

**1. Chemicals Management in Pakistan:
Need for Integrated, programmatic, Holistic Systems Approach**
Paper by
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Chemicals Management in Pakistan: Need for Integrated, programmatic, Holistic Systems Approach

Pakistan Basic Facts

1. **Location:** Southern Asia, bordering the Arabian Sea, between India on the East and Iran and Afghanistan on the West and China in the North.
2. **Geographic Coordinates:** 30 00 N, 70 00 E
3. **Area**
Total: 803, 940 sq km
Land: 778, 720 sq km
Water 25, 220 sq km
4. **Population:** 141,553,775 (July 2000 est.)
5. **Literacy:**
Definition: Age 15 and over can read and write
Total population: 37.8%
6. **Land use:**
Arable land: 27%
Permanent crops: 1%
Permanent pastures: 6%
Forests and woodland : 5%
Other : 61% (1993 est.)
7. **Irrigated Land:** 171, 100 sq km (1993 est.)

Environment – international agreements:

Party to: Biodiversity, Climate Change, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Wetlands, Stockholm Convention signed, but not ratified: Marine Life Conservation

Environmental Panorama of Pakistan

Pakistan is a beautiful country of South Asia having rich cultural and historical heritage. The great plains in the East and grand mountains in the North and Northwest have nurtured great ancient civilizations. The 8,611 m high k2 (Mt. Godwin – Austin) attracts tourists and adventurers from whole over the world. However, Pakistan is a young developing country and requires all out efforts for development. Sincere efforts have been made for development of agriculture and industrial sectors in the country. In less than six decades of its existence the country has achieved remarkable economic growth and has emerged as an important actor in the global economy. However, in our zeal for development we have badly undermined the environment and degraded our natural beauty. High growth rate of over 2% of 141 million population coupled with high “development” tempo has adversely effected the very objectives of development e.g societal uplift, raised standards of living of their populace and poverty irradiation, cultural revival etc. Agricultural runoff exacerbated by ongoing deforestation and industrial run off have polluted water supplies; factory and vehicle emissions have degraded air quality. Pakistan currently spends about \$17 million per year on pollution – related clean up; however, atleast \$84 million is needed to correct

country's environmental problems. It is estimated that \$1.8 billion per year are lost due to environmental damage.

Safe guarding public health as well as preserving Pakistan's natural wonders has made environmental protection increasingly important for Pakistan in particular and global community in general. Government of Pakistan is making concerted efforts to combat the menace of environmental pollution. However, these efforts are severely handicapped by capacity and resource limitations. International support and instruments like Basel Convention, Stockholm Convention and Rotterdam Convention have given impetus to environment – protection and sound chemicals management drives.

Chemicals Management Framework in Pakistan

The approach taken for the protection of the environment in Pakistan is laid down in the Environmental Conservation Strategy of 1992 and its review in 2000. For specific rules and regulations, "The Environmental Protection Act" was enacted in 1997 and it provides the backbone and framework for environmental legislation in Pakistan. This act establishes the Pakistan Environmental Protection Council, the highest decision making body in environmental issues, the Pakistan Environmental protection Agency (Pak EPA) and Environmental Tribunals.

The Pakistan Environmental Protection Council (PEPC) shall, among other duties, co-ordinate and approve comprehensive national environmental polices and approve National Environmental Quality Standards.

The act further defines the functions of institutions, providing a broad mandate to for enacting rules, procedures and technical standards in different areas of environmental protection. The Act requires Pak EPA to co-ordinate environmental policies and programmes nationally and internationally, initiate legislation, establish surveys, manage monitoring and auditing schemes, promote research as well as education and awareness in the field of the environment.

The Environmental Protection Act does further require the provincial authorities to establish Provincial Environmental Protection Agencies for carrying out functions delegated to the provinces.

The Government of Pakistan has recently elaborated its further action in-line with the finding of the review of the National Conservation Strategy in the form of the National Environmental Action Plan, NEAP (as approved by PEPC in 2001). The Government of Pakistan has, with assistance from UNDP, embarked on a major programme in support of the NEAP. The NEAP-support Programme has sub-programmes in the areas of policy Co-ordination and Environmental Governance, and Pollution Control. POPs Enabling Activity Project of Pak-EPA has been launched in collaboration with UNDP and GEF. UNITAR is providing technical assistance and international coordination for the project.

Pakistan ratified the Basel Convention on Trans boundary Movements of Hazardous Waste and their Disposal in 1994 and is a signatory to the Rotterdam Convention (1997) for the Prior informed Consent (PIC) procedure for Banned or Restricted Chemicals in International Trade. Pakistan has also signed Stockholm Convention in 2001 and ratification of the SC is currently under consideration.

Pakistan has developed a National Profile for chemicals, published in October 2000, with the assistance of UNITAR.

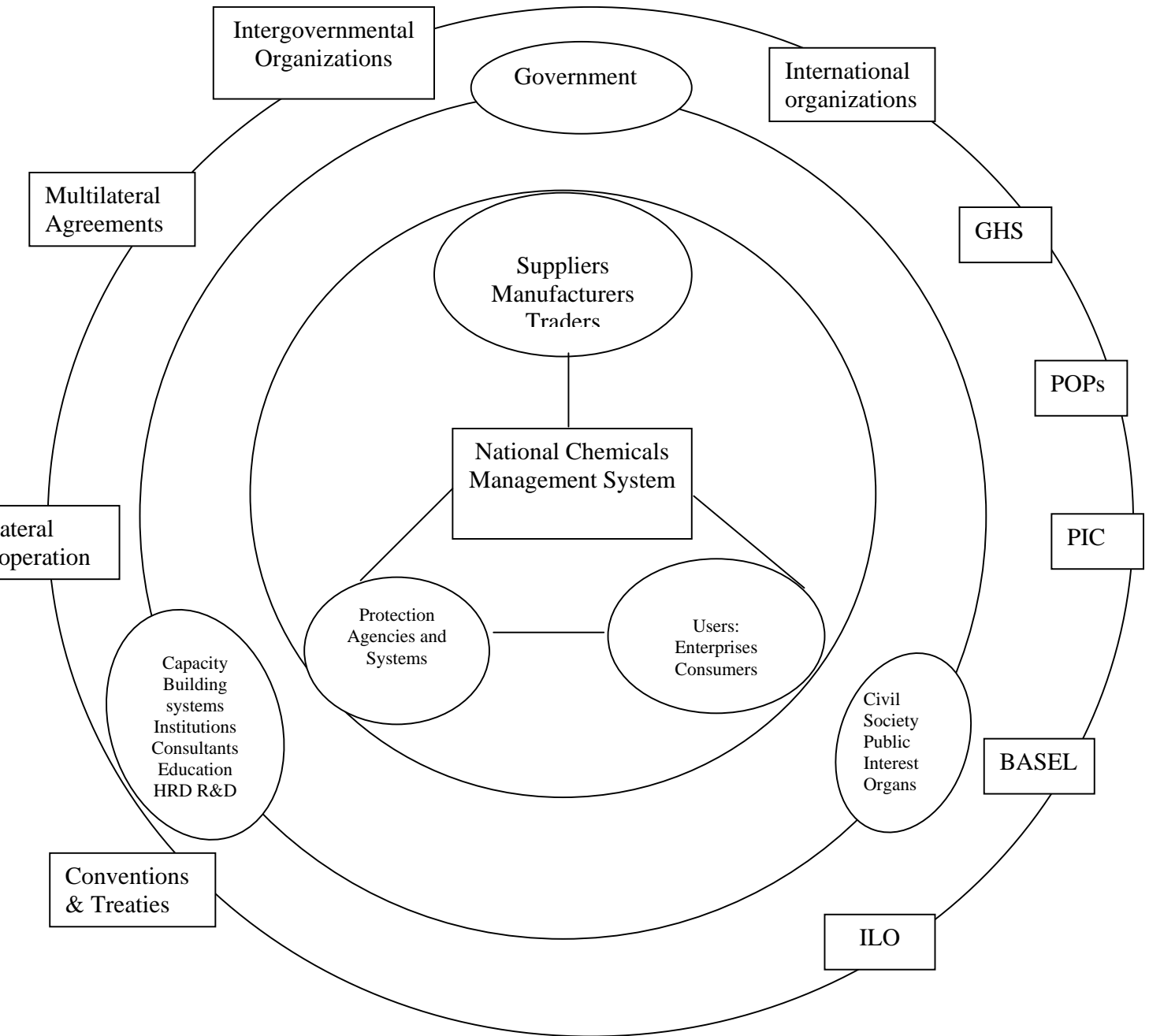
State of Chemicals Management in Pakistan

- Our industry imports chemicals worth Rs. 4,500 million and dyes/colors worth Rs. 5,000 million every year.

- Over 500 types of chemicals are being imported in the country for use in different processing industries.
- Local production of chemicals is limited to only a few categories viz. Soda Ash, sulphuric acid, caustic soda, chlorine, fertilizers, pesticides, paint/varnishes and polishes and creams.
- Import data of 1997-98 indicates that industry imported
 - 3,000 tons of formic acid (a carcinogenic chemical),
 - 2,052 tons phenols,
 - 4,200 tons isocyanides,
 - 31 tons of mercury,
 - 22,817 tons inks/dyes,
 - 234 tons Arsenic,
 - 1,615 tons chromium salt and so on
- All these chemicals are entering into the environment every year.
- Their processing generates wastes and pose potential risk to public health.
- A recent survey of effluents from 150 industrial units has reported extreme deviation from the permissible levels.
- Tanneries located in Kasur and Sialkot have been discharging effluent with chrome concentration
 - ranging between 182-222 mg/litre against the standard of 1 mg/litre and
 - Chemical Oxygen Demand 5,002-7320 mg/litre against limit of 150 mg/litre prescribed in the NEQs.
- Biological Oxygen Demand (BOD) of river Ravi has been found as high as 300 mg/litre as compared to acceptable limit of 9 mg/litre
- About 3,600 tons per year of chemical fertilizer is produced in the country.
- 18,000 tons of pesticides are imported every year.
- Another serious issue is that of high content of lead in petrol which is presently 0.35 gms/litre as compared to 0-0.15 gms/litre in other countries of the region.
- Pakistan Medical Association has found dangerous levels of lead in blood samples of traffic police, children and adults in Karachi, Islamabad and Peshawar cities.
- Sulphur in Diesel is also much higher i.e. 1% as compared to 0.05-0.50% in other countries of the region.
- Sulphur in furnace oil is 3% as compared to 0.5% - 1% in other countries of the region.
- Solid waste management and its disposal is also an area of great concern.
- Pakistan generates 47,920 tons of solid waste per day.
- Urban waste: 19,190 tons
- Rural waste: 28,730 tons
- The industries of chemicals, fertilizers, tanneries, textile units produce 21,173 tons of toxic waste.
- Collection efficiency of solid wastes is about 54% in the urban centers.
- Since none of the cities in Pakistan has adequate waste collection and disposal system for municipal or hazardous wastes urban land is getting polluted.
- None of the 9 POPs pesticides controlled under the Stockholm Convention is now registered in Pakistan.
- Aldrin and Mirex have never been registered in Pakistan.
- Other seven pesticides have also been deregistered during 1983-1997.
- POPs pesticides have never been manufactured in Pakistan.
- DDT, HCB and Dieldrin have been formulated/packaged locally
- These sites are potentially extensively contaminated with these substances and need thorough inspection.
- There exist large stockpiles (around 5,000 tons) of obsolete pesticides in Pakistan.
- Safe disposal of these obsolete toxic stocks is a big challenge.
- It can be expected that sediments in irrigation canals and rivers in high intensity cotton cultivation areas are highly contaminated with POPs.
- The use of PCBs is not regulated properly in Pakistan.

- No scientific attempt has been made.
- A rough estimation of transformer oils usage is 200 tons per annum.
- No legislation covering dioxins and other unintentional POPs exists in Pakistan.
- Inventories on sources of PCBs, Dioxins, Furans and POPs pesticides have been initiated by in accordance with guidelines prepared by the secretariat of Stockholm Convention.
- POPs emission from metallurgical, pulp, and petrochemicals industries need to be monitored and controlled.
- State-of-the-art of testing and calibration laboratories and toxic materials handling/disposal systems need to be established in the country.
- Social practices like open pit burning of wastes need to be changed through behavior change communications.
- Mass awareness on hazards of POPs poisoning particularly amongst rural population need to be increased substantially.
- Institutional gaps need to be identified and filled
- New institutional infrastructure needs to be evolved based on a holistic systems approach that incorporates integrated management of programmatic.

Proposed Globally Supported National Chemicals Management System



2. New and Innovative Approaches to Strategic Management of Chemicals: What is Required for Effective Global Governance of Chemicals & Wastes

Paper By
Syed Zaheer Ahmed Gillani

A multi pronged global attack on POPs and other hazardous chemicals is urgently required. There is urgent need to invest heavily in building capacity to track existing technologies for their hazardous efforts; disseminate this knowledge speedily and effectively to all potential effectees and stakeholders; develop alternate technologies and share them generously with those who need them but cannot afford to have them. New global mechanism and institutional infrastructure may be required to achieve these hard to hit goals. For example:

- i) **Global Proprietary Technology System (GPTS):** There is need to develop a new system whereby Proprietary rights of selected technologies or groups of technologies could be acquired by a global organization or group of organizations. The present system of technology development and transfer grants intellectual property rights to individuals, groups of individuals or corporate entities in private and public sectors. The system is working well in a highly oligopolistic and imperfect technology market. However; in the area of high global concern, a new system is required so that vested interests of private and public sectors and sluggish market mechanisms do not add indiscriminate delays and costs to Environment Friendly Technologies. High costs of Technology and cumbersome technology transfer processes make timely access to technology very difficult by a large part of global population creating serious threats to the very existence of the global community. If highly required green and clean technologies are produced through GPTS or acquired from other producers by GPTS, they can be transferred to requisite destinations at much higher speed than through normal routes of transfer of intellectual property. This will save time and replace dirty technologies with clean technologies before it is too late.
- ii) **Global Technology Monitoring System (GTMS):** There is a need to develop a new fast track global system that would monitor technologies for their impact on global environment with special reference to least developed nations. The GTMS would create its centers at regional level and nodes at national level. The GTMS would generate information and ensure its effective dissemination to all stakeholders. The GTMS could also identify technologies, which need urgent replacement through GPTS and/or other mechanisms.

iii) **Globally Supported National Technology Transfer Systems (GSN-TTS):** There is need for national technology transfer institutions for technology need assessment, technology sourcing, acquisition, adoption, adaptation, assimilation, etc. Such institutions cannot work in vacuum. They have to be part of intra-country and inter-country network. In poor and developing countries these institutions can provide a lifeline to development endeavors provided adequate global support is made available to them.

iv) **Globally Supported National Chemicals Management Institutions (GSN-CMI):**

Management of chemicals and chemical wastes is a complex phenomenon involving a host of national, regional and global stakeholders and institutions. At national and provincial level so many ministries; departments, business and trade houses and individuals are involved having several common and many conflicting interests. At international, regional and global level inter-country and inter-regional interests are involved. Increasing global realization of the threat posed by hazardous chemicals and their wastes has given rise to the need for global strategic approaches to safe and sound management of chemicals. Several bilateral and multi lateral agreements and conventions e.g., SC, Basel, PIC, GHS, ILO etc have emerged, and more can be expected. There is a need to take all these entities as part of a system as a whole. If a holistic approach is adopted then synergy can be maximized. Otherwise there is a danger of discordination, duplication of efforts, maximization of costs and minimization of efficiency, efficacy and effectiveness of the management efforts. If so happens it would be defeating the over riding objective of quick identification of the hazards of certain chemicals and saving humanity from them.

The planet earth can no more afford to allow mismanagement in handling chemicals. No person, community, nation or group of nations should be allowed to play with human health and environment for what ever reasons; be it scarcity of funds, lack of technical skills, insufficient infrastructure, lack of institutional capacity, etc. Safe chemicals management demands dedicated and concerted efforts for efficient coordination, alongwith effective linkages amongst producers, traders, users, controllers, policy and decision makers. No body (a person or a unit) belonging to one of these vested interest players can do this job. Neither can this be done satisfactorily as a part time duty of a government official. For this purpose special institution is required having no vested interests of its own and having institutional capacity and capability to handle the complex job of strategic chemicals management. Such an institution would not only require national support but also need global support and linkages. If designed and developed appropriately, the Globally Supported National Chemicals Management Institution will go a long way in strategic, safe, sound, efficient and effective management of intentionally and Un intentionally produced chemicals and chemical wastes.

