



SCIENCE FAIR

*Mainstreaming of science in the
sound management of chemicals and wastes*

Challenges of Integrating Science in Decision Making on Chemicals and Wastes at the National Level

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Introduction – Chemicals

Chemicals provide important benefits in many areas - agriculture, medicine, industrial manufacturing, energy, public health.

Chemicals play important role to achieve development goals- improving maternal health, reducing child mortality, ensuring food security.

However chemicals may cause deleterious health effects and adverse effects on the environment.

Human poisoning due to exposure to toxic chemicals is a big problem in developing countries. The International Labor Organization (ILO) estimates that 25% of workplace deaths worldwide are due to chemical exposures.

Global chemical pollution from production and consumption activities is a serious threat to sustainable development and livelihood.

Thus chemicals are elixirs of life and harbingers of diseases and death !!

Introduction – Wastes

“Wastes” are substances or objects which are disposed of, or are intended to be disposed of, or are required to be disposed of, by the provisions of national law (1989 Basel Convention).

Over 500 million tons of hazardous wastes including e-waste are generated annually world-wide but not managed in an environmentally sound manner.

Illegal export of waste to developing countries is a global challenge as these lack infrastructure and resources for environmentally sound management.

An irrefutable link is established between poverty and increased risks of exposure to toxic and hazardous chemicals and wastes.



Poor populations routinely face high risks because of their occupation, living situation and lack of knowledge about the impacts of exposure to hazardous chemicals and wastes.

Unused chemicals, dumped illegally or forgotten in unsafe storage areas/conditions, can contaminate soil, water and air.

Hazardous Chemicals and Waste Management Challenges In Developing Countries

- **Waste disposal** (co-disposal of hazardous waste and general wastes) rather than waste management (collection, storage, sorting, transportation, processing and disposal).
- Little or no knowledge of **material safety data sheet** (MSDS) of hazardous chemicals.
- Lacking or inadequate **infrastructure for Sound Chemicals Management and ESM** of hazardous waste management. (infrastructure challenge).
- **Low level awareness** of adverse environmental and human health impacts of exposure to hazardous chemicals and waste, **at all levels of governance** (political/socio-economic).
- Shift of chemicals production from OECD countries to BRICS countries and other developing countries over the last decade.
- **Weak institutional and regulatory framework** for environmentally sound management of hazardous wastes.

Hazardous Chemicals and Waste Management Challenges In Developing Countries

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- No systematic monitoring studies (hence no monitoring data) of hazardous chemicals levels (e.g. heavy metals and POPs) in environmental media and exposed human populations.
 - No systematic studies of the environmental and social impact of waste management practices and technologies.
 - Paucity of a quantum of trained and competent manpower in analytical measurements science, environmental toxicology, risk assessment, environmental data management, pollutants modelling, etc, at the echelons of government.
 - Lack of modern, well equipped, analytical laboratories for POPs, mercury and other priority pollutants, staffed with competent scientists.
 - Weak government-universities interface in environmental governance.
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Need for Sound Chemicals & Waste Management at the National Level



Chemicals & Wastes Management

Includes:

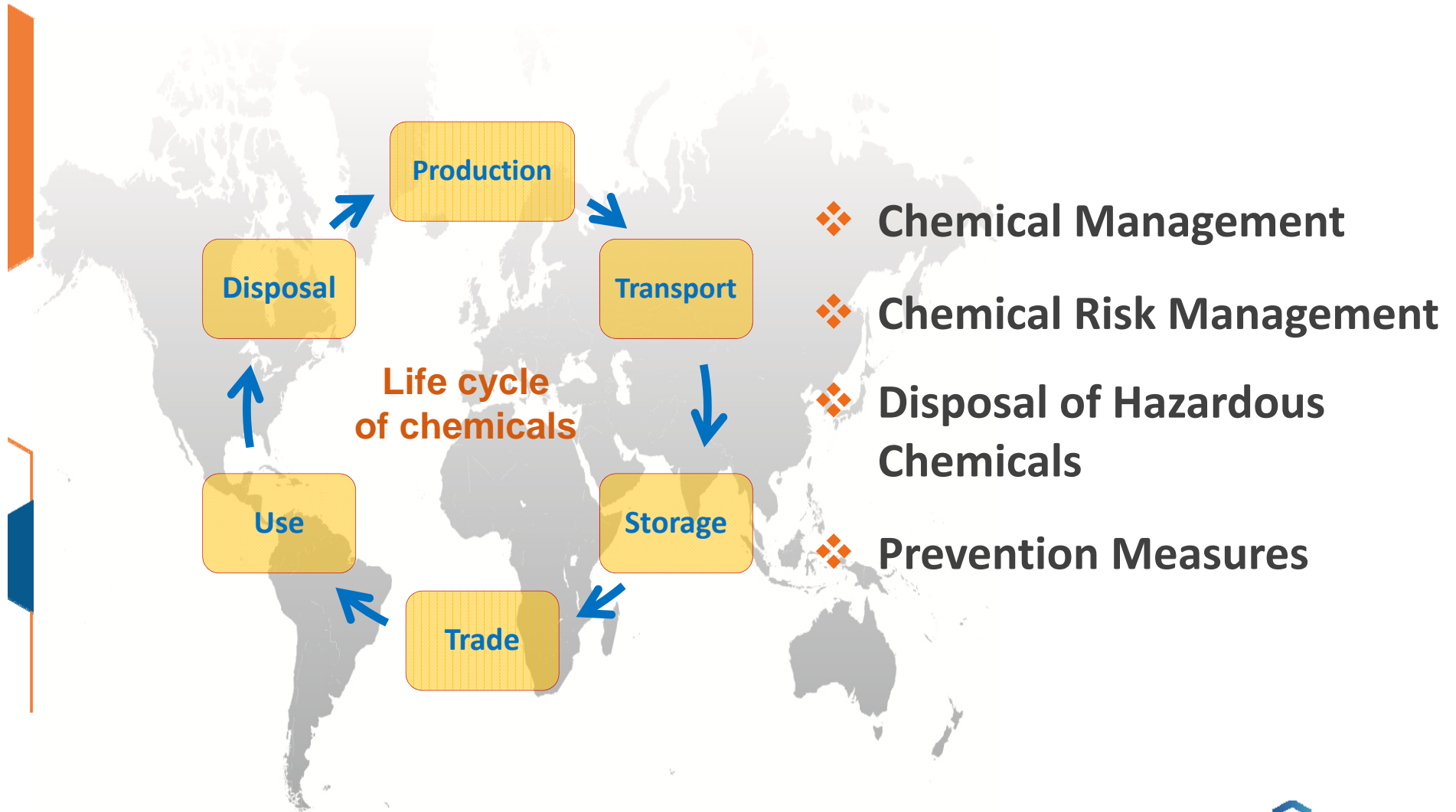
Scientific knowledge, risk assessment, risk reduction, classification and labelling, approval systems, inspections, awareness and information.



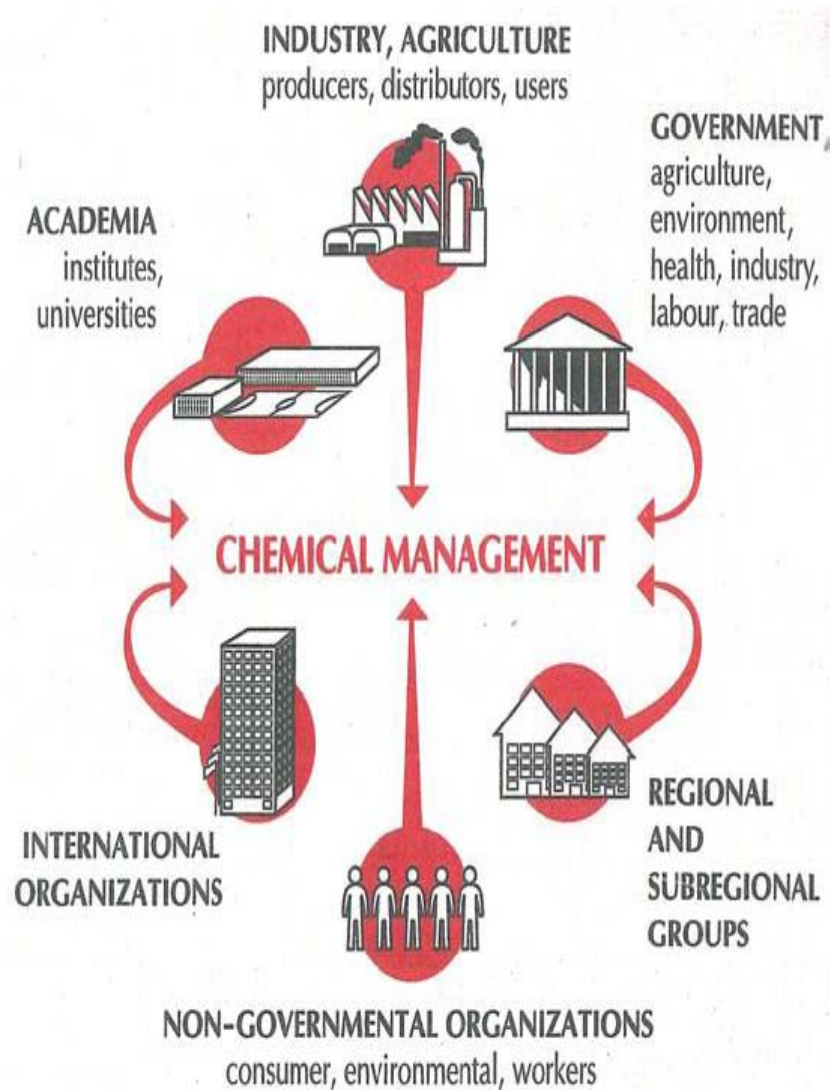
Touches:

Hazardous waste issues, workers health, public safety, sustainable production, cleaner production.

Chemicals Management Framework




Chemicals & Waste Management Actors



Importance of Implementation of Chemical and Waste MEAs


- Elaboration of the Basel, Rotterdam and Stockholm MEAS is part of the strategy towards the improvement of chemicals and waste management at the global, regional and national level based on lifecycle approach.
- Most if not all of these MEAs have been ratified but not domesticated into national legislations !!!!!

Challenges of integrating science in decision making




- The gap in science and technology capacity at the national level is a major constraint towards adopting science-based informed decisions or policy developments in environmental governance.

- Rio+20 “The Future we Want” urged countries to embrace a “Green Economy”; and take measures to prevent the unsound management of hazardous wastes and their illegal dumping in a manner consistent with countries' obligations under international instruments.



- Adapting to global change and attaining a green economy within the framework of the Chemicals and Waste MEAs require new capabilities: job skills, learning ways, management approaches and research efforts, expertise lacking in most developing countries.



- Action needed to fill the skills gaps in the green sector; update educational institutions to better meet educational needs for sustainability work; train managers to better respond to global environmental change; and encourage research to address the sustainability challenge.

- Chemicals and waste environmental challenges continue to grow, coping with them calls for new strategies and policies underpinned by a strong science, knowledge base and training.

Challenges of integrating science in decision making

- The importance of science-policy interface in environmental decision making at the national level not fully appreciated by decision-makers.
- Lack of awareness of risks associated with human health and the environment from exposure to hazardous chemicals and wastes, and the socio-economic costs of inaction.
- Lack of/weak, framework, capacity and infrastructure for scientific research resulting in lack of national data critical for science based, informed policy decisions, standards setting and formulation of regulations, particularly data on fate and toxicology of chemicals and their levels in environmental media and in human populations.
- Many developing countries have difficulties, due to inadequate scientific capacity, to fulfill their obligations under MEAs integrating scientific concepts and principles.
- High turnover of officers and focal points who do not have university degrees in environmental science or technology, but have acquired great experience.
- Staff turnover coupled with complexity and diversity of global environmental issues have impact on the preparation, participation and quality of national representation at MEAs negotiations.

The Way Forward

Mainstreaming science in the decision-making process is important for the sound management of chemicals and wastes as it facilitates the science-policy interface to arrive at understanding and mutual agreements.

There is need for strengthening national capabilities and capacities for sound management of chemicals and wastes by bridging the scientific knowledge gaps on MEAs in the areas of:

- Negotiation and Implementation; Enforcement; Mainstreaming;
- Development of tools, Guidelines and Legislation;
- Promotion of Ratification and Implementation of Conventions;
- Information dissemination and exchange and Awareness creation;
- Training and sensitization for key target groups (environmental desk officers, decision/policy-makers, and parliamentarians/political class).

Embark on continual capacity-building through online training; webinars, workshops; and pilot projects on the scientific basis of chemicals and wastes MEAs and their mainstreaming.

The Way Forward

Generate environmental data and information valuable for science-informed policy formulation and decision-making through:

- Establishing modern analytical research laboratories at national or sub-regional level;
- Undertaking systematic studies on the levels of POPs and other priority pollutants in environmental media;
- Undertaking the assessment of environmental impact of waste disposal.

Governments to fund national universities to undertake environmental monitoring studies and mission oriented research to provide practical solutions to local environmental challenges arising from unsound management of chemicals and wastes.

Undertake constant Advocacy and Awareness Raising among all stakeholders on risks to human health and the environment from unsound management of chemicals and wastes.

