

CHARTER
ON
CORPORATE RESPONSIBILITY
FOR
ENVIRONMENTAL PROTECTION

CHARTER
ON
CORPORATE RESPONSIBILITY
FOR
ENVIRONMENTAL PROTECTION

ACTION POINTS
FOR
17 CATEGORIES OF INDUSTRIES

CENTRAL POLLUTION CONTROL BOARD MINISTRY OF
ENVIRONMENT & FORESTS

March 2003

CONTENTS

1.	Preface	
2.	Industry Sectors: action points	
(i)	Aluminum	3.
(ii)	Cement	5
(iii)	Chlor- Alkali	7
(iv)	Copper	8
(v)	Distillery	9
(vi)	Dyes & dye intermediates	11
(vii)	Fertilizer	13
(viii)	Integrated Iron & Steel	16
(ix)	Oil Refineries	19
(x)	Pesticides	21
(xi)	Petrochemicals	24
(xii)	Pharmaceuticals	27
(xiii)	Pulp & paper	29
(xiv)	Sugar	30
(xv)	Tannery	31
(xvi)	Thermal Power Plants	34
(xvii)	Zinc	37

**CHARTER ON CORPORATE RESPONSIBILITY
FOR ENVIRONMENT PROTECTION (CREP)**

PREFACE

1. Industrial development is an important constituent in our pursuits for economic growth, employment generation and betterment in the quality of life. On the other hand, industrial activities, without proper precautionary measures for environmental protection are known to cause pollution and associated problems. Hence, it is necessary to comply with the regulatory norms for prevention and control of pollution. Alongside, it is also imperative to go beyond compliance through adoption of clean technologies and improvement in management practices. Commitment and voluntary initiatives of industry for responsible care of the environment will help in building a partnership for pollution control. This is the very purpose of this Charter.
2. With this in view, a series of industry- specific interaction meetings have been organized as per details given below, to formulate the Charter on Corporate Responsibility for Environmental Protection (CREP).

Sr. No.	Industrial sector	Workshop Organized at	Date
1.	Aluminium	Kolkata by WBPCB	12.12.2002
2.	Cement	Ballabgarh by NCB	05.12.2002
3.	Chlor – Alkali	Ahmedabad by GPCB	08.01.2003
4.	Copper	Kolkata by WBPCB	12.12.2002
5.	Distillery	Mumbai by MPCB	03.01.2003
6.	Dyes & dye intermediates	Ahmedabad by GPCB	07.01.2003
7.	Fertilizer	Ahmedabad by GPCB	08.01.2003
8.	Iron & Steel	Kolkata by WBPCB	12.12.2002
9.	Oil Refineries	Guwahati by APCB	10.01.2003
10.	Pesticides	Ahmedabad by GPCB	07.01.2003
11.	Petrochemicals	Guwahati by APCB	09.01.2003

12.	Pharmaceuticals	Harderabad by APPCB	11.12.2002
13.	Pulp & Paper	Lucknow by UPPCB	14.12.2002
14.	Sugar	Mumbai by MPCB	03.01.2003
15.	Tannery	Chennai by CLRI	02.01.2003
16.	Thermal Power Plants	Delhi by CPCB	23.12.2002
17.	Zinc	Kolkata by WBPCB	12.12.2002

3. The action points enlisted in the charter are addressed to corporate bodies as well as regulatory agencies. Thus, the charter is a commitment for partnership and participatory action of the concerned stakeholders. The charter is also a road map for progressive improvement in environment management system. Thus, it is not necessarily limited to compliance of end-of-the-pipe effluent and emission standards. In a number of industrial sectors, the targets set in the charter are ahead of effluent and emission standards. During interaction meetings, the representatives of some industrial sectors sought extension of time to meet the regulatory norms because of techno-economic constraints. In case of units falling in such industrial sectors, time bound action had been proposed in the Charter. This measure has been agreed on the understanding that a bank guarantee would be furnished by the concerned units indicating the commitment to the action plan. However, this is without any prejudice to the stipulations made in the existing standards and action already taken/ initiated for the compliance and area- specific requirements warranting stringent actions.
4. The industrial units which are not complying with the national standards notified under the Environment (Protection) Act, 1986, will submit action plan to meet the standards and bank guarantee to respective State Pollution Control Board within 3 Months (by June, 2003).

1.0 LUMINIUM INDUSTRY

Sr. No.	Issues	Action points	Targets
1.	Technology	Allowing Potlines only with Pre-baked Technology	Environment clearance new potlines to be given by MoEF, after June 2003, only with pre-baked technology
2.	Fluoride Emissions	<p>Prescribing maximum size of the plant</p> <p>Revision of fluoride emission standard</p> <p>Phasing out Wet Scrubbing System for fluoride</p> <p>Allowing new Potlines only with Dry Scrubbing System</p> <p>Monitoring of fugitive emissions from pot rooms</p>	<p>Maximum size of the plant shall be decided based on the assimilative capacity of each plant location.</p> <p>For Soderberg Technology 2.8 kg/t by December 2005 [1.0kg/t (VCS) & 1.30 kg/t 9HSS) by December 2010]*</p> <p>For Pre-baked Technology 0.8 kg/t By December 2006</p> <p>Environmental clearance for new potlines shall be given by MoEF, after June 2003, only with Dry Scrubbing System. To start with Indal or any other better method & submit data from January 2004, regularly to SPCBs & CPCB</p>
3.	Fluoride Consumption	Fluoride consumption tonne of aluminum produced (as F)	<p>[For Soderberg Technology 15 kg/t by December 2005</p> <p>For Pre-baked technology</p>

			10kg/t by December 2005]*
4.	Ambient Fluoride	Forage fluoride standards Measurement of forage fluoride	* Twelve consecutive months average-40 ppm * Two consecutive months Average- 60 ppm * One month – 80 ppm To start monitoring and submit data from January 2004, regularly to SPCBs & CPCB. The locations of monitoring may be selected in collaboration with SPCBs & CPCB
5.	Spent Pot Lining (SPL)	Setting up a centralized SPL treatment & disposal facility with aluminum fluoride recovery and utilization of SPL in steel/ cement industries Limit for pot life, (for new pots installed after December 31, 2003 SPL (Carbon & Refractory) to be disposed in Secured Landfill	[Proposal to be prepared]* [2500 days (average)]* With immediate effect
6.	Red Mud	Phasing Wet disposal Red Mud utilisation	To achieve minimum 50% solids in red mud by Dec. 2005 A proposal for practical utilization to be prepared by Aluminium Association of India within six months
7.	Anoda Baking Oven	Achieving particulate matter limit of 50 mg/Nm ³	By Dec. 2005

* National task Force will submit the proposal within three months

2.0 CEMENT INDUSTRY

1. Cement Plants, which are not complying with notified standards, shall do the following to meet the standards;

Augmentation of existing Air Pollution Control Devices - by July 2003

Replacement of existing Air Pollution Control Devices - by July 2004

2. Cement Plants located in critically polluted or urban areas (including 5 km distance outside urban boundary) will meet 100 mg/ Nm³ limit or particulate matter by December 2004 and continue working to reduce the emission of particulate matter to 50 mg/Nm³.
3. The new cement kilns to be accorded NOC/Environmental Clearance w.e.f 01.04.2003 will meet the limit of 50 mg/Nm³ for particulate matter emissions.
4. CPCB will evolve load based standards by December 2003.
5. CPCB and NCBM will evolve SO₂ and NO_x emission standards by June 2004.
6. The Cement industries will control fugitive emissions from all the raw material and products storage and transfer points by December 2003. However, the feasibility for the control of fugitive emissions from limestone and coal storage areas will be decided by the National Task Force (NTF). The NTF shall submit its recommendations within three months.
7. CPCB, NCBM, BIS and Oil refineries will jointly prepare the policy on use of petroleum cokes as fuel in cement kiln by July 2003.
8. After performance evaluation of various types of continuous monitoring equipment and feedback from the industries and equipment manufactures, NTF will decide feasible unit operations/ sections for installation of continuous monitoring equipment. The industry will install the continuous monitoring systems (CMS) by December 2003

9. Tripping in kiln ESP to be minimized by July 2003 as per the recommendations of NTF.
 10. Industries will submit the target date to enhance the utilization of waste material by April, 2003.
 11. NCBM will carry out a study on hazardous waste utilization in cement kiln by December 2003.
 12. Cement industries will carry out feasibility study and submit target dates to CPCB for co-generation of power by July 2003.
- * Non complying units shall given bank guarantee to respective SPCBs.

3.0 CHLOR- ALKALI INDUSTRY

1. Complete recycling of mercury bearing effluent by December 2003.
2. Installation of continuous on-line mercury analyzer by June 2003.
3. Treatment of cell-room ventilation gas – limit for mercury not to exceed 1 gm/t of product by December 2005.
4. De-mercerisation of caustic soda & limit for mercury in caustic soda at 0.1 gm/of product by December 2004.
5. Reduction of mercury in H₂ gas at 0.5 gm/t by December 2004.
6. Installation of common full-fledged salt washery unit at source by Dec. 2003.
7. Capping existing completed disposal sites by June 2004 (Action plan to be submitted by June 2003).
8. Installation of mercury distillation units by June 2003.
9. Brine sludge treatment and water leachable mercury content in brine mud at < 0.1 mg/I before disposal in Secured Landfill.
10. Reduction of mercury consumption at < 50 gm/t of product by December 2005.
11. Total mercury release to environment at < 2.0 gm/t of product by December 2005.

12. The mercury cell plants will switch over to membrane cell technology in a time bound manner for which action plan will be prepared by respective plants within six months.
13. Industry to submit action plan covering the pollutional and safety aspects for Cl_2 handling to prevent any accident/ release of Cl_2 within three months.

4.0 COPPER INDUSTRY

1. To meet SO_2 emission limit (2kg/tonne of $\text{H}_2 \text{SO}_4$ produced). 50 mg / Nm^3 of acid mist by December 2005. Action plan to be submitted by July 2003.
2. SO_2 Emissions monitoring: Installation / Proper operation, maintenance and calibration of continuous SO_2 monitoring system by 30th June 2003.
3. Proper operation and maintenance of tailing dams.
4. Wastewater treatment and disposal: To achieve Zero discharge through 100 recycle reuse of treated wastewater by 31 st Dec. 2003.
5. House Keeping: To reduce the generation of fugitive dust from vehicle movement and improve overall house keeping by 31 st Dec. 2003.
6. Green Belt: To develop canopy based green belt around the periphery of plant and township as per CPCB guidelines.

5.0 DISTILLERIES

Existing Molasses – Based Distilleries will furnish bank guarantee and Action Plan to concerned State Board to ensure compliance with any combination of the following measures;

- I Compost making with press mud/agricultural residue/ Municipal Waste:
 - I Concentration and drying/ Incineration:
 - II treatment of spentwash through biomethanation followed by two stage secondary treatment and dilution of the treated effluent with

process water for irrigation as per norms prescribed by CPCB/MoEF.

- IV Treatment of spentwash through bio- machination following by secondary treatment (BOD < 2500 mg/I) for controlled discharge into sea through a proper submerged marine outfall at a point permitted by SPCB/CPCB in consultation with National Institute of Oceanography (NIO), so that Dissolved Oxygen in the mixing zone does not deplete, less than 4.0 mg/I.
- V. For taking decision on feasibility of one time controlled land application of treated effluent, a study will be under taken within three months.

The road map for utilization of spentwash by the distilleries to achieve zero discharge of spentwash in inland surface water courses will be as below:-

50% utilization of spentwash	- By March, 2004
75% utilization of spentwash	- By March, 2005
100% utilization of spentwash	- By December, 2005

The 100% utilization of spentwash is achieved, controlled and restricted discharge of treated effluent form lined lagoons during rainy season will be allowed by SPCB/CPCB in such a way that the perceptible colouring of river water bodies does not occur.

1. Monitoring Task Force consisting of CPCB, SPCB, Experts and industry shall be constituted for monitoring the implementation of action points.
2. New Distilleries & Expansion of Existing Distilleries (Mollasses based)
Proposal for Standalone new distilleries and expansion of exiting distilleries will out achieving zero discharge in surface water/ ground water will not be considered MoEF/ SPCB.

* to be decided by SPCB/ CPCB/ MoEF.

6.0 DYES & DYE INTERMEDIATES

Wastewater Management

1. Industry Associations will conduct feasibility study for adoptions of cleaner technologies for H- Acid manufacture (Catalytic hydrogenation and others) Within one year.
2. Industries will submit a proposal for recovery and purification by June 2003.
3. Dye intermediate industries will install salt recovery systems in case of sodium sulphate from dyestuff and reuse recovered salt in the process by December 2003.
4. An action plan for installation /up gradation of incineration systems as per CPCB guidelines to handle concentrated wastewater and reuse of treated weak wastewater will be submitted within six months.
5. Industry Associations will encourage waste exchange for proper use of weak acids. (Action within one year)
6. Wherever possible waste generated from one industry will be utilized by others (e.g use of effluent generated from Vinly Sulphone plant in H- Acid plant). Action plan in this regard will be submitted by April 2004.
7. Industries will regularly monitor ground water quality. This will be initiated immediately.
8. H- Acid industries will examine the feasibility to increases product yield form 1.09 to 1.86 for reducing iron sludge, within six months.
9. In case of dyestuff, wherever possible (to be decided by the task Force within six months), industries will use spray drying instead of salting to minimize load on Effluent Treatment Plants.
10. Industries will submit proposal on adoption of waste minimization practices by June 2003.
11. Existing standards will be reviewed in consultation with industries. Action in this regard will be taken within six months.

Air Pollution Management

1. Industries will minimize loss of volatile organics (solvent recovery of at lead either individually or collectively. An action plan will be submitted by June 2003.
2. Scrubbing systems for Sox and NOx emission will be upgraded by July 2003.

Solid Management

Proper on site storage facilities and final disposal of solid waste on secured landfill will be ensured immediately.

Better Management Practices

Improvement of house keeping such as concreting of floors, sealing of breaches/leakages in the system, replacement of corrosive pipenes, etc to prevent spillages, leakages, fugitive emissions will be done three months.

7.0 FERTILIZER INDUSTRY

Wastewater Management

1. Efforts will be made for conservation of water, particularly with a target to have consumption less than 8.12 and 15 m³ tonne of urea produced for plant based on gas, naphtha and fuel oil, respectively. In case of plants using Naptha and Gas both as feed stocks, water consumption target of less than 10m³/ tonne will be achieved. An action plan for this will be submitted by June 2003 and targets be achieved by March 2004.
2. Use of arsenic for CO₂ absorption in ammonia plants and chromate based chemicals for cooling system, which is still continuing in some industries, will be phased out and replaced with non- arsenic and non- chromate systems by December 2003. In this regard, action plan will be submitted by June 2003.
3. Adequate treatment for removal of oil, chromium (till non- chromate based cooling system is in place) and fluoride will be provided to meet the prescribed standards at the source (end respective process unit) itself. Action plan will be firmed up by June 2003 for compliance by March 2004.

4. Proper and complete nitrification and de-nitrification will be ensured wherever such process used for effluent treatment, by September 2003,
5. Ground water monitoring around the storage facilities and beyond the factory premises will be carried out at regular intervals particularly for pH. Fluoride CPCB will finalize the guidelines for groundwater monitoring by December 2003.
6. No effluent arising from process plants and associated facilities will be discharged to the storm water drain. The quality of storm water will be regularly monitored by all the industries.
7. The industries, where waste water/ effluent flows through the storm water drains even during the dry season will install continuous systems for monitoring the storm water quality for pH, ammonia and fluoride. If required, storm water will be routed through effluent treatment plant before discharging. An action plan will be submitted by June 2003 and necessary action will be taken by June 2004.

Air Pollution Management

- 1 All the upcoming urea plants will have urea prilling towers based on natural draft so as to minimize urea dust emissions.
2. The existing urea plants particularly, the plants having forced draft prilling towers will install appropriate systems (e.g. scrubber. etc.) for achieving existing norms of urea dust emissions. In this regard, industries will submit action plan by June 2003 and completion of necessary actions by June 2004.
3. The sulphuric acid plants having SCSA system will switch over to DCDA system by March 2004 to meet the emission standard for SO₂ as 2kg/tonne of H₂SO₄ produced. An action plan for this will be submitted by June 2003.
4. Sulphuric acid plants having DCDA system will improve the conversion and absorption efficiencies of the system as well as scrubbers to achieve SO₂ emission of 2kg tonne of acid produced in

- case of plants having capacity above 300 tpd and 2.5 kg tonne in case of plants having capacity upto 300tpd. An action plan will be submitted by June 2003 and emission levels will be complied with by September 2004.
5. Stack height for sulphuric acid plants will be provided as per the guidelines and on the basis of normal plant operations (and not when the scrubbers are in use)by June 2003. The scrubbed gases are to be letout at the same height of the stock.
 6. An action plan for providing proper dust control systems rock phosphare grinding unit in phosphoric acid plants/ single super phosphate plants, so as to achieve particulate emission of 150 mg/Nm³ will be submitted by September 2003 and complied with by March 2004.
 7. Particulate as well as gaseous fluoride will be monitored and adequate control systems will be installed by June 2004 to achieve the norms on total fluoride emissions (25 mg/Nm³).
 8. Continuous SO₂ emission monitoring systems will be installed in sulphuric acid plants (having capacity 200 tpd and above) by March 2004. Action plan for this will be submitted by June 2003.
 9. Regular monitoring of ambient air quality with regard to SO₂ NO_x, PM, SO₃, fluoride and acid mist will be carried out.

Solid Waste Management

1. Gypsum will be effectively managed by providing proper lining, dykes with approach roads and monitoring of groundwater quality around storage facilities. Accumulated gypsum will be properly capped. In this regard, action plan will be submitted by June 2003 and for compliance by December 2003.
2. An action plan for proper handling, storage and disposal of spent catalyst having toxic metals will be submitted by June 2003 and implemented by September 2003. The industry will also explore recovery/buy-back of spent catalyst by September 2003.

3. Carbon slurry, sulphurmuck and chalk will be properly managed and disposed of in properly designed landfill either within premises or in common facility. Action plan on this will be submitted by June 2003 and implemented by March 2004.
4. Existing stock of chromium and arsenic bearing sludge will be properly disposed by December 2003. industries will also explore recovery of chromium from the sludge. CPCB will provide guidelines for proper disposal of the sludge.

8.0 INTEGRATED IRON & STEEL INDUSTRY

1. Coke Oven Plants

- To meet the parameters PLD(% leaking colors), PLL (% leaking lids), PLO (% leaking off take), of the notified standards under EPA within three years by December 2005). Industry will submit time bound action plan and PER Chart along with the Bank Guarantee for the implementation or the time.
- To rebuild at least 40% of the coke oven batteries in next 10 years (by December 2012.).

2. Steel Melting Shop

- Fugitive emissions - To reduce 30% by March 2004 and 100% by March 2008 (including installation of secondary dedusting facilities).

3. Blast Furnace

- * Direct inject of reducing agents ----- by June 2013.

4. Solid Waste /Hazardous Waste Management

Utilization of Steel/ Melting shop (SMS)/ Blast Furnace (BF) Slag as per the following schedule:

- * By 2004 - 70%
- * By 2006 – 80% and
- * By 2007 – 100 %.

Hazardous Wastes

- Charge of tar sludge/ ETP sludge to Coke Oven by June 2003.

- Inventorization of the Hazardous waste as per Hazardous Waste (M& H), Rules, 1989 as amended in 2000 and implementation of the Rules by Dec. 2003.
(tar sludge, acid sludge, waste Lubricating oil and type fuel falls in the category of Hazardous waste).

5. **Water Conservation/ Water Pollution**

- To reduce specific water consumption to 5 m³/t for long products and 8 m³/t for flat products by December 2005.
 - To operate the Co-BP effluent treatment plant efficiently to achieve the notified effluent discharge standards. – by June 2003.
6. Installation of Continuous stack monitoring system & its calibration in major stacks and setting up of the online ambient air quality monitoring stations by June 2005.
7. To operate the existing pollution control equipment efficiently and to keep proper record of run hours, failure time and efficiency with immediate effect. Compliance report in this regard be submitted to CPCB/SPCB every three months.
8. To implement the recommendations of Life Cycle Assessment (LCA) study sponsored by MoEF by December 2003.
9. The industry will initiate the steps to adopt the following clean technologies measures to improve the performance of industry towards production, energy land environment.
- Energy recovery of top Blast Furnace (BF) gas.
 - Use of Tar- free runner linings.
 - De- dusting of Cast house at tap holes, runners, skimmers ladle and charging points.
 - Suppression of fugitive emissions using nitrogen gas or other inert gas

- To study the possibility of slag and fly ash transportation back to the abandoned mines, to the abandoned mines, to fill up the cavities through empty railway wagons while they return back to the mines and its implementation.
- Processing of the waste containing flux & ferrous wastes through waste recycling plant.
- To implement rainwater harvesting
- Reduction Green House Gases by :
 - * Reduction in power consumption
 - * Use of by –products gases for power generation
 - * Promotion of Energy Optimisation technology including energy/ audit
- To set targets for Resource Conservation such as Raw material, energy and water consumption to match International Standards.
- Up- gradation in the monitoring and analysis facilities for air and water pollution. Also to impart elaborate training to the manpower so that realistic data is obtained in the environmental monitoring laboratories.
- To Improve overall house keeping.

10. Sponge Iron Plants

Inventorisation of sponge iron plants to be completed by SPCBs/CPCE by June 2003 and units will be asked to install proper air pollution control equipment by December 2003 to control primary and secondary emissions.

As per rebuilding schedule submitted to CPCB/MoEF.

9.0 OIL REFINERIES

Air Pollution Management

1. All the refineries located in the critically pollution areas, identified by CPCB, will submit an action plan (within six months) for phase wise reduction of SO₂ emission from the present level.

2. Future refineries will have Sulphur Recovery Unit (SRU) with minimum 99% efficiency.
3. To enhance the efficiency of SRUs in the existing refineries, an expert committee will be constituted to look into various aspects and suggest a road map within six months.
4. With regard to NO_x emission, the new refineries/process units will install low NO_x burners. For retrofitting of low NO_x burners in existing units, the expert committees will suggest the strategies and action plan within six months including NO_x standard.
5. The flare losses will be minimized and monitored regularly.
6. Refineries will install continuous emission monitoring systems for SO_x and NO_x in major stacks with proper calibration facilities. Action plan for this will be submitted within six months.
7. Refineries will also monitor total HO and Benzene in the premises (particularly at loading –loading operations and ETP). The status and action plan will be submitted within six months.

The expert committee will also suggest an action plan, within six months, for contract and monitoring of hydrocarbon loss & VOC emissions. leak detection and repa (LDAR) programme and vapour recovery systems (for loading & unloading operations within refineries only).

Wastewater management

1. Refineries will prepare action plan for conservation of water resources and maximized reuse recycling treated effluent within six months. The treated effluent discharge quantity (excluding once through cooling water) will be limited to 0.4 m³/per tonne (for 90% of time) except for the monsoon season.
2. Oil spill response facilities at coastal refineries will be in position within two years. To facilitate this MoEF will coordinate with Coast Guards. Port Trust and departments.

Solid Waste Management

1. Refineries will explore new technologies for reduction in the generations of oils sludge Strategy and action plan for liquidation of existing sludge will be submitted within six months
2. The petroleum coke having high sulphur content will be sold to /reused by organized industries (having consent from SPCBs), which have systems to control SO₂ emissions. This will be ensured by June 2003.

10.0 PESTICIDES INDUSTRY

1. Segregation waste streams

Waste streams should be segregated into COD waste, toxic waste, low OCD waste, inorganic waste etc, for the purpose of providing appropriate treatment- Implementation June 2003 and action plan to be submitted to SPCB immediately.

2. Detoxification and treatment of high COD waste streams

Streams should be detoxified and treated in CTP or thermally destroyed in incinerator, as per CPCB guidelines. The waste streams should be treated suitably before taking to evaporation ponds. Implementation by June 2004 and action plan to be submitted to SPCB by June 2003.

3. Improvement in solvent recovery

- a) Solvent recovery should be improved and attempts be made to achieve atleast 90% recovery wherever possible- Implementation by Dec. 2003 and action plan to be submitted to SPCB by June 2003.
- b) Rest of the solvents which can not be recovered shall be incinerated .

5. Hazardous air pollutant control

- (a) For air pollution control from processes, scrubber efficiency will be improved and maintained as per the best practicable

technology for control of HCl, Cl. Methyl Chloride, Phosphorus Pentoxide, Ammonia, H₂S and volatile organic carbons (VOCs)- Implementation by December 2003 and action plan to be submitted to SPCB by June 2003.

(b) An incinerator will be installed, where necessary – Implementation by December 2004 and action plan to be submitted to SPCB by June 2003.

6. Control of fugitive emissions/ VOCs

For control of fugitive emissions (particularly) for hazardous air pollutions). The industries will adopt standard engineering practices. System of leak detection and repair (LDAR) programme especially for solvents, should be developed industries- implementation by March-2004 and action plan to be submitted to SPCB by June 2003.

7. Up- gradation of incinerators

Incinerators will be upgraded to meet CPCB norms hazardous waste incinerators. This is necessary for Halogenated compound and POPs – Implementation target will be decided on the basis of action plan submitted by individual industries by June 2003.

8. Replacement of Bio Assay test by toxicity Factor

The present bio-assay test will be replaced by Toxicity Factor test method developed by CPCB. Toxicity factor of four (TF-4) will be achieved by December 2003 and industries will improve their system to achieve TF-2 by, July 2006. TF test method will be implemented by SPCBs/CPCB/ MoEF- Submission of action plan by June 2003. The Central Pollution Board will organize work – shops on “Toxicity Factor” for industry.

9. Minimum scale of production to afford cost of pollution load.

To be decided, as industries view point is that this can not be done as few products are costly and made in small volume. The matter will be studied in detail by MoEF/ CPCB.

10. Non- complying Units (as identified by SPCB) should meet the notified standards by December 2003- Bank guarantee to be submitted to SPCB by Non- complying units by June 2003.

The submissions from pesticides industry regarding speedy clearance and other will be considered by MoEF/ CPCB for examination.

11.0 PETROCHEMICALS

1. Adoption of state-of- art technology

State of Art technology will be adopted for both process technology as well sound engineering practices required for control of emission, at the stage of design itself in case of new plants

2. Management of storm water

For the storm water generated from process area and tank farm area during initial hours of rain. An arrangement will be made for collection and oil separation including further treatment as required. Such arrangement will include provision for buffer tank (holding tank) and monitoring of effluent quality. This will be accomplished by June 2003.

3. Effective detoxification and waste water treatment scheme.

In order to control high COD and persistent organic pollution including toxic constituents, the industry will select appropriate unit operations for pre-treatment of effluent within inside battery limit (ISBL) before sending to the biological treatment systems for better functioning of ETPs. Action plan for the same will be submitted within 6 months and implemented within one year (March, 2004)

4. Control of emission from combustion

The industry will submit an action plan within six months for improving thermal efficiency and control of NOx.

5. Proper functioning of point source emission control systems

The industry will make efforts for proper operation of pollution control system (mostly scrubbers) and attainment of desired efficiency within six months. The will include backup of power

supply to the control equipment and arrangement for frequent sampling and analysis of all critical pollution in the tall gases.

6. Leak detection and repair (LDAR) programme

As a good operating, the industry will adopt periodically leak detection and repair (LDAR) programme to check fugitive emissions within six months. The frequency of the programme will be proportionate to the risk potential of carrying fluid. Based on leak detection as per LDAR programme, action will be taken to eliminate fugitive emissions. this will be a continuous activity.

7. Handling of halogenated organics

The industry will submit an action plan within 6 months to ensure that no halogenated organics is sent to the flares in order to avoid formation of persistent organic pollutants. All HAPs had halongenated organics will be routed to the incineration system having end- on -pollution control facility.

8. Control of fugitive emissions of carcinogenic compounds

Fugitive emissions of carcinogenic compounds (e.g Benzene) will be controlled by closed vapor collection and recovery system. Measures will be taken to monitor health of the work

9. Management of solid waste

Proper facilities will be provided for handling and storage of hazardous waste with manifest system in case transported to other places. For incinerable waste, properly designed incinerator will be installed within the premises or as a common facility. The non-incinerable hazardous waste should be disposed of in a secure-land fill.

10. Proper operation of incinerator

Industry will check the design and will adopt sound engineering practices for proper operation of incinerators. Continuous monitoring will be done for operational parameters and specific

parameters in tail gas to ensure the efficient functioning. This will be implemented within 3 months.

11. Optimising the inventory of hazardous chemicals

Efforts will be made to optimize the inventory, particularly of hazardous chemicals. Such information will be made available to the Regulatory Agencies (SPCBs). Inspector of Factory & District Collector.

12. Self - regulation by industry through monitoring and environmental auditing.

Industry will go for self -assessment and regulation by conducting environmental auditing regularly, besides having regular monitoring of pollutants in air emission, liquid effluent and receiving environment.

13. Organizational restructuring and accreditation of environmental manager of industry

For self-evaluation, organizational restructuring will be done and the environmental manager of the industry will be accredited to bring professionalism in environmental management.

12.0 PHARMACEUTICALS

1. Segregation of waste streams

Waste streams should be segregated into high COD waste toxic waste, low COD waste, inorganic waste etc, for the purpose of providing appropriate treatment. Implementation by December, 31, 2003 and action plan to be submitted to SPCB by June 30, 2003.

2. Detoxification and treatment of high COD waste streams

High COD streams should be detoxified and treated in XTP or thermally destroyed in incinerator - Implementation by March 2004 and action plan to be submitted to SPCB by June 2003.

3. Management of solid waste

Proper facilities should be provided for handling and storage of hazardous waste. For final disposal of hazardous waste, recycling and reuse should be given priority, either within the premises or

outside with proper manifest system. In case of incinerable waste, property designed incinerator should be installed within the premises or outside as a common facility. The non-incinerable hazardous waste should be disposed of in properly designed secure-landfill either within the industry's premises or in a common facility-implementation by march 2004 and action plan to be submitted to SPCB by June 2003.

4. **Minimum scale of production to afford cost of pollution control**
For new industries which are not connected with CETP & TSDF and which do not have the economics to install treatment facilities may not be considered for granting consent to establishment. Industry association shall submit proposal to SPCB/CPCB – implementation by December 31, 2003 and action plan to be submitted to SPCB by June 30, 2003.
5. **Long term strategies for reduction in waste**
Consent for establishment and consent for operation under the Water Act will be based on pollution load and concentration of pollutants. Each industry will submit pollution load, concentration of final discharge alongwith water balance to SPCB/CPCB for formulation of strategy – action plan to be submitted to SPCB by June 30, 2003.
6. **Control of air pollution**
Industry will take up in priority the control of hardous air pollutants (such as benzene carbon tetrachloride 1-4 diocane, methanol, toluene, methyl chloride etc). and odorous compounds (mecapatan & hydrogen sulphide) – Implementation by Dec. 2004 and action plan to be submitted to SPCB by June 2003.
7. **Self – regulation by Industry through regular monitoring and environmental auditing**
Industries on their will carry out monitoring environmental parameters, audit it at regular interval and submit the same to SPCB- Implementation by June 2003.

Comment of BDMA- There shall be a policy for accrediting the auditors and the policy guidelines may be issued by MoEF.

8. Organisational restructuring and accreditation of Environmental Manager of Industry

- (a) Environment management cell will be created for each industry reporting to CEO directly- Implementation by June 2003.
- (b) There should be a certification system for the environmental managers at individual level and common facility level. BDMA may 2003 the programme along with SPCB/ CPCB Implementation by March 31, 2000 and action plan to be submitted to SPCB by July 2003.

9. Optimizing the inventory of hazardous chemicals

The Information shall be submitted to SPCB regularly alongwith rational- action plan to be submitted to SPCB by May 31, 2003.

13.0 PULP & PAPER INDUSTRY

Large Pulp and Paper	Implementation Schedule
Discharge of AOX kg/tonne of paper	AOX 1.5 kg/tonne of paper within 2 years AOX 1.0 kg/ tonne of paper in 5 years
Installation of lime kiln	Within 4 years
Wastewater discharge cum/tonne of paper	Less than 140* cum/tonne of paper within 2 years Less than 120 cum/tonne in 4 years for units installed before 1992 Less than 100m ³ / tonne of paper per units installed after 1992.
Colour control by burning the reduced sulfur emissions in the boiler/lime-kiln	Installation of odour control system within 4 years.
Utilization of treated effluent for irrigation	Utilization of treated effluent for irrigation wherever possible
Colour removal from the effluent	Indian Paper Manufactures Association to take up project with Central Pulp & Paper Research Institute
Small Pulp and Paper	

Compliance of standard of BOD, COD & AOX	Recovery of chemicals by installation of Chemical recovery plant or utilization of black liquor with no discharge from pulp mill within 3 years OR Shift to waste paper
Upgradation of ETPs so as to meet discharge standards	ETPs to be upgraded within 1 year so as to meet discharge standards.
Waste water discharge/ tonne of paper	Less than 150 cum/tonne of paper within 3 years
Utilization of treated effluent for irrigation	Utilization of treated effluent for irrigation wherever possible
Colour removal from the effluent	Indian Agro and Recycled Paper Manufacturers Association to take up project with CPPRI.

Note:- Non-complying units not meeting notified standards under Environment (Protection) Act.1986 will submit action plan with PERT Chart along with bank guarantee to SPCBs by June30,2003.

14.0 SUGAR INDUSTRY

1. Waste Water Management

- Operation of ETP shall be started atleast one month before starting of cane crushing to achieve desired MLSS so as to meet the prescribed standards from day one of the operation of mill.
- Reduce wastewater generation to 100 litres per tonne of cane by April 2004.
- To achieve zero discharge in inland surface water bodies by December 2004.
- To provide 15 days storage capacity for treated effluent to take care of no demand for irrigation by April 2004.

2. Emission Control

To install ESP/bag filter /high efficiency scrubber to comply with standards for particulate matter emission to < 150 mg/Nm³ by April 2004.

15.0 TANNERY

- (i) All the chrome tanning units in the country will have the Chrome Recovery Plant either on individual basis or on collective basis in the form of Common Chrome Recovery Plant and use the recovered chrome in the tanning process by December 2005.
- (ii) Common Chrome Recovery Plant is to be installed and commissioned at Kanpur by December 2004 for which the Feasibility Report has already been prepared. All the chrome tanning units will make their financial contribution to the extent of 10% by June 2003.
- (iii) Recovered Chromium is to be utilized in tanning process by December 2004.

2. Waste Minimization Measures

- (i) Waste minimization circles will be formed in all the clusters of tanneries in the country to implement waste minimization measures and for adoption of clean technologies by March 2004.
- (ii) Waste minimization measures as identified by the Task Force to be implemented in all the tanneries by December 2005.

3. Reduction of Water Consumption in Tannery Units

- (i) All the tanneries will install waste meters and flow meters to measure actual consumption and waste water discharge by December 2003.
- (ii) Waste consumption rates will be brought down to 28m³ /tonne of hides by taking water conservation measures by December 2003.

4. Compliance of Standards

All CETPs and ETPs will take the following measures

- (i) Deployment of qualified and well trained

6. **Solid Waste Management**

For solid waste management, the following methods will be adopted.

- (i) Utilization of Process sludge for by – product recovery. By December 2004.
- (ii) Resource Recovery from process sludge and ETP sludge in the form of Biogas. By : December 2004.
- (iii) Safe disposal hazardous sludge and non- hazardous solid wastes. By: December 2005.

7. **Salt from Solar Evaporation**

The following methods will be adopted depending on the site specific conditions:

- (i) The following methods will be adopted depending on the site specific conditions:
- (ii) Safe land disposal or Sea disposal wherever required.

8. Use of Boron bearing compounds will be dispensed with By : December 2003.

9. Ground water quality monitoring to be strengthened wherever the treated effluents are applied on land for irrigation. By : December 2004.

10. The implementation of recommendations of the Task Force constituted by the Ministry of Environment & Forests, Govt. of India Will commenced by June 2003.

Note:- Non complying units not meeting notified standards under Environment (Protection), 1981 will submit action plan with PERT Chart alongwith Bank Guarantee to SPCB by June 30, 2003.

16.0 THERMAL POWER PLANTS

1. Implementation of Environmental Standards (emission & effluent) in non-compliant* Power Plants (31 & 27)
 - Submission of action plan : June 30, 2003
 - Placement of order for Pollution of control equipment : September, 2003
 - Installation & commission : December 31, 2005.
2. For existing thermal power plants, a feasibility study shall be carried out by Central Electricity Authority (CEA) to examine possibility to reduce the particulate matter emissions to 100 mg/Nm³. The studies shall also suggest the road map to meet 100 mg/Nm³. The studies shall also suggest the road map to meet 100 mg/Nm³ wherever found feasible. CEA shall submit the report by March 2004.
3. New / expansion power projects to be accorded environmental clearance on or after 1.4.1.2003 shall meet the limit of 100 mg/Nm³ for particulate matter.
4. Development of SO₂ & NO_x emission standards for coal based plants by December 2003.
 - New/ expansion power projects shall meet the limit of SO₂ & NO_x w.e.f. 1.1.2005.
 - Existing power plants shall meet the limit of SO₂ & NO_x w.e.f. 1.1.2006.
5. Install/activate opacity meters/ continuous monitoring system in all the units by December 31, 2004 with proper calibration system.
6. Development of guidelines/ standards for mercury and other toxic heavy metals emissions by December 2003.
7. Review of stack height requirement and guidelines for power plants based on micro meteorological data by June 2003.
8. Implementation of use of beneficiated coal as per GOI Notification:

Power plants will sign fuel supply agreement (FSA) to meet the requirement as per the matrix prepared by CEA for compliance of the notification as short term measure.

Options/mechanism for setting up of coal washeries as a long term measure

- * Coal India will up its own washery
 - * State Electricity Board to set up its own washery
 - * Coal India to ask private entrepreneurs to set up washeries for CIL and taking washing charges
 - * SEBs to select a private entrepreneur to set up a washery near pit-head installation of coal beneficiation plant
9. Power plants will indicate their requirement of abandoned coal mines for ash disposal & Coal India/ MOC shall provide the list of abandoned mines by June 2003 to CEA.
 10. Power plants will provide dry ash to the users outside the premises or uninterrupted access to the users within six months.
 11. Power Plants should provide dry flyash free of cost to the users.
 12. State P.W.Ds/ construction & development agencies shall also adhere to the specifications/Schedules of CPWD for ash based products utilization MoEF will take up the matter with State Governments.
 - 13 (i) New plants to be accorded environmental clearance on or after 1.04.2003 shall adopt dry flyash extraction or dry disposal system or Medium (35-40%) ash concentration slurry disposal system or Lean phase with hundred percent ash water re-circulation system depending upon site specific environmental situation.
 - (ii) Existing plants shall adopt any of the systems mentioned in 13 (i) by December 2004.
 14. Flyash Mission shall prepare guidelines/manuals for flyash utilization by March 2004.

15. New plants shall promote adoption of clean coal and clean power generation technologies

* Units will submit bank guarantee to respective SPCB

17.0 ZINC INDUSTRY

1. Meeting SO₂ emission limit (2kg/tonne of H₂ SO₄ produced), 50 mg/Nm³ of acid mist by Dec 2006. Action plan to be submitted by July 2003.
2. SO₂ Emissions monitoring – Installation/ Proper operation, maintenance and calibration of continuous SO₂ monitoring system by 30th September 2003.
3. Solid and Hazardous Waste disposal: Construction of secured landfill for disposal of hazardous waste such a Jerosite cake, ETP cake and spent catalyst as per CPCB guidelines by 30 th June 2003.
4. Wastewater treatment and disposal: To achieve Zero discharge through 100% recycle/ reuse of treated wastewater by 31 st December 2004.
5. House Keeping: To reduce the generation of fugitive dust from vehicle movement and improve overall house keeping – by 31st December 2003.
6. Green Belt: To develop canopy based green belt around the periphery of plant and township as per CPCB Guidelines