

TNPCB



news letter செய்தி மடல்

Volume 3 - Issue 1

January - March 2008

34வது சுற்றுலா பொருட்காட்சியில் வாரிய அரங்கம்



தமிழ்நாடு மாசு கட்டுப்பாடு வாரியம்
Tamil Nadu Pollution Control Board

மாசற்ற உலகம் படைப்போம்

Dr. N. SUNDARDEVAN, I.A.S.
CHAIRMAN
 Tamilnadu Pollution Control Board



FROM THE CHAIRMAN'S DESK

In every sphere of modern activity, be it entertainment or industry, the technology keeps on changing, bringing in its wake new pollutants into the environment: Volatile organic chemicals, e-wastes, toxic chemicals, dioxins, and the list is endless. In such a scenario, the task of pollution prevention is not simple. The Board needs to keep pace with the technology and to get the expertise from various sources. Realizing this, the Board has been coordinating with leading educational institutions and reputed research organisations.

The application of information technology has brought about appreciable changes in the functioning of the Board. With the help of the National Informatics Centre, a Management Information System (MIS) has successfully been implemented. The MIS is proving to be a useful tool in simplification of procedures, especially in consent management and inventory of polluting industries. More of such technological adoptions are on the anvil.

Best wishes.

[Signature]
CHAIRMAN

TNPCB Newsletter (for Private Circulation only)
 January- March 2008
 Published by: Tamil Nadu Pollution Control Board,
 76, Mount Salai, Guindy, Chennai - 600 032.
 Phone (044)-2235 3135 to 3141
 Fax (044)-2235 3068
 e-mail: tnpqb@vsnl.com; tnpqb@dataone.in
 Website: www.tnpqb.gov.in

Chief Editor : **R. Ramachandran**
 Member Secretary
 Sub Editor : **J. Theresa**
 Librarian

**ENVIRONMENTAL ISSUES OF VANIYAMBADI OFFICE JURISDICTION
 VELLORE DISTRICT**

Vellore District is located on the Northern part of Tamil Nadu surrounded by Chittoor District of Andhra Pradesh in the North, Thiruvannamalai District in the South, Dharmapuri District in the West and Kancheepuram District in the East. Vellore District lies between 12 and 13.15' North latitude and 78.20' and 79.50' East longitude. Vellore District covers an area of 6077 Sq.km. This district comprises of 8 revenue Taluks, 20 Panchayat Unions, 14 Municipalities and 22 Town Panchayats. Tamil Nadu Pollution Control Board office in Vellore District was formed during the year 1994. The same was bifurcated and Tamil Nadu Pollution Control Board,

Vaniyambadi office was formed on 27.01.1997. The Vaniyambadi office has its jurisdiction covers Tirupathur Taluk, Vaniyambadi Taluk, Gudiyatham Taluk and Katpadi Taluk, 10 Panchayat unions, 7 Municipalities and 7 Town Panchayats.

In this office jurisdiction 849 industries have been applied for the consent of the Board under the provisions of Water (P&CP) Act 1974 as amended and Air (P&CP) Act 1981. Tannery sector covers the major number of polluting industries in this office jurisdiction apart from 3 Co-operative Sugar Mills and 1 Explosives unit.

Details of CETP's (Vaniyambadi Office Jurisdiction)

Sl. No.	Name and address of the CETP	Date of Commissioning	No. of Member	Designed capacity (KLD)	Project cost Rs. in Lakhs
01	M/s Ambur Tannery Effluent Treatment Plant Co. Thuthipet Sector, Ambur	17.10.1994	49	2219	414
02	M/s Ambur Tannery Effluent Treatment Plant Co. Maligaihope Sector, Ambur	15.10.1998	16	1100	119
03	M/s Vaniyambadi Enviro Control Systems Ltd., Valayampet Sector, Vaniyambadi	May 1991	110	2500	749
04	M/s Vaniyambadi Enviro Control Systems Ltd., Udayendiram Sector, Vaniyambadi	01.01.1996	10	220	118.9
05	M/s Talco Pernambut Tannery Effluent Treatment Co., Ltd, Bakkalapalli Sector, Pernambut	08.12.1995	20	891	214

Status of Tanneries:

Clusters of tanneries are located in Vaniyambadi, Ambur and Pernambut. Five Common Effluent Treatment Plants are in operation with 190 functioning tanneries. The Reverse Osmosis and Reject Management System in respect of 4 CETP's (Amburtec CETP - Thuthipet Sector, Amburtec CETP - Maligaihope Sector, Vanitec CEPT - Valayampet Sector and Vanitec CETP - Udayendiram Sector) are in progress and Board given time upto 31.03.2008 for completion and commissioning of the same. 14 individual tanneries



REVERSE OSMOSIS SYSTEM INSTALLED IN ONE OF THE INDIVIDUAL TANNERY



IMPROVISED SOLAR EVAPORATION PANS PROVIDED IN ONE OF THE ZERO DISCHARGE UNITS.

have provided Reverse Osmosis with Reject Management System to achieve zero discharge.



CHAIRMAN TNPCB HAVING A LOOK AT THE NEWLY INAUGURATED SECURED LANDFILL FACILITY AT AMBUR

Hazardous Waste Management:

The major hazardous waste generating industries are tanneries totally 71 units identified as hazardous waste generating units and obtained authorization under Hazardous Waste (Management & Handling) Rules 1989 as amended. The Secured land fill facility for the disposal of CETP sludge and IETP sludge and for Ambur area was completed and commissioned during December – 2007 in the premises of Amburtec CETP Thuthipet Sector at a cost of Rs. 350 lakhs. The secured land fill facilities at Vaniyambadi and Pernambut at a cost of Rs 691 lakhs and 280 lakhs respectively are nearing completion stage.

Bio Medical Waste:

A common Bio Medical Waste treatment facility M/s. Ken Bio Links Ltd is functioning at Kandipedu Village, Katpadi Taluk, Vellore District to cater to the needs of

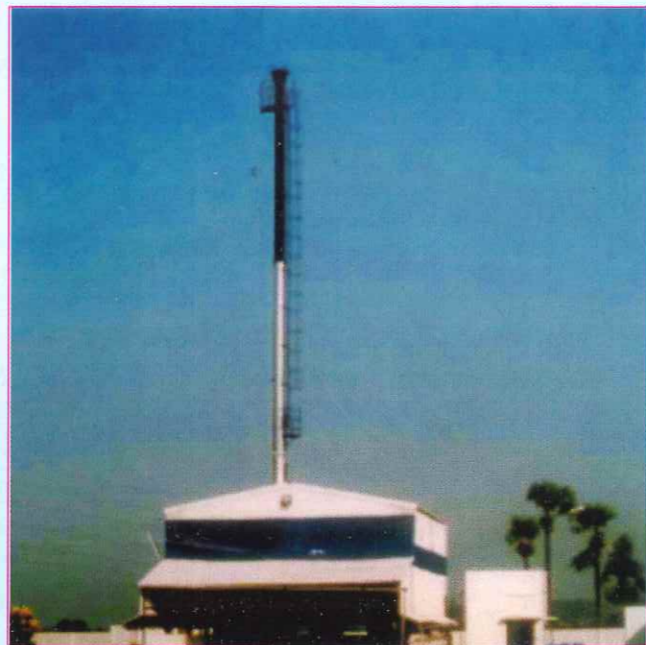
hospitals located at Vellore and Tiruvannamalai District. Total distance covered by the facility is 640 Km with 173 hospitals, the common facility has an incinerator with a capacity 150 Kg/hr. an autoclave with a capacity of 1000 lit/hours and a shredder as its treatment components.



SECURED LAND FILL FACILITY AT AMBUR. INAUGURATED BY THE CHAIRMAN TNPCB DURING DEC. 2007

Municipal Solid Waste:

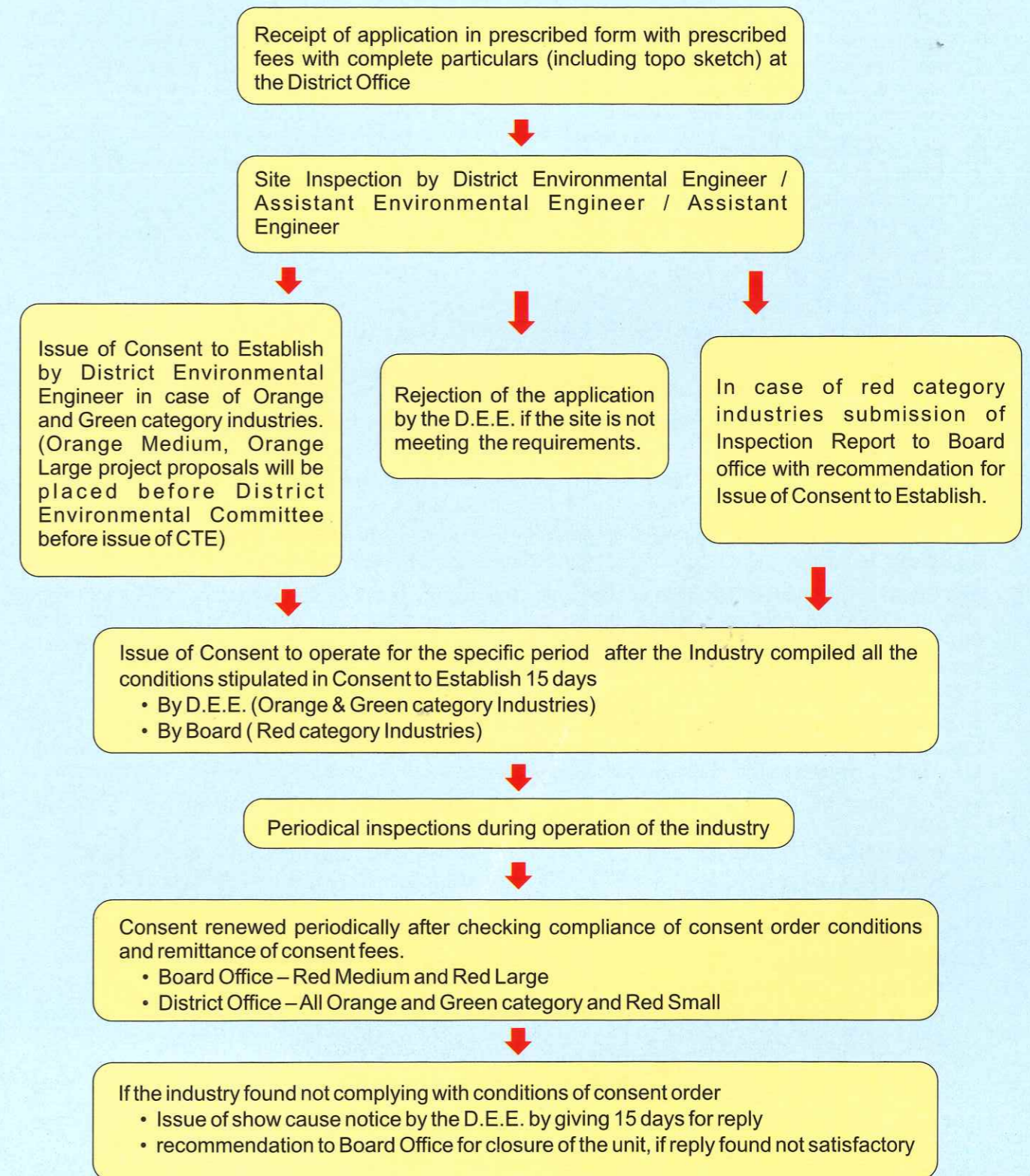
Out of 7 municipalities, 6 Municipalities have identified land for developing composed yard and 2 Municipalities obtained NOC of the Board and 2



Municipalities obtained authorization of the Board under Municipal Solid Waste Management and handling rules.

N. Sundaragopal
Joint Chief Env'tl Engr., TNPCB
Vaniyambadi.

PROCESSING OF APPLICATIONS FOR CONSENT UNDER WATER/AIR ACTS & MONITORING



Ministry of Environment And Forests
NOTIFICATION
New Delhi, the 3rd March 2008

S.O.417(E),-In exercise of the powers conferred by sub-section (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) and in pursuance of the Government of India notification number S.O. 1533 (E) dated the 14th September, 2006, the Central Government hereby constitutes the State Level Environment Impact Assessment Authority (SEIAA), Tamil Nadu (hereinafter referred to as the Authority, Tamil Nadu) comprising of three members namely, Chairman, Member and Member Secretary nominated by the State Government of Tamil Nadu as under:

1. Sh. C. Thangaraj, IAS(Retd),
Chairman,
Project Management.
No, 4/19, 3rd Main Road, Indira Nagar, Chennai-600 020.
 2. Sh. G. Rengasamy,
Member,
Environment Quality.
No. 38/83, Madhavaram High Road (South), Perambur, Chennai-600 011.
 3. Member Secretary
Director of Environment, Government of Tamil Nadu.
2. The Chairman and Members shall have the term of three years from the date of publication of this notification in the Official Gazette.
 3. The Authority, Tamil Nadu shall exercise such powers and follow such procedures as enumerated in the notification number S.O. 1533(E) dated the 14th September, 2006.
 4. The Authority, Tamil Nadu shall base its decision on the recommendations of the State Level Expert Appraisal Committee (SEAC) constituted for the State of Tamil Nadu in this order.
 5. The State Government of Tamil Nadu shall notify the agency to act as secretariat for the Authority and shall provide all financial and logistic support including accommodation, transportation and such other facilities in respect of all its statutory functions. Sitting fee, Travelling Allowance / Dearness Allowance to the Chairman and Member of the authority shall be paid by the State Government of Tamil Nadu as per State rules
 6. To assist the said Authority, the Central Government, in consultation with the State Government of Tamil Nadu, hereby constitutes the State Level Expert Appraisal Committee, Tamil Nadu (hereinafter referred to as SEAC), which shall comprise the following Members:

<ol style="list-style-type: none"> 1. Dr. Muthiah Mariappan, T4/1, Cauvery Street, Kalakshetra Colony, Besant Nagar, Chennai-600 090. 2. Dr. K. Thanasekaran, Director, Centre for Environmental Studies, Anna University, Chennai-600 02 3. Sh. P.M. Natarajan, Flat No. 155, 8th Cross Street, Arulanandanagar, Thanjavur-613 007 4. Dr. S. Sivanesan, Director, Centre for Entrepreneurship Development, Anna University, Chennai-600 025 5. Dr. M.P. Chockalingam, Sevalur Village, Kulipirai (PO), Tirumayam Taluk, Pudukkottai Dist.-622 402 	<p>Chairman, Project Management Environmental Engineering, Ecology & Energy Management.</p> <p>Member, Environmental Engineering, Planning & Architecture.</p> <p>Member, Hydro Geological Mapping</p> <p>Member, Environmental Chemistry</p> <p>Member, Civil Engineering</p>
--	--

6. Prof. T. Swaminathan,
Dept. of Chemical Engineering,
Indian Institute of Technology,
Chennai 600 036
Member, Environmental Management,
Risk Assessment, Environmental Policy,
Environmental Economics.
 7. Sh. V. Ramdoss, IAS (Retd),
Former Secretary to Government,
Information and Tourism Department,
Plot No. 7, (Old No. 75), 15th Street,
Q Block, Anna Nagar, Chennai-600 040
Member, Project Management, Law
 8. Dr. Dhulasi Birundha Varadarajan,
Professor & Head,
Dept. of Environmental Economics,
School of Economics,
Madurai Kamaraj University, Madurai-625 021
Member, Environmental Economics.
 9. Dr. K. Srinivas, Professor & Head,
Department of Mining Engineering
Anna University, Chennai-600 025
Member, Expert in Mining
 10. Dr. A.G. Murugesan, Reader,
Manonmaniam Sundarnar University,
Alwarkurichi - 627 412
Member, Industrial Toxicology
 11. Dr. V. Sundararaj,
C-18, Queens Park, Plot No. 77 & 78,
Gowrivakkam, Tambaram, Vellachery Road,
Chennai-601302
Member, Sectoral Expert in Fisheries,
Marine Biology & Aquaculture.
 12. Prof. K. Muthuchelian, Director,
Centre for Biodiversity & Forest Studies,
Madurai Kamarajar University,
Madurai-625 021
Member, Life Sciences.
 13. Dr. H. Mohamad Kasim,
Principal Scientist & Scientist in Charge,
Madras Research Centre of CMFR Institute,
75, Shanthom High Road, R.A. Puram,
Chennai-600 028
Member, Marine Biology.
 14. Member Secretary,
Tamil Nadu Pollution Control Board
Secretary.
7. The Chairman and Members shall have the term of three years from the date of publication of this notification in the Official Gazette and SEAC, Tamil Nadu shall be reconstituted after every three years.
 8. The SEAC, Tamil Nadu shall exercise such powers and follow such procedures as enumerated in the notification number S.O. 1533(E) dated the 14th September, 2006.
 9. The SEAC, Tamil Nadu shall function on the principle of collective responsibility. The Chair person shall endeavour to reach a consensus in each case, and if consensus cannot be reached, the view of the majority shall prevail.
 10. The State Government of Tamil Nadu shall notify the agency to act as secretariat for the SEAC, Tamil Nadu and shall provide all financial and logistic support including accommodation, transportation and such other facilities in respect to all its statutory functions. Sitting fee, Travelling Allowance / Dearness Allowance to the Chairman and Members of the SEAC shall be paid by the State Government of Tamil Nadu as per State rules.

{No.J-11013/97/2007-IA.II(1).}
NALINI BHAT, Scientist 'G'

Source: The Gazette of India: Extraordinary [Part II - Sec 3(ii)]

சுற்றுச்சூழல் தாக்கத்தின் மதிப்பீட்டு குழுமம் State Level Environment Impact Assessment Authority



மாண்புமிகு தமிழக முதலமைச்சர் கலைஞர் அவர்களை 08.04.2008 அன்று தலைமைச் செயலகத்தில் சுற்றுச்சூழல் தாக்கத்தின் மதிப்பீட்டுக் குழுமத்தின் தலைவர் திரு.சி.தங்கராஜ், I.A.S. (ஓய்வு) சுற்றுச்சூழல் தாக்கத்தின் மதிப்பீட்டுக் குழுவின் தலைவர் டாக்டர் முத்தையா மாரியப்பன் ஆகியோர் சந்தித்துப் பேசினர். சுற்றுச்சூழல் மற்றும் வனத்துறைச் செயலாளர் திரு.ஆர். இராஜகோபால் I.A.S. உடனிருந்தார்.

Tamil Nadu Pollution Control Board MEMBER SECRETARY



Er. R. Ramachandran has taken charge as Member Secretary of Tamil Nadu Pollution Control Board on 3.1.2008. He graduated BE Civil Engineering in Annamalai University and obtained ME Environmental Engineering in Anna University.

He started his carrier as Assistant Engineer in Tamil Nadu Water Supply and Drainage Board in the year 1975. After a period of seven years service, he joined as Assistant Environmental Engineer in TNPCB in year 1983. Since then he is servicing TNPCB in various capacities. As a Joint Chief Environmental Engineer he served as head of the region at all the five regions of TNPCB in the State. As a JCEE he mainly focused on the monitoring of 17 categories of highly polluting industries and hazardous waste generating industries and made them to implement proper pollution control systems.

From 2000 onwards he is in the head office of TNPCB as Additional Chief Environmental Engineer. He is the key person in the formation and implementation of CETPs for tannery and textile units, common bio medical waste management facility, municipal solid waste management, TSDF facility in the State. He is a member in various committees which includes State Environmental Sub-committees of Textile units, Power plants and Paper industries, Anna University Academic Council, Annamalai University Board of Studies, Member in expert committee of BMW & HW constituted by MoEF. He is in active role of making policy decision in State and Central Government Environment Ministry. In addition to above all busy schedule of his official duty, he is doing Ph D research in the field of hazardous waste management. The person with such vast academic and practical knowledge in the field of pollution control and high administrative capacity has taken charge as Member Secretary of the Board.

திடக்கழிவு மற்றும் மருத்துவக் கழிவுகள் மேலாண்மை கருத்துப்பட்டறை

திடக்கழிவு மற்றும் மருத்துவக் கழிவுகள் மேலாண்மை குறித்த விழிப்புணர்வை ஏற்படுத்தும் நோக்கத்தோடு சி.பி.ஆர். சுற்றுச்சூழல் கல்விமையம் தமிழ்நாடு மாசு கட்டுப்பாடு வாரியத்துடன் இணைந்து விழிப்புணர்வு



கருத்துப்பட்டறையை மதுரை, கோயம்புத்தூர் மற்றும் சென்னை ஆகிய மாநகரங்களில் மார்ச் 4, 5, 15, 28 மற்றும் 29 ஆம் ஆகிய தினங்களில் நடத்தியது. இக்கருத்துப் பட்டறை மத்திய வன மற்றும் சுற்றுச்சூழல் அமைச்சகத்தின் நிதியுதவியுடன் நடத்தப்பட்டது. மதுரை மாவட்ட ஆட்சியர் திரு. ஜவஹர், IAS அவர்கள் மதுரை மாவட்ட கருத்துப்பட்டறையை துவக்கிவைத்தார். திரு.நிர்மல், நிறுவனர் எக்ஸ்ப்ளோரர், கலந்து கொண்டு முக்கிய உரையாற்றினார். கோவை மாவட்ட கருத்துப்பட்டறையை தமிழ்நாடு மாசு கட்டுப்பாடு வாரிய உறுப்பினர் செயலர் திரு.இரா. இராமச்சந்திரன் அவர்கள் துவக்கி வைத்தார். திரு. ஓசா, (IAS Retired) அவர்களும் த.நா.மா.க.வாரிய கூடுதல் முதன்மை சுற்றுச்சூழல் பொறியாளர் திரு. பாலாஜி அவர்களும் சென்னை கருத்துப்பட்டறையை துவக்கி வைத்தனர்.



இக்கருத்துப்பட்டறைகளில் தென் மண்டல இயக்குனர், நகராட்சி நிர்வாகம், தலைவர், கோவை மருத்துவ கல்லூரி உட்பட பல நகராட்சி ஆணையர்கள், பொறியாளர்கள், செயல் அலுவலர்கள், நகர பஞ்சாயத்து அரசு மற்றும்



தனியார் மருத்துவர்கள் என 500க்கும் மேற்பட்டோர் கலந்து கொண்டு பயன் பெற்றனர். தமிழ்நாடு மாசு கட்டுப்பாடு வாரிய அலுவலர்கள், மருத்துவர்கள் தனியார் நிறுவனத்தை சார்ந்த இத்துறை நிபுணர்கள் அவர்தம் கருத்துகளை பகிர்ந்து கொண்டு இக்கருத்துப் பட்டறையில் கலந்து கொண்டோர் பயனுற உதவினர்.

R.மோகன் நாயுடு
இயக்குனர், சுற்றுச்சூழல் பயிற்சி மையம்,
த.நா.மா.க.வாரியம்

Asbestos

It is a human carcinogens killing at least 90,000 people every year of asbestos related diseases such as lung cancer and mesothelioma.

INITIATIVE TAKEN BY TNPCB ON e-WASTE MANAGEMENT IN TAMIL NADU

Introduction.

The growing dependence on IT and electronic products have given rise the growing menace of "Electronics Waste" (e-waste). Electronic waste generally consists of obsolete electronic devices such as computer systems and its accessories, TV's & display devices, telecommunication devices besides household appliances such as refrigerators, air conditioners etc. A personal computer system weighing about 25 kg is estimated to contain about 1.5 kg of Lead. E-waste also contain other hazardous substances like mercury, arsenic, cadmium, PVC, brominated flame retardants (BFRS), Ozone depleting substances and other toxic potentially hazardous compounds. These wastes are considered as hazardous waste as per rule 16 listed in Schedule 2 of Hazardous Waste (M&H) Rules, 1989 and also the generators are responsible for safe handling to prevent damage to the environment.

Hazards from the e-waste

The Priority components of the e-wastes include glass from Cathode Ray Tubes use in TV/PC monitors, Mercury Switch, Printed Circuit boards (PCBs), PCB Capacitor and Batteries. It contains toxic elements including lead, mercury and chromium. These elements can lead to a range of health impacts including allergic reactions, skin and eye irritation and even cancer. The recovery and extraction of metal by acid treatment and burning of plastic wires are resulting serious environmental degradation.

Growth of e-waste in Tamilnadu

IT and Telecom are fast growing industries in Tamilnadu. The Government, Public and private

sector account for almost 70% of the total e-waste. The contribution of individual households is relatively small, at about 15%. Other sources include computer manufacturers. Another major source of e-waste is the illegal import of such material. Accurate data on such imports is not available owing to the nature of the trade. Even though the import of e-waste is legally banned in India, there are many reports of such waste landing at Indian ports. There is a provision in the existing import policy that permits the import of second hand computers to be received as donation for charitable institutions, including schools, hospitals and NGOs. The import of computers that are upto 10 years old (which is almost the end of useful life), thus adding to the volume of waste. e-wastes are also generated by manufacturers, distributors, retailers, consumers, re-users and recyclers and secondary markets for old PCs, cell phones etc.



Status of Software companies in Tamilnadu as per TNPCB Acts

As per G.O.Ms.No.15 Dt 22.05.03 of IT Department all software companies exempted from the purview of the TNPCB acts. Software companies with built up area more than 20,000 Sq.m are issued with Consent of TNPCB after obtaining the Environmental Clearance from MOEF as per EIA Notification 2006. Nearly 1350 small/Medium/Large scale software companies are in Tamilnadu. Approximately 200-1000 employees are working in these software companies and generating 50-200 KLD excluding canteen wastewater. This sewage is treated either in individual STP or discharged into the municipal sewer. Also these units generate solid waste including e-waste due to the obsolete nature of electronic items.

Initiatives taken by TNPCB on e-waste management

TNPCB has taken several initiatives in the management of e-waste generated in Tamilnadu. Five member committee consists of officials of Anna University, Toxics Link, National Metallurgical Laboratory was formed towards the management of e-waste generated at TamilNadu. Also key stake holders meetings were held with the officials of Anna University, CII, Toxics Link Chennai, Port trust etc to discuss the issues on e-waste management.

To create an awareness among the stakeholders and to sensitize the issue on handling of e-waste, TNPCB has conducted a one day work-shop on "e-waste Management" on 25.07.06. The participants were officials of Information Technology department, Software companies, hardware companies, ELCOT, Port Trust, Customs (Chennai), e-waste recyclers, computer suppliers and TNPCB. The main objectives of the workshop was to sensitize the issue of electronic waste, sources and impacts on e-waste, recycling and e-waste challenges and opportunities

Towards the out come of the workshop the Board requested the Secretary, I.T.Department to include the following recommendations in the IT policy so as to regulate/manage the sewage/Canteen wastewater including e-waste generated from the software companies.

1. Software companies with GFA more than one crore shall obtain consent under Water

(P&CP)Act and under Air(P&CP)Act and shall obtain authorisation under Hazardous waste (M&H)Rules1989 as amended for management of e-waste.

2. All the software companies shall ensure that the e-waste generated from their institution shall be disposed to the authorized recyclers as approved by TNPCB.

The customs officials have been addressed to furnish the quarterly report on the e-waste imported through the Chennai port from the foreign countries and to provide scanning facility at the port to scan the materials in the consignment. Toxics Link (NGO) was instructed to conduct training programme for the informal sectors of e-waste recyclers located at Chennai.

e-waste recycling in Tamilnadu

With the over all aim of implementing a clean and transparent e-waste channel in Tamilnadu, TNPCB has issued consent to the following e-waste recyclers for Segregation & recovery of PCB, IC, Iron Copper, Rubber, Glass from the raw material of mixed computer electronics and Electrical good scrap and sent for recycling. PCB/IC wastes are exported to foreign countries such as USA, Singapore and Malaysia to recover the heavy metals present in the said wastes and other wastes are disposed through the authorised inland recyclers

Details on e-Waste Recyclers located in Tamilnadu

Sl.No	Name and address of the unit	Activity for which consent issued	Consent status by the Board
1.	M/s AER world wide (India) Pvt Limited, 1321/2, Madhavaram village, Ambattur Taluk, Thiruvallur District	Segregation & recovery of printed circuit Board(PCB)and Integrated Circuits (IC) -2 T/Month from the raw material of electronic scraps such as IT & telecommunications equipments, personal computers and user terminal system (0.4T / Day).	Consent to operate issued vide Board proc. Dt.18.10.06 and renewed upto 30.09.08
2.	M/s INAA Enter Prises plot No.AC-31/24, SIDCO Industrial Estate, Thirumudivakkam Village, Sriperumpudur Taluk, Kancheepuram District	Segregation & recovery of PCB, IC, Iron Copper, Rubber, glass from the raw material of electronic scraps such as computers, Electrical & Electronics telecommunications equipments-25 T/Month (300T/Year)	Consent to Operate issued vide Board Proc.Dt.18.06.07

3.	M/s TES-AMM recyclers (India) Pvt Ltd, SF.No3894/19, Tondiyarpet village, Fort-Tondiyarpet Taluk, Chennai District	Segregation & recovery of PCB, IC, Iron Copper, Rubber, glass from the raw material of mixed computer electronics and Electrical good scrap -1000T/Month.	Consent to establish issued vide Board proc. Dt.5.03.07
4.	M/s.Trishyiraya Recycling India Private Ltd., Plot No.A-7, Phase-I, MEPZ-SEZ, Kadaperi village, Tambaram Taluk, Kancheepuram District	Segregation & recovery of PCB, IC, Iron Copper, Rubber, glass from the raw material of mixed computer electronics and Electrical good scrap -1500.15 T/year.	Consent to Operate issued vide Board proc. Dt.12.11.07
5.	M/s Trancity tech Electro Pvt Ltd, Plot No 101, SIDCO Industrial Estate, Ambattur, Chennai-98.	Segregation & crushing of waste PCB and sent for recycling-600 MT /Annum	Consent to operate issued vide proc. Dt. 26.10.04
6.	M/s.SVP Recycling P Limited Unit 13, Vyasarpadi Industrial Estate, EH Road, Chennai.	Segregation & crushing of waste PCB and sent for recycling-150 MT/Month	Consent under both the Acts vide Board proc. Dt. 7.11.07
7.	Abishek Enterprises 2G/2NP, Developed plot, SIDCO Industrial Estate, Ambattur, Tiruvallur	Segregation & crushing of waste PCB and sent for recycling-495 MT/Month	Consent to establish issued vide Board proc.Dt.01.02.08
8.	M/s. Auto mac Systems, S.F.No 60 Pt, Errahalli Village, Krishnagiri District	Segregation & crushing of waste PCB and sent for recycling-250 MT / Annum	Consent to establish issued vide Board proc. Dt.03.08.07

Other initiatives taken by the Board for the e-waste management in Tamilnadu

- Periodical stack holder meetings are conducted at Board regarding the e-waste management
- Condition is imposed to the computer manufacturers and suppliers such as DEL and Mobile phone suppliers like Nokia to install their own collection centres to collect their e-waste
- Condition is imposed to the industries for the scientific disposal of e-waste through Authorised e-waste recyclers.
- Software companies Public and private sectors have been instructed to dispose their e-waste through authorized e-waste recyclers.
- Authorised e-waste recyclers has been posted in TNPCB Web site.
- Separate meeting to be conducted with recyclers to install their own collection centres to collect the

domestic and other industrial e-waste so as not to be mixed with the MSW.

- Customs officials have been instructed to ensure that the importers and exporters of waste category Basel No. 1180 as per schedule-3 of hazardous Waste (M&H) Rules 2003 shall obtain necessary permission from MOEF, GOI, New Delhi
- **The unit of M/s. TES AMM Recyclers India limited has identified a site in the SIPCOT Oragadam for setting up a full fledged e-waste Recycling facility in Tamilnadu as in Singapore .**
- Inventorisation of e-waste generation is in progress as per the instruction of CPCB.

S. Josephine Sahayarani
Asst. Env'tl. Engr., TNPCB

பணியாளர் நியமனம் மற்றும் ஓய்வு

1.1.2008 முதல் 31.3.2008 வரை 15 பணி இடங்களை நிரப்ப பதவி நியமன ஆணைகள் வழங்கப்பட்டுள்ளன.

உதவி பொறியாளர்	4
சுற்றுச்சூழல் விஞ்ஞானி	1
உதவியாளர்	8
தட்டச்சர்	1
ஆய்வக உதவியாளர் (கருணை அடிப்படையில்)	1

கீழ்க்கண்ட அலுவலர்கள் பணியிலிருந்து ஓய்வு பெற்றனர்.

திரு த. ஜேம்ஸ், கூடுதல் மேலாளர் அவர்கள் 33 வருடங்கள் பணி செய்து, 31.1.2008 அன்று பணியிலிருந்து ஓய்வு பெற்றுள்ளார்.

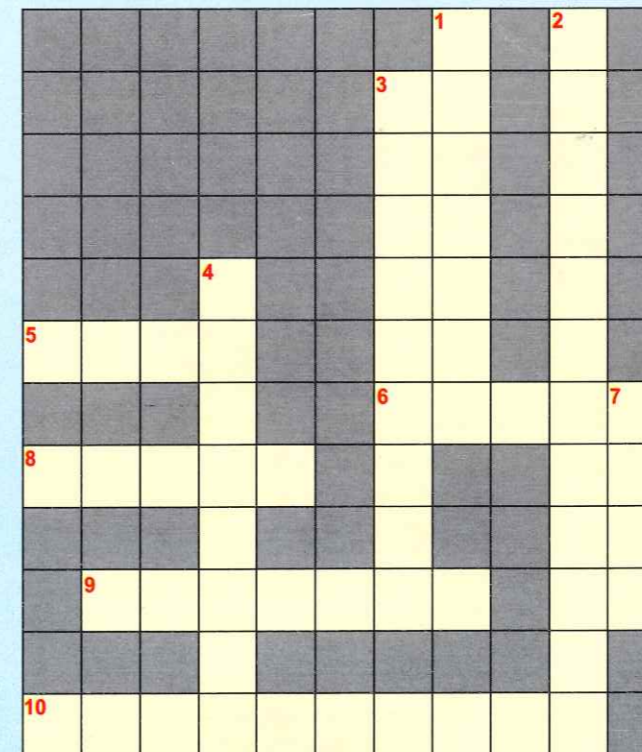
திரு. வ. ஆனந்தன், இணை தலைமை சுற்றுச்சூழல் பொறியாளர் அவர்கள் 31.3.08 அன்று விருப்ப ஓய்வில் சென்றார்.



ஓய்வு பெற்ற அலுவலர்கள் இருவருக்கும் வாரிய தலைவர் அவர்கள் பணிபாராட்டு சான்றிதழை வழங்கினார்.

ஜி. ஆனிலோசபின்
மேலாளர் (ப & நி), த.நா.மா.க.வாரியம்

CROSSWORD



Across:

5. A commonly burnt fossil fuel in power stations to make electricity. (4)
6. Cutting these down is also contributing to global warming. (5)
8. Which layer protects against the Sun's harmful UV rays. (5)
9. A greenhouse gas given off by cows. (7)
10. Too much exposure to the sun cause this type of cancer. (4)

Down:

1. This changes day today but could become even more changeable if the world heats up (7)
2. Found in the kitchen, emits CFCs. (12)
3. Rays of sunlight causes this. (9)
4. Tiny animals and plants in the sea which are easily damaged by strong sunlight. (8)
7. What is a mixture of fog and smoke called? (4)

Answer in Page No.: 18

M. Mythili
Environmental Scientist
AEL, TNPCB

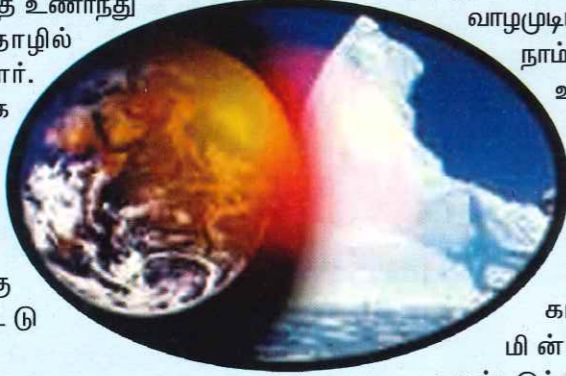
சென்ற இதழில் அதிகரிக்கும் வெப்பம் பற்றியும், கியோட்டோ ஒப்பந்தம் பற்றியும் படித்து இருப்பீர்கள் என்று கருதுகின்றேன்.

இந்த இதழில் எந்தெந்த பொருள்கள் மூலமாக எவ்வளவு வெப்ப வாயு இந்த பூமியில் சேர்கின்றது என்பதை பார்ப்போம்,

எந்தவொரு தொழில் நுட்பமும் மனிதனை அழித்துக் கொண்டு வளர வேண்டியதில்லை. மனிதனை அழித்துக் கொண்டு தொழில் நுட்பம் வளர்ந்து என்ன புண்ணியம்.

“நோபல் பரிசு” பற்றி நாம் அனைவரும் அறிந்து இருக்கின்றோம். ஒரு சிறப்புமிக்க விஞ்ஞானி புதிய கண்டுபிடிப்பை நிகழ்த்தி வெற்றிபெற்றார். அதன் பிறகு இந்த கண்டுபிடிப்பால் மனித குலத்துக்கு வாழ்வா? சாவா? என்ற கேள்வி அவர் மனதில் எழுந்தது. சற்று யோசித்தார். பல ஆண்டுகள் இரவு பகல் பாராமல் கண்டுபிடித்த இந்த தொழில்நுட்பம் மனித குலத்திற்கு அழிவைத்தரக்கூடியது என்பதை உணர்ந்து அவர் கண்டுபிடித்த அத்தொழில் நுட்பத்தை அவரே அழித்தார்.

அதன் பிறகு அவர் நினைவாக “நோபல் பரிசு” என்ற ஒரு விருது தோன்றியது. இந்த நோபல் பரிசு மனித குலத்திற்கு தொண்டாற்றுகின்ற சேவை செய்கின்ற நபர்களுக்கு தொடர்ந்து வழங்கப்பட்டு வருகின்றது.



இதுபோன்று, இன்று உலகத்தில் இருக்கின்ற 500 விஞ்ஞானிகள் ஒன்றாக இணைந்து லண்டனில் “Sense about Science” என்ற அமைப்பை உருவாக்கி உள்ளனர். இந்த நிறுவனத்தின் மூலமாக மக்களுக்கு நலம் பெறுகின்ற அனைத்து தொழில் நுட்பங்களையும், கண்டுபிடித்து நாட்டுக்கு அர்ப்பணிப்பதோடு விஞ்ஞானத்தை மக்களிடத்தில் பரப்பி வருகின்றார்கள். இது போன்ற விஞ்ஞானிகள் ஒன்றாக இணைந்து இந்த பூமி நாளுக்கு நாள் வெப்பம் அடைந்து வருகின்றது. இதை நாம் குறைக்கவில்லை என்றால் மனிதன் அழிவிலிருந்து தடுக்க முடியாது என்று பல ஆண்டுகளாக பிரச்சாரம் செய்து, ஐ.நா. விடம் எடுத்துக்கூறி வந்ததால் இன்று உலக நாடுகள் ஒன்றாக இணைந்து அதிகரித்து வரும் வெப்பத்தை குறைப்பதற்கு திட்டம் தீட்டுகின்றனர்.

இனி நாம் அன்றாடம் பயன்படுத்துகின்ற பொருள் களில் எவ்வளவு வெப்பம் நமக்கு தெரியாமலேயே வெளியிடுகின்றோம் என்பதை பார்ப்போம்.

Cன் எடை 12 gm எனவே $12 \times 13 = 156 \text{ gm}$
 184 gm மீடியம் டீசல் ஆயில் (MDO)
 $156 \text{ gm} = 184 \times 100 = 84.78$ சதவீதம் கரி உள்ளது.
 ஒரு கிலோ பீனல் 3.108 கிலோ CO₂ ஆகும்
 கேசோலின் மூலக்கூறு C₈H₁₈,
 இதன் மூலக்கூறு எடை 113 gm

113 gm கேசோலின் 96 gm கரி உள்ளது. அதாவது ஒரு கிலோ கேசோலின் 3.115 கிலோ கார்பன் டை ஆக்சைடு-ஐ தருகிறது.

இவையெல்லாம் பார்க்கும்போது நம்மையெல்லாம் வியக்கவைக்கிறது. இதிலிருந்து என்ன தெரிகிறது. நாம் அன்றாடம் பயன்படுத்துகின்ற பொருள்களிலிருந்து நமக்கு நாமே தீமையை ஏற்படுத்திக்கொண்டு வருகின்றோம் என்பது மறுக்கமுடியாத உண்மை. ஆனால் இவையெல்லாம் நமக்கு தீமையை ஏற்படுத்துகின்றது எனத் தெரிந்திருந்தாலும், இவைகளை நாம் பயன்படுத்தாமல் வாழமுடியாது. அதற்கு மாற்று எரிபொருளை நாம் கையாள வேண்டிய கட்டாயத்தில் உள்ளோம். உதாரணத்திற்கு எடுத்துக்கொண்டால் நீரில் இருந்து ஹைட்ரஜன் ஆக்ஸிஜன் வாயுக்களை பிரித்து உபயோகிக்க சூரிய ஒளியில் இருந்து பெறப்படுகின்ற மின்சாரம், காற்றாலை மூலம் பெறப்படுகின்ற மின்சாரம் போன்றவைகளை பயன்படுத்திக் கொள்ளலாம்.

நீர், காற்று, சூரிய ஒளி இவைகள் இயற்கையாகவே நம் நாட்டில் அதிகமாக உள்ளது. ஆகவே இயற்கை ஆதாரத்தை முற்றிலும் பயன்படுத்தி மாற்று எரிசக்தியை உண்டுபண்ண வேண்டும்.

நீரில் இருந்து $H_2, HA + 1/2O_2$ வாயு கிடைக்கின்றன.

H₂ என்பது ஹைட்ரஜன் மூலக்கூறு = 22.4 லிட்டர் O₂ என்பது ஆக்ஸிஜன் மூலக்கூறு இந்த ஹைட்ரஜன் வாயுவை பயன்படுத்தி வாகனங்களை இயக்கமுடியும்.

இதுபோன்ற புதிய தொழில் நுட்பங்களை கண்டுபிடித்து அன்றாடம் பயன்பாட்டுக்கு கொண்டு வருவதற்கு மிகவும் உறுதியாக இருப்பது கியோட்டோ ஒப்பந்தமாகும்.

(தொடரும்)

Dr. C.R. தமிழ்வாணன்
 நிறுவனர், கீரின் இந்தியா கார்பன் மிட்டிகேசன் மற்றும் டிரேடிங் லிமிடெட், திண்டுக்கல்.

Dr. Rupert Sheldrake, a biologist and Philosopher and a leading systemic thinker shares his current cosmic view, rooted in deep ecology, in a lecture given at the Gaia Foundation. Dr. Sheldrake spent eighteen months at the 'Shanthivanam Ashram' near Kulithalai, Tamilnadu, where he wrote his first book and discovered the phenomenon of 'Morphic Resonance'. The essence of his talk, which resonates with the author's own thinking, is distilled for the reader's understanding.

In the Middle Ages the belief that nature was alive still prevailed throughout Europe. This belief began to disappear during the eighteenth century Enlightenment when people started thinking that reason, based on empirical observation, was the only accurate tool for judgements about reality; science and its experimental method prevailed. Today, many leading scientific thought leaders think that science is returning to the understanding that we're all part of a living earth.

The Enlightenment understood God as a creator, external to his creation. With reason in the driving seat, nature was seen to be ruled by a rigid determinism, with everything, in principle, predictable. The Earth was just a rock hurtling around the sun in accordance with Newton's laws of motion. The creation was a giant clockwork machine inexorably going through its predestined motions. The machine was the dominant metaphor of science and anything not seen like this was regarded as unscientific: the eye was a camera, the heart a pump, and later, the brain was seen as a computer. The basis of nineteenth century rationalism was that nature could be fully known by science and that we would finally understand everything. Paradoxically, against this background, human progress was taken for granted by all enlightened intellectuals. Similarly

today, secular humanists believe we represent the only form of consciousness in the universe (although some say that cats, dogs and dolphins have a little too!) This presupposes that everything in the universe, apart from us, is unconscious.

At the beginning of the twentieth century many scientist were then deeply shocked when it was discovered that at atomic and subatomic levels you simply cannot predict with accuracy what will happen. Things seem to happen spontaneously within a range of possibilities. For instance, you cannot predict when a particular atom of Uranium will decay - it may be in a thousand years, a million years, or in the next second; it is not at all determined. Even the idea that nature is made up of solid atoms - little bits of matter that



endure forever - has been overthrown. Atoms are now seen to be vibratory structures of activity in ceaseless motion within fields of energy- pulsating nuclei surrounded by electron clouds. Energy and vibrations - you simply can't precisely determine where anything is.

In the course of the twentieth century, it became clear that most of nature is like this. The weather, waves breaking on a shore, the turbulence of flowing water in rivers - none can be accurately described by deterministic science. There seems to be a level of spontaneity, indeterminism and creativity at every level and not the unfolding of a rigidly determined plan. The only predictable things in nature are man-made machines, and even they aren't always predictable, as we know to our cost! Karl Popper said that through modern science materialism has transcended itself, because matter is no longer its fundamental explanatory principle. Fields and energy are. Science itself is leading us away from a mechanical view of nature towards a much more organic view of a living world. Nature is alive, living and organic.

Like the ancient Vedic myth of the hatching of the cosmic egg (*Hiranya Garba*), the theory of the Big Bang also demonstrates something very different to the mechanistic idea of the universe. Starting extremely small, the universe has been growing ever since its beginning. As it grows, it cools down. As it cools, new forms of organisation and patterns come into being, including atoms, molecules, stars, galaxies, elements, crystals and biological life. This is more like an embryo than a machine -no machine starts out tiny, grows, and forms new structures. The idea that the earth was an inert ball of rock hurtling around the sun is being replaced with the idea of *Gaia* (Greek earth Goddess). We now have an organic cosmology of a growing, evolving universe. Evolution implies creativity -new things constantly happen as evolution unfolds. Science is recovering the sense of living nature that includes a view of freedom, indeterminism and spontaneity on every level. We are rediscovering Mother Earth. The Gaia Hypothesis tells us what we've really known all along.

Dr Rupert Sheldrake believes that we are rediscovering Mother Earth. The Gaia Hypothesis tells us what we've really known all along many ancient archetypal themes were driven into the unconscious by the rationalism of the Enlightenment and that these need to be brought back into consciousness again to establish a new relationship with a living earth and our Ecosystem. For instance, he understands the western materialism - the cult of consumerism, consumption and money - as an unconscious cult of the Great Mother. *Mater*, Latin for mother, and 'material', have common roots; the word 'economy', on which everything depends in the modern world, comes from the Greek, *oekonomia*, meaning 'household management' - again, the realm of the feminine. The economy is driven by supply and demand: the only organ in the body that also adheres to this principle is the breasts. Money too was originally seen in many ancient traditions as an aspect of the Great Mother -the pouring out of the riches of the earth: *Lakshmi*, the goddess of wealth, is often depicted as holding two vases like enormous breasts, out of which gold coins pour. Nature is often

referred to as Mother Nature and the word 'nature' itself - the source of all life - comes from the Latin word *natus*, meaning birth, to be born. Nature is ever giving birth.

Another area that Sheldrake suggests resurrecting from the unconscious is pilgrimage, which he thinks has been replaced by tourism. Most tourist destinations are, in fact, ancient sacred sites: Stonehenge, the Great Pyramid, temples and cathedrals. The problem is, as tourists, we don't know what to do when we get there. As post-Enlightenment intellectuals we are supposed to be interested in facts and figures, and so guides appear telling us how many tons of stone there are, when it was built and which kings reigned - information that goes in one ear and out the other because that's not really why we are there. We are there because it's a sacred place. But what to do? Say a prayer? Most of us can't do that. We are modern enlightened rational people who have risen above superstition. And so we are left unsatisfied. In the paradigm shift that is happening now we might begin to consider that when we travel we are seeking the experience of pilgrimage. Of course in these days of Global Warming we need less tourism, not more, but we could have higher quality travelling, if we travelled in the spirit of pilgrimage.

All religions relate us to the Earth and Heavens. Each reminds us that we are part of something larger than ourselves. All stem from direct mystical insights of a greater form of consciousness beyond our own. Religions are about our place in the world, our relationship to other people, and our relationship to the whole of creation. Every religion has something within it that touches on our concern for nature. This relationship with nature is being re-examined within many religions in an attempt to help change people's attitude to the environment. This ties in to the movement to reassess the relationship indigenous traditions have to nature and to bring this out in a modern context. The idea that we could, through our own activity, transform our relationship to the earth, was not something that crossed the minds of even the most scientifically educated people until a few decades ago. We have always taken the fullness of the earth and its continuity more or less for granted. This is a new situation for scientists, religious people,

Continuation in Page No. 18

பேதமை

கழிவுகளை கடலில் கொட்டு

கரைகளை அழகுபடுத்து

மரங்களை வெட்டு, வீச

நீர்குழாய்களை பதித்துப் போ

தோப்புகளை வீழ்த்து

தொட்டி செடி வளர்

நிலநீர் படுகொலை செய்

மழைநீர் அறுவடை செய்

ஓசோன் கிழித்து பூமி பொசுக்கு

குளமை தேடி மலைபிரதேசம் ஓடு

காடு வெட்டி பறவைக்கூடு உடை

குயிலின் குக்கூ வை ரிங்டோனாக்கு

மலைகளை மழித்து மண்ணாக்கு

திடக்கழிவுகளின் குவியலை குன்றுகளாக்கு

மூலிகை செடிகொடி அறுத்தெறி

இலவச மருத்துவமுகாம் நடத்து

வெளியே ஒலிபெருக்கி ஊளையிடு

அமைதி தேடி ஆலயம் போவதாய் கூறு

பருவக்காற்று தடுத்து பொய்கை உலர்த்து

ஈரப்பதம் ஏற குளிர்சாதனம் பொறுத்து

வரப்பு உடைத்து வாய்க்கால் அடை

வயல்களுக்கு வாய்க்கரிசி போடு

அவசர அவசரமாய்

அநியாயம் அத்தனையும் செய்

பின்

வக்கணையாய் சொல்

வள்ளலார் மனமெனக்கு

வாடிய பயிரை

கண்ட போதெல்லாம்

வாடினென

எம். மைதிலி

சுற்றுச்சூழல் விஞ்ஞானி
ஆய்வகம், த.நா.மா.க.வாரியம்

என்னை (பூமித்தாய்) வாழவிடு

என் கைகளாகிய

ஆறுகளால்

உன் தாகம் போக்கினேன்

என் மார்பாகிய நிலத்தால்

உன் பசியை தணித்தேன்

என் சுவாச உறுப்புகளாகிய மரங்களால்

உன் சுவாசத்திற்கு வழிவகுத்தேன்

மண்ணில் விளையும்

அனைத்தையும் கொண்டு

உன் அழகுக்கு அழகூட்டும்

என்னை ஏன் வெறுக்கிறாய்

நீ அநியாயம் செய்கிறாய் என்றே

நினைத்து நான் உன்னை இன்னமும் நேசிக்கிறேன்.

நீ செய்த ஆலைகளால்

என் வாயில் விஷத்தை

ஊற்றுகிறாயே

உன்னையும் உன் மூதாதையரையும்

உன் பேரனுக்கு பேரனையும்

உயிர் வாழ வைக்க காத்திருக்கும்

என்னை வாழவிடு.

நீ செய்த வாகனங்களின்

கரும் புகையினால் என் முகத்தில்

கரியை பூசுகிறாயே

அதை சுத்திகரிக்கும் மரங்களை

தாங்கி நிற்கின்றேனே

என்னை வாழவிடு.

பெண்ணை மலர்களால் உன் கூந்தலை

அலங்கரித்துக் கொள்கிறாய் ஆனால்

உன் சோம்பேறித்தனத்தால்

செயற்கையை உபயோகித்து

வழக்கையாகிக் கொண்டிருக்கிறாயே

நான் கொடுத்த நாட்டு மருந்தால்

உன் முன்னோர்கள்

மேனி மிளிர் வைத்தார்கள்

ஆனால் என்னை இழிவாக நினைத்து

மாற்று மருந்தை பயன்படுத்தி

உன் உள்உறுப்புகளையும்

மெல்ல மெல்ல இழக்கிறாயே

உன் பிள்ளைகளுக்கும்

ஏன் அக்கதியை

விட்டுச்செல்ல முடிவெடுக்கிறாய்

உன்னை வாழவைக்கும்

என்னை வாழவிடு.

ஜெ. திரேசா

நூலகர், த.நா.மா.க.வாரியம்

ADMINISTRATION FOR WASTES IN KITAKYUSHU CITY, JAPAN.

Introduction

The author has undergone the Area Focused Training Course in Solid Waste Management for Southwest Asia Discussion for Realizing the Improvement Measures held at Kitakyushu city, Japan under the Technical Cooperation Programme of the Government of Japan from 29th October 2007 to 15th December 2007. The purpose of the training course is to acquire the method of administration and managerial skills of waste disposal including the reduction of waste generation and utilization of wastes in order to prevent and control the environmental pollution caused by wastes. This Programme was conducted by Japan International Cooperation Agency. The contents of the training course are:

Outline of Environmental laws

- Outline of Japanese environmental Laws
- History of overcoming pollution and international cooperation in Kitakyushu
- Details of domestic waste management in Kitakyushu

Management techniques of solid waste

- Separation, collection and transportation of waste in Kitakyushu
- Collection and treatment of medical waste
- Management of industrial waste
- Recycle techniques of waste

Education for public Awareness

- Education on how to reduce and recycle waste
- Environmental education for citizens
- Environmental Museum
- Community Activities

Landfill Technology

- Regulation and structure of landfills
- Practice of landfill technology
- Effluent treatment facility in landfill sites

Making compost

- Making compost with garbage
- Making compost with dung of livestock.

The waste management in Kitakyushu city of Japan has been detailed below.

Kitakyushu city has a population of 1,000,000, number of household 422,000 and land area of 482 km. Total quantity of solid waste generation 438,000 T / year for 2006. The percapita generation is 1.2 kg / person / day. The daily generation is 1200 T / day. The composition of solid waste is shown in Fig 1. The average expenditure for the collection and disposal costs for each ton of waste generated by the city is Rs 13,800/- and the management cost per citizen per year is Rs 6040. The cost distribution for the management of solid waste is shown in Fig. 2

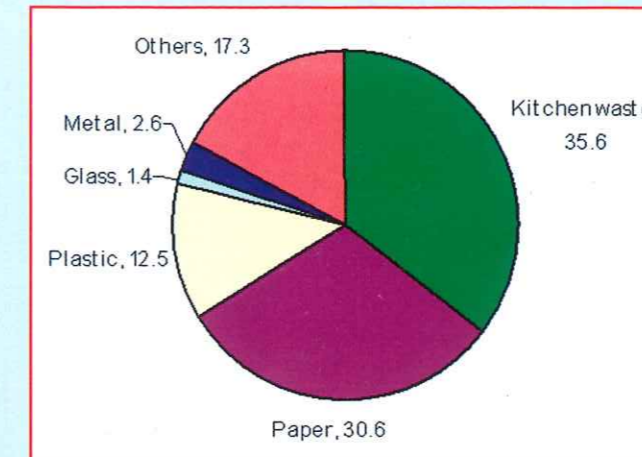


Fig 1 Composition of Solid waste

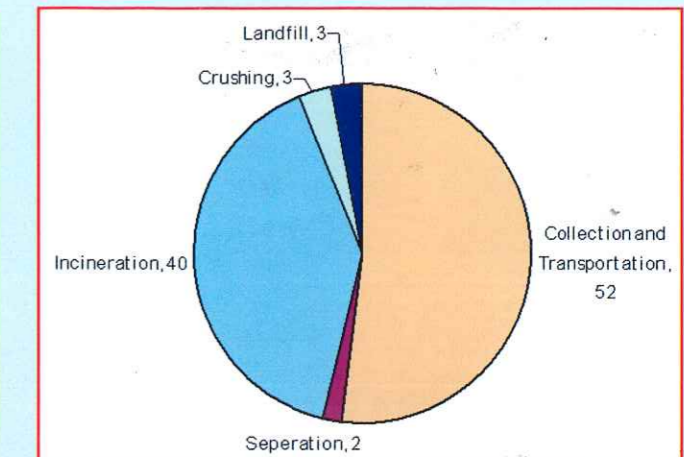


Fig 2. Cost distribution for SWM

The city has implemented waste management such as resource segregation at source, recycling, adoption of polythene bags for the collection of waste from households, collection of waste twice a week, complete incineration, and land filling disposal. The city has implemented some cyclic measures for preserving the environment i.e "Hygienic Management"- "recycling oriented disposal" - "circulation oriented disposal".

The present situation of Kitakyushu city is that they have implemented the plan for the management of municipal solid waste. This has been implemented under two systems; one is under the direct management of municipality and the other under entrustment of private sector. The outline describes the discharge, collection, transport, treatment, disposal (for the disposal centered type) & discharge, sorting, storage, transport, treatment, disposal, recycling (recycling oriented type). In collection and



Separation of glass bottles, cans and plastic bottles

transportation method the municipal solid waste are collected under "designated polythene bag system" for the purpose of promoting reduction and recycling of waste. Municipal solid waste such as Kitchen refuse and paper waste are collected twice in a week according to waste collection plan. The collected waste are being incinerated at very high temperature 1800° C with adequate air pollution control measures including the provision for the prevention of resynthesis of Dioxins. 244 Million KWh/Year of electric power generated by utilizing the excess heat from the incineration process. The residues from the incineration process, is disposed in the secured landfill system.

Empty cans and bottles are being collected as recyclable waste once in a week. PET bottles are also collected once in a week. Collected cans, bottles and PET bottles are recycled after being sorted into steel cans, aluminum cans, transparent bottles, brown bottles and other bottles and PET bottles at "recycling center for waste cans and bottles".



Incineration plant



Presentation on "Solid waste management in Palacode through public participation"

Plastic containers and packaging materials are being collected separately once in a week and sorted. The sorted plastic materials are recycled.

The details of the recycling and treatment methods including composting will be discussed in the forthcoming issues. The author has presented a case study on "Solid waste management in Palacode through public participation" at the forum of the eminent stakeholders of management of solid waste. They have appreciated the efforts taken by the local body and special mention about the composting.

(to be continued)

Dr. P. Rajasekar
District Environmental Engineer,
TNPCC, Pudukottai

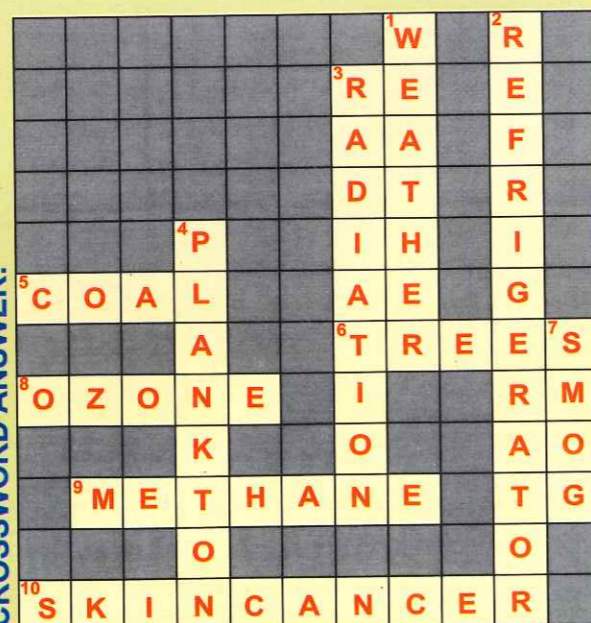
Continuation A NEW RELATIONSHIP...

traditional cultures and modern scientific ones. Sheldrake believes we do need science, we need reason, but they're not enough on their own.

The more we recover a sense of the sacredness of the earth and the universe, the more we can see that our own activities, based on consumerism, competitiveness and greed are not the way to continue. We really don't need as much as we think we do. Becoming conscious again of the numerous archetypal patterns that have always been there in our relationship to our earth – albeit hidden in the unconscious for many centuries – would surely facilitate this paradigm shift we're all experiencing. This is the core attitude to save the earth and in the process save the human race.

Barnabas Tiburtius
Chennai

CROSSWORD ANSWER:



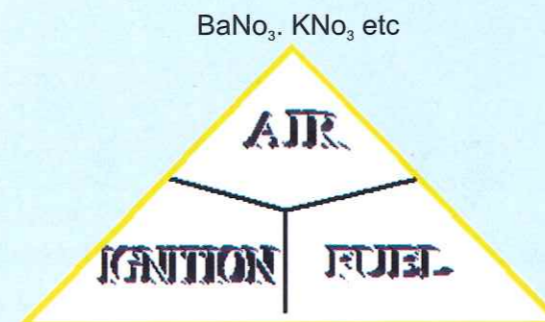
HOW "FIRE WORKS"

Festivals, functions of Joy and Sorrow are all accompanied mostly with cracking of crackers and fire works. What is inside the crackers? How it works? How various colours are associated? are explained in this article.

Fundamentals Of Fire

Three important things are needed for a fire to broke out ie., a material that can catch fire, an igniting source like electric spark, match stick, cigarettes etc., and the third is the supporter of combustion ie. Oxygen available in Air. If any one of these is removed the fire will quench, based on this principle only fire fighting is done ie. Cutting off oxygen supply with CO₂, or quenching the source of fire by spraying water on sand.

Fire Triangle



Matches sparks etc. Sulphur, A1 Powder etc.

While the three parameters of the Fire triangle determine the entire Fire, there is a less known fourth dimension and that is the Free Radicals that sustain the fire. Free radicals are unstable but highly reactive break down parts of a flammable molecule formed as intermediates in the burning process. The flammable molecule is first split into components by rupture at the weakest bonds that gives rise to the free radicals. The free radicals immediately formed, combine with oxygen and burn up generating more heat that generates more free radicals and the fire is enhanced. Control of the formation of free radicals, is the fourth dimension in Fire control that has not been fully explored. Dry chemical powders have been shown to have greater free radical prevention or suppression properties than the other fire fighting media. Of these the Potassium bi-carbonate-Urea dry powder is supposed to excel in free radical. Fire is classified as Type A, Type B, Type C, Type D, Type E.

To combat fire fighting, the coding of A, B, C, D or E or in combination of this is marked in any fire fighting equipment for the suitability to put off fire.

Type A Fires are the most common of fires where the burning substance is cellulosic like wood, paper, cloth etc., Type A fires can be extinguished by any available type of fire extinguishing agent namely water, carbon dioxide, foam, Dry Chemical Powder, soda-acid, Halon etc., Water being the most preferred one for Type A fire unless the burning substance is a valuable material that is to be saved.

Type B Fires, where the burning substance is a flammable liquid. Water is not to be used for Type B fires as the fire would aggravate. Foam is the most favored and then comes Dry Chemical Powder. Carbon dioxide is not desirable due to high static charge development and re-ignition chance. Cut off source of fuel, if possible, as the first measure and the fight fire.

Type C Fires are the flammable Gas fires, Water; Foam Carbon dioxide cannot be used. Dry Chemical Powder and Fog can be used. Cutting off the source by isolation is the most favored means and allow the gas fire to extinguish by itself.

Type D Fires involving metals like iron, magnesium, aluminium, zinc etc., Water foam, carbon dioxide, Halon are prohibited. Dry Chemical Powder is the only safe fire extinguishing means of Type D Fires. Smothering is also useful and be used.

Type E Fires involving electrical equipment are Type E fires, Cut off electric supply first. Use Halon or carbon dioxide or Dry Chemical Powder (except for highly sensitive electronic equipment fire). Water, foam fog should not be used. Carbon dioxide cannot be used. If electrical components are red hot as it will enhance fire.

Crackers And Fire Works

Crackers, contain a burning material like Aluminium Powder a fuse containing thread, Aluminium powder and coal powder and paper is used to ignite the aluminium powder. The supporter of combustion the oxygen is obtained for firing from the other raw materials like BaNO₃, KNO₃ etc. The constituents are detailed below.

Raw materials	Role
KNO ₃	Oxidiser
BaNO ₃	Color and Oxidiser
Sulphur	Fuel
Al Powder	Fuel
Paper	Container
Fuse	Igniter
Red sand	Packing
Jute	Winding
Dextrin	Adhesive

How Noise is Caused

The materials needed for firing are packed in a Small Card Board paper Box of various sizes and jute is wound thickly around the box and painted and solar dried to sell in the market as atom bombs, Hydrogen bombs, Bullet Bombs etc., smaller amount of these chemicals are filled into cylindrical paper container packed with their bottom with sand and fuse are fixed to form small crackers. The extent of sound depends on the amount of chemicals used, compaction of jute winding or paper winding and extent of drying etc.

Noise Levels

Ratio Value of Noise to the reference Noise	Exponential form of ratio "Bel"	10 X exponent "Decibel"
1	10 ⁰	0
10	10 ¹	10
100	10 ²	20
1,000	10 ³	30
10,000	10 ⁴	40
1,00,000	10 ⁵	50
1000,00,00,000	10 ⁸	100

$d_b = 10 \log_{10} [P / P_0]$ where P is the sound measured and P₀ is the reference sound.

From the above table it could be inferred that Noise is a level and it cannot be measured on normal scale. Hence the difference between a noise level of 50 and 100 are likely not mere the same quantum of Noise on a linear scale. Measurement of Noise is done as Slow, Fast and Impulse according to the generation

and decay of noise. Also it is measured under the weightages as A, B, C. Sophisticated noise level meters capable of measuring Noise contains a mike fitted with wind barrier followed by an amplifier and a display unit supported with a micro computer.

Noise Levels for Crackers

The CPCB guidelines prescribes 125 dB (A1) or 145 C Peak is the maximum allowable levels of noise for individual crackers. The same is adopted by cracker manufacturers in Tamilnadu. When two or more successive firing of crackers of various noise levels are made the resultant noise is the maximum noise only and not the summation of all.

When two or more simultaneous firing of crackers are made the noise levels are not the total of them but it increases by 3 dB. Noise levels for sequential firing with more No. of occurrences will cause damage to ears.

Hence when more crackers are connected together to get 1000 or 5000 wala crackers, the formula $5 \log N$ dB is used to control the noise. Where N is the number of crackers connected in series. For example 125 dB (A1) Noise level allowable for crackers should be reduced to 110 in 1000 wala as explained below.

$$\begin{aligned}
 5 \log_{10} 1000 &= 5 \log_{10} 10^3 \\
 &= 3 \times 5 \times \log_{10} 10 \\
 &= 3 \times 5 \times 1 = 15
 \end{aligned}$$

Hence Noise level of each cracker in a 1000 wala should be $125 - 15 = 110$ dB (A1) only. Accordingly the crackers will be manufactured.

Tamil Nadu Pollution Control Board & Central Pollution Control Board conducts Noise Level Surveys of the crackers manufactured at the manufacturing places as well as during Deepavali Festivals in cities. This survey has proved that the noise levels of crackers manufactured have come down over the years. Hence an appeal is made to go in for more light emitting fire works than Noise emitting crackers.

R. Vijayabasker
District Environmental Engineering
TNPCCB, Madurai

ECO FRIENDLY SOLAR STEAM GENERATOR

Introduction

The demand of energy endures an increasing trend mainly due to changes in societal scenario and improvements in living standards. Similarly, the price of electricity and other fossil fuels endures an increasing trend. All these have necessitated the need for finding alternative means not only to bridge the gap between demand and supply but also to reduce the dependence on electricity and fossil fuels. By the by, our country is one of the pioneers in terms of adoption and utilization of solar thermal and electrical energies. Both these solar energies can be generated by using solar steam generating systems and so they are widely preferred nowadays. These steam generators can replace either partially or totally the conventional fuels that are used in various sectors and mitigate the emissions of harmful particulate and gaseous pollutants along with the green house gases. It is worth mentioning that the utilization of solar steam generators offers the benefits like energy security, environmental protection and economic development.

Solar steam generators

Solar steam generators are fabricated with different materials, components and dimensions on the basis



SOLAR STEAM GENERATOR

of the actual requirements in application sectors. In fact, the three major applications of solar steam generators are the generation of solar steam for industrial processes, solar steam for cooking and solar steam for power generation. These applications are profitable all over the world.

In general, the solar steam generators consist of concentrating reflectors, receiver heat exchangers, heat pipes, steam storage tanks and tracking



RECEIVER

devices. The concentrating reflectors are flexible parabolic reflectors that are fixed on the frame that is made up of mild steel. The reflecting surface is high quality glass with silver coating and so it has very good reflectivity. The receiver, which is in the focus of the solar concentrator reflector, serves as a heat exchanger. The solar rays falling on the concentrator are reflected and subsequently concentrated on the receiver placed in its focus. Due to the concentration of heat, the temperature raises at the focal point. As the receivers are well insulated blocks of steel with stainless coils inside through which water is circulated, the water in the receiver comes to boiling and steam is generated.

The header pipes with suitable diameters are placed above the receiver and they are partially filled with



HEADER

water. The cold water enters into the receivers through the inlets of the coil and gets heated up. The heated water moves up to the header pipes. The cold water from header pipes enters through the inlet and the cycle continues till the steam is generated. The generated steam moves up to the header pipes. As the pressure keeps on rising, the generated steam can be sent to application sections.

Solar steam for industrial processes

Steam is generated by using a large amount of liquid and solid fossil fuels as well as electricity in industries and it is used at various industrial processes. The same method of steam generation is adopted in other energy intensive sectors also. Instead, solar supported steam generators can be used for producing steam that can be used subsequently at various processes in industries and other energy intensive sectors. Some of the potential application areas of solar steam generators along with industrial processes are garment care, jewel cleaning, dry cleaning, food service, sterilization and laboratories.

Solar steam for cooking

Steam cooking is a moist cooking method that uses natural convection of heat that is traveling in air, steam or liquid. It is rather a tried and tested, versatile and rewarding method of cooking. As foods are cooked by steam (not by intense and dry heat as with other cooking methods) in this method, the cooked foods are relatively more nutritious. So, steam cooking is preferred nowadays.

Solar supported steam cookers can be used for cooking any quantity of food. In fact, the system is generally hooked up with a conventional steam generating system already available with the user, to make it reliable under all climate conditions. The world largest solar steam generating system for cooking has been installed by the Tirumala Tirupathi Devasthanam (TTD), at Tirumala, Andhra Pradesh, under a demonstration scheme of the Ministry of New and Renewable Energy. It employs manual tracking solar dish concentrators which convert water in to high pressure steam. The steam thus generated is used for cooking purposes in the TTD kitchen. The system can supply sufficient steam to prepare food for 15,000 people each day. Smaller systems of this type have been installed at Mount Abu, Shirdi, Hubli, Guraon, and some other places in our country.

Solar steam for power generation

Solar supported power plants like parabolic reflector power plants, dish reflector power plants, linear Fresnel reflector power plants and power tower plants are in operation all over the world. It has been reported that parabolic trough power plants are the most successful and cost effective power plants among the existing concentrated solar power plants. In parabolic reflector power plants, curved troughs are used to reflect sunlight on to hollow tubes. These tubes run along but above the troughs. The whole troughs tilt through the course of the day so that light remains focused on the hollow tubes as long as the sun shines. The fluids pass through the tubes and become hot. Full scale parabolic trough systems consist of many such troughs laid out in parallel over a large area of land. A parabolic trough power plant that adopts this principle is in operation in California in the



PARABOLIC TROUGH STEAM GENERATOR

United States and it produces 330 MW. In fact, this power plant uses oil to take the heat away. The oil then passes through a heat exchanger, creating steam which runs a steam turbine. Other parabolic trough systems are under development which can create steam directly in the tubes. Of course, this concept is thought to lead to cheaper overall designs, but the concept still under development.

Energy, Environment and Economic Benefits

The steam generators can replace either partially or totally the conventional fuels like furnace oil (FO), light diesel oil (LDO), low sulphur heavy stock (LSHS), coal and fire wood that are used to produce steam mainly in industrial sectors and mitigate the

Continuation in Page No. 24

TOXIC TOYS

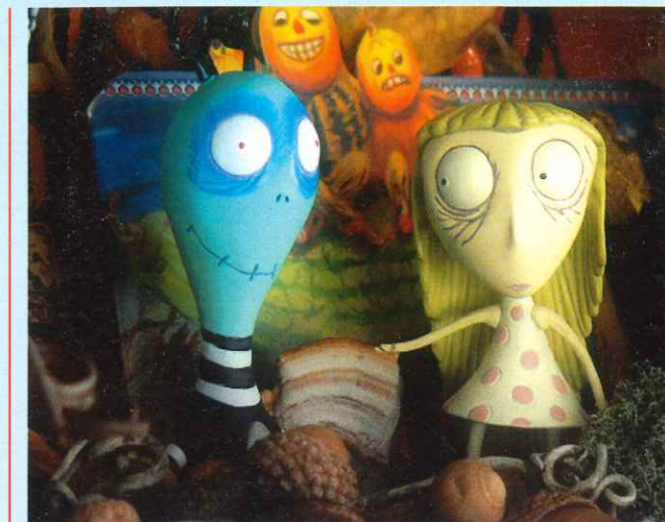
Playing with soft PVC toys may no longer be safe as alarming levels of lead and cadmium have been found in them, says a study.

Polyvinyl chloride (PVC) is a synthetic resin used as the basic material in plastics, among other things. PVC commonly known as vinyl, is the plastic used in products when flexibility is important. PVC production has increased 100 times during the last 40 years. PVC is both a health hazard and a pollutant. Plastics like PVC are chemically dependant and need additives like lead, cadmium and other chemicals to make them usable. However these additives leach from the PVC and contaminate human bodies, putting especially children at risk. Toy makers use PVC to add bright colours to the toys in order to attract children. "We need to shift to safer materials that are non-toxic for products like toys".



A study on the toxic elements present in toys sold in Indian markets has revealed shockingly high levels of lead and cadmium – in varying concentrations – in all of the 111 toys collected from Delhi, Mumbai and Chennai last year. The study was conducted by Delhi based NGO Toxics Link. According to Dr. Abhay Kumar of Toxics Link and a co-author of the study, lead and cadmium act as stabilizers in polyvinyl chloride toys.

Manufacturers also use PVC to add bright colours to the toys in order to attract children. He emphasises that when chewed or sucked by children, these toys put them at great risk.



Health Risk:

India has more than 130 million children below the age of six - an age when children chew and even swallow substances. This makes a large section of the population prone to lead and cadmium poisoning from toys. A large amount of these metals in the bloodstream could lead to complications such as brittleness of bones, mental disorders, anemia and even cancer.

Lead and Cadmium are proven poisons, being neurotoxins and nephrotoxins, respectively. Neurotoxins are agents that can cause toxic effects on the nervous system while nephrotoxins are agents that can cause toxic effects on the kidney. Even the tiniest amounts can have long term and measurable effects on children, while at the same time displaying no distinctive symptoms. Lead being a cumulative in nature and is absorbed into the bloodstream, some of it is filtered out and excreted, but the rest is distributed in the liver, brain, kidneys and bones.

According to Prof. Veena Kalra, Head of the Department of Paediatrics, All India Institute of Medical Sciences (AIIMS), exposure to lead toxicity in children could pose several health hazards such as impaired hearing and growth, affect the child's IQ, lead to nerve disorders, anemia and even cause death.

Some worrying Indicators:

- * India has no enforceable standards for lead, cadmium and other toxic metals permissible in toys.



- * Toys, particularly soft PVC toys, which are intimately linked to children's environment, have not been investigated as one of the possible sources of lead, cadmium and other heavy metals exposure to children.

- * Most plastic products are not recycled and are incinerated or accumulate in our landfills.
- * Unbranded toys have a huge demand among lower income groups. What is of grave concern is that toys made in the unorganized sector use cheap recycled plastic, which can be a source of poisoning. And a lack of regulatory control poses serious health risks to the children.

The toy industry volume is estimated at \$1 billion in the organized sector and about \$1.5 billion in the unorganized sector, it is alarming that toy manufacturers have not yet registered with the BIS.

Focus of Toy manufacturers and consumers in this subject may save our children's future.

Source: <http://www.toxiclink.org>

M. Mythili
Environmental Scientist
AEL, TNPCB

Continuation ECO FRIENDLY SOLAR...

emissions of harmful particulate and gaseous pollutants along with the green house gases. A solar steam cooker can save up to 10 liquefied petroleum gas (LPG) cylinders per year upon full use at small establishments, whereas a community solar steam cooker can save around 35 LPG cylinders in a year on its full use. As solar steam cookers can replace partially the conventional fuels that are used for cooking in Indian homes, institutions and establishments, the emissions of harmful particulate and gaseous pollutants along with the green house gases can be substantially reduced. So the deterioration of the indoor and outdoor air qualities by the partial utilization of solar steam cookers is substantially fewer when compared to the usage of conventional fuels. In the case of solar supported power plants, no environmental pollution except the thermal pollution is endured during the operation of these power plants. But, it has been reported that 3000, 1200 and 510 tonnes of particulates are released per year from coal, oil and gas based thermal power stations respectively for the production of 1 GW of electricity. In addition, the gaseous pollutants like sulphur oxides, nitrogen oxides and carbon monoxide are released

enormously from these thermal power stations. Organic compounds, sulphuric acid, chlorides, phosphates, boron and suspended solids are also released in the liquid effluents from these thermal power stations. By the by, all the solar steam generators have pay back periods of less than five years depending upon the extent of use and place of use. As the pay back periods are also minimum, there are economic benefits along with these energy and environmental benefits.

Conclusion

As the potential and prospects of solar thermal technology in terms of energy, environment and economic benefits is prosperous in our country, it is concluded that the solar thermal technology can provide a positive progress in the sustainable development of our country.

The author acknowledges Hykon India Pvt. Ltd, Trissur for providing photographs

Dr.R.V.Jeba Rajasekhar,Ph.D.
Research Associate, Regional Test Centre (Solar Thermal)
School of Energy, Environment and Natural Resources
Madurai Kamaraj University, Madurai 625 021

கடலூர் துறைமுக பகுதியில் மீன்கள் இறப்பு த.நா.மா.க. வாரியத்தின் உடனடி நடவடிக்கை

கடலூர் துறைமுகத்திற்கு பின்புறம் உள்ள லாபோர்ட் கடல் நீர் வாய்க்காலில் கடந்த 15.3.2008 அன்று மீன்கள் இறந்து கூட்டமாக கரை ஒதுங்கியுள்ளதாக வாரியத்திற்கு புகார் வந்தது. இத்தகவல் அறிந்தவுடன் தமிழ்நாடு மாசு கட்டுப்பாடு வாரிய அதிகாரிகள் அவ்விடத்திற்கு விரைந்து சென்று ஆய்வு மேற்கொண்டனர். கடலூர் துறைமுகத்தில் இறக்குமதி செய்யப்பட்ட யூரியா உர மூட்டைகளின் ஒரு பகுதி சுமார் 300 டன் துறைமுகத்தின் வளாகத்தில் திறந்த வெளியில் அடுக்கி ஐவக்கப்பட்டிருந்தது.



இப்பகுதியில் நான்கு நாட்களாக பெய்த மழையின் காரணமாக யூரியா உரம் மழைநீரில் கரைந்து அருகில் செல்லும் லாபோர்ட் கடல் நீர் வாய்க்காலில் கலந்தது. இந்நீரின் தன்மையை பரிசோதனை செய்து பார்த்ததில் இதில் கரைந்துள்ள ஆக்சிஜன் அளவு 2.8 மிகி/ லிட்டர் அளவிலும் பி.எச் 8.24 அளவிலும் இருந்தது. இதனால் நீரின் தன்மை பாதிக்கப்பட்டு மீன்கள் இறந்ததாக அறியப்பட்டது.



மேலும் காற்றில் கலந்துள்ள அமோனியா வாயுவின் அளவும் காற்று மாதிரி எடுத்து பரிசோதனை செய்து பார்க்கப்பட்டது. காற்றில் கலந்துள்ள அமோனியா அளவு அனுமதிக்கப்பட்ட அளவுக்கு உட்பட்டு இருந்தது.



உடனே மேற்படி இறந்த மீன்களை சுற்றுச்சூழலுக்கு மாசு ஏற்படாமல் பூமியில் குழி தோண்டி புதைக்கும் படையும் யூரியா மூட்டைகளை அகற்றி பாதுகாப்பான குடோனில் வைக்கும்படியும் லாபோர்ட் வாய்க்கால் நீரினை அருகில் உள்ள உப்பநாற்று நீரினை கொண்டு சமநிலைப் படுத்தும் படையும் சம்மந்தப்பட்ட துறைமுகத்தில் சரக்குகளை கையாளும் நிறுவனத்திற்கு வாரியம் அறிவுறுத்தியது. அதன்படி பணிகள் மேற்கொள்ளப்பட்டு முடிக்கப்பட்டன. ஆதனால் சுற்றுச்சூழல் மாசுபடுவது தடுக்கப்பட்டது. பாதிக்கப்பட்ட மீன்வளர்ப்பு குத்தகைகாரருக்கு உரிய



நஷ்டயீடும் பெற்றுக்கொடுக்கப்பட்டது. மேலும் கடலூர் பகுதிக்கு உரம் விநியோகம் செய்யும் ஐதராபாத்தில் உள்ள தனியார் உரக் கம்பெனிக்கு, நீர் (மாசு தடுப்பு கட்டுப்பாடு) சட்டம் 1974-கீழ் வாரியம் மேற்படி நிகழ்வினை கண்டித்து முகாந்திர கடிதம் அனுப்பியது. இதற்கு பதில் அளித்த அந்நிறுவனம் கடலூரில் கப்பல் சரக்குகளை கையாளும் தமது ஒப்பந்ததாரருக்கு சரக்குகளை சரிவர கையாளும் படி அறிவுறுத்தியுள்ளதாக தெரிவித்தது. இனிவரும் காலங்களில் இதுபோன்ற நிகழ்வுகள் நடவாவண்ணம் கடலூர் துறைமுகத்தில் இறக்குமதி செய்யப்படும் சரக்குகளை சரிவர கையாளவேண்டும் என சம்மந்தப்பட்ட நிறுவனங்களை வாரியம் அறிவுறுத்தியுள்ளது.

புகார் பிரிவு,
த.நா.மா.க.வாரியம், சென்னை

AIR QUALITY MONITORING/AWARENESS CAMPAIGN IN CHENNAI CITY DURING BHOGI-2008

Tamil Nadu Pollution Control Board conducted an intensive awareness campaign during Bhogi Festival'2008 from 11.01.08 to 13.01.08. The campaign covered all the 10 zones of the Chennai Corporation specially in the residential areas and



slum areas. People were educated about the harmful effects namely respiratory problems, reduction of visibility, disruption of road traffic and air pollution in intersection etc/ due to burning of tyres, plastics, rubber and other refuses.

As a follow up action of awareness campaign, 25 monitoring teams of Tamil Nadu Pollution Control Board were formed to monitor the situation in Chennai city and to keep vigil during the hole night of 13th January (Pre Bhogi) and early morning of 14th January (Bhogi Day).



Nine ambient Air Quality Monitoring stations were set up in Anna Nagar, T.Nagar, Beseant Nagar, Kilpauk, Royapuram, Vallalar Nagar, Triplicane, Mandaveli and Vyasarpadi. This year there was a



reduction of 8% Total Suspended Particulate Matter, Whereas an increase in Oxides of Nitrogen (11%) and Respirable Suspended Particulate Matter (15%) was observed as compared to the last year. The overall status of gaseous pollutants like Sulphur-di oxide and Oxides of Nitrogen are well within the prescribed standards.



In most of the places particularly in slum areas of the city in Vyasarpadi, Royapuram, Otteri, Pulianthope, Saidapet, Kotturpuram, Avvai Nagar, Buckingham Canal, Tharamani, banks of Coovum river, TNPCB monitoring team accompanied by the Police instructed the public not to burn the mat, broom sticks, wood, papers and rags etc. As compared to previous years, this year the burning of tyres and plastics was considerably reduced due to intensive campaign carried out by TNPCB and Police.

TNPCB will continue such awareness campaign during Bhogi Festival and monitor the air quality in Chennai city in the succeeding years also.

P.V.Marimuthu
Assistant Director
AEL, TNPCB.