

NIGERIA'S SITUATION REPORT OF CHLORPYRIFOS

by

SRADeV Nigeria



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SRADeV Nigeria



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Prepared by Victor Fabunmi (Project Officer) and edited by Dr. Leslie Adogame, Executive Director, Sustainable Research and Action for Environmental Development (SRADeV Nigeria)

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ABSTRACT

Nigeria is a growing economy. The average age of the population is around 18 years. The nation engages extensively in agricultural activities to about 35% of the population. Agricultural practices in Nigeria depend heavily on chemical use. This grossly uncontrolled application leaves the population with occupational, dietary and environmental related long term exposure to Highly Hazardous Pesticides (HHP). This has increased risks on food safety, health of consumers and agricultural workers.

Chlorpyrifos is an organophosphate insecticide used extensively in agriculture, construction and public health control of insect pest. In Nigeria Chlorpyrifos brands exist both in open and online markets like Afrimash, Konga and Jumia. Currently, the popular brands including: Massacre (20% Chlorpyrifos), Kolar (20%), Terminator (50% Chlorpyrifos/5% Cypermethrin), Predator (Chlorpyrifos 50% EC) and ACT FORCE 55 (Chlorpyrifos 35 % + Cypermethrin 10 % EC). The national situation on Chlorpyrifos involved assessing national data and desktop review.

In the last 5 years, over 4million liters of Chlorpyrifos was imported into the country. In 2021, over 1 million liters was imported. Importing countries were China, India and Argentina. However, these HHPs have reportedly

been banned in India and highly restricted in China, yet find its way to Nigeria from them. In the last 5 years, thirteen and seventeen companies from India and China respectively exported Chlorpyrifos into Nigeria.

The Federal Ministry of Agriculture and Rural Development (FMARD) issued a ban on the use of Chlorpyrifos on the 7 March, 2022. National Agency for Food, Drug Administration and Control (NAFDAC) compiled a set of HHPs up for review, of such was Chlorpyrifos. The agency proposed a phase-out for Chlorpyrifos within the next 2 years. The agency held meetings on 24th and 29th November, 2022 with relevant stakeholders including civil societies, professional associations and importers dealing with pesticides to communicate and get feedback.

EXECUTIVE SUMMARY

Nigeria is one of the seven most populous countries, and the most populous black nation in the world. The country has an estimate of 206,139,589 people (Worldometer, 2020) and an average population density of 226 persons per sq. km. The economy hinges on two pillars: oil/gas and agriculture. Both sectors contribute 65% – 70% of Gross Domestic Product (GDP), while the secondary sector (manufacturing) contributes about 7% and the tertiary sector (transport, trade, housing, etc.) contributes about 25%. Agriculture is an economically important sector in Nigeria that provides employment for about 35% of the population and contributing almost 22% of the country's GDP in 2021 according to the National Bureau of Statistics.

Chlorpyrifos is majorly used as a broad spectrum insecticide. It was introduced in 1965 by Dow Chemical Company India (Eisler, 2000). It is renowned for elimination of termites. It effectively controls termites and other soil insects in field and plantation crops, as well as in factories, furniture, and buildings. It has extensively been used as pre and post construction, public health and environmental control of insects. It is broadly used in the control of termites, cockroach, spider, ants, fleas, mosquitoes and bedbugs. Chlorpyrifos effectively

controls boll worms, cutworms, white grub, termites, borers on crops like cotton, vegetables, pulses, paddy, and fruit trees. In the country Nigeria is used on fruit and vegetable crops to manage crop pest especially insects. Such crops include watermelon (*Citrullus lanatus*), spinach (*Amaranthus cruentus*), sorrel (Zobo) (*Hibiscus sabdariffa*) and rice paddy.

However, the use of Chlorpyrifos has extensively posed both health and environmental concerns to the country. According to the National Environmental Standard Regulation and Enforcement Agency (NESREA). Chlorpyrifos presents dermal reactions among other health effects. Nigerians consume crops and plants grown under chemical pest control that have the potential to pose risks to humans.

Currently, some popular brands include Massacre (20% Chlorpyrifos), Kolar (20%), Terminator (50% Chlorpyrifos/5% Cypermethrin), Predator (Chlorpyrifos 50% EC) and ACT FORCE 55 (Chlorpyrifos 35 % + Cypermethrin 10 % EC) are available locally in chemical stores as well as on online platforms like Afrimash, Konga and Jumia.

The study approach used in the course of the data collection involved desktop

literature review, assessing national records and key Informant Interview from relevant stakeholders. These include National Agency for Food Drug Administration and Control (NAFDAC), Federal Ministry of Agriculture and Rural Development (FMARD), National Environmental Standard Regulation and Enforcement Agency (NESREA), Crop protection expert among others.

Results and findings showed the quantity of pesticides imported into Nigeria from January 2017 to April 2022 provided by the National Agency for Food, Drug Administration and Control (NAFDAC). In this data, it was reported that Chlorpyrifos imported into Nigeria in the past 5 years was over 4 million liters and over six hundred tonnes. The highest import (over one million liters) of chlorpyrifos was recorded in 2019. In 2021, 854,644 liters was imported.

Basically the countries of imports in the past 5 years were China, India and

Argentina. Currently, Chlorpyrifos has been banned in India and highly restricted in China but is still imported from these countries to Nigeria.

The Federal Ministry of Agriculture and Rural Development (FMARD) has made the call for ban and compliance monitoring of all agrochemical products with Chlorpyrifos active ingredients and variant chlorpyrifos-methyl including: Blocade, Cortilan, OleoRel, Pyrinex and Reldan22 in Nigeria. The National Agency for Food, Drug Administration and Control (NAFDAC) compiled a set of HHPs up for review of such was Chlorpyrifos. The agency proposed a phase-out for Chlorpyrifos through a 2 year moratorium period. However, the department of Veterinary Medicine and Pesticide of the agency held meetings on 24th and 29th November, 2022 with several stakeholders including the civil societies, professional associations and importers dealing with pesticides to disseminate their stand and get stakeholders feedback.

1.0 INTRODUCTION TO THE COUNTRY

1.1 General overview of the country and its agriculture activities

Nigeria has a total area of 923,768 sq. km, of which the total land area is 913,768 sq. km while 10,000 sq. km is water. Administratively, Nigeria has 36 states and the Federal Capital Territory (FCT). The states are divided into 774 Local Government Areas (LGAs) distributed across six different geopolitical zones: these are North-west, North-east, North-central, South-east, South-west, and South-south.

Agriculture is an economically important sector in Nigeria that provides employment for about 35% of the population and contributing almost 22% of the country's GDP in 2021, according to the National Bureau of Statistics. Agriculture supplies the country with food, raw materials for industries and importation of internationally generated revenue. Nigeria's major industries are located in Lagos, Agbara and Sango Ota, Port Harcourt, Ibadan, Aba, Onitsha, Calabar, Kano, Jos and Kaduna.

Agriculture in Nigeria is largely at subsistence level characterized by intensive small holder unirrigated farming and extensive grazing. Agricultural produce in Nigeria varies from one region to the other. Major produce in the north are cereals such as millet, rice, maize, beans, soya beans and vegetables. Irish potato, yam, and potato are the main agricultural products in the middle belt, while cassava, cash crops such as cocoa, coffee, kola nuts and cashew nuts are grown in south-western Nigeria. Also, red oil production and cassava cultivation spread across the Southern region.

1.2 The country's history on the registration and use of Chlorpyrifos

Chlorpyrifos is majorly used as a broad spectrum insecticide. It was introduced in 1965 by Dow Chemical Company India (Eisler, 2000). It is renowned for elimination of termites. It effectively controls termites and other soil insects in field and plantation crops, as well as in factories, furniture, and buildings. It has extensively been used as pre and post construction, public health and environmental control of insects. It is broadly used in the control of termites, cockroach, spider, ants, fleas, mosquitoes and bedbugs.

However, information from fumigators confirmed they use it accordingly but also mix with other pesticides for effective actions. Currently, the popular brands including: Massacre (20% Chlorpyrifos), Kolar (20%), Terminator (50% Chlorpyrifos/5% Cypermethrin), Predator (Chlorpyrifos 50% EC) and ACT FORCE 55 (Chlorpyrifos 35 % + Cypermethrin 10 % EC) are available locally in chemical stores as well as on online platforms like Afrimash and Jumia.

2.0 STATUS OF CHLORPYRIFOS USE IN THE NIGERIA

2.1 Quantity of chlorpyrifos imported in the country

In the quantity of pesticides imported into Nigeria from January 2017 to April 2022 was provided by The National Agency for Food, Drug Administration and Control (NAFDAC). This is the agency of the Federal Ministry of Health saddled with the responsibility of registering and regulating the use of pesticides among other products in the country.

The choice of NAFDAC's data was its disaggregation to active ingredients. In the data obtained, we noted the following:

- The quantity of liquid pesticides containing Chlorpyrifos imported into Nigeria were over 4 million litres. Further review showed Chlorpyrifos based pesticides imported into the country were mostly liquid products.
- Further review showed that about six hundred thousand kilograms of Chlorpyrifos products were also imported. Details of our findings are presented below.

Table 1: Quantity of Imports in 2017-2022

| | |
|-----------|--------------|
| Litres | 4,150,768.00 |
| Kilograms | 672,416.00 |

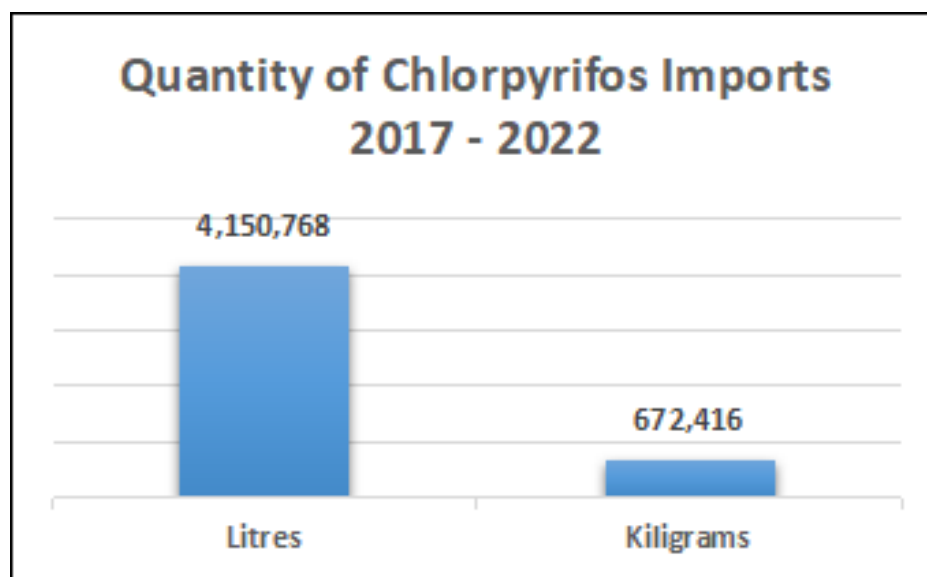


Figure 1: Quantity of Imports in 2017-2022

2.1.1 Nigeria's yearly Imports of Chlorpyrifos

During our analysis of the pesticide imported into Nigeria within the review period, we noted the yearly imports of Chlorpyrifos based pesticides peaked in 2019. This was followed by a steady decline in imports from year 2020. A rationale for this trade reduction can be attributed to the effect of lockdowns introduced in 2020 after the advent of the COVID-19 pandemic and relative increased awareness on the dangers of chlorpyrifos as the decline was highly significant in 2021. However, the documented data was received in the first quarter of the year and not the true reflection of the entire year. Also, importation of the pesticide in solid state was made in 2019 and 2020. The value corresponds with values in liquid state. Details of our findings are presented below:

Table 2: Yearly quantity of Chlorpyrifos importation

| Year | Amount (LT) | Amount (KG) |
|------|--------------|-------------|
| 2017 | 641,272.00 | Nil |
| 2018 | 494,180.00 | Nil |
| 2019 | 1,064,772.00 | 538,416.00 |
| 2020 | 1,037,500.00 | 134,000.00 |
| 2021 | 854,644.00 | Nil |
| 2022 | 58,400.00 | Nil |

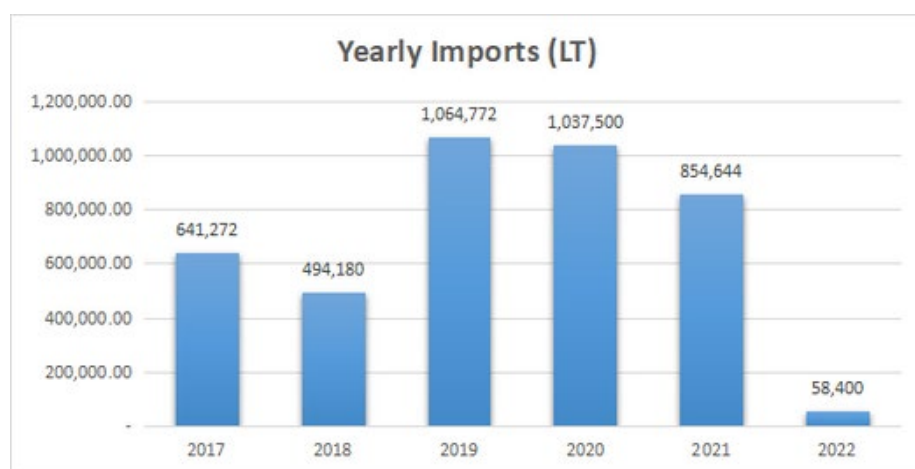


Figure 2: Yearly import of Chlorpyrifos in litres 2017 – 2022 (First quarter)

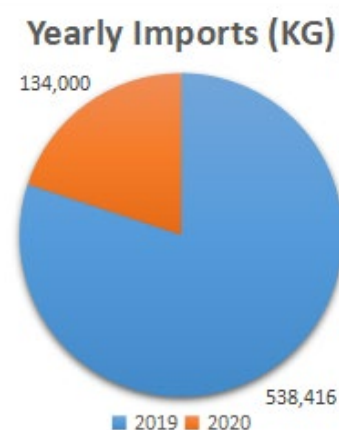


Figure 3: Yearly import in kilograms

2.2 The main crops using chlorpyrifos in the Nigeria

Chlorpyrifos effectively controls boll worms, cutworms, white grub, termites, borers on crops like cotton, vegetables, pulses, paddy, and fruit trees. Chlorpyrifos is used in Nigeria on fruit and vegetable crops to manage crop pest especially insects. Such crops include watermelon (*Citrullus lanatus*), spinach (*Amaranthus cruentus*), sorrel (Zobo) (*Hibiscus sabdariffa*), Rice paddy.

3.0 SOURCE OF CHLORPYRIFOS IN NIGERIA

This baseline study also focused on establishing the source of import of Chlorpyrifos. On the question of whether Nigeria produce Chlorpyrifos? Or imported, where is it imported from and which companies specifically import into the country.

3.1 Production

Based on national registered pesticides data on chlorpyrifos, Nigeria does not produce Chlorpyrifos. Most of the registered ones are being imported into the country. The National Agency for Food Drug Administration and Control (NAFDAC) registers pesticides to be used in the country either locally manufactured or imported).

3.2 Countries Nigeria patronizes for Chlorpyrifos

Sufficient information exist that Nigeria imports Chlorpyrifos majorly from China and India. However, as of 2019, Chlorpyrifos has been banned in India and currently been restricted in China yet exported to Nigeria. In the last five years, the exporting countries and companies of Chlorpyrifos-based pesticides into Nigeria is presented below:

Table 3: Exporting Countries and their Companies of Chlorpyrifos in the last 5 years

| CHINA | INDIA | ARGENTINA |
|-------------------------------------|-----------------------------|-------------------|
| Agrohao Co Ltd | Afri Ventures Fze | Hemani Industries |
| Cresdev Marketing Pte Ltd | Agrow Allied Ventures | |
| De Broglie New Mat | Atlantic Crop Science | |
| Fusion International | Hemani Industries | |
| Hanjing Rhonquim | Heranba Industries Limited | |
| Hong Kong Yufull | Inshara Global Fzc | |
| Jat Offshore S.A.L | Lionseal Industries | |
| Jiansu Hoso Impt.And Expt. | Meghmani House, Bh | |
| Lagos And Niger Shipping Agencies | Meghmani Organics | |
| Nanjing Rhonquim Co Ltd | Modern Insecticides Limited | |
| Ningbo Double Fusi | Multibis Sigapore Pte Ltd | |
| Ningbo Farming Imp | Ranjit Insecticides Pvt Ltd | |
| Shandong Weifang Rainbow Chemicals | Vishwamitra Dmcc J | |
| Shenzhen Baocheng Chemical Industry | | |
| Valency Intl Tradi | | |
| Vink + Co GMBH | | |
| Vink Corporation DMCC, UAE | | |

4.0 HUMAN HEALTH AND ENVIRONMENTAL IMPACTS OF CHLORPYRIFOS

4.1.1 Human health impacts reported in the country

Every agrochemical has human and environmental effect. For instance, Chlorpyrifos presents dermal reactions among other health effects. Nigerians consume crops and plants grown under chemical pest control that have the potential to pose risks to humans. This is particularly common in the consumption of fruits and vegetables without proper washing. There are existence of significant research findings in Nigeria, which indicates the presence of concentrations of Chlorpyrifos residues in vegetables (spinach, lettuce, cabbage, tomato and onion) and aquatic biota. For instance, Akpan et al., 2013 documented the concentrations of organophosphorus pesticide residues (dichlorvos, diazinon, chlorpyrifos, and fenitro-thion) in vegetables like spinach, lettuce, cabbage, tomato and onion and soil samples to be above the Maximum Residue Limits (MRLs) and acceptable daily intake values (ADIs) set for vegetables and soil by the Codex 2009 (WHO and FAO). Also, Maigari et al, 2021 documented chlorpyrifos residues in Cabbage, lettuce, Calyces and Tiger nut to range 0.013 – 0.043µg/kg above the EU MRL. This finding could be responsible for many cases of alterations in carbohydrate and lipid metabolism and organ damage in humans in Nigeria

4.1.2 Environmental and biodiversity impacts reported in the country

According to the NESREA, Chlorpyrifos residues have been detected in sediments, soil, water, vegetables, food stuff and even in human fluids. The extensive application of Chlorpyrifos has caused contamination of various ecosystems like soil, sediments, water, and air and also leads to the disruption of biogeochemical cycles. Chlorpyrifos pesticide residues have been identified in Nigerian environmental matrices, including biota and birds. This is evident in many studies such According to Adewunmi et al, 2018; Woke and Aleleye-Wokoma, 2009. *Clarias garipenus* expressed acute toxicity within 96hours of exposure to Chlorpyrifos concentrations (0.40, 0.55, 0.70 and 0.85mg/l) in aquatic habitat causing increasing mortality rates ranging 30 - 85%, other noticeable malfunctioning were hyperventilation, stillness, increase opercular opening for ventilation, general body weakness, skin discoloration, loss of reflex, uncoordinated swimming among others.. At sub lethal levels, Chlorpyrifos was found to reduce the haemoglobin level but increased the red blood cell. Chlorpyrifos products have harmful effects on humans, animals, beneficial insects and the Environment. It has been confirmed that exposure to Chlorpyrifos has created health complications due to the inhibition of cholinesterase enzyme, which leads to neurotoxicity, immunological and psychological effects in humans plus to the natural ecosystem.

4.2 Measures taken, if any, as a result of the human health and environmental impact

Several measures taken by the Ministries Departments and Agencies includes

4.2.1 Measures by the Federal Ministry of Agriculture

The Federal Ministry of Agriculture and Rural Development (FMARD) made the call for ban and compliance monitoring of all agrochemical products with Chlorpyrifos active ingredients and NAFDAC compiled a set of HHPs up for review including Chlorpyrifos, and proposed a phase-out for Chlorpyrifos through a 2 year moratorium period.

4.2.2 National policy related initiatives

4.2.2.1 NESREA'S Intervention:

NESREA is playing a key role on pesticides management in Nigeria in line with provisions of the NESREA Act, Regulations 7(f-g):

- 1.To enforce compliance with any legislation on sound chemical management, judicious use of pesticides and disposal of spent packages thereof; and
- 2.Enforce compliance with regulations on the importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste other than in the oil and gas sector.

Also, in line with this mandate, the Agency has made significant efforts as follows:

- 1.Development and implementation of National Environmental (Chemicals and Pesticides) Regulations, 2014 which contains Code of Practice for Handling of Pesticides in Nigeria.
- 2.Sensitization/awareness creation on the use of banned and restricted chemicals (including pesticides) in Nigeria.
- 3.Carried out market surveillance on use of banned and restricted chemicals and pesticides in some States in Nigeria.
- 4.Carrying out compliance monitoring and enforcement programs on the use of banned and restricted Chemicals and Pesticides in Nigeria.
- 5.Implementation of chemical tracking in Nigeria to monitor importation of chemicals including pesticides into Nigeria.
- 6.Implementation of Extended Producer Responsibility (EPR) on proper disposal of used pesticides containers in Nigeria.

4.3 Government initiative to minimize the use of and/or ban chlorpyrifos.

The European Union has banned the use of Chlorpyrifos pesticides in farms in Europe, consequently, these products are being shipped to poorer countries including Nigeria. At the moment, Chlorpyrifos is not listed in any of the chemically related Multilateral Environmental Agreements (MEAs) for which Nigeria is a signatory.

4.3.1. Efforts by NESREA

1. Sensitization of farmers and other pesticides users on Integrated Pest Management (IPM).
2. Encourage research & development on formulation of safer pesticides alternatives including bio-pesticides from local raw materials.
3. Seeking technical and financial assistance from relevant international agencies on sound pesticides management in Nigeria.

4.3.2. Effort by the Federal Ministry of Agriculture and Rural Development (FMARD)

The Federal Ministry of Agriculture and Rural Development (FMARD) has made the call for ban and compliance monitoring of all agrochemical products with Chlorpyrifos active ingredients and variant chlorpyrifos-methyl including: Blocade, Cortilan, OleoRel, Pyrinex and Reldan 22 in Nigeria.

FMARD is redirected to the Federal Ministry of Environment, being the Designated National Authority (DNA) for chemically related MEAs in Nigeria, who will transmit such decision to the Secretariat of the Rotterdam Convention on Prior Informed Consent on Certain Hazardous Chemicals and Pesticides in International Trade.

4.3.3 Efforts by the NAFDAC

The National Agency for Food, Drug Administration and Control (NAFDAC) compiled a set of HHPs up for review of such was Chlorpyrifos. The department of Veterinary Medicine and Pesticide of the agency held meetings on 24th and 29th November, 2022 with several stakeholders including the civil societies, professional associations and importers dealing with pesticides. The agency proposed the following process of phase-out in a 2 year moratorium for its phase-out. However, members of CropLife Nigeria requested that more years be given to access a favourable alternative(s).

This phase-out process involves:

- By December 2022, the Registration and Regulation department of the Agency stops issuing certificate for registration and renewal of the product.
- By January 2023, importation of the product is stopped while, field trials is conducted and provisional permit is given.
- Between Jan 2023 and Dec 2023, a control is placed on the importation of the product with authority to clear and the quantity that can be permitted issued. Sensitization continues on the moratorium.
- January 2024 - October 2024 will be the period of moratorium.
- November 2024, a ban on Chlopyrifos is placed.

4.4 Policy framework that is in place or intended to be in place with regards to Chlorpyrifos

NESREA is implementing the National Environmental (Chemicals and Pesticides) Regulations, 2014. The main thrust of the Regulations is to ensure Environmentally Sound Management (ESM) of Hazardous Chemicals and Pesticides within their life cycle for the protection of human health and the environment.

The specific objectives are to:

1. Implement the Rotterdam Convention (RC) on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and any other related MEAs that may be domesticated by Nigeria;
2. Enforce the ban of Persistent Organic Pollutants (POPs);
3. Control the trans-boundary movement of hazardous chemical waste and their disposal;
4. Enforce the provision of the Harmful Waste (Special Criminal Provisions, etc.) Act CAP HI LFN 2004;
5. Strengthen the sound management of hazardous chemicals and pesticides, but preventing and reducing the adverse effects and accidents involving hazardous chemicals; and
6. Regulate all other hazardous chemicals and pesticides in international trade (imported, manufactured, exported or sold) and in use, that can impact adversely on human health and the environment.

5.0 COMMUNICATION STRATEGY

5.1 Report was prepared in English as main and official language, and can be used to communicate with government officials and for national awareness raising purpose

The report will be published in a press release by major media outfits to raise national awareness on the status of Chlorpyrifos situation in Nigeria.

5.2 Fact sheets, posters or any other communication tools in a local language to be used to reach out to media and the public.

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ANNEXES



FEDERAL MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT FARM INPUTS SUPPORT SERVICE DEPARTMENT

Bank Of Agriculture Plaza (5th Floor)
Plot 162 Independence Avenue, Central Business District, FCT-Abuja
Email: fessgestmar2015@gmail.com

FMARD/FISS/GEN/442/1/48

7th March, 2022

c/o Donald Ekenna Ofoegbu,
Program Coordinator Sustainable Nigeria Program,
Heinrich Boll Foundation,
Abuja/Alliance for Action on pesticide in Nig.(AAPN).

RE: EUROPEAN UNION AND UNITED KINGDOM EXPORTING BANNED NEONICOTINOID PESTICIDES TO NIGERIA AND OTHER POORER COUNTRIES

In furtherance of the banning of Neonicotinoid pesticides by the European Union and its unpopular shipment from countries within the Union to poorer countries including Nigeria, the Federal Ministry of Agriculture and Rural Development hereby notify you and other stakeholders of the immediate ban of the product in Nigeria.

2. Similarly, all agrochemical products with Chlorpyrifos active ingredients and variant chlorpyrifos-methyl including, Blocade, Cortilan, OleoRel, Pyrinex, and Reldan 22 are amongst banned products.

3. Reports have reviewed that these products have been banned for use in farms in Europe due to the harmful effect on Humans, Animals, beneficial insects, and the Environment.

4. Consequently, we request you to stop the distribution and marketing of the aforementioned products and also urge you to assist the Ministry in any way possible towards curbing the use of these products in the country for the safety of Nigerians and the ecosystem. The Ministry will also embark on a sensitization exercise to highlight the consequences of using banned pesticides.

5. Please accept the assurances of the Permanent Secretary's warm regards.

Engr. Tunde Bello
Director (Farm Inputs Support Service Department)
For: Permanent Secretary

ANNEXES



NATIONAL AGENCY FOR FOOD AND DRUG ADMINISTRATION AND CONTROL

NAFDAC CORPORATE HQ:

Plot 2032 Olusegun Obasanjo Way.
Wuse Zone 7, Abuja.
Tel: +234-9-2905701
E-mail: nafdac@nafdac.gov.ng
website: www.nafdac.gov.ng

LAGOS LIAISON OFFICE:

1, Isolo Industrial Estate
Oshodi - Apapa Expressway
Isolo, Lagos
Tel: +234-1-4730643

Your Ref:.....Our Ref:.....7th November 2022

The Managing Director,

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.....

Dear Sir/Madam,

INVITATION TO PARTICIPATE IN A STAKEHOLDER'S MEETING ON THE PROPOSED PHASE-OUT/BAN OF SOME AGROCHEMICAL ACTIVE INGREDIENTS

The National Agency for Food and Drug Administration and Control (NAFDAC) is a customer focused and Agency minded Organization. The collaboration with stakeholders is one of its strategies in ensuring that only safe, effective and quality products are available for use in Nigeria while protecting the health of man, animals and the environment. The Agency, through the Veterinary Medicine and Allied Products (VMAP) Directorate, routinely engages with stakeholders on critical issues that directly impact man, animals, and the environment. As part of this engagement, VMAP Directorate is holding a virtual (Zoom platform) one-day stakeholders meeting to deliberate on the proposed phase-out/ban plans for some pesticide and agrochemical active ingredients that are currently on the NAFDAC registered products database (please see attached list of the active ingredients).

Please find details of the meeting below.

Date: 24th November 2022

Time: 11 am

Meeting ID: 82933678866

Password: 752164

We look forward to your active participation.

Thank you

Pharm. (Mrs.) Uche Sonny-Afoekelu
Director: Veterinary Medicine and Allied Products Directorate
For: Director General-NAFDAC