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PIC CIRCULAR LII (52) – December 2020

ROTTERDAM CONVENTION

SECRETARIAT OF THE ROTTERDAM CONVENTION
ON THE PRIOR INFORMED CONSENT PROCEDURE
FOR CERTAIN HAZARDOUS CHEMICALS AND PESTICIDES
IN INTERNATIONAL TRADE

PIC CIRCULAR LII (52) – December 2020

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INTRODUCTION

1. THE PURPOSE OF THE PIC CIRCULAR

The Rotterdam Convention on the Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals and Pesticides in International Trade entered into force on 24 February 2004.

The purpose of the PIC Circular is to provide all Parties, through their designated national authorities, with the information required in Articles 4, 5, 6, 7, 10, 11, 13 and 14 of the Convention. The decision guidance documents on relevant chemicals dispatched to Parties in line with paragraph 3 of Article 7 are sent out in a separate communication.

The PIC Circular is published every six months, in June and December. The present Circular contains information related to and received during the period from **1 May 2020 to 31 October 2020**. Information received after 31 October 2020 will be included in the next PIC Circular.

Designated national authorities are requested to review the information relating to their countries and communicate any inconsistencies, errors or omissions to the Secretariat.

2. IMPLEMENTATION OF THE ROTTERDAM CONVENTION

2.1 Designated national authorities

In line with paragraph 3 of Article 4, Parties shall notify the Secretariat on designations of or changes to designated national authorities. A register of designated national authorities is distributed together with the present PIC Circular and is also available on the Rotterdam Convention website.[1]

2.2 Notifications of final regulatory action

Parties that have adopted final regulatory actions shall notify the Secretariat within the timeframes established in paragraphs 1 and 2 of Article 5.

Appendix I of the PIC Circular contains a synopsis of all notifications of final regulatory action received from Parties since the last PIC Circular, in line with paragraphs 3 and 4 of Article 5 of the Convention. It contains summaries of notifications of final regulatory action that have been received by the Secretariat and verified to contain the information required by Annex I to the Convention (Part A), information regarding notifications which do not contain all the information (Part B), as well as those notifications that are still under verification by the Secretariat (Part C).

Appendix V contains a list of all the notifications of final regulatory action for chemicals not listed in Annex III, received during the interim PIC procedure and the current PIC procedure (September 1998 to 31 October 2020).

A database of notifications of final regulatory action submitted by Parties, including those for the chemicals listed in Annex III to the Convention, verified as containing the information required by Annex I to the Convention is also available on the Convention website.[2]

A synopsis of all notifications received under the original PIC procedure, which is before the adoption of the Convention in 1998, was published in **PIC Circular X** in December 1999.[3] These notifications however do not meet the requirements of Annex I because the information requirements for notifications under the original PIC procedure were different. Although Parties are not obliged to resubmit

[1] http://www.pic.int/tabid/3282/Default.aspx.
[2] http://www.pic.int/tabid/1368/language/en-US/Default.aspx.
[3] http://www.pic.int/tabid/1168/language/en-US/Default.aspx.

notifications submitted under the original PIC procedure,[4] they may wish to consider doing so for those chemicals not presently listed in Annex III if sufficient supporting information is available.

To facilitate the submission of notifications, a **form for notification of final regulatory action to ban or severely restrict a chemical** and **instructions on how to complete it** are available on the Convention website.[5]

2.3 Proposals for the listing of severely hazardous pesticide formulations

In line with paragraph 1 of Article 6, any Party that is a developing country or a country with an economy in transition and that is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory, may propose to the Secretariat the listing of the severely hazardous pesticide formulation in Annex III.

Appendix II of the PIC Circular contains summaries of such proposals, which the Secretariat has verified contain the information required by part 1 of Annex IV to the Convention.

To facilitate the submission of proposals, an **incident report form for human health incidents involving severely hazardous pesticide formulations** and an **incident report form for environmental incidents involving severely hazardous pesticide formulations** are available on the Convention website.[6]

2.4 Chemicals subject to the PIC procedure

Appendix III of the PIC Circular lists all the chemicals that are currently listed in Annex III to the Convention and subject to the PIC procedure, their categories (pesticide, industrial and severely hazardous pesticide formulation) and the date of first communication of the corresponding decision guidance document.

The tenth meeting of the Conference of the Parties (COP-10) to the Rotterdam Convention, scheduled for 19 to 30 July 2021 in Geneva, Switzerland, will consider the following chemicals recommended for listing in Annex III to the Convention by the Chemical Review Committee:

Chemical name	CAS No.	Category	Decision No.
Decabromodiphenyl ether	1163-19-5	Industrial	CRC-15/2
Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds*	335-67-1	Industrial	CRC-16/2

*Note:

The following substances are included in this designation:

- Perfluorooctanoic acid (PFOA) and its salts
- Any related substance (including its salts and polymers) having a linear or branched perfluoroheptyl group with the formula C_7F_{15}- directly attached to another carbon atom as one of the structural elements
- Any related substance (including its salts and polymers) having a linear or branched perfluorooctyl group with the formula C_8F_{17}- as one of the structural elements

The following substances are excluded from this designation:

- C_8F_{17}-X, where X = F, Cl, Br

[4] Article 5, paragraph 2 of the Rotterdam Convention.

[5] http://www.pic.int/tabid/1182/language/en-US/Default.aspx.

[6] http://www.pic.int/tabid/1192/language/en-US/Default.aspx.

- C_8F_{17}-C(=O)OH, C_8F_{17}-C(=O)O-X′ or C_8F_{17}-CF_2-X′ (where X′ = any group, including salts)
- Perfluorooctane sulfonic acid and its derivatives (PFOS) ($C_8F_{17}SO_2X$ (X = OH, Metal salt (O-M+), halide, amide, and other derivatives including polymers)).

At its ninth meeting, the Conference of the Parties deferred to its tenth meeting consideration of whether to include acetochlor, carbosulfan, chrysotile asbestos, fenthion (ultra-low-volume (ULV) formulations at or above 640 g active ingredient/L) and liquid formulations (emulsifiable concentrate and soluble concentrate) containing paraquat dichloride at or above 276 g/L, corresponding to paraquat ion at or above 200 g/L. Further information on these chemicals can be found on the Rotterdam Convention website, in the section "Chemicals recommended for listing"[7].

2.5 Information exchange on exports and export notifications

Article 12 and Annex V to the Convention set out the provisions and information requirements related to export notifications. When a chemical that is banned or severely restricted by a Party is exported from its territory, that Party shall provide an export notification to the importing Party, which shall include the information in Annex V. The importing Party has the obligation to acknowledge receipt of the first export notification received after the adoption of the final regulatory action.

To assist Parties in meeting their obligations under the Convention, a **standard form for export notification** and **instructions on how to complete it** are available on the Convention website.[8]

The Conference of the Parties, at its ninth meeting recalled decision RC-7/2 on the proposal on ways of exchanging information on exports and export notifications. Decision RC-9/1 requested continued facilitation of exchange of information and provision of assistance to Parties in their implementation of paragraph 2 of Article 11, and Articles 12 and 14 of the Convention. Parties were also encouraged to provide information by submitting responses to the periodic questionnaire on the implementation of those articles.

2.6 Information to accompany exported chemicals

In accordance with paragraph 1 of Article 13, the World Customs Organization has assigned specific Harmonized System customs codes to the individual chemicals or groups of chemicals listed in Annex III to the Convention. These codes entered into force on 1 January 2007. For the chemicals listed in Annex III after 2011, Harmonized System codes will be assigned by the World Customs Organization. A table containing this information is available on the Convention website.[9]

If a Harmonized System customs code has been assigned to a chemical listed in Annex III, Parties shall require that the shipping document carries this assigned code when the chemical is exported.

2.7 Information on responses concerning import of chemicals listed in Annex III to the Convention

In accordance with paragraphs 2 and 4 of Article 10, each Party shall transmit to the Secretariat, as soon as possible, and in any event no later than nine months after the date of dispatch of the decision guidance document, a response concerning the future import of the chemical concerned. If a Party modifies this response, the Party shall forthwith submit the revised response to the Secretariat. The response shall consist of either a final decision or an interim response.

[7] http://www.pic.int/tabid/1185/language/en-US/Default.aspx
[8] http://www.pic.int/tabid/1365/language/en-US/Default.aspx.
[9] http://www.pic.int/tabid/1159/language/en-US/Default.aspx.

Paragraph 7 of Article 10 provides that, each new Party shall, no later than the date of entry into force of the Convention for that Party, transmit to the Secretariat import responses with respect to each chemical listed in Annex III to the Convention.
Appendix IV includes an overview of import responses received since the last PIC Circular. All import responses received, including a description of the legislative or administrative measures on which the decisions have been based, are available on the Convention website.[10] Information on any cases of failure to transmit a response is also available.

As at 31 October 2020, the following twelve Parties have submitted import responses for all 52 chemicals listed in Annex III to the Convention: Australia, Bosnia and Herzegovina, Canada, China, Colombia, Costa Rica, Eritrea, Russian Federation, Saint Kitts and Nevis, Serbia, Switzerland and Togo. 150 Parties have not yet provided import responses for one or more of the chemicals listed in Annex III to the Convention. Of these, the following seven Parties have failed to provide any import responses: Afghanistan, Djibouti, Marshall Islands, Namibia, Saint Vincent and the Grenadines, Sierra Leone and Somalia.

To facilitate the submission of responses regarding import, a **form for import response** and **instructions on how to complete it** are available on the Convention website.[11]

Import responses must be submitted through the official channel of communication for the Party. The date of issue and signature of the DNA is to be provided for each individual form to ensure its official status.[12]

2.8 Information on chemicals for which the Conference of the Parties has yet to take a final decision

The Conference of the Parties, in its decisions RC-3/3, RC-4/4, RC-6/8, RC-8/6, RC-8/7 and RC-9/5 encouraged Parties to make use of all information available on the following chemicals, to assist others, in particular developing countries and countries with economies in transition, to make informed decisions regarding their import and management and to inform other Parties of those decisions using the information exchange provisions in Article 14: acetochlor; carbosulfan; chrysotile asbestos; fenthion (ultra-low volume (ULV) formulations at or above 640 g active ingredient/L); and liquid formulations (emulsifiable concentrate and soluble concentrate) containing paraquat dichloride at or above 276 g/L, corresponding to paraquat ion at or above 200 g/L.

In line with these decisions and paragraph 1 of Article 14, **Appendix VI** of the PIC Circular contains information on chemicals recommended by the Chemical Review Committee for listing in Annex III but for which the Conference of the Parties has yet to take a final decision.

2.9 Information on transit movements

As outlined in paragraph 5 of Article 14, any Party requiring information on transit movements through its territory of chemicals listed in Annex III may report its need to the Secretariat, which shall inform all Parties accordingly.

Since the last PIC Circular, no Party has reported to the Secretariat its need for information on transit movements through its territory of Annex III chemicals.

3. ADDITIONAL INFORMATION

3.1 Information on the status of ratification of the Rotterdam Convention

[10] http://www.pic.int/tabid/1370/language/en-US/Default.aspx.
[11] http://www.pic.int/tabid/1165/language/en-US/Default.aspx.
[12] http://www.pic.int/tabid/1165/language/en-US/Default.aspx.

As at 31 October 2020 there were 162 Parties to the Rotterdam Convention.[13] Algeria is the latest country that joined the Convention on 19 October 2020. Information on new Parties after 31 October 2020 will be reported in the next PIC Circular.

3.2 Documents relevant to the implementation of the Rotterdam Convention

The following documents relevant to the implementation of the Convention are available on the Convention website:[14]

- Text of the Convention - Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade *(Arabic, Chinese, English, French, Russian, Spanish)*;[15]
- Decision guidance documents for each of the chemicals listed in Annex III to the Convention *(English, French, Spanish)*;[16]
- Form and instructions for notification of final regulatory action to ban or severely restrict a chemical *(English, French, Spanish)*;[5]
- Form and instructions for import responses *(English, French, Spanish)*;[11]
- Form and instructions for reporting human health incidents and environmental incidents relating to severely hazardous pesticide formulations *(English, French, Spanish)*;[6]
- Export notification form and instructions *(English, French, Spanish)*;[7]
- Form for notification of designation of contacts *(English, French, Spanish)*;[17]
- All PIC Circulars *(English, French, Spanish)*;[3]
- Register of designated national authorities for the Rotterdam Convention *(English)*.[1]

3.3 Resource Kit of information on the Rotterdam Convention

The Resource Kit[18] is a collection of publications containing information on the Rotterdam Convention. It has been developed with a range of end-users in mind, including the public, designated national authorities and stakeholders involved in the implementation of the Convention. It includes elements to assist in awareness-raising activities and detailed technical information and training materials aimed at facilitating implementation of the Convention.

Secretariat of the Rotterdam Convention (FAO)

Viale delle Terme di Caracalla
00153 Rome, Italy
Fax: +39 06 5705 3224
Email: pic@fao.org

Secretariat of the Rotterdam Convention (UNEP)

Office Address: 11-13, chemin des Anémones
CH-1219 Châtelaine, Geneva, Switzerland
Postal Address: c/o Palais des Nations, 8-14, avenue de la Paix, 1211 Geneva 10, Switzerland
Fax: +41 22 917 8082
Email: pic@pic.int; pic@brsmeas.org

[13] http://www.pic.int/tabid/1072/language/en-US/Default.aspx.

[14] http://www.pic.int/.

[15] http://www.pic.int/tabid/1048/language/en-US/Default.aspx. A further compilation including the amendments adopted by the Conference of the Parties in May 2019 is being prepared and will be made available on the Convention website in due course.

[16] http://www.pic.int/tabid/2413/language/en-US/Default.aspx.

[17] http://www.pic.int/tabid/3285/language/en-US/Default.aspx.

[18] http://www.pic.int/tabid/1064/language/en-US/Default.aspx.

APPENDIX I

SYNOPSIS OF NOTIFICATIONS OF FINAL REGULATORY ACTION RECEIVED SINCE THE LAST PIC CIRCULAR

This appendix consists of three parts:

Part A: Summary of notifications of final regulatory action that have been verified as containing all the information required by Annex I to the Convention

Notifications of final regulatory action that have been verified as containing all the information required in Annex I to the Convention, received between 1 May 2020 and 31 October 2020.

Part B: Notifications of final regulatory action that have been verified as not containing all the information required by Annex I to the Convention

Notifications of final regulatory action that have been verified as not containing all the information required by Annex I to the Convention, received between 1 May 2020 and 31 October 2020.

Part C: Notifications of final regulatory action still under verification

Notifications of final regulatory action that have been received by the Secretariat for which the verification process has not yet been completed.

The information is also available on the Convention website.[19]

[19] http://www.pic.int/tabid/1368/language/en-US/Default.aspx.

Synopsis of notifications of final regulatory action received since the last PIC Circular

PART A

SUMMARY OF NOTIFICATIONS OF FINAL REGULATORY ACTION THAT HAVE BEEN VERIFIED AS CONTAINING ALL THE INFORMATION REQUIRED BY ANNEX I TO THE CONVENTION

BOSNIA AND HERZEGOVINA

Common Name(s): Amitraz ***CAS number(s):*** 33089-61-1

Chemical Name: N,N'-[(methylimino)dimethylidyne]di-2,4-xylidine

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Banned for all application as plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: This Decision prohibits the registration, import, trade, or use of active substances and PPPs containing active substances in article 2. of this Decision and their use and trade is prohibited in the European Union.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 08/07/2008

BOSNIA AND HERZEGOVINA

Common Name(s): Carbaryl ***CAS number(s):*** 63-25-2

Chemical Name: 1-naphthyl methylcarbamate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All application as plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: This Decision prohibits the registration, import, trade, or use of active substances and PPPs containing active substances in article 2. of this Decision and their use and trade is prohibited in the European Union.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 08/07/2008

BOSNIA AND HERZEGOVINA

Common Name(s): Dichlobenil ***CAS number(s):*** 1194-65-6

Chemical Name: 2,6-dichlorobenzonitrile

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All application as plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: This Decision prohibits the registration, import, trade, or use of active substances and PPPs containing active substances in Annex 1 which is an integral part of this Decision and their use and trade is prohibited in the European Union.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2010

BOSNIA AND HERZEGOVINA

Common Name(s): Fenitrothion ***CAS number(s):*** 122-14-5

Chemical Name: Phosphorothioic acid, O,O-dimethyl O-(3-methyl-4-nitrophenyl) ester

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All application as plant protection products.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: Non-inclusion of fenitrothion in the List of active substances for use in PPPs in Bosnia and Herzegovina (Official Gazette of Bosnia and Herzegovina No 61/10) and the withdrawal of authorisations for plant protection products containing that substance.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 27/07/2010

COLOMBIA

Common Name(s): Mercury ***CAS number(s):*** 7439-97-6

Chemical Name: Mercury

Final regulatory action has been taken for the category: Industrial

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Eradicate the use of mercury throughout the national territory in:

- All industrial and productive processes within a period not exceeding ten (10) years (15 July 2023).
- For mining within a maximum period of five (5) years (up to 15 July 2018).

Use or uses that remain allowed: The regulation prohibits the use and marketing of mercury in industrial activities and establishes two terms depending on the activity. Therefore, currently the deadline for industrial uses other than mining has not been met; this is the reason why the use of mercury in the production of dental amalgam will continue until 15 July 2023.

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: The government of Colombia prohibited the marketing and use of mercury under Law 1658 of July 15, 2013 *"Under which arrangements are established for the marketing and use of mercury in the different industrial activities of the country, requirements and incentives for their reduction and elimination, and other provisions are issued*".

The purpose of the law is "*In order to protect and safeguard the human health and preserve renewable natural resources and the environment, the use, import, production, marketing, handling, transportation, storage, final disposal and release into the environment of mercury in industrial activities, whatever they may be, must be regulated throughout the national territory*".

Specifically, Article 3 establishes the measures to reduce and eliminate the use of mercury in the country as follows:

"Article 3. Reduction and elimination of the use of mercury. The Ministries of Environment and Sustainable Development; Mines and Energy; Health and Social Protection and Work, will establish the necessary regulatory measures that will allow to reduce and eliminate, in a safe and sustainable way, the use of mercury in the different industrial activities of the country. ***Eradicate the use of mercury throughout the national territory, in all industrial and productive processes within a period not exceeding ten (10) years and for mining within a maximum period of five (5) years…*** *".*

The reasons for the final regulatory action were relevant to: Human health and environment

Summary of known hazards and risks to human health:

INS MERCURY REPORT 2010_2011- SIVIGILA. (Annex II pages 1 and 8)

According to SIVIGILA, during 2010 and the first semester of 2011, there were 201 cases of mercury poisoning in Colombia, 134 cases in 2010 and 67 cases in the first semester of 2011. 96% of the cases were of occupational or accidental origin as follows: 85% (n = 171) occupational, 11% (n = 22) accidental.

SURVEILLANCE AND CONTROL PROTOCOL OF ACUTE MERCURY POISONING. (Annex III pages 2, 15 and 16)

Mercury is a toxic substance, that when entering the human body produces disorders, mainly at the central nervous system level. The presence of mercury in the air, water, soil and food (mainly fish) (1) in concentrations above the allowed limit has caused a serious public health problem in the country. Regions such as the Northeast of Antioquia, the South of Bolívar, Chocó, Santander, Nariño, Caldas, Vaupés, among others, carry out artisanal gold mining and for the final extraction of this precious metal, mercury is used. Its use occurs in an indiscriminate and poorly controlled way, a situation that has caused environmental contamination and has affected people's health. Exposure to mercury is also increased in industrial areas that use this substance.

Mercury contamination in Colombia is originated in the gold benefit processes in which the mineral containing the precious metal is extracted by joining with the mercury, forming the amalgam. During the process, mercury spills into water bodies and the environment. Subsequently, the amalgam obtained is burned in the open air, leaving the gold and releasing the toxic mercury vapors into the atmosphere. All these activities are performed very close to the miners' households, in such a way that families breathe a large part of the volatilized mercury vapor. Even remote populations can be affected by the mobilization of this substance.

Chronic mercury poisoning worries the scientific community due to the neurotoxic alterations, which initially manifest as subtle changes in the individual's behavior. This has become a challenge for medical personnel (Maizlish, 1994; Powell, 2000), since if poisoning is not suspected, it can progress to irreversible neurological damage, leaving disabling sequelae (Mergler, 2002). Studies carried out in exposed populations (occupational and general population) to mercury have made it possible to establish its relationship in the development of these manifestations (Fawer et al 1983, Piikivi 1989, Marh et al 1987).

The neuroepidemiological and toxicological study of the Suratá river pollutants carried out in the mining population of that region (Santander, 1992) raised the possible relationship of chronic exposure to mercury with the presence of neurological diseases (15). Tirado et al (2000) suggest that this form of exposure can cause neuropsychological and behavioral deficits in the population (16). In 1995, Olivero et al reported that the inhabitants of southern Bolívar presented signs of mercury intoxication such as hand tremors, neurological disorders and visual problems, among others. In this region, frequent cases of congenital malformations have also been reported, although without evidence of association with mercury exposure.

SCIENTIFIC, REGULATORY AND TECHNICAL EVIDENCE ON THE MERCURY PROBLEM AT THE NATIONAL AND INTERNATIONAL LEVEL OF THE HEALTH SECTOR AND OTHER RELATED SECTORS - ASSOCIATION AGREEMENT NO. 447 OF 2012 SIGNED BETWEEN THE MINISTRY OF HEALTH AND SOCIAL PROTECTION AND THE FOUNDATION FOR EDUCATION AND SOCIAL DEVELOPMENT - FES. (Annex IV pages 34, 48, 105, 106, 142, 143, 146, 147)

Mercury is currently used in products such as thimerosal-containing vaccines; skin lightening creams, thermometers, batteries, occupational uses such as dental amalgams, and gold extraction (page 34).

In conclusion, the reviewed studies in Colombia, have found inconsistent effects, possibly due to factors such as the population evaluated, habits, biomarker used, studied effects, or concentrations found; and have identified the consumption of fish or marine mammals as the main risk factor, being the most studied adverse health effect the neurological performance, especially motor skills. Regarding the results, there were not found differences with respect to age or gender, but it is possible to identify that the population with the highest risk are pregnant women due to the fetus susceptibility (page 48).

Investigations (pages 46, 47, 58)

On the Atlantic Coast, the study "Mercury on the Colombian Atlantic Coast: A limiting factor for development" makes a review of different investigations carried out in this part of the country, where the high concentrations of mercury in fish and humans are highlighted. One of the most important conclusions is that the *yellow mojarra*, the *moncholo* and the *doncella* have concentrations above the limit allowed according to WHO (0.5 µg, 1991).

Furthermore, in the Colombian Orinoquia in 1999 a study was carried out with the purpose of establishing the levels of mercury and the perception of risk in the Guainía gold mining population. Two groups were considered: 37 exposed people directly related to mining and 28 indirectly exposed, corresponding to family members and other local people. Such persons were surveyed to determine risk perception, and blood and hair samples were taken to establish the level of mercury. It was found that the work environment is not adequate, and was classified

as precarious in the study. Furthermore, there is a lack of knowledge of the ecological risk and inadequate knowledge regarding the health effects caused by exposure to mercury. An average of 59.2 µg/L of mercury was found in blood and 26.9 µg/g in hair for the mining population. On the other hand, in the population exposed to mercury indirectly, average concentrations of 53.5 µg/L in blood and 22.86 µg/g in hair were found. In the comparison of the two groups, no statistically significant differences were found, reason why prevention and control programs should not be focused only on the mining population.

Regarding Antioquia, which is considered the most exposed department, different studies have been carried out, for example, in 2003 was published: "Measurement of mercury concentrations and environmental controls in the burning of amalgam from mining", focused on gold trading workers and their surroundings. For this purpose, the concentrations of mercury in the urine of workers and in the air of the places of sales and streets of Segovia were determined. Levels 14 times above average for industrial environments were found according to the American Conference of Governmental Industrial Hygienists (ACGIH) where in 1994 the maximum concentration was set at 25 µg/m^3. Mercury levels in the air of places of sales were between 192.2 and 679.28 µg/m^3, in the streets between 315.97 and 416.1 µg/m^3 and in the urine between 47 and 420 µg/m^3.

Moreover, in 2009 a study was carried out in Cartagena, Colombia to determine the concentration of mercury in canned tuna and was found that the concentrations of total mercury in the tuna samples varied between 0.09 and 2.59 ppm (0.86 ± 0.09 ppm), 34% of the analyzed samples exceeded the maximum limit for mercury established by Colombian legislation (1 ppm), and 59% of them exceeded the levels recommended by WHO (0.5 ppm). The results suggested that the consumption of canned tuna in the city of Cartagena represents a moderate risk for the general population in terms of exposure to mercury. Moreover, vulnerable groups (children, pregnant women, people with cardiac problems, and those seeking dietary and cardiovascular benefits) should limit their consumption, since the risk is high for these groups.

Additionally, other studies in Colombia have also shown that in the sites where mining is carried out fish with high concentrations of mercury can be found. In 2009, a study was carried out in the Ciénaga de Ayapel and in the San Pedro river, an area that has extensive nickel mining and gold mining. Mercury level measurements were made in fish and it was found that from a total of 45 fish species collected, 19 (42.2%) exceeded the maximum allowed concentration of 0.5 µg/g established by WHO as safe for human consumption. All of them were carnivorous species. However, to protect the vulnerable population (under 15 years of age, pregnant women and frequent consumers), the same organization has established a limit of 0.2 µg/g, thus the number of specimens above this new limit increased to 36 (80%), including specimens of non-carnivorous species (93).

In addition, given that the consumption of fish is part of the cultural traditions of many communities, studies have been carried out with indigenous populations that have a high consumption of fish in order to estimate the concentrations of mercury in fish and the population exposure.

Characterization of Mercury Poisonings (Pages 105-106)

As a result of the report from the Primary Data Generating Units (UPGD) to Notifying Units (UN) and District or Departmental Notifying Units (UND), the INS received the information and based on this, published the Bulletin of mercury poisoning in Colombia over 2007 - 2011 showing the results of the epidemiological surveillance of mercury poisoning since the report began across the country (179) [1].

As aspects to be highlighted, it is shown that during this period, 450 cases were reported, and during 2009, the highest number of notifications were presented with 159 cases. The department of Antioquia notified 407 cases during the 5 years study, been the main notifier, this trend was maintained during all the reviewing years, where Antioquia annually reported more than 90% of the national total cases (179).

Of the total of cases in the studied period, 85.55% correspond to men and 94.67% required hospitalization; the highest number of notifications were in the age group of 20 to 49 years, within this range the subgroups of 40 at 44 years and 45 to 49 years old presented the same percentage (14.67%) and the group from 25 to 29 years old 13.56%, which allows to deduce a relationship between intoxication and occupational activity (179).

The 79.33% of the poisoning cases were caused by respiratory route, 9.56% by oral route and 6.89% by the skin. Given this, it can be affirmed that mercury poisoning in the country is associated with the inhalation of metallic mercury vapors, a product of the burning of amalgam to obtain gold; and given the form of exposure that is permanent and at variable concentrations, the intoxication is predominantly chronic, with infrequent acute intoxication, but acutening of chronic symptoms due to the exposure to an unusual concentration of the pollutant occurred with some frequency (179).

Occupational exposure is the most frequent with 88.4% of reported cases, where mining and quarrying occupations are the ones with the highest number of cases (267) associated with the use of mercury as an input for gold mining (179).

The most significant conclusions indicate that the most frequent notifiers during the period were Antioquia, followed by Bogotá, Bolívar, Risaralda, Santander and Valle del Cauca. The highest percentage of intoxications

reported were occupational, been respiratory the most frequent route of exposure, and according to the analysis by occupation, the highest number of intoxicated were miners or stonemasons (179).

In the technical meetings held by the FES foundation, it was also identified that there are some population groups that deserve special attention in relation to exposure to mercury, since they have a greater probability of exposure to dangerous levels, or because carriers of disease, the intoxication effects can be exacerbated (53). These groups are:

- Workers exposed to mercury
- General population next to sources of mercury contamination (mines, industries)
- Populations in areas contaminated by mercury, especially indigenous and riverine, whose main source of proteins is fish
- People using mercury-containing medications for a long time
- People with central nervous system diseases, patients with chronic kidney and bronco pulmonary failure
- Pregnant women and toddlers

In addition, the emphasis was on pregnant women, lactating women and children who have certain characteristics that, combined with the characteristics of mercury, make them the most vulnerable population groups.

Results of Studies in Colombia (pages 142, 143,144, 145, 146 and 147):

Year 1991:

Neuro epidemiological and neuro toxicological study of a mining population with chronic exposure to mercury. Objective: To determine if chronic environmental exposure to mercury is a risk factor for neurological diseases in the mining population of the Suratá river (Santander). Target population: Exposed - Miners, relatives and neighbors. Not exposed - General population. Suratá, Santander-Colombia. Results: Mercury concentrations in blood did not exceed the average standard, however, there were statistically significant differences between exposed and unexposed. In untreated water, the average was greatly exceeded in those exposed. The prevalence of events is higher in the exposed group; however, there are no statistically significant differences. An association was found between blood levels and extrapyramidal diseases and migraine.

Year 1995:

Study "Mercury in hair of different occupational groups in a gold mining area in the North of Colombia". Objective: To determine the magnitude of mercury contamination in the population of the South of Bolívar according to their occupation and the incidence on their health. Study population: 219 inhabitants of southern Bolívar and 27 people from Cartagena as a control group. Results: Differences were found in the concentration of mercury in hair according to occupation as follows: fishermen (5.23+-5.78) > miners (2.83+-3.27)> other activities (2.40+-2.02)> control group (1.33+-0.74); fishermen data was statistically significant with the rest. There are no differences by sex and age.

Year 2000:

Study "Neuropsychological alterations due to occupational exposure to mercury vapors in El Bagre (Antioquia, Colombia)". Objective: To determine if the miners of El Bagre (Antioquia, Colombia) have neuropsychological and/or behavioral disorders as a result of occupational exposure to toxic mercury vapor. Study population: Cases: 22 healthy men occupationally exposed for more than three years. Controls: 22 healthy men not exposed to mercury with age and education-matched with cases. Results: In the group of cases, effects were found in intellectual damage (alteration of some neuropsychological functions), emotional (anxiety and depression) and neurological (amnesia, insomnia and tongue tremor) changes, with statistically significant differences than the control group, in which no effects were observed. There are no differences in all the tests.

Year 2001:

Study "Mercury levels and perception of risk in a gold mining population of Guainía (Colombian Orinoquia)". Objective: To determine the levels of mercury in hair and blood in a mining population of the department of Guainía and the perception of risk that this population has when using this element. Study population: 78 residents of the region related to mining, which consumed fish and water. The analysis divided exposed groups: individuals directly involved in mining activities and another group indirectly exposed with family members or people who carried out other activities in the village. Results: Mercury concentrations of 59.16 µg/l were found in blood on average (6.9-168) and in hair of 26.93 µg/g (3.0-89.2) in miners, while in indirectly exposed population levels were lower, although without statistically significant differences, 53.5 and 22.86 in blood and hair respectively. It is evident that they pollute the ecosystem, possibly due to deficits in the work environment and the lack of knowledge of the ecological risk; and have inadequate knowledge of the metal even though they perceive the risk.

Study: "Diagnosis of Mercury levels in employees and students of the Faculty of Dentistry, University of Antioquia, 1999". Objective: To determine the existence of biological mercury poisoning by quantifying the element in 24-hour urine samples in dentistry students and professors. Study population: workers and students at the Faculty of Dentistry of the University of Antioquia, and comparison with the biological index of exposure. Results: The 192 samples presented concentrations below 30 mg (intoxication) and 1.6% (3) had levels >= 15 mg, which is the limit value for the occupationally exposed population. The highest concentrations are in students and teachers (6.04). There is a significant positive correlation between the exposure time (academic semester) and the mercury concentration. Negative correlation at the level of teachers and graduation time.

Year 2003:

The study "Mercury in the Colombian Atlantic Coast: Limiting factor of development" makes a review of different studies carried out in this part of the country, where high concentrations of mercury in fish and humans are evidenced. One of the most important conclusions established that the population with the highest concentrations of mercury are the fishermen, followed by the miners. The reviewed studies found that exposure to mercury is associated with the following effects: headache, nausea, oral lesions, metallic taste, memory loss and irritability, intellectual damage, emotional changes (depression and anxiety), neurological disorders, amnesia, insomnia and tongue tremor in miners.

Year 2004:

Study "Management of dental amalgam in small and medium dental studios in Medellín, Itagüí, Envigado, Sabaneta and Bello". Objective: To characterize the occupational variables, the management of mercury and amalgam residues in small and medium dental studios in Medellín, Itagüí, Envigado, Sabaneta and Bello. Studied population: Dentists and studios with at least one and less than seven chairs and where dental amalgam was used (800). Results: Training of dental personnel to carry out safe practices. Occupational: 46% have not been tested in the last 5 years, of these 4% had levels above normal, although not at levels of intoxication. 86% of those surveyed refer to following a protocol, although it is found not to be true. They report no symptoms.

Year 2006:

Study "Determination of neuro-behavioral alterations in adults chronically exposed to mercury in the population of the municipality of Segovia, Antioquia, 2005". Objective: To establish the prevalence of neuro-behavioral alterations in people chronically exposed to mercury in the municipality of Segovia, Antioquia. Study population: 860 people over 15 years old, miners or not from Segovia, Antioquia. Results: 15.2% of the evaluated people had mercury concentrations in hair >= 5 µg/g. The prevalence of symptoms is high in this population. Subjective: 9.5-44.5; Neuropsychiatric: 10.3-63.5; are lower in the group of people with mercury levels >= 5 µg/g, however there are no significant differences, which suggests that tolerance has been generated.

Year 2007:

Study "Finding of Mercury in fish from the Ayapel swamp, Córdoba, Colombia". Objective: To determine the total mercury (Hg-T) concentrations in some species of fish from the Cienaga de Ayapel (Colombia). Study population: Six samples of the following fish: Bocachico (Prochilodus magdalenae), Pintao catfish (Pseudoplatystoma fasciatum), Yellow mojarra (Caquetaia kraussi), Tilefish (Sorubin cuspicaudus), Moncholo (Hoplias malabaricus), Pacora (Plagioscion surcellainamensis), Maiden (Ageneiosus caucanus) and Liseta (Leporinus muyscoruma). Results: The average levels of Hg-Ten in the evaluated fish was 0.288 +- 0.145, in carnivores it was 0.246 and in non-carnivores 0.184, which did not exceed the limit for human consumption established by WHO. However, the risk can be increased by the consumption of 0.12 kg of fish, mainly Ageneiosus caucanus or "Maiden", which had the highest concentration (0.504+-0.103mg Hg/kg). In dry season the concentrations are higher except for Doncella, Bocachico and Liseta. These last two would be the only ones suitable for human consumption according to WHO.

Study "Humans and crabs exposed to Mercury on the Atlantic Coast of Colombia: Impact of an abandoned chlor-alkali factory". Objective: To establish the impact of mercury in contaminated sediments on the in the Bay of Cartagena. Study population: Inhabitants of fishing communities between 6-85 years old and crabs (Callinectes sapidus and Callinectes bocourti) along the Caribbean coast (CoveñasTasajera). Results: Total mercury concentrations found in hair were 0.1-21.8 µg/m^3, with average of 1.52; this was measured in different places where the highest values were from the residents of Caño del Oro (1.4), followed by Bocachica (1.2), Lomarena (0.7) and Tasajera (0.7), and there were significant differences. A similar trend was observed in crabs and the highest values were in those collected next to the abandoned chlor-alkali factory. It shows that contaminated sediments continue to drive the distribution of mercury in the food chain.

Year 2008:

Study "Behavioral and personality alterations due to occupational exposure to mercury in a group of gold miners from the Bagre Antioquia region". Objective: To evaluate behavioral and personality alterations in 25 people occupationally exposed to contamination and/or intoxication by metallic mercury in the municipality of El Bagre.

Study population: 25 inhabitants of El Bagre, occupationally exposed, ages: 20 to 55 years. Results: Suggests that exposure to mercury generates behavioral and personality alterations.

Year 2009:

Study "Contamination by heavy metals in the Muña reservoir and its relationship with blood levels of Lead, Mercury and Cadmium and health alterations in the inhabitants of the municipality of Sibaté (Cundinamarca) 2007". Objective: To describe the relationship between blood levels, population health conditions, and heavy metal contamination in the Muña reservoir. Study Population: Population of Sibaté, Cundinamarca, ages: 10 to 49 years. Results: The greatest exposure to metals is from the consumption of fruits, vegetables, meat and milk grown near the reservoir; the consumption of fish is low. The most frequent symptoms related to Hg were: headache, mood disorders, feeling dizzy and hands tingling, among others. The average Hg in blood was 4.06 ug/L (1.7-13.5). No participant had levels above the average, although in 47.1% of them were found low concentrations.

Study "Risk in the management of dental amalgam in medium and small dental clinics in the department of Antioquia, Colombia". Objective: Describe and characterize the activities related to the management of mercury, amalgam and its residues in 107 clinics that provide oral health services. Study population: Clinics that provide oral health services, classified between medium and small (with less than five chairs or dental units in the same workplace). Results: 46% of the entities have high or very high risk. People who have had abnormal levels have not received any treatment. Ignorance is evident, thus academic institutions recommend implementing comprehensive and safe methodological actions in the short term to reduce the risk for staff, patients and the ecosystem.

Year 2010:

Study "Mercury contamination in humans and fish in the municipality of Ayapel, Córdoba, Colombia, 2009". Objective: To evaluate the concentrations of total mercury in hair of inhabitants of the municipality of Ayapel (Córdoba) and in fish caught in the Ayapel swamp. Study population: 112 riverian residents of the Ayapel swamp over 14 years of age (hair) and 45 fish (muscle tissue). Results: Concentrations in people (2.18+-1.77) above EPA recommendations in the study group, but in the control it was below the standard. The most prevalent symptoms were headache, lack of energy, and irritability. In fish the highest levels are found in Sorabin cuspicaudus (0.74+-0.19). Showing evidence between fish consumption and health effects.

Study "Detection of heavy metals in cattle, in the valleys of Sinú and San Jorge rivers, department of Córdoba, Colombia". Objective; To evaluate the presence of heavy metals (Pb, Cu, Cd and Hg) in the liver and right pectoral muscle of bovine, from farms in the Sinú and San Jorge area. Study population: Male, adult, mixed-breed zebu cattle, between 2 and 7 years old. Results: The concentrations of mercury and other metals (except copper) did not exceed the European and Mexican standards. The highest concentrations come from the cattle of San Jorge and the control group, although there are no significant differences. The registered values do not represent a risk to human health.

Year 2011:

Study "Neuropsychological alterations in schoolchildren in a municipality with high levels of environmental mercury vapor, Colombia, 2008-2009". Objective: To establish the prevalence of neuropsychological alterations in language, memory, executive functions and attention of schoolchildren between the second grade of primary school and the ninth grade of high school in the municipality of Segovia, Antioquia. Study population: 196 students from second grade to ninth year of high school in the municipality of Segovia, Antioquia. Results: 79.6% of schoolchildren present alterations in language comprehension, 77.6% in executive functions, 52.6% in visual attention, 43.9% in verbal fluency, 38.8% in short-term verbal memory and 31.1% long-term. Such percentages generate an alarm and indicate the need of intervention.

Study "Evaluation of the concentration of mercury in various brands of canned tuna marketed in the city of Cartagena de Indias." Objective: To determine the concentrations of mercury present in four brands of canned tuna in water, marketed in the city of Cartagena de Indias, evaluating their compliance with current national and international sanitary standards. Study population: four brands of tuna (three national and one imported), 41 samples. Results: 34% of the samples exceeded the Colombian legislation (1ppm) and 59%, WHO recommended parameter (0.5ppm). The can of imported tuna has lower levels with statistically significant differences.

Study "Determination of mercury levels in the air of dental studios and clinics in Cartagena Colombia". Objective: To determine the levels of mercury in the air of dental studios and clinics in the city of Cartagena, Colombia. Results: 51% of the clinics had levels above those recommended by the EPA (300 ng/m^3), finding an average concentration of 1206 +-142 in air. In spittoons, 59% exceeded the standard 2538 +- 879. 51% of the cabinets exceeded the standard, finding an average of 2116 + 1551 ng/m^3, the concentration in the cabinets reached 11394 ± 13.9 when patients were present.

DIAGNOSIS OF NATIONAL ENVIRONMENTAL HEALTH (Annex VI)

***Natural sources of Mercury in Colombia* (page 235)**

A mercury deposit of volcanic origin is found in the department of Caldas, municipality of Aranzazu, which was discovered approximately in the fourth decade of the 20th century (INGEOMINAS, 1958). The first and only national mercury mine called "La Nueva Esperanza" mine was deployed in this region. In 1960, Ingeominas publications reported a reserve in the region of 35,000 pounds of the metal (INGEOMINAS, 1960), with an approximate annual production of 2,700 and 7,500 pounds of mercury for the years 1955 and 1957, respectively (INGEOMINAS, 1958). These figures apparently increased in the following years. Due to its exclusivity and high productivity, the deposit received great attention from the authorities in charge of monitoring the mining sector at the time. During a technical visit to the mine, the optimization of the facilities, the use of closed methods, and the relocation of workers' homes were recommended in order to reduce exposure to mercury, INGEOMINAS report March 1960. The previously mentioned confirms the imminent risk for the workers of the organization identified since that year, as well as the search for alternatives that would mitigate the said risk and therefore promote safe operations in the mine.

In 1977, the mine was closed due to health alterations detected in the workers of this area, associated with occupational exposure to mercury (Escobar, 2006). After the closure of the mine, in a study published in 1979, sediment, soil and rock samples were evaluated considering the territory where the mine operated and an area close by, finding abnormal concentrations of mercury in an extension of 1 by 25 km (Vesga and Prez, 1979).

Studies in humans (pages 243-245)

In Colombia, mercury measurements have been made in humans, mainly in workers and communities surrounding mining activities or adjacent to riverine areas. An interesting information comes from a study where pre-Hispanic samples were analyzed, corresponding to the Mesa de los Santos area in Santander, where mercury levels in hair were detected below 0.3 µg/g (Idrovo et al, 2002); These values can be used as a baseline time reference for future studies in the country. In contrast, today levels up to 76 (Olivero et al, 2008a) and 256 times higher (Idrovo et al, 2001) are detected. The above clearly indicates an increase in mercury levels in human samples, suggesting a relationship between human exposure to mercury with the industrialization and development processes in recent times.

Table 5.9. Mercury values in hair and blood samples in Colombia.

Place	Source	Levels	Author
Sur de Bolívar	Hair - fisherman	5.23±5.78µg/g	Olivero et al, 1995
	Hair - miner	2.83±3.27µg/g	
	Hair - people with another activity	2.40±2.02µg/g	
Cartagena	Hair	1.33±0.74µg/g	
Guainía	Blood - miner	59.1 µg/L	Idrovo et al, 2001
	Blood - not miners	53.5 µg/L	
	Hair - miner	26.93 µg/g	
	Hair - not miner	22.86 µg/g	
Caimito, Sucre	Hair	4.91±0.55 µg/g	Olivero et al, 2002
Bahía de Cartagena			
Caño del Oro	Hair	1.5 µg/g	Olivero et al, 2008a
Bocachica	Hair	1.4 µg/g	Olivero et al, 2008a
Coveñas	Hair	1.2 µg/g	Olivero et al, 2008a
Lomarena	Hair	0.7 µg/g	Olivero et al, 2008a
Tasajera	Hair	0.7 µg/g	Olivero et al, 2008a

Note Source: Adaptation made by the author.

* Data was obtained from the studies corresponding to the following authors: Olivero et al, 1995; Idrovo et al, 2001; Olivero et al, 2002; Olivero et al, 2008a.

Health effects of mercury (pages 245- 247)

In Colombia, the neurological effects of mercury have been mainly described. In the routine information reporting systems on health services and the national epidemiological surveillance system, cases of acute mercury poisoning are mandatory. It is striking that despite the high exposure to the metal detected in different regions of the country, for 2010 only two acute metal poisonings were reported, one of which corresponded to mercury (SIVIGILA, 2010). In addition, most of the detectable cases of intoxication may correspond to chronic intoxication events that go unnoticed within the system, since these are not immediately notified.

5.2.4.1. Neurological effects. The neuroepidemiological study of the Suratá River, near the Vetas-California mining district, Santander, found chronic mercury poisoning in the population of this area associated with the presence of extrapyramidal alterations in the exposed group (Pradilla, 1992). Such alterations mainly consist of tremor, dystonia and coordination disorders, among others.

In another study developed in a mining population, the neurological symptoms developed between the working population and another unexposed population were compared; in this case, a significant increase of neuropsychological symptoms and behavioral alterations was found in the exposed group (Tirado et al, 2000).

Furthermore, a study carried out in Segovia, Antioquia, in 2005 found a significant association between elevated levels of methylmercury and the presence of neurological symptoms such as fine tremor in the eyelids and lips; the most frequent neurological findings in this group were tremor 11.5% followed by a positive Romberg's sign, in 5.7% of the cases, consisting in the inability of maintaining balance while the individual stands upright keeping the feet together, eyes closed and arms in front, (Cote M, 2006). Because Segovia is an area with high exposure to mercury, multiple intervention and improvement strategies have been developed by public and private entities, in order to increase the knowledge of the community and workers in issues and good practices of the use of mercury, as well as efficient alternatives. Six years after the mentioned study, another investigation was carried out in the region, emphasizing the perception of risk, in which 96.4% of the individuals participating in the investigation considered that mercury was a harmful element for health.

Those people who had a health dossier of toxic effects of mercury had a greater perception of risk and greater use of protective measures, 58.9% 246 used gloves, 30.4% a mask, and 60.7% used mercury recyclers. It is striking that despite all the aforementioned, around 50% of the sample studied did not previously receive training in good practices related to the use of mercury in mining (García et al, 2011). When conducting an evaluation of the symptoms that the population self-reported as secondary effects of exposure to mercury in Segovia, it was found that the main symptoms were tremors, decreased visual acuity, headache, and memory loss, in this order. (García et al, 2011).

However, Segovia, like most mining districts, has a social, political and cultural scenario that generates different barriers to effective communication between the community and the territorial and health authorities, therefore, the measures given by the public health authorities and government policies are not easily adopted by the mining population.

A research with an anthropological and social approach determined the disagreement of the mining union with regard to the norms imposed from the public sphere, since they feel that they have been developed without their participation, based on scientific research and without taking into account the role of the mining community (Aguilar, 2009). This scenario is easily extrapolated to other mining contexts, where the process of adopting appropriate practices from an environmental and sanitary point of view by the mining community has been frustrated.

Another research carried out in Puerto Berrio, Antioquia, focused on evaluating the neurological and ototoxic effects of mercury in the context of artisanal mining, compared the clinical findings of the mining population with individuals working in limestone mining; the first group presented neuropsychotoxic alterations in 16% of the cases vs 1.25% in the second group. In addition, a positive and significant relationship was determined between exposure time and mining seniority, with hearing impairments (Ocampo et al, 2004).

5.2.4.2. Other effects. A single study carried out in the country in 1996 has evaluated obstetric events related to exposure to mercury in gold mining. The prevalence of congenital malformations was 0.56%, abortions 6.2% and perinatal death in 3.4% (Alzate, 1996). When comparing the data obtained in the population exposed to mercury with the statistics on the prevalence of congenital malformations in the general population, it was found very similar values (prevalence between 1.80% and 3.12% in the general population) (Zarante et al. 2010). This last study takes into account sentinel centers for congenital malformations; therefore, the data obtained may overestimate the prevalence of the general population and not be comparable with the study of the mining population.

In addition, an investigation carried out at the beginning of the 90's, tried to evaluate the ocular effects of exposure to mercury in miners. It is a topic little explored worldwide and most research has been directed to evaluating the effects of methylmercury, considering alterations such as progressive decrease in visual acuity, alteration of night vision, color discrimination, among others (Collins et al, 247 2007). However, a study carried out in workers exposed to total mercury vapors also found a subclinical reduction in color discrimination (Urban et al, 2003).

The Colombian study reported an association between subtle changes between perimetry and the reduction in visual acuity with seniority in mining, although these changes were not adjusted for age. A proportion less than 10% of the sample presented abnormal values of mercury in urine, the previous was not associated with visual alterations; palpebral tremor was reported in 50% of the study population, positively associated with the frequency of daily exposure to mining work (De los Ríos, 1991).

CONGRESS GAZETTE NO. 156, 2011 (Annex VII - page 1 and 2)

Mercury is a powerful neurotoxin from a naturally occurring heavy metal, capricious and difficult to work with. At room temperature and pressure, it is a silvery-white liquid that evaporates rapidly. The most common form of human exposure to this metal occurs through two routes: a) Occupational, in which there is inhalation of inorganic mercury vapor from the burning of amalgam or the gold smelting; It is also caused by spills, by manipulation in the sale or during the process of manufacturing medical devices or the use in the process called amalgamation in mining. b) The ingestion of methylmercury (MeHg) through the diet, especially the consumption of contaminated fish.

In mining, mercury is widely used by small and artisanal mining, which uses it to recover gold, but due to the way used, most of it is discharged into rivers; this is how mercury is transformed into methylmercury when settling in aquatic environments; the ingestion of this compound affects the nervous system, the kidneys and the liver, causing mental disorders and damage to the motor and reproductive systems, speech, vision and hearing. It is especially worrying because it prevents the neurological development of fetuses, infants and children. When a woman consumes fish or shellfish that contain mercury, it accumulates in her tissues and takes several years to be excreted; and if during this period becomes pregnant, the fetus will be exposed to methylmercury inside the uterus, which can negatively affect over the time the growth of brain and nervous system, with alterations in cognitive thinking, memory, attention, language, fine motor skills, and visual spaces in such creatures.

Mercury ingestion has been widely shown to damage respiratory system, kidney, and motor function; its toxicity is so high that even with very low exposure levels serious damage to the nervous system can be caused. In addition, environmental pollution generated in water, soil, air and the detriment of the quality of life is added; as well as the ever growing challenges imposed by the green and sustainable markets for the commercialization of these products.

[1] This Bulletin was issued in 2012 and officially published in 2013. For further information please visit: https://repository.usta.edu.co/bitstream/handle/11634/2923/%5B32%5D%20Vigilancia%20epidemiol%C3%B3gica%20de%20la%20intoxicaci%C3%B3n%20por%20mercurio%20Colombia%202007%20a%202011.pdf?sequence=38&isAllowed=y

Expected effect of the final regulatory action in relation to human health: Reduce occupational and environmental exposure to mercury in humans.

Summary of known hazards and risks to the environment:

PROTOCOL FOR THE SURVEILLANCE AND CONTROL OF ACUTE POISONING BY MERCURY (Annex III pages 2, 15 and 16)

The presence of mercury in the air, water, soil and food (mainly fish) (1) in concentrations above the permitted limits has caused a serious public health issue in the country. Regions such as Northeast Antioquia, South Bolívar, Chocó, Santander, Nariño, Caldas, Vaupés, among others, carry out artisanal gold mining and mercury is used for the final extraction of this precious metal. Its use occurs in an indiscriminate and poorly controlled way, a situation that has caused environmental contamination and has affected people's health. Exposure to mercury is also increased in industrial areas that use this substance.

Mercury contamination in Colombia is originated in the gold benefit processes in which the mineral containing the precious metal is extracted by joining with the mercury, forming the amalgam; during this process, mercury spills into water bodies and the environment. Subsequently, the amalgam obtained is burned in the open air, separating the gold and releasing the toxic mercury vapors into the atmosphere. All these activities are carried out very close to the miners' homes, in such a way that families breathe a large part of the volatilized mercury vapor. Even remote populations can be affected by the mobilization of this substance.

Although in Colombia the main source of contamination comes from the gold beneficiation process, the presence of mercury as a contaminant was made known for the first time in the country in 1976 in a study performed by the Cartagena Bay Environmental Protection Committee (COPAC) which evidenced the presence of mercury in shellfish, fish, water and sediments (mercury levels of 32 ppm) due to the mercury waste discharged from the electrolytic alkali plant in Colombia.

SCIENTIFIC, REGULATORY AND TECHNICAL EVIDENCE ON THE MERCURY PROBLEM AT THE NATIONAL AND INTERNATIONAL LEVEL OF THE HEALTH SECTOR AND OTHER RELATED SECTORS - ASSOCIATION AGREEMENT NO. 447 OF 2012 SIGNED BETWEEN THE MINISTRY OF HEALTH AND SOCIAL PROTECTION AND THE FOUNDATION FOR EDUCATION AND SOCIAL DEVELOPMENT - FES. (Annex IV pages 35, 46, 47, 57, 58, 81, 82, 143, 144, 145 and 146)

According to the report prepared by Columbia University for the United Nations Industrial Development Organization UNIDO in 2010, Colombia ranks as the country with the highest per capita mercury contamination from artisanal gold mining as a result of such activity. This report shows that mercury concentrations in air exceed

by 1,000 times the chronic exposure limits in Antioquia, specifically in Segovia, Remedios, Zaragoza, El Bagre and Nechí. Despite this, the methodology used for the measurement must be critically evaluated, and afterwords comparison must be performed considering both results. (Page 35)

Studies (page 57)

In a review carried out in 2006 in freshwater fish in Colombia, it is indicated that according to the studies carried out to determine mercury concentrations, there is a direct relation between high concentrations in fish and the proximity to areas with direct influence of dumping of gold mining waters, with critical values found in the region of La Mojana and the northeastern zone of Antioquia, where almost all the samples presented values higher than the standard of 0.5 μg/g of mercury. The highest mercury concentrations were found in carnivorous species such as Moncholo (Hopliasmalabaricus), Maiden (Ageneiosuscaucanus) and Mojarra (Caquetaiakaussi) that are found in the upper part of the food chain. However, high levels were also found in detritivorous species such as Arenca (Triportheusmagdalenae) that present a considerable accumulation of the metal due to the way in which these species obtain their food from sediments, which present high levels of mercury.

Research results in Colombia (pages 143, 144, 145 and 146)

Year 2006:

Study "State of knowledge of concentrations of mercury and other heavy metals in freshwater fish from Colombia". Objective: To verify the effects of aquatic contamination with freshwater organisms and the evaluation of at least three parameters (heavy metals, temperature, effluents), using eight species of fish. Study population: Colombia, Species: Carassius auratus, Oreochromis spp., Piractus brachypomus, Prochilodus magdalenae, Astyanax fasciatus, Colossoma bidens, Gambusia affinis and Grundulus bogotensi. Results: Río Magdalena and its tributaries (Mojana) is the place where the contamination of fish in Colombia has been studied. The relation between the high concentrations in fish and the proximity to the direct influence of gold mining is evidenced. Critical values were found in La Mojana and Northeast Antioquia and high concentrations in carnivorous fish (Hoplias malabaricus, Ageneiosus caucanus and Caquetaia kaussi).

Study "Measurement of mercury concentrations and environmental controls in the burning of amalgam from mining". Study population: Sales workers in Antioquia. Results: Levels 14 times above the standard. In buying and selling areas: 192.2-679.28 mg/m^3, in the streets: 315.97-416.1 and in urine: 47-420.

Year 2007:

Study "Mercury contamination from artisanal gold mining in Antioquia, Colombia: The most expensive per capita contamination in the world." Objective: To obtain information about the gold production methods and ways of releasing mercury to the environment in the municipalities of Segovia, Remedios, Zaragoza, El Bagre and Nechí. Results: In 2009, 11 companies legally imported 130 tons of metallic mercury. In Segovia, Remedios, Zaragoza el Bagre and Nechí there are 323 artisanal processing facilities producing between 10 and 20 tons of gold. Taking into account the average amount of mercury consumed according to the balance sheet and the interviews of the facility owners, the estimated amount of mercury in these artisanal facilities corresponds to 93 tons. Concentrations in urban air range between 300 (background) and 1 million ng/m3 (inside gold shops), in residential areas the most common concentration is 10,000 ng/m3, when the occupational limit according to WHO is 1000 ng/m3. The total release/emission of mercury in Colombia can reach 150 tons/yr, giving the country the dishonorable position of the first country in the world with the highest per capita mercury pollution from artisanal mining. It is required: Urgent government intervention to eradicate the supply of mercury to artisanal processing facilities. Facilities must be removed from urban centers, technology improved, and emissions reduced through technical assistance.

Study "Distribution of mercury in different environmental components in an aquatic ecosystem impacted by gold mining in northern Colombia." Objective: To determine the levels of Hg in different environmental matrices in this ecosystem and to evaluate the changes in the distribution of Hg throughout different sampling sites and stations, environmental assessment and human exposure. Target Population: Humans, Sediments, Water, Plankton, Fish, and Seston. Results: T-Hg levels were found in water, sediments, seston, phytoplankton and zooplankton: 0.33, 0.71, 1.20, 052, 0.94, respectively. The highest values were found in the dry season. Differences were found according to trophic position.

Year 2008:

Study "Contribution of locative and environmental conditions to the risk of mercury contamination in dental entities in Antioquia." Objective: To describe the locative and environmental conditions in 30 large dental entities in the department of Antioquia. Target population: 30 dental entities (85% of the population) that had five or more dental chairs or units in the same workplace. Results: Not all large entities provide services in adequate facilities or make good management of environmental variables. In 97% of the entities there is a latent risk of mercury contamination. Spills have occurred in 37% of the sites.

Year 2012:

Study "Mercury concentrations in muscle and liver tissue of fish collected along the Magdalena river, Colombia". Objective: To determine the concentration of total mercury in muscle and liver tissue in fish caught in the Magdalena river basin. Study population: 378 muscle and 102 liver samples. Results: The highest level of mercury in muscle tissue was found in the non-carnivore Pimelodus blochii, however, the carnivorous group had higher concentrations with significant differences. There are no significant differences in total mercury by species or genus.

Study "Concentrations of methylmercury in six species of fish from two rivers of Colombia". Objective: To determine if the fish chosen in La Miel and Nechí rivers differ in the concentration of methylmercury in the muscle. Study population: Six species of fish from two rivers (La Miel, Nechí): Sorubim cuspicaudus, Pseudoplatystoma magdaleniatum, Triportheus magdalenae, Pimelodus spp., Prochilodus magdalena, Leporinus muyscoru. Results: Fish from the market near to Nechí River had high levels of MeHg. Concentrations are highest in the Nechí river. Results suggest that pollution is not generalized in all river basins; highly contaminated fish reach the market in mining regions.

QUANTIFICATION OF ANTHROPOGENIC MERCURY RELEASES IN COLOMBIA (Annex V. pages 67, 68, 69 81 and 82)

Regarding releases and emissions, the report on the quantification of anthropogenic releases of mercury in Colombia contains the quantification of releases and emissions of mercury generated in the productive and service sectors in 2009. Compared to total releases of mercury, for the year 2009, this were 345,570 kg distributed as follows:

Table 44. Quantification of mercury releases in Colombia for 2009

Soil	Air	Water	Waste treatment from specific sectors /disposal	By-products and impurities	Waste in general
151,650	74,420	31,260	45,400	28,190	14,650

Both in Table 44 and in Figure 7, it is observed that the most affected environmental matrices are the soil and air, which receive 226,060 kg, and, within the production process, the treatment of waste and by-products and impurities, the phases where the highest amount of mercury is released with 73,590 kg.

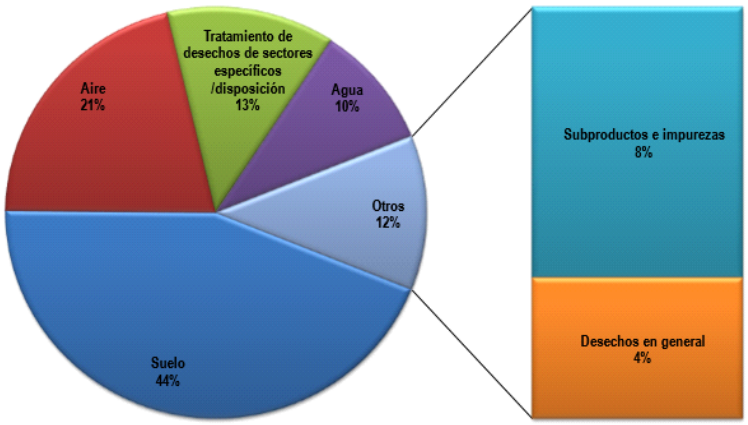


Figure 7. Distribution of mercury releases in the different matrices

According to the report, the largest mercury emitting sources in the country correspond to the category "Primary production of metals", (194.97 Ton/year,) "Chemical products" including: production of chlor-alkali and vinyl chloride monomers (PVC), (97.60 Ton/year); waste disposal and wastewater treatment (57.81 Ton/year); use and disposal of products containing mercury corresponding to commercial activities that involve importing the products (thermometers, electrical switches, light sources, batteries) with 44.305 tons/year. The most affected medium is air, followed by soil and water. These releases come in a high percentage from the primary extraction of metals, mainly gold, as presented in the following table.

Table 11. Estimated mercury releases by category

Categories	Estimated Hg input, Kg Hg/year	Estimated Hg releases, Kg Hg/year					
		Air	Water	Soil	By-products and impurities	General waste	Waste treatment / disposal, specific by sector
Primary metal production	194,974	49,475.74	17,291.20	123,384.00	4822.4	0	0.7
Chemical production	97,597	11,117.09	1,951.95	19,348.63	21,896.54	0	43,283.23
Waste disposal/landfill and wastewater treatment	7,990	918.77	3,293.83	3,312.11	0	319.42	0
Use and disposal of products with mercury content	44,305	8048.75	11027.41	8543.5	242.88	12855.37	2059.98
Fuel production	3,519	324.52	571.79	0	301.71	456.2	0.00
Other production materials	4,648	2,801.10	0	0	923.56	923.56	0
Waste incineration	536	485.21	0	0	0	0	51.28
Crematories and cemeteries	463	82.5	0	377.5	0	0	0
Metal recycling production	0.31	0.1	0	0.1	0	0.1	0
Production of products containing mercury	0	0	0	0	0	0	0
Energy consumption	1,267	1,169	0	0	0	98.42	0
Total	355,300	74,423	34,136	154,966	28,187	14,653	45,395

Additionally, this inventory highlights that Colombia produces lighting fixtures, but there are no official activity rate data to be able to quantify this subcategory. Manometers to measure blood pressure (mercury sphygmomanometer), contained in the category Use and disposal of products with mercury content, were not taken into account in the inventory because these are not produced in the country and all units are imported and marketed. Furthermore, entry into the country is made under a tariff heading that covers many other products, making discrimination impossible for quantification purposes. The category of gold extraction with amalgamation and without the use of a retort is the activity that uses and releases the greatest amount of mercury in the country, being the artisanal miners lack of knowledge, the deficiency in environmental controls and inadequate mercury management the factors responsible for the situation. In addition to this, it should be noted that artisanal miners in the country believe that the greater the amount of mercury used, the greater the recovery of gold.

NATIONAL ENVIRONMENTAL HEALTH DIAGNOSIS - Annex VI (pages 237-243)

Mercury exposure assessment

Following, mercury concentrations in different environmental matrices are presented in maps, tables and graphs. For further information please see Annex VI.

Figure 5.3. Map of mercury levels in sediment, Colombia

Note: The map is displayed at page 23 of Colombia's FRA notification on mercury available at: www.pic.int/Portals/5/download.aspx?d=UNEP-FAO-RC-FRA-NOTIF-Mercury-7439976-Colombia-20200506.Sp.pdf

Source: the author.

*Data obtained from studies of Sarmiento et al, 1999; Marrugo J et al, 2010; Alonso, 2000.

Table 5.5. Mercury evaluation (ng/ml) in river Cauca waters according to monitoring point 1995-2008

Station	Hg[ng/ml]	%RSD
Puente Hormiguero	14.66	3.4
Paso del comercio	2.79	3.5
Juanchito	16.02	4.1
Media Canoa	1.79	3.9
Yotoco	23.33	3.0
Puerto Isaacs	1.69	3.8
Vijes	2.63	1.6

Note Source: Vásquez A. Evaluation by atomic absorption spectrometry of mercury in waters of the southern section of the Cauca River [Thesis]. Santiago de Cali, 2001.

Table 5.6. Analysis of total mercury in sediments of Cauca River

Sampling station	11/15/95		05/22/96		09/04/96		07/30/97	
	Concentration (ng/g)	%RSD	Concentration (ng/g)	%RSD	Concentration (ng/g)	%RSD	Concentration (ng/g)	%RSD
Juanchito	107.131	0.0	338.273	9.0	341.817	1.2	7966.562	1.6
Paso del comercio	194.752	1.0	434.795	8.8	2817.663	1.3	267.598	1.2
Puerto Isaacs	208.641	3.2	265.341	8.2	1645.169	1.1	267.598	1.6
Paso de la Torre	195.372	0.1	145.530	1.0	217.988	1.3	885.388	1.1
Vijes	188.604	3.3	113.816	1.2	92.961	1.4	651.230	3.1
Yotoco	175.594	6.5	111.616	0.1	512.329	1.1	1092.380	1.3
Media Canoa	1095.064	0.0	584.779	4.2	650.132	0.1	910.580	2.2

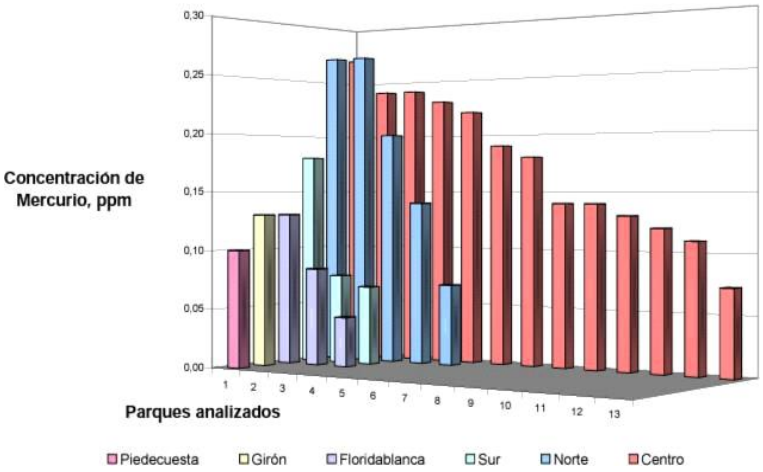
Note Source: Rada MP. Study and evaluation of the degree of contamination by Cadmium, Mercury and Lead in waters, fish and sediments of the Rio Cauca by atomic absorption spectrometry [Thesis]. Santiago de Cali: Universidad de Valle, 1998.

Table 5.7. Mercury concentrations found in samples from Cauca River

Sampling point	Concentration (ppb)
Puente Hormiguero	12.8
Antes Canal CVC-Sur	4.92
Después Canar CVC-Sur	4.50
Bocatoma Puerto Mallarino	11.6
Puente de Juanchito	2.42
Salida A Residuales PTAR-C	4.50
Desembocadura del río Cali en río Cauca	3.25

Note Source: Correa WA. Speciation of Lead, Chromium and Cadmium with XAD-16 amberlite resin and quantification of mercury in waters of the Cauca River in Santiago de Cali by atomic absorption spectrometry [Thesis]. Santiago de Cali, 2009.

Figure 5.4. Mercury concentrations in soils of Bucaranga metropolitan area parks



Note Source: Muñoz FA. Determination of mercury in soils of Bucaramanga, using a prolizer coupled to a mercury detector based on atomic absorption spectroscopy unlike Zeeman [Thesis]. Bucaramanga: Industrial University of Santander, 2006.

Table 5.8. Mercury concentration in fish in Colombia

Place	Fish type	Levels	Author
Ayapel, Córdoba		2.18±1.77 µg/g (max. 12.76) fresh weight	Gracia et al, 2010
Bahía de Cartagena	Carnivores	0.100±0.006 mg/g	Olivero et al, 2009
	Omnivores	0.076±0.014 mg/g	
	Detritivores	0.028±0.001 mg/g	
Ciénaga de Ayapel, Córdoba	Carnivores	0.288±0.145 mg kg-1fresh weight	Marrugo J et al 2007
		0.346±0.133 mg kg-1 fresh weight	
	Non-carnivores	0.184±0.102 mg kg-1 fresh weight	
Cga de Ayapel, Mojana		0.298 + 0.148 mg/g, fresh weight	Marrugo J et al, 2010
Mojana	Carnivores	0.160-0.301 mg/g	Marrugo J et al, 2008
		0.346 ± 0.171 mg g_1 fresh weight ¥	
	Non-carnivores	0.155 ± 0.108 mg g_1 fresh weight	
		0.146 ± 0.102 mg g_ fresh weight ¥	
San Benito		0.346±0.262 µg/g fresh weight ¥	
		0.386± 0.260 µg/g fresh weight	
Ayapel		0.332±0.125 µg/g fresh weight ¥	
		0.370±0.123 µg/g fresh weight	
San Marcos		0.286±0.167 µg/g fresh weight ¥	
		0.296±0.167 µg/g fresh weight	
Guaranda		0.253±0.168 µg/g fresh weight ¥	
		0.268±0.168 µg/g fresh weight	
Caimito		0.228±0.153 µg/g fresh weight ¥	
		0.240±0.165 µg/g fresh weight	
Majagual		0.106±0.054 µg/g fresh weight ¥	
		0.117±0.057 µg/g fresh weight	
Sucre		0.088±0.057 µg/g fresh weight ¥	
		0.091±0.059 µg/g fresh weight	
Bahía de Cartagena		Detection levels at 852 mg/kg dry weight	Alonso et al, 2000
Place	**Fish type**	**Levels**	**Author**
Ciénaga Grande de Santa		Detection levels at 68 mg/kg dry weight	Alonso et al, 2000

Place	Fish type	Levels	Author
Marta			
Río Nechi		40 to 934 ng/g¥	Álvarez et al, 2012
Río la Miel		8 to 92 ng/g	

Note Source: Adaptation made by the author.
* Data have been extracted from studies of the following authors: Gracia et al, 2010; Olivero et al, 2009; Marrugo J et al 2007; Marrugo J et al, 2010; Marrugo J et al., 2008; Alonso et al, 2000; Álvarez et al, 2012.
** Total mercury was measured in all cases, except those indicated with ¥, in which methylmercury was measured

CONGRESS GAZETTE NO. 156, 2011 (Annex VII - page 3)

Studies conducted by the Government of Antioquia in the municipalities of Segovia and Remedios, in the Northeast of the department, found a concentration of mercury of approximately 340 μg/m³ in the air (300 times higher than the guideline of the World Health Organization for public maximum exposure to vapor of mercury). Approximately 26 to 6,118 ppm of Hg is discharged into rivers by miners in the region.

Additionally, the main food of these communities is fish, which has been shown to be affected by the emission of mercury. Studies completed by Corantioquia, the University of Antioquia, and the University of Cartagena have revealed a concentration above 1.06 μg Hg/g in most of the species found in the rivers of the surrounding area.

Expected effect of the final regulatory action in relation to the environment: Reduce the anthropogenic releases and emissions of mercury to the environment.

Date of entry into force of the final regulatory action: 15/07/2013

Date of prohibition of the use of mercury in mining: July 15, 2018.

Date of prohibition of the use of mercury in other industrial activities: July 15, 2023 *(The only industrial activity that is currently allowed to use mercury in Colombia is the manufacture of dental amalgams).*

COLOMBIA

Common Name(s): Methyl bromide ***CAS number(s):*** 74-83-9

Chemical Name: Methane, bromo-

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is severely restricted

Use or uses prohibited by the final regulatory action: This regulation applies to all formulations with active ingredient methyl bromide, where there was a severe restriction of these formulations, prohibiting the disinfection of soils and fumigation of stored grains. Additionally, specific measures are established for a controlled use of the substance.

Use or uses that remain allowed: The use of gaseous formulations of methyl bromide is allowed for quarantine treatment in the control of quarantine pests in agricultural products and packaging at ports and border crossings, until a viable substitute is found that allows their replacement. Requiring the use of airtight fumigation chambers.

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: *Resolution 2152 of 1996 of the Ministry of Health established that Methyl Bromide is an extremely toxic pesticide for humans and that this substance has in turn been identified as one of the most powerful atmospheric ozone depletors. In addition, there are viable substitutes for Methyl Bromide in fumigation of stored grains and for soil disinfection.*

However, for sanitary actions in plant quarantines, methyl bromide is the only fumigant enabled for the treatment of fresh plant tissues at the level of ports of entry and exit and there is no other product as an alternative that provides the required quarantine security.

Given this situation, Resolution 2152 authorizes the importation, commercialization and use of METHYL BROMIDE, only for quarantine treatment for control of exotic pests in fresh plant tissues at the port and border crossing level, until a viable substitute is found that allows its replacement. Its application must be airtight and with a closed pesticide recovery system.

Subsequently, modifications were made to article 1 of resolution 2152 in order to make a more controlled and restrictive use of the substance, such modifications were made through resolutions 00643 of 2004, 01800 of

2006, 03587 of 2008 and the resolution 5049 of 2008. **Currently, resolution 2152 of 1996 and resolution 5049 of 2008 are in force.**

*The latter defines all the restrictions in force for the use of methyl bromide, establishing: "ART. 1º - Modify Article 1 of Resolution 2152 of 1996, as amended by resolutions 643 of 2004 and 1800 of 2006, which will read as follows:"***ART. 1º - Authorize the importation, commercialization and use of Methyl Bromide only in quarantine treatment for the control of quarantine pests in agricultural products and wood packaging at the level of influence zones established within a maximum radius of ten (10) kilometers from from the port and / or border crossing.**

PAIR. 1º - The authorization referred to in this article shall be valid as long as the Montreal Protocol allows its application as a use except or a viable substitute is found that allows its replacement and applies only for agricultural products and solid wood packaging including stowage They are going to be exported from Colombia, when the competent agricultural authority of the importing country, or the entity that does its times, expressly requests its use or when for quarantine reasons the ICA orders its application and is carried out tightly in authorized fumigation chambers, by the ICA

PAIR. 2º - The application of this pesticide should be carried out only in areas of influence established within a maximum radius of ten (10) kilometers from the port and / or border crossing taking into account:

a) The doses endorsed by the Colombian Agricultural Institute (ICA);

b) The environmental measures established for this purpose by the Ministry of Environment, Housing and Territorial Development;

c) Supervision by the Ministries of Agriculture and Rural Development, through the Colombian Agricultural Institute (ICA), and Social Protection, through the territorial entities in the area of their jurisdiction who in turn will endorse the method to use in your application.

d) The application must be carried out in hermetic fumigation chambers authorized by the ICA."

Considering the above, this notification refers to final regulatory action 5049 of 2008.

The reasons for the final regulatory action were relevant to: Human health and environment

Summary of known hazards and risks to human health: In Resolution 2152 of 1996 it is stated that 'pesticide METHYL BROMIDE is an irritating and vesicant gas, extremely toxic to humans that affects different organs and systems, with a high potential risk of producing acute poisoning by inhalation and absorption through the skin and mucous membranes'. This was established from the toxicological concept issued by the Ministry of health in May 1992 (Annex II).

This concept was developed considering the provisions on the use and management of pesticides, established in Decree 1843 of 1991 and the criteria established in Resolution 10834 of 1992 (Annex XIV), such as: the Oral Median Lethal Dose and dermal and inhalation mean lethal concentration in rats, chronic toxicity studies, potential carcinogenic, mutagenic and teratogenic effects; presentation and formulation; form and dose of application; persistence and degradability; acute, sub acute and chronic toxic effects in humans and animals; feasibility of medical diagnosis and treatment with full recovery, short-term environmental effects. With regard to the lethal doses and the average lethal concentration, Colombia took into account the tables presented below:

Table 1. Toxicological categories according to LD50

CATEGORY	**LD50, rats (mg/kg body weight)**			
Oral		**Dermic**		
***Solids**		***Liquids**	***Solids**	***Liquids**
I. EXTREMELY TOXIC	5 or less	20 or less	10 or less	40 or less
II. HIGHLY TOXIC	> 5 up to 50	>20 up to 200	>10 up to 100	>40 up to 400
II. MEDIUM TOXIC	>50 up to 500	>200 up to 2000	> 100 up to 1000	>400 up to 4000
IV. SLIGHTLY TOXIC	> 500	> 2000	> 1000	> 4000

*The terms solid and liquid refer to the physical state of the active ingredient of the formulations object of the classification.

Table 2. Toxicological categories according to LD50

CATEGORY	**LD50, mg/1 Air, 4h**
I. EXTREMELY TOXIC	up to 0.5
II. HIGHLY TOXIC	0.5 up to 2

II. MEDIUM TOXIC	2 up to 20
IV. SLIGHTLY TOXIC	> 20

Additionally, methyl bromide was identified "as one of the most powerful depletors of atmospheric ozone and therefore indirectly favours the effects of solar radiation in the production of skin cancer (Scientific, Technical and Economic Review of the Committee of Experts of the Montreal Protocol on METHYL BROMIDE) ". This implies that, by reducing the use of methyl bromide in Colombia, we are contributing to the reduction of emissions of an ozone layer depletory and, indirectly, to reducing the risk of skin cancer by increased solar radiation.

This was also supported by the 1989 report of the Montreal Protocol, which defines that "skin cancer will increase with any increase in UV-B radiation, the relationship between skin cancer and ozone decrease is not one to one: For every 1% decrease of the total ozone will result in a 3% increase in the incidence of melanoma or skin cancer" and this was considered in the development of regulation 2151, 1996 (Annex XV page II).

In addition to the problems at skin level due to the exposure increase to UV-B radiation caused by the loss of stratospheric ozone, it has also been identified that the incidence of cataracts and the severity of different infections has been increased since the immune system is supressed from radiation. Annex IV Report of the Panel on Environmental Effects p. 11-24

It is important to highlight that in the UNEP Methyl Bromide reports in 1992 and 1994, one of the sources of exposure to this evaluated pesticide was the use in pre-sowing and post-harvest agricultural activities, fumigations in structures (such as containers and buildings) and in intermediate chemicals. Additionally, a predictive theoretical analysis identified that between 45 and 53% of the amount used in agricultural activities could be released into the atmosphere (Annex V p. 10-7). This was expected to happen in Colombia since Methyl Bromide was used as a soil fumigant, for stored grains, and as quarantine fumigant. Specifically, in soils treatment it was used to eliminate weeds, nematodes and fungi, that frequently made necessary to disinfect the substrate used, the amounts of use as a soil fumigant are presented in table 3 (this information is available to the general public in Annex VI).

Table 3. Main users of Methyl Bromide as soil fumigant, Colombia 1994

SECTOR	**ESTIMATED REPORTED AMOUNT OF METHYL BROMIDE USED kg**	**ESTIMATED PRODUCTION AREA (1994) Ha**
BANANA	32000	45000
STRAWBERRY	50	100
CHRYSANTHEMUM	Not specified	350
FOLIAGE PLANTS	Reported use	200
TOBACCO (SEED)	Reported use	3000
FOREST-TREES (NURSERIES)	Reported use	15000
MELON	Reported use	250
COFFEE (SEED)	Reported use	100000

Source: UNDP Regional survey on Methyl Bromide- Latin America 1995 (PNUD 1996)

Similarly, Colombia identified in 1996 that, for sanitary actions in plant quarantines, Methyl Bromide was the only fumigant authorized for the treatment of fresh plant tissues at the ports of entry and exit and there is no other product as an alternative providing the required quarantine security. Consequently severe restriction and not total ban of the pesticide was adopted. However, taking into account what was identified by the panel of experts of the Montreal Protocol, it was required hermetic use with a closed pesticide recovery system.

Subsequently, some aspects to improve the fumigation process were identified to reduce the risk to the environment and health. Specifically, in 2008 the report on 'Use of Methyl Bromide for disinfection of aromatics for exporting" (Annex VII) carried out by the ICA, described the use of Methyl Bromide through fumigation with carps. However, it is important to note that this kind of fumigation generated concern in the aromatics union, since years before, due to possible emissions to the environment and workers exposure to the pesticide. Reason why in 2007 the ICA promoted meetings with the MAVDT to brief on the project 'Construction of two chambers for the commercial application of Methyl Bromide as quarantine treatment', as described on page 3 of Annex XI and Annex IX.

As a result of institutional, sectorial and inter-institutional work, resolution 5049 of 2008 was generated, modifying resolution 2152 of 1996, making the use of fumigation chambers for Methyl Bromide mandatory as expressed in the conclusions and commitments of the 27 August 2008 meeting of the inter-institutional working committee on the use of Methyl Bromide in Colombia (Annex XI and Annex IX).

Expected effect of the final regulatory action in relation to human health: Risk reduction of poisoning by the use of Methyl Bromide and contribute to the reduction of Methyl Bromide emissions that deplete the ozone layer,

which increases solar radiation and in the long term may increase the risk of skin cancer in people.

Summary of known hazards and risks to the environment: Methyl Bromide was included in the Montreal Protocol as an ozone layer depleting substance under the Copenhagen Amendment since this substance, upon reaching the stratosphere, photolyzes or reacts with OH and O and rapidly releases Bromine atoms. Unlike Chlorine, where only small fractions are reactive, Bromine is reactive for almost half of the total amount. Therefore, it is more efficient in catalytic ozone destruction than Chlorine. Furthermore, the photochemical gas phase separation between the reactive forms and reservoirs of bromine is quite rapid in sunlight, about one hour or less, such that the direct heterogeneous conversion of HBH and BroN02 to Bro is likely to have little impact on the bromine partition, except perhaps at polar twilight.

The mixing ratios of Nox, Hox and Clox increase strongly with an altitude above 20 km than with Bro and the fractional contribution to ozone loss due to Bromine is greater in the lower stratosphere. And it is there, where the concentrations of oxygen atoms are small, the Bro reaction is relatively insignificant, and the three reaction cycles listed below are mainly responsible for the Bromine-catalysed ozone loss, been Cycle III less important than Cycles I and II:

$$ClO + BrO + h\nu \rightarrow Br + Cl + O_2$$
$$Br + O_3 \rightarrow BrO + O_2 \quad \textbf{(I)}$$
$$Cl + O_3 \rightarrow ClO + O_2$$

$$BrO + HO_2 \rightarrow HOBr + O_2$$
$$HOBr + h\nu \rightarrow OH + Br$$
$$Br + O_3 \rightarrow BrO + O_2 \quad \textbf{(II)}$$
$$OH + O_3 \rightarrow HO_2 + O_2$$

$$BrO + NO_2 + M \rightarrow BrONO_2 + M$$
$$BrONO_2 + M \rightarrow Br + NO_3$$
$$NO_3 + h\nu \rightarrow NO + O_2 \quad \textbf{(III)}$$
$$Br + O_3 \rightarrow BrO + O_2$$
$$NO + O_3 \rightarrow NO_2 + O_2$$

In the Polar Regions, where Nox is reduced and Clox is reinforced by heterogeneous reactions of sulphate aerosols and polar stratospheric clouds, the loss of ozone due to Bromine is evidenced in Cycle I. In mid-latitudes where the first two cycles occur, an approximately equal contribution of ozone loss is evidenced at 20 km. Cycle II occurs near the tropopause, where the abundance of H02 is substantial and the amount of Clox is negligible. Because Bromine is released more rapidly with altitude than Chlorine, and a fraction of inorganic Bromine remains in active forms, the catalytic destruction of ozone by Bromine is more important than Chlorine considering a mol-to-mol ratio.

As a consequence, at about 20 km the contribution of Bromine to the overall rate of ozone loss is almost as important as the contribution of Chlorine. However, the total ozone losses are the result of the continuous photochemical destruction of ozone that is generated when transporting from the region of origin in the tropics from lower altitudes to higher latitudes. Therefore, it is difficult to assess the overall contribution to ozone trends from instantaneous ozone loss rates (Annex V Chapter 10 pages 19 and 21).

As presented in section 2.4.2.1 Colombia identified the use of this pesticide in different crops, as well as the need to use it for quarantine treatment, reason why severe restriction of the pesticide through Resolution 2152 of 1996 was carried out. Later In 2008, more restrictions were implemented to control the use of Methyl Bromide and thus limiting this pesticide emission into the environment. Therefore, under Resolution 5049 of 2008, the use of hermetic fumigation chambers was made mandatory.

Expected effect of the final regulatory action in relation to the environment: Reduction and control of emissions of ozone-depleting substances such as methyl bromide.

Date of entry into force of the final regulatory action: 12/12/2008

COSTA RICA

Common Name(s): Alachlor ***CAS number(s):*** 15972-60-8

Chemical Name: 2-chloro-2' ,6'-diethyl -N-methoxymethylacetanilide

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All formulations containing Alachlor active ingredient, as well as all uses in Costa Rica, are banned.

Use or uses that remain allowed: None.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: A meeting of the Interministerial Commission was held, in May 2012, with the participation of officials from the Ministry of Environment and Energy (MINAE), Ministry of Health (MS), and State Phytosanitary Service (SFE) - Ministry of Agriculture (MAG) with the participation of the Coffee Institute of Costa Rica (ICAFE), as pesticide Alachlor was of great importance for the cultivation of coffee. During this meeting it was pointed out that Alachlor is used very little in coffee nurseries, so there was no big impact if prohibited; together with the above, the Directorate of ICAFE by means of a letter sent to the State Phytosanitary Service indicating that pesticides Aldicarb and Alachlor are used very little and there are substitute products registered for this kind of crop and therefore their elimination would not cause an impact on coffee growing.

In June, August and September 2012, different follow-up meetings of the SFE-MINAE-MS Interministerial Commission were held, where modifications and corrections were made to the proposed decree. In October 2012, the Directorate of Environmental Quality Management (DIGECA) handed over to the Head of the Department of Agrochemicals of the SFE the technical report on the Alachlor issue, concluding that the environmental fate of this pesticide generates concern, as it is a substance persistent in water and moderately toxic to aquatic and terrestrial organisms; for algae, base organisms of the trophic chain, it is highly toxic, and the degradation of this product generates unknown metabolites that may have unacceptable toxicological and ecotoxicological effects; therefore, its use in agricultural applications could result in significant effects for the country's ecosystems, for which the technical environmental criterion indicated in the technical report was that the use of Alachlor in the country would be eliminated.

On this same month, October 2012, the SFE-MAG issued the agronomic technical report where it was concluded that after analysing the scientific and technical information on the risks that Alachlor represents for the human health and the environment, and considering the agricultural use panorama in Costa Rica, it is the criterion of the SFE -MAG that the joint efforts required with MINAE and MS should be made to dictate the corresponding legal regulation that would allow natural or legal persons who register, formulate, package, repackage, import, export, commercialize, manipulate and use, synthetic pesticides formulated containing Alachlor, had a non-extendable term of six months, considered from the publication date of the decree in the Official Gazette 'La Gaceta' to deplete their stocks in the national market and after this term the MAG through the SFE, would proceed to cancel all these registrations.

In the technical report carried out by the Ministry of Health, it is concluded that after the analysis of the technical and scientific information on the represented risks on health and the environment and that, given the little importance that this herbicide has in the country's agriculture, efforts should be made together with MINAE and MAG to dictate the legal regulation that allows the prohibition for the importation, manufacture and use of Alachlor and formulated products; the MS considered that the carcinogenic risk to humans of this product has not been fully studied nor completely discarded.

In November 2012 the Occupational Health Council issued a technical report, where it was concluded that calculations from studies conducted on German and UK operators using the appropriate personal protective equipment, during mixing, loading and application of the product, indicate that the operator faces an inadmissible risk in all uses, and in order to protect life, health and safety of the operators, it was agreed the prohibition of registration, import, export, re-destination, manufacture, formulation, packaging, repackaging, storage, sale, mixing, marketing and use of the technical active ingredient Alachlor and synthetic pesticides formulated containing this active ingredient.

During this same month, the SFE-MAG delivers to the Ministries of Labour and Social Security, the Ministry of Environment and Energy and the Ministry of Health the draft decree requesting the approval of said regulations. This same month the approvals of the Ministry of Labour and Social Security and the Ministry of Environment and Energy are received, however, the Ministry of Health made some observations in relation to the legal basis.

From the date indicated in the previous point to the moment of publication in the Official Gazette 'La Gaceta', observations were made by all the Ministries and entities involved on the decree draft that had been drawn up from

the beginning and the respective collection of the signatures of the ministries involved.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 04/03/2015

COSTA RICA

Common Name(s): Bromacil ***CAS number(s):*** 314-40-9

Chemical Name: (RS)-5-bromo-3-sec-butyl-6-methyluracil

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All formulations containing Bromacil active ingredient, as well as all uses in Costa Rica, are banned.

Use or uses that remain allowed: None.

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: Water analysis were carried out in two aquifers located in the Atlantic area of the country where the presence of bromacil was determined, and since 12 September 2014 the contamination of the waters of 3 aqueducts located in this same area was confirmed.

The National Service of Groundwater, Irrigation and Drainage (SENARA) prepared the Matrix of criteria for agricultural land use, according to the vulnerability to contamination of aquifers for the protection of the water resource, in addition the AYA, in 2009, contracted a hydrogeological vulnerability study in two basins in which the water intakes of the aqueducts takes place, where the contamination of the waters was confirmed, concluding that they are of high and extreme hydrogeological vulnerability.

In 2011, SENARA contracted a second hydrogeological vulnerability study in the same basins, observing that the study area is highly vulnerable, from the hydrogeological point of view; to a lesser extent in the Destierro river basin there are areas with medium vulnerability.

In September 2015, the National Environmental Council agreed to commission the Ministers of Health, Environment and Energy and Agriculture and Livestock to present a proposal and a roadmap to address the contamination of aquifers and water bodies problem by agrochemicals used in the cultivation of pineapple in that region.

The Inter-Institutional Commission, coordinated by the Ministry of Health, for the elaboration of a single Plan to address the water contamination by pesticides issue in Desierro and Peje river basins, called for an institutional sub-commission to prepare proposals for the management of the aforementioned basins, in November 2015, and constituted by the Ministry of Health (as coordinator), the Ministry of Agriculture through the SFE, the Ministry of the Environment through DIGECA and SENARA and Aqueducts and Sewers (AYA) who issued sanitary orders, carried out hydrogeological studies, control of wastewater reuse to avoid dumping in medium and high risk areas, monitoring of water and surface sources, and also coordinated the work with the National Chamber of Producers and Exporters of Pineapple (CANAPEP) so that elimination of Bromacil was done gradually to do not affect producers.

The single Action plan is then created and approved, the most important steps are: prohibit the import of Bromacil at the national level, continue with the inspections of the warehouses and farms in the area, continue with the sampling plan of the aqueduct water, continue to follow up on the sanitary order issued in 2008 that prohibits the use of Bromacil on farms in the affected area and continue to inform the Environmental Administrative Tribunal on the actions taken to provide feedback on the 3 files opened to this respect.

On May 10, 2016, representatives of the Ministry of Agriculture - SFE presented information and graphs pointing to the levels of persistence allowed at the international level of Bromacil in the water, so it was agreed for the next session that the Minister of Health, in his quality of rector of water, will make a report on the status of the Bromacil situation and present the scientific comparison with respect to the observations made by the MAG-SFE.

On 5 July 2016, the Minister of Health exposed the problem, in the Atlantic Zone since 2002, regarding the persistence of Bromacil since the current drinking water regulation was ignored in terms of maximum levels, for which article 273 and 277 of the General Health Law was applied, where it is stated that it is prohibited to contaminate water supplies and that natural or legal persons must use water that meets the qualities required by the Ministry, and for this reason, from 2008 and 2009 the populations of the area have been supplied by drinking water tanks. The Director of DIGECA explained that the Unique Plan of the Pineapple presented in 2015 was elaborated together and approved by the ministers, it was a more comprehensive plan, not limited to the prohibition

of the Bromacil but urging that it should be prohibited, in addition the Minister of Agriculture clarified that in the visit of the European Union, the Costa Rican pineapple sector affirmed that Bromacil is no longer used; and in this ordinary session of the National Environmental Council was discussed that the most convenient thing is to unregister Bromacil from the pesticides registry.

As an agreement of this session, it was decided to proceed with the corresponding steps to eliminate Bromacil from the pesticides registry, or, otherwise opting for banning Bromacil in specific areas with there water vulnerability based on SENARA studies and hydrogeological maps.

On 4 July 2016, in the ordinary session, the progress of the fulfilment of the Single Action Plan was presented, and can be found in Annex II.

On October 25, 2016, the Vice Minister of the Ministry of Agriculture and Livestock requested to designate representatives of MINAE, MTSS and Health to form up the National Monitoring Committee for the pineapple sustainability initiative, where the two strategic ways are the use and conservation of soils. In addition, priority actions were identified to adopt the best practices for the use and conservation of soils, management and handling of pineapple stubble, management and control of phytosanitary problems, measures to mitigate the impacts of climate change, differentiation of pineapple in national and International markets and to stimulate the production of organic pineapple; in this ordinary session the progress report of the sustainable pineapple project presented by the Vice Minister is considered received.

On 15 May 2017, the head of the MAG's Legal Department indicates to the Executive Director of the State Phytosanitary Service - MAG, that by request of the Minister of Agriculture and Livestock, will draw up the Executive Decree to prohibit the use of Bromacil in the national territory, on the grounds that using this pesticide many pineapple-producing farms have a high risk of contaminating groundwater, aquifers and humans, in addition requesting the technical justification draft for the elaboration of this decree; the Executive Director of the SFE-MAG answered on May 26 indicating that for registration and prohibition of a pesticide three institutions are necessary: the Ministry of Environment and Energy (MINAE), the Ministry of Health (MS), and SFE-MAG, where each one of them carries out an evaluation in the scope of its competence; SFE-MAG has to evaluate the agronomic information of the pesticide and, from the agronomic point of view, the biological efficacy and the phytotoxicity of Bromacil, which does not present problems that justify its prohibition since said pesticide meets all the requirements for its use in the crops for which is registered, therefore there is no scientific foundation. In addition, the Director indicates that from the toxicological and ecotoxicological point of view the Ministries of Health and Environment and Energy must issue the technical criteria within the scope of their competence and therefore the SFE-MAG does not have the technical competence to issue a justification that allows the prohibition of Bromacil for presenting a high risk of contaminating groundwater, aquifers and affecting human health, so the technical justification to draw up the prohibition decree must be requested from MINAE and MS.

Summary of known hazards and risks to human health: Although a health risk assessment was not performed, the levels of Bromacil in drinking water raised a health concern.

Expected effect of the final regulatory action in relation to human health: Reduce potential exposure to Bromacil from the consumption of drinking water with this pesticide, in compliance with Executive Decree 38924-S Regulation for the Quality of Drinking Water and its reforms.

The reasons for the final regulatory action were relevant to: Environment

Summary of known hazards and risks to the environment: In Costa Rica, before Executive Decree 40423-MAG-MINAE-S entered into force, four technical grade active ingredients (IAGT) and six formulated products were registered whose IAGT was Bromacil and whose use was for the cultivation of pineapple and citrus, these pesticides are currently cancelled. Annex II shows the summary table of the formulated products mentioned above, where their formulation, toxicity, band colour, uses, dose and application interval and harvest interval are detailed.

Within the hazard identification of Bromacil, the value of toxicity for fish, toxicity for daphnia, toxicity for algae, persistence in soil, water-sediment, mobility, bioaccumulation and solubility is determined, these are shown below:

Toxicity to fish, LC_{50}	> 36
Daphnia toxicity, EC_{50}	> 119
Toxicity to algae, LC_{50}	0.013
Persistence in soil (Laboratory at 20°C) DT_{50}	60
Persistence in soil (Laboratory at 20°C) DT_{50}	60
Persistence in water-sediment (DT_{50} water) DT_{50}	ND
Mobility, K_{oc} or K_{foc}	32
Bioaccumulation BCF (l/kg)	2,8
Solubility, mg/L	815
GUS index[1]	

LC_{50}: Medium Lethal Concentration;

EC_{50}: Average Effective Concentration; DT_{50}:;
K_{oc}/K_{foc} Half Life: adsorption coefficient or soil-water partition coefficient

From the above information, the hazards were characterized with the GUS1 index, which is reported higher than 2.8, therefore, it has a high contaminant potential in the aquifers.

In 2014, water contamination of in the Atlantic Zone of the country was confirmed, especially the pesticide Bromacil, in the aqueducts Milano, Louisiana, France and Cairo de Siquirres, by different water analysis that were carried out, and the identified levels are presented listed as 17/24, 18/24 in Annex I.

Additionally, two vulnerability studies were carried out in Peje river and Destierro river basins, in which the water intakes of Cairo, France, Louisiana and Milan in Siquirres and Gucimo aqueducts are located, in the first study, carried out in In 2009, it was determined, according to the GOD2 index, that Peje and Destierro river basins are of high and extreme hydrogeological vulnerability, the above is reflected in the following map:

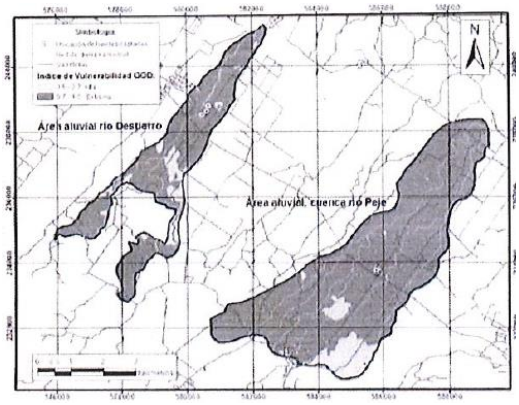


Figure 1. Map of the vulnerability analysis carried out in Peje and Destierro river basins, according to GOD index

In the second vulnerability study, carried out in 2011 and using DRASTIC3 methodology, with a greater level of detail, it was determined that the study area is highly vulnerable, from the hydrogeological point of view, to a lesser extent, in the basin of Rio Destierro there are areas with medium vulnerability (the map obtained from this study can be viewed in Annex I page 6/24). The experts who carried out this study determined that in the lower middle basin of Destierro and Peje rivers, the vast majority of the pineapple cultivation areas were located in areas of high vulnerability, in addition pineapple crops can be found into the immediate recharge zones of the Milano river's source and in the closest area to the sources of Cairo river.

Additionally, concentrations of Bromacil were identified in the water samples analysed in the aqueducts of Cairo, France, Luisana and Milano that exceeded what established in Executive Decree 38924-S Regulation for the Quality of Drinking Water and its reforms; which establishes that the Maximum Allowable Value (VMA) of Bromacil, Diuron and Triadimefon in groundwater is ND (Not Detectable).Taking into account the potential risk for the human health, actions were generated by the different State institutions, such as, for example, the suspension of water consumption from the aforementioned aqueducts for the preparation of food or direct intake; the supply of drinking water in these areas was carried out by cisterns.

Taking into account this risk assessment for the contamination of aquifers that are used for human consumption, it became necessary to prohibit the use of Bromacil and its lithium salt.

Expected effect of the final regulatory action in relation to the environment: Eliminate contamination of aquifers with bromacil.

Date of entry into force of the final regulatory action: 05/06/2017

ECUADOR

Common Name(s): 2,4,5-T and its salts and esters ***CAS number(s):*** 93-76-5

Chemical Name: 1-hydroxy-2,4,5-trichlorobenzene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All uses of 2,4,5-T are banned.

Use or uses that remain allowed: Not relevant.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action:

Resolves:

Art. 1 - The National Plant Health Program prohibits registration as harmful to health, and manufacture, commercialization and use of the following pesticides have been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5-T, Amitrole, Mercure and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: 2,4,5-T is absorbed through the skin and mucosa and can cause irritation and burns, with the possibility of eye damage. By inhalation causes irritation to nose, throat and lungs.

Exposure to high concentrations of 2,4,5-T can cause muscle weakness, shortness of breath, tremors, seizures, and coma. Neurotoxic, teratogenic, is related to degenerative diseases such as Parkinson's, exposure can develop chlorination, disorders in the lipid metabolism; and is hepatotoxic.

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to health.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Alachlor ***CAS number(s):*** 15972-60-8

Chemical Name: 2-chloro-N-(2,6-diethylphenyl)-N-(methoxymethyl)-

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: Banned

Use or uses prohibited by the final regulatory action: All uses of Alachlor are banned

Use or uses that remain allowed: Not relevant.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action:

The Executive Director of the Ecuadorian Agency for the Agricultural quality assurance of agro-quality Agrocalidad, resolves:

Article 1.- Cancelling all the applications requesting the registration or reevaluation of products containing the active ingredient Alachlor and its mixtures.

Article 2.- By signing off this resolution, the records of products containing the active ingredient Alachlor and its mixtures are canceled, under the provisions of Article 32-f, decision 804, Andean standard for registration and control of chemical pesticides for agricultural use in the Andean community.

Article 3.- Prohibiting importation of products containing the active ingredient Alachlor and its mixtures, except for those products whose import procedures have been approved by Agrocalidad, to the date of subscription of this resolution.

The reasons for the final regulatory action were relevant to: Human helth.

Date of entry into force of the final regulatory action: 31/12/2015

ECUADOR

Common Name(s): Aldicarb ***CAS number(s):*** 116-06-3

Chemical Name: 2-methyl-2-(methylthio)propionaldehyde O-methylcarbamoyloxime

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is severely restricted.

Use or uses prohibited by the final regulatory action: 10% G and 15% G formulations for all crops, especially bananas. Except flowers crops by the method of restricted use and applied sale.

Use or uses that remain allowed: 10% and 15% G formulations on roses

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Cancellation of Ministerial Agreement No. 0419 of 11 September 1991, published in Official Gazette No. 773 of 19 September 1991.

Art. 2 - Providing that the Ecuadorian Agricultural Health Service restricts the use, application, commercialization of the insecticide-nematicide Aldicarb (Temik) 10% G and 15% G, exclusively to flowers and only by RESTRICTED USE AND APPLIED SALE method, under the responsibility of RP Ecuatoriana Ltda.

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health: H330: Fatal if inhaled.

H300: Fatal if swallowed.

H311: Toxic in contact with skin.

R26/28: Very toxic by inhalation and if swallowed. R24: Toxic in contact with skin.

Date of entry into force of the final regulatory action: 30/09/1999

ECUADOR

Common Name(s): Amitrole ***CAS number(s):*** 61-82-5

Chemical Name: 1H-1,2,4-triazol-3-amine

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Amitrole is totally banned

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Art. 1 - Registration by the National Program of Plant Health is prohibited, as these pesticides are harmful for the human health, and the manufacture, marketing or use, in several countries, of the following pesticides has been prohibited: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Clordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Repr. (Cat. 2): Reproductive toxicity

R63: Possible risk during pregnancy of harmful effects for the fetus.

R48/22: Harmful: risk of severe effects to health by prolonged exposure if swallowed.

Expected effect of the final regulatory action in relation to human health: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and consequent health risks

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Binapacryl ***CAS number(s):*** 485-31-4

Chemical Name: 2-Butenoic acid, 3-methyl-, 2-(1-methylpropyl)-4,6-dinitrophenyl ester

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All uses are strictly banned

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE EXECUTIVE DIRECTOR OF THE ECUADORIAN SERVICE OF AGRICULTURAL HEALTH, SESA

Resolves:

Article 1.- Cancelling register of chemical products binapacryl, ethylene oxide, and ethylene bichloride as agricultural use pesticides, having been banned in several countries due to their risks as products harmful to human and animal health, and the environment.

The reasons for the final regulatory action were relevant to: Human health and environment

Summary of known hazards and risks to human health: R61: Risk of adverse effects to the fetus during pregnancy.

R21/22: Harmful in contact with skin and if swallowed.

H360D ***: May harm the fetus.

H312: Harmful in contact with skin.

H302: Harmful if swallowed

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to the pesticide and consequently reducing risks to human health.

Summary of known hazards and risks to the environment: Bioaccumulative, persistent.

H400. Very toxic to aquatic organisms. Acute Aquatic (Cat. 1): Dangerous for the aquatic environment.

H410: Very toxic to aquatic organisms with long lasting effects. Chronic Aquatic (Cat: 1): Hazardous to the aquatic environment.

Expected effect of the final regulatory action in relation to the environment: Eliminating exposure to this pesticide and consequently reduction of risks to the environment.

Date of entry into force of the final regulatory action: 03/10/2005

ECUADOR

Common Name(s): Captafol ***CAS number(s):*** 2425-06-1

Chemical Name: N-(1,1,2,2-tetrachloroethylthio)cyclohex-4-ene-1,2-dicarboximide

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of pesticide Captafol is banned.

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Art. 1. - The importation and marketing of the following pesticides for agricultural use is prohibited:

CHEMICAL	CATEGORY
Captafol	Pesticide
Fluoroacetamide	Pesticide
HCH (mixture of isomers)	Pesticide
Hexachlorobenzene	Pesticide
Parathion	Pesticide
Pentachlorophenol and its salts and esters	Pesticide
Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above10% and Thiram at or above 15%	Extremely hazardous pesticide formulation
Methamidophos: (Soluble liquid formulations that exceed 600 g a.i./l)	Extremely hazardous pesticide formulation
Phosfamidon: (Soluble liquid formulations that exceed 1000 g a.i./l)	Extremely hazardous pesticide formulation

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 13/01/2009

ECUADOR

Common Name(s): Carbofuran ***CAS number(s):*** 1563-66-2

Chemical Name: 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use is strictly banned

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Article 1.- Cancelling all the application requesting the registration or reevaluation of products containing the active ingredient Carbofuran, Trichlorform and its mixtures.

Article 2.- By signing off this Resolution, the registration of products containing the active ingredient Carbofuran, Trichlorform and its mixtures are canceled, under the provisions of Article 32-f, Decision 804, Andean standard for registration and control of chemical pesticides for agricultural use in the Andean community.

Article 3.- Prohibit the importation of products containing the active ingredient Carbofuran, Trichlorform and its mixtures, except for products whose import procedures have been approved by Agrocalidad, to the date of subscription of this resolution. Those imports authorized until 6 November 2017, may nationalize their products until 7 May 2018.
Article 4.- Granting a period of 180 calendar days, as of 7 May 2018, so that the products containing the active ingredient carbofuran, trichlorfon and their mixtures are withdrawn from the national market.

The reasons for the final regulatory action were relevant to: Human health and environment

Date of entry into force of the final regulatory action: 14/11/2017

ECUADOR

Common Name(s): Carbon tetrachloride ***CAS number(s):*** 56-23-5

Chemical Name: Carbon tetrachloride

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Carbon Tetrachloride is totally banned

Use or uses that remain allowed: N.A.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Resolves:

Art. 1 - Registration is prohibited by the National Program of Plant Health, as these pesticides are harmful for the human health; and the manufacture, marketing or use of the following pesticides has been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: R40: possible carcinogenic effects

R23/24/25: Toxic if inhaled or ingested and by skin contact

R48/23: Toxic: risk of severe effects to health by prolonged exposure if inhaled.

Carc. (Cat. 2): Carcinogenicity

Expected effect of the final regulatory action in relation to human health: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and consequent health risks

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Dibromochloropropane (DBCP) ***CAS number(s):*** 96-12-8

Chemical Name: Propane, 1,2-dibromo-3-chloro-

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of DBCP is totally banned

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Art. 1 - Registration by the National Program of Plant Health is prohibited, as these pesticides are harmful for the human health; and the manufacture, marketing or use of the following pesticides has been prohibited, in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Clordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health: Repr. (Cat. 1A): Reproductive toxicity. Carc. (Cat. 1B): Carcinogenicity
Muta (Cat. 1B): Germ cell mutagenicity

R45: May cause cancer

R46: May cause inherited genetic disorders

R60: May impair fertility.
R25: Toxic if swallowed

Expected effect of the final regulatory action in relation to human health: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and consequent health risks.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): DDT ***CAS number(s):*** 50-29-3

Chemical Name: 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned.

Use or uses prohibited by the final regulatory action: Use of DDT is totally banned.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Art. 1 - Registration by the National Program of Plant Health is prohibited, as these pesticides are harmful for the human health; and the manufacture, marketing or use of the following pesticides has been prohibited, in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Clordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health:

R25: Toxic if swallowed.

R48/25: Toxic: danger of serious damage to health by prolonged exposure if swallowed.

R40: Possible carcinogenic effects

Carc. (Cat. 2): Carcinogenicity

STOT repe. (Cat. 1): Specific target organ toxicity - repeated exposure

Expected effect of the final regulatory action in relation to human health: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and consequent health risks.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Dieldrin ***CAS number(s):*** 60-57-1

Chemical Name: (1R,4S,4aS,5R,6R,7S,8S,8aR)-1,2,3,4,10,10-hexachloro-1,4,4a,5,6,7,8,8a-octahydro-6,7-epoxy-1,4:5,8-dimethanonaphthalene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Dieldrin is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and manufacture, commercialization or use have been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health:

R27: Very toxic in contact with skin. R25: Toxic if swallowed. R48 / 25: Toxic: danger of serious damage to health by prolonged exposure if swallowed. R40: Possible carcinogenic effects

Carc. (Cat. 2): Carcinogenicity

Tox. ag. (Cat. 1): Acute toxicity

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Dinoseb and its salts and esters ***CAS number(s):*** 88-85-7

Chemical Name: -2-sec-butyl-4,6-dinitrophenol

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Dinoseb is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and manufacture, commercialization or use in several countries have been prohibited: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

Art. 2 - Registration is prohibited due to environmental contamination and toxic effects; and, due to the cancellation of the following products in several countries: Methyl, Diethyl and Ethyl Parathion, Mirex and Dinoseb.

The reasons for the final regulatory action were relevant to: Human health and environment.

Summary of known hazards and risks to human health:

R61: Risk during pregnancy of adverse effects on the fetus.

R62: Possible risk of impaired fertility.

R36: Eyes irritant.

Repr. (Cat. 1B): Reproduction toxicity

Ocular. (Cat. 2): Serious eye damage or eye irritation

Toxicity (Cat. 3 *): Acute toxicity

Expected effect of the final regulatory action in relation to human health: The Regulatory Action has the intended effect of eliminating exposure to this pesticide and consequently reducing risks to health.

Summary of known hazards and risks to the environment: H400. Very toxic for aquatic organisms. Acute aquatic (CAT. 1): Dangerous for the aquatic environment. H410: Very toxic for aquatic organisms, with long lasting harmful effects. Chronic aquatic (Cat.1): Dangerous for the aquatic environment

Expected effect of the final regulatory action in relation to the environment: The Regulatory Action has the intended effect of eliminating exposure to this pesticide and consequently reducing risks to the environment.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): DNOC ***CAS number(s):*** 534-52-1

Chemical Name: 4,6-dinitro-o-cresol

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of DNOC is strictly forbidden

Use or uses that remain allowed: Not relevant.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE EXECUTIVE DIRECTOR OF THE ECUADORIAN SERVICE OF AGRICULTURAL HEALTH, SESA

Resolves:

Article 3.- Registration of the insecticide, acaricide and defoliant Dinitro Orto Cresol - DNOC (Trifrin), registered by the National Directorate of Plant Health of the MAG, is canceled as of 19 January 1990, as dangerous to human health and the environment.

The reasons for the final regulatory action were relevant to: Human health and environment

Summary of known hazards and risks to human health:

R68: Possibility of irreversible effects.

R26/27/28: Very toxic by inhalation, by ingestion and in contact with the skin.

R43: May cause sensitization by skin contact.

H341: Suspected of causing genetic defects.

H317: May cause allergic skin reaction.

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to the human health.

Summary of known hazards and risks to the environment:

H400. Very toxic to aquatic organisms. Acute Aquatic (Cat. 1): Hazardous to the aquatic environment.

H410: Very toxic to aquatic organisms with long lasting harmful effects.
Chronic Aquatic (Cat: 1): Hazardous to the aquatic environment.

Expected effect of the final regulatory action in relation to the environment: Eliminating exposure to this pesticide and consequently reducing risks to the environment

Date of entry into force of the final regulatory action: 03/10/2005

ECUADOR

Common Name(s): EDB (1,2-dibromoethane) ***CAS number(s):*** 106-93-4

Chemical Name: 1,2-dibromoethane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is severely restricted

Use or uses prohibited by the final regulatory action: Use is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and manufacture, commercialization or use have been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health:

R45: May cause cancer.

R23/24/25: Toxic by inhalation, by ingestion and in contact with skin.

R36/37/38: Irritating to eyes, respiratory system and skin.

Carc. (Cat. 1B): Carcinogenicity

Tox. Acute (Cat. 3 *): Acute toxicity

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to health.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Endosulfan ***CAS number(s):*** 115-29-7

Chemical Name: 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenebismethylene sulfite

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for the Agricultural Quality Assurance - AGROCALIDAD resolves:

Article 1. - To repeal Resolution No. 160 of 30 September 2011, signed by the Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - AGROCALIDAD.

Article 2. - Prohibit the import of products that contain Endosulfan and its mixtures, with the exception of those products whose import procedures have been approved by AGROCALIDAD, as of September 30, 2011.

Article 3.- Cancelling all registration or re-evaluation procedures of products containing Endosulfan and its mixtures.

Article 4. - Cancel all records of products containing Endosulfan and its mixtures as of June 30, 2012, under the provisions of Article 28 of Decision 436 of the Andean Community of Nations.

The reasons for the final regulatory action were relevant to: Human health

Date of entry into force of the final regulatory action: 12/12/2011

ECUADOR

Common Name(s): Endrin ***CAS number(s):*** 72-20-8

Chemical Name: 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-exo-1,4-exo-5,8-dimethanonaphthalene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and manufacture, commercialization or use have been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health: Very toxic if swallowed. Toxic in contact with skin. H300: Fatal if swallowed. H311: Toxic in contact with skin.

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to health.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Fluoroacetamide ***CAS number(s):*** 640-19-7

Chemical Name: 2-fluoroacetamide

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: The use of Fluoroacetamide is totally banned.

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Art. 1. - The importation and marketing of the following pesticides for agricultural use is prohibited:

CHEMICAL	CATEGORY
Captafol	Pesticide
Fluoroacetamide	Pesticide
HCH (mixture of isomers)	Pesticide
Hexachlorobenzene	Pesticide
Parathion	Pesticide
Pentachlorophenol and its salts and esters	Pesticide
Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above10% and Thiram at or above 15%	Extremely hazardous pesticide formulation
Methamidophos: (Soluble liquid formulations that exceed 600 g a.i./l)	Extremely hazardous pesticide formulation
Phosphamidon: (Soluble liquid formulations that exceed 1000 g a.i./l)	Extremely hazardous pesticide formulation

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 13/01/2009

ECUADOR

Common Name(s): Heptachlor ***CAS number(s):*** 76-44-8

Chemical Name: 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Heptachlor is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action:

THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and manufacture, commercialization or use have been prohibited in several countries: Aldrin, Dieldrin,

Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Toxic in contact with the skin and if swallowed. Possible carcinogenic effects 2B. Hazard of cumulative effects.

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to the human health.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Hexachlorobenzene ***CAS number(s):*** 118-74-1

Chemical Name: Hexachlorobenzene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of chemical Hexachlorobenzene is banned.

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Art. 1. - The importation and marketing of the following pesticides for agricultural use is prohibited:

CHEMICAL	CATEGORY
Captafol	Pesticide
Fluoroacetamide	Pesticide
HCH (mixture of isomers)	Pesticide
Hexachlorobenzene	Pesticide
Parathion	Pesticide
Pentachlorophenol and its salts and esters	Pesticide
Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above10% and Thiram at or above 15%	Extremely hazardous pesticide formulation
Methamidophos: (Soluble liquid formulations that exceed 600 g a.i./l)	Extremely hazardous pesticide formulation
Phosphamidon: (Soluble liquid formulations that exceed 1000 g a.i./l)	Extremely hazardous pesticide formulation

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 13/01/2009

ECUADOR

Common Name(s): Leptophos ***CAS number(s):*** 21609-90-5

Chemical Name: O-(4-bromo-2,5-dichlorophenyl) O-methyl phenylphosphonothioate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Leptophos is totally banned

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Art. 1 - Registration by the National Program of Plant Health is prohibited, as these pesticides are harmful for the human health; and the manufacture, marketing or use of the following pesticides has been prohibited, in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Clordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Harm of severe irreversible effects if swallowed. Acute toxicity (oral, dermal, by inhalation). Chronic toxicity

Expected effect of the final regulatory action in relation to human health: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and consequent health risks

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Lindane (gamma-HCH) ***CAS number(s):*** 58-89-9

Chemical Name 1α,2α,3β,4α,5α,6β-hexachlorocyclohexane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Lindane and isomers is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and their manufacture, commercialization or use have been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Toxic by ingestion. Harmful by inhalation and in contact with skin. Harmful to breastfed children.

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to health.

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Methamidophos ***CAS number(s):*** 10265-92-6

Chemical Name: (RS)-(O,S-dimethyl phosphoramidothioate)

Final regulatory action has been taken for the category: Pesticide.

Final regulatory action: The chemical is banned.

Use or uses prohibited by the final regulatory action:

Use is strictly are forbidden.

Use or uses that remain allowed: Not relevant.

The final regulatory action was based on a risk or hazard evaluation: No.

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for the Agricultural quality assurance - AGROCALIDAD resolves:

Article 1.- Cancelling all applications requesting registration or reevaluation of products containing the active ingredient Methamidophos and its mixtures.

Article 2.- Signing off this resolution, all records of products containing the active ingredient Methamidophos and its mixtures are canceled, under provisions of article 32-f, Decision 804, Andean standard for registration and control of chemical pesticides for agricultural use in the Andean community.

Article 3.- Prohibit the importation of products containing the active ingredient Methamidophos and its mixtures. Imports authorized until September 31, 2015, may nationalize their products up to March 2016.

Article 4.- Grant a 180 calendar days period, as from the signing of this Resolution to withdraw from the domestic market, those products containing the active ingredient Methamidophos and its mixtures.

The reasons for the final regulatory action were relevant to: Human health.

Date of entry into force of the final regulatory action: 23/10/2015

ECUADOR

Common Name(s): Mirex ***CAS number(s):*** 2385-85-5

Chemical Name: dodecachloropentacyclodecane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Mirex is totally banned

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Resolves:

Art. 1 - Registration is prohibited by the National Program of Plant Health, as these pesticides are harmful for the human health; and the manufacture, marketing or use of the following pesticides has been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachloro, Chlorobenzilate.

Art.2 - Registration is also prohibited due to environmental contamination and toxic effects; and for having been cancelled in several other countries the following products: Methyl, Diethyl and Ethyl Parathion, Mirex and Dinoseb.

The reasons for the final regulatory action were relevant to: Human health and environment.

Summary of known hazards and risks to human health: Possible carcinogenic effects, may harm breastfed children.

Harmful if in contact with the skin and if swallowed.

Expected effect of the final regulatory action in relation to human health: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and consequent health risks

Summary of known hazards and risks to the environment: Bioaccumulative, persistent, persistent organic pollutant (POP).

H400. Very toxic for aquatic organisms. Acute aquatic (CAt. 1): Dangerous to the aquatic environment.

H410: Very toxic to aquatic life with long lasting toxic effects. Chronic Aquatic (Cat: 1): Dangerous to the aquatic environment.

Expected effect of the final regulatory action in relation to the environment: The intended effect of the regulatory action is the elimination of the exposure to this pesticide and the consequent health risks

Date of entry into force of the final regulatory action: 12/11/1992

ECUADOR

Common Name(s): Monocrotophos ***CAS number(s):*** 6923-22-4

Chemical Name: Dimethyl (E)-1-methyl-2-(methylcarbamoyl)vinyl phosphate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use strictly banned

Use or uses that remain allowed: Not relevant.

The final regulatory action was based on a risk or hazard evaluation: No

The reasons for the final regulatory action were relevant to: Human health and environment.

Summary of known hazards and risks to human health: R68: Possibility of irreversible effects R26/28: Very toxic by inhalation and if swallowed. R24: Toxic in contact with skin.

H341: Suspected of causing genetic defects

Neurotoxic

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to health.

Summary of known hazards and risks to the environment: H400. Very toxic to aquatic organisms. Acute Aquatic (Cat. 1): Hazardous to the aquatic environment.

H410: Very toxic to aquatic organisms with long lasting effects. Chronic Aquatic (Cat: 1): Hazardous to

Expected effect of the final regulatory action in relation to the environment: Eliminating exposure to this pesticide and consequently reducing risks to the environment.

Date of entry into force of the final regulatory action: 03/10/2005

ECUADOR

Common Name(s): Parathion ***CAS number(s):*** 56-38-2

Chemical Name: O,O-diethyl O-4-nitrophenyl phosphorothioate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Importation and marketing of agricultural pesticide Parathion are banned.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Art. 1. - The importation and marketing of the following pesticides for agricultural use is prohibited:

CHEMICAL	CATEGORY
Captafol	Pesticide
Fluoroacetamide	Pesticide
HCH (mixture of isomers)	Pesticide
Hexachlorobenzene	Pesticide
Parathion	Pesticide
Pentachlorophenol and its salts and esters	Pesticide
Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above10% and Thiram at or above 15%	Extremely hazardous pesticide formulation
Methamidophos: (Soluble liquid formulations that exceed 600 g a.i./l)	Extremely hazardous pesticide formulation

Phosphamidon: (Soluble liquid formulations that exceed 1000 g a.i./l)	Extremely hazardous pesticide formulation

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health:

R26/28: Very toxic if inhaled or ingested. R24: Toxic in contact with skin.

H330: Fatal if inhaled

H300: Fatal if ingested

H311: Toxic in contact with skin

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks for the human health

Date of entry into force of the final regulatory action: 13/01/2009

ECUADOR

Common Name(s): Pentachlorophenol and its salts and esters ***CAS number(s):*** 87-86-5

Chemical Name: Phenol, pentachloro-

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned.

Use or uses prohibited by the final regulatory action: Use of Pentachlorophenol and its salts and esters is banned.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Art. 1. - The importation and marketing of the following pesticides for agricultural use is prohibited:

CHEMICAL	CATEGORY
Captafol	Pesticide
Fluoroacetamide	Pesticide
HCH (mixture of isomers)	Pesticide
Hexachlorobenzene	Pesticide
Parathion	Pesticide
Pentachlorophenol and its salts and esters	Pesticide
Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above10% and Thiram at or above 15%	Extremely hazardous pesticide formulation
Methamidophos: (Soluble liquid formulations that exceed 600 g a.i./l)	Extremely hazardous pesticide formulation
Phosfamidon: (Soluble liquid formulations that exceed 1000 g a.i./l)	Extremely hazardous pesticide formulation

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 13/01/2009

ECUADOR

Common Name(s): Phosphamidon ***CAS number(s):*** 13171-21-6

Chemical Name: O-(2-chloro-2-diethylcarbamoyl-1-methyl-vinyl) O,O-dimethyl phosphate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Phosfamidon as soluble liquid formulations that exceed 1000 g a.i./l is banned

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: The Executive Director of the Ecuadorian Agency for Agricultural Quality Assurance - Agrocalidad, resolves:

Art. 1. - The importation and marketing of the following pesticides for agricultural use is prohibited:

CHEMICAL	CATEGORY
Captafol	Pesticide
Fluoroacetamide	Pesticide
HCH (mixture of isomers)	Pesticide
Hexachlorobenzene	Pesticide
Parathion	Pesticide
Pentachlorophenol and its salts and esters	Pesticide
Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above10% and Thiram at or above 15%	Extremely hazardous pesticide formulation
Methamidophos: (Soluble liquid formulations that exceed 600 g a.i./l)	Extremely hazardous pesticide formulation
Phosfamidon: (Soluble liquid formulations that exceed 1000 g a.i./l)	Extremely hazardous pesticide formulation

The reasons for the final regulatory action were relevant to: Human health and environment

Date of entry into force of the final regulatory action: 13/01/2020

ECUADOR

Common Name(s): Toxaphene (Camphechlor) ***CAS number(s):*** 8001-35-2

Chemical Name: : 1,2,2,3,3,4,7,7-Octachloro-5,5-dimethyl- 6-methylenebicyclo[2.2.1]heptane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Use of Campheclor is strictly forbidden

Use or uses that remain allowed: Not relevant

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: THE MINISTRY OF AGRICULTURE

Agrees:

Art. 1 - Register of the following pesticides is prohibited by the National Plant Health Program, as harmful to health, and manufacture, marketing or use have been prohibited in several countries: Aldrin, Dieldrin, Endrin, BHC, Campheclor (Toxaphene), Chlordimeform (Galecron and Fundal), Chlordano, DDT, DBCP, Lindane, EDB, 2,4,5 T, Amitrole, Mercury and Lead Compounds, Carbon Tetrachloride, Leptophos, Heptachlor, Chlorobenzilate.

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health:

R40: Possible carcinogenic effects R25: Toxic by ingestion.

R21: Harmful in contact with skin. R37/38: Irritating to respiratory system and skin

Carc. (Cat. 2): Carcinogenicity

Cut.Irrit. (Cat. 2): Skin corrosion o irritation

Expected effect of the final regulatory action in relation to human health: Eliminating exposure to this pesticide and consequently reducing risks to the human health.

Date of entry into force of the final regulatory action: 12/11/1992

EUROPEAN UNION

Common Name(s): Diisobutyl phthalate ***CAS number(s):*** 84-69-5

Chemical Name: bis(2-methylpropyl) benzene-1,2-dicarboxylate

Final regulatory action has been taken for the category: Industrial

Final regulatory action: The chemical is severely restricted

Use or uses prohibited by the final regulatory action: Industrial chemical.

Use or uses that remain allowed: Pursuant to Regulation (EC) No 1907/2006 (REACH Regulation), only certain uses are exempted from the authorization requirement, e.g. uses as intermediates or for scientific research and development activities, as described in the document Generic exemptions from the authorization requirement. The exemption concerning mixtures mentioned in Section 1 of the linked document applies when the substance is present in mixtures below 0.3% (weight/weight) (generic concentration limit specified in Regulation (EC) No 1272/2008). However, this exemption is constrained by entry 51 of REACH Annex XVII, restricting its use in toys and childcare articles (individually or in any combination of the phthalates bis(2-ethylhexyl) phthalate (DEHP, EC No 204-211-0), benzyl butyl phthalate (BBP, EC No 201-622-7), dibutyl phthalate (DBP, EC No 201 -557-4)) in a concentration equal to or greater than 0.1 % (after 7 July 2020 this restriction will apply to any articles). From the exemptions specific to certain intrinsic properties mentioned in Section 2, those referring to Article 57 (c) and to hazards to human health apply for diisobutyl phthalate (see Section 2.4.2.1 below for intrinsic properties of the substance).

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: By Commission Regulation (EU) No 125/2012 of 14 February 2012 amending Annex XIV to Regulation (EC) No 1907/2006, diisobutyl phthalate was included into Annex XIV (Authorisation List) of Regulation (EC) No 1907/2006 (REACH Regulation), which contains substances of very high concern that are subject to authorisation.

The listing of diisobutyl phthalate in Annex XIV has the effect that any use of this substance after 21/02/2015 (the Sunset Date) is prohibited (except for exempted uses as described in Section 2.3.2 of this document), unless a company submits an application for authorisation and the authorisation is granted. Since no applications for authorisation have been submitted to date only the exempted uses remain allowed. Hence, the final regulatory action severely restricts the use of diisobutyl phthalate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Diisobutyl phthalate has been classified under Regulation (EC) No 1272/2008 (CLP Regulation) as Toxic for Reproduction, Category 1B, H360Df ("May damage the unborn child. Suspected of damaging fertility."), which is the basis for the identification as substance of very high concern under Article 57 (c) of Regulation (EC) No 1907/2006 (REACH Regulation).

Summary of data for repeated dose toxicity

Diisobutyl phthalate (and similarly also the monoester, mono-iso-butyl phthalate to which DIBP hydrolysed) induced microscopic testicular atrophy associated with markedly reduced testes weights in rats and alterations in zinc and testosterone concentrations in rats and mice after oral exposure.

Summary of data for toxicity for reproduction

Adverse effects on male reproductive organs (testicular toxicity) and on spermatogenesis had been observed at relatively high dosages during repeat dose toxicity studies (see above).

Studies related to developmental toxicity revealed embryotoxic, fetotoxic and teratogenic properties after oral administration or intraperitoneal injection of diisobutyl phthalate in pregnant rats. A LOAEL of 125 mg/kg bw/day was derived for developmental toxicity.

Expected effect of the final regulatory action in relation to human health: Avoidance of risk for human health from the use of diisobutyl phthalate.

Date of entry into force of the final regulatory action: 21/02/2015

EUROPEAN UNION

Common Name(s): Tris(2-chloroethyl) phosphate ***CAS number(s):*** 115-96-8

Chemical Name: Tris(2-chloroethyl) phosphate

Final regulatory action has been taken for the category: Industrial

Final regulatory action: The chemical is severely restricted

Use or uses prohibited by the final regulatory action: Industrial chemical.

Use or uses that remain allowed: Pursuant to Regulation (EC) No 1907/2006 (REACH Regulation), only certain uses are exempted from the authorisation requirement, e.g. uses as intermediates or for scientific research and development activities, as described in the document Generic exemptions from the authorisation requirement. The exemption concerning mixtures mentioned in Section 1 of the linked document applies when the substance is present in mixtures below 0.3% (weight/weight) (generic concentration limit specified in Regulation (EC) No 1272/2008). From the exemptions specific to certain intrinsic properties mentioned in Section 2, those referring to Article 57 (c) and to hazards to human health apply for TCEP (see Section 2.4.2.1 below for intrinsic properties of the substance).

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: By Commission Regulation (EU) No 125/2012 of 14 February 2012 amending Annex XIV to Regulation (EC) No 1907/2006, tris(2-chloroethyl) phosphate (TCEP) was included into Annex XIV (Authorisation List) of Regulation (EC) No 1907/2006 (REACH Regulation), which contains substances of very high concern that are subject to authorisation.

The listing of TCEP in Annex XIV has the effect that any use of this substance after 21/08/2015 (the Sunset Date) is prohibited (except for exempted uses as described in Section 2.3.2 of this document), unless a company submits an application for authorisation and the authorisation is granted. Since no applications for authorisation have been submitted to date only the exempted uses remain allowed. Hence, the final regulatory action severely restricts the use of tris(2-chloroethyl) phosphate.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: TCEP has been classified under Regulation (EC) No 1272/2008 (CLP Regulation) as Toxic for Reproduction, Category 1 B, H360F ("May damage fertility."), which is the basis for the identification as substance of very high concern under Article 57 (c) of Regulation (EC) No 1907/2006 (REACH Regulation).

Summary of data for toxicity for reproduction

Treatment of mice resulted in significant impairment of reproductive success of both sexes and of male reproductive organs and of sperm parameters. Oral administration of TCEP revealed significant impairment of reproductive capacity and fertility for both sexes during continuous breeding and for two successive generations in CD1- mice. The reproductive system of male mice appeared to be more sensitive to TCEP treatment than that of females. A significant reduction of the number of litters produced by the F0 generation, reduced pregnancy and fertility indices in the F1 generation, and reduced litter size in F0 and F1 generation. NOAEL fertility of 175 mg/kg bw/day was derived.

Expected effect of the final regulatory action in relation to human health: Avoidance of risk for the human health from the use of Tris(2-chloroethyl) phosphate.

Date of entry into force of the final regulatory action: 21/08/2015

IRAN (ISLAMIC REPUBLIC OF)

Common Name(s): Chrysotile (white asbestos) ***CAS number(s):*** 12001-29-5

Chemical Name: Chrysotile asbestos

Final regulatory action has been taken for the category: Industrial

Final regulatory action: The chemical is banned.

Use or uses prohibited by the final regulatory action: Asbestos-cement, cement pipe and sheet, gaskets and seals, insulation material, construction materials, brake pad.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: Production, importation, distribution, sale and use of Chrysotile and any other type of Asbestos, or mixture thereof, for any item, component or production, is prohibited with certain specific exception.

The ban on asbestos amphiboles refers to any presentation varieties of production or materials that contain them.

The possession, processing, export, import, distribution, manufacture and cession of all varieties of amphibole asbestos fibres are prohibited, throughout the national territory, as well as fibre varieties or products that contain said compound.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Effects of long-term or repeated exposure:

The substances have effects on the lungs, resulting in pulmonary fibrosis and mesothelioma. This substance is carcinogenic to human.

Expected effect of the final regulatory action in relation to human health: Control of occupational exposure and prevention of diseases related to asbestos.

Date of entry into force of the final regulatory action: 09/10/2011

MALAYSIA

Common Name(s): Paraquat ***CAS number(s):*** 4685-14-7

Chemical Name: 1,1′-dimethyl-4,4′ bipyridinium dichloride

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: Circular was issued on May 16 2014 informing the termination of paraquat dichloride registration in Malaysia on 1 January 2020. The use of paraquat dichloride was banned since January 1, 2020.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health: Highly toxic via ingestion, one teaspoonful of paraquat is fatal. Follllowinnng ingestion of very small amounts of the liquid concentrate, pulmonary oedema, cardiac failure, renal failure, liver failure and convulsions caused by central nervous system involvement, can occur. Under these circumstances, death from multiple organ failure may follow within hours or days. There is no antidote for paraquat.

Long-term and delayed health effects may also occur including Parkinson's diseases, lung effects and skin cancer.

Expected effect of the final regulatory action in relation to human health: Poisoning cases to public citizen, consumers and bystanders can be reduced dramatically.

Date of entry into force of the final regulatory action: 01/01/2020

MOZAMBIQUE

Common Name(s): 2,4-D-dimethylammonium ***CAS number(s):*** 2008-39-1

Chemical Name: dimethylammonium (2,4-dichlorophenoxy)acetate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Ban all formulation and for all uses.

Use or uses that remain allowed: None

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: Based on the decision N. 001/DNSA/2014 2,4-D-dimethylamine was banned by the National Directorate of Agrarian Services from further import and use in Mozambique. The ban of all uses and the cancellation of the products containing 2,4-D dimethylamine in the country was decided due to the toxic nature and hazardous properties of this active substance, which combined with the local conditions of use can damage human and animal health and additionally cause potential damage to the environment. The decision to cancel the registration of 2,4-D-dimethylamine was taken as the last step of the project for Risk Reduction of Highly Hazardous Pesticides, which identified Highly Hazardous Pesticides that are registered in Mozambique. After consultations with different actors (public sector, private sector, civil society and others), cancelation of registrations and consequent ban and non-approval for their use in Mozambique was approved.

The reasons for the final regulatory action were relevant to: Human health.

Summary of known hazards and risks to human health:

A project entitled Reducing Risks of Highly Hazardous Pesticides (HHPs) in Mozambique was initiated by the Government of Mozambique with the objective to reduce the risks associated with pesticide use in the country. The ultimate goal was to develop and implement an "HHP Risk Reduction Action Plan" for the most dangerous pesticides and use situations, resulting over time in the implementation of a variety of risk reduction measures based on a review of use conditions.

In the first step of the project, a review of all pesticides registered in Mozambique was carried out and a shortlist of highly hazardous pesticides was identified. This shortlist was based on an assessment of the hazards of the pesticides, based on criteria established by the FAO/WHO Joint Meeting on Pesticide Management (JMPM) (FAO/WHO, 2008).

Based on the hazard assessment in Step 1, a short list of HHPs, including "coming close" to HHPs, which were used in the country, was established.

2,4-D dimethylamine 720g/l (72%) SL pesticide formulation was on the short list as a pesticide "coming close" to HHPs based on the below indicated criteria:

- For liquid formulations: pesticide products with an acute oral LD50< 200 mg/kg or an acute dermal LD50< 400 mg/kg (note that these are the Class Ib limits in the previous version of the WHO Classification (WHO, 2005).

All pesticide formulations registered in Mozambique were classified using the oral and dermal LD50 value of the formulation, as provided in the registration dossier. LD50 values for the formulation were available or could be estimated for all registered pesticide products except for three microbial pesticides and one citronella oil (i.e. > 99% of the total).

2,4-D dimethylamine 720g/l (72%) SL pesticide formulation in Mozambique was identified as WHO class II, but dermal hazard was identified as close to Class Ib (Come A.M. & van der Valk H., 2014). The a.i. was banned in US and approved for use in the European Union.

During the second step of the project, a pesticide use field surveys and exposure were carried out in selected regions and cropping systems in Mozambique. The main goal of the survey was to identify the conditions under which pesticides are being used in the country and their contribution to potential risks for human health and the environment.

The surveys (325 subsistence farmers interviewed) revealed that most of the farmers applied pesticides (95%), and that the conditions of use were likely to result in undue (excessive) exposure. Half of the farmers interviewed never received any training on pesticides use, and even the other half that did, often lacked understanding of the risks involved. Farmers were spraying vegetable crops at least 14 times per growing season. One out of three applications was involving one of the HHP containing formulation (Farmers using HHPs includes almost 30% of the interviewed farmers).

Also almost none of the farmers (93%) owned or wore adequate PPE having only one or no protective items at all. Only 2% of those applying HHPs wore adequate full body protection PPE. About half of the farmers had not received any training on the use of pesticides. The majority of pesticide applicators used manual sprayer (36%), followed by electric sprayer (with batteries); 33% and followed by inappropriate equipment such as watering can (13.5%) or other (unknown) means (12.5%). Approximately about half of the farmers surveyed reported that they noticed to receive pesticide on their clothes, bare skin or eyes when using pesticides. The main health symptoms associated with pesticide use by farmers noticing symptoms were headaches, skin rashes, burning eyes, vomiting, burning nose, blurred vision, dizziness and excessive sweating. Almost half of the farmers declared they did not read pesticide labels, including use instructions such as proper dosage and protective measures, the main reason being illiteracy. One out of four farmers poorly understood the hazard colour band on pesticide labels that indicates acute toxicity.

The survey results showed that the use of pesticides in general, and of HHPs in particular, was likely to result in excessive exposure of farmers in Mozambique. Therefore enforcing risk mitigation measures depending solely on wearing the appropriate PPE under the local conditions of use to be difficult and unlikely to give results.

The third step of the project consisted of a stakeholder consultation to further discuss the use and risks of highly hazardous pesticides in Mozambique and fine-tune the shortlist based on the survey results and the expertise and experience of stakeholders.

During the fourth step of the project, the risk of occupational exposure was assessed for a subset of the shortlisted pesticides, including **2,4-D dimethylamine**. The subset included nine pesticides in seven different cropping systems using 13 application scenarios, each with and without personal protective equipment (PPE).

For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

The exposure assessment used the registered dose rates and other application parameters for each pesticide based on farming conditions in Mozambique, including application with backpack sprayers (used in vegetables, tobacco, cereals and several other crops), hand-held rotary atomisers (used in cotton), and tractor- mounted sprayers. The exposure of pesticide applicators wearing full PPE that is realistically available in Mozambique was compared to the exposure of applicators wearing shorts and a T-shirt, as is often the case for smallholder farmers.

The toxicologically acceptable level of exposure applied in this study was the Acceptable Operator Exposure Level (AOEL), which is defined as the maximum amount of active substance to which the operator may be exposed without any adverse health effects (EC, 2006). The cropping systems that were evaluated are those for which the pesticide were registered. In some cases, crops were grouped together when the exposure to the pesticide were likely to be similar, based on height of the crop and the application method.

The volume application rates used in the model were generally those recommended on the label of the registered pesticide in Mozambique. If a volume application rate was not indicated on the label, 200 litres of pesticide mixture per ha was used as a default for EC or SC formulations applied with hydraulic nozzles or by air-assisted sprayers (high volume application). In the case of cotton applications, a scenario where 10 litres of mixture per ha was applied using rotary atomisers (low volume application) was also evaluated.

The dose rates used in the models were the highest rates recommended on the labels of the registered pesticide. In some cases where a wide range of dose rates was recommended, the lowest dose rate was also evaluated.

The risk of occupational exposure to pesticides was assessed, in particular when spraying the products. The risk of worker exposure (e.g. during harvesting) or bystander exposure was not evaluated. For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level. Exposure of pesticide applicators was estimated using occupational exposure models that are often applied in the European Union: the so-called "German model" and the "UK Predictive Operator Exposure Model" (UK-POEM) (Hamey et al. 2008; EFSA 2010). The models are different in their exposure calculations and also include different exposure scenarios. Therefore, both models are often used in parallel in the EU when assessing occupational exposure. Exposure scenarios and application parameters for the models were based on Mozambican pesticides application conditions.

Exposure of pesticide applicators was estimated using occupational exposure models that are often applied in the European Union: the so-called "German model" and the "UK Predictive Operator Exposure Model" (UK-POEM) (Hamey et al. 2008; EFSA 2010). The models are different in their exposure calculations and also include different exposure scenarios. Therefore, both models are often used in parallel in the EU when assessing occupational exposure. Exposure scenarios and application parameters for the models were based on Mozambican pesticides application conditions.

Table 1. Details on the pesticides and cropping systems used in the operator risk assessments (2,4-D dimethylamine)

Pesticide	**Concentration & type of formulation** [1]	**Cropping systems**	**Volume application rate** (L mixture/ha)	**Dose rate** (L or kg formulation/ha	**AOEL** [2, 3] (mg a.i./kg bw/day)
2,4-D dimethylamine	720 g a.i./L SL	Palm tree, cocoa, coconut	200	3	0.15 [A]
		Cabbage, rice	200	3	

[1] a.i. = active ingredient; WP = wettable powder; SL = soluble concentrate; WG -= wettable granules
[2] bw = bodyweight
[3] Sources of AOELs: [A] = FootPrint - Pesticide Properties Database (undated); [B] = Rotterdam Convention (2011); [C] = ERMA (2010)

Expression of risk

The risk for the pesticide operator has been expressed as a risk quotient, which is the ratio between the estimated exposure of the operator to the pesticide (in mg a.i./kg bw/day) and the AOEL (in mg a.i./kg bw/day). A risk quotient > 1 implies that the risk is not acceptable; a risk quotient <1 implies an acceptable risk. For instance, a risk quotient of 100 means that the estimated exposure level of the operator, for the given pesticide application scenario, is a 100 times higher than the acceptable exposure level.

Outcome of the risk assessments

The results of the pesticide operator risk assessments for 2,4-D dimethylamine are summarized in the table below. Risk quotients are given for the scenario when no PPE is worn during both mixing and spraying (worst case situation) and for the scenario with full PPE during both mixing and spraying (best practice situation). Table 2 shows the results for the application of the herbicide 2,4-D dimethylamine in palm trees, cocoa and coconut, and in cabbage and rice. Crops were grouped together as crop structure and the application scenarios were considered similar. The occupational risk assessments that were conducted showed that acceptable operator exposure levels were exceeded for all crops and all pesticide application scenarios. In the cases when PPE was used, or when applying the herbicide in the home/garden scenario, limited exceedance of the AOEL was estimated, of about a factor 2.5.

Table 2. Outcome of the operator risk assessments for formulations containing 2,4-D dimethylamine, a pesticide "coming close to a HHP".

Pesticide formulation	**Cropping system**	**Application rate**	**Exposure model**	**Use of PPE**	**Risk quotient**
720 g/L SL	Palm tree Cocoa Coconut	2160 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	14
				Mixing yes; spraying yes	2.5
	Cabbage Rice	2160 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	14
				Mixing yes; spraying yes	2.4
			UK - home/ garden; low level target	Mixing no; spraying no	2.3

The occupational risk assessments showed that the application of **2,4-D dimethylamine**, at registered dose rates would result in exceedance of acceptable operator exposure levels in all cropping systems that were assessed, both with and without PPE. (Table 3).

Table 3. Summary of the results of the operator risk assessments.

Pesticide	**Formulation [type]** (g a.i./L)	**Evaluated crops**	**Evaluated application rates** (g a.i./ha)	**Exceedance of AOEL**	
				With PPE	Without PPE
2,4-D	720 [SL]	Palm tree, cocoa,	2160	All cases	All cases

dimethylamine	coconut, cabbage, rice

2,4-D dimethylamine and the products containing this a.i. were considered harmful for the human health under the local conditions of use in Mozambique requiring risk mitigation measures. Therefore the authorities decided to ban the a.i. **2,4-D dimethylamine** from future use in the country and to cancel the registration of all the products containing it.

Expected effect of the final regulatory action in relation to human health: Reducing the risks posed by the use of HHPs in Mozambique in the context of human health. All registration of the 2,4-D dimethylamine products was cancelled.

Summary of known hazards and risks to the environment: N/A

Expected effect of the final regulatory action in relation to the environment: N/A

Date of entry into force of the final regulatory action: 31/12/2014

MOZAMBIQUE

Common Name(s): Diuron ***CAS number(s):*** 330-54-1

Chemical Name: 1-(3,4-dichlorophenyl)-3,3-dimethylurea

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Ban all formulations and for all uses.

Use or uses that remain allowed: None

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: Based on the decision N. 001/DNSA/2014 diuron was banned by the National Directorate of Agrarian Services from further import and use in Mozambique. The ban of all uses and the cancellation of the products containing diuron in the country was decided due to the toxic nature and hazardous properties of this active substance, which combined with the local conditions of use can damage human and animal health and additionally cause potential damage to the environment. The decision to cancel the registration of diuron was taken as the last step of the project for Risk Reduction of Highly Hazardous Pesticides, which identified Highly Hazardous Pesticides that are registered in Mozambique. After consultations with different actors (public sector, private sector, civil society and others), cancelation of registrations and consequent non-approval for their use in Mozambique was approved.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health:

A project entitled Reducing Risks of Highly Hazardous Pesticides (HHPs) in Mozambique was initiated by the Government of Mozambique with the objective to reduce the risks associated with pesticide use in the country. The ultimate goal was to develop and implement an "HHP Risk Reduction Action Plan" for the most dangerous pesticides and use situations, resulting over time in the implementation of a variety of risk reduction measures based on a review of use conditions.

In the first step of the project, a review of all pesticides registered in Mozambique was carried out and a shortlist of highly hazardous pesticides was identified. This shortlist was based on an assessment of the hazards of the pesticides, based on criteria established by the FAO/WHO Joint Meeting on Pesticide Management (JMPM) (FAO/WHO, 2008).

Based on the hazard assessment in Step 1, a short list of HHPs, including "coming close" to HHPs, which were used in the country, was established.

Diuron was on the short list as a pesticide "coming close" to HHPs based on the below indicated criteria:

- Pesticides for which carcinogenicity evaluations by different registration/assessment authorities did not lead to consistent classification as GHS Category 1A or 1B, but which were, based on the evidence of one of these authorities, considered of particular concern for use in Mozambique (Come A.M.& van der Valk H., 2014).
- Diuron was classified by the US EPA as known/likely to be carcinogenic. It was registered in the US. However, the use of backpack sprayers was prohibited, due to occupational cancer risk concerns. Diuron was registered in the EU. The EC review from 2008, classified diuron in Category 2 of carcinogenicity

classification. The US proposed risk mitigation measures posed significant concern for Mozambican use situation.

The final conclusion for the HHP assessment in Mozambique identified diuron as carcinogenic equivalent or similar to GHS Class 1A&1B, and therefore considered as "coming close" to HHPs. (Come A.M.& van der Valk H., 2014.)

In addition, diuron was identified among the few pesticide products with a known chronic hazard that were imported in the country with imported volumes varying from several tens to several hundred tons of the active ingredients. Therefore diuron was identified as a compounds of primary concern due to the carcinogenicity as known chronic hazard to human health (Lahr J., R. Kruijne & J. Groenwold, 2014).

During the second step of the project, a pesticide use field surveys and exposure were carried out in selected regions and cropping systems in Mozambique. The main goal of the survey was to identify the conditions under which pesticides are being used in the country and their contribution to potential risks for human health and the environment.

The surveys (325 subsistence farmers interviewed) revealed that most of the farmers applied pesticides (95%), and that the conditions of use were likely to result in undue (excessive) exposure. Half of the farmers interviewed never received any training on pesticides use, and even the other half that did, often lacked understanding of the risks involved. Farmers were spraying vegetable crops at least 14 times per growing season. One out of three applications was involving one of the HHP containing formulation (Farmers using HHPs includes almost 30% of the interviewed farmers).

Also almost none of the farmers (93%) owned or wore adequate PPE having only one or no protective items at all. Only 2% of those applying HHPs wore adequate full body protection PPE. About half of the farmers had not received any training on the use of pesticides. The majority of pesticide applicators used manual sprayer (36%), followed by electric sprayer (with batteries); 33% and followed by inappropriate equipment such as watering can (13.5%) or other (unknown) means (12.5%). Approximately about half of the farmers surveyed reported that they noticed to receive pesticide on their clothes, bare skin or eyes when using pesticides. The main health symptoms associated with pesticide use by farmers noticing symptoms were headaches, skin rashes, burning eyes, vomiting, burning nose, blurred vision, dizziness and excessive sweating. Almost half of the farmers declared they did not read pesticide labels, including use instructions such as proper dosage and protective measures, the main reason being illiteracy. One out of four farmers poorly understood the hazard colour band on pesticide labels that indicates acute toxicity.

The survey results showed that the use of pesticides in general, and of HHPs in particular, was likely to result in excessive exposure of farmers in Mozambique. Therefore enforcing risk mitigation measures depending solely on wearing the appropriate PPE under the local conditions of use to be difficult and unlikely to give results.

The third step of the project consisted of a stakeholder consultation to further discuss the use and risks of highly hazardous pesticides in Mozambique and fine-tune the shortlist based on the survey results and the expertise and experience of stakeholders.

During the fourth step of the project, the risk of occupational exposure was assessed for a subset of the shortlisted pesticides, including diuron. The subset included nine pesticides in seven different cropping systems using 13 application scenarios, each with and without personal protective equipment (PPE).

For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

The exposure assessment used the registered dose rates and other application parameters for each pesticide based on farming conditions in Mozambique, including application with backpack sprayers (used in vegetables, tobacco, cereals and several other crops), hand-held rotary atomisers (used in cotton), and tractor- mounted sprayers. The exposure of pesticide applicators wearing full PPE that is realistically available in Mozambique was compared to the exposure of applicators wearing shorts and a T-shirt, as is often the case for smallholder farmers.

The toxicologically acceptable level of exposure applied in this study was the Acceptable Operator Exposure Level (AOEL), which is defined as the maximum amount of active substance to which the operator may be exposed without any adverse health effects (EC, 2006). The cropping systems that were evaluated are those for which the pesticide were registered. In some cases, crops were grouped together when the exposure to the pesticide were likely to be similar, based on height of the crop and the application method.

The volume application rates used in the model were generally those recommended on the label of the registered pesticide in Mozambique. If a volume application rate was not indicated on the label, 200 litres of pesticide mixture per ha was used as a default for EC or SC formulations applied with hydraulic nozzles or by air-assisted sprayers (high volume application). In the case of cotton applications, a scenario where 10 litres of mixture per ha was applied using rotary atomisers (low volume application) was also evaluated.

The dose rates used in the models were the highest rates recommended on the labels of the registered pesticide. In some cases where a wide range of dose rates was recommended, the lowest dose rate was also evaluated.

The risk of occupational exposure to pesticides was assessed, in particular when spraying the products. The risk of worker exposure (e.g. during harvesting) or bystander exposure was not evaluated. For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

Exposure of pesticide applicators was estimated using occupational exposure models that are often applied in the European Union: the so-called "German model" and the "UK Predictive Operator Exposure Model" (UK-POEM) (Hamey et al. 2008; EFSA 2010). The models are different in their exposure calculations and also include different exposure scenarios. Therefore, both models are often used in parallel in the EU when assessing occupational exposure. Exposure scenarios and application parameters for the models were based on Mozambican pesticides application conditions.

Table 1. Details on the pesticides and cropping systems used in the operator risk assessments (diuron)

Pesticide	**Concentration & type of formulation** [1]	**Cropping systems**	**Volume application rate** (L mixture/ha)	**Dose rate** (L or kg formulation/ha	**AOEL** [2, 3] (mg a.i./kg bw/day)
Diuron	800 g a.i./kg WP	Sugar cane	200	4.5	0.007 [A]
	800 g a.i./kg WG	Sugar cane	200	4.5	
	800 g a.i./L SC	Sugar cane	200	4.5	
		Fruit & nut trees	200	4	

[1] a.i. = active ingredient; WP = wettable powder; SL = soluble concentrate; WG -= wettable granules
[2] bw = bodyweight
[3] Sources of AOELs: [A] = FootPrint - Pesticide Properties Database (undated); [B] = Rotterdam Convention (2011); [C] = ERMA (2010)

Expression of risk

The risk for the pesticide operator has been expressed as a risk quotient, which is the ratio between the estimated exposure of the operator to the pesticide (in mg a.i./kg bw/day) and the AOEL (in mg a.i./kg bw/day). A risk quotient > 1 implies that the risk is not acceptable; a risk quotient 1 implies an acceptable risk. For instance, a risk quotient of 100 means that the estimated exposure level of the operator, for the given pesticide application scenario, is a 100 times higher than the acceptable exposure level.

Outcome of the risk assessments

The results of the pesticide operator risk assessments for diuron are summarized in the table below. Risk quotients are given for the scenario when no PPE is worn during both mixing and spraying (worst case situation) and for the scenario with full PPE during both mixing and spraying (best practice situation). Crops were grouped together as crop structure and the application scenarios were considered similar.

Table 2. Outcome of the operator risk assessments for formulations containing Diuron, a pesticide "coming close to a HHP".

Pesticide formulation	**Cropping system**	**Application rate**	**Exposure model**	**Use of PPE**	**Risk quotient**
800 g/kg WP	Sugar cane	3600 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	77
				Mixing yes; spraying yes	15
800 g/kg WG	Sugar cane	3600 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	64
				Mixing yes; spraying yes	13
800 g/L SC	Sugar cane	3600 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	546
				Mixing yes; spraying yes	87
800 g/kg WP	Sugar cane	3600 g a.i./ha	UK - tractor-mounted boom sprayer; hydraulic nozzles	Mixing no; spraying no	65
				Mixing yes; spraying yes	8.1

Pesticide formulation	Cropping system	Application rate	Exposure model	Use of PPE	Risk quotient
800 g/L SC	Sugar cane	3600 g a.i./ha	UK - tractor-mounted boom sprayer; hydraulic nozzles	Mixing no; spraying no	207
				Mixing yes; spraying yes	32
800 g/L SC	Citrus Avocado Banana Mango Macadamia nuts	3200 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	420
				Mixing yes; spraying yes	77

Table 2 shows the results for the application of the herbicide **diuron** in sugar cane and in various fruit and nut trees. The latter were grouped together because crop structure and the application scenarios were similar.

Various formulation of diuron and application scenarios were modelled in sugar cane. In all cases the AOEL was exceeded, irrespective of the use of PPE. Operator exposure in fruit trees was also unacceptable, in spite of the lower dose rate of diuron being registered.

Occupational risks

The occupational risk assessments showed that the applications of six pesticides (among those diuron) at registered dose rates would result in exceedance of acceptable operator exposure levels in all cropping systems that were assessed, both with and without PPE **(Table 3).** The occupational risk of diuron in sugar cane and plantation crops might be reduced by using closed ventilated cabins on tractors in sugar cane.

The occupational risk assessments reported in this study largely confirm that the majority of pesticide products identified as highly hazardous pesticides on the basis of hazard criteria would also lead to unacceptable occupational exposure on the basis of risk assessment.

Eight out of the nine pesticides showed exceedance of the acceptable operator exposure levels with or without the use of PPE. Only two of these seven (endosulfan and oxamyl) came closer to no exceedance of the AOEL at the lowest registered dose rates, with PPE and for specific application methods. All other showed factors of exceeding the AOEL ranging from about 10x to more than 100000x.

Table 3. Summary of the results of the operator risk assessments.

Pesticide	Formulation [type] (g a.i./L)	Evaluated crops	Evaluated application rates (g a.i./ha)	Exceedance of AOEL	
				With PPE	Without PPE
Diuron	800 [WP/WG/SC]	Sugar cane, fruit & nut trees	≥ 3200	All cases	All cases

Expected effect of the final regulatory action in relation to human health: Reducing the risks posed by the use of HHPs in Mozambique in the context of human health. All registration of the diuron was cancelled.

Date of entry into force of the final regulatory action: 31/12/2014

MOZAMBIQUE

Common Name(s): Oxyfluorfen ***CAS number(s):*** 42874-03-3

Chemical Name: 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Ban all formulation and for all uses.

Use or uses that remain allowed: None

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: Based on the decision N. 001/DNSA/2014 oxyfluorfen was banned by the National Directorate of Agrarian Services from further import and use in Mozambique. The ban of all uses and the cancellation of the products containing the oxyfluorfen in the country was decided due to the toxic nature and hazardous properties of this active substance, which combined with the local conditions of use can damage human and animal health and additionally cause potential damage to the environment The decision to cancel the registration of oxyfluorfen was taken as the last step of the project for Risk Reduction of Highly Hazardous Pesticides, which identified Highly Hazardous Pesticides that are registered in Mozambique. After consultations with different actors (public sector, private sector, civil society and others), cancelation of registrations and consequent non-approval for their use in Mozambique was approved.

The reasons for the final regulatory action were relevant to: Human health

Summary of known hazards and risks to human health:

A project entitled Reducing Risks of Highly Hazardous Pesticides (HHPs) in Mozambique was initiated by the Government of Mozambique with the objective to reduce the risks associated with pesticide use in the country. The ultimate goal was to develop and implement an "HHP Risk Reduction Action Plan" for the most dangerous pesticides and use situations, resulting over time in the implementation of a variety of risk reduction measures based on a review of use conditions.

In the first step of the project, a review of all pesticides registered in Mozambique was carried out and a shortlist of highly hazardous pesticides was identified. This shortlist was based on an assessment of the hazards of the pesticides, based on criteria established by the FAO/WHO Joint Meeting on Pesticide Management (JMPM) (FAO/WHO, 2008).

Based on the hazard assessment in Step 1, a short list of HHPs, including "coming close" to HHPs, which were used in the country, was established.

Oxyfluorfen was on the short list as a pesticide "coming close" to HHPs based on the below indicated criteria:

- Pesticides for which carcinogenicity evaluations by different registration/assessment authorities did not lead to consistent classification as GHS Category 1A or 1B, but which were, based on the evidence of one of these authorities, considered of particular concern for use in Mozambique (Come A.M.& van der Valk H., 2014).
- Oxyfluorfen was classified by the US EPA as YES/likely to be carcinogenic (2010). It was registered in the US. Due to the cancer risk of handlers' applicators/workers, double layer of Personal Protective Equipment (PPE) for all other mixers, loaders, and applicators was required. In addition, closed mixing/loading/ application systems were required for use in several major crops. Oxyfluorfen was registered in the EU. The EFSA conclusion from 2010, proposed oxyfluorfen in Category 3 of carcinogenicity classification with limited evidence of carcinogenic effect. The US proposed risk mitigation measures (double PPE and closed systems) posed significant concern for Mozambican use situation.

The final conclusion for the HHP assessment in Mozambique identified oxyfluorfen as carcinogenic equivalent or similar to GHS Class 1A&1B, and therefore considered as "coming close" to HHPs. (Come A.M.& van der Valk H., 2014.)

During the second step of the project, a pesticide use field surveys and exposure were carried out in selected regions and cropping systems in Mozambique. The main goal of the survey was to identify the conditions under which pesticides are being used in the country and their contribution to potential risks for human health and the environment.

The surveys (325 subsistence farmers interviewed) revealed that most of the farmers applied pesticides (95%), and that the conditions of use were likely to result in undue (excessive) exposure. Half of the farmers interviewed never received any training on pesticides use, and even the other half that did, often lacked understanding of the risks involved. Farmers were spraying vegetable crops at least 14 times per growing season. One out of three applications was involving one of the HHP containing formulation (Farmers using HHPs includes almost 30% of the interviewed farmers).

Also almost none of the farmers (93%) owned or wore adequate PPE having only one or no protective items at all. Only 2% of those applying HHPs wore adequate full body protection PPE. About half of the farmers had not received any training on the use of pesticides. The majority of pesticide applicators used manual sprayer (36%), followed by electric sprayer (with batteries); 33% and followed by inappropriate equipment such as watering can (13.5%) or other (unknown) means (12.5%). Approximately about half of the farmers surveyed reported that they noticed to receive pesticide on their clothes, bare skin or eyes when using pesticides. The main health symptoms associated with pesticide use by farmers noticing symptoms were headaches, skin rashes, burning eyes, vomiting, burning nose, blurred vision, dizziness and excessive sweating. Almost half of the farmers declared they did not read pesticide labels, including use instructions such as proper dosage and protective measures, the main reason

being illiteracy. One out of four farmers poorly understood the hazard colour band on pesticide labels that indicates acute toxicity.

The survey results showed that the use of pesticides in general, and of HHPs in particular, was likely to result in excessive exposure of farmers in Mozambique. Therefore enforcing risk mitigation measures depending solely on wearing the appropriate PPE under the local conditions of use to be difficult and unlikely to give results.

The third step of the project consisted of a stakeholder consultation to further discuss the use and risks of highly hazardous pesticides in Mozambique and fine-tune the shortlist based on the survey results and the expertise and experience of stakeholders.

During the fourth step of the project, the risk of occupational exposure was assessed for a subset of the shortlisted pesticides, including **oxyfluorfen**. The subset included nine pesticides in seven different cropping systems using 13 application scenarios, each with and without personal protective equipment (PPE).

For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

The exposure assessment used the registered dose rates and other application parameters for each pesticide based on farming conditions in Mozambique, including application with backpack sprayers (used in vegetables, tobacco, cereals and several other crops), hand-held rotary atomisers (used in cotton), and tractor- mounted sprayers. The exposure of pesticide applicators wearing full PPE that is realistically available in Mozambique was compared to the exposure of applicators wearing shorts and a T-shirt, as is often the case for smallholder farmers.

The toxicologically acceptable level of exposure applied in this study was the Acceptable Operator Exposure Level (AOEL), which is defined as the maximum amount of active substance to which the operator may be exposed without any adverse health effects (EC, 2006). The cropping systems that were evaluated are those for which the pesticide were registered. In some cases, crops were grouped together when the exposure to the pesticide were likely to be similar, based on height of the crop and the application method.

The volume application rates used in the model were generally those recommended on the label of the registered pesticide in Mozambique. If a volume application rate was not indicated on the label, 200 litres of pesticide mixture per ha was used as a default for EC or SC formulations applied with hydraulic nozzles or by air-assisted sprayers (high volume application). In the case of cotton applications, a scenario where 10 litres of mixture per ha was applied using rotary atomisers (low volume application) was also evaluated.

The dose rates used in the models were the highest rates recommended on the labels of the registered pesticide. In some cases where a wide range of dose rates was recommended, the lowest dose rate was also evaluated.

The risk of occupational exposure to pesticides was assessed, in particular when spraying the products. The risk of worker exposure (e.g. during harvesting) or bystander exposure was not evaluated. For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

Exposure of pesticide applicators was estimated using occupational exposure models that are often applied in the European Union: the so-called "German model" and the "UK Predictive Operator Exposure Model" (UK-POEM) (Hamey et al. 2008; EFSA 2010). The models are different in their exposure calculations and also include different exposure scenarios. Therefore, both models are often used in parallel in the EU when assessing occupational exposure. Exposure scenarios and application parameters for the models were based on Mozambican pesticides application conditions.

Table 1. Details on the pesticides and cropping systems used in the operator risk assessments

Pesticide	**Concentration & type of formulation** [1]	**Cropping systems**	**Volume application rate** (L mixture/ha)	**Dose rate** (L or kg formulation/ ha	**AOEL** [2, 3] (mg a.i./kg bw/day)
Oxyfluorfen	240 g a.i./L EC	Vegetables, soybean	350	3	0.013 [A]
		Pine & eucalyptus trees, citrus			
		Cotton			

[1] a.i. = active ingredient; WP = wettable powder; SL = soluble concentrate; WG -= wettable granules

[2] bw = bodyweight

[3] Sources of AOELs: [A] = FootPrint - Pesticide Properties Database (undated); [B] = Rotterdam Convention (2011); [C] = ERMA (2010)

Expression of risk

The risk for the pesticide operator has been expressed as a risk quotient, which is the ratio between the estimated

exposure of the operator to the pesticide (in mg a.i./kg bw/day) and the AOEL (in mg a.i./kg bw/day). A risk quotient > 1 implies that the risk is not acceptable; a risk quotient 1 implies an acceptable risk. For instance, a risk quotient of 100 means that the estimated exposure level of the operator, for the given pesticide application scenario, is a 100 times higher than the acceptable exposure level.

Outcome of the risk assessments

The results of the pesticide operator risk assessments for oxyfluorfen are summarized in the table below. Risk quotients are given for the scenario when no PPE is worn during both mixing and spraying (worst case situation) and for the scenario with full PPE during both mixing and spraying (best practice situation).

Table 2 Outcome of the operator risk assessments for formulations containing Oxyfluorfen, a pesticide "coming close to a HHP".

Pesticide formulation	Cropping system	Application rate	Exposure model	Use of PPE	Risk quotient
240 g/L EC	Vegetables, soybean	720 g a.i./ha	UK – hand-held sprayer; low level target	Mixing no; spraying no	35
				Mixing yes; spraying yes	5.6
240 g/L EC	Cotton	432 g a.i./ha	UK – hand-held sprayer; low level target	Mixing no; spraying no	33
				Mixing yes; spraying yes	5.8
240 g/L EC	Citrus Pine trees Eucalyptus trees	720 g a.i./ha	UK – hand-held sprayer; low level target	Mixing no; spraying no	30
				Mixing yes; spraying yes	4.2

Table 2 shows the results for the application of the herbicide **oxyfluorfen** in vegetables, soybean, cotton and in citrus and forestry uses. In all cases was the AOEL exceeded, irrespective of the use of PPE.

Occupational risks

The occupational risk assessments showed that the applications of six pesticides (among those oxyfluorfen) at registered dose rates would result in exceedance of acceptable operator exposure levels in all cropping systems that were assessed, both with and without PPE. **(Table 3).**

The exceedance of the AOEL when applying oxyfluorfen with PPE was relatively limited (RQ = 2.3 - 5.8). Possibly the strict enforcement of using full PPE combined with engineering control such as low-drift nozzles could reduce the occupational risk to acceptable levels.

The occupational risk assessments reported in this study largely confirm that the majority of pesticide products identified as highly hazardous pesticides on the basis of hazard criteria would also lead to unacceptable occupational exposure on the basis of risk assessment.

Eight out of the nine pesticides showed exceedance of the acceptable operator exposure levels with or without the use of PPE. Only two of these seven (endosulfan and oxamyl) came closer to no exceedance of the AOEL at the lowest registered dose rates, with PPE and for specific application methods. All other, including oxyflorfen showed factors of exceeding the AOEL ranging from about 10x to more than 100000x.

Table 3. Summary of the results of the operator risk assessments.

Pesticide	Formulation [type] (g a.i./L)	Evaluated crops	Evaluated application rates (g a.i./ha)	Exceedance of AOEL	
				With PPE	Without PPE
Oxyfluorfen	240 [EC]	Vegetables, soybean, trees	720	All cases	All cases
		Cotton	432	All cases	All cases

Expected effect of the final regulatory action in relation to human health: Reducing the risks posed by the use of HHPs in Mozambique in the context of human health. All registration of oxyfluorfen were cancelled.

Date of entry into force of the final regulatory action: 31/12/2014

MOZAMBIQUE

Common Name(s): Paraquat ***CAS number(s):*** 4685-14-7

Chemical Name: 1,1'-dimethyl-4,4'-bipyridinium

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: Ban all formulation and for all uses.

Use or uses that remain allowed: None

The final regulatory action was based on a risk or hazard evaluation: Yes

Summary of the final regulatory action: Based on the decision N. 001/DNSA/2014 paraquat was banned by the National Directorate of Agrarian Services from further import and use in Mozambique. The ban of all uses and the cancellation of the products containing paraquat in the country was decided due to the toxic nature and hazardous properties of this active substance, which combined with the local conditions of use can damage human and animal health and additionally cause potential damage to the environment The decision to cancel the registration of paraquat was taken as the last step of the project for Risk Reduction of Highly Hazardous Pesticides, which identified Highly Hazardous Pesticides that are registered in Mozambique. After consultations with different actors (public sector, private sector, civil society and others), cancelation of registrations and consequent non-approval for their use in Mozambique was approved.

The reasons for the final regulatory action were relevant to: Human health and environment

Summary of known hazards and risks to human health:

A project entitled Reducing Risks of Highly Hazardous Pesticides (HHPs) in Mozambique was initiated by the Government of Mozambique with the objective to reduce the risks associated with pesticide use in the country. The ultimate goal was to develop and implement an "HHP Risk Reduction Action Plan" for the most dangerous pesticides and use situations, resulting over time in the implementation of a variety of risk reduction measures based on a review of use conditions.

In the first step of the project, a review of all pesticides registered in Mozambique was carried out and a shortlist of highly hazardous pesticides was identified. This shortlist was based on an assessment of the hazards of the pesticides, based on criteria established by the FAO/WHO Joint Meeting on Pesticide Management (JMPM) (FAO/WHO, 2008).

Based on the hazard assessment in Step 1, a short list of HHPs, including "coming close" to HHPs, which were used in the country, was established.

Paraquat 200g/l (20%) SL pesticide formulation was on the short list as a pesticide "coming close" to HHPs based on the below indicated criteria:

- For liquid formulations: pesticide products with an acute oral LD50< 200 mg/kg or an acute dermal LD50< 400 mg/kg (note that these are the Class Ib limits in the previous version of the WHO Classification (WHO, 2005).

All pesticide formulations registered in Mozambique were classified using the oral and dermal LD50 value of the formulation, as provided in the registration dossier. LD50 values for the formulation were available or could be estimated for all registered pesticide products except for three microbial pesticides and one citronella oil (i.e. > 99% of the total).

Paraquat 200g/l (20%) SL pesticide formulation in Mozambique was identified as WHO class II, but chronic toxicity alert, dermal hazard was identified as close to Class Ib and very low AOEL (Come A.M. & van der Valk H., 2014). The a.i. was registered in US and banned for use in the European Union. In the case of paraquat, the WHO Classification notes in addition that it "*has serious delayed effects if absorbed. It is of relatively low hazard in normal use but may be fatal if the concentrated product is taken by mouth or spread on the skin*" (WHO, 2010). The occupational hazard of paraquat is confirmed by the very low Acceptable Operator Exposure Level defined in the EU (PPDB, 2012).

During the second step of the project, a pesticide use field surveys and exposure were carried out in selected regions and cropping systems in Mozambique. The main goal of the survey was to identify the conditions under which pesticides are being used in the country and their contribution to potential risks for human health and the environment.

The surveys (325 subsistence farmers interviewed) revealed that most of the farmers applied pesticides (95%), and that the conditions of use were likely to result in undue (excessive) exposure. Half of the farmers interviewed never

received any training on pesticides use, and even the other half that did, often lacked understanding of the risks involved. Farmers were spraying vegetable crops at least 14 times per growing season. One out of three applications was involving one of the HHP containing formulation (Farmers using HHPs includes almost 30% of the interviewed farmers).

Also almost none of the farmers (93%) owned or wore adequate PPE having only one or no protective items at all. Only 2% of those applying HHPs wore adequate full body protection PPE. About half of the farmers had not received any training on the use of pesticides. The majority of pesticide applicators used manual sprayer (36%), followed by electric sprayer (with batteries); 33% and followed by inappropriate equipment such as watering can (13.5%) or other (unknown) means (12.5%). Approximately about half of the farmers surveyed reported that they noticed to receive pesticide on their clothes, bare skin or eyes when using pesticides. The main health symptoms associated with pesticide use by farmers noticing symptoms were headaches, skin rashes, burning eyes, vomiting, burning nose, blurred vision, dizziness and excessive sweating. Almost half of the farmers declared they did not read pesticide labels, including use instructions such as proper dosage and protective measures, the main reason being illiteracy. One out of four farmers poorly understood the hazard colour band on pesticide labels that indicates acute toxicity.

The survey results showed that the use of pesticides in general, and of HHPs in particular, was likely to result in excessive exposure of farmers in Mozambique. Therefore enforcing risk mitigation measures depending solely on wearing the appropriate PPE under the local conditions of use to be difficult and unlikely to give results.

The third step of the project consisted of a stakeholder consultation to further discuss the use and risks of highly hazardous pesticides in Mozambique and fine-tune the shortlist based on the survey results and the expertise and experience of stakeholders.

During the fourth step of the project, the risk of occupational exposure was assessed for a subset of the shortlisted pesticides, including **paraquat**. The subset included nine pesticides in seven different cropping systems using 13 application scenarios, each with and without personal protective equipment (PPE).

For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

The exposure assessment used the registered dose rates and other application parameters for each pesticide based on farming conditions in Mozambique, including application with backpack sprayers (used in vegetables, tobacco, cereals and several other crops), hand-held rotary atomisers (used in cotton), and tractor- mounted sprayers. The exposure of pesticide applicators wearing full PPE that is realistically available in Mozambique was compared to the exposure of applicators wearing shorts and a T-shirt, as is often the case for smallholder farmers.

The toxicologically acceptable level of exposure applied in this study was the Acceptable Operator Exposure Level (AOEL), which is defined as the maximum amount of active substance to which the operator may be exposed without any adverse health effects (EC, 2006). The cropping systems that were evaluated are those for which the pesticide were registered. In some cases, crops were grouped together when the exposure to the pesticide were likely to be similar, based on height of the crop and the application method.

The volume application rates used in the model were generally those recommended on the label of the registered pesticide in Mozambique. If a volume application rate was not indicated on the label, 200 litres of pesticide mixture per ha was used as a default for EC or SC formulations applied with hydraulic nozzles or by air-assisted sprayers (high volume application). In the case of cotton applications, a scenario where 10 litres of mixture per ha was applied using rotary atomisers (low volume application) was also evaluated.

The dose rates used in the models were the highest rates recommended on the labels of the registered pesticide. In some cases where a wide range of dose rates was recommended, the lowest dose rate was also evaluated.

The risk of occupational exposure to pesticides was assessed, in particular when spraying the products. The risk of worker exposure (e.g. during harvesting) or bystander exposure was not evaluated. For the occupational risk assessment an estimate of operator exposure was made, which was then compared to a toxicologically acceptable level.

Exposure of pesticide applicators was estimated using occupational exposure models that are often applied in the European Union: the so-called "German model" and the "UK Predictive Operator Exposure Model" (UK-POEM) (Hamey et al. 2008; EFSA 2010). The models are different in their exposure calculations and also include different exposure scenarios. Therefore, both models are often used in parallel in the EU when assessing occupational exposure. Exposure scenarios and application parameters for the models were based on Mozambican pesticides application conditions.

Table 1. Details on the pesticides and cropping systems used in the operator risk assessments

Pesticide	**Concentration & type of formulation** [1]	**Cropping systems**	**Volume application rate** (L mixture/ha)	**Dose rate** (L or kg formulation/ha	**AOEL** [2, 3] (mg a.i./kg bw/day)
Paraquat	200 g.a.i./L SL	Sugar cane	200	3	0.0004 [A]
		Bananas Vegetables	200 200	5 2.5	

[1] a.i. = active ingredient; WP = wettable powder; SL = soluble concentrate; WG -= wettable granules
[2] bw = bodyweight
[3] Sources of AOELs: [A] = FootPrint - Pesticide Properties Database (undated); [B] = Rotterdam Convention (2011); [C] = ERMA (2010)

Expression of risk

The risk for the pesticide operator has been expressed as a risk quotient, which is the ratio between the estimated exposure of the operator to the pesticide (in mg a.i./kg bw/day) and the AOEL (in mg a.i./kg bw/day). A risk quotient > 1 implies that the risk is not acceptable; a risk quotient 1 implies an acceptable risk. For instance, a risk quotient of 100 means that the estimated exposure level of the operator, for the given pesticide application scenario, is a 100 times higher than the acceptable exposure level.

Outcome of the risk assessments

The results of the pesticide operator risk assessments for paraquat are summarized in the table below. Risk quotients are given for the scenario when no PPE is worn during both mixing and spraying (worst case situation) and for the scenario with full PPE during both mixing and spraying (best practice situation). Crops were grouped together as crop structure and the application scenarios were considered similar.

Table 2. Outcome of the operator risk assessments for formulations containing Paraquat, a pesticide "coming close to a HHP".

Pesticide formulation	**Cropping system**	**Application rate**	**Exposure model**	**Use of PPE**	**Risk quotient**
200 g/L SL	Sugar cane	600 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	1408
				Mixing yes; spraying yes	255
			UK - tractor-mounted boom sprayer; hydraulic nozzles	Mixing no; spraying no	653
				Mixing yes; spraying yes	95
	Bananas	1000 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	2268
				Mixing yes; spraying yes	423
			UK - tractor-mounted boom sprayer; hydraulic nozzles	Mixing no; spraying no	1045
			UK - tractor-mounted boom sprayer; hydraulic nozzles	Mixing no; spraying no	1045
				Mixing yes; spraying yes	155
	Vegetables	500 g a.i./ha	UK - hand-held sprayer; low level target	Mixing no; spraying no	1193
				Mixing yes; spraying yes	213
			UK - home/ garden; low level target	Mixing no; spraying no	203

The occupational risk assessments that were conducted showed that acceptable operator exposure levels were greatly exceeded for all crops and all pesticide application scenarios, irrespective of the application rate or use of PPE. This indicates that the application of paraquat likely poses a high risk under Mozambican use conditions.

Occupational risks

The occupational risk assessments showed that the applications of six pesticides (among those paraquat) at registered dose rates would result in exceedance of acceptable operator exposure levels in all cropping systems that were assessed, both with and without PPE (Table 3).

Given the large risk quotient, it is unlikely that locally feasible mitigation measures would reduce the risk of paraquat to acceptable levels.

The occupational risk assessments reported in this study largely confirm that the majority of pesticide products identified as highly hazardous pesticides on the basis of hazard criteria would also lead to unacceptable occupational exposure on the basis of risk assessment.

Table 3. Summary of the results of the operator risk assessments.

Pesticide	**Formulation [type]** (g a.i./L)	**Evaluated crops**	**Evaluated application rates** (g a.i./ha)	**Exceedance of AOEL**	
				With PPE	Without PPE
Paraquat	200 [SL]	Sugar cane, bananas, vegetables	≥ 500	All cases	All cases

Expected effect of the final regulatory action in relation to human health: Reducing the risks posed by the use of HHPs in Mozambique in the context of human health. All registration of the Paraquat were cancelled.

Summary of known hazards and risks to the environment: The Alterra study carried out by Wageningen University (WUR) analysed the following environmental hazard indicators: Environmental toxic load to aquatic organisms (fish, *Daphnia*, and algae), hazard to bees and groundwater leaching potential. The hazard assessment took into account the trends of registered pesticide imports in the country from 2002 to 2011 explored in terms of numbers (type) of pesticides and volume (amount) of pesticides. Paraquat was identified as pesticide of secondary concern based on the relative hazard to algae using the environmental toxic load (ETL) as a hazard indicator (details in Table 6, Table 1.3, Table 3.3, of Alterra report).

Environmental Toxic Loads (fish, aquatic invertebrates, algae, bees)

Secondary concern: Active ingredients of which the imported quantity of a.i. constitutes >10% of the total annual ETL value in 1 year or more.

Table 3.3: Active ingredients with the major contribution to the annual ETL for algae (i.e. > 0.5 %).

Year	Rank Nr.	Compound Nr.	Compound name	(kg)	(%)
2002	1	128	Paraquat	1745	98.5
2003	2	128	Paraquat	4721	21.4
2004	2	128	Paraquat	7418	16.3
2005	2	128	Paraquat	5377	8.1
2006	2	128	Paraquat	6604	12.8
2007	2	128	Paraquat	4272	11.7
2008	2	128	Paraquat	4600	6.3
2009	2	128	Paraquat	8448	11.0
2010	2	128	Paraquat	4540	5.4
2011	2	128	Paraquat	7020	10.7

Expected effect of the final regulatory action in relation to the environment: Significantly reduce the risk to aquatic organisms (algae) in Mozambique water basins.

Date of entry into force of the final regulatory action: 31/12/2014

SERBIA

Common Name(s): 1,3-Dichloropropene ***CAS number(s):*** 542-75-6

Chemical Name: (EZ)-1,3-dichloroprop-1-ene

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing 1,3-Dichloropropene. 1,3-Dichloropropene is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Before the List of Approved Substances ("Official Gazette RS" No 117/13) came into force, plant protection products containing active substance 1,3-Dichloropropene were not registered in the Republic of Serbia. Since than active substance 1,3-Dichloropropene has not been included in the List of Approved Substances.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Acephate ***CAS number(s):*** 30560-19-1

Chemical Name: N-[methoxy(methylsulfanyl)phosphoryl]acetamide

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as plant protection product and as active substance for biocidal product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: <u>As plant protection product</u>

It is prohibited to place on the market or use plant protection products containing acephate. Acephate is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Before the List of Approved Substances ("Official Gazette RS" No 117/13) came into force, plant protection products containing active substance acephate were not registered in the Republic of Serbia. Since than active substance acephate has not been included in the List of Approved Substances

<u>As biocidal product</u>

Biocidal product (BP) containing acephate shall not be placed on the market if Decision on Inclusion of that Biocidal Product into the Temporary List has been issued.

Law on Biocidal Products prescribes that BP shall be included into the Temporary List if such BP contains:

-active substance(s) included into the List of Active Substances in the Biocidal Product („Official Gazette of the RS", No 94/16 and 26/18) Annex I/Annex Ia (approved active substances in EU)) and/or

-active substance(s) currently included in the Review Programme, for relevant product type (PT) combination,

unless active substance in that BP is included into the Annex II - List of existing active substances for which a decision of non-inclusion into the Annex I/Ia has been adopted, i.e. there is a reasonable doubt that such biocidal product represents unacceptable risk on humans, animals and environment.

Acephate is not included into List of Active Substances in the Biocidal Product (Annex I/Annex Ia) neither in the Review Programme.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 14/04/2010

SERBIA

Common Name(s): Acetochlor ***CAS number(s):*** 34256-82-1

Chemical Name 2-chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing acetochlor. Acetochlor is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Registration of plant protection products containing the active substance acetochlor was revoked on 31st December 2013. The import of active substance acetochlor or use for the production or formulation of plant protection products in the Republic of Serbia were banned. The import, production or formulation of plant protection products containing the active substance acetochlor in the Republic of Serbia were banned. Placing on the market of existing stocks in wholesale was allowed for another 6 months to manufacturers, representatives and distributers of the plant protection products. Placing on the market and use of existing stocks in retail was allowed for another 18 months only to beneficiaries.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Benfuracarb ***CAS number(s):*** 82560-54-1

Chemical Name: ethyl 3-[[(2,2-dimethyl-3H-1-benzofuran-7-yl)oxycarbonyl-methylamino]sulfanyl-propan-2-ylamino]propanoate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing benfuracarb. Benfuracarb is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Before the List of Approved Substances ("Official Gazette RS" No 117/13) came into force, plant protection products containing active substance benfuracarb were not registered in the Republic of Serbia. Since than active substance benfuracarb has not been included in the List of Approved Substances.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Butralin ***CAS number(s):*** 33629-47-9

Chemical Name: N-butan-2-yl-4-tert-butyl-2,6-dinitroaniline

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing butralin. Butralin is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Registration of plant protection products containing the active substance butralin was revoked on 31st December 2013. The import of active substance butralin or use for the production or formulation of plant protection products in the Republic of Serbia were banned. The import, production or formulation of plant protection products containing the active substance butralin in the Republic of Serbia were banned. Placing on the market of existing stocks in wholesale was allowed for another 6 months to manufacturers, representatives and distributers of the plant protection products. Placing on the market and use of existing stocks in retail was allowed for another 18 months only to beneficiaries.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Cadusafos ***CAS number(s):*** 95465-99-9

Chemical Name: 2-[butan-2-ylsulfanyl(ethoxy)phosphoryl]sulfanylbutane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing cadusafos. Cadusafos is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Before the List of Approved Substances ("Official Gazette RS" No 117/13) came into force, plant protection products containing active substance cadusafos were not registered in the Republic of Serbia. Since than active substance cadusafos has not been included in the List of Approved Substances.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Carbosulfan ***CAS number(s):*** 55285-14-8

Chemical Name: 2-[butan-2-ylsulfanyl(ethoxy)phosphoryl]sulfanylbutane

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing carbosulfan. Carbosulfan is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Registration of plant protection products containing the active substance carbosulfan was revoked on 31st December 2013. The import of active substance carbosulfan or use for the production or formulation of plant protection products in the Republic of Serbia were banned. The import, production or formulation of plant protection products containing the active substance carbosulfan in the Republic of Serbia were banned. Placing on the market of existing stocks in wholesale was allowed for another 6 months to manufacturers, representatives and distributers of the plant protection products. Placing on the market and use of existing stocks in retail was allowed for another 18 months only to beneficiaries.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Chlorfenapyr ***CAS number(s):*** 122453-73-0

Chemical Name: 4-bromo-2-(4-chlorophenyl)-1-(ethoxymethyl)-5-(trifluoromethyl)pyrrole-3-carbonitrile

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

Use or uses prohibited by the final regulatory action: All applications as a plant protection product.

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing chlorfenapyr. Chlorfenapyr is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Before the List of Approved Substances ("Official Gazette RS" No 117/13) came into force, plant protection products containing active substance chlorfenapyr were not registered in the Republic of Serbia. Since than active substance chlorfenapyr has not been included in the List of Approved Substances

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Dichlorvos ***CAS number(s):*** 62-73-7

Chemical Name: 2,2-dichloroethenyl dimethyl phosphate

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: <u>As plant protection product</u>

It is prohibited to place on the market or use plant protection products containing dichlorvos. Dichlorvos is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Registration of plant protection products containing the active substance dichlorvos was revoked on 31st December

2013. The import of active substance dichlorvos or use for the production or formulation of plant protection products in the Republic of Serbia were banned. The import, production or formulation of plant protection products containing the active substance dichlorvos in the Republic of Serbia were banned. Placing on the market of existing stocks in wholesale was allowed for another 6 months to manufacturers, representatives and distributers of the plant protection products. Placing on the market and use of existing stocks in retail was allowed for another 18 months only to beneficiaries.

As biocidal product

Biocidal product (BP) containing dichlorvos shall not be placed on the market if Decision on Inclusion of that Biocidal Product into the Temporary List has been issued.

Law on Biocidal Products prescribes that BP shall be included into the Temporary List if such BP contains:

-active substance(s) included into the List of Active Substances in the Biocidal Product („Official Gazette of the RS", No 94/16 and 26/18) Annex I/Annex Ia (approved active substances in EU)) and/or

-active substance(s) currently included in the Review Programme,

for relevant product type (PT) combination, unless active substance in that BP is included into the Annex II - List of existing active substances for which a decision of non-inclusion into the Annex I/Ia has been adopted, i.e. there is a reasonable doubt that such biocidal product represents unacceptable risk on humans, animals and environment.

Dichlorvos is included in the the Annex II and that active substance cannot be used for biocidal product type PT18.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

SERBIA

Common Name(s): Dicloran ***CAS number(s):*** 99-30-9

Chemical Name: 2,6-dichloro-4-nitroaniline

Final regulatory action has been taken for the category: Pesticide

Final regulatory action: The chemical is banned

The final regulatory action was based on a risk or hazard evaluation: No

Summary of the final regulatory action: It is prohibited to place on the market or use plant protection products containing dicloran. Dicloran is not included in the List of Approved Substances.

Plant protection products shall be registered if an active substance, i.e. basic substance contained in the plant protection products is included into the List of Approved Substances pursuant to the Law on Plant Protection Product and regulations promulgated thereof.

Before the List of Approved Substances ("Official Gazette RS" No 117/13) came into force, plant protection products containing active substance dicloran were not registered in the Republic of Serbia. Since than active substance dicloran has not been included in the List of Approved Substances.

The reasons for the final regulatory action were relevant to: Human health and environment.

Date of entry into force of the final regulatory action: 31/12/2013

Synopsis of notifications of final regulatory action received since the last PIC Circular

PART B

NOTIFICATIONS OF FINAL REGULATORY ACTION THAT HAVE BEEN VERIFIED AS NOT CONTAINING ALL THE INFORMATION REQUIRED BY ANNEX I TO THE CONVENTION

Chemical name	CAS No.	Category	Country	Region	Annex III
Polyoxyethylene alkylphenol ether	9016-45-9 26027-38-3 9002-93-1 9036-19-5 (non exhaustive list)	Industrial	China	Asia	No

PART C

NOTIFICATIONS OF FINAL REGULATORY ACTION STILL UNDER VERIFICATION

Chemical name	CAS No.	Category	Country	Region	Annex III
Dibromochloropropane (DBCP)	96-12-8	Pesticide	Indonesia	Asia	No
2,3-Dichlorophenol	576-24-9	Pesticide	Indonesia	Asia	No
(2,4,5-trichlorophenoxy)acetic acid	93-76-5	Industrial	Indonesia	Asia	No
2,4,5-Trichlorophenol	95-95-4	Pesticide	Indonesia	Asia	No
2,4,6-Trichlorophenol	88-06-2	Pesticide	Indonesia	Asia	No
2,4-Dichlorophenol	120-83-2	Pesticide	Indonesia	Asia	No
2,5-Dichlorophenol	583-78-8	Pesticide	Indonesia	Asia	No
Aldicarb	116-06-3	Pesticide	Indonesia	Asia	Yes
Aldrin	309-00-2	Pesticide/Industrial	Indonesia	Asia	Yes/No
Captafol	2425-06-1	Pesticide	Indonesia	Asia	Yes
Chlordane	57-74-9	Pesticide	Indonesia	Asia	Yes
Chlordimeform	6164-98-3	Pesticide	Indonesia	Asia	Yes
Chlorobenzilate	510-15-6	Pesticide	Indonesia	Asia	Yes
Crocidolite asbestos	12001-28-4	Industrial	Indonesia	Asia	Yes
Cyhexatin	13121-70-5	Pesticide	Indonesia	Asia	No
DDT	50-29-3	Pesticide/Industrial	Indonesia	Asia	Yes/No
Dieldrin	60-57-1	Pesticide/Industrial	Indonesia	Asia	Yes/No
Dinoseb and its salts and esters	88-85-7	Pesticide/Industrial	Indonesia	Asia	Yes/No
Endosulfan	115-29-7	Pesticide	Indonesia	Asia	Yes
Endrin	72-20-8	Pesticide/Industrial	Indonesia	Asia	Yes/No
Ethyl p-nitrophenyl benzenethiophosphonate (EPN)	2104-64-5	Pesticide	Indonesia	Asia	No
1,2-Dibromoethane (EDB)	106-93-4	Pesticide/Industrial	Indonesia	Asia	Yes/No
Ethylene Dichloride	107-06-2	Pesticide/Industrial	Indonesia	Asia	Yes/No

Chemical name	CAS No.	Category	Country	Region	Annex III
Ethylene Oxide	75-21-8	Pesticide/Industrial	Indonesia	Asia	Yes/No
Fluoroacetamide	640-19-7	Pesticide/Industrial	Indonesia	Asia	Yes/No
Heptachlor	76-44-8	Pesticide/Industrial	Indonesia	Asia	Yes/No
Hexachlorobenzene	118-74-1	Pesticide/Industrial	Indonesia	Asia	Yes/No
HCH (mixed isomers)	608-73-1	Pesticide/Industrial	Indonesia	Asia	Yes/No
Lindane	58-89-9	Pesticide/Industrial	Indonesia	Asia	Yes/No
Mercury	7439-97-6	Pesticide/Industrial	Indonesia	Asia	No
Methamidophos	10265-92-6	Pesticide/Industrial	Indonesia	Asia	Yes/No
Methyl-parathion	298-00-0	Pesticide/Industrial	Indonesia	Asia	Yes/No
Methyl bromide	74-83-9	Pesticide/Industrial	Indonesia	Asia	No
Mirex	2385-85-5	Pesticide/Industrial	Indonesia	Asia	Yes/No
Monocrotophos	6923-22-4	Pesticide/Industrial	Indonesia	Asia	Yes/No
Bromophos-ethyl (*O*-(4-Bromo-2-chlorophenyl) *O*,*O*-diethyl phosphorothioate)	4824-78-6	Pesticide	Indonesia	Asia	No
Parathion	56-38-2	Pesticide/Industrial	Indonesia	Asia	Yes/No
Polychlorinated biphenyls (PCBs)	1336-36-3	Pesticide/Industrial	Indonesia	Asia	No/Yes
Pentachlorophenol	87-86-5	Pesticide/Industrial	Indonesia	Asia	Yes/No
Phosphamidon	13171-21-6	Pesticide/Industrial	Indonesia	Asia	Yes/No
Polybrominated biphenyls (PBBs)	36355-01-8 (hexa-) 27858-07-7 (octa-) 13654-09-6 (deca-)	Pesticide/Industrial	Indonesia	Asia	No/Yes
Polychlorinated terphenyls (PCTs)	61788-33-8	Pesticide/Industrial	Indonesia	Asia	No/Yes
Toxaphene	8001-35-2	Pesticide/Industrial	Indonesia	Asia	Yes/No
Tris(2,3-dibromopropyl) phosphate	126-72-7	Pesticide/Industrial	Indonesia	Asia	No/Yes
1,1,1,2-Tetrachloroethane	630-20-6	Industrial	Turkey	Europe	No
1,1,2,2-Tetrachloroethane	79-34-5	Industrial	Turkey	Europe	No
1,1,2-Trichloroethane	79-00-5	Industrial	Turkey	Europe	No
1,1-dichloroethylene	75-35-4	Industrial	Turkey	Europe	No
1,3-Dichloropropene	542-75-6	Pesticide	Turkey	Europe	No
2-naphthylamine	91-59-8	Industrial	Turkey	Europe	No
2-amino-2-thiazoline-4-carboxylic acid	2150-55-2	Pesticide	Turkey	Europe	No
2-Naphthoxyacetic acid	120-23-0	Pesticide	Turkey	Europe	No
4-aminobiphenyl	92-67-1	Industrial	Turkey	Europe	No
4-Chlorophenoxyacetic acid	122-88-3	Pesticide	Turkey	Europe	No
4-nitrobiphenyl	92-93-3	Industrial	Turkey	Europe	No
Acephate	30560-19-1	Pesticide	Turkey	Europe	No
Acetochlor	34256-82-1	Pesticide	Turkey	Europe	No
Actinolite asbestos	77536-66-4	Industrial	Turkey	Europe	Yes
Amitraz	33089-61-1	Pesticide	Turkey	Europe	No
Amosite asbestos	12172-73-5	Industrial	Turkey	Europe	Yes

Chemical name	CAS No.	Category	Country	Region	Annex III
Ammonium thiocyanate	1762-95-4	Pesticide	Turkey	Europe	No
Anilofos	6429-01-0	Pesticide	Turkey	Europe	No
Anthophyllite asbestos	77536-67-5	Industrial	Turkey	Europe	Yes
Atrazine	1912-24-9	Pesticide	Turkey	Europe	No
Azinphos-ethyl	2542-71-9	Pesticide	Turkey	Europe	No
Azinphos-methyl	86-50-0	Pesticide	Turkey	Europe	Yes
Azocclotin	41083-11-8	Pesticide	Turkey	Europe	No
Arsenic compound	7440-38-2	Pesticide	Turkey	Europe	No
Benfuracarb	82560-54-1	Pesticide	Turkey	Europe	No
Benzene	71-43-2	Industrial	Turkey	Europe	No
Benzidine and-or its salts-derivatives	92-87-5; 531-85-1; 531-86-2; 21136-70-9; 36341-27-2	Industrial	Turkey	Europe	No
Benzyl butyl phthalate (BBP)	85-68-7	Industrial	Turkey	Europe	No
Bitertanol	55179-31-2	Pesticide	Turkey	Europe	No
Brodifacoum	56073-10-0	Pesticide	Turkey	Europe	No
Bromacil	314-40-9	Pesticide	Turkey	Europe	No
Bromophos	2104-91-3	Pesticide	Turkey	Europe	No
Bromophos-ethyl	4824-78-6	Pesticide	Turkey	Europe	No
Bromopropylate	18181-80-1	Pesticide	Turkey	Europe	No
Bronopol	52-51-7	Pesticide	Turkey	Europe	No
Butralin	33629-47-9	Pesticide	Turkey	Europe	No
Cadasufos	95465-99-9	Pesticide	Turkey	Europe	No
Cadmium compounds	7440-43-9	Industrial	Turkey	Europe	No
Calcium-cyanide	592-01-8	Pesticide	Turkey	Europe	No
Carbaryl	63-25-2	Pesticide	Turkey	Europe	No
Carbendazim	10605-21-7	Pesticide	Turkey	Europe	No
Carbosulfan	55285-14-8	Pesticide	Turkey	Europe	No
Chinomethionat	2439-01-2	Pesticide	Turkey	Europe	No
Chlorfenvinphos	470-90-6	Pesticide	Turkey	Europe	No
Chlorfluazuron	71422-87-8	Pesticide	Turkey	Europe	No
Chloroneb	2675-77-6	Pesticide	Turkey	Europe	No
Chlorpicrin	76-06-2	Pesticide	Turkey	Europe	No
Chlorpyrifos-ethyl	2921-88-2	Pesticide	Turkey	Europe	No
Chrysotile asbestos	12001-29-5	Industrial	Turkey	Europe	Non
Crocidolite asbestos	12001-28-4	Industrial	Turkey	Europe	Yes
Cis-Zeatin	327771-64-5	Pesticide	Turkey	Europe	No
Coumachlor	81-82.3	Pesticide	Turkey	Europe	No
Cyanazine	21725-46-2	Pesticide	Turkey	Europe	No
Cycloate	1134-23-2	Pesticide	Turkey	Europe	No
Cyclosulfamuron	136949-15-5	Pesticide	Turkey	Europe	No
Cyhexatin	13121-70-5	Pesticide	Turkey	Europe	No
Cypermethrin	67375- 30-8	Pesticide	Turkey	Europe	No
Diazinon	333-41-5	Pesticide	Turkey	Europe	No
Diclofluanid	1085-98-9	Pesticide	Turkey	Europe	No
Dicofol	115-32-2	Pesticide	Turkey	Europe	No

Chemical name	CAS No.	Category	Country	Region	Annex III
Dimethenamid	87674-68-8	Pesticide	Turkey	Europe	No
Dimethipin	55290-63-7	Pesticide	Turkey	Europe	No
Diniconazole-M	83657-18-5	Pesticide	Turkey	Europe	No
Dioxacarb	698-21-2	Pesticide	Turkey	Europe	No
Dioxathion	78-34-2	Pesticide	Turkey	Europe	No
Diphenamid	957-51-7	Pesticide	Turkey	Europe	No
Ethalfluralin	55283-68-6	Pesticide	Turkey	Europe	No
Ethion	563-12-2	Pesticide	Turkey	Europe	No
Endosulfan	115-29-7	Pesticide	Turkey	Europe	Yes
Endothal	145-73-3	Pesticide	Turkey	Europe	No
EPN. O-Ethyl O-(p-nitrophenyl) phenylphosphonothioate	2104-84-5	Pesticide	Turkey	Europe	No
EPTC. S-Ethyl dipropylthiocarbamate	759-94-4	Pesticide	Turkey	Europe	No
Esbiothrin	84030-86-4	Pesticide	Turkey	Europe	No
Ethiofencarb	29973-13-5	Pesticide	Turkey	Europe	No
Ethirimol	23947-60-6	Pesticide	Turkey	Europe	No
Ethoate-methyl	116-01-8	Pesticide	Turkey	Europe	No
Fenarimol	60168-89-9	Pesticide	Turkey	Europe	No
Fenopropathrin	39515-41-8	Pesticide	Turkey	Europe	No
Fenpiclonil	74738-17-3	Pesticide	Turkey	Europe	No
Fenthin acetate	900-95-8	Pesticide	Turkey	Europe	No
Fenthin hydroxide	76-87-9	Pesticide	Turkey	Europe	No
Fenvalerate	51630-58-1	Pesticide	Turkey	Europe	No
Fenthion	55-38-9	Pesticide	Turkey	Europe	No
Fipronil	120068-37-3	Pesticide	Turkey	Europe	No
Flocoumafen	90035-08-8	Pesticide	Turkey	Europe	No
Fluzaifop	69335-91-7	Pesticide	Turkey	Europe	No
Flubenzimine	37893-02-0	Pesticide	Turkey	Europe	No
Flucythrinate	70124-77-5	Pesticide	Turkey	Europe	No
Flumetsulam	98967-40-9	Pesticide	Turkey	Europe	No
Fluridone	59756-60-4	Pesticide	Turkey	Europe	No
Fluthiacet-methyl	117337-19-6	Pesticide	Turkey	Europe	No
Fomesafen	72178-02-0	Pesticide	Turkey	Europe	No
Formothion	2540-82-1	Pesticide	Turkey	Europe	No
Furathiocarb	65907-30-4	Pesticide	Turkey	Europe	No
Halfenprox	111872-58-3	Pesticide	Turkey	Europe	No
Haloxyfop ethoxyethyl ester	8723748-7	Pesticide	Turkey	Europe	No
Haloxyfop	69806-34-4	Pesticide	Turkey	Europe	No
Hexaconazole	79983-71-4	Pesticide	Turkey	Europe	No
Hexaflumuron	86479-06-3	Pesticide	Turkey	Europe	No
Hydrogen cyanamide	420-04-2	Pesticide	Turkey	Europe	No
Hydrogen cyanide	74-90-8	Pesticide	Turkey	Europe	No
Hydrogen peroxide	7722-84-1	Pesticide	Turkey	Europe	No
Imazamethabenz-methyl	69969-22-8	Pesticide	Turkey	Europe	No
Imazapic	104098-48-8	Pesticide	Turkey	Europe	No
Imazapyr	81334-34-1	Pesticide	Turkey	Europe	No

Chemical name	CAS No.	Category	Country	Region	Annex III
Imazethapur	81335-77-5	Pesticide	Turkey	Europe	No
Iminoctadine	13516-27-3	Pesticide	Turkey	Europe	No
Indolylacetic acid	87-51-4	Pesticide	Turkey	Europe	No
Iprodione	36734-19-7	Pesticide	Turkey	Europe	No
Isofenphos	25311-71-1	Pesticide	Turkey	Europe	No
Kinetin	525-79-1	Pesticide	Turkey	Europe	No
Mephosfolan	950-10-7	Pesticide	Turkey	Europe	No
Methabenzthiazuron	18691-97-9	Pesticide	Turkey	Europe	No
Methadion	950-37-8	Pesticide	Turkey	Europe	No
Methoprene	40596-69-8	Pesticide	Turkey	Europe	No
Metolachlor	51218-45-2	Pesticide	Turkey	Europe	No
Metominostrobin	133408-50-1	Pesticide	Turkey	Europe	No
Metosulam	139528-85-1	Pesticide	Turkey	Europe	No
Mevinphos	7786-34-7	Pesticide	Turkey	Europe	No
Monolinuron	1746-81-2	Pesticide	Turkey	Europe	No
Norfluzaron	27314-13-2	Pesticide	Turkey	Europe	No
Nuarimol	63284-71-9	Pesticide	Turkey	Europe	No
Ofurace	58810-48-3	Pesticide	Turkey	Europe	No
Omethoate	1113-02-6	Pesticide	Turkey	Europe	No
Oxadixyl	77732-09-3	Pesticide	Turkey	Europe	No
Oxamyl	23135-22-0	Pesticide	Turkey	Europe	No
Oine-copper	1038-28-6	Pesticide	Turkey	Europe	No
Oxycarboxin	559-88-1	Pesticide	Turkey	Europe	No
Oxymedeton-methyl	301-12-2	Pesticide	Turkey	Europe	No
Paraquat	4685-14-7	Pesticide	Turkey	Europe	No
Phenthoate	2597-03-7	Pesticide	Turkey	Europe	No
Phosalone	2310-17-0	Pesticide	Turkey	Europe	No
Phorate	296-0202	Pesticide	Turkey	Europe	Yes
Phosphoric acid	7664-38-2	Pesticide	Turkey	Europe	No
Primisulfuron-methyl	86209-51-0	Pesticide	Turkey	Europe	No
Procymidone	32809-16-8	Pesticide	Turkey	Europe	No
Profenofos	41198-08-7	Pesticide	Turkey	Europe	No
Prometryn	7287-19-6	Pesticide	Turkey	Europe	No
Propargite	2312-35-8	Pesticide	Turkey	Europe	No
Propanil	709-98-8	Pesticide	Turkey	Europe	No
Propoxur	114-26-1	Pesticide	Turkey	Europe	No
Prothiofos	34643-46-4	Pesticide	Turkey	Europe	No
Prothoate	2275-18-5	Pesticide	Turkey	Europe	No
Pyrazophos	13457-18-6	Pesticide	Turkey	Europe	No
Pyridaphenthion	119-12-0	Pesticide	Turkey	Europe	No
Pyrimidifen	105779-78-0	Pesticide	Turkey	Europe	No
Pyrithiobac-sodium	123343-16-8	Pesticide	Turkey	Europe	No
Quinalphos	13593-03-8	Pesticide	Turkey	Europe	No
Quintozene	82-68-8	Pesticide	Turkey	Europe	No
Resmethrin	10453-86-8	Pesticide	Turkey	Europe	No
Simazine	122-34-9	Pesticide	Turkey	Europe	No
Sodium cyanide	143-33-9	Pesticide	Turkey	Europe	No

Chemical name	CAS No.	Category	Country	Region	Annex III
TCMTB-Thiocyanic acid (2-benzothiazolylthio) methyl ester	21564-17-0	Pesticide	Turkey	Europe	No
Tebuthiuron	34014-18-1	Pesticide	Turkey	Europe	No
Terbutryn	886-50-0	Pesticide	Turkey	Europe	No
Tetardifon	116-29-0	Pesticide	Turkey	Europe	No
Thiazafluron	25366-23-8	Pesticide	Turkey	Europe	No
Tremolite asbestos	77536-68-6	Industrial	Turkey	Europe	Yes
Thiobencarb	28249-77-6	Pesticide	Turkey	Europe	No
Thiocyclam Hydrogen Oxalate	31895-22-4	Pesticide	Turkey	Europe	No
Thiodicarb	59669-26-0	Pesticide	Turkey	Europe	No
Thiometon	640-15-3	Pesticide	Turkey	Europe	No
Tolfenpyrad	129558-76-5	Pesticide	Turkey	Europe	No
Tralomethrin	66841-25-6	Pesticide	Turkey	Europe	No
Triadimefon	43121-43-3	Pesticide	Turkey	Europe	No
Triazamate	112143-82-5	Pesticide	Turkey	Europe	No
Triazophos	24017-47-8	Pesticide	Turkey	Europe	No
Tridemorph	81412-43-3	Pesticide	Turkey	Europe	No
Trifloxysulfuron-sodium	199119-58-9	Pesticide	Turkey	Europe	No
Trifluaralin	1582-09-8	Pesticide	Turkey	Europe	No
Triforine	26644-46-2	Pesticide	Turkey	Europe	No
Trimedlure	12002-53-8	Pesticide	Turkey	Europe	No
Vinclozolin	50471-44-8	Pesticide	Turkey	Europe	No
Zineb	12122-67-7	Pesticide	Turkey	Europe	No

APPENDIX II

PROPOSALS FOR INCLUSION OF SEVERELY HAZARDOUS PESTICIDE FORMULATIONS IN THE PIC PROCEDURE

PART A

SUMMARY OF EACH PROPOSAL FOR INCLUSION OF A SEVERELY HAZARDOUS PESTICIDE FORMULATION THAT HAS BEEN VERIFIED TO CONTAIN ALL INFORMATION REQUESTED BY PART 1 OF ANNEX IV TO THE CONVENTION

None.

PART B

PROPOSALS FOR INCLUSION OF SEVERELY HAZARDOUS PESTICIDE FORMULATIONS STILL UNDER VERIFICATION

None.

APPENDIX III

CHEMICALS SUBJECT TO THE PIC PROCEDURE

Chemical name	CAS No.	Category	Date of first dispatch of decision guidance document
2,4,5-T and its salts and esters	93-76-5[1]	Pesticide	Prior to adoption of Convention
Alachlor	15972-60-8	Pesticide	24 October 2011
Aldicarb	116-06-3	Pesticide	24 October 2011
Aldrin	309-00-2	Pesticide	Prior to adoption of Convention
Azinphos-methyl	86-50-0	Pesticide	10 August 2013
Binapacryl	485-31-4	Pesticide	1 February 2005
Captafol	2425-06-1	Pesticide	Prior to adoption of Convention
Carbofuran	1563-66-2	Pesticide	15 September 2017
Chlordane	57-74-9	Pesticide	Prior to adoption of Convention
Chlordimeform	6164-98-3	Pesticide	Prior to adoption of Convention
Chlorobenzilate	510-15-6	Pesticide	Prior to adoption of Convention
DDT	50-29-3	Pesticide	Prior to adoption of Convention
Dieldrin	60-57-1	Pesticide	Prior to adoption of Convention
Dinitro-*ortho*-cresol (DNOC) and its salts (such as ammonium salt, potassium salt and sodium salt)	534-52-1 2980-64-5 5787-96-2 2312-76-7	Pesticide	1 February 2005
Dinoseb and its salts and esters	88-85-7[1]	Pesticide	Prior to adoption of Convention
1,2-Dibromoethane (EDB)	106-93-4	Pesticide	Prior to adoption of Convention
Endosulfan	115-29-7	Pesticide	24 October 2011
Ethylene dichloride	107-06-2	Pesticide	1 February 2005
Ethylene oxide	75-21-8	Pesticide	1 February 2005
Fluoroacetamide	640-19-7	Pesticide	Prior to adoption of Convention
HCH (mixed isomers)	608-73-1	Pesticide	Prior to adoption of Convention
Heptachlor	76-44-8	Pesticide	Prior to adoption of Convention
Hexachlorobenzene	118-74-1	Pesticide	Prior to adoption of Convention
Lindane	58-89-9	Pesticide	Prior to adoption of Convention
Mercury compounds, including inorganic mercury compounds, alkyl mercury compounds and alkyloxyalkyl and aryl mercury compounds		Pesticide	Prior to adoption of Convention
Methamidophos	10265-92-6	Pesticide	15 September 2015[2]
Monocrotophos	6923-22-4	Pesticide	1 February 2005

Chemical name	CAS No.	Category	Date of first dispatch of decision guidance document
Parathion	56-38-2	Pesticide	1 February 2005
Pentachlorophenol and its salts and esters	87-86-5[1]	Pesticide	Prior to adoption of Convention
Phorate	298-02-2	Pesticide	16 September 2019
Toxaphene	8001-35-2	Pesticide	1 February 2005
All tributyltin compounds including: - Tributyltin oxide - Tributyltin fluoride - Tributyltin methacrylate - Tributyltin benzoate - Tributyltin chloride - Tributyltin linoleate - Tributyltin naphthenate	 56-35-9 1983-10-4 2155-70-6 4342-36-3 1461-22-9 24124-25-2 85409-17-2	Pesticide	1 February 2009[3]
Trichlorfon	52-68-6	Pesticide	15 September 2017
Dustable powder formulations containing a combination of: - Benomyl at or above 7%, - Carbofuran at or above 10%, - Thiram at or above 15%	 17804-35-2 1563-66-2 137-26-8	Severely hazardous pesticide formulation	1 February 2005
Phosphamidon (soluble liquid formulations of the substance that exceed 1000 g active ingredient/L)	13171-21-6 (mixture, (E)&(Z) isomers) 23783-98-4 ((Z)-isomer) 297-99-4 ((E)-isomer)	Severely hazardous pesticide formulation	Prior to adoption of Convention
Methyl-parathion (emulsifiable concentrates (EC) at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)	298-00-0	Severely hazardous pesticide formulation	Prior to adoption of Convention
Asbestos: - Actinolite - Anthophyllite - Amosite - Crocidolite - Tremolite	 77536-66-4 77536-67-5 12172-73-5 12001-28-4 77536-68-6	Industrial	 1 February 2005 1 February 2005 1 February 2005 Prior to adoption of Convention 1 February 2005
Commercial octabromodiphenyl ether including: - Hexabromodiphenyl ether - Heptabromodiphenyl ether	 36483-60-0 68928-80-3	Industrial	10 August 2013
Commercial pentabromodiphenyl ether including: - Tetrabromodiphenyl ether - Pentabromodiphenyl ether	 40088-47-9 32534-81-9	Industrial	10 August 2013
Hexabromocyclododecane	25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8	Industrial	16 September 2019

Chemical name	CAS No.	Category	Date of first dispatch of decision guidance document
Perfluorooctane sulfonic acid, perfluorooctane sulfonates, perfluorooctane sulfonamides and perfluorooctane sulfonyls including: - Perfluorooctane sulfonic acid - Potassium perfluorooctane sulfonate - Lithium perfluorooctane sulfonate - Ammonium perfluorooctane sulfonate - Diethanolammonium perfluorooctane sulfonate - Tetraethylammonium perfluorooctane sulfonate - Didecyldimethylammonium perfluorooctane sulfonate - N-Ethylperfluorooctane sulfonamide - N-Methylperfluorooctane sulfonamide - N-Ethyl-N-(2-hydroxyethyl) perfluorooctane sulfonamide - N-(2-Hydroxyethyl)-N-methylperfluorooctane sulfonamide - Perfluorooctane sulfonyl fluoride	 1763-23-1 2795-39-3 29457-72-5 29081-56-9 70225-14-8 56773-42-3 251099-16-8 4151-50-2 31506-32-8 1691-99-2 24448-09-7 307-35-7	Industrial	10 August 2013
Polybrominated biphenyls (PBB)	36355-01-8 (hexa-) 27858-07-7 (octa-) 13654-09-6 (deca-)	Industrial	Prior to adoption of Convention
Polychlorinated biphenyls (PCB)	1336-36-3	Industrial	Prior to adoption of Convention
Polychlorinated terphenyls (PCT)	61788-33-8	Industrial	Prior to adoption of Convention
Short-chain chlorinated paraffins	85535-84-8	Industrial	15 September 2017
Tetraethyl lead	78-00-2	Industrial	1 February 2005
Tetramethyl lead	75-74-1	Industrial	1 February 2005
All tributyltin compounds including: - Tributyltin oxide - Tributyltin fluoride - Tributyltin methacrylate - Tributyltin benzoate - Tributyltin chloride - Tributyltin linoleate - Tributyltin naphthenate	 56-35-9 1983-10-4 2155-70-6 4342-36-3 1461-22-9 24124-25-2 85409-17-2	Industrial	15 September 2017[4]
Tris(2,3-dibromopropyl) phosphate	126-72-7	Industrial	Prior to adoption of Convention

Notes:

1. Only the CAS numbers of parent compounds are listed. For a list of other relevant CAS numbers, reference may be made to the relevant decision guidance document.

2. The date relates to the date for the communication of the decision guidance document for the chemical currently included in Annex III and adopted by decision RC-7/4, which amended Annex III to list methamidophos and deleted a previous entry in Annex III for "methamidophos (soluble liquid formulations of the substance that exceed 600 g active ingredient/L)".

3. See the related entry for all tributyltin compounds within the industrial category. Tributyltin compounds were initially listed within the pesticide category by decision RC-4/5 and the initial decision guidance document communicated to Parties related solely to the pesticide category. Decision RC-8/5 subsequently amended Annex

III to list all tributyltin compounds also in the industrial category, with the amendment entering into force on 15 September 2017. A revised decision guidance document was also approved (see note 4).

4. This entry refers to the date for communication of the revised decision guidance document for tributyltin compounds, which relates to both the pesticide and industrial categories, which was approved by decision RC-8/5.

APPENDIX IV

LISTING OF ALL IMPORT RESPONSES RECEIVED FROM PARTIES AND CASES OF FAILURE TO SUBMIT RESPONSES

All import responses received from Parties and cases of failure to submit responses are available on the Convention website: http://www.pic.int/tabid/1370/language/en-US/Default.aspx.

The online database is presented with four tabs:

1. Import responses recently transmitted;
2. Import responses by Party;
3. Import responses by Chemical;
4. Cases of failure to submit responses.

The import responses received since the last PIC Circular (between 1 May 2020 and 31 October 2020) may be viewed under the first tab "Import responses recently transmitted". The overview of those import responses is available in this appendix.

All import responses, including latest and previously transmitted information, may be viewed under the second tab "Import responses by Party" or the third tab "Import responses by Chemical".

The cases of failure to submit responses are available under the fourth tab "Cases of failure to submit responses". It also includes the date on which the Secretariat first informed all Parties, through publication in the PIC Circular, of cases of failure to transmit a response.

OVERVIEW OF NEW IMPORT RESPONSES RECEIVED SINCE THE LAST PIC CIRCULAR

Pesticides

Alachlor
Australia
Costa Rica

Aldicarb
Costa Rica

Carbofuran
Malaysia
Saint Kitts and Nevis
United Arab Emirates

Endosulfan
Costa Rica

Phorate
Australia
Chile
China
Colombia
Japan
Malaysia
Qatar
Serbia

All tributyltin compounds
Malaysia
United Arab Emirates

Trichlorfon
Chile
Malaysia
United Arab Emirates

Severely hazardous pesticide formulations

Dustable powder formulations containing a combination of benomyl at or above 7%, carbofuran at or above 10% and thiram at or above 15%
Saint Kitts and Nevis

Industrial Chemicals

Actinolite asbestos
Sri Lanka

Amosite asbestos
Sri Lanka

Anthophyllite asbestos
Sri Lanka

Crocidolite asbestos
Sri Lanka[1]

Tremolite asbestos
Sri Lanka

Commercial octabromodiphenyl ether (including hexabromodiphenyl ether and heptabromodiphenyl ether)
Australia[2]

Commercial pentabromodiphenyl ether (including tetrabromodiphenyl ether and pentabromodiphenyl ether)
Australia[2]

Hexabromocyclododecane
Australia
China
Eritrea
Japan
Norway
Qatar
Serbia

Perfluorooctane sulfonic acid, perfluorooctane sulfonates, perfluorooctane sulfonamides and perfluorooctane sulfonyls
Australia[2]

Polybrominated biphenyls (PBB)
Sri Lanka

Polychlorinated terphenyls (PCT)
Sri Lanka

Short-chain chlorinated paraffins
Australia[3]

Tetraethyl lead
Saint Kitts and Nevis

Tetramethyl lead
Saint Kitts and Nevis
All tributyltin compounds
Eritrea
Tris(2,3-dibromopropyl) phosphate
Saint Kitts and Nevis

Notes:

1. A revision to the import response published in PIC Circular XXII (December 2005).
2. A revision to the import response published in PIC Circular XXXIX (June 2014).
3. A revision to the import response published in PIC Circular XLVIII (December 2018).

APPENDIX V

NOTIFICATIONS OF FINAL REGULATORY ACTION FOR CHEMICALS NOT LISTED IN ANNEX III

This appendix consists of two parts:

Part A: Notifications of final regulatory action for chemicals not listed in Annex III and verified as containing all the information required by Annex I to the Convention

The table lists all the notifications received during the interim PIC procedure and the current PIC procedure (September 1998 to 31 October 2020) verified as containing all the information required by Annex I to the Convention.

Part B: Notifications of final regulatory action for chemicals not listed in Annex III and verified as <u>not</u> containing all the information required by Annex I to the Convention

The table lists all the notifications received during the interim PIC procedure and the current PIC procedure (September 1998 to 31 October 2020) verified as not containing all the information required by Annex I to the Convent.

The information is also available on the Convention website.[20]

[20] http://www.pic.int/tabid/1368/language/en-US/Default.aspx.

Notifications of final regulatory action for chemicals not listed in Annex III

PART A

NOTIFICATIONS OF FINAL REGULATORY ACTION FOR CHEMICALS NOT LISTED IN ANNEX III AND VERIFIED AS CONTAINING ALL THE INFORMATION REQUIRED BY ANNEX I TO THE CONVENTION

Chemical name	CAS No.	Category	Country	Region	PIC Circular
1,1,1,2-Tetrachloroethane	630-20-6	Industrial	Latvia	Europe	XX
1,1,1-Trichloroethane	71-55-6	Industrial	Latvia	Europe	XX
1,1,2,2-Tetrachloroethane	79-34-5	Industrial	Latvia	Europe	XX
1,1,2-Trichloroethane	79-00-5	Industrial	Latvia	Europe	XX
1,1-Dichloroethylene	75-35-4	Industrial	Latvia	Europe	XX
1,3-Dichloropropene	542-75-6	Pesticide	European Union	Europe	XXXVI
1,3-Dichloropropene	542-75-6	Pesticide	Serbia	Europe	LII
2,4,5-TP (Silvex; Fenoprop)	93-72-1	Pesticide	Thailand	Asia	XIV
2,4,6-Tri-*tert*-butylphenol	732-26-3	Industrial	Japan	Asia	XXI
2,4-D	94-75-7	Pesticide	Norway	Europe	XIII
2,4-D-dimethylammonium	2008-39-1	Pesticide	Mozambique	Africa	LII
2-Ethyl-1,3-hexanediol	94-96-2	Pesticide	Thailand	Asia	XX
2-Naphthylamine	91-59-8	Industrial	Japan	Asia	XXI
2-Naphthylamine	91-59-8	Industrial	Republic of Korea	Asia	XX
2-Naphthylamine	91-59-8	Industrial	Latvia	Europe	XX
2-Naphthylamine	91-59-8	Industrial	Switzerland	Europe	XXIII
2-Nitrobenzaldehyde	552-89-6	Industrial	Latvia	Europe	XX
2-Propen-1-ol, reaction products with pentafluoroiodoethane tetrafluoroethylene telomer, dehydroiodinated, reaction products with epichlorohydrin and triethylenetetramine	464178-90-3	Industrial	Canada	North America	XLI
2-Propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with butyl 2-propenoate and 2,5 furandione, gamma-omega-perfluoro-C_{8-14}-alkyl esters, *tert*-Bu benzenecarboperoxoate-initiated	459415-06-6	Industrial	Canada	North America	XLI
2-Propenoic acid, 2-methyl-, hexadecyl ester, polymers with 2-hydroxyethyl methacrylate, gamma-omega-perfluoro-C_{10-16}-alkyl acrylate and stearyl methacrylate	203743-03-7	Industrial	Canada	North America	XLI
4-Aminobiphenyl	92-67-1	Industrial	Republic of Korea	Asia	XX
4-Aminobiphenyl	92-67-1	Industrial	Japan	Asia	XXI
4-Aminobiphenyl	92-67-1	Industrial	Latvia	Europe	XX
4-Aminobiphenyl	92-67-1	Industrial	Switzerland	Europe	XXIII
4-Nitrobiphenyl	92-93-3	Industrial	Japan	Asia	XXI
4-Nitrobiphenyl	92-93-3	Industrial	Latvia	Europe	XX
4-Nitrobiphenyl	92-93-3	Industrial	Switzerland	Europe	XXIII
Acephate	30560-19-1	Pesticide	European Union	Europe	XVIII
Acephate	30560-19-1	Pesticide	Serbia	Europe	LII
Acetochlor	34256-82-1	Pesticide	Burkina Faso	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Cabo Verde	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Chad	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Gambia	Africa	XLV

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Acetochlor	34256-82-1	Pesticide	Guinea-Bissau	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Mali	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Mauritania	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Niger	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Senegal	Africa	XLV
Acetochlor	34256-82-1	Pesticide	Togo	Africa	XLV
Acetochlor	34256-82-1	Pesticide	European Union	Europe	XLV
Acetochlor	34256-82-1	Pesticide	Serbia	Europe	LII
Acetochlor	34256-82-1	Pesticide	Bosnia and Herzegovina	Europe	XLIX
Allyl alcohol	107-18-6	Pesticide	Canada	North America	XXII
Alpha hexachlorocyclohexane	319-84-6	Pesticide	China	Asia	XLV
Alpha hexachlorocyclohexane	319-84-6	Industrial	Japan	Asia	XXXII
Alpha hexachlorocyclohexane	319-84-6	Pesticide	Japan	Asia	XXXIII
Aluminium phosphide	20859-73-8	Pesticide & Industrial	Japan	Asia	XX
Aminopyralid	150114-71-9	Pesticide	Norway	Europe	XXXIII
Amitraz	33089-61-1	Pesticide	Iran (Islamic Republic of)	Asia	XXX
Amitraz	33089-61-1	Pesticide	Bosnia and Herzegovina	Europe	LII
Amitraz	33089-61-1	Pesticide	European Union	Europe	XXI
Amitraz	33089-61-1	Pesticide	Syrian Arab Republic	Near East	XXXII
Amitrole	61-82-5	Pesticide	Thailand	Asia	XX
Amitrole	61-82-5	Pesticide	European Union	Europe	XLIX
Amitrole	61-82-5	Pesticide	Ecuador	Latin America and the Caribbean	LII
Ammonium hydrogen sulfide	12124-99-1	Industrial	Latvia	Europe	XX
Ammonium polysulfide	9080-17-5	Industrial	Latvia	Europe	XX
Anthracene oil	90640-80-5	Industrial	Latvia	Europe	XX
Aramite	140-57-8	Pesticide	Thailand	Asia	XIV
Arsenic compounds	7440-38-2	Industrial	Latvia	Europe	XX
Arsenic pentoxide	1303-28-2	Industrial	Republic of Korea	Asia	XX
Atrazine	1912-24-9	Pesticide	Cabo Verde	Africa	XLI
Atrazine	1912-24-9	Pesticide	Chad	Africa	XLI
Atrazine	1912-24-9	Pesticide	Gambia	Africa	XLI
Atrazine	1912-24-9	Pesticide	Mauritania	Africa	XLI
Atrazine	1912-24-9	Pesticide	Niger	Africa	XLI
Atrazine	1912-24-9	Pesticide	Senegal	Africa	XLI
Atrazine	1912-24-9	Pesticide	Togo	Africa	XLI
Atrazine	1912-24-9	Pesticide	European Union	Europe	XXI
Atrazine	1912-24-9	Pesticide	Uruguay	Latin America and the Caribbean	L
Azinphos-ethyl	2642-71-9	Pesticide	Iran (Islamic Republic of)	Asia	XLVI
Azinphos-ethyl	2642-71-9	Pesticide	Thailand	Asia	XIV
Benfuracarb	82560-54-1	Pesticide	European Union	Europe	XXXV
Benfuracarb	82560-54-1	Pesticide	Serbia	Europe	LII
Bentazon	25057-89-0	Pesticide	Norway	Europe	XIII
Benzene	71-43-2	Industrial	Latvia	Europe	XX
Benzidine	92-87-5	Industrial	Republic of Korea	Asia	XX
Benzidine	92-87-5	Industrial	Latvia	Europe	XX
Benzidine	92-87-5	Industrial	Jordan	Near East	XLII
Benzidine	92-87-5	Industrial	Canada	North America	XXI

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Benzidine	92-87-5	Industrial	Canada	North America	XXVIII
Benzidine and its salts	92-87-5	Industrial	India	Asia	XX
Benzidine and its salts	92-87-5	Industrial	Japan	Asia	XXI
Benzidine and its salts	92-87-5	Industrial	Switzerland	Europe	XXIII
Benzidine and its salts	92-87-5	Industrial	Jordan	Near East	XVIII
Beta cypermethrin	65731-84-2	Pesticide	European Union	Europe	L
Beta hexachlorocyclohexane	319-85-7	Pesticide	China	Asia	XLV
Beta hexachlorocyclohexane	319-85-7	Industrial	Japan	Asia	XXXII
Beta hexachlorocyclohexane	319-85-7	Pesticide	Japan	Asia	XXXIII
Beta hexachlorocyclohexane	319-85-7	Pesticide	Thailand	Asia	XX
Bifenthrin	82657-04-3	Pesticide	Netherlands	Europe	XIV
Bis(2-chloroethyl)ether	111-44-4	Industrial	Republic of Korea	Asia	XX
Bis(chloromethyl)ether	542-88-1	Industrial	Japan	Asia	XXI
Bis(chloromethyl)ether	542-88-1	Industrial	Republic of Korea	Asia	XX
Bis(chloromethyl)ether	542-88-1	Industrial	Canada	North America	XII
Bitertanol	55179-31-2	Pesticide	Norway	Europe	XXXV
Bromacil	314-40-9	Pesticide	Costa Rica	Latin America and the Caribbean	LII
Bromobenzylbromotoluene (DBBT)	99688-47-8	Industrial	Latvia	Europe	XX
Bromobenzylbromotoluene (DBBT)	99688-47-8	Industrial	Switzerland	Europe	XXIII
Bromochlorodifluoromethane (Halon 1211)	353-59-3	Industrial	Canada	North America	XIII
Bromochloromethane	74-97-5	Industrial	Thailand	Asia	XXIV
Bromotrifluoromethane	75-63-8	Industrial	Canada	North America	XII
Bromoxynil octanoate	1689-99-2	Pesticide	Norway	Europe	XIV
Bromuconazole	116255-48-2	Pesticide	Norway	Europe	XIII
Butralin	33629-47-9	Pesticide	European Union	Europe	XXXIII
Butralin	33629-47-9	Pesticide	Serbia	Europe	LII
Cadmium	7440-43-9	Industrial	Latvia	Europe	XX
Cadusafos	95465-99-9	Pesticide	European Union	Europe	XXXVI
Cadusafos	95465-99-9	Pesticide	Serbia	Europe	LII
Calcium arsenate	7778-44-1	Pesticide	Thailand	Asia	XIV
Carbaryl	63-25-2	Pesticide	Mozambique	Africa	LI
Carbaryl	63-25-2	Pesticide	Bosnia and Herzegovina	Europe	LII
Carbaryl	63-25-2	Pesticide	European Union	Europe	XXVI
Carbaryl	63-25-2	Pesticide	Jordan	Near East	XVIII
Carbaryl	63-25-2	Pesticide	Syrian Arab Republic	Near East	XXXII
Carbon tetrachloride	56-23-5	Industrial	Republic of Korea	Asia	XX
Carbon tetrachloride	56-23-5	Pesticide	Thailand	Asia	XX
Carbon tetrachloride	56-23-5	Industrial	Latvia	Europe	XX
Carbon tetrachloride	56-23-5	Pesticide & Industrial	Switzerland	Europe	XXI
Carbon tetrachloride	56-23-5	Pesticide	Ecuador	Latin America and the Caribbean	LII
Carbon tetrachloride	56-23-5	Industrial	Jordan	Near East	XLIV
Carbon tetrachloride	56-23-5	Pesticide & Industrial	Canada	North America	XII
Carbosulfan	55285-14-8	Pesticide	Burkina Faso	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	Cabo Verde	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	Chad	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	Gambia	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	Mauritania	Africa	XLI

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Carbosulfan	55285-14-8	Pesticide	Niger	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	Senegal	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	Togo	Africa	XLI
Carbosulfan	55285-14-8	Pesticide	European Union	Europe	XXXV
Carbosulfan	55285-14-8	Pesticide	Serbia	Europe	LII
Chloral hydrate	302-17-0	Pesticide	Netherlands	Europe	XIV
Chlorates (including but not limited to Na, Mg, K chlorates)	7775-09-9, 10326-21-3, 3811-04-9 and others	Pesticide	European Union	Europe	XXXVIII
Chlordecone	143-50-0	Pesticide	China	Asia	XLV
Chlordecone	143-50-0	Industrial	Japan	Asia	XXXII
Chlordecone	143-50-0	Pesticide	Japan	Asia	XXXIII
Chlordecone	143-50-0	Pesticide	Thailand	Asia	XIV
Chlordecone	143-50-0	Pesticide	Switzerland	Europe	XX
Chlordecone	143-50-0	Pesticide	Peru	Latin America and the Caribbean	XLV
Chlorfenapyr	122453-73-0	Pesticide	European Union	Europe	XVIII
Chlorfenapyr	122453-73-0	Pesticide	Serbia	Europe	LII
Chlorfenvinphos	470-90-6	Pesticide	Mozambique	Africa	LI
Chlorfenvinphos	470-90-6	Pesticide	Norway	Europe	XIII
Chlornitrofen	1836-77-7	Pesticide	Japan	Asia	XX
Chloroethylene	75-01-4	Industrial	Latvia	Europe	XX
Chlorofluorocarbon (totally halogenated)	75-69-4, 75-71-8, 76-13-1, 76-14-2, 76-15-3	Industrial	Canada	North America	XII
Chloroform	67-66-3	Industrial	Latvia	Europe	XX
Chloromethyl methyl ether	107-30-2	Industrial	Canada	North America	XXVIII
Chlorpyrifos	2921-88-2	Pesticide	Sri Lanka	Asia	XLIX
Chlorsulfuron	64902-72-3	Pesticide	Norway	Europe	XIII
Chlorthal-dimethyl	1861-32-1	Pesticide	European Union	Europe	XXXVII
Chlorthiophos	60238-56-4	Pesticide	Thailand	Asia	XIV
Chlozolinate	84332-86-5	Pesticide	European Union	Europe	XVI
Chrysotile asbestos	12001-29-5	Industrial	South Africa	Africa	XXX
Chrysotile asbestos	12001-29-5	Industrial	Iran (Islamic Republic of)	Asia	LII
Chrysotile asbestos	12001-29-5	Industrial	Japan	Asia	XXX
Chrysotile asbestos	12001-29-5	Industrial	Japan	Asia	XXV
Chrysotile asbestos	12001-29-5	Industrial	European Union	Europe	XIII
Chrysotile asbestos	12001-29-5	Industrial	Latvia	Europe	XX
Chrysotile asbestos	12001-29-5	Industrial	Switzerland	Europe	XXI
Chrysotile asbestos	12001-29-5	Industrial	Bulgaria	Europe	XXII
Chrysotile asbestos	12001-29-5	Industrial	Chile	Latin America and the Caribbean	XV
Chrysotile asbestos	12001-29-5	Industrial	Canada	North America	XLIX
Chrysotile asbestos	12001-29-5	Industrial	Australia	Southwest Pacific	XIX
Creosote	8001-58-9	Industrial	Latvia	Europe	XX
Creosote oil	61789-28-4	Industrial	Latvia	Europe	XX
Creosote oil, acenaphthene fraction	90640-84-9	Industrial	Latvia	Europe	XX
Creosote, wood	8021-39-4	Industrial	Latvia	Europe	XX
Cybutryne	28159-98-0	Pesticide	European Union	Europe	LI
Cycloheximide	66-81-9	Pesticide	Thailand	Asia	XIV
Cyhexatin	13121-70-5	Pesticide	Japan	Asia	XX

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Cyhexatin	13121-70-5	Pesticide	Brazil	Latin America and the Caribbean	XXXVI
Cyhexatin	13121-70-5	Pesticide	Canada	North America	XXII
DDD	72-54-8	Pesticide	Thailand	Asia	XX
Decabromodiphenyl ether	1163-19-5	Industrial	Japan	Asia	XLVIII
Decabromodiphenyl ether	1163-19-5	Industrial	Norway	Europe	XXXIX
Polybrominated diphenyl ethers (PBDEs)	40088-47-9**, 32534-81-9**, 36483-60-0**, 68928-80-3**, 32536-52-0, 63936-56-1, 1163-19-5	Industrial	Canada	North America	XLVIII
Demephion-*O*	682-80-4	Pesticide	Thailand	Asia	XIV
Demeton-methyl (isomeric mixture of demeton-*O*-methyl and demeton-*S*-methyl)	8022-00-2, 867-27-6, 919-86-8	Pesticide & Industrial	Japan	Asia	XX
DPX KE 459 (flupyrsulfuron methyl)	150315-10-9, 144740-54-5	Pesticide	European Union	Europe	LI
Diazinon	333-41-5	Pesticide	Bosnia and Herzegovina	Europe	L
Diazinon	333-41-5	Pesticide	European Union	Europe	XXXII
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	Pesticide	Thailand	Asia	XIV
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	Pesticide	Colombia	Latin America and the Caribbean	XLV
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	Pesticide	Ecuador	Latin America and the Caribbean	LII
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	Pesticide	Canada	North America	XXII
Dibromotetrafluoroethane	124-73-2	Industrial	Canada	North America	XIII
Dibutyltin hydrogen borate (DBB)	75113-37-0	Industrial	Latvia	Europe	XX
Dichlobenil	1194-65-6	Pesticide	Bosnia and Herzegovina	Europe	LII
Dichlobenil	1194-65-6	Pesticide	European Union	Europe	XXXVI
Dichlobenil	1194-65-6	Pesticide	Norway	Europe	XII
Dichloro[(dichlorophenyl) methyl]methylbenzene	76253-60-6	Industrial	Latvia	Europe	XX
Dichloro[(dichlorophenyl) methyl]methylbenzene	76253-60-6	Industrial	Switzerland	Europe	XXIII
Dichlorobenzyltoluene	81161-70-8	Industrial	Switzerland	Europe	XXIII
Dichlorophen	97-23-4	Pesticide	Thailand	Asia	XIV
Dichlorvos	62-73-7	Pesticide	European Union	Europe	XXXIV
Dichlorvos	62-73-7	Pesticide	Serbia	Europe	LII
Dicloran	99-30-9	Pesticide	European Union	Europe	XXXVI
Dicloran	99-30-9	Pesticide	Serbia	Europe	LII
Dicofol	115-32-2	Industrial	Japan	Asia	XXII
Dicofol	115-32-2	Industrial	Japan	Asia	XXXII
Dicofol	115-32-2	Pesticide	Japan	Asia	XXXIII
Dicofol	115-32-2	Pesticide	Netherlands	Europe	XXII
Dicofol	115-32-2	Pesticide	Romania	Europe	XX
Dicofol	115-32-2	Pesticide	Switzerland	Europe	XXIV
Dicofol	115-32-2	Pesticide	European Union	Europe	XXXIII
Dicrotophos	141-66-2	Pesticide	Jordan	Near East	XVIII
Diisobutyl phthalate	84-69-5	Industrial	European Union	Europe	LII
Dimefox	115-26-4	Pesticide	Thailand	Asia	XIV

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Dimefox	115-26-4	Pesticide	Jordan	Near East	XVIII
Dimethenamid	87674-68-8	Pesticide	European Union	Europe	XXVII
Diniconazole-*M*	83657-18-5	Pesticide	European Union	Europe	XXXIV
Dinoterb	1420-07-1	Pesticide	Thailand	Asia	XIV
Dinoterb	1420-07-1	Pesticide	European Union	Europe	XIV
Dinoterb	1420-07-1	Pesticide	Switzerland	Europe	XX
Diphenylamine	122-39-4	Pesticide	European Union	Europe	XXXIX
Distillates (coal tar), naphthalene oils	84650-04-4	Industrial	Latvia	Europe	XX
Distillates (coal tar), upper	65996-91-0	Industrial	Latvia	Europe	XX
Disulfoton	298-04-4	Pesticide	Thailand	Asia	XIV
Diuron	330-54-1	Pesticide	Mozambique	Africa	LII
Endosulfan	115-29-7**, 959-98-8, 33213-65-9	Pesticide* & Industrial	Japan	Asia	XLIV
Endrin	72-20-8	Pesticide & Industrial	Japan	Asia	XX
Endrin	72-20-8	Pesticide & Industrial	Republic of Korea	Asia	XX
Endrin	72-20-8	Pesticide	Bulgaria	Europe	XXII
Endrin	72-20-8	Pesticide	Romania	Europe	XX
Endrin	72-20-8	Pesticide	Switzerland	Europe	XX
Endrin	72-20-8	Pesticide	Ecuador	Latin America and the Caribbean	LII
Endrin	72-20-8	Pesticide	Peru	Latin America and the Caribbean	XIII
Endrin	72-20-8	Pesticide	Guyana	Latin America and the Caribbean	XXVI
Endrin	72-20-8	Pesticide	Uruguay	Latin America and the Caribbean	XXVIII
Endrin	72-20-8	Pesticide	Jordan	Near East	XVIII
Endrin	72-20-8	Pesticide	Canada	North America	XXII
Epoxiconazole	106325-08-0	Pesticide	Norway	Europe	XIII
EPTC	759-94-4	Pesticide	Norway	Europe	XIII
Ethylbromoacetate	105-36-2	Industrial	Latvia	Europe	XX
Extract residues (coal), low temp. coal tar alk	122384-78-5	Industrial	Latvia	Europe	XX
Fenarimol	60168-88-9	Pesticide	European Union	Europe	XXXVII
Fenitrothion	122-14-5	Pesticide	Bosnia and Herzegovina	Europe	LII
Fenitrothion	122-14-5	Pesticide	European Union	Europe	XXXII
Fensulfothion	115-90-2	Pesticide	Thailand	Asia	XIV
Fenthion	55-38-9	Pesticide	European Union	Europe	XXII
Fentin acetate	900-95-8	Pesticide	European Union	Europe	XVI
Fentin hydroxide	76-87-9	Pesticide	European Union	Europe	XVI
Ferbam	14484-64-1	Pesticide	Canada	North America	XLIX
Fipronil	120068-37-3	Pesticide	Cabo Verde	Africa	XLI
Fipronil	120068-37-3	Pesticide	Chad	Africa	XLI
Fipronil	120068-37-3	Pesticide	Gambia	Africa	XLI
Fipronil	120068-37-3	Pesticide	Mauritania	Africa	XLI
Fipronil	120068-37-3	Pesticide	Niger	Africa	XLI
Fipronil	120068-37-3	Pesticide	Senegal	Africa	XLI
Fipronil	120068-37-3	Pesticide	Togo	Africa	XLI
Fluazifop-*P*-butyl	79241-46-6	Pesticide	Norway	Europe	XIII
Fluazinam	79622-59-6	Pesticide	Norway	Europe	XXXII
Flufenoxuron	101463-69-8	Pesticide	European Union	Europe	XXXIX

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Fluopicolide	239110-15-7	Pesticide	Norway	Europe	XLIII
Fluoroacetic acid	144-49-0	Pesticide & Industrial	Japan	Asia	XX
Flurprimidol	56425-91-3	Pesticide	European Union	Europe	XXXVI
Folpet	133-07-3	Pesticide	Malaysia	Asia	XII
Fonofos	944-22-9	Pesticide	Thailand	Asia	XIV
Furfural	98-01-1	Pesticide	Mozambique	Africa	LI
Furfural	98-01-1	Pesticide	Canada	North America	XXII
Hexachlorobutadiene	87-68-3	Industrial	Japan	Asia	XXII
Hexachlorobenzene	118-74-1**	Industrial	China	Asia	XLII
Hexachlorobenzene	118-74-1**	Pesticide* & Industrial	Japan	Asia	XX
Hexachloroethane	67-72-1	Industrial	Latvia	Europe	XX
Hexachlorobenzene	118-74-1**	Pesticide* & Industrial	Panama	Latin America and the Caribbean	XIX
Hexachlorobutadiene	87-68-3	Industrial	Canada	North America	XXVIII
Hexachlorobenzene	118-74-1**	Industrial	Canada	North America	XXVIII
Hexane, 1,6-diisocyanato-, homopolymer, reaction products with alpha-fluoro-omega-2-hydroxyethyl-poly(difluoromethylene), C_{16-20}-branched alcohols and 1-octadecanol	Not available	Industrial	Canada	North America	XLI
Hexazinone	51235-04-2	Pesticide	Burkina Faso	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Cabo Verde	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Chad	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Gambia	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Guinea-Bissau	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Mali	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Mauritania	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Niger	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Senegal	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Togo	Africa	XLV
Hexazinone	51235-04-2	Pesticide	Norway	Europe	XIII
Imazalil	35554-44-0	Pesticide	Norway	Europe	XIII
Imazapyr	81334-34-1	Pesticide	Norway	Europe	XIV
Iprodione	36734-19-7	Pesticide	Mozambique	Africa	LI
Iprodione	36734-19-7	Pesticide	European Union	Europe	L
Isodrin	465-73-6	Pesticide	Switzerland	Europe	XX
Isoproturon	34123-59-6	Pesticide	European Union	Europe	LI
Isopyrazam	881685-58-1	Pesticide	Norway	Europe	XXXVII
Kelevan	4234-79-1	Pesticide	Switzerland	Europe	XX
Lead arsenate	7784-40-9	Pesticide	Japan	Asia	XX
Lead arsenate	7784-40-9	Pesticide	Peru	Latin America and the Caribbean	XXXV
Lead carbonate	598-63-0	Industrial	Latvia	Europe	XX
Lead carbonate	598-63-0	Industrial	Jordan	Near East	XXXVI
Lead hydroxycarbonate	1319-46-6	Industrial	Latvia	Europe	XX
Lead sulfate	15739-80-7	Industrial	Latvia	Europe	XX
Lead(II)sulfate	7446-14-2	Industrial	Latvia	Europe	XX
Leptophos	21609-90-5	Pesticide	Ecuador	Latin America and the Caribbean	LII
Lindane	58-89-9**	Industrial	China	Asia	L
Linuron	330-55-2	Pesticide	European Union	Europe	LI
Linuron	330-55-2	Pesticide	Norway	Europe	XXVI

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Malathion	121-75-5	Pesticide	Syrian Arab Republic	Near East	XXXII
Maleic hydrazide	123-33-1	Pesticide	Romania	Europe	XX
MCPA-thioethyl(phenothiol)	25319-90-8	Pesticide	Thailand	Asia	XIV
MCPB	94-81-5	Pesticide	Thailand	Asia	XIV
Mecoprop	7085-19-0	Pesticide	Thailand	Asia	XIV
Mephosfolan	950-10-7	Pesticide	Thailand	Asia	XIV
Mepiquat chloride	24307-26-4	Pesticide	Norway	Europe	XIII
Mercurous chloride (Calomel)	10112-91-1	Pesticide	Romania	Europe	XX
Mercury	7439-97-6	Industrial	Sweden	Europe	XLIX
Mercury	7439-97-6	Industrial	Colombia	Latin America and the Caribbean	LII
Metaldehyde	108-62-3, 9002-91-9	Pesticide	Norway	Europe	XLVII
Methazole	20354-26-1	Pesticide	Australia	Southwest Pacific	XII
Methidathion	950-37-8	Pesticide	Mozambique	Africa	LI
Methidathion	950-37-8	Pesticide	Uruguay	Latin America and the Caribbean	L
Methomyl	16752-77-5	Pesticide	Uruguay	Latin America and the Caribbean	L
Methyl bromide	74-83-9	Pesticide	Malawi	Africa	XXX
Methyl bromide	74-83-9	Pesticide & Industrial	Republic of Korea	Asia	XX
Methyl bromide	74-83-9	Pesticide	Netherlands	Europe	XV
Methyl bromide	74-83-9	Pesticide & Industrial	Switzerland	Europe	XXI
Methyl bromide	74-83-9	Pesticide	Colombia	Latin America and the Caribbean	LII
Methyl bromoacetate	96-32-2	Industrial	Latvia	Europe	XX
Methyl cellosolve	109-86-4	Industrial	Canada	North America	XXVIII
Methyl parathion	298-00-0	Pesticide	Côte d'Ivoire	Africa	XX
Methyl parathion	298-00-0	Pesticide	Gambia	Africa	XIX
Methyl parathion	298-00-0	Pesticide	Nigeria	Africa	XXI
Methyl parathion	298-00-0	Pesticide	China	Asia	L
Methyl parathion	298-00-0	Pesticide & Industrial	Japan	Asia	XX
Methyl parathion	298-00-0	Pesticide	Thailand	Asia	XXI
Methyl parathion	298-00-0	Pesticide	Bulgaria	Europe	XXII
Methyl parathion	298-00-0	Pesticide	European Union	Europe	XVIII
Methyl parathion	298-00-0	Pesticide	Brazil	Latin America and the Caribbean	XX
Methyl parathion	298-00-0	Pesticide	Dominican Republic	Latin America and the Caribbean	XXV
Methyl parathion	298-00-0	Pesticide	El Salvador	Latin America and the Caribbean	XX
Methyl parathion	298-00-0	Pesticide	Guyana	Latin America and the Caribbean	XXVI
Methyl parathion	298-00-0	Pesticide	Panama	Latin America and the Caribbean	XIX
Methyl parathion	298-00-0	Pesticide	Panama	Latin America and the Caribbean	XLVII
Methyl parathion	298-00-0	Pesticide	Uruguay	Latin America and the Caribbean	XXVIII
Methyl parathion	298-00-0	Pesticide	Uruguay	Latin America and the Caribbean	L
Mevinphos	26718-65-0	Pesticide	Thailand	Asia	XIV
Mevinphos	26718-65-0	Pesticide	Jordan	Near East	XVIII

Chemical name	CAS No.	Category	Country	Region	PIC Circular
MGK Repellent 11	126-15-8	Pesticide	Thailand	Asia	XX
Mirex	2385-85-5	Pesticide & Industrial	Japan	Asia	XXI
Mirex	2385-85-5	Pesticide	Thailand	Asia	XX
Mirex	2385-85-5	Pesticide	Bulgaria	Europe	XXII
Mirex	2385-85-5	Pesticide & Industrial	Switzerland	Europe	XXIII
Mirex	2385-85-5	Pesticide	Colombia	Latin America and the Caribbean	XLV
Mirex	2385-85-5	Pesticide	Cuba	Latin America and the Caribbean	XXVIII
Mirex	2385-85-5	Pesticide	Ecuador	Latin America and the Caribbean	LII
Mirex	2385-85-5	Pesticide	Guyana	Latin America and the Caribbean	XXVI
Mirex	2385-85-5	Pesticide	Uruguay	Latin America and the Caribbean	XXVIII
Mirex	2385-85-5	Industrial	Canada	North America	XII
Mirex	2385-85-5	Industrial	Canada	North America	XXVIII
Monomethyl dichlorodiphenyl methane	122808-61-1	Industrial	Latvia	Europe	XX
N,N'-Ditolyl-*p*-phenylenediamine; N,N'-Dixylyl-*p*-phenylenediamine; N-Tolyl-N'-xylyl-*p*-phenylenediamine	27417-40-9, 28726-30-9, 70290-05-0	Industrial	Japan	Asia	XXI
Naled	300-76-5	Pesticide	European Union	Europe	XXXIX
NCC ether	94097-88-8	Industrial	Canada	North America	XXVIII
Nickel	7440-02-0	Industrial	Latvia	Europe	XX
Nitrofen	1836-75-5	Pesticide	European Union	Europe	XVI
Nitrofen	1836-75-5	Pesticide	Romania	Europe	XX
N-Nitrosodimethylamine	62-75-9	Industrial	Canada	North America	XXVIII
Nonylphenol	11066-49-2, 25154-52-3, 84852-15-3, 90481-04-2	Pesticide & Industrial	European Union	Europe	XXIII
Nonylphenol ethoxylate	127087-87-0, 26027-38-3, 37205-87-1, 68412-54-4, 9016-45-9	Pesticide & Industrial	European Union	Europe	XXIII
Nonylphenols and nonylphenol ethoxylates	104-40-5, 11066-49-2, 127087-87-0, 25154-52-3, 26027-38-3, 37205-87-1, 68412-54-4, 84852-15-3, 9016-45-9, 90481-04-2	Pesticide	South Africa	Africa	XLVI

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Nonylphenols and nonylphenol ethoxylates	104-40-5, 11066-49-2, 25154-52-3, 84852-15-3, 90481-04-2, 127087-87-0, 26027-38-3, 37205-87-1, 68412-54-4, 9016-45-9	Pesticide & Industrial	Switzerland	Europe	XXXVI
Octylphenols and octylphenol ethoxylates	140-66-9, 1806-26-4, 27193-28-8, 68987-90-6, 9002-93-1, 9036-19-5	Pesticide & Industrial	Switzerland	Europe	XXXVI
Orthosulfamuron	213464-77-8	Pesticide	European Union	Europe	LI
Oxydemeton-methyl	301-12-2	Pesticide	European Union	Europe	XXX
Oxyfluorfen	42874-03-3	Pesticide	Mozambique	Africa	LII
Paraquat	4685-14-7	Pesticide	Mozambique	Africa	LII
Paraquat	4685-14-7	Pesticide	Togo	Africa	XLII
Paraquat	4685-14-7	Pesticide	Malaysia	Asia	LII
Paraquat	4685-14-7	Pesticide	Sri Lanka	Asia	XXVIII
Paraquat	4685-14-7	Pesticide	Sweden	Europe	XXIII
Paraquat dichloride	1910-42-5	Pesticide	Burkina Faso	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Cabo Verde	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Chad	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Mali	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Mauritania	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Niger	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Senegal	Africa	XXXV
Paraquat dichloride	1910-42-5	Pesticide	Sweden	Europe	XXIII
Paraquat dichloride	1910-42-5	Pesticide	Uruguay	Latin America and the Caribbean	XXVIII
Paraquat dimethyl,bis	2074-50-2	Pesticide	Sweden	Europe	XXIII
Paris green	12002-03-8	Pesticide	Thailand	Asia	XIV
Pendimethalin	40487-42-1	Pesticide	Norway	Europe	XXV
Pentachlorobenzene	608-93-5	Pesticide	China	Asia	XLV
Pentachlorobenzene	608-93-5	Industrial	Japan	Asia	XXXII
Pentachlorobenzene	608-93-5	Pesticide	Japan	Asia	XXXIII
Pentachloroethane	76-01-7	Industrial	Latvia	Europe	XX
Pentachlorobenzene	608-93-5	Industrial	Canada	North America	XXVIII
Pentachlorophenol and its salts and esters	87-86-5**, 131-52-2, 27735-64-4, 3772-94-9	Pesticide* & Industrial	Japan	Asia	XLIV

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Perfluorocarboxylic acids that have the molecular formula $C_nF_{2n+1}CO_2H$ in which $8 \leq n \leq 20$, their salts, and their precursors (LC-PFCAs)	375-95-1, 335-76-2, 2058-94-8, 307-55-1, 72629-94-8, 376-06-7, 141074-63-7, 67905-19-5, 57475-95-3, 16517-11-6, 133921-38-7, 68310-12-3 (list is not exhaustive)	Industrial	Canada	North America	XLVII
Perfluorooctane sulphonate (PFOS), its salts and perfluorooctanesulfonyl fluoride (PFOSF)	2795-39-3**, 70225-14-8**, 29081-56-9**, 29457-72-5**, 307-35-7**	Pesticide & Industrial*	China	Asia	XLV
Perfluorooctanoic acid (PFOA), its salts and PFOA related compounds	335-67-1, 45285-51-6, 3825-26-1, 90480-56-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 376-27-2, 3108-24-5 (list is not exhaustive)	Industrial	Canada	North America	XLVII
Perfluorooctanoic acid (PFOA), its salts and PFOA related compounds	335-67-1, 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 376-27-2, 3108-24-5	Industrial	Norway	Europe	XLI
Perfluorooctanoic acid (PFOA), its salts and PFOA related compounds	335-67-1, 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 376-27-2, 3108-24-5 (list is not exhaustive)	Industrial	Norway	Europe	LI
Permethrin	52645-53-1	Pesticide	Syrian Arab Republic	Near East	XXXII
Phenol, 2-(2*H*-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)-	3846-71-7	Industrial	Japan	Asia	XXVII
Phenthoate	2597-03-7	Pesticide	Malaysia	Asia	XLIV
Phosalone	2310-17-0	Pesticide	European Union	Europe	XXVII
Phosphamidon	13171-21-6	Pesticide	Côte d'Ivoire	Africa	XX
Phosphamidon	13171-21-6	Pesticide	China	Asia	L
Phosphamidon	13171-21-6	Pesticide & Industrial	Japan	Asia	XX
Phosphamidon	13171-21-6	Pesticide	Thailand	Asia	XIV

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Phosphamidon	13171-21-6	Pesticide	Brazil	Latin America and the Caribbean	XX
Phosphamidon	13171-21-6	Pesticide	Ecuador	Latin America and the Caribbean	LII
Phosphamidon	13171-21-6	Pesticide	Panama	Latin America and the Caribbean	XIX
Picoxystrobin	117428-22-5	Pesticide	European Union	Europe	L
Polychlorinated naphthalenes	70776-03-3	Industrial	Japan	Asia	XXI
Polychlorinated naphthalenes	28699-88-9, 1321-65-9, 1335-88-2, 1321-64-8, 1335-87-1, 32241-08-0, 2234-13-1	Industrial	Japan	Asia	XLIV
Polychlorinated naphthalenes	70776-03-3	Industrial	Canada	North America	XXXVIII
Polychloroterpenes	8001-50-1	Pesticide	Thailand	Asia	XX
Procymidone	32809-16-8	Pesticide	European Union	Europe	XXXVII
Profenofos	41198-08-7	Pesticide	Malaysia	Asia	XLIV
Propachlor	1918-16-7	Pesticide	European Union	Europe	XXXIII
Propachlor	1918-16-7	Pesticide	Norway	Europe	XXVI
Propanil	709-98-8	Pesticide	European Union	Europe	XXXIX
Propargite	2312-35-8	Pesticide	European Union	Europe	XXXIX
Propisochlor	86763-47-5	Pesticide	European Union	Europe	XXXVI
Propylbromoacetate	35223-80-4	Industrial	Latvia	Europe	XX
Prothiofos	34643-46-4	Pesticide	Malaysia	Asia	XLIV
Prothoate	2275-18-5	Pesticide	Thailand	Asia	XIV
Pymetrozine	123312-89-0	Pesticide	Norway	Europe	XXXIX
Pyrazophos	13457-18-6	Pesticide	European Union	Europe	XIII
Pyrinuron	53558-25-1	Pesticide	Thailand	Asia	XX
Quinalphos	13593-03-8	Pesticide	Malaysia	Asia	XLIV
Quintozene	82-68-8	Pesticide	European Union	Europe	XV
Quintozene	82-68-8	Pesticide	Romania	Europe	XX
Quintozene	82-68-8	Pesticide	Switzerland	Europe	XX
Schradan	152-16-9	Pesticide & Industrial	Japan	Asia	XX
Schradan	152-16-9	Pesticide	Thailand	Asia	XIV
Simazine	122-34-9	Pesticide	European Union	Europe	XXI
Simazine	122-34-9	Pesticide	Norway	Europe	XIII
Sodium arsenite	7784-46-5	Pesticide	Netherlands	Europe	XIV
Sodium fluoroacetate	62-74-8	Pesticide	Cuba	Latin America and the Caribbean	XXVIII
Sodium trichloroacetate	650-51-1	Pesticide	Netherlands	Europe	XIV
Sulfosulfurone	141776-32-1	Pesticide	Norway	Europe	XV
Sulfotep	3689-24-5	Pesticide	Thailand	Asia	XIV
Tar acids, coal, crude	65996-85-2	Industrial	Latvia	Europe	XX
Tecnazene	117-18-0	Pesticide	European Union	Europe	XV
Terbufos	13071-79-9	Pesticide	Mozambique	Africa	LI
Terbufos	13071-79-9	Pesticide	Canada	North America	XXVIII
Tetraethyl pyrophosphate (TEPP)	107-49-3	Pesticide & Industrial	Japan	Asia	XX
Tetrachlorobenzene	12408-10-5, 84713-12-2, 634-66-2, 634-90-2, 95-94-3	Industrial	Canada	North America	XXVIII

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Thallium acetate	563-68-8	Industrial	Republic of Korea	Asia	XX
Thallium nitrate	10102-45-1	Industrial	Republic of Korea	Asia	XX
Thallium sulphate	7446-18-6	Industrial	Republic of Korea	Asia	XX
Thallium sulphate	7446-18-6	Pesticide	Thailand	Asia	XX
Thiabendazole	148-79-8	Pesticide	Norway	Europe	XIII
Thiodicarb	59669-26-0	Pesticide	Mozambique	Africa	LI
Thiodicarb	59669-26-0	Pesticide	European Union	Europe	XXVII
Triasulfuron	82097-50-5	Pesticide	European Union	Europe	LI
Triazophos	24017-47-8	Pesticide	Cabo Verde	Africa	XLI
Triazophos	24017-47-8	Pesticide	Chad	Africa	XLI
Triazophos	24017-47-8	Pesticide	Gambia	Africa	XLI
Triazophos	24017-47-8	Pesticide	Malaysia	Asia	XLIV
Triazophos	24017-47-8	Pesticide	Mauritania	Africa	XLI
Triazophos	24017-47-8	Pesticide	Niger	Africa	XLI
Triazophos	24017-47-8	Pesticide	Senegal	Africa	XLI
Triazophos	24017-47-8	Pesticide	Togo	Africa	XLI
Tribufos	78-48-8	Pesticide	Australia	Southwest Pacific	XIII
Tributyl tetradecyl phosphonium chloride	81741-28-8	Industrial	Canada	North America	XIII
Triclosan	3380-34-5	Pesticide	European Union	Europe	LI
Tricyclazole	41814-78-2	Pesticide	European Union	Europe	LI
Trifluralin	1582-09-8	Pesticide	European Union	Europe	XXXVI
Tris-(1-aziridinyl)phosphine oxide	545-55-1	Industrial	Latvia	Europe	XX
Tris-(1-aziridinyl)phosphine oxide	545-55-1	Industrial	Switzerland	Europe	XXIII
Tris(2-chloroethyl) phosphate	115-96-8	Industrial	European Union	Europe	LII
Vinclozolin	50471-44-8	Pesticide	Norway	Europe	XIII
Vinclozolin	50471-44-8	Pesticide	Jordan	Near East	XVIII
Zineb	12122-67-7	Pesticide	Ecuador	Latin America and the Caribbean	XX

* The chemical is listed in Annex III under this category.

** The chemical is listed in Annex III under this CAS number.

Notifications of final regulatory action for chemicals not listed in Annex III

PART B

NOTIFICATIONS OF FINAL REGULATORY ACTION FOR CHEMICALS NOT LISTED IN ANNEX III AND VERIFIED AS NOT CONTAINING ALL THE INFORMATION REQUIRED BY ANNEX I TO THE CONVENTION

Chemical name	CAS No.	Category	Country	Region	PIC Circular
1,2-Dichloropropane	78-87-5	Pesticide	Saudi Arabia	Near East	XXXII
1,4-Dichlorobenzene	106-46-7	Pesticide	Israel	Europe	XXXV
1-Bromo-2-chloroethane	107-04-0	Pesticide	Saudi Arabia	Near East	XXXII
2-(2,4,5-Trichlorephenoxy)ethyl 2,2-dichloropropanoate	136-25-4	Pesticide	Saudi Arabia	Near East	XXVII
2,4,5-TP (Silvex; Fenoprop)	93-72-1	Pesticide	Saudi Arabia	Near East	XXXII
2,4,5-Trichlorophenol	95-95-4	Pesticide	Ecuador	Latin America and the Caribbean	XLVII
Acephate	30560-19-1	Pesticide	Oman	Near East	XXXIX
Acrolein	107-02-8	Pesticide	Saudi Arabia	Near East	XXXII
Acrylonitrile	107-13-1	Pesticide	Saudi Arabia	Near East	XXVII
Amitraz	33089-61-1	Pesticide	Oman	Near East	XXXIX
Amitrole	61-82-5	Pesticide	Oman	Near East	XXXIX
Amitrole	61-82-5	Pesticide	Saudi Arabia	Near East	XXVII
Atrazine	1912-24-9	Pesticide	Oman	Near East	XXXIX
Azinphos-ethyl	2642-71-9	Pesticide	Saudi Arabia	Near East	XXVII
Bendiocarb	22781-23-3	Pesticide	Saudi Arabia	Near East	XXVII
Benomyl	17804-35-2	Pesticide	Ecuador	Latin America and the Caribbean	XLVII
Benomyl	17804-35-2	Pesticide	Oman	Near East	XXXIX
Benomyl	17804-35-2	Pesticide	Saudi Arabia	Near East	XXXVIII
Bifenthrin	82657-04-3	Pesticide	Oman	Near East	XXXIX
Bromadiolone	28772-56-7	Pesticide	Oman	Near East	XXXIX
Bromadiolone	28772-56-7	Pesticide	Saudi Arabia	Near East	XXXVIII
Bromofos-ethyl	4824-78-6	Pesticide	Oman	Near East	XXXIX
Bromofos-ethyl	4824-78-6	Pesticide	Saudi Arabia	Near East	XXVII
Cadmium	7440-43-9	Pesticide	Thailand	Asia	XX
Cadusafos	95465-99-9	Pesticide	Oman	Near East	XXXIX
Calcium cyanide	592-01-8	Pesticide	Saudi Arabia	Near East	XXVII
Captan	133-06-2	Pesticide	Oman	Near East	
Captan	133-06-2	Pesticide	Saudi Arabia	Near East	XXVII
Carbaryl	63-25-2	Pesticide	El Salvador	Latin America and the Caribbean	XXVII
Carbaryl	63-25-2	Pesticide	Saudi Arabia	Near East	XXXVIII
Chloranil	118-75-2	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Chloranil	118-75-2	Pesticide	Saudi Arabia	Near East	XXXII
Chlordecone	143-50-0	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Chlordecone	143-50-0	Pesticide	Saudi Arabia	Near East	XXXII
Chlormephos	24934-91-6	Pesticide	Oman	Near East	XXXIX
Chlormephos	24934-91-6	Pesticide	Saudi Arabia	Near East	XXVII
Chloropicrin	76-06-2	Pesticide	Oman	Near East	XXXIX
Chloropicrin	76-06-2	Pesticide	Saudi Arabia	Near East	XXVII
Chlorothalonil	1897-45-6	Pesticide	Saudi Arabia	Near East	XXXVIII
Chlorpyrifos	2921-88-2	Pesticide	Saudi Arabia	Near East	XXXVIII
Chlorthiophos	60238-56-4	Pesticide	Saudi Arabia	Near East	XXVII

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Chrysotile asbestos	12001-29-5	Industrial	El Salvador	Latin America and the Caribbean	XXVII
Copper arsenate hydroxide	16102-92-4	Pesticide	Thailand	Asia	XX
Cyanazine	21725-46-2	Pesticide	Oman	Near East	XXXIX
Cyanophos	2636-26-2	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Cycloheximide	66-81-9	Pesticide	Saudi Arabia	Near East	XXVII
Cyhexatin	13121-70-5	Pesticide	Saudi Arabia	Near East	XXXII
Daminozide	1596-84-5	Pesticide	Saudi Arabia	Near East	XXXII
DDD	72-54-8	Pesticide	Saudi Arabia	Near East	XXVII
Demeton-*S*-methyl	919-86-8	Pesticide	Oman	Near East	XXXIX
Demeton-*S*-methyl	919-86-8	Pesticide	Saudi Arabia	Near East	XXXVIII
Dialifos	10311-84-9	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
DBCP (1,2-dibromo-3-chloropropane)	96-12-8	Pesticide	Saudi Arabia	Near East	XXVII
Dichlorvos	62-73-7	Pesticide	Saudi Arabia	Near East	XXVII
Diclofop-methyl	51338-27-3	Pesticide	Saudi Arabia	Near East	XXXII
Dicofol	115-32-2	Pesticide	Oman	Near East	XXXIX
Dicofol	115-32-2	Pesticide	Saudi Arabia	Near East	XXXVIII
Dicrotophos	141-66-2	Pesticide	Oman	Near East	XXXIX
Dicrotophos	141-66-2	Pesticide	Saudi Arabia	Near East	XXVII
Diflubenzuron	35367-38-5	Pesticide	Oman	Near East	XXXIX
Dimefox	115-26-4	Pesticide	Oman	Near East	XXXIX
Dimefox	115-26-4	Pesticide	Saudi Arabia	Near East	XXVII
Dimethoate	60-51-5	Pesticide	Saudi Arabia	Near East	XXXVIII
Dimethylarsinic acid	75-60-5	Pesticide	Israel	Europe	XXXV
Dinitramine	29091-05-2	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Dinitramine	29091-05-2	Pesticide	Saudi Arabia	Near East	XXVII
Disulfoton	298-04-4	Pesticide	Oman	Near East	XXXIX
Disulfoton	298-04-4	Pesticide	Saudi Arabia	Near East	XXVII
Endrin	72-20-8	Pesticide	Nepal	Asia	XLII
Endrin	72-20-8	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Endrin	72-20-8	Pesticide	Saudi Arabia	Near East	XXVII
EPN	2104-64-5	Pesticide	Saudi Arabia	Near East	XXVII
Erbon	136-25-4	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Erbon	136-25-4	Pesticide	Saudi Arabia	Near East	XXXII
Ethephon	16672-87-0	Pesticide	Saudi Arabia	Near East	XXVII
Ethoprophos	13194-48-4	Pesticide	Oman	Near East	XXXIX
Ethoprophos	13194-48-4	Pesticide	Saudi Arabia	Near East	XXXVIII
Ethylan	72-56-0	Pesticide	Saudi Arabia	Near East	XXVII
Ethylmercury chloride	107-27-7	Pesticide	Armenia	Europe	XII
Fenamiphos	22224-92-6	Pesticide	Oman	Near East	XXXIX
Fenamiphos	22224-92-6	Pesticide	Saudi Arabia	Near East	XXVII
Fenthion	55-38-9	Pesticide	Oman	Near East	XXXIX
Fentin acetate	115-90-2	Pesticide	Saudi Arabia	Near East	XXVII
Fipronil	120068-37-3	Pesticide	Oman	Near East	XXXIX
Flucythrinate	70124-77-5	Pesticide	Oman	Near East	XXXIX
Fluorine	7782-41-4	Pesticide	Saudi Arabia	Near East	XXVII
Folpet	133-07-3	Pesticide	Saudi Arabia	Near East	XXVII

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Fonofos	944-22-9	Pesticide	Oman	Near East	XXXIX
Fonofos	944-22-9	Pesticide	Saudi Arabia	Near East	XXVII
Formothion	2540-82-1	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Fosthietan	21548-32-3	Pesticide	Oman	Near East	XXXIX
Fosthietan	21548-32-3	Pesticide	Saudi Arabia	Near East	XXVII
Granosan M	2235-25-8	Pesticide	Armenia	Europe	XII
Hexaethyl tetra phosphate	757-58-4	Pesticide	Saudi Arabia	Near East	XXVII
Hydrogen cyanide	74-90-8	Pesticide	Saudi Arabia	Near East	XXVII
Lead arsenate	7784-40-9	Pesticide	Togo	Africa	XLII
Lead arsenate	7784-40-9	Pesticide	Thailand	Asia	XX
Leptophos	21609-90-5	Pesticide	Saudi Arabia	Near East	XXVII
Linuron	330-55-2	Pesticide	Oman	Near East	XXXIX
Mancozeb	8018-01-7	Pesticide	Saudi Arabia	Near East	XXXVIII
Mephosfolan	950-10-7	Pesticide	Oman	Near East	XXXIX
Mephosfolan	950-10-7	Pesticide	Saudi Arabia	Near East	XXVII
Metham sodium	137-42-8	Pesticide	Saudi Arabia	Near East	XXVII
Methidathion	950-37-8	Pesticide	Oman	Near East	XXXIX
Methiocarb	2032-65-7	Pesticide	Saudi Arabia	Near East	XXXVIII
Methomyl	16752-77-5	Pesticide	Saudi Arabia	Near East	XXXVIII
Methoxychlor	72-43-5	Pesticide	Oman	Near East	XXXIX
Methoxychlor	72-43-5	Pesticide	Saudi Arabia	Near East	XXXVIII
Methyl parathion	298-00-0	Pesticide	Cameroon	Africa	XVIII
Methyl parathion	298-00-0	Pesticide	Peru	Latin America and the Caribbean	XLVIII
Mevinphos	7786-34-7	Pesticide	Oman	Near East	XXXIX
Mevinphos	7786-34-7	Pesticide	Saudi Arabia	Near East	XXVII
Mirex	2385-85-5	Pesticide	Nepal	Asia	XLII
Mirex	2385-85-5	Pesticide	El Salvador	Latin America and the Caribbean	XXVII
Mirex	2385-85-5	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Mirex	2385-85-5	Pesticide	Peru	Latin America and the Caribbean	XXXVI
Mirex	2385-85-5	Pesticide	Saudi Arabia	Near East	XXVII
Monuron	150-68-5	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Nicotine	54-11-5	Pesticide	Oman	Near East	XXXIX
Nitrofen	1836-75-5	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Oxydemeton-methyl	301-12-2	Pesticide	Oman	Near East	XXXIX
Oxydemeton-methyl	301-12-2	Pesticide	Saudi Arabia	Near East	XXXVIII
Paraquat	4685-14-7	Pesticide	Saudi Arabia	Near East	XXVII
Paraquat dichloride	1910-42-5	Pesticide	Oman	Near East	XXXIX
Phenylmercury acetate	62-38-4	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Phosfolan	947-02-4	Pesticide	Saudi Arabia	Near East	XXVII
Phosphamidon	13171-21-6	Pesticide	Peru	Latin America and the Caribbean	XLVIII
Phosphonic diamide, *p*-(5-amino-3-phenyl-1*H*-1,2,4-triazol-1-yl)-N,N,N',N'-tetramethyl-	1031-47-6	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Polychloroterpenes	8001-50-1	Pesticide	Saudi Arabia	Near East	XXVII

Chemical name	CAS No.	Category	Country	Region	PIC Circular
Polyoxyethylene alkylphenol ether	9016-45-9, 26027-38-3, 9002-93-1, 9036-19-5 (list is not exhaustive)	Industrial	China	Asia	LII
Propargite	2312-35-8	Pesticide	Saudi Arabia	Near East	XXXVIII
Propoxur	114-26-1	Pesticide	Saudi Arabia	Near East	XXXVIII
Prothoate	2275-18-5	Pesticide	Saudi Arabia	Near East	XXVII
Quintozene	82-68-8	Pesticide	Japan	Asia	XX
Quintozene	82-68-8	Pesticide	Saudi Arabia	Near East	XXXVIII
Quintozene	82-68-8	Pesticide	Oman	Near East	XXXIX
Safrole	94-59-7	Pesticide	Thailand	Asia	XX
Schradan	152-16-9	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Schradan	152-16-9	Pesticide	Saudi Arabia	Near East	XXVII
Simazine	122-34-9	Pesticide	Oman	Near East	XXXIX
Simazine	122-34-9	Pesticide	Saudi Arabia	Near East	XXXVIII
Sodium cyanide	143-33-9	Pesticide	Saudi Arabia	Near East	XXVII
Sodium dimethylarsinate	124-65-2	Pesticide	Israel	Europe	XXXV
Sodium fluoroacetate	62-74-8	Pesticide	Mexico	Latin America and the Caribbean	XXVIII
Sodium fluoroacetate	62-74-8	Pesticide	Saudi Arabia	Near East	XXVII
Tefluthrin	79538-32-2	Pesticide	Oman	Near East	XXXIX
TEPP	107-49-3	Pesticide	Saudi Arabia	Near East	XXVII
Terbufos	13071-79-9	Pesticide	Saudi Arabia	Near East	XXVII
Tetradifon	116-29-0	Pesticide	Saudi Arabia	Near East	XXXVIII
Thallium sulphate	7446-18-6	Pesticide	Saudi Arabia	Near East	XXVII
Thionazin	297-97-2	Pesticide	Saudi Arabia	Near East	XXVII
Thiram	137-26-8	Pesticide	Ecuador	Latin America and the Caribbean	XLVII
Zineb	12122-67-7	Pesticide	Oman	Near East	XXXIX
Zineb	12122-67-7	Pesticide	Saudi Arabia	Near East	XXXVIII

APPENDIX VI

INFORMATION EXCHANGE ON CHEMICALS RECOMMENDED BY THE CHEMICAL REVIEW COMMITTEE FOR LISTING IN ANNEX III BUT FOR WHICH THE CONFERENCE OF THE PARTIES HAS YET TO TAKE A FINAL DECISION

In line with decisions[21] RC-3/3, RC-4/4, RC-6/8, RC-8/6, RC-8/7, RC-9/5 and paragraph 1 of Article 14, appendix VI has been prepared to facilitate information exchange on chemicals that have been recommended for listing in Annex III to the Convention by the Chemical Review Committee but for which the Conference of the Parties has yet to take a final decision.

This appendix consists of two parts:

Part A provides a reference to the information that has been submitted by Parties on their decisions concerning the management of these chemicals.

Part B is a list of decisions on the import of these chemicals submitted by Parties. These import decisions are circulated for information only and do not constitute part of the legally binding PIC procedure.

Further information on these chemicals is available on the Convention website,[22] including the notifications of final regulatory action and supporting documentation made available to the Chemical Review Committee and the draft decision guidance documents.

[21] http://www.pic.int/tabid/1728/language/en-US/Default.aspx.

[22] http://www.pic.int/tabid/1185/language/en-US/Default.aspx.

PART A

DECISIONS CONCERNING THE MANAGEMENT OF THE CHEMICALS RECOMMENDED BY THE CHEMICAL REVIEW COMMITTEE FOR LISTING IN ANNEX III BUT FOR WHICH THE CONFERENCE OF THE PARTIES HAS YET TO TAKE A FINAL DECISION

The information on decisions by Parties concerning the management of the chemicals recommended by the Chemical Review Committee for listing in Annex III, for which the Conference of the Parties has not yet taken a final decision, can be found in the following webpages of the RC website www.pic.int:

- The Convention/Chemicals/Recommended for listing; and
- Countries/Country profiles, "Submissions" tab section of the respective Country profile, as indicated in the following tables.

Acetochlor (CAS No: 34256-82-1)		
PIC REGION: PARTY	**CATEGORY**	**INFORMATION ON REGULATORY AND MANAGEMENT DECISIONS**
Africa: Burkina Faso, Cabo Verde, Chad, Gambia, Guinea-Bissau, Mali, Mauritania, Niger, Senegal, Togo	Pesticide	**Chemical webpage:** http://www.pic.int/tabid/7596/language/en-US/Default.aspx **Country profiles:** http://www.pic.int/tabid/1087/language/en-US/Default.aspx
Europe: Bosnia and Herzegovina, European Union, Serbia	Pesticide	

Carbosulfan (CAS No: 55285-14-8)		
PIC REGION: PARTY	**CATEGORY**	**INFORMATION ON REGULATORY AND MANAGEMENT DECISIONS**
Africa: Burkina Faso, Cabo Verde, Chad, Gambia, Mauritania, Niger, Senegal, Togo	Pesticide	**Chemical webpage:** http://www.pic.int/tabid/5393/language/en-US/Default.aspx **Country profiles:** http://www.pic.int/tabid/1087/language/en-US/Default.aspx
Europe: European Union, Serbia	Pesticide	

Fenthion (ultra-low volume (ULV) formulations at or above 640 g active ingredient/L) (CAS No: 55-38-9)		
PIC REGION: PARTY	**CATEGORY**	**INFORMATION ON REGULATORY AND MANAGEMENT DECISIONS**
Africa: Chad	Severely hazardous pesticide formulation	**Chemical webpage:** http://www.pic.int/tabid/4339/language/en-US/Default.aspx **Country profile:** http://www.pic.int/tabid/1087/language/en-US/Default.aspx

Liquid formulations (emulsifiable concentrate and soluble concentrate) containing paraquat dichloride at or above 276 g/L, corresponding to paraquat ion at or above 200 g/L (CAS No: 1910-42-5)		
PIC REGION: PARTY	**CATEGORY**	**INFORMATION ON REGULATORY AND MANAGEMENT DECISIONS**
Africa: Burkina Faso	Severely hazardous pesticide formulation	**Chemical webpage:** http://www.pic.int/tabid/2396/language/en-US/Default.aspx **Country profiles:** http://www.pic.int/tabid/1087/language/en-US/Default.aspx

Chrysotile asbestos (CAS No: 12001-29-5)		
PIC REGION: PARTY	**CATEGORY**	**INFORMATION ON REGULATORY AND MANAGEMENT DECISIONS**
Africa: South Africa	Industrial	**Chemical webpage:** http://www.pic.int/tabid/1186/language/en-US/Default.aspx **Country profiles:** http://www.pic.int/tabid/1087/language/en-US/Default.aspx
Asia: Iran (Islamic Republic of), Japan	Industrial	
Europe: Bulgaria, Latvia, European Union, Switzerland	Industrial	
Latin America and the Caribbean: Chile, El Salvador	Industrial	
North America: Canada	Industrial	
Southwest Pacific: Australia	Industrial	

PART B

IMPORT DECISIONS ON THE CHEMICALS RECOMMENDED BY THE CHEMICAL REVIEW COMMITTEE FOR LISTING IN ANNEX III BUT FOR WHICH THE CONFERENCE OF THE PARTIES HAS YET TO TAKE A FINAL DECISION

Chrysotile asbestos (CAS No: 12001-29-5)		
PARTY	**IMPORT DECISION**	**DATE RECEIVED**
Canada	Consent to import only subject to specified conditions: The *Prohibition of Asbestos and Products Containing Asbestos Regulations* do not prohibit the: • Import and use of asbestos in the chlor-alkali industry (until December 31, 2029); • Import, sale and use of products containing asbestos to service equipment in nuclear facilities if no technically or economically feasible asbestos-free alternative is available (until December 31, 2022); • Import, sale and use of products containing asbestos to service military equipment if no technically or economically feasible asbestos-free alternative is available (until December 31, 2022); • Import, sale and use, under the authority of a permit, of products containing asbestos to service military equipment or equipment of a nuclear facility if there was no technically or economically feasible asbestos-free alternative available at the time the permit application was submitted (after December 31, 2022); • Import, sale and use of military equipment serviced with a product containing asbestos while it was outside of Canada for the purpose of a military operation if no technically or economically feasible asbestos-free alternative is available; • Import, sale and use of asbestos and products containing asbestos for the purpose of display in a museum; • Import, sale and use of asbestos and products containing asbestos for scientific research, for sample characterization or as an analytical standard in a laboratory; • Transfer of physical possession or control of asbestos or a product containing asbestos to allow its disposal; and • Import, use and sale, under the authority of a permit, of asbestos and products containing asbestos to protect the environment or human health if there was no technically or economically feasible asbestos-free alternative available at the time the permit application was submitted. Administrative measure: *Prohibition of Asbestos and Products Containing Asbestos Regulations*. P.C. 2018-1210, 28 September, 2018, SOR/2018-196, Canada Gazette, Part 11, vol. 152, no. 21, p.3405, October 17, 2018. http://gazette.gc.ca/rp-pr/p2/2018/2018-10-17/html/sor-dors196-eng.html The above named regulations prohibit the import, sale and use of asbestos, as well as the manufacture, import, sale and use of products containing asbestos, with a limited number of exclusions, see "Other remarks" section. Other remarks: In addition to the exclusions mentioned above, the *Prohibition of Asbestos and Products Containing Asbestos Regulations* (the Regulations) do not apply to:	25 April 2019

Chrysotile asbestos (CAS No: 12001-29-5)		
PARTY	**IMPORT DECISION**	**DATE RECEIVED**
	• Asbestos or a product containing asbestos that is in transit through Canada, from a place outside Canada to another place outside Canada. • Asbestos that is integrated into a structure or infrastructure if the integration occurred before the day on which these Regulations came into force (December 30, 2018). • A product containing asbestos used before the day on which these Regulations came into force (December 30, 2018). • Pest control products (as defined in subsection 2(1) of the *Pest Control Products Act*), as pest control products are regulated under this Act. The Regulations do not apply to mining residues except for the following activities, which are prohibited: • The sale of asbestos mining residues for use in construction and landscaping, unless the use is authorized by the province in which the construction or landscaping occurs; and The use of asbestos mining residues to manufacture a product that contains asbestos.	
European Union	Consent to import only subject to specified conditions: The manufacture, placing on the market and use of chrysotile asbestos fibres and of articles containing these fibres added intentionally is prohibited. However, Member States may exempt the placing on the market and use of diaphragms containing chrysotile for existing electrolysis installations until they reach the end of their service life, or until suitable asbestos-free substitutes become available, whichever is the sooner. By 1 June 2011 Member States making use of this exemption shall provide a report to the Commission. The Commission shall ask the European Chemicals agency to prepare a dossier with a view to prohibit the placing on the market and use of diaphragms containing chrysotile. Administrative measure: The chemical was prohibited (with the one limited derogation referred to section 5.3 above) by Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the registration, evaluation, authorisation and restriction of chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (Official Journal of the European Communities (OJ) L396 of 30 December 2006, p. 1) as amended by Commission Regulation (EC) No 552/2009 of 22 June 2009 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards Annex XVII (OJ L 164 of 22 June 2009, p. 7).	6 October 2009

Liquid formulations (emulsifiable concentrate and soluble concentrate) containing paraquat dichloride at or above 276 g/L, corresponding to paraquat ion at or above 200 g/L (CAS No: 1910-42-5)		
PARTY	**IMPORT DECISION**	**DATE RECEIVED**
Qatar	No consent to import Administrative measure: (*) Ministry of Environment to perform all the tasks and actions to protect the environment in the country, According to the law No. 30 of 2002 Article (26). Prohibiting the import or handling or transport of hazadous materials, without authorization from the competent administrative authority, and article (29) or law No. 30 of 2002 Provides (spray or prohibited the use of pesticides or other chemical compounds for agriculture, public health or other purposes but after taking into account the requirements and checks and balances defined by the regulations, to ensure that human, animal or plant or watercourses or other components of the environment directly or indirectly on the spot or future adverse impacts of pesticides or chemical compounds (*)Law No. 24 of 2010 Promulgating the Law (Regulation) of Pesticides in the States of the Cooperation Council for the Arab State of the Gulf.	2 November 2015

Fenthion (ultra-low volume (ULV) formulations at or above 640 g active ingredient/L) (CAS No: 55-38-9)		
PARTY	**IMPORT DECISION**	**DATE RECEIVED**
Nigeria	No consent to import Administrative measure: The final decision is based on resolutions of the national committee on chemicals management (NCCM), a body charged with the responsibilities of promoting and co-ordinated, continuous and cost efficient approach to chemicals safety and management across all sectors necessary to protect the environment, human and animal health in Nigeria.	05 February 2020