

T O X I C S

DISPATCH



Toxics Link
for a toxics-free world

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Upscaling people's participation in urban solid waste management: policy seminar

Toxics Link organised a two-day report release-cum-policy seminar on 'Upscaling people's participation in urban solid waste management: constraints and prospects', at the India Habitat Centre, New Delhi, on January 21 and 22, 2005. About 100 people attended the policy seminar; participants included representatives from government agencies such as the Ministry of Environment and Forests (MOEF), Central Pollution Control Board (CPCB), Municipal Corporation of Delhi (MCD), international financial institutions like the World Bank, international donor groups like United States Agency for International Development (USAID), Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and organisations and individuals working with waste issues across the country.

The seminar was the culmination of an in-depth study conducted over a period of 18 months by Toxics Link. This study has documented 25 community interventions in solid waste management across the country. The main objective of the seminar was to discuss the findings of this documentation study critically and arrive at some policy recommendations needed to up-scale and sustain these interventions.

The seminar began with a welcome address by Ravi Agarwal, Director, Toxics Link, who introduced the subject and the need for such a seminar. Next, Sanjay K.Gupta of Toxics Link presented the main findings of the study. As per the report, there are five types of waste management models in practice across the country. They are:

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EIA: Environmental Impact Acceptance!

Between an industrial project's conception and its becoming a reality, lies the 'devil' of the EIA, or the Environmental Impact Assessment Statement. It literally represents the environmental and development divide. This document, which is supposed to translate the intention of the state to protect the 'environment' into what is acceptable 'development', seems to have now become an inconvenient procedure.

A recent Open Letter to the Ministry of Environment and Forests points out that the 64 members in the six environmental assessment expert committees of the Ministry of Environment and Forests (MOEF), which advises MOEF on whether to clear industrial and development projects, are dominated by current and former bureaucrats, politicians and engineers. There is little representation from ecologists or environmentalists; there are only two wildlife experts (though the Notification requires a flora/fauna expert in each committee); there are few representatives of indigenous/ adivasi/ local communities; and only three or four women members in all. There have been at least 12 significant dilutions of the EIA process over the past decade, and the mandatory public hearings are a farce, often being held by the project proponents themselves! Further dilutions are in the offing, in the name of easing the process of clearance and reducing 'delays'. Clearly, the state is not very keen on implementing its own laws.

On the other hand, our 'role model' China is recognising the immense ecological damage their almost 9 per cent growth rate is causing. The estimated clean-up costs are over US \$450 billion with an annual degradation amounting to US \$54 million, and over 178,000 premature deaths per year owing to pollution, as per World Bank studies. The GDP actually reduces by at least a couple of percentage points when this is accounted for, as acknowledged recently in an interview in a German magazine by a senior Chinese government health official. A Green GDP is now being talked about in China, there while we dither and fumble here!

Environmental damages are irreversible. If 'development' is the name of the game, then for those who suffer and die, it may not seem to 'matter' any more, and for those who live on, they carry forward a toxic and reduced possibility in their lives. Clearly this cannot be termed 'sustainable development' by any stretch of the imagination.

Ravi Agarwal

Continued from page 1

1. **Partnership between municipalities and NGOs:** like Exnora Green Cross (Vellore), Jana Chaithanya at Vishakapatnam, Stree Mukti Sanghatana (SMS) in Mumbai, and the Center for Development Communication (CDC) in Jaipur.
2. **NGOs/CBOs (Community-based Organisations) on their own:** for example, Muskan Jyoti Samiti's intervention at Lucknow.
3. **Municipalities on their own:** as in Suryapet, Panjim, Kalyani, etc.
4. **Outsourced to private operators:** examples from Chennai, Nasik, Surat, Delhi, etc.
5. **Institutions/industrial complexes on their own:** as with the Indian Institute for Technology (IIT) and Jawaharlal Nehru University (JNU) in New Delhi, and ITC in Bhadrachalam.

A surprising revelation of the study was that some of these community interventions are collecting and managing waste from over 1 lakh households in a city. Not only that, they have been able to convert about 80 per cent of the waste as a resource through recycling and composting. Apart from generating wealth from waste, these interventions have integrated more than 10,000 ragpickers as formal waste collectors, imbuing them with a sense of dignity and providing social recognition for their work.

All these efforts of decentralised community intervention become more meaningful in contrast with the ongoing efforts of municipalities in solid waste management. At present, the trend among municipal bodies is to contract solid waste management services to private operators. Unfortunately, this privatisation is based on a haulage system – the more the waste collected and disposed of, more the money earned. This, in fact, promotes unsustainable waste management practices and directly violates the cardinal 3 'R's principle of waste management – Reduce, Reuse and Recycle.

Though the community waste management systems have shown success at their level, they operate under great pressure and stress and have not been able to upscale their work at the city level. The main cause of this inability to upscale has been the apathy of municipalities towards these interventions. They need municipal support in the form of provision of infrastructure such as tricycles, compost sheds, segregation space, etc, but this support has not been forthcoming. In fact, the possibility of upscaling and sustaining such projects has never been explored by the government or urban local bodies.

Besides highlighting the useful contributions being made by these community interventions in urban solid waste management, the study has developed a model for initiating a micro-enterprise that has been created on the basis of the data gathered from ongoing field interventions. This model demonstrates that it is possible to generate profit even while managing waste in an environmentally sustainable way, one that gives prominence to the livelihoods of waste collectors. As per the model, decentralised community interventions, covering a number of households, are likely to attain break-even points as per the following table, provided land and shed for segregation and composting have been supplied by the concerned municipality.



Number of households	Break-even period (in months)	
	Model 1	Model 2
10,000	17	20
5,000	24	31
2,000	44	63

Model 1: Revenue from user fee + revenue from recyclables
Model 2: Revenue from user fee only (recyclables given to waste collectors)

Following the presentation of the report, the session was thrown open to discussing the findings in detail. The crux of the subsequent discussion was that it was possible to manage waste locally, as has been proven by the study, on the condition that municipalities are ready to support such initiatives.

In the next session, CPCB and MCD representatives presented their perspectives and their plans to deal with the problems of recycling of plastics and waste, respectively.

In the final session, a panel discussion was held to arrive at some policy recommendations to manage waste in a socially just and sustainable way. Initiating the discussion on the subject, the chairperson of the panel, T.K. Ramkumar congratulated Toxics Link for a relevant and timely study. He emphasised the point that this session was all about finding solutions to waste management problems and there is a need to prioritise issues and find solutions accordingly. Adding his opinion, Sridharan from the MOEF acknowledged that it was high time decentralised community waste management systems should be given serious thought. He emphasised the point that these decentralised practices should be incorpo-

rated into waste management policies in order to reduce the costs incurred on these services and new policies should be framed to resolve the apparent contradictions between centralised and decentralised waste management practices. It should not be an either/or situation, he elabo-

rated, and both centralised and decentralised waste management practices should be followed simultaneously as per the needs.

Ravi Agarwal said we need to think as a group, though we are all working on the ground individually. It was with this idea of bringing various players together that, in 2003, Toxics Link had facilitated the formation of an alliance of organisations and individuals known as the Alliance for Waste Management (AWM), working with waste issues across the country. All the AWM members participated in the policy seminar, and the second day of the seminar was scheduled to specifically discuss AWM and related issues in detail.

Adding to the discussion, Mr Agarwal mentioned that there are several issues – livelihoods of ragpickers, recycling, occupational and safety hazards, compost and its marketing problems, etc – that need to be dealt with. According to him, there are a plethora of problems that make the situation very complex for both policy-makers and practitioners but these complexities should neither be overstated nor understated. India, at present, does not have the framework to resolve these issues, but the

concept of Extended Producer Responsibility (EPR) provides the appropriate framework as a blueprint to proceed further. For example, implementing EPR will make companies like Coke and Pepsi invest in recycling industries, which are, at present, finding it difficult to generate resources from open competitive markets. Europe has already adopted EPR as a policy solution for waste and other related problems. However, the policy has to be devised with India's unique situation in mind. For instance, livelihood is not an issue in Europe since it is a post-material society, whereas India is still grappling with issues of poverty and livelihood.

One of the panelists of the session, Shubhagato Dasgupta of the World Bank, said that waste management was cross-cutting in its nature and involves many govern-



The executive summary of the research was released by the Chief Guest, a waste collector employed by Naya Savera of Delhi.

mental agencies like CPCB, MOEF, MOUD (Ministry of Urban Development) and municipalities, etc, in its ambit. It needs to address several complex issues like kinds of technologies preferred and subsidies offered, various level of decision-making that impinge on inter-governmental relations, etc, and hence there is a need to take all these issues into account while making future waste management policies.

The seminar concluded on the common demand that municipal laws should incorporate decentralised waste management practices into their ambit and EPR should provide the appropriate framework to proceed further.

By Indrajeet Rai



Right: Participants at the two-day national workshop.



Left: Toxics Link's Communities and Waste team shares the various findings of the research on successful Community Based Solid Waste Management.

FEATURES

Streamlining the disposal of bio-medical waste from Chennai's government hospitals

A step in the right direction

Government apathy was once more brought to the fore when in mid-2004, a controversy struck Government Royapettah Hospital (GRH) in Chennai, as news reports claimed that bio-medical waste from the hospital, in the form of amputated limbs, was found in a municipal corporation truck collecting solid waste. The Central Pollution Control Board (CPCB) took cognisance of the incident and issued notices to the State agencies for their lackadaisical approach to bio-medical waste management. This incident created quite a stir in bureaucratic corridors and pushed the Tamil Nadu Pollution Control Board (TNPCB) into action. The TNPCB contacted Toxics Link Chennai and its partner group CAG (Citizen consumer and civic Action Group) and requested assistance in effective implementation of the medical waste rules in government healthcare institutions (GHCI) over the next few months.

The spadework

The situation in the GHCI was far from satisfactory. The neglect had been ongoing for several years, and preliminary visits to all the 18 GHCI confirmed the worst. Based on the prevailing situation, Toxics Link Chennai and CAG, in consultation with Srishti (the toxics-free healthcare programme of Toxics Link), developed an Action Plan for both the short term (crisis

management) and the long term (sustainability).

Beginning with rapid waste and instrumentation audits in order to obtain the current status, the short-term plan aimed at providing interim solutions on certain priority areas: **segregation, disinfection, sharps management, solid waste and plastics**. As even bins and bags were unavailable in certain institutions, the first step was the procurement of waste management equipment. By reviving the Hospital Maintenance Fund (HMF) under the State Government Health Department, these items and other instruments such as needle destroyers, liquid disinfectants, etc. were procured. Due procedures were also recommended for each of the priority areas and the Corporation of Chennai was asked to dedicate a special collection vehicle for picking up the waste from all the 18 healthcare institutions.

Sensitisation and sustainability

With interim measures in place, the challenge was to ensure that the implementation continued without a hitch. This required an elaborate exercise of sensitisation and training for the staff of these GHCI. The objective was two-pronged: to train all the staff of the institutions and to create a model hospital.

Training of Trainers (ToT)

The ToT method is a very effective method that can be used to train other employees with a trained employee group. In this case, all the 18 institutions were instructed by the Directorate of Medical Education (DME) to form Core Groups with representation from all departments of the institution. Along with the TNPCB and CAG, Toxics Link (Chennai and Delhi) formed a team of resource persons and conducted training for all the 18 core groups. These core groups are in turn now conducting the training for the rest of their staff.

The champion

The second objective of creating a model institution was strategic, and aimed at tackling the complacency that had set in. By establishing a champion, it was felt that all other GHCI would be able to learn from the champion. Stanley Medical College and Hospital was chosen and it was planned

that all staff be trained. By December 2004, except the doctors, all other staff had been trained and provided hands-on learning experiences.

Final disposal

With things moving fast within the GHCI, the final disposal systems had to be streamlined as well. As purely an interim measure, the dedicated vehicle provided by the Corporation has been collecting all the disinfected waste, except sharps, from these institutions and disposing of them at the Kodungaiyur dumping ground. For managing sharps, the Corporation was instructed by the TNPCB, based on recommendations from CAG and Toxics Link, to provide concrete bins which could have sharps dumped in them and then be covered with plaster of paris. These could later be transported to secured landfills.

As a long-term measure, a common disposal facility is being planned by the State Health Department, with guidance from the TNPCB. As with private healthcare institutions, the GHCI will also be required to tie up with this facility for their final disposal needs. As a via media till the common facility gets set up, the option of sending some of the bio-medical waste to the two existing facilities that are being run for private institutions was also considered. An audit of the two Common Bio-medical Waste Treatment Facilities (CBWTFs) was carried out by the partner groups, and recommendations were provided. It was recommended that as a start Category 1 waste alone could be sent to the facilities for final disposal.

Multi-stakeholder participation

The overall implementation is now in its final stages. Though the motivation to change was because of the threat of authority and not voluntary, it must be lauded as a step in the right direction. This work is an example of how active participation of all the stakeholders in this sector working in coordination can achieve reform at all levels. TNPCB, DME, Corporation of Chennai and the administrative staff of Stanley Hospital and all the other GHCI have come together and it is important that this collaboration continues so that the hands that heal don't harm.

By *Rajesh Rangarajan*

RESOURCE TEAM

K.S. Sudhakar (Toxics Link Chennai)

Kavitha Anand (CAG)

Dr Gajendran

(Nodal Officer – Stanley Hospital)

Assisted by

Rajesh Rangarajan (Toxics Link Chennai)

Balaji (Trainer – TNPCB)

WTE continues to be a flaming issue

Two new proposals to set up combustion-based waste-to-energy (WTE) plants in Ahmedabad and Imphal are uncalled for. The Ahmedabad municipal standing committee is planning to allow a private firm to set up a plant to generate power from solid waste collected in the city. Delhi-based Djai Power Ltd has offered to set up a plant designed to generate 7.5 MW power from the daily garbage collection of minimum 500 tonnes. The project will be implemented in two phases, costing Rs 10.94 crore and Rs 34.55 crore, respectively.

The plant would be located at the new dump site of the Ahmedabad Municipal Corporation (AMC) near Gyaspur village on the Narol-Sarkhej bypass. The AMC is supposed to provide and deliver garbage at the plant site free of cost. The electricity generated will be sold to the AMC at Rs 2.25 per unit, with a 5 per cent annual escalation on a cumulative basis for the next 25 years. The AMC will also be required to pay Rs 30 per tonne to the company for segregation of garbage.

An article in the *Indian Express* carries the claim that the plant will be ready in nine months from the date of awarding of work order. The article states, "There are three such plants running in India, two in Andhra Pradesh and one in Uttar Pradesh." The latter part of this statement is patently false, as the Lucknow plant was shut down last year (an event reported in the December 24, 2004, issue of the same newspaper).

The project proponents say, "we are setting up our plant using the technology applied in the Andhra Pradesh plants". This 'Hyderabad recipe' from Andhra Pradesh is being proposed, unmindful of the health and environmental consequences of the project. A survey of the pelletisation-based WTE plant

near Hyderabad has highlighted its adverse health and environmental impacts on the entire Peerancheri Panchayat and on Yellikata village, the two places where its units are in operation. Besides environmental unsustainability, such projects are not even technically and financially viable.

The unhealthy ecological footprint of supplying 'quality' garbage will remain an impediment in any waste-to-energy project in India, as exemplified in the failure of the Timarpur WTE plant, and the proposed Gazipur and Kanpur plants.

In Imphal, Manipur, there is a proposal for an incinerator plant to dispose of waste. The undisposable material would be piled

up as artificial hills. A detailed project report has already been submitted by the State authorities to the Union Ministry indicating a plot at Tingri area for an incinerator plant. The Ministry of Urban Development and Poverty Alleviation has been approached to approve and fund an incinerator plant in order to free Imphal from rotting garbage.

The estimated cost of the plant is around Rs 24 crore. The State Government has begun the process of acquiring the 60 acres of land needed for setting up the plant. The local leaders and Meira Paibis (Women Torchbearers) are scheduled to visit Shillong, Meghalaya, for an on-the-spot study of the environment-friendly Solid Waste Disposal Plant set up there.

Earlier, the Manipur Government had selected a site at Lamdeng Khunou for setting up a Solid Waste Disposal Plant with assistance from the French Government, but the proposal failed as France pulled out of the programme and the Lamdeng Khunou land of only 6 acres was insufficient.

Andrew Whitehead, head of British law firm Martineau Johnson based in Birmingham and London, who was recently in India, said that the proposed WTE projects can qualify under the Kyoto Protocol's 'Clean Development Mechanism' (CDM) and could attract significant revenue from the sale of emission reduction credits. He would have Indian agencies believe that the Russian ratification of the Kyoto Protocol could make some economically unsound projects financially viable, especially if, as predicted, prices in the market go up. This approach, however, has been vigorously opposed by environmental groups in developing countries, as the ecological brunt of such activities will be felt most heavily in our own backyards. (see article on *Kyoto Protocol and the Clean Development Mechanism* on the following page).

By Gopal Krishna



Distorting the Kyoto Protocol and its Clean Development Mechanism

The Kyoto Protocol against global warming, an international and legally binding agreement to reduce greenhouse gas (GHG) emissions worldwide, lists commitments that member-countries must respect strictly in terms of definition of emissions in order to achieve sustainable development, as well as in terms of measures to limit and/or reduce emissions of GHGs not controlled by the Montreal Protocol. For the Protocol to enter into force, it was required that it be ratified by at least 55 Parties to the Convention, including developed countries that account for at least 55 per cent of the total 1990 emissions from this industrialised group.

The Conference of the Parties (COP 10) on the Kyoto Protocol in Buenos Aires, Argentina, from December 6-17, 2004, was a conference of hope, sparked by the upcoming entry into force of the Protocol. On November 18, 2004, Russia, which is responsible for 17 per cent of the world's emissions, deposited its instrument of ratification with the United Nations. This marked the start of the 90-day countdown to the entry into force of the Protocol.

According to the treaty, nations are supposed to limit GHG emissions to the atmosphere for the first period from 2008 to 2012. Although the Protocol doesn't formally go into effect until 2008, February 16, 2005 marks the start of a pre-Kyoto pilot programme with at least 136 countries as signatories to begin reducing emissions of six key GHGs.

The Protocol's entry into force means that, from February 16, 2005:

- 1) 30 industrialised countries will be legally bound to meet quantitative targets for reducing or limiting their GHG emissions.
- 2) The international carbon trading market will become a legal and practical reality. The Protocol's 'emissions trading' regime enables industrialised countries to buy and sell emissions credits amongst themselves; this mar-

ket-based approach will improve the efficiency and cost effectiveness of cuts.

- 3) The Clean Development Mechanism (CDM) will move from an early implementation phase to full operations. It will encourage investments in developing-country projects that limit emissions while pushing sustainable development.
- 4) The Protocol's Adaptation Fund, established in 2001, will start preparing itself for assisting developing countries to cope with the effects of climate change.

Only four industrialised countries have not yet ratified the Kyoto Protocol: they are Australia, Liechtenstein, Monaco and the United States. Australia and the United States have stated that they do not plan to do so; together they account for over one-third of the greenhouse gases emitted by the industrialised world. These polluting countries are waging a brand of 'eco-terrorism' which endangers the survival of low-lying island countries like Kiribati, Tuvalu, the Marshall Islands and a handful of others. These nations are threatened by the rise in sea level caused by global warming that could see them entirely submerged. Their future looks bleak in the face of climate change, climate variability and sea level rise. Developing countries, including Brazil, China, India and Indonesia, are also Parties to the Protocol but do not have emission reduction targets.

What is being ignored, while promoting waste-to-energy (WTE) projects based on burn technologies, is that it violates Kyoto Protocol. The CDM enables developing countries to participate in joint greenhouse gas (GHG) mitigation projects. This is done by engaging in project activities that result in certified emissions reductions (CER). The Protocol allows developed countries and economies in transition (Annex I countries) to use the CER accruing from such projects undertaken in developing countries, to account for their own mandated reductions in GHG emissions. Projects starting in the year 2000 are eligible to earn CER if they lead to "real, measurable, and long-term" GHG reductions,

which are additional to any that would occur in the absence of the CDM project.

Waste combustion is a toxic activity and a contributor to global warming but CDM may end up becoming a vehicle to promote it in developing countries as a sustainable activity. Vested business interests are promoting waste incineration under various names such as gasification and pyrolysis as renewable energy. Energy drawn from projects that use resource incineration processes is a non-renewable energy and it cannot be used for CER. The fact that waste incineration leads to global warming is acknowledged in the Kyoto Protocol itself where it is listed as one of the sources of greenhouse gases. It is true that the Kyoto Protocol mentions waste management, but what is really happening is that investors and promoters of incineration technologies are taking advantage of Article 10(c) of Kyoto, which seeks to facilitate transfer of or access to environmentally-sound technologies pertinent to climate change.

If this trend of misusing CDM gains momentum, it will be a setback to the anti-incineration campaign worldwide. The United States has already introduced waste incineration as renewable energy in its Energy Bill amidst fierce opposition. In India, the Ministries of Science & Technology and Non-conventional Energy Sources are promoting incineration of organic resource with the support of subsidies instead of promoting sustainable integrated plant nutrients management. Processes such as incineration, gasification, pyrolysis are being supported on the pretext that they are a source of renewable energy, even though these technologies are totally inappropriate for Indian waste matter.

What is emerging is that organic waste as a fuel for electricity generation through combustion processes is being termed a renewable process. This is a gross attempt to twist scientific facts to suit vested interests. It makes a farce of CDM, which encourages renewable energy technologies to reduce carbon emissions and not otherwise.

By Gopal Krishna

Pesticides used in tobacco cultivation

There exists a lot of awareness about the effects on health of tobacco consumption. What is little recognised, however, is that harm from tobacco begins at an earlier stage – during the process of cultivation itself. Many pesticides are used in tobacco cultivation, and these have high potential for causing damage to the consumers, the sprayers, the farmers and their family members, all of whom are exposed to the toxic effects of these pesticides.

Most often, the farmers and the sprayers also consume tobacco in one form or the other. The pesticide-laced tobacco together with the pesticides that is inadvertently absorbed by their bodies during spraying, doubly adds to their body burden. Pregnant women involved in farming and spraying activities are exposed to pesticides and pass on these toxic contaminants to their children. A large section of the Indian population suffers from malnutrition and is under-nourished; this makes them more vulnerable to the negative impacts of pesticide exposure. Furthermore, spraying of pesticides contaminates all quarters of the environment. Ultimately, the brunt of the load of pesticides on the environment is borne by the entire population.

Moreover, the total costs of tobacco consumption to the community as a whole consists of private costs and external (or 'social') costs. The most significant external cost of tobacco cultivation is its widespread destruction of the environment. Land that could have been cultivated for food crops is used for tobacco cultivation. Intensive use of pesticides and fertilisers add to the problem by polluting water, air and soil. Tobacco leaf has a higher surface-to-weight ratio than other crops, and with excessive use of pesticides there is always a chance for accumulation of pesticide residues in the leaf¹.

The problem of pesticide residues in cured leaf is a major cause for concern. To get a good price for export oriented flue-cured and burley tobacco, quality is of utmost importance. Among the various factors that determine the quality, the level of pesticide residues in cured leaf is of significance². If the leaf has residue level higher than the set standard, it cannot be exported



since importing countries have stringent systems in place for monitoring pesticide residue levels in tobacco. Currently, Indian tobacco is exported to more than 80 countries. Top multinational cigarette companies like British American Tobacco (BAT), Philip Morris, RJ Reynolds, SEITA, Imperials, Reemtsma, etc, and many government monopoly companies all over the world import Indian tobacco either directly or indirectly³. These countries while importing tobacco follow stringent Guidance Residue Levels (GRL) and Maximum Residue Levels (MRL) for most of the pesticides used in tobacco⁴.

Usually, for export quality leaves, pesticides are used as per the recommendations. Their effect and quantity gets reduced due to temperatures, sunlight, humidity, air, rainfall and due to the action of enzymes in the plant. But export-quality flue-cured tobacco comprises only 23.6 per cent of the total tobacco production in the country. Much of the tobacco produced (around 76.3 per cent)⁵ caters to local markets in the form of *bidi*, *gutka*, etc. High levels of pesticide residues on tobacco leaves used for local consumption in India and other countries in South East Asia is a matter of grave concern.

Tobacco is grown in more than 100 countries, most of them developing countries. Tobacco plants require huge amounts of fertiliser, herbicides and pesticides because they are prone to a wide variety of diseases. More than 450 pesticides are registered with the Environmental Protection Agency (EPA)⁶ to be used on tobacco crops⁷. This list includes nerve toxins and pesticides that are toxic and may cause cancer or birth defects.

Throughout the growing cycle, up to 16 applications of pesticides may be applied over a three-month growing period for tobacco. Pesticides are available mainly in powder, liquid and granular form and are applied mainly through manually operated machines. However, the use of power sprayers, dusters and mist sprayers is increasing in agriculture. Aircraft are used to

CTRI, which falls under the aegis of the Indian Council of Agricultural Research, has put together a list of recommended and prohibited pesticides to be used on tobacco. The following is a combined list of all the chemicals recommended for use on tobacco by CTRI, the Government of India and other research institutes:

- | | |
|--------------------|-----------------|
| 1. Imidacloprid | 14. DDT |
| 2. Chlorpyrifos | 15. Nicotine |
| 3. Thiamethoxam | sulphate |
| 4. Acephate | 16. Malathion |
| 5. Methomyl | 17. Dichlorvos |
| 6. Amine | (DDVP) |
| 7. 2,4 DES | 18. Endosulphan |
| 8. Amyl alcohol | 19. Aldrin |
| 9. Bordeaux | 20. Chlordane |
| 10. Silver nitrate | 21. Captan |
| 11. Sulphur | 22. Copper |
| 12. Carbaryl | oxychloride |
| 13. BHC | 23. Carbendazim |

Source: CTRI and Handbook of Agriculture, 2003



a limited extent in certain areas on cotton, *jowar*, rice, sugarcane, cashewnut and groundnut. Such pesticides can inadvertently land up in tobacco fields where such crops are grown during crop rotation. It is recommended that pesticides in dust form not be used on tobacco. Cigar sprayers with duromist nozzles or high-tech sprayers should be used for greater efficiency.

The research institutes, such as Indian Agricultural Research Institute (IARI), Central Tobacco Research Institute (CTRI), etc, all differ in the pesticides they prescribe and the dosages they recommend for use on tobacco. These discrepancies have created confusion even in the minds of experts on pesticides in India.

The problem in South East Asian Region (SEAR) countries is that there is indiscriminate use of pesticides, that it is sprayed more often than required, that higher doses are used than is recommended, and that pesticide mixtures containing more than one insecticide is used⁸. Also, there is the problem of pesticide drift from the use of pesticides not recommended for tobacco in adjoining fields growing some other crops. Some of these pesticides do not degrade quickly and have a tendency to get accumulated in plants, leaves and soil. GRLs and MRLs are not adhered to for pesticides used in tobacco grown for consumption in India. Some amount of monitoring to check for residues on export quality tobacco leaves does exist in India but the monitoring system in place to check for residues on leaves meant for internal consumption is extremely weak or does not exist at all. Hence, there is always a chance that the residues will be more than the acceptable limits. The heavy price of this is paid by the entire society.

By Papiya Sarkar

References

¹ <http://www.globalink.org>

² <http://www.hindu.com>

³ <http://www.indiantobacco.com>

⁴ <http://factsheets.globalink.org>

⁵ <http://www.fao.org/documents>

⁶ *The Environment Protection Agency (EPA): The US government agency that is responsible for protecting public health and environment. The EPA monitors and regulates water, air and land quality and any factors that may affect them.*

⁷ <http://www.panna.org>

⁸ <http://factsheets.globalink.org>

UK Environment Agency report validates Toxics Link stance on e-waste

Over the years, Toxics Link has been regularly claiming that large quantity of electronic waste (e-waste) is dumped into Indian shores in the name of recycling. This standpoint was vindicated to some extent in December 2004, when a report released by the British Environment Agency (BEA) indicated that there are several companies exporting e-waste from the UK to India, Pakistan and China. The BEA report states that around 23,000 tonnes of waste may be being shipped to non-OECD (Organisation for Economic Cooperation and Development) countries in the Far East, the Indian sub-continent, West Africa and China without the right authorisation from the Environment Agency. The report goes on to announce the stepping up of activity by the Agency to identify the perpetrators of these illegal exports, with the intention of bringing them to justice. The Agency warned defaulting companies to comply with the rules, or risk prosecution.

The report was compiled on behalf of the Environment Agency by the Industry Council for Electronic Equipment Recycling and is being used to help target investigative and enforcement work by Agency officers. The Agency is setting up a dedicated special enforcement team that will step up the number of random inspections carried out at ports across England and Wales, and prosecute offenders.

Under the Basel Convention, no hazardous waste, including electrical or electronic waste, can be sent abroad for disposal. E-waste falls under the head of hazardous waste as it contains several toxic materials such as heavy metals, PVC plastics, brominated flame-retardants, etc, which are a hazard to the environment and to human health. According to UK law, waste electronic equipment containing hazardous material destined for minor repair may be exported but must first be authorised by the Environment Agency. It is illegal to send any hazardous waste, including electrical or electronic waste, to a non-OECD or developing country for disposal or recovery.

According to the BEA report, e-waste exports are worth hundreds of millions of pounds. Last year, such waste involved tens



of thousands of old computers, 500,000 television sets, 3 million refrigerators, 160,000 tonnes of other electrical equipment and millions of discarded mobile phones, all sent to Asian countries like India, China and Pakistan.

On the other hand, the Central Pollution Control Board, the Government of India's regulatory and monitoring body, continues to deny that e-waste is coming into India. It is high time that the Government and Port Authorities in India implement the Hazardous Waste Rules and check the illegal imports of e-waste at the entry points itself. E-waste is included in Lists A and B of Schedule 3 of the Hazardous Waste Rules, 2002, wherein its import is restricted.

Toxics Link has released several reports on the status of e-waste, which have revealed that more than 70 per cent of electronic waste collected in the recycling units of Delhi is actually exported or dumped by developed countries such as the USA. In India, this waste is subjected to primitive and highly polluting recycling operations, which contaminate air and water and severely impact the health of workers.

The movement of hazardous wastes of all kinds is meant to be defined, and controlled or prohibited under the terms of the Basel Convention – an international treaty under the auspices of the United Nations Environment Programme. The Government of India should heed the warnings contained in the BEA report and check the illegal imports of e-waste.

By Kishore Wankhade

COP-1: Meeting of governments discusses implementation of Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (POPs) had its first Conference of Parties (COP-1) to the Convention in Punta del Este, Uruguay, from May 2-6, 2005. At this mega meeting, more than 600 government officials and observers from 98 countries committed to rid the world of some of the most hazardous chemicals ever created.

The Stockholm Convention is a global treaty to protect human health and the environment from POPs. While the risk levels vary from POP to POP, all POPs share some commonality. They are chemicals that persistently remain in the environment for long periods, get distributed geographically at a trans-boundary level, bio-accumulate and bio-magnify in fatty tissues, and are toxic to humans and wildlife. Negotiated under the auspices of the United Nations Environment Programme (UNEP), the Convention, entered into force on May 17, 2004. It targets 12 hazardous pesticides and industrial chemicals that can kill people, damage the nervous and immune systems, cause cancer and reproductive disorders, and interfere with normal infant and child development.

Among the matters taken up for consideration and action at COP-1 was evaluation of the continued use of DDT for vector control. This discussion covered measures to reduce or eliminate release from unintentional production and use of DDT, spe-

cific exemptions and related issues. The International POPs Elimination Network (IPEN) emphasised the need to work on strategies for integrated vector control, non-chemical alternatives and adequate public health measures. Fortunately, the health and environment communities both agreed that, while DDT will remain necessary for some time in some countries, it will be possible to gradually reduce its use by adopting more environment-friendly alternatives.

The conference also considered adopting or endorsing the guidelines on managing POPs wastes that were adopted last year by the Basel Convention on Trans-boundary Movements of Hazardous and Other Wastes. COP-1 also provided guidance to the Global Environment Facility, which serves for the time being as the “financial mechanism” that funds national projects and activities for implementing the Convention.

Measures to reduce or eliminate releases from unintentional production were also discussed in detail. An international set of guidelines for drastically reducing dioxins and furans, which are carcinogenic chemicals unintentionally produced and present at levels that put human health and wildlife at grave risk, was discussed in detail at COP-1. Unlike the other 10 POPs covered by the Convention, dioxins (or PCDDs) and furans (PCDFs) are unwanted by-products with no commercial value. They result from various sources like

incomplete combustion in incinerators, the burning of garbage, wood and other biomass and other industrial processes. The Stockholm Convention has recognised that current technologies make it extremely difficult to approach zero releases of these chemicals. To assist government in achieving real reductions in releases, officials and delegates at COP-1 released draft guidelines on Best Available Techniques and Best Environmental Practices (BAT and BEP). NGOs generally agree that these guidelines contain some useful material but that they require further work before they can be adopted. IPEN says that means techniques other than waste incineration and landfilling of wastes should be recommended in the BAT/BEP guidelines.

COP-1 also assessed the national inventories of dioxin and furan sources that governments are in the process of completing for identification and quantification of releases. Around 24 national inventories have already been completed using the UNEP Chemicals Dioxin Furan Toolkit. These inventories reveal that major source of dioxin and furan in developing countries include the uncontrolled burning of garbage and other materials but in developed nations the major source tends to be dominated by the high-tech industrial emissions.

However, the UNEP Toolkit has not met with approval from watchdog bodies. IPEN says this Toolkit does not cover important by-product POPs such as PCBs and incompletely addresses calculations of dioxin and furan releases. “We recommend that the Parties do not adopt the Dioxin Toolkit,” IPEN said. “It is a flawed document that poses serious limitations to implementing the Stockholm Convention. We suggest COP-1 call for substantial revisions, where Parties and stakeholders need better opportunities to provide input and to review the results, in order to insure a more responsive and transparent process.”

Another of the conference’s key tasks was to establish a process for evaluating chemicals which are possible future candidates for banning. According to a release by the Global Anti-Incinerator Alliance (GAIA), a conglomeration of groups working in the field, four new chemicals have been proposed for a global ban. Norway nominated the brominated flame retardant pentabromodiphenyl ether (penta-BDE) used in foam



The Contact Group on the POPs Review Committee, chaired by Ibrahima Sow, Senegal (third from left), reaching agreement on size and membership.

This Inuit statue representing a mother with a baby in arms, serves to remind participants of the health effects of POPs and the importance of their work. It has sat on the dais at every POPs meeting.



cushions in home furnishings. Mexico is nominating a group of chemicals called hexachlorocyclohexanes (HCH), including the pesticide lindane, a member of that group. The European Union is nominat-

ing two candidates for elimination under the treaty – the pesticide chlordecone, and the brominated flame retardant hexabromobiphenyl, used in machine housings and radio and TV parts.

Other matters discussed at COP-1 included implementation plans, information exchange, technical assistance, financial resources, mechanisms and related financial arrangements, establishing POPs review committee, establishing a schedule on reporting, establishing arrangements for monitoring data on POPs, adopting rules of procedure and financial rules and adopting a budget for Secretariat.

Though COP-1 has ended amidst widespread optimism shared by government, observers and civil societies, the world awaits the implementation of the Convention in all countries as a giant step towards a toxics-free tomorrow.

By Papiya Sarkar

The official website of the Stockholm Convention is at <http://www.pops.int/>

For more information on the NGO position, visit IPEN at <http://ipen.ecn.cz/index.php>

OBITUARY

Bob Hunter, Greenpeace co-founder



GREENPEACE

Robert 'Bob' Hunter, Canadian co-founder of the Greenpeace organisation, died on May 2, 2005, in Toronto. He was suffering from prostate cancer. He had backed successful campaigns against nuclear testing and pollution of oceans after he helped launch Greenpeace in 1971. Hunter was also well known for his work as a journalist and author. *Time* magazine named Bob Hunter one

of the 20th-century's top eco heroes.

He adopted the term 'Rainbow Warriors' for Greenpeace activists, which later got coined as a name of Greenpeace's flagship. He introduced the concept of direct action which drew dramatic reportage, leading him to develop the concept of the 'media mind bomb'. This term well described the effects of the Greenpeace protests which have followed thereafter. Hunter pioneered the move to bring whale and seal hunting to public attention and to stop dumping of toxic waste into the oceans. In 1973, he became the first-ever President of Greenpeace, and led Greenpeace through its transformation into an international organisation. Today, Greenpeace is present in 40 countries, with more than 2.5 million members worldwide.

Hunter wrote several books over the years, including a history of Greenpeace, *The Greenpeace to Amchitka*, in 2004.

Roch Lanthier, anti-asbestos warrior

Roch Lanthier of the Asbestos Victims Association of Quebec (AVAQ), Canada, is no more. Roch was deeply concerned about the plight of asbestos victims in Quebec and India. Ban Asbestos Network of India (BANI) and AVAQ had plans to work in close collaboration.

BANI is saddened by his sudden demise. It seems just yesterday that the three of us – Roch Lanthier, Dr Annie Thebaud-Mony, Director of Research at the National Institute of Health and Medical Research at the University of Paris, France, a founding member of the BAN Asbestos Global Network, and myself were exchanging notes on language and linguistics.

At the Global Asbestos Congress (GAC), 2004 in Tokyo, Roch informed us about how AVAQ was founded to help asbestos victims and their families with medical, legal, environmental and personal issues, to make the population more aware of the situation through the media, and to develop alliances with other groups. Under his guidance, AVAQ has proposed an international moratorium on the use and production of asbestos until a really safe way of using it can be found and applied everywhere.

Roch had great fascination for Indian philosophy. In fact he was truly an Indian at heart. He had lived in Hardwar, one of the most spiritual cities in India.

He expressed his views in unusually non-verbose manner about the subtle existence of our being. He felt that I would understand him better; people in Quebec, he said, found his views incomprehensible. Roch was of the view that "we never cease to exist". I agree with him.

By Gopal Krishna

UPDATES

MEDICAL WASTE UPDATE

Mercury in households

Almost every home contains one or more hazardous products, that can harm human health or the environment if improperly handled. Each year, thousands of people are injured by exposure or accident involving hazardous household products. Because of the dangers they pose, these products require special awareness, handling and disposal. In order to protect health and the environment, every consumer should know how to properly use, store, and dispose of hazardous household products.

Mercury is one such product.

Thermometers are the most widely used instrument containing mercury that are used in households. Mercury thermometers are easy to recognise; they are made of glass with a silvery-white liquid inside. This liquid is mercury, a toxic substance that can harm both humans and wildlife. The metal is used because it expands and contracts evenly with temperature changes. A typical fever thermometer contains 0.7-1 gm of mercury.

Toxics Link conducted a survey in the Sarita Vihar residential colony of Delhi during December 2004, to get some data regarding the usage of thermometers. There are approximately 7,000 households in the colony and 17 chemist shops. All the chemist shops and around 100 households were covered during this study.

The study was undertaken to assess the level of mercury awareness among the residents, the thermometer usage pattern, and breakage and disposal pattern in a household.

The survey found that 86 per cent of the households use mercury thermometers. Awareness among residents about mercury, it was found, is very low. As a result, little importance is given to the proper handling and disposal of mercury in case of breakage of a thermometer. In cases of breakage, the survey revealed, people collect the spilled mercury using cotton, paper, or a broom or mop. The collected mercury is disposed of along with the general household waste, or flushed down the drain, each of which would lead to mercury's entry into the food chain.

It is essential that products containing mercury should be appropriately labelled with warnings and precautions. There should be a message along with the products which informs the consumer of the dangers that can be caused due to mercury. Specifications should also be provided for handling of mercury in case of a spill.

ASBESTOS UPDATE

White asbestos continues to be a threat in India

Namo Narain Meena, Union Minister for Environment and Forests, misinformed the Lok Sabha on December 20, 2004, repeating his reply of July 19, 2004, saying, "The Government has received representations from few non-government organisations for a total ban on white asbestos in the country. However, as no scientific study establishing that the use of white asbestos causing lung cancer is available, it is not considered desirable to ban the use of white asbestos". This is despite the fact that the Union Ministry of Health has informed the Parliament that exposure to any type of asbestos can lead to the development of asbestosis, lung cancer and mesothelioma. Asbestos is now a totally banned substance throughout the European Union, and the World Trade Organisation as well as countries like Japan and Australia have termed white asbestos as cancer-causing.

In India, the grant of fresh mining leases and renewal of existing mining leases for asbestos is banned on health grounds. Blue and brown asbestos and asbestos waste have already been banned in the country; only white asbestos remains.

"All kinds of asbestos are cancer-causing including white asbestos and there is no cure for diseases caused due to asbestos exposure," says Dr S.K. Dave, Director, National Institute of Miners' Health, Nagpur. "The diseases caused by asbestos may occur years after a person has stopped working in a asbestos factory or mine and it is difficult to track these workers and do cohort studies. We do not have such infrastructure in the country. Also a person with these debilitating diseases, won't be working – they will be either in hospital or would have died."

Dr T.K. Joshi, Director, Centre for Occupational and Environmental Health, Lok Nayak Jai Prakash Hospital, New Delhi, adds his voice to this, saying, "When the world is preparing and planning to get rid of all forms of asbestos, it makes us look stupid in India to be still importing it, we should devote our scarce resources to prevent the impending disaster by phasing it out as soon as we can."

It is possible to eliminate the use of asbestos by redesigning the job or product for which it is being utilised, or by using another, safer material. Cellulose fibre, PVA fibre, clay, stone tiles and steel are all substitutes for asbestos in different applications. The substitutes exist – what is required is a unified, sensitive approach by the government to see the problem for what it really is, and to ban the import and use of all forms of asbestos, including white asbestos.

By Gopal Krishna

HAZARDOUS WASTE UPDATE

Supreme court orders destruction of waste oil containers

The Supreme Court of India directed the Mumbai Port authorities that 133 containers of waste oil lying at the Mumbai Port for several years should be destroyed "expeditiously" through the incineration method. The monitoring committee appointed by the apex court had classified the waste oil as hazardous and recommended that the Bench, comprising Justice Y.K. Sabharwal and Justice S.H. Kapadia, order its removal.

Experts say waste oil contains cancer-causing chemicals such as polychlorinated biphenols (PCBs) and can contaminate the environment in such a way that the poison travels through the food chain affecting various living organisms, including humans.

These oils contain mixtures of hydrocarbons and water, emulsions and other toxic substances as they are subjected to different processes and several chemicals are extracted. However, the entire quantity is never fully reused and hazardous by-products are generated.

The Bench applied the 'polluter pays' principle and asked the importers to deposit



the cost of incineration with the committee and directed all concerned authorities to extend “full cooperation” in the task. After destroying the hazardous waste oil in the containers, the committee would file a compliance report, the Bench decreed.

Turning its attention to about 170 such containers lying at Nhava Sheva Port near Mumbai containing similar imported waste oil, the Court also directed the Customs department to furnish within four weeks the details of the importers so that appropriate orders could be passed.

By *Kishore Wankhade*

COMMUNITIES UPDATE

Zero Waste Drive

On December 19, 2004, the Delhi Government organised a Bhagidari Mela at Pragati Maidan, in which Toxics Link participated. Highlights of the community-based solid waste management programme at Sarita Vihar were displayed; the first batch of compost from that initiative was on exhibit. It was encouraging to see the enthusiasm of visitors to learn about compost and to buy it. The composting process at Sarita Vihar is running successfully.

As part of the programme for creating Zero Waste Campuses, Toxics Link has been assisting St Columba’s School. The aim is to manage waste generated from the school in the campus itself and reduce the amount of waste disposed outside the premises of the school, thereby lowering pressure on landfills. Toxics Link is in the process of capacity-building with the school; awareness programmes for students, gardeners, canteen employees and the faculty will start soon, followed by training sessions for the gardeners and canteen employees.

Another organisation that has taken the initiative of creating a Zero Waste Campus is United Nations Development Programme (UNDP) in New Delhi. Toxics Link visited the campus on January 6, 2005, and the necessary data were collected. Two pits were dug for composting the biodegradable waste from the canteen and garden. A supervisor has been appointed to look after the composting pits and Toxics Link is monitoring the process on a regular basis.

By *Linthoin*

NEWS

Shame of shipping

The Gujarat Government requested more infrastructure for the Alang ship-breaking yard from Prime Minister Manmohan Singh on January 4, 2005, perhaps unaware of the fact that on December 20, 2004, three civil society organisations of France (Ban Asbestos France, Bannir l’Amiante and Syndicat CGT de la DCN de Toulon) wrote an Open Letter to the French Defence Minister, Michele Alliot-Marie, alerting her and the French people about the export of the former French Navy aircraft carrier, *Le Clemenceau*, to India, without any consideration for the health of the Indian workers who have to dispose of it. This ship is laden with tonnes of asbestos waste on board. It is a well-known fact that workers in this ship-breaking yard are exposed to a cocktail of hazardous wastes and do not wear any protective gear. The French Minister did not pro-

vide any answer to the Open Letter.

Le Clemenceau was decommissioned in Toulon, France, in 1997. It was expected to reach India in the first quarter of 2005, to be scrapped by the Indian company AG Enterprises Ltd – Shree Ram Vessels Scrap Ltd, in Alang, Gujarat. *Le Clemenceau* has long been in search of a harbour where it could be recycled.

The European Union forbids export of waste outside of countries which are affiliated to the European Association of Free Trade (in French, Association Européenne de Libre Echange or AELE). Asbestos is classified in the ‘red list’ of the relevant European regulation (annex IV). India is not a member of the AELE. The French law on the environment, which contains the same rule on the export of toxic waste as the European regulation, stipulates that criminal sanction can be applied, if the rules are not applied. The Basel Convention, which regulates the control of the movements across the boundaries for the elimination of hazardous waste, banned the export of haz-

Alang: graveyard of ships,
graveyard of souls



STOP PRESS!

On Earth Day, one more toxic ship lands!

April 22: The troubled waters surrounding the *Le Clemenceau* case got murkier as a Danish ship, the *Kong Frederik IX*, landed at Alang on Earth Day. According to a report in *The Hindu*, Connie Hedegaard, Denmark’s Environment Minister had earlier sent warning to A. Raja, India’s Minister for Environment and Forests, about the illegal departure of the ship. Her letter had stated that the ship had violated an order to be decontaminated in Denmark. She had pointed out that the ship’s movement was in violation of the Basel Convention and had requested the Indian Government to cooperate with Danish authorities and have the ship returned to Denmark. It’s now up to the Indian authorities – who have since inspected the ship and found asbestos – to do the right thing in this case.

ardous wastes from developed to developing countries as long ago as 1995.

In these circumstances, sending *Le Clemenceau* to India for demolition with tonnes of asbestos on board is illegal under every system, including under Indian law. The asbestos removal must be done entirely in France in the proper conditions. French authorities must adhere to EU Waste Shipment Regulation, International Maritime Organisation guidelines on ship recycling, and the Basel Convention. The EU Waste Shipment Regulation obligates member states like France to ensure that the shipment of waste is reduced to the minimum, consistent with environmentally sound and efficient management of such wastes.

Despite the Basel Convention's ban on their movement, hazardous wastes contained as components in old ships – such as asbestos, polychlorinated biphenyls (PCBs), toxic paints and fuel residues – have been repeatedly exported to countries such as India. The Supreme Court of India, in its October 14, 2003 order, refers to the issue of ship-breaking, saying, "We accept the following recommendations of HPC [Report of the High Powered Committee on Management of Hazardous Wastes]: 'Before a ship arrives at port, it should have proper consent from the concerned authority or the State Maritime Board, stating that it does not contain any hazardous waste or radioactive substances.... The ship should be properly decontaminated by the ship owner prior to the breaking...'"

Dr Gopalakrishna Thyagarajan, Chairman, Hazardous Waste Monitoring Committee, has responded promptly to the *Le Clemenceau* crisis, saying that he is verifying the position to ascertain that no forbidden waste is exported to India and that all the directives in paragraphs 58 & 59 of the Apex Court order are strictly complied with.

Countries like France do not scrap their own ships because no European would volunteer. It is proof of an attitude of environmental racism that they do not have any qualms about dumping this hazardous task on a developing nation like India. What makes this abhorrent situation worse is that the Indian government, instead of condemning such behaviour, should collude with it to the detriment of Indian workers and the local environment.

By **Gopal Krishna**

Toxics Link-CAG Environmental Awareness Public Lecture Series

Tsunami – a natural disaster with environmental impacts

'Tsunami' is now part of every Indian's vocabulary. Apart from the understanding of the grief that it has caused through damage to life and property, the actual facts and the science behind the tsunami is not fully understood. The reason for the devastation it has caused are many but the most blatantly obvious reason is the absence of natural barriers along India's coastline. One is forced to ponder whether the tsunami by itself would have left a visible scar on the environment.

With this background, Toxics Link Chennai and its partner CAG – Citizen consumer and civic Action Group organised the third public lecture of the Environmental Awareness Lecture Series on the topic 'Could the tsunami have caused a large-scale environmental impact?' The panel of speakers included **Prof M. Ravindran** of IIT Madras, who was a former Director of the National Institute of Ocean Technology (NIOT), and **Dr Ranjith Daniels** of Care Earth, an eminent ecologist. **T. Mohan**, an environmental lawyer and activist, moderated the session. Prof Ravindran presented in detail the reasons for a tsunami to be caused and the various monitoring and alert systems currently being used in India. He also listed the environmental strategies and physical barriers for possible mitigation of impacts.

This was followed by a brief talk by Dr Ranjith Daniels, who actually surprised the audience by saying that natural disasters like these may, in fact, be beneficial to the environment by causing a spurt in biodiversity. While explaining how even natural barriers such as the forests on the coasts of Andaman and Nicobar Islands and Sri Lanka could not withstand the force of the tsunami, Dr Daniels cautioned against short-term interventions such as building sea walls, groynes, etc. and suggested that the current models of entire coastal development be revisited. He opined that, by enlarging the purview of the Coastal Regulation Zone (CRZ) Notification, reviving traditional wisdom amongst the current generations of fishing

Sunita Narain of CSE awarded Padmashri



Sunita Narain has been awarded the Padmashri (2005) by the President of India for her services in the field of environmental protection. Narain has worked with the Centre for Science and Environment (CSE) from 1982. She has worked with Anil Agarwal, an eminent environmentalist who established CSE in 1980, and *Down To Earth*, a science and environment magazine, in 1992. CSE is working on several environmental issues such as air pollution, water pollution, water harvesting, etc. Sunita Narain is currently Director of CSE as well as the Director of the Society for Environmental Communications. She is also publisher-editor of *Down To Earth*.

By **Gopal Krishna**

populations and by harmonising modern lifestyles with natural systems, a better coastal protection plan and in turn mitigation of potential impacts of sea-based natural disasters, could be achieved.

Concluding the session, T. Mohan criticised the Central and State Governments for not only disrespecting the CRZ, but also gradually diluting the norms under it. While he lauded the constitution of the Coastal Zone Management Authority, he was critical of the fact that the Authority is almost defunct and lacks adequate representation of various stakeholders.

Rajesh Rangarajan

Drugged drinking water

Drugs and personal care products that are excreted from or washed off the body naturally end up in the sewage that flows into sewer systems and septic tanks, but where do they go from there? Scientists are beginning to monitor the extent of pharmaceutical and personal care products (PPCPs) in the aquatic environment and their consequences. What they're finding is that, through leaching from septic tanks and escaping intact through sewage treatment processes, some of these substances find their way into our drinking water.

Germany has been at the forefront of PPCP monitoring. Studies conducted there during the past 10 years confirmed the presence of PPCPs in treated and untreated sewage effluents, surface water, groundwater, and drinking water. Most commonly found were anti-inflammatory and pain-killing drugs, cholesterol-lowering drugs, anti-convulsants, and sex hormones from oral contraceptives. Samples from 40 German rivers and streams turned up residues of 31 different PPCPs, according to a report presented at the March 2000 American Chemical Society meeting in San Francisco, California, by Thomas Ternes, a chemist at the Institute for Water Research and Water Technology in Wiesbaden, Germany.

Researchers worldwide have discovered more than 60 different PPCPs in water sources, according to Christian Daughton, chief of the Environmental Chemistry Branch of the US Environmental Protec-

tion Agency (EPA) Environmental Sciences Division in Las Vegas, Nevada. In addition to the drugs noted above, the list includes antineoplastics, beta-blockers, bronchodilators, lipid regulators, hypnotics, antibiotics, antiseptics, X-ray contrast agents, sunscreen agents, caffeine, and fragrances such as synthetic musks. Most PPCPs are detected at concentrations ranging from parts per trillion to parts per billion, and originate in treated and untreated sewage, says Daughton, who coauthored an article on PPCPs in the December 1999 issue of *EHP Supplements*.

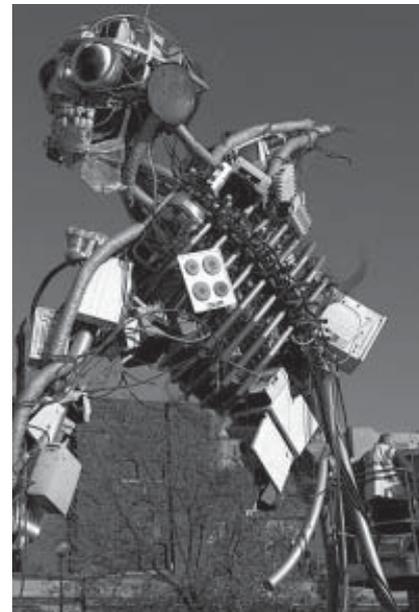
Environmental scientist Chris Metcalfe of Trent University in Peterborough, Ontario, is just beginning to analyse the effects of cholesterol-lowering drugs, estrogens and anti-convulsants on fish in the Great Lakes. All three drug types can potentially interfere with normal reproduction and development in fish living downstream from sewage treatment plants. His laboratory studies show that estrogen compounds at parts-per-trillion exposures feminise male fish and disrupt the development of the circulatory system, eyes and bladder. He says it's too soon to know whether PPCPs adversely affect wild fish populations.

"In areas of water scarcity, we'll see more and more reuse of treated sewage to meet drinking water needs," predicts Daughton, thereby increasing the likelihood that PPCPs will end up in drinking water. Extensive monitoring of the occurrence of PPCPs and their concentration trends over time is required to ensure safe water supplies in the future. Then toxicologists need to determine if the kinds and amounts of PPCPs that occur affect people and other living creatures. This subject will require collaboration between the Food and Drug Administration and the EPA, says Daughton, since the former usually does not address environmental concerns and the latter generally does not deal with drug issues.

Source: Carol Potera, *Environmental Health Perspectives*
Compiled by Pratibha Singh



The WEEE Man Cometh



In order to publicise the onset of EU's Waste Electrical and Electronic Equipment (WEEE) directive in the UK, the Royal Society for the Encouragement of Arts, Manufactures & Commerce (otherwise known as the RSA) has crafted the WEEE Man, a 7-metre sculpture made up of discarded electric and electronic appliances. The WEEE Man represents all the device waste a single UK citizen will discard in a typical lifetime: an astonishing 3,300 kilograms, including five fridges, 12 kettles and 35 mobile phones! The WEEE Man was displayed outside City Hall on London's South Bank for 28 days before touring other parts of the country, including the Eden Project in Cornwall.

The WEEE Man is remarkable both as a piece of public art and as a piece of public education. The WEEE Man website is also quite interesting, with abundant information about product manufacturing life cycles (including references to Cradle to Cradle and Natural Capitalism), details on the WEEE Directive, even a quick calculator of the estimated footprint of the various mobile phones and PCs in one's life (this last is based on information for EU countries only).

The WEEE Man site also includes a section giving information on what individuals and organisations can do to reduce their device waste footprints. Some of the suggestions are just common sense – more re-

sponsibility in purchases, more recycling and repair of existing gear – and some are more technical, particularly the information for businesses needing to comply with WEEE or the corresponding Restriction of Hazardous Substances (RoHS).

The RSA hopes the striking figure on the South Bank will raise public awareness of WEEE and prompt consumers, retailers, designers and manufacturers to focus on recycling, reuse, repair, refurbishment, and sustainable manufacturing. It developed the WEEE Man project as part of a larger endeavour, an agenda they call Moving Towards a Zero Waste Society. Such a society would require full design for disassembly, cradle-to-cradle production processes, and an aggressive effort to eliminate toxins. It's an ambitious goal – but ambitious goals are the ones worth pursuing.

The WEEE directive, which will become law across the EU this summer, and go into effect as of January 2006, mandates that manufacturers of electric and electronic devices accept and properly recycle 'end-of-life' equipment. The goal of WEEE is to reduce the amount of electronic gear going into the waste stream; RoHS limits and prohibits a variety of toxic substances in printed circuit boards.



Components include: (1) PC screens; (2) printers; (3) industrial lights; (4) satellite dishes; (5) computer mice; (6) toasters; (7) vacuum cleaners; (8) heaters; (9) washing machines; (10) microwaves

FACT FILE

Climate change – why should we care?

Do you sometimes feel that each summer seems to be hotter than the last or that each winter is colder than the previous one? The change in climate over the last few decades has been, almost literally, earth-shaking. Recognising the long-term implications of such changes, the United Nations introduced some protocols; the best known of which is the Kyoto Protocol. On February 16, the Kyoto Protocol came into force, with 30 industrialised countries having signed up to reduce greenhouse gas emissions.

Some facts about climate change

- ▼ Global warming of the earth's surface has not been uniform all over the earth – the Northern Hemisphere is warmer than the Southern Hemisphere.
- ▼ Over the last 100 years, the sea level has risen by 10-12.5 cm. By 2100 AD, average global temperatures are expected to rise by about 2 °C and the sea level by an average of 50 cm.
- ▼ Satellite measurements of sea levels have uncovered a bizarre effect – the sea seems to be rising faster near shore than in mid-ocean.
- ▼ Global warming could lead to freakish weather patterns such as unexpected droughts, cyclones and sudden snowstorms.
- ▼ The massive West Antarctic ice sheet, previously assumed to be stable, is starting to collapse, scientists warn.
- ▼ Climate change will mean one in every four land animal and plant species is on its way to extinction by 2050, predicts a major new study.
- ▼ Scientists are warning that the biggest hole in the ozone layer over the Northern Hemisphere will appear this spring. This hole could extend from the Arctic to the British Midlands. People are being advised to cover themselves well when they go out in the sun, to avoid exposure to potentially carcinogenic UV rays, which the ozone layer otherwise protects us against.
- ▼ Scientists have identified areas on the earth, known as natural sinks, which have the capacity to absorb greenhouse gases and clean the air around us. Trees in the form of forest cover, vegetation and soil to some extent, all have the ability to take in carbon dioxide, in fact soils may also provide a removal mechanism for methane. All these constitute the natural sinks.
- ▼ The fraction of the Earth suffering drought has more than doubled in the past 30 years – rising temperatures and climate change are implicated.
- ▼ Coral reefs act as a sink for millions of tonnes of carbon annually, slowing the process of global warming. When temperatures soar, coral reefs might create a cool shade by releasing chemicals into the atmosphere that promote cloud formation.



RESOURCES

TOXICS LINK PUBLICATIONS NOW AVAILABLE IN TAMIL

Acting on the need to reach out to communities in a language closer to them, Toxics Link has taken its first steps in providing information in the vernacular form. With support from the Chennai node, Toxics Link has begun to make some of its important publications available in Tamil. The first lot should be ready for distribution in May 2005. These join 'Nachilla Nannilam', the Tamil newsletter of Toxics Link, two issues of which have already been published, and have been met with approbation.

For details about the forthcoming Tamil publications and the Tamil newsletter, contact **K.S Sudhakar**, Toxics Link Chennai. E: sudhakar@toxicslink.org; T: 044-52607642 / 24460387; T/F: 044-24914358

UPSCALING PEOPLE'S PARTICIPATION IN URBAN SOLID WASTE MANAGEMENT: CONSTRAINTS AND PROSPECTS

Toxics Link recently released the above-mentioned report, which documents the results of research conducted in numerous cities across the country. This report outlines the work of various organisations involved in addressing the problem of sustainable management of urban solid waste. Models have been designed based on the



research findings, which can be adopted according to the suitability of the area and the viability of costs. This report is a handy reference volume for those wishing to study various methods of solid waste management and to contribute in solving the problem of garbage in our country. Various other materials on solid waste and its management are also available from Toxics Link, in English and Hindi and soon in Tamil, for one's easy understanding. These include flyers on Zero Waste and composting, stickers for children with messages on zero waste and calendars encouraging waste segregation at source.

For more information, contact lin@toxicslink.org

INJECTION SAFETY WEBSITE

The India Injection Safety Coalition recently launched its new website, with the domain name www.injectionsafety-india.org. The coalition, which is modelled on the lines of the global alliance SIGN – Safe Injection Global Network, was formed in March 2002. It aims to bring forward injection safety issues on the national agenda, work with stakeholders to help formulate safe injection policies, assist implementation of safe injection practices and waste disposal, and provide a resource for information dissemination and discussion of injection safety issues, in the Indian context.

The new website will serve as a resource to those interested in India specific information on injection safety, and will also feature activities undertaken by members in this area.

Ratna Singh



E-toxic listserve

Toxics Link coordinates an electronic discussion group for sharing and disseminating information. If you would like to join the group, please e-mail us at tdelhi@toxicslink.org

If you have suggestions or require information, please contact:

Toxics Link – Delhi

H2 (Ground Floor)
Jungpura Extension
New Delhi 110 014
T: +91-(0)11-24328006, 24320711
E: tdelhi@toxicslink.org

Toxics Link – Chennai

8, Fourth Street
Venkateswara Nagar
Adyar
Chennai 600 020
T: +91-(0)44-24914358, 24460387
E: tlchennai@toxicslink.org

/: www.toxicslink.org

Quotes from the Earth

Quotes from the Earth is a compilation of films on the themes of Hunger, Water and Survival. To screen the films in your city, please get in touch with **Ruchita Khurana** (ruchita@toxicslink.org). The films are available against a nominal security deposit. You can view details about the films at www.toxicslink.org/earthquotes/