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DRAFT CHEMICAL PAPER FOR THE 12th MEETING OF THE AMCEN (7-9 June 2008, Johannesburg): Presentation by the Secretariat of Stockholm Convention

THEME – Sound Chemicals Management: Relieving the Burden on Public Health

Chemicals have been and are powerful tools supporting improvements in health and lifestyle: their scope extend from monomers used to make plastics, pigments used in paints and dyes, flame retardants that protect against fire, detergents and soaps to keep ourselves and our homes clean, to pesticides. They are found in industries (e.g., chemical production, certain metal and refining processes, pulp and paper manufacturing processes that utilize chlorine), agricultural environments and commodities, in domestic items such as furniture, carpeting and appliances as well as releases from the combustion of certain fuels and waste.

Their economic value is unquestionable but some chemicals have characteristics that make them very harmful and, improperly managed, they find their ways to, and contaminate, food and drinking water, and cause substantial damage to human health and the environment. Urgent attention is required if we want to avoid what is seen as possible toxic chemical timed bomb.

Scientific weight of evidence.

Scientific weight of the evidence shows that chemicals are cause of serious problems to the environment as well as animals, and, human impacts beyond isolated cases are already demonstrable. The most tangible concerns can be linked to the characteristics of persistence, bioaccumulation, long range transport and toxicity. Chemicals with such characteristics are found everywhere, including the most remote areas, far from any industrial activities. Even though they are present in the environment at low levels, they have been linked to many health and environmental effects.

Evidence of persistence

Banned in France since 1987, PCBs have been used for 40 years by the industry, mainly as insulation in electrical transformers. They are also present in oils, adhesives and paints. The group belongs to the POPs included in the Stockholm Convention. PCBs have been banned because it was found to cause immune suppression, altered sexual development, cancer, delayed brain development, lower IQ, and behavioral problems like hyperactivity in humans. Exposure may be particularly harmful during a critical window of brain development during pregnancy and early childhood. Recent tests found that the fish from Rhone River in France contained PCBs between 10 and 12 times the legal safety limit. Fish from the Grand Large was banned at the end of 2005 and similar bans have progressively spread to other areas. Since August 2007, the consumption of fish caught in the Rhone in France is prohibited.

Chlordane is another persistent organochlorine insecticide. Chlordane has been used to prevent or eliminate termites between the 1950's and 80's. However, after many reports of serious illness among both adults and children following its application and links to cancer in animals, chlordane was finally banned by the EPA in March of 1988. It is such a highly toxic and persistent chemical that homes treated 20-30 years ago are still showing unsafe levels of chlordane in the indoor air. The hundreds of gallons of chlordane underneath the homes are slowly evaporating and entering the homes.

Evidence of bioaccumulation

Levels of toxic flame retardants in people are rising dramatically. Some types of PBDEs concentrate in the fatty tissues of living organisms. As a result, they bioaccumulate, or build up in the food chain, and now can be found in human blood, fat tissue, and breast milk. Levels of PBDEs in animal and human tissues have been growing exponentially, doubling every two to five years. At this rate, tissue levels will increase 100- to 1000-fold every 25 years. The expected bioaccumulation factors for chlordane, another POP, are in excess of 3000 times background water concentrations indicating that bioconcentration is significant for this compound. Chlordane does not chemically degrade and is not subject to biodegradation in soils.

Evidence of long-range transport

Several studies by the Arctic Monitoring and Assessment Program have reported on concerns about levels of many persistent organic pollutant contaminants in the Arctic. All POPs considered by the AMAP monitoring programme (aldrin, dieldrin, chlordane, DDT, hexachlorobenzene, technical HCH, toxaphene, endosulfan and tributyltin) have been found in air, snow, water, and/or wildlife in the Arctic. Monitoring of air in the Arctic has shown that levels of lindane (gamma HCH) and chlordane are correlated with long-range transport from usage in the mid-latitudes of North America, Europe and Asia. The highest levels of alpha HCH in the world's oceans are found in the Canada Basin and Canadian Arctic Archipelago.

PentaBDE has been detected in Canadian and Russian Arctic air at concentrations up to 28 pg/m³. A larger study was performed detecting BDEs in trout (three species) from eleven high mountain lakes in Europe. These lakes were selected as being far from local pollution emission sources, and it was considered that the only source of BDEs to these lakes was as a result of atmospheric transport and deposition.

Evidence of toxicity

Chemicals produce a wide range of toxic effect, in line with the primary purpose of the development of some of them. Illnesses identified in the medical research include adult and child cancers, numerous neurological disorders, immune system weakening, autoimmune disorders, asthma, allergies, infertility, miscarriage, and child behavior disorders including learning disabilities and mental retardation.

There is mounting evidence that organochlorine compounds can act as hormones. These compounds, including DDT, PCBs may also be part of the cause for the decrease in the quality of semen, an increase in testicular and prostate cancer, an increase in defects in male sex organs; and increased incidence of breast cancer which has been observed in the last fifty years. (Hileman, 1994; Soto; 1993). They have been linked to adverse reproductive effects and could impact the developing foetus. Many organochlorines pesticides have been classified as having sufficient evidence of cancercausing effects in animals (DDT, dioxin (TCDD), hexachlorobenzene, mirex, toxaphene). Recent research shows that exposure to toxic flame retardants can interrupt brain development in mice, permanently impairing learning and movement. So far, scientists have not identified "safe" levels of exposure of these chemicals that do not produce damage and their levels in people have already reached levels of concern. Additionally, these substances are found together in humans, and their effects may be additive.

The widespread and extensive effects of POPs on biodiversity are becoming apparent. POPs have been implicated in major adverse impacts on animals at the genetic, population, species and community / ecosystem level. Impacts include endocrine disruption, reduced disease resistance, reduced fertility rates, increased tumor incidence, and declines in population sizes (including outbreaks of mass mortalities). Due to biodiversity being affected by POPs at very low concentrations and through bioaccumulation, the long-lasting effect of POPs on biodiversity is not fully known.

Studies (Lee *et al.*) found a strong dose response relationship between type II diabetes risk and body burden of 6 persistent organic pollutants (POPs).

Other studies indicated that even small amounts of methylmercury exposures may cause adverse effects on the cardiovascular systems, thereby leading to increased mortality. Although there is not clear evidence of chemical pollution impacts in developing countries, the global mercury report indicates that mercury is present in fish all over the globe, indicating probable public health effects. Given the importance of cardiovascular disease worldwide, these findings need close attention. Also, chemical exposures pose disproportionate threats to populations in high risk groups. **Poverty** limits adaptive responses chemical exposures and **malnutrition**, particularly in the very young, may compound and worsen effects from any toxic chemical exposure.

Other reasons for concern

Trade issues

An estimated 1-2 million chemical preparations are on sale around the world today. After the automotive sector, the chemicals industry is the world's largest manufacturing industry, with annual sales of US\$1.6 trillion. International trade accounts for US\$480 billion in sales. The Rotterdam Convention was initially inspired by a North-South dilemma in which wealthier countries with bans on certain life-threatening chemicals continued to sell them abroad. However, in recent years South-South trade has increased between newly emerging economies, where chemicals production is rising, and poorer countries. Deep concern over global traffic of certain hazardous chemicals has spurred international acceptance of the chemical-related MEAs.

Wastes issues

In August 2006, the international community was moved by the dumping of toxic products in the District of Abidjan, Côte d'Ivoire, from a Ship, the «PROBO KOALA ». Despite national and international mobilization, the impact of toxic waste dump was felt in most of the sectors that experienced economic losses. This incident demonstrated gaps in the international regulatory mechanisms and their implementation, leaving the sentiment that events, such as the dumping of waste in Abidjan, could happen again if nothing is done to fill the gaps.

Emerging Issues

Endocrine disruption:

There is widespread compelling evidence that a range of natural and synthetic chemicals, which are present in the global environment, are continuing to impact wildlife by a variety of mechanisms that directly or indirectly disrupt the endocrine systems of some species including birds, fish, mammals, reptiles and molluscs.

Climate change-related chemical exposures:

The emerging and unprecedented public health threat of accelerating climate change may significantly alter global and local development, use, distribution, and degradation of chemicals in ways that could affect human health through change of the distribution and break-down of chemicals in complex ways. The effect on human exposure will vary widely according to the properties of specific chemicals and chemical combinations, soil and water conditions, wind patterns, topography, land use, level of development, and human population characteristics.

- Extreme precipitation, storms and floods threaten water quality by increasing run-off
- Drought threatens water quality by concentration of non-volatile chemicals and toxic metals.
- Increased temperatures will cause volatile chemicals to disperse more quickly in the air. Global movement of persistent chemicals will be modified with changes in global water and air currents, and population exposures will also change.

Action for Results

Scientists discovered the first indications of systemic harm caused by PCBs as early as 1937. However, PCBs were not banned until 1976, after hundreds of scientific studies documented widespread exposure and actual harm to human health. Further study showed new forms of health impact caused by lower levels of exposure, which continue to be documented decades after the chemicals were phased out. This experience with PCBs shows that failure to act on early warnings can lead to irreversible environmental contamination and damage to health. Phasing out chemicals leads to reduced contamination and exposure levels. The European Union reduced the use of PBDEs in the late 1990s after finding increasing levels in the breast milk of Swedish mothers and preliminary evidence of toxic effects. Since 1998, concentrations of PBDEs in breast milk of Swedish women have declined steadily. Similarly, PCB levels found in the population began to decline after the U.S. banned the chemical. Reducing exposure prevents further harm to human health. Prerequisites for success include:

- full integration of a precautionary approach in the marketing of chemicals, shifting the burden of proof from regulators to industry;

- development of adequate chemicals management infrastructure in all countries, including laws and regulations, mechanisms for effective enforcement and customs control, and capacity to test and monitor;
- substitution with less-hazardous materials, adoption of best available technologies and environmental practices, and easy access to these approaches for developing countries and countries with economies in transition;
- encouragement of innovation in manufacturing, non-chemical alternatives in agriculture, and waste avoidance and minimization; and
- inclusion of environmental issues related to chemicals in regular educational curricula.

The emerging awareness of the impacts of chemicals has triggered action at all levels. However the level of awareness and the capacity for taking and implementing measures aimed at reducing exposure to hazardous chemicals vary significantly among countries and regions. Some regional examples:

Common regulation for the registration of pesticides in the CILSS member States

CILSS member States signed in 1992 the Common Regulation for the Registration of Pesticides in CILSS member States (Burkina Faso, Cape Verde, Gambia, Guinea Bissau, Mali, Mauritania, Niger, Senegal and Chad). The main objectives of this common Regulation are to combine the expertise on pesticide evaluation and management of all CILSS MEMBER States for pesticide registration; to avoid free circulation of banned products from one country into another; and to reduce the cost of pesticide registration on individual countries. This common regulation system also permits countries to practice judicious chemical control methods that are respectful to the environment through an intergraded crop pest management approach.

European Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

The new European law on chemicals, REACH, came into force in June 2007. REACH requires manufacturers and importers to register and submit not only new chemical substances but also tens of thousands of existing chemical substances. Its scope will be gradually extended in future.

International Agreements and Approaches on Chemical Control

Chemicals management is now addressed by 17 multilateral agreements; 21 IGOs and a variety of coordination mechanisms. Existing multilateral and regional agreements offer an opportunity to arrest and eventually reverse the increasing releases of hazardous chemicals.

1. BASEL CONVENTION

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal came into force in 1992 and aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements and disposal of hazardous and other wastes. It has 170 Parties. The Convention regulates the transboundary movements of hazardous and other wastes applying the "Prior Informed Consent" procedure (shipments made without consent are illegal). Shipments to and from non-Parties are illegal unless there is a special agreement. The Convention obliges its Parties to ensure that hazardous and other wastes are managed and disposed of in an environmentally sound manner (ESM).

2. BAMAKO CONVENTION

The Bamako Convention is complimentary to the Basel Convention and bans all export of hazardous wastes from developed countries to Africa.

3. ROTTERDAM CONVENTION

The Rotterdam Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure. It built on the voluntary PIC procedure, which was initiated by UNEP and FAO in 1989 and came to an end on 24 February 2006. The Rotterdam Convention has 120 Parties and its objectives are:

- to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;
- to contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

4. STOCKHOLM CONVENTION

The Stockholm Convention is a global treaty to protect human health and the environment from persistent organic pollutants (POPs). POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. POPs circulate globally and can cause damage wherever they travel. In implementing the Convention, Governments will take measures to eliminate or reduce the release of POPs into the environment. The treaty starts by immediately targeting 12 particularly toxic POPs for reduction and eventual elimination, but it also sets up a system for tackling additional chemicals identified as unacceptably hazardous. It recognizes that a special support may be needed to phase out certain chemicals for certain uses and seeks to ensure that this support is made available. It also channels resources into cleaning up the existing stockpiles and dumps of POPs that litter the world's landscape. Ultimately, the Convention points the way to a future free of dangerous POPs. The Stockholm Convention entered into force in 2002 and has 154 Parties.

5. THE STRATEGIC APPROACH TO INTERNATIONAL CHEMICALS MANAGEMENT (SAICM)

Adopted by the International Conference on Chemicals Management (ICCM) on 6 February 2006 in Dubai, United Arab Emirates, the Strategic Approach to International Chemicals Management (SAICM) is an international policy framework to foster the sound management of chemicals. SAICM was to support the achievement of the goal agreed at the 2002 Johannesburg World Summit on Sustainable Development of ensuring that, by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health. A major driving force for the establishment of the Strategic Approach has been the recognition of the growing gaps between the capacities of different countries to manage chemicals safely, the need to improve synergies between existing instruments and processes and the growing sense of urgency regarding the need to assess and manage chemicals more effectively to achieve the 2020 goal articulated in paragraph 23 of the Johannesburg Plan of Implementation.

6. SYNERGY PROCESS FOR THE BASEL, ROTTERDAM AND STOCKHOLM CONVENTIONS

The ad hoc working group on enhancing cooperation and coordination among the Basel, Rotterdam and Stockholm Conventions, made up of 15 representatives of Parties of each of the Conventions, recently completed recommendations for achieving synergies among the Conventions. The recommendations will go to the Conferences of the Parties to the three Conventions for possible adoption, starting with the Basel Convention in late June 2008. Recognized as key is programmatic cooperation, including capacity building activities, that is aimed at promoting coordinated implementation of the three conventions at the national and regional levels. Among the recommendations is that extraordinary meetings of the Conference of the Parties of the three Conventions be held at the same time and in conjunction with the next meetings of the UNEP Governing Council Special Session/Global Environment Ministers Forum in early 2010. These extraordinary meetings may consider the establishment of joint services among the three Conventions for administration, legal support, information technology and resource mobilization.

HOW DO THESE AGREEMENTS WORK FOR THE AFRICAN CONTINENT

Competencies

Knowledge building and sharing through

- the exchange of information on risk reduction and alternatives to POPs
- Awareness among policy and decision makers;
- educational and public awareness programmes and Training of workers, scientists, educators;

- encourage industry and professional users to promote and
- within their capabilities, at the national and international levels, encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to persistent organic pollutants
- International and multi-sectoral collaboration

Parties are called to cooperate directly or through global, regional and subregional organizations, and consult their national stakeholders, including women's groups and groups involved in the health of children, in order to facilitate the development, implementation and updating of their implementation plans.

Technical and financial assistance

The Stockholm Convention requests to "Take into account the circumstances and particular requirements of developing countries, in particular the least developed among them, and countries with economies in transition, especially the need to strengthen their national capabilities for the management of chemicals, including through the transfer of technology, the provision of financial and technical assistance and the promotion of cooperation among the Parties..."

International trade

The Rotterdam Convention deals with chemicals that are banned or severely restricted in some countries (particularly in industrialized regions) but that are still exported to other countries (particularly in developing regions) and constitutes an early warning system that empowers poorer nations to take their own informed decisions on toxic chemical imports.

Activity Fields

- Control of production, use and disposal
- Assessment of the environment: in the framework of regional implementation of the global monitoring plan for POPs activities are ongoing in all UN regions, supported by the Secretariat of the Stockholm Convention, which will result in first systematic data on air concentrations of POPs and levels of POPs in human (milk). These levels will serve as baseline to evaluate future changes over time.
- Continuous identification of the most hazardous substances
- Establishment/strengthening of legislative and institutional framework
- Promoting public health

In the case of DDT as an example, Stockholm Parties are called (within their capabilities) to promote research and development of safe alternative chemical and non-chemical products, methods and strategies, relevant to the conditions of those countries and with the goal of decreasing the human and economic burden of disease. The Conference of the Parties to the Stockholm Convention at its third meeting in Dakar, Senegal, requested that the secretariat prepare a business plan to enhance a global partnership for the development and deployment of alternative products, methods and strategies to DDT for disease vector control. Such alternatives must be cost-effective, locally suitable, and, countries must be afforded the capacity to introduce them.

- Promoting sustainable and clean industrial development and technologies transfer: Comprehensive guidance on best available techniques and best environmental practices has been developed under the Stockholm Convention to assist countries in taking measures to reduce releases of unwanted pollutants. This document can be used by countries also to avoid importing of obsolete technologies which are already banned in developed countries.
- Arrangements for technical assistance and transfer of technology to developing countries and countries with economies in transition (Stockholm Convention Parties invited to promote and require the use of best available techniques for new sources (of POPs))

How do the Conventions achieve their goals?

- Agreeing on substance to be controlled, control measures, possible actions and procedures
- Supporting safe handling procedures
- Avoiding unwanted trade

As it deals with chemicals that are banned or severely restricted in some countries (particularly in industrialized regions) but that are still exported to other countries (particularly in developing regions), The Rotterdam Convention is an early warning system that empowers poorer nations to take their own informed decisions on toxic chemical imports by providing: information on other countries' decisions to ban or severely restrict certain chemicals; information on other countries' experiences with severely hazardous pesticide formulations; the means to stop unwanted imports; the requirement that exporting countries respect other countries' decisions on imports. Basel Convention limits toxic trade in hazardous wastes and ensures proper disposal of wastes and the Stockholm Convention refers to the prior informed consent and additionally requires certification when a Party enters in trade arrangements with a non-Party.

- Promoting search for alternatives: The Conference of the Parties to the Stockholm Convention at its third meeting in Dakar, Senegal, requested that the secretariat prepare a business plan to enhance a global partnership for the development and deployment of alternative products, methods and strategies to DDT for disease vector control.
- Promoting capacity building and regional centers
Arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing countries and countries with economies in transition relating to the implementation of the Convention include regional and subregional centres for capacity-building and transfer of technology to assist countries fulfil their obligations and to promote south-south or interregional cooperation. To date there are 11 regional centers nominated under the Stockholm Convention (2 in Africa, 4 in Latin America and the Carribbeans, 3 in Asia, 2 in Central and Eastern and 1 in Western Europe and other region). The Basel Convention also has 14 regional Centers, 4 in each of Africa and West Asia, Asia and the Pacific, Latin America and the Caribbean's and 2 in Central and Western Europe. It should be noted that four of the nominated centers under the Stockholm Convention are also Basel regional centres, a promise of synergy.
- Funding (incremental) cost for implementing control, disposal and introduction of alternatives through the global Environment facility or also other possible sources of funding and/or entities to facilitate the adequacy and sustainability of funding for activities relevant to the implementation
- Creating synergy and win-win partnerships between different multilateral agreements, between and within countries.

What should countries do?

- Become a Party if not done
- Promote knowledge building
- Identify and define needs for technical assistance
- Take responsibility to trigger assistance and project proposals
- Implement actions at national level and participate in global debate
- Elaborate and adopt non-POPs strategies
- Ensure institutional stability and sustainable capacity
- Synergize at national level

ELEMENTS FOR CONSIDERATION FOR A CHEMICAL DECLARATION AT THE 12th MEETING OF THE AMCEN, JO'BURG (10-12 June)**CONSIDERATIONS**

- The direct adverse impacts of chemicals on public health include lost productivity and income due to ill health effect, particularly considering harm to the physical and intellectual development of children thereby preventing them from realizing their full potential in society
- WSSD plan of action countries agreed to a common objective that is to “*achieve by 2020 that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment...*”
- The chemical related conventions are key to the successful delivery of WSSD objectives and the SAICM goals
- The importance of BC/RC/SC, and their complementarities as being established through the synergy process, in this holistic approach,
- Recognition that financial and technical support is essential to developing countries to deliver...
- The existence of a financial mechanism for the Stockholm Convention but not for the Basel and Rotterdam convention

POSSIBLE ELEMENTS FOR DECLARATION

- Prioritization of sound chemical management in national regional and subregional environmental planning
- to provide high level political support to the implementation of the national implementation plans and action plans of the conventions and the Strategic approach to integrated chemical management;
- Development of effective chemicals management infrastructures, using the assistance mechanisms available under the Chemicals related MEAs;
- Promotion at national level an integrated approach to the implementation of these three Conventions as a set of tools to assist countries in taking a holistic or life cycle approach to the sound management of chemicals through
 - Prevention of unwanted trade in hazardous chemicals that cannot be managed safely at the national level;
 - Access to information on chemicals banned or severely restricted;
 - promoting coordination and links with public health structures;
 - identifying POPs in use or as wastes for sound management;
- Invitation to (sub)regional economic communities (or REIOs) to cooperate with Convention secretariats for successful regional delivery;
- Invitation to the GEF and other donors to make available new and additional resources for expanding the chemical management portfolio of the GEF beyond POPs;
- Request to the CEO of the GEF with the support of the Executive Director of UNEP to make funds available to support least developed countries in reaching the capacity necessary to initiate implementation of the Stockholm Convention and related instruments;
- Invitation to the GEF and other donors to support the work of regional centers as centers of excellence for regional capacity building and technology transfer;
- Invitation to countries that have not done so to ratify the Basel, Rotterdam and Stockholm conventions;
- Request to the AMCEN secretariat in collaboration with the Conventions secretariats to periodically review the progress towards integration of sound chemical management into national planning strategies and programmes and implementation of the conventions in African countries and to report to the AMCEN;

- to invite governments to actively work with, and make use of regional centers under the conventions in defining projects;
- Invitation to countries to jointly report on the progress on implementation of the present declaration;
- Invitation to the president of the AMCEN to transmit the present declaration to the joint conference of Health and Environment Ministers in Africa for their consideration and further action;