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JAN 2017

Phosphorus in detergents NGT IA Jan 2017

IN THE MATTER OF :

Almitra H. Patel & Another ..Petitioner

Versus

Union of India & Ors. ... Respondent

INDEX

Particulars	Pages

A. **INTERIM APPLICATION FOR DIRECTIONS**

B. **ANNEXURES**

C. Accompanying Affidavit

ADVOCATE FOR THE PETITIONER : MS. MANIK KARANJAWALA

IN THE NGT.....

I.A.NO._____ OF 2017

IN MA 843 of 2014

IN THE MATTER OF :

Almitra H. Patel & Another ... Petitioner

Versus

Union of India & Ors. ... Respondent

INTERIM APPLICATION FOR DIRECTIONS

TO THE HON'BLE CHAIRMAN NGT

AND HIS OTHER COMPANION TRIBUNAL MEMBERS

The humble Application of the Applicant above named

MOST RESPECTFULLY SHEWETH:

This Interim Application is a natural continuation of MA 843 filed primarily to stop the open dumping of urban waste all over India, along with constructive solutions for waste minimization and reduction of environmental pollution from waste.

1, BRIEF CHRONOLOGY OF IA22 in WP(C) 888/96 = MA 843 in NGT

On 17.8.1999 the Petitioner in WP (C) 888/96 sought 12 Directions.

CJI Kirpals Order dt 28.10.2002 stated : *Orders will have to be passed with regard to 12 directions which are sought (page 3546 of the paperbook).....*

Subsequently, 11 of the 12 Directions Sought were dealt with, except Direction 12, which read :

12, A preventive rather than a reactive response to the magnitude of the urban solid waste problem is called for, as described in section 9.1 and Anx E of the [Supreme Court appointed Committee] Report. We direct the Central Pollution Control Board to prepare suitable Waste Prevention and Eco-friendly Packaging Rules, in order to minimise needless generation of solid waste. These Rules shall include provisions for an Eco-surcharge to promote life-cycle responsibility by the manufacturers and marketers of all products.

To refocus attention on this urgent need for Waste prevention and Ecofriendly Packaging legislation, this was repeated as an explanation in IA 22 of 2011, cited below :

*5.4 **LOW-PHOSPHATE SOAPS AND DETERGENTS***

*One major voluminous waste which is not considered Municipal Solid Waste but which is a major financial and managerial burden for all Local Bodies is the annual removal of excessive growth of weeds in water-bodies, which thrive on the high phosphate content in soaps and detergents. Costs apart, this has led to choking of waterways and water-bodies worldwide and depletion of their oxygen content needed for survival of fish. Phosphates are a limiting nutrient for growth of water-hyacinth, other aquatic weeds, and algae which choke urban water-supply systems. Lake Erie between USA and Canada, "dying" by such eutrophication, was saved and revived by a treaty in 1970 capping the phosphorus content in detergents to 8.7% in 1970, **2.2% in 1973** and none around Lake Erie now. Annexed hereto as ANX Q is the Petitioner's letter dt 7.3.2010 to the Hon'ble Minister for Environment, Govt of India (CC Secy MOEF) seeking MINIMISE POLLUTION BY DETERGENTS by progressively reducing to 2.2% their permissible Phosphorus content. This legislation is vital to reduce the burden on municipalities of annually deweeding their storm-drains and lakes to prevent flooding. Its implementation is technically very easy now as the detergent industry in India is currently controlled by the same three multinationals who have 80% share of the US detergent market, where they produce only low-phosphorus and even zero-phosphorus detergents.*

Prayer 5 of that IA 22 of 2011 = MA 843 of 2014 read :

5, direct the Union of India (Respondent No.1), CPCB and BIS to consider the issue of proactive Notifications, Rules and/or Regulations to Minimize Waste and Prevent its Pollution, e.g. for use of unrecyclable plastic in roads, use of Low-Mercury Fluorescents, Lead-Free Paints and Pigments, Low-Phosphate Detergents, phase-out of Short-life PVC products and Expanded Polystyrene

Packaging, sale of fully-compostable Garbage Bags as suggested in the present application.

WPC (888/96 along with its IA 22 was transferred in September 2014 to the hon NGT as OA 199 of 2014 and MA 843. Both were comprehensively and usefully disposed of on 22 December 2016, with the omission of complete orders in Prayer 5 of MA 843 cited above. Hence this IA.

The current scenario for all these examples is as follows:

i , Use of unrecyclable plastic in roads has been made compulsory in all National Highways within 50 km of 5 lakh plus cities by a 15.11.15 Notifcation of MoRTH, the Ministry of Road Transport and Highways.

ii, Low Mercury fluorescents are yet to be mandated in India as in Europe and elsewhere. However high mercury fluorescents in India are gradually being replaced by CFLs and now LED tubelights and largely used in all new construction because of the economic benefits of saving power consumption. So high mercury tubelights continue to be used largely only for municipal street lights. Hence directions to aggressively replace all these by LED lighting would serve to largely eliminate the use of high mercury containing fluorescents.

iii, Permissible limits of lead in domestic decorative paints have been and are being reduced. What remains to be done is to mandate low levels of lead in all paints and pigments, excluding anticorrosion marine paints.

iv, Phase out of short life PVC has wisely been mandated by this honble Bench in its 22 December 2016 order in this MA 843.

v, Compostable garbage bags are being produced and used in response to plastic bans in various cities, districts and States like Karnataka.

vi, Expanded Polystyrene (Thermocole) packaging while technically recyclable is very voluminous and enormously costly to transport (maximum 800 kg fills a 10 ton truck) hence there was a need to phase out its use in packaging. The SWM Rules 2016 Section 17 mandate funding of its waste management or its take-back, so when cities begin to demand and enforce this, economic pressures will drive the move to more affordably manageable and recyclable alternatives like papier mache, bubble wrap, compostable pellets etc.

vii, What remains as a serious issue which was inadvertently not addressed in the 22 December 2016 Order by NGT, is the question of phosphorus in detergents, explained below.

2, REASONS FOR REGULATING DETERGENT CONTENT IN INDIA

Phosphorus is an essential plant nutrient, almost entirely imported. It is useful when it promotes plant growth on land, but disastrous when it promotes aquatic plant growth. 50 to 75% of phosphorus in Indian surface waters is estimated to come from detergents.

Water hyacinth and similar nuisance aquatic weeds today choke all our surface waters and are annually removed, if at all, at enormous cost by both urban and rural local bodies. There are no Rules in place to regulate the management of this Orphan Waste.

Canada and the US faced this problem in Lake Erie in the sixties. When they discovered that the sudden proliferation of aquatic plants and algae was promoted mainly by the phosphorus in newly introduced synthetic detergents replacing soaps, they jointly moved to reduce phosphorus levels in detergents and limit them in 1970 to 8.7% free phosphorus and in 1973 to 2.2% free phosphorus. This fascinating legal battle was won through public opinion.

3, APPLICANT'S EFFORTS TO ADDRESS THE PROBLEM

The Applicant realized with dismay that water weeds are an Orphan Waste, managed by default by urban local bodies whose overwhelming urban waste problems she has been addressing at a local level since 1991, at a multi-State level since 1994 and through the hon Supreme Court since 1996 and the hon NGT since 2014.

Researching international responses to the multiple problems of choked waterways, death of fish and aquatic life through eutrophication and oxygen depletion in water and the enormous cost and logistic problems of clearing excessive waterweed growth, she learned of the Lake Erie problem caused by phosphorus in new detergents and how it was solved. There are 332,000 Google entires for Lake Erie detergent phosphorus alone.

She sought similar solutions for India by directly appealing to major detergent manufacturers to comply in India with North American and European restrictions, as the three major players having 80% market share are all MNCs producing low phosphorus detergents abroad. They were cynically indifferent as no Indian laws required such compliance and profit motives drove their excessive use of cheap phosphorus ingredients.

Next she appealed to regulatory authorities, as shown in the Annexures below.

Anx A to this IA is a letter addressed on 22.3.2005 to the Chairman CPCB
Anx B is a similar appeal to the CPCB Chairman in 2010.
Anx C is a 7.3.2010 letter to the hon. Minister MOEF Jairam Ramesh

After attempts to address the pollution regulatory authorities failed, the Applicant reiterated the need to set low limits on phosphorus in detergents in her IA 22 of September 2015.

Her continuing civil society efforts were supported by the 2015 findings of Prof T V Ramachandra at the Centre for Ecological Studies, Indian Institute of Science Bangalore on the very severe and persistent problem of high rafts of foam in Bellandur and Varthur lakes, caused by detergents in sewage inflows and the phosphorus in detergents.

Based on this, the visiting MOEF Minister Prakash Javadekar was quoted in several newspapers as saying he would look into banning phosphorus from detergents. **Anx D** quotes The Hindu of 1.1.16 reporting his statements. The Applicant immediately wrote to him to expedite a decision on this. See **Anx E.**

There has been no action to date from MOEF despite a similar persistent foam problem in the Yamuna being widely reported during 2016, with NCT news photos of women immersed neck deep in river foam during Chhath Puja rituals.

The Applicant also met the Consumer Affairs Secretary and BIS Director General and wrote to the BIS on 9.3.2016 (see **Anx F**). A year has passed with no progress, while the foams in Yamuna and Bellandur rise higher and higher.

4, RECENT DEVELOPMENTS

In 1991 Ecomarks were developed for detergents and Godrej Ezee was the first product to apply for this Ecomark. When the brand was taken over by Proctor and Gamble, they dropped this for corporate reasons though they used Swedish ecomarking in EU. No detergent brand has applied for the Ecomark since then.

Today Unilever claims that all its detergent products are phosphate-free. If one firm can do it, so can all the others. The climate is ripe now for making the voluntary Ecomark requirements for detergents into mandatory requirements incorporated in the BIS Standards, even if the Ecomark itself is not made mandatory.

Almost no sewage treatment plant in India removes phosphorus from its treated water before release into surface waters, although this is mandatory for every German town over 20,000 population, for example. Phosphorus can be removed either biologically by polyphosphate accumulating organisms or by chemical precipitation using alum, lime or ferric chloride. This is necessary to remove phosphorus from fecal matter as well as smallscale detergent unit products. This removed phosphorus can be usefully returned to soils where it is needed.

5, PRAYERS FOR ACTION

It is prayed that the hon. NGT may please

1, Call for an Action Taken Report on follow up of Mr Javadekars press statement to look into banning phosphorus in detergents.

2, Require the detergent industry associations to file an affidavit on the current phosphate/phosphorus content of all detergent powder, liquid and bar brands of their members, and also analyse popular local brands of non-members.

3, Ask for the detergent industry response to an immediate cap of 2.2% phosphorus (= 5% phosphorus pentoxide) and the timeframe by which they can switch to zero phosphorus formulations.

4, Similarly ask for an industry affidavit on whether their surfactants are biodegradable or not, and set a timeline to switch to full biodegradability.

5, Ask for an industry affidavit on the content of Triclosan in detergents, and their response to a proposed ban on this carcinogenic chemical (banned in many other countries) which also kills foam-breaking bacteria.

6, Ask the Govt of India to propose economic incentives such as tax concessions for phosphorus-free biodegradable formulations and an eco-tax on non-complying ones.

7, Mandate an immediate declaration of the phosphorus content and biodegradability percentage on all products to enable citizens to fulfil their constitutional duty under Article 51 (a) to protect Indias waters and environment through wise purchasing decisions.

8, Ensure that no industrial or other cleaning agents escape the above requirements through alternate definitions of their products as other than detergents.

9, Call for quarterly progress reports on compliance.

10, Make Ecomark criteria mandatory, though not use of the Ecomark itself.

11, Harmonise all BIS standards to eliminate the need for phosphorus in detergents, laundry bars etc.

12, Make it mandatory for all sewage treatment plants, new or existing, to remove phosphorus from their treated water, by a separate law, if necessary.

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Anx A to IA in NGT [=Anx M in IA 22/2011 = MA 843/2014] See para 15

Petitioner's 2005 suggestions to CPCB for Rules to Reduce Waste Quantity & Pollution

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Member, Supreme Court Committee for Solid Waste Management
Advisor, Ganga ICDP Project, Clean Jharkhand Project

22.3.2005
Mr Rajagopalan,Chairman, CPCB
East Arjun Nagar,Delhi 100032

Dear Mr Rajagopalan

WASTE MINIMISATION & POLLUTION PREVENTION

Greetings. I refer to our conversation yesterday when you had kindly agreed to consider facilitating a list of interventions which CPCB could undertake either directly or through various concerned ministries, to minimize waste as well as to prevent pollution and inform the consumer of potential health hazards.

WASTE MINIMSATION

After the Supreme Court Committee submitted its recommendations in March 1999, there remained several areas not covered by its Terms of Reference or the Report, which a member suggested I could take up separately in my capacity as Petitioner, such as citizen involvement, good accounting practices and Waste Minimisation and Ecofriendly Packaging. This last item is the final one of twelve Directions Sought in September 1999 in WP 888/96, and may be taken up by the Court after December 2005 or so, as we are currently on Directions 8 and 9.

I would like to record here my great appreciation of the positive and constructive role of CPCB, despite being a Respondent, and Dr Akolkar in particular, in the task of cleaning up India, by preparing, on its own initiative, two Drafts of the Municipal Solid Waste Rules which were then formally discussed with the Supreme Court Committee before sending on to MOEF. I look forward to similar

proactive initiatives by CPCB in advance of my request to the Court for the drafting of Waste Minimisation and Ecofriendly Packaging Rules for our country, similar to several prevailing in the EU and many North American States and Provinces, especially California. Some examples of the elements of their rules, not necessarily in order of priority, are given below. Most succeed best through economic incentives, so even in the absence of Rules, a slight rebate in Sales Tax or VAT for eco-friendly packaging and take-back participants can work wonders.

1, **BottleTax or Take-Back Rules** for single-use packaging like PET bottles for soft and hard drinks and mineral water. Even a nominal rebate works wonders: 5 cents or 10cents per bottle or can brings in upto 85% of units sold, as Ireland discovered in the first few months of introducing such a policy. Even if yuppies or housewives do not bother to return these, their employees do, or failing that the ragpickers. We already have this practice in India since almost a century, for "goli-soda" bottles and beer bottles, currently at Rs 5 per glass bottle of carbonated drinks. So the public will have no difficulty accepting this for PET as well, at a rate of say Re 1 refundable surcharge per bottle returned. (Less is not practical, since nobody handles change smaller than Re 1 nowadays). The current rate of Rs 5 per glass bottle does not represent its market value as recyclable raw material, but covers the cost of the "reverse-distribution" chain.

A Bottle Tax is being strenuously resisted by the major players, of which Pepsi is the most cooperative and Coke the most defiant and indifferent. For example, at Bangalore's "healing sessions" by Benny Hinn, attended by 5 lakh people and sponsored by Coke, the Jakkur aerodrome used was littered with uncollected PET bottles, despite advance offers of free cleanup by an experienced recycler who left Benny Hinn's Mumbai event spotless the previous year, when Pepsi were sponsors and provided both space and permission for bottle collection. The same thing must be happening at cricket matches sponsored by Coke.

2, So in addition to a Bottle Tax or Take-Back Policy, we need national policy or legislation under the E P Act to **prevent litter pollution at events** sponsored by producers of consumables like soft drinks, ice creams, distributors of fliers etc, by requiring them to file an Ongoing Cleanup Plan for any sponsored event before being granted permission for the event by civic authorities. Can this find a place in the anti-littering para of our MSW Rules?

3, **Mandatory Recycling Targets for packaging suppliers** has worked wonders in Europe. Germany's Duales System, for instance, required annually increasing targets (currently 55 to 80 %) for categories like glass, cardboard, plastics, aluminum cans, Styrofoam etc. Europe has about 22 different such schemes in various countries. In all of them, basically the packaging user industries bear the cost of take-back for recycling in proportion to their annual tonnage purchase and use of such packaging. In India, given our high informal recycling rates, we may do this through say the Cardboard Manufacturers' Association or Carrybag Manufacturers' Associations, leaving it to registered members to rope in unregistered ones for contributions.

4, In India this has been tried successfully but sporadically for sales promotion in one-free-for-ten-or-twenty wrappers etc for items packed in tiny multifilm sachets, which are another huge nuisance in Indian wastes. We can find economic incentives for firms that institutionalize this, either for their own products or for generic products (e.g. any paan-masalas or shampoos or namkeens). Similarly for non-recycled items like expanded polystyrene use-and-throw plates and cups.

5, Some countries have **economic disincentives to discourage needlessly large packaging**, such as half-full cereal boxes. In Russia, toothpaste tubes were sold without any cardboard packaging addition, which is not really required for protecting the contents.

6, Eco-friendly substitutes for non-recyclable packaging can be mandated, such as a pre-announced gradual **phase-out of Styrofoam packaging** [expanded polystyrene, EPS] by papier-mache moulded shapes or folded-cardboard supports. This already being done since long by Sony, Nokia and others in Japan because of the costly volume of landfills occupied by Styrofoam or Ufoam. In India in the late nineties, PSI was voluntarily recycling polyurethane foam packaging for electronic hardware received and shipped out again by a cut-and-paste peon in the stores department. Suppliers of white goods like refrigerators, washing machines etc should also be required to take back their bulky packaging by offering refunds for its return to the store. This will automatically force them to use collapsible modular shapes for compact return shipping and reuse.

POLLUTION PREVENTION THROUGH TAKE-BACK

7, India's first and laudable effort is the Rule for Take-Back of lead-acid batteries. We can learn from its weaknesses and improve subsequent such rules. In an effort to keep Household Hazardous Waste out of the MSW stream, we need similar mandatory take-back (preferably driven by economic incentives) initially for:

a) Insecticide spray-cans (e.g. HIT) and anti-termite chemicals etc.

b) Garden pesticides, herbicides and agro-chemicals (maybe for ALL Red-Triangle and even Yellow Triangle Agro-chemical packaging)

c) Fluorescents containing more mercury than levels currently exempted in EU's RoHS legislation.

d) Torch batteries and Button Cells.

e) Cosmetics and Paint cans containing heavy metals (See Labelling below).

POLLUTION PREVENTION THROUGH PRODUCT LABELLING

8, If paraffin oil is being objected to in baby oils, and pesticide traces in soft drinks, how much greater is the need to label the exact content of lead in hair dyes and ayurvedic medicines and paints (also cadmium and chromium), of mercury in sindoor or in light-up switches in kiddie shoes and toys, of arsenic in wood preservatives etc. A list can be made of these highly polluting toxic elements, whose presence MUST be reported on labelling for ALL products containing them.

POLLUTION PREVENTION AND HEALTH PROTECTION THROUGH PRODUCT PHASE-OUTS AND BANS

9, Lead-based paints are now banned since years in most developed countries, but not in India. UNICEF ordered (and got, in India) lead-free paint on childrens' playground equipment sponsored by them. But these same well-informed suppliers continue to use lead-based paints on all their play equipment out of sheer indifference or because there is no blanket legislation to create a level economic playing-field for compliance. Dr T Venkatesh, Head of Biophysics and Biochemistry at St John's Hospital Bangalore and founder of NRCLPI (National Referral Centre for Lead Poisoning in India) can send you documented evidence of the lead levels found in playground soils and in the blood of children frequenting these in Mangalore. Contact venky_tv@hotmail.com [now venkatesh.thuppil@gmail.com] or 93412-42430.

10, We can start by charging an **Eco-Tax for Haz-Waste Disposal** of containers for such toxic-containing paints, with a time-table for their phased total discontinuance. The Eco-Tax can be either straightaway or progressively raised to equal the difference in cost between cheap toxic paints and their maybe costlier eco-friendly alternatives, so that compliance can be market-driven.

11, Similarly, since we cannot ban immersion of painted idols at festivals, we can certainly ban the use of paints containing lead, mercury, cadmium, selenium, chromium, mercury etc for such purposes. The paint industry will have to indicate with say a Green Dot or Blue Fish on such eco-friendly paints so that even illiterate persons know what can be permissibly used.

12, We also need **economic incentives to move away from chlorine-bleached paper and feminine products**, as their production process gives rise to large amounts of dioxins in their environs, especially water bodies contaminated by their effluents. This can be done either by a phased ban on bleached toilet paper, Huggies, sanitary napkin filler etc, or by an Eco-tax on bleached products or a tax rebate on non-bleached items.

13, We can and should ban needlessly polluting items like mercury-containing light-up kiddie-shoes and toys which have a short life and end up in municipal waste, not haz-waste sites.

14, We also need to **ban one-time-use rigid PVC containers** like bottles for ketchup, mineral water (even for duplicates of popular brands!), cosmetics etc. These end up in municipal waste which is still commonly burnt countrywide, generating dioxins. A more important reason is that just one missed PVC bottle in 10,000 PET bottles spoils the whole batch as it chars and darkens at a lower temperature. That is why Reliance ended up with a useless batch of 5000 tons of PET flakes when it tried to enter this recycling market.

A ban on PVC bottles would automatically make PET collection and recycling viable, keeping these out of storm drains and sewer pipes and thereby reducing urban flooding in the rains. PVC has its uses and place, in long-life construction items like fire-retardant electrical wiring and casings, or flexible medical tubing. Even the common cheap PVC chappals have at least a year's life. But there is no

excuse for permitting its use in one-time-use rigid packaging for which dozens of eco-friendlier substitutes exist. I have a collection of several of these needlessly-PVC bottles which I can send you if required.

WASTE MINIMISATION & POLLUTION PREVENTION THROUGH PRODUCT SPECIFICATIONS

15, The most urgent need is for a **reduction in the permissible free-phosphate levels in detergents.** Eutrophication and slow death of Lake Erie was arrested by both US and Canada jointly bringing down the levels of free phosphorus to 2.2% in a briefly-phased manner. This was done decades ago, so the know-how for alternatives is well established. In contrast, VOICE and CERC in Ahmedabad found, in a study reported by Down To Earth, that our top brands of Surf, Ariel etc have upto 21% free phosphorus. This penny-wise attitude of detergent producers leads to huge waste-management costs for cities that have to deal with removal of water-hyacinth etc from their water-bodies, where they flourish on this free fertilizer.

Whenever this issue has been raised over the years, either in NGO forums or even at MOEF meetings, Hind-Lever has said first stop the inflow of human waste into your water bodies as faeces contain more phosphorus than our detergents. At our stage of development, I think we have no room for such a cynical and irresponsible response.
We need to act on BOTH fronts, simultaneously, not sequentially targeting the poorest persons and most difficult problems first.

MAKE ECO-MARKS MANDATORY NOW

16, CPCB has spent enormous valuable effort since 1991 in preparing criteria for certification of 14 categories of industries to qualify for Ecomarks. These were to be voluntary. Till 1999 I think there was not a single taker for any

category. Soon after Godrej came forward to get an Ecomark for its detergent, its then joint-venture partner Proctor and Gamble forced them to withdraw their application. I think the country has lost patience with non-compliance on a voluntary basis. After giving industry a chance for 15 years to behave responsibly, it is time to **make these Ecomark criteria (if not the mark itself) mandatory in a phased manner**. This may require, on a case-by-case basis, a joint review with industry on slight initial relaxations. For example zero free-phosphate for Ecomarked detergent may be neither feasible nor necessary if 2% is acceptable to industry. The edible oil industry could not guarantee lead-free oil from peanuts grown by the roadsides in leaded-petrol days, but may be more receptive now.

17, Another objection voiced at the time was, that industries were not willing to pay for the additional BIS-type charges and bureaucratic interference in production that goes with it. Also, that their label designers, fighting for every square millimeter of space for product promotion, were reluctant to spare space for an additional Ecomark symbol. Hence I suggest that the use of and payment for the Ecomark itself can continue to be voluntary, but the STANDARDS and norms implied in them, perhaps with some relaxation, must now be made progressively mandatory as norms for the industries where so much homework is ready. It is a pre-condition for us to consider ourselves a developed nation, where value for human life and well-being is a well-established social definition of such status.

This is a very long list. But CPCB has many talented and dedicated staff who can each run with one or more of the issues raised above. At the highest levels, and yourself personally, inter-ministerial lobbying will be called for to achieve holistic results.

With best wishes and always with pleasure at your service,

Sincerely,

ALMITRA H PATEL

Anx B to this IA [prev Anx P in S.C. IA 22/2011 = MA 843/2014]

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7.3.2010

Mr Jairam Ramesh, Hon'ble Minister for Environment
Govt of India jairam54@gmail.com

Dear Jairam ji

MINIMISE POLLUTION BY DETERGENTS

Greetings. India's lakes, tanks and rivers can be saved from eutrophication and needless pollution by one essential and simple measure: limit the free phosphate in detergents. A plant nutrient, phosphates create algae blooms that 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.**

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, the 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 free phosphate.

1 , Begin with requiring labeling to show the level of free phosphate (as STPP or otherwise) so that consumers can make an educated choice. (My attempts to get this information from ISTMA, the Indian Soaps and Toiletries Makers Assn at Mumbai, have been met with deafening silence).

2 , Set an upper limit of say 10% free phosphate 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 will 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 required to furnish you their report on all the 14 brands they tested. They can also 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.

3 , Set subsequent annual declining limits of 8%, 6%, 4% and finally 2% free phosphate.

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 phosphate levels, 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 compliance, 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."

We have many examples of MNCs falling in line when pressured to do so, such as a major bread-supplier researching biodegradable plastic wrapping for loaves, as a precautionary response to Delhi State's anti-plastic moves. Without legislation they are openly defiant. Hindlever's response in public meetings to requests for taking the lead in responsible phosphate reduction has been "control open defecation first"

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.

More information, and contacts of those working on detergent issues, will be available from Sunita Narain of CSE. And of course I am always with pleasure at your service.

Sincerely,
Almitra H Patel

[Note 2011: Google 'Lake Erie detergents' for 332,000 entries, and read the Historical Perspecitve 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** .]

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Anx C The Hindu report dt 1.1.16 on MOEF Minister statement re phosphorus
http://www.thehindu.com/news/cities/bangalore/A-saviour-for-frothing-lakes-is-coming/article13975027.ece

A saviour for frothing lakes is coming

BENGALURU JANUARY 01, 2016

Javadekar Promises To Consider Restrictions On Phosphates, A Major Component In Detergents, To Reduce Frothing Of Lakes.

Can A Ban On Phosphates In Detergents Be The Saviour For The Frothing Bellandur Lake In The City?

Based On A Report By Researchers From Indian Institute Of Science (Iisc.), Union Environment Minister Prakash Javadekar Said On Thursday He Would Consider Restrictions On Detergents Which Were Considered The Primary Reason For The Froth That Has Engulfed The Nearly 700-Acre Lake.

"I Will Take It Up With The Department Concerned, To Check If An Alternative That Is Environmentally Friendly And Cost-Effective To Phosphates Can Be Used. If We Can Ban Diclofenac (A Painkiller For Cattle Which Was Found To Be The Reason For The Mass Deaths Of Endangered Vultures), Then We Can Surely Consult And Think Of A Better Alternative," He Said At A Seminar On Climate Change Here.

The Minister Was Briefed About The Problems Of Bellandur Lake, Where Froth Started To Rise Alarmingly In April 2015, And Within A Month, A Portion Of Froth Was Even Seen Catching Fire.

A Recent Report By Researcher T.V. Ramachandra On The Pollution In The Lake, Submitted To The Minister, Conclusively Shows That The Froth Appeared Because Of Higher Concentration Of Phosphates In The Lake.

Phosphates Form A Major Component In Household Detergents, And Make Their Way To The Lake Through The Estimated 500 Million Litres Of Sewage That Flows Into Bellandur And Vathur Lakes. Phosphates Do Not Disintegrate, And Continue To Remain In The Water, Which Ends Up Being Used For Agriculture Further Downstream Of The Lake.

The Researcher Had Previously Said That More Than 70 Per Cent Reduction In Phosphates Was Needed To Reduce Eutrophication (Excessive Nutrients In The Lake That Cause Dense Growth Of Plants, Including Water Hyacinth) In The Lake. This Sort Of Reduction Has Been Seen In Lakes Of Developed Countries Where Stringent Measures On Phosphates Were Imposed To Preserve Waterbodies.

Review Of Lakes

Union Environment Minister Prakash Javadekar Believed That The Design Of The Lake System In Bengaluru Nearly 500 Years Ago Was As A "Strong Example" Of Water Conservation. "It Was Beautiful Water Planning For An Urban City," He Said.

However, With Decades Of Urbanisation And Effluents Taking Their Toll On The Lakes, Many Waterbodies Have Either Disappeared Or Turned Into Cesspools. Mr. Javadekar Promised A Comprehensive Review Of The Waterbodies In The City During His Next Visit In February.

Seminar

Over 200 International Students, Representing More Than 20 Countries, Who Are Studying In The City Made Their Way To The Seminar On Climate Change Organised By Indian Institute Of Science And World Organisation Of Students And Youth On Thursday. Discussions Included The Effects On Climate Change On Water Resources, As Well As The Studied Links Between Urbanisation And Greenhouse Gasses.

Area

Bellandur Lake: 700.18 Acres

Varthur Lake: 445.14 Acres

Pollution

April 27, 2015: Six-Feet-High Froth Seen In Bellandur Lake

May 16, 2015: Pockets Of Froth Caught Fire, Which Is Believed To Have Been Caused By Built-Up Methane In The Bubbles

17 Inlets Lead To Bellandur Lake

Only Two Carried Treated Water

110 Villages Around The Two Lakes Remain Unconnected To Underground Drainage

500 Industries Estimated

The Phosphate Problem

High Phosphates: 4.22 To 5.76 Parts Per Million (For Drinking Water, Less Than 0.1 Ppm Prescribed By The Who)

Enhanced Biological Oxygen Demand: 119 To 140 Parts Per Million (Should Be 30 Ppm Or Less)

Decreased Dissolved Oxygen: 0 To 1.06 Parts Per Million

Excessive Phosphate Encourages Wild Growth Of Algae And Aquatic Plants Which Sucks Up Oxygen From The Lake And Chokes Inlets

Adversely Affects Flora And Fauna Of The Lake

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Anx D to this IA

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1.1.2016

Mr Prakash Javadekar
Honble Minister for Environment, Forest and Climate Change
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Dear Mr Javadekar

MAKING DETERGENTS ECO-FRIENDLY

Greetings for 2016 and warmest thanks for your wonderful New Year gift to the nation by considering regulation of detergents to reduce their pollution potential. Your remarks at yesterdays IISc Climate Change seminar have been well reported in The Hindu, along with your proposed focus on Bangalore lakes next February.

By mid-sixties, Lake Erie was turning green and dying, traced to excessive inflows of detergents containing 7 - 17% phosphorus gross dry weight. The lake was saved by a US-Canada treaty to limit phosphorus to 8.7% in 1970, then 2.2% in 1973.

Though fiercely contested (and defeated), the detergent industry since then conforms to these limits abroad, and even to zero-phosphorus standards in Washington State. Three of those same MNCs control the major share of India's detergent industry, so there is no technical problem whatsoever in enforcing similar detergent standards in India, say 6% phosphorus immediately and 2% from 2017. A review after three years can consider the need for the zero-phosphorus limit in the 1991 Ecomark standards which, being voluntary for a quarter-century, has not a single taker.

Besides saving all our surface waters countrywide from dying of eutrophication and oxygen depletion, a limit on phosphorus will have three added benefits:

1, A Swach Bharat. Water weeds are an unregulated "orphan waste" which ULBs have to spend on hugely to remove annually, with no space for composting them.

2, Reduction in greenhouse gases, because dying waterweeds sink to the bottom, consume all the aquatic oxygen there and generate visible bubbles of methane.

3, Rural water-bodies will also be saved for public use because NCAER estimates 55% consumption of detergents is in rural India.

There is a wonderful paper describing the evolution of detergents and the history of the US-Canada treaty on phosphorus limits :

http://www.colorado.edu/conflict/full_text_search/AllCRCDocs/94-54.htm.

This paper also describes how in the 1950s alkyl benzene sulfonate (ABS) was the main surfactant ingredient but unresponsive to wastewater treatment. Release of ABS into streams and rivers resulted in floating flotillas of foam, forcing a change to biodegradable linear alkyl sulfonates, to correct the foam problem. For this reason, the 1991 ecomark for detergents also specifies Biodegradable Surfactants. It is very necessary to regulate this aspect along with phosphorus content.

A third item needing a total ban in detergents is Triclosan, added as a recent fad promoting "anti-bacterials" in cleansing products. This hormone-disrupting chemical has been classified by the EU as "irritating to the skin and eyes, and very toxic to aquatic organisms" Environment Canada likewise categorized triclosan as potentially toxic to aquatic organisms, bio-accumulative, and persistent in the environment, where it also reacts to form dioxins. See www.davidsuzuki.org/issues/health/science/toxics/chemicals-in-your-cosmetics---triclosan/

Tricloasan needs to be banned from detergents not only for aquatic toxicity but also because it will kill the microbes needed to break down the biodegradable surfactants to be mandated for controlling foaming in water bodies.

These limits on phosphorus, biodegradable surfactants and ban on Triclosan should also apply to industrial cleaning products (car-wash etc) which might escape the definition of "detergents".

One might also consider ways to encourage water-saving cleaning products using peptide surfactants (see www.aibn.uq.edu.au/pepfactants etc) which can considerably save water usage in washing machines.

Finally, what is immediately needed is mandatory labeling of phosphorus content in all detergents (pwders, bars, liquids) so that citizens who want to comply with their constitutional duty under Article 51A to "protect and improve the natural environment including forests, lakes, rivers..." are empowered with the information to make eco-

friendly purchases. The Legal Metrology section of the Consumer Affairs Department can be asked to immediately enforce such mandatory labeling.

With best wishes and always with pleasure at your service,
Sincerely, Almitra
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Anx E to this IA

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9.3.2016

The Director General
Bureau of Indian Standards
Manak Bhavan, Bahadur Shah Zafar Marg
New Delhi 110001

Dear Sir

MINIMISING OF POLLUTION by DETERGENTS and SEWAGE

Greetings. India's lakes, tanks and rivers are dying.

Water Aid has reported that 80% of India's surface waters are polluted, and that 70-80% of this pollution by volume is from sewage.(Times of India June 28 2015 : http://m.timesofindia.com/home/environment/pollution/80-of-Indias-surface-water-may-be-polluted-report-by-internatiopPrintout nal-body-says/articleshow/47848532.cms, Printout in **Annexure A**).

Phosphorus in detergents and laundry soaps is the single major cause of algal and waterweed growth in our water bodies. A plant nutrient, phosphorus creates algae blooms that rob underwater ecosystems of oxygen, killing all fish life. Every kg of phosphorus promotes growth of an additional 700 kg of aquatic vegetation and water-weeds. All our rural water-bodies are under threat too, as a 1996 NCAER study reported that 55% of all washing-powder sales are generated by rural demand.

Water weeds are an 'orphan' solid waste which imposes enormous costs on urban and rural local bodies countrywide to remove from waterbodies and dispose of somehow. This is a huge burden on public taxpayers and governments, merely to protect the profits of detergent producers who use cheap high-phosphorus ingredients without care for ecology.

The US and Canada faced exactly this problem in the mid-sixties. It was solved by putting a cap on phosphorus content in detergents and laundry soaps. 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.** These limits were voluntarily agreed to by the industry after much resistance and losing many legal battles, described in a 1994 paper on Historical Perspective of the Phosphate Detergent Conflict. See http://www.colorado.edu/conflict/full_text_search/AllCRCDocs/94-54.htm.

The formation of huge rafts and flotillas of foam over urban lakes was cured by requiring the use of biodegradable surfactants to lift dirt off fabrics. India needs a similar switch to biodegradable surfactants, to prevent newsmaking foams on lakes like Bellandur in Bangalore recently.

Pepfactants are biodegradable and can reversibly bind to or release oil and grease particles. An article in http://economist.com/science/tq/displaystory.cfm?story_id=9677960 explains how pepfactants in laundry detergent could save a lot of water used to remove soap-suds.

Based on these well-known facts, India's 1991 Ecomark for detergents specified the use of zero phosphorus and biodegradable surfactants. Being voluntary, there is not a single company adopting this Ecomark. One firm trying it withdrew their application as they saw no market advantage in a non-level playing field with no mandatory standards in place.

If we want to save India's surface waters as North America successfully did, we too need mandatory regulation of phosphorus and surfactants in Indian detergents and laundry soaps. There is no technical impediment because this industry in India is dominated by major MNC players like Unilever, Proctor and Gamble, Johnson who all know very well how to comply with North American standards and have been complying abroad for over four decades. Only economic pressure can bring about the compliance required to protect our country's water-bodies in the long term.

The limits suggested are not unrealistic. Washington State in 1998 mandated zero phosphorus in laundry and dish-washing detergents because "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."

Political and administrative will is needed to urgently restore India's lakes and rivers to health. It is past time for us to modify our BIS standards for detergents and laundry soaps and introduce mandatory compliance through Rules under the EP Act to incrementally prevent and control such pollution-promoting levels of phosphorus content and non-biodegradable foaming surfactants.

Our current Sewage Treatment Plants do not remove Phosphorus from effluents, achieving only a reduction of BOD and COD and a neutral pH. So Phosphorus promotes rampant water-plant growth. These die, sink and convert wetlands to swamps.

1, It will help to require Mandatory Content Labelling so that consumers can make an educated choice. All major brands above a certain turnover or market share should display on their packaging their current phosphorus content and whether the surfactants used are biodegradable or non-biodegradable.

2 , Set an upper limit of 9% phosphorus content immediately on introducing the Rules. This should apply to all major brands having more than a given quantum of sales, or 2% of national market share, to create a level playing field.

3 , Set subsequent annual declining limits of 7%, 5%, 3% and finally 2% phosphorus content which shall be mandatory. These time limits may be speeded up in major riverside towns and in smart cities.

4 , Undertake or commission annual randomised testing of common market brands and put their phosphorus content and surfactant biodegradability on a public website.

Thanking you and always with pleasure at your service.

Almitra H Patel