

Problems of Toxic Chemicals and Strategies for Control

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Abstract: Chemicals no doubt have variety of uses and play key roles in the economy of a nation. While most people agree that chemicals are useful to man, there is consensus that chemicals – especially toxic chemicals equally pose grave danger to mankind and the environment he lives. There is therefore, a great need for the control of these chemicals. Different approaches have been adopted – both domestic and international. This article examines the effectiveness of these approaches.

Keywords: Toxic, Chemicals, hazard, Prior Informed Consent (PIC), Persistent Organic Pollutants, Food, and Agricultural Organization (FAO).

1. INTRODUCTION

Chemicals have a variety of uses. Synthesized chemicals play a key role in many sectors such as agriculture, industry, housing, transport, textiles, the health sector and the home. Chemical fertilizers help to develop the agricultural base while pesticides help to control disease and various sort of pests. Chemicals are essential ingredients in the production of synthetic fibres and yarns such as nylons and polyesters. In transport and housing, chemicals are used for thermal insulation, wood substitutes, water purifiers, paints and so on. Chemicals also play a leading role in maintaining and monitoring human health through drugs and pharmaceuticals (Oludayo, 2004).

Despite the usefulness of chemicals to man, they could pose significant hazards to human health and environment if they are indiscriminately produced, distributed and disposed. Some synthetic chemicals are found to be toxic and their introduction to the land, air and water pose significant hazards to the environment. Although not all chemicals are objects of regulation, chemicals that are toxic or potentially toxic are the subject of international and municipal control. This article examines these strategies.

2. TOXIC CHEMICALS AND THEIR EFFECTS

Toxic chemicals are those chemicals that enter the environment as the product or by-product of human activities and which appear to pose a real threat to human health and the environment and which can only be eliminated with difficulty to the environment. Toxic chemicals may subject any person to the risk of death, fatal injury or incurable impairment of physical and mental health (Harmful Waste Special Criminal Provisions etc Act, 2004 s.15).

Chlorinated organic compounds illustrate this problem. For example, groups of chemicals such as polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT) were developed as relative substances but as a result of their widespread use and release into the environment, they can be detected in Arctic and Antarctic snow and surrounding ecosystems. Some of these chemicals are either banned or restricted in production, distribution and marketing. In determining what constitutes toxic in this context, experts gather and evaluate data on the type of health effects, diseases or ecological damage that may be produced by a chemical and the exposure conditions under which the effects do occur.

Given the toxicity of most chemicals and the inherent danger to human health and environment, the need for efficient management of chemicals becomes imperative. Efficient management of chemicals include reducing the risk that the chemicals may cause human health or environment. The risk associated with exposure to chemicals varies according to circumstances. It concerns the control of consumer products; measures to protect workers from exposure to chemicals, reduction of hazardous emissions into the environment and better regulation of the production and distribution of previously unregulated substances.

The categories of regulated chemicals are contained in Schedule II to the Management of Solid and Hazardous Waste Regulation. The classification is based on their hazardous contents, toxicity, corrosiveness and halogenated hydrocarbon contents. However, the chemicals that are of international and national concerns are pesticides and persistent organic pollutants (POPs).

Pesticides literally mean 'pest killers.' It is the generic term, which embraces the insecticides, fungicide and herbicides (FAO Conference Res. 10/85 1985 Art 2). The increasing use and the attendant consequences of pesticides have given rise to serious concerns of human and wildlife. The greatest concern from a wildlife point of view about the usage of herbicides is the alteration of habitats. Pesticides are of different compositions – organochlorine pesticides (OC), organophosphates (OP), and carbamates. Examples of organochlorine pesticides are aldrin, BHC (Benzene HexaChloride), Chlordane, DDT, dieldrin, endrin, heptachlor and Lindane. Most organochlorine pesticides are now banned in the developed world and of reduced usage in some parts of the world (POP Convention, 2001).

Persistent organic pollutants (POPs) are chemical substances that persist in the environment, bioaccumulate through the food web, and pose a risk that includes an array of chemicals, pesticides, pharmaceuticals, plastics, industrial chemicals and the by-products of industrial processes in the form of organochlorides. The main properties of POP are toxicity, persistence, bioaccumulation and migratory.

While the effects of POPs on animals and human health have been debated, many have linked the increase in the level of POPs to cancer immune deficiencies, and decreases in fertility and reproductive stress. Given the growing evidence of long-range transport of these substances in regions where they have never been used or produced and the consequential threats they pose to global environment, the need to reduce and eliminate these dangerous chemicals globally becomes imperative. International efforts at regulating POPs are reflected in two major conventions. First, the Protocol under the 1979 Long-Range Trans-boundary Air Pollution (LRTAP) Convention (Geneva, 13 November, 1979).

Municipal Control:

Nigeria is not a major producer of chemicals but rather a consumer of these toxic chemicals. Hence, there is no law that bans the production or consumption of such chemicals in Nigeria. Rather, the existing legislation is aimed at controlling the transportation, storage and distribution of the regulated chemicals. Also, there is no statutory framework for the integrated pest management in Nigeria. However, there are administrative measures applied by the Federal Ministry of Environment under the Montreal Protocols and the Vienna Convention that seek to track the importation, consumption, marketing and distribution of the toxic chemicals within the country. The strategies for the management of toxic chemicals include

- (a) The control of chemical hazards through pollution prevention, emission inventories, product labelling, use of limitation procedure for safe handling and exposure regulations.
- (b) The phase out or ban of high risk chemicals that are persistent and bioaccumulative, and whose use cannot be adequately controlled or monitored.
- (c) The emphasis on the use of biological control methods for pest control and
- (d) The control of importation of banned or restricted chemicals.

In addition, the Federal Ministry of Environment adopts the voluntary Prior Informed Consent (PIC) procedure offered by UNEP Guidelines and FAO Codes of Conduct which require that exporting countries should obtain the consent of the importing country designated national authority before shipping any toxic chemicals into the country. Under this procedure, consent is first given by the Ministry for the consignment of chemicals and a permit issued for the exportation of the chemicals into the country.

For example, a German firm which intends to export toxic chemicals into Nigeria must first obtain the consent of the Federal Ministry of Environment which would in turn issue a permit to the German firm with which the chemicals would be exported from Germany into Nigeria.

By this measure, information about the importation, composition potential risk and usages of those chemicals that are banned or restricted is closely monitored right from the exporting countries to the distribution and marketing networks including the warehouses and outlets to ensure safe handling, storage and disposal within Nigeria. In this respect, importers and consumers of these chemicals are required to register with the Federal Ministry of Environment. Where there are any discrepancies in the consignment, the importer must inform the Ministry of any discrepancies in the chemicals supplied within 21 days of the receipt of such consignment (Environmental Pollution Control Law of Lagos State ss.16 & 18).

Where such consent and permit are not obtained, the Ministry acting under any tip off or alerted on the impending shipment of toxic water camouflaged as industrial raw material will intercept such vessel at the sea port, take physical samples of such consignments and analyse them before the consignment is released to the owner. In addition, the Federal Ministry of Environment embarks on chemical tracking by monitoring warehouses and outlets for the safe handling, storage and disposal of imported chemicals.

International Measures:

Although some of these chemicals are banned in many countries, they found their ways into other countries, particularly the developing countries markets many reasons. First, the developed countries continue the production and exportation of banned chemicals for developing countries markets. Second, many developing countries patronized these chemicals because of their relative panacea to pest problems and as a boost to agricultural production. Most developing countries import these chemicals to boost their agricultural and industrial activities without adequate information and the legal regulation on the chemicals being imported and infrastructure to manage such chemicals in an environmentally sound manner. Incidentally, many of these chemicals find their way back into the food chain of the developed countries through exportation of food crops.

In order to stem the tide of vicious poisoning, international legal responses are directed at regulating the chemical distribution and transportation. International law is not concerned with banning trade in chemicals but rather in controlling the distribution network by provision of necessary information and imposition of stringent rules on international trade in chemicals with a view to enabling a nation to decide whether or not it intends to acquire such chemicals. By acquiring and exchanging information on chemicals, it is believed that humankind will learn how to use chemicals safely so that their risks are minimised and their benefits serve towards meeting the social, economic and sustainable development goals of modern world. These international legal regimes are contained in different instruments which are considered below.

FAO Code of Conduct On Distribution and Use of Pesticides:

The International Code of Conduct on Distribution and Use of Pesticides was first developed in 1985 by FAO to address a number of difficulties associated with the use of pesticides in developing countries where adequate regulatory infrastructures are frequently lacking. One of the basic functions of the Code is to serve as a point of reference particularly for developing countries until such a time as countries have established adequate regulatory infrastructures for pesticides. The objectives of the Code are to set forth responsibilities and establish voluntary standards of conduct for all public and private entities engaged in or affecting the distribution and use of pesticides, particularly where there is no or an adequate national law to regulate pesticides. The 1985 Code was subsequently amended in 1989 to incorporate the principle of Prior Informed Consent in Article 9 (FAO Conference Res 6/89, 1989).

The Code is voluntary and imposes global standards for the sale, use and management of pesticides. The Code allocates voluntary obligations on all stakeholders including the government, industry and public involved in the distribution and use of pesticides. The overall responsibility and power to regulate the distribution and use of pesticides is exclusively vested in national governments. They must take action to introduce at the domestic level the necessary legislation for the regulation of use and distribution of pesticides, including the enforcement of the law. This will necessarily require national governments to accord high priority and adequate resources to the task of effectively managing the availability, distribution and use of pesticides in their countries (Arts 3-6).

As a mark of recognition to the roles of the producers, distributors and users in chemical management, the Code recommends that pesticide manufacturers and traders should adhere to the provisions of the Code as a “standard for the manufacture, distribution and advertisement of pesticides.” (Arts 3-6). Pesticide industries should observe the safe pesticide management practices which include the supply of pesticide of adequate quality, packaged and labelled for each market, pay special attention to formulations, presentation, packaging and labelling to reduce hazard to users, provide in each package of pesticide, information and instructions in a form and language adequate to ensure safe and effective use; retain an active interest in following their products to the ultimate consumer and keeping track of major uses and occurrence of any problems arising in the actual use of their products as a basis for determining the need for changes in labelling, direction for use, packaging, formulation or product availability.

It further recommends that the manufacturers and traders of pesticides should undertake elaborate testing of the pesticides and pesticide products to secure the safety, efficacy and fate of the chemicals and make available copies or summaries of the original reports to the designated national authorities where the pesticide is to be offered for sale (Arts 4 & 8). Where certain pesticide is destined to market of a particular region, the manufacturer must ensure through appropriate testing techniques that the product is not only inimical to human health and environment, but must be conducive to the peculiar conditions prevailing in the region. National government is at liberty to evaluate and approve the test before approval is given for the product to enter trade channels of the country concerned. All pesticides entering international trade must conform to the relevant FAO/WHO or equivalent specifications for composition and qualities control as well as rules and regulations relating to classification, packaging, marketing, labelling and documentation (Art 8(13)). Where upon request by the importing state, provide advice on methods for the analysis of any active ingredient of formulations and analytical standards of the products (Art. 4).

The core of pesticide control lies in the ability of the national government to regulate the use, availability and distribution of pesticides within its territory. Such regulation must take cognisance of the level of trainings and expertise in pesticide handling. The Code recommends two methods to restrict availability of toxic pesticides: by refusing to register a product; and by restricting the availability to certain groups of users (Art. 7).

Article 9 provides for exchange of information between the exporting and importing countries. It recommends that the government of any country that takes action to ban or severely restrict the use or handling of a pesticide in order to protect health or environment should notify FAO as soon as such decision is taken. FAO will subsequently notify the designated national authorities in other countries of the action of the notifying government. The essence of notification is to give competent authorities in other countries the opportunity to access the risks associated with the informed decisions as to the importation and use of the pesticides concerned, after taking into account local, public, health, economic, environmental and administrative conditions.

Article 9 further introduced the principle of prior informed consent in the management of chemicals. Hence, pesticides that are banned or severely restricted for reasons of health or environmental considerations are subject to the Prior Informed Consent (PIC) procedure. Under this procedure, exporting nations are expected to participate in the PIC process and importing nations are invited to participate. A designated national authority is then required to report pesticide bans, refused registration or impose severe restrictions for health and environmental reasons to the FAO. The FAO, in response issues a “PIC Decision Guideline Document” for every pesticide recommended by the FAO expert panel or for which notice has been received from national chemical and physical composition of the pesticide as well as its uses, possible source of exposure and information summarising the toxicity and regulatory status in other countries. The document is then sent to participating countries, which have ninety days to decide whether to ban import of the pesticides. The status quo is maintained if the importing country does not respond within 90 days. FAO then maintains a database from which countries can monitor the import status of chemicals in each country. The Code also makes elaborate provisions on labelling, packaging, storage, disposal and advertising of pesticides (Arts 10 & 11).

The London Guidelines for the Exchange of Information on Chemicals in International Trade:

The London Guidelines (UNEP Governing Council 1987, amended by UNEP Governing Council decision 15/30 of 25 May 1989) was introduced by UNEP in 1987 and amended in 1989 to accommodate prior informed consent procedure. The Guidelines are complementary to existing instruments such as WHO and FAO Codes and are equally voluntary in nature. They are aimed at assisting governments in ensuring chemical management and chemical safety through the exchange of information on chemicals in international trade. The Guidelines also aimed at enhancing the sound

management of chemicals through scientific, technical, economic and legal information. The scope of Guidelines includes industrial chemicals and pesticides but excludes pharmaceuticals, narcotics, drugs and psychotropic substances, radioactive materials and chemicals imported for the purposes of research or analysis in quantities not likely to affect the environment or human health (Vienna Convention on Civil Liability for Nuclear Damage, 1963).

States parties are to take steps to establish and strengthen the legislative and regulatory measures of improving control and management of chemicals with a view to protecting human, animal or plant life or health or the environment. However, such regulatory measures must not necessarily obstruct international trade. To ensure global regulation and cross-fertilization of idea, states with more advanced systems for the safe management of chemicals should share their experience with those countries in need of improved systems.

It also introduced the Prior Informed Consent (PIC) procedure and International Register of Potentially Toxic Chemicals (IRPTC) to the effective monitoring of compliance with the Guidelines. The PIC procedure is jointly implemented by the FAO and UNEP. States that have banned or severely restricted a chemical shall notify IRPTC now known as “UNEP-Chemicals.” The IRPTC will in turn disseminate those information to other members. The information required includes information relating to chemical identification, specification, summary of the control action taken and reasons for it and additional information as may be requested by any exporting state.

The PIC procedure is similar to the FAO Code. Under the PIC procedure, participating states will have opportunity to record their decisions regarding future imports of banned or severely restricted chemicals in a formal way. Each participating country must designate one competent body to handle both industrial chemicals and pesticides or may designate separate competent bodies for each. Once UNEP, through its UNEP-Chemicals group identifies the chemical as one that meets the definition of banned or severely restricted under the FAO Code of Conduct and London Guidelines, a “decision guidance document” is circulated to other participating countries who may then notify UNEP-Chemicals and FAO of their decisions concerning their imports of the chemicals. The country’s decisions are then compiled and disseminated to all participating governments.

As a complement to the London Guidelines as amended, the Code of Ethics on the International Trade in Chemicals was concluded in 1994 between UNEP and private sector parties, governments and intergovernmental organizations concerned. By this Code, the private sector parties commit themselves to help achieve the objective of the London Guidelines and to enhance the sound management of chemicals through exchange of information on chemicals in international trade.

Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention on PIC):

This convention is the first legally binding instrument to impose obligation on contracting states to apply the prior informed consent in international trade on hazardous chemicals and pesticides. It was adopted on 11th September, 1998 in Rotterdam. The Convention is aimed at promoting the shared responsibility and co-operative efforts among parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. It also aimed at contributing to the environmental sound use of chemicals by facilitating information exchange about their characteristics and by providing for a national decision-making process on their import and export through dissemination of information to parties. The primary purpose of the treaty is to ensure that importing nations are informed and have the opportunity to give or to refuse consent of shipments. The Convention also seeks to reduce environmental and public risks from the application and consumption of hazardous chemicals in importing nations, particularly in the developing world.

The Convention legalises the prior informed consent procedure hitherto voluntarily applied by states under the FAO Code and the London Guidelines. According to the Convention, export of a chemical can take place only with the Prior Informed Consent (PIC) of the importing party. The PIC procedure is a means for formally obtaining and disseminating the decisions of the importing parties as to whether they wish to receive future shipments of certain chemicals and for ensuring compliance with these decisions by exporting countries. It covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by participating states, and which have been subject to notification by parties for inclusion in the PIC procedure.

Long-Range Trans-Boundary Air Pollution (LRTAP) Convention 1979:

Efforts at minimising the incidence of atmospheric pollution at international level began in 1979 following the conclusion of the 1979 Convention on Long-Range Trans-Boundary Air Pollution. Prior to this Convention, Europe has been monitoring the emission of SO₂ (sulphur dioxide) and NO_x (oxides of nitrogen) within the continent since the 1970s and beginning in the 1980s it has been able to estimate the SO₂ and NO_x pollution budgets for most countries. This treaty was originally negotiated among the European States but the United States of America and Canada have subsequently ratified it. The treaty signed by both East and West apparently as a result of the end of the Cold War between Europe and USA.

The objective of the Convention is “to protect man and his environment against air pollution and to endeavour to limit and, as far as possible, gradually reduce and prevent air pollution, including long-range trans-boundary air pollution.” (Art 2).

Contracting States are required to initiate policies and strategies for exchange of information, consultation, research and monitoring as a means of combating the discharge of air pollution. The Convention also sought for cooperation among member states in the area of research and development of existing and proposed technologies for reducing emission of sulphur compounds and other major air pollutants, including technical and economic feasibility and their environmental consequences. It also seeks to study the effects of sulphur compounds and other major air pollutants on human health and the environment. It also has its objective, capacity development through education and training programmes in related aspects of air pollution and long-range trans-boundary effect. The treaty has been followed by a number of other protocols (Protocols of 1984 Geneva; 1985 Helsinki; 1988 Sofia; 1991 Geneva and 1994 Oslo). The Protocol institutes a clear target and timetable by freezing emissions at 1987 levels. It also specifies certain technology-based standards, including, for example, a requirement to make unleaded gasoline available. Finally, the NO_x protocol requires parties to begin gathering information for a critical load approach, which as of 1997 the parties were still negotiating.

Stockholm Convention on Persistent Organic Pollutants, 2001:

The Stockholm Convention seeks the elimination or restriction of production, use and disposal of all Persistent Organic Pollutants (POPs). It provides a regulatory framework for management and disposal of stockpile in a safe, efficient and environmentally sound manner. It further imposes trade restrictions and controls international trade in those regulated chemicals. The categories of chemicals regulated include both pesticides and industrial chemicals and their by-products. Every contracting party is required to prohibit and or take the legal and administrative measures necessary to eliminate the production, use, import and export of chemicals listed in Annex A. Similarly, every Contracting Party shall take steps to restrict the production, use, import and export of chemicals listed in Annex B. Contracting Parties are required to provide measures aimed at identifying and eliminating the chemicals listed in Annex C.

3. PROBLEMS AND RECOMMENDATIONS

(i) Problems:

Most of the information needed for control is obtained from the exporting countries. Issues of sabotage and deliberate withholding or supplying of defective information cannot be ruled out.

The major drawback in most of the international instruments is that they do not ban or control trade with non-parties. This is because there is no counterpart provision on exporting countries. They may even export to non-parties without restriction by the PIC control. Exporting Parties are obligated only to seek consent from intended importing parties when exporting a domestically banned or severely restricted chemical.

Most of the measures require implementation legislation in many nations. As developing nations, most of the importing parties may lack the resources needed to perform their obligations under the PIC procedure.

While the PIC procedure is intended to protect importing countries that opt for PIC control protection, the burdens of implementation fall most heavily on them. The success of the PIC Convention will hinge largely on the ability of developing nations to scrutinize all their imports from all nations, and to differentiate PIC Control compliant from non-compliant shipments.

This calls for strict import control regime which is lacking in most developing nations.

(ii) Recommendations:

What is required is to expose citizens in developing nations to educational training on how to handle toxic chemicals. Such a training should include sensitization campaigns on the dangers of toxic chemicals. In addition, a strict import control regime should be put in place. Also, a legislation which imposes total ban on any form of dealings in toxic chemicals is also required.

4. CONCLUSION

With adequate training and sensitization on the inherent and potential dangers of toxic chemicals, coupled with the necessary statutory intervention, the process for an effective regulatory regime on toxic chemicals may be achieved.

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