

Pollution Control Implementation Division - I

IMPORTANT PROJECTS:

Some of the important projects taken up by the Division are as follow:

PREPARATION OF NATIONAL CHEMICAL MANAGEMENT PROFILE (NCMP) TO ASSESS THE INFRASTRUCTURE FOR MANAGEMENT OF CHEMICALS

It is widely recognized internationally that chemicals need to be managed properly in order to achieve a sustainable economic development and to attain a high level of environmental and human health protection. An important initial step in strengthening systems for risk reduction and management of chemicals is the preparation of a comprehensive assessment of the national infrastructure relating to the legal, institutional, administrative and technical aspects of chemicals management, along with an understanding of the nature and extent of chemicals availability and use throughout their life cycle in the country.

National Chemicals Management Profile (NCMP) is being prepared through a stakeholder consultation process under the auspices of the Canada-India Environmental Institutional Strengthening Project ([CI-EISP](#)). It will help assess the national infrastructure for the management of chemicals in the country to identify the gaps for capacity building and priority areas of concern to improve chemicals management. The Objective of the National Profile is to provide an assessment of the infrastructure in India for sound management of chemicals, to identify the gaps where capacity needs strengthening, and to define priorities for action

The key principle of preparing a Profile is the involvement of all concerned parties (a multi-stakeholder process) in a country driven process. To ensure a broad stakeholder involvement a National Coordinating Committee (NCC) has been constituted to oversee the preparation of the Profile and guarantee the full participation and contribution of interested parties.

Three Working Groups (Legal, Technical and Infrastructure) have also been established to guide the preparation of the data inputs and make the initial assessment and analysis of the available information. Technical Assistance from UNITAR through two Indian consultants was made available, for preparation of Chemical Profile, under the guidance of three Working Groups.

To obtain the views of stack holders such as SPCBs, Chief Inspectors of Factories, Industrial Associations and NGOs concerned with subject, on draft document prepared, two regional workshops were organised, (one at Delhi and other at Mumbai). The draft document prepared is available on website (www.ncmpindia.com), which is to be considered for finalisation as publication of a first version of the National Profile to meet the requirements. The website is facilitated with an interactive forum for the users to share their views on various components of the profile.

The final document has been forwarded to MoEF for their concurrence for publishing.

Project on “Study on Environmental Contamination with Polychlorinated Dioxins viz. Tcdds”

Polychlorinated dibenzo-p-dioxins (PCDDs) and poly-chlorinated dibenzofurans (PCDFs) are created inadvertently by a host of industrial activities in which chlorine based compounds are exposed to a high heat in the presence of organic material. These are highly stable and known carcinogenic. The exposure to these contaminants results in adverse health effects in human and animals like liver necrosis, and neurobehavioral changes, skin lesions, reproductive etc.

Central Pollution Control Board sponsored a project to M/s National Environmental Engineering Research Institute (NEERI), Nagpur, to assess the presence of said chemicals in wastewater, solid waste from Pulp & paper mills, PVC industries, incinerators, and crematorium. The salient findings from pulp & paper mill are as follows:

The quantitative and qualitative identification of 2,3,7,8-TCDD, dioxin congeners and precursors contamination

were studied for the samples collected from pulp and paper industries.

Analysis Results of 2,3,7,8-TCDD contaminations

S. No.	Industry /Type of Bleaching	Sampling location	Concentration (ngg-1 or ngL-1)
i	Industry I(1st set)/Chlorine & Chlorine dioxide bleaching	Final treated effluent	0.12
ii	Industry I (2nd set)/Chlorine & Chlorine dioxide bleaching -DO-	Secondary Treated Effluent	0.06
		Primary Clarifier Effluent	0.10
iii	Industry II/ Elemental Chlorine bleaching	Bleached pulp	0.01

It is pertinent to mention that there are units, although using elemental chlorine for bleaching there was no report of 2,3,7,8 TCDD. However, dioxins & furan congeners presents at both inlet and outlet of ETP, ETP sludge and ash from boiler.

In case of unit using elemental chlorine and chlorine dioxide both for bleaching, where occasional peak of PCBs are there but TCDD, dioxins & furan congeners were absent. Presence of chlorinated compounds has not been observed in unit using only chlorine dioxide.

Under such circumstances, if any one attempt to conclude, the result indicate presence of TCDD, PCBs in case of elemental chlorine bleaching or bleaching with elemental chlorine and chlorine dioxide mixture, but there is no presence of chlorinated compounds in case of exclusively chlorine dioxide bleaching. It means chlorine dioxide bleaching is safer than elemental chlorine bleaching.

PROJECT ON DEVELOPMENT OF TECHNOLOGIES FOR POLLUTION CONTROL ON SELECTED DRUGS MANUFACTURING UNITS – PARACETAMOL - A CASE STUDY

Paracetamol is an important drug manufactured in India and is being used as an analgesic and antipyretic drug. This is reserved for small sector in India and more than 60 manufacturers produce this drug. Nearly 75% of the manufacturers were located in Andhra Pradesh and Gujarat, having 60% of total capacity of Paracetamol in India. In year 2003-04, the actual production was 14,700Tonnes /Year against the installed capacity 20,000 tonnes/year.

Paracetamol is produced from para nitro phenol using iron-acid for hydrogenation. As a result huge amount of hazardous waste is generated with high organic impurities and difficult to dispose of. Since, the scale of operation is very small and it will be very difficult for them to dispose even in common hazardous waste disposal sites, it will be worthwhile to employ catalytic hydrogenation or any other cleaner technology options so that the effluent/emission/hazardous waste generation can be eliminated. With in this backdrop, Central Pollution Control Board sponsored a project to M/s National Chemical Laboratory (NCL), Pune, to develop cleaner technology i.e. replacement of chemical reduction process by Iron sludge.

The objective of the study is to develop a cleaner production process for manufacturing of paracetamol and improvement in the efficiency of production & cost reduction and waste minimisation. The salient findings of the study are as follows:

There are four routes available for production of paracetamol, which are as follows:

- Phenol Route
- p-nitrochlorobenzene route
- 4-hydroxyacetophenone route
- Nitrobenzene route
- Out of four processes, p-nitrochlorobenzene route is more popular as the same is less costly and technology is well accustomed in India. NCL has, therefore, decided to upgrade this technology.
- The study brought out following modifications in the existing process route:

- Replacement of iron-acid reduction by catalytic hydrogenation to eliminate generation of iron sludge;
- Stepwise catalytic hydrogenation and acetylation to eliminate use of acids;
- Addition of borate in hydrolysis step to reduce undesirable by products, and load on effluent treatment and to improve purity of product; and
- Use of activated carbon pre-treatment with sulphite solution.

Development/review of effluent & emission standards for oil refineries

Standards for discharge of effluent and emissions from oil refineries were notified under Environment (Protection) Act in the years 1986 and 1990 respectively. These standards are same for old & new refineries and consider few parameters only. Besides, many developments have taken place in the technologies for oil refining process and pollution control in this sector, particularly, during last one decade. New process units are also being added to meet the improved fuel quality standards, required for reducing vehicular pollution that is of concern in urban centers.

Draft revised standards have been discussed in the Peer & Core Committee and after approval of the Board; the same has been forwarded to MoEF for consideration and notification.

Development/review of effluent & emission standards for fertilizer industries

Standards for discharge of effluent and emissions from fertilizer industries were notified under the Environment (Protection) Act, 1986 in the years 1986 and 1989 respectively. Since then, many developments in respect of process/pollution control technologies and waste minimization & better management practices have taken place. In view of this, revision of standards was taken up. Necessary studies required for this have been completed and new standards are under finalization.

Revision of emission standards for sulphuric acid plants

Sulphuric acid (H₂SO₄) plants emit oxides of sulphur and acid mist in the atmosphere. Presently, emission limits are prescribed as 4.0 kg/tonne of concentrated (100%) acid produced for SO_x and 50 mg/nm³ for acid mist. In recent years some large sulphuric acid plants have been established which require further reduction in emissions of these pollutants. In addition, improved process & pollution control technologies are also available. Therefore, a project was taken up to study the possibilities of technology up-gradation in existing sulphuric acid plants and use of improved technology in new plants so as to reduce and control oxides of sulphur & acid mist emissions.

Draft revised standards have been discussed in the Peer & Core Committee and after approval of the Board; the same has been forwarded to MoEF for consideration and notification.

Status and prospects of natural dyes in India

In the recent years, there has been more focus on use of natural dyes due to ecological and environmental problems related to the use of synthetic dyes. Moreover, many synthetic dyes have been found to be potentially carcinogenic. Although, natural dyes are manufactured through eco-friendly processes based on abundantly available natural products like plants, animals and minerals, many textile manufacturers have not yet seen an incentive to switch to natural dyes, which are more expensive than synthetic ones. The technology of utilizing natural dyes in the modern clothing industry is also relatively new and is still being improved upon.

A study has been carried out to bring out the status of natural dyes in India and, its technology, standards, market prospects both domestic and international as well as policy support required for promoting these eco-friendly products. Further, the study may help in identifying the harmful synthetic dyes that could be substituted by natural dyes. Final report of the study is under preparation.

Review of Ambient Air Quality Criteria/Standards

The Central Pollution Control Board has notified ambient air quality standards (AAQS) for various pollutants. The first set of AAQS was adopted in 1982. Subsequently, the revised standards were notified in the year 1994 and the standards for Ammonia were included in the year 1998. These standards need review, particularly with regard to the criteria for setting the standards e.g. existing land use based standards, inclusion of new parameters (e.g.

Volatile Organic Compounds (VOCs), Benzene Soluble Fractions (BSF) for particulates, Formaldehyde, Benzene, Poly-aromatic Hydrocarbons (PAH), Arsenic, Nickel, Mercury and Vanadium), prescribing short and long-term limiting values considering health impacts, monitoring protocol, etc. CPCB initiated a project on 'Review of ambient air quality criteria/standards'. Studies are in progress.

Review of effluent standards and development of emission standards for dyes and dye intermediate industries

Existing standards were developed almost 20 years back and since then many developments have taken place in process and pollution control technologies. There is a need for study on the present status of pollution control, review the existing standards and develop the new sets of standards/guidelines for management of emission, effluent and solid waste in dyes & dye intermediates industries. The project work is under progress.