MINIMISE POLLUTING WASTES FOR SAFE RECYCLING

By Mrs Almitra H Patel, MS MIT USA,almitrapatel@rediffmail.com, www.almitrapatel.com
Member Supreme Court Committee for Solid Waste Management

ABSTRACT: Few of us realize how many indirect wastes and hazardous pollutants needlessly enter the municipal waste stream, and how necessary and easy it is to minimize these through pro-active, preventive measures. Two such examples are given below, with detailed suggestions on how to solve both problems.

1, Aquatic weeds are a major and hard-to-recycle waste that local bodies are forced to handle because of high-phosphate detergents. Prevention is key, by limiting phosphate content in detergents which is a key nutrient for their growth. Such limits effectively saved Lake Erie in the 1960s. Similar rules are possible and vital under our Water Act to save India's urban and rural water-bodies.

2, High-mercury containing fluorescents are regularly found in Indian municipal waste. In the EU, these are considered hazardous waste, requiring very costly haz-waste landfilling. So EU buyers have switched to fluorescents with less than 5 mg mercury content, which are permitted to be co-disposed in landfills for municipal waste. All fluorescents like tube-lights are E-waste, but are not covered by India's new E-waste Guidelines, operational from may 2012. We need to switch to locally-manufactured low-mercury alternatives as the EU has done.

WATER WEED GROWTH FED BY PHOSPHATE DETERGENTS IN WASTEWATER

Aquatic weeds like water hyacinth choke most of our urban storm-water drains and lakes, causing flooding with even brief light rains. Mosquitoes breed in these stagnant waters, because there are no fish to control their population. The fish die because of excessive weed growth which, while dying and sinking to the bottom, remove oxygen from the water.

India's lakes, tanks and rivers can be saved from such eutrophication and needless pollution by one essential and simple measure: limit the phosphorus content of detergents. Phosphates are plant nutrients that create algal blooms which choke water-supply intakes and also rob underwater ecosystems of oxygen. All our rural water-bodies are under threat too: a 1996 NCAER study reported that 55% of all washing-powder sales are generated by rural demand.

When Lake Erie was under similar threat, Canada and the US through the Great Lakes Water Quality Board of the IJC (Int'l Joint Commission) passed regulations in 1970 to limit phosphorus content in detergents to 8.7%, and brought it down further to just **2.2% in 1973.** Read the fascinating "Historical Perspective of the Phosphate Detergent Conflict" and its resolution by consensus in US on http://www.colorado.edu/conflict/full_text_search/AllCRCDocs/94-54.htm and over 332,000 Google entries on 'Lake Erie Detergents'.

In India, by contrast, the very MNCs who follow these norms abroad, are the worst offenders here. ATIRA (Ahmedabad Textile Industry Research Assn) in 2001 completed an 18-month study of 14 common detergent brands at the request of VOICE ((Voluntary Organisation in Interest of Consumer Education). As reported in Down To Earth magazine of June 30, 2001, this study showed that the worst six brands showed the following levels of phosphate, reported as STPP content by weight:

Surf Excel	30.6 %
Ariel Microshine	22.4 %
Surf Wash Booster	21 %
Nirma Super	13.8 %
Ariel Super Soaker	7 %
555	5.5 %

It is past time for us to introduce Rules under the EP Act to incrementally prevent and control such pollution-promoting levels of phosphate in soaps and detergents.

1 , Begin with requiring LABELLING of these products to show their phosphate content (as STPP or otherwise) so that consumers can make an educated choice.

2 , Set an upper limit of say 10% phosphorus immediately on introducing the Rules. This should apply to all major brands having more than say 2% of national market share or of a given quantum of sales. They very well know how to effect such reductions, and an upper limit will create a level playing field about which none can complain. ATIRA can be provided Environment Education funding to undertake an annual updated survey to be posted in the public domain, with matching MRPs to enable inflation-reducing optimal choices. Increased cost of detergents is no longer a valid argument. The cost to the poorest of weed-choked annual flooding even in light early showers is far more economically damaging.

3 , Set subsequent annual declining limits of 8%, 6%, 4% and finally 2% phosphorus in laundry soaps and detergents . Offer time-bound tax rebates to encourage compliance.

4 , Thereafter make CPCB's 1991 Ecomark compliance mandatory for avoiding an Eco-tax for higher limits of free phosphate. This eco-tax of say 10-20% of MRP, depending on phosphorus content, should go to a dedicated escrow fund earmarked for actual cleanup of eutrophication in the worst-affected spots, and perhaps grants for public research on cost-saving cleaner technologies. Twenty years is long enough to wait for voluntary cooperation by industry, which has not worked. Only economic pressure can bring about the compliance needed to protect our country's water-bodies in the long term.

5 , These limits are not unrealistic. Washington became the first State in the US to ban residential dishwashing detergents that contain phosphates, starting 2008.

Details are available from Sierra Club, whose Richard Reed led the effort for a ban. Their logic : "By taking phosphates out of the consumer flow, we are saving money on technology. It's a lot cheaper to get it out of the stores than to try to remove it through wastewater-treatment plants." Latest limits elsewhere are for 0.8%.

We have many examples of MNCs falling in line when pressured to do so, while without Indian legislation they are openly defiant.

6 , We also need positive economic instruments to encourage cleaner alternatives like the biodegradable Pepfactants developed in 2007 at the University of Queensland in Australia. Their specially designed surfactants are made of upto 21 biodegradable amino acids, some hydrophilic, some hydrophobic. Attached to a Zinc atom, Pepfactants can bind or release oil reversibly, a huge benefit for getting out hard-to reach oil film residues from "dry" oil wells. Details available in http://economist.com/science/tq/displaystory.cfm?story_id=9677960, which also explains how adding a dash of Pepfactants to laundry detergent and changing the acidity of a wash-load between the washing and rinsing cycles could save a lot of the water required to remove soap-suds.

MERCURY POLLUTION PREVENTION

A major source of urban mercury pollution is from tubelights and fluorescents. They are the only form of E-waste commonly found discarded countrywide in municipal waste dumps. (Other ewaste seems to be eagerly harnessed for backyard recycling). They also puncture the very costly tyres of garbage trucks and JCBs.

One 40W tubelight contains 20-40 mg mercury, depending on the brand. This quantity, which is equal to the daily safe exposure limit for 4000 persons, is released within 8 hours of tube-light caps being removed on roadsides for the sake of recovering Re 1 worth of aluminium for sale for recycling. Currently these mercury limits appear to fall below the 50mg Mercury and mercury compounds limits for Haz-waste in Class A Schedule 2 of the Haz-Waste Rules. Hence they are unregulated "orphan wastes".

Nowadays throughout the EU and in much of the US, RoHS and WEEE legislation classifies fluorescents as hazardous waste unless each contains less than 5 mg mercury. These LOW-MERCURY TUBELIGHTS are readily available there as standard products. They are preferred because the alternative of costly haz-waste landfilling of high-mercury ones is so very costly. These low-mercury products are not yet produced in India for want of adequate demand, but are readily available as OGL imports from Singapore etc at slightly higher cost. CFL alternatives are low-mercury, and LED arrays are even less polluting and more power-saving.

Abroad, high-mercury tubelights end up in Haz-waste landfills which are readily available and conscientiously used. In the absence of such an infrastructure,

requirement and law-abiding culture in India, I have the following suggestions for the CPCB to take a national lead in mitigating this source of pollution:

1, Require all Urban Local Bodies, beginning with those over 1 lakh population to tender for and PURCHASE only LOW-MERCURY FLUORESCENTS from now on, and to auction their stocks of discarded tubelights (all high-mercury ones currently) only to Authorised Recyclers. Also all PWD and Highway establishments, railways, defence establishments and public sector enterprises should be required to set a similarly eco-responsible example.

2, Whenever any State Pollution Control Board issues consents to large housing or commercial and industrial complexes and technology parks etc, they should be required, as a pre-condition, to install and permanently use ONLY LOW-MERCURY LIGHTING FIXTURES, so that we move forward to a less polluting future.

3, If possible, ULBs may be urged to issue annual consents to existing large institutions and commercial complexes subject to their switching over to low-mercury lighting fixtures and showing proof of compliance.

4, Simultaneously, as a test model, all electrical distributors and dealers of fluorescents in our 100 largest ULBs should be required to TAKE-BACK discarded high-mercury tubelights for any similar products sold, with effect from a given date, on conditions similar to our car-battery take-back rules, with Extended Producer Responsibility for the reverse-distribution chain.

5, Economic instruments are also necessary to move society in this direction. Sales Tax authorities may be asked to cooperate in this effort, by announcing a lower State ST on low-mercury tube-lights. With the help of CPCB, the Centre may be urged to reduce or waive import duties etc for at least three years on low-mercury tubelights to bring their costs in line with locally manufactured high-mercury ones until sufficient order volumes encourage local low-mercury production.

Major industry players may be asked to make a presentation on the cost-effectiveness of low-mercury alternatives and what would equalise costs.

6, Simple low-cost equipment is now available for safe recycling of tube-lights and capture of mercury vapour in activated carbon for haz-waste landfilling. But recycling tubelights is a Cost, not a Profit. So Pollution Prevention phase-out of high-mercury tubelights and creating demand for low-mercury tubelights via Govt and public-sector demand for economies of scale in modernization is a preferred option.

7, These proposals or intentions can be posted on the CPCB, MOEF and Urban Development websites to invite comments and suggestions.