides healthcare products, it is also used in paints, cosmetics, compact fluorescent lamps (CFLs), electrical switches and fertilisers. The CFL sector alone generates 8.3 tonnes of mercury waste annually, which ultimately land up in the cities' landfills/ become air borne and pose grave threat to the environment.

Read the full report: http://www.dailypioneer.com/nation/ngo-report-backs-govt-move-to-rid-india-of-mercury.html

Film Festival "Quotes from the Earth"

Dear Friends,

Toxics link with India International Centre (IIC) is organizing the 6th Environmental Film Festival called "Quotes from the Earth" at IIC's premise, New Delhi on 5 & 6 December, 2014.

"Quotes from the Earth" offers the audience with visual delights on environment from every corner of the world, and make them feel the glory of nature and also the heartrending and mindless conflicts that we wage against her. Visual and creative delight aside, through this medium we also tend to highlight the good practices and challenges at national and international level; to further strengthen the agenda of environment preservation at public discourses and policy making circles.

Since its inception, it has attracted film makers from around the globe; and each time it has grown and become all the more popular. The film makers are well known and also the upcoming ones, who have the potential to express and mobilize viewers' feelings and thoughts, through this visual medium. The audience will see 24 films that focus upon five broad themes of Biodiversity, Livelihood, Water, Sustainability, and Climate Change. These films are produced over past couple of years and are from India and abroad.

The festival also goes beyond viewing films. A panel discussion, with eminent academicians, activists, media persons and filmmakers is conducted during the film festival. This is to provide the audience with a wider context to the meaning of films and their role in societal change.

We cordially invite everyone to see the films and be a part of our crusade on preserving Mother Nature.

Lead Safe Paints Campaign

Paints are very commonly used item for any decoration. However, lead based paints have since long been associated with serious health concerns among people, specifically the children. The adverse effects of its exposure in children include delayed mental and physical development, learning deficiencies, behaviour problems, shortened attention span, among others. In India numerous manufacturers that are still using lead in paints and Toxics Link has been fighting for a government policy to refrain these manufacturers from using lead.

Join us in our Lead Safe Paints Campaign!

To sign the petition log on to: http://goo.gl/OVwlzh

Edited by: Samir Prasad

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An environment news Bulletin

Visit: http://enews.toxicslink.org/, for our monthly e-newsletter on environment related news, articles, policy interventions,, events on toxicity and its management. You can also subscribe to receive its update via e-mail.

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Toxics Link
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STAY CONNECTED

For more information materials, invitations and updates on environmental issues please write to us at info@toxicslink.org

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