

*National Secretariat for the Urban Environment and  
Environmental Quality – SQA  
Department of Environmental Quality - DQA*

National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants –  
Update/Brazil.

**Presentation at**

**Workshop “From science to action”** for the implementation of the BRS Conventions and the  
environmentally sound management of industrial chemicals.”

By

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MUDANÇA DO CLIMA



# Stockholm Convention on Persistent Organic Pollutants (POPs)

- Entered into force on May, 2004
- **In Brazil:** June, 2004.
  - **Promulgation:** June 20, 2005.



# Stockholm Convention on Persistent Organic Pollutants (POPs)

## ➤ Article 7 of the EC:

- NIP BRAZIL 2015 – Addresses: the initial 12 POPs and more 11 POPs included until the sixty Conference of the Parties, in 2013.
- The Project *“Revision and Update of POP-Brazil*, signed on June 14, 2018. Included COPs 7, 8 and 9.



# 31 POPs addressed in the inventory

FIRST NIP - 2015		NIP Update 2020
Aldrin Bifenilas Policloradas (PCBs) Clordano Diclorodifeniltricloroetano (DDT) Dieldrin Endrin Dioxinas (PCDD) e Furanos (PCDF) Heptacloro Hexaclorobenzeno (HCB) Mirex Toxafeno Clordecona	Clordecona PFOS, seus sais e PFOSF c-octaBDE e C-penta BDE Hexabromobifenila Hexaclorociclohexanos ( $\alpha$ -HCH e $\beta$ -HCH) Lindano ( $\gamma$ -HCH) Endossulfam técnico e seus isômeros HBCD Pentaclorobenzeno (PCBz) decaBDE	PFOS, seus sais e PFOSF c-octaBDE e C-penta BDE HBCD Hexaclorobutadieno (HCBD) Naftalenos policlorados (PCN) Pentaclorofenol seus sais e ésteres decaBDE Parafinas cloradas de cadeia curta (SCCPs) PFOA Dicofol

# NIP 2015 – Action Plan



The NIP 2015 contains the following measures and action plans:

➤ **Measures:**

- 1) To strengthen national institutional capacity and the legislative framework of the country for the management of POPs
- 2) For information dissemination, public awareness and education
- 3) To improve the national analytical capacity, monitoring of POPs, research, development and innovation

➤ **Action Plans for the management of:**

- 1) Stockpiles and wastes of POPs used as pesticides and other nonagricultural uses
- 2) Polychlorinated biphenyls (PCBs)
- 3) New Industrial POPs
- 4) Sites contaminated with Persistent Organic Pollutants (POPs)
- 5) For the Progressive Reduction of Unintentional Persistent Organic Pollutants (POPs) Releases

# 2018 - NIP Updating Project



The **specific objectives** of the Project were:

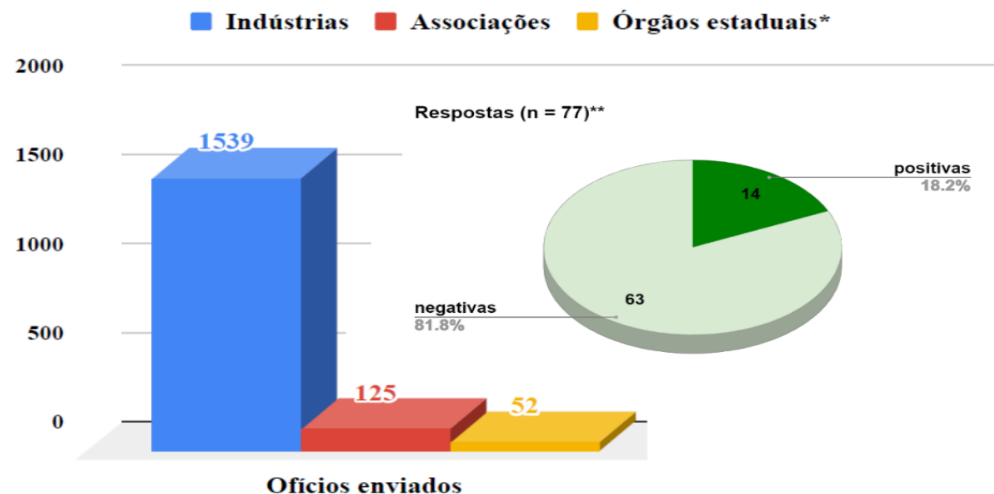
- 1) Update the NIP-Brazil regarding industrial use POPs
- 2) Develop inventory for POPs listed after the NIP delivering (COPs 7, 8 and 9)
- 3) Update NIP action plans.

The Science and Development Educational Foundation of the **Federal University of Rio de Janeiro (FECD / UFRJ)** was selected and hired to develop the specific objects of the project.

**Another important product** of the project was the development of a monitoring study to evaluate the transformation of sulfloramid into PFOS in representative soils of Brazilian agriculture, as well as the occurrence of this POP in the environment, especially in water bodies and sediments. This research was carried out by Embrapa.

# Inventories Development

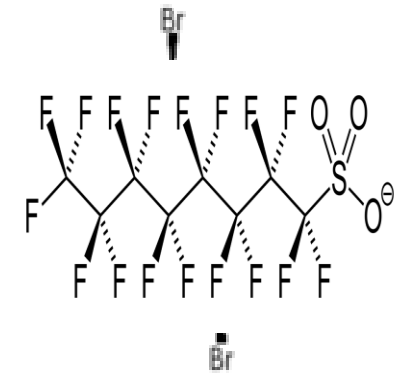
To carry out the POPS inventories in Brazil, inquiries were made by sending questionnaires to all associations and institutions identified according to the categories that might use these chemicals in their processes or articles.



- ✓ 1,716 questionnaires sent
- ✓ 77 responses received
- ✓ 63 negative
- ✓ 14 affirmative for POPs

# PFOS, its salts and PFOSF

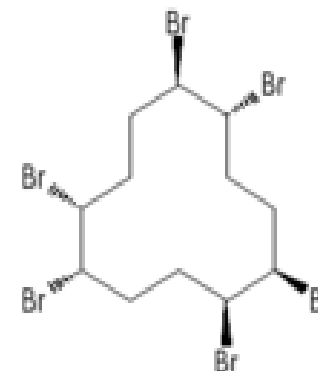
- PFOS and its related chemicals have been produced for more than 50 years and continue to be produced in various countries.
- **The only remaining use in Brazil is Perfluorooctane Sulfonyl Fluoride, CAS No. 307-35-7, that is imported to produce Sulfluramid in Brazil.**
- Sulfluramid (N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonamide (**CAS No.: 4151-50-2**)) is used as an active ingredient in the production of bait insecticide to control leafcutter ants in Brazil.
- Brazil requested the registration of an acceptable purpose for the use of sulfluramid as bait insecticide to control the leafcutter ants *Atta* spp. and *Acromyrmex* spp.
- **PFOS** was also used in metal plating in Brazil. **The specific exception for this use ended in 2018.**





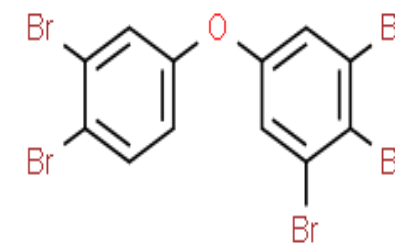
# HBCD

- HBCD has been used as a flame retardant additive on polystyrene materials in the 1980s as a part of safety regulation for articles, vehicles, and buildings.
- According to information received, HBCD was used in the building, electronics, automotive and textile industries in Brazil. **The information indicates that HBCD was only used as a flame retardant in concentrations of 0.3 to 0.7%** for: expanded polystyrene (EPS); extruded polystyrene (XPS) and high-impact polystyrene (HIPS).
- **Brazil requested a specific exemption to continue use of HBCD** in the applications involving expanded polystyrene (EPS), extruded polystyrene (XPS) in buildings.
- The specific exception term **ended in November 2019**, since the use of HBCD is no longer allowed in Brazil.



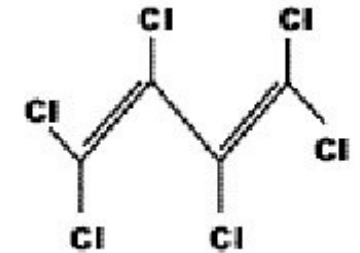
# PBDEs (c-pentaBDE e c-octaBDE)

- Polybromodiphenyl ethers including tetra-, penta-, hexa-, and heptaBDEs inhibit or suppress combustion in organic materials and therefore are used as additive flame retardants.
- The production of tetra - and pentaBDEs has ceased in certain regions of the world, while no production of hexa- and heptaBDEs is reported.
- **No information was identified on the import and export** of polybrominated diphenyl ethers and products containing such substances in Brazil.
- The substances **may be present in old electronic equipment and automobiles.**
- **It was not possible to carry out** chemical analyses to confirm the presence of these POPs in **articles and waste.**



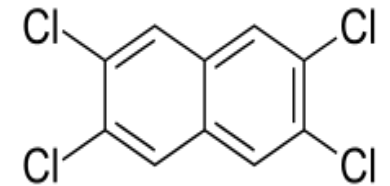
# HCBD

- **Most commonly used as a solvent for other chlorine-containing compounds.** Hexachlorobutadiene occurs as a by-product during the chlorinolysis of butane derivatives in the production of both carbon tetrachloride and tetrachloroethene. These two commodities are manufactured on such a large scale, that enough HCBD can generally be obtained to meet the industrial demand.
- It seems that HCBD is no longer intentionally produced and used in the UNECE region including in the US and Canada; **specific information on current intentional production and use for the past 30 years is lacking.** This indicates that substitution has taken place and alternatives are available.
- **Only 01 (one) response to the inventory questionnaire was received and indicated the HCBD contamination site** in an old chlorinated solvent factory in the city of Cubatão, São Paulo. According to the questionnaire, **it is estimated that the factory produced 5,000 to 9,000 tons of HCBD, between the years 1974 and 1993.**



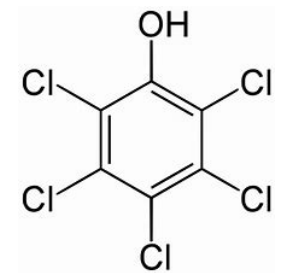
# PCNs

- Polychlorinated naphthalenes (PCNs) make effective insulating coatings for electrical wires. Others have been used as wood preservatives, as rubber and plastic additives, for capacitor dielectrics and in lubricants.
- **To date, intentional production of PCN is assumed to have ended.** The only available information is that, since the production of PCN has stopped in the 1970s and 1980s, PCN have been substituted by other chemicals.
- PCN are **unintentionally generated during high-temperature industrial processes in the presence of chlorine.**
- PCNs can be present in commercial mixtures of PCBs in concentrations ranging from 40 to 1,300 mg/kg.
- **In Brazil it is estimated that there is an amount of PCN ranging from 33 g to 1,071 kg in commercial mixtures of PCBs.**



# PCP

- Pentachlorophenol, its salts and ester (PCP) has been used as herbicide, insecticide, fungicide, algaecide, disinfectant and as an ingredient in antifouling paint. Some applications were in agricultural seeds, leather, wood preservation, cooling tower water, rope and paper mill system.
- **Its use has been significantly declined due to the high toxicity of PCP and its slow biodegradation.**
- **The use of PCP has been prohibited** by National Health Surveillance Agency (**ANVISA**) and **Ibama** since 2016 (RDC 124A/2006, RDC 164/2006. IN no. 132/2006).

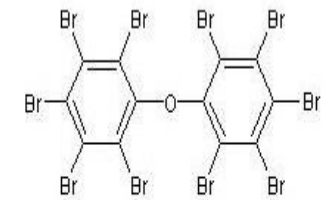


# DecaBDE

Decabromodiphenyl Ether is used as an additive flame retardant, and has a variety of applications including in plastics/polymers/composites, textiles, adhesives, sealants, coatings and inks. DecaBDE containing plastics are used in housings of computers and TVs, wires and cables, pipes and carpets. Commercially available decaBDE consumption peaked in the early 2000's, but c-decaBDE is still extensively used worldwide.

**There are no reports of production of decaBDE, but the product has already been imported. As it was included in a generic NCM, it is not possible to confirm that it is still imported.**

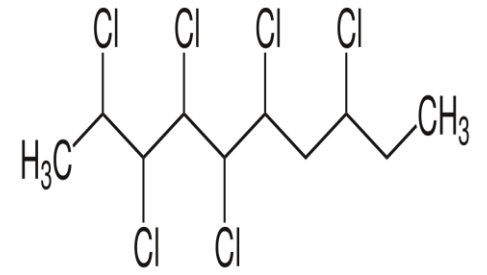
**Brazil requested a specific exemption on parts for the use of decaBDE in vehicles** specified in paragraph 2, part IX, of Annex A, until the end of the vehicles' useful life or in 2036



Molecular structure of decabromodiphenyl ether (decaBDE)

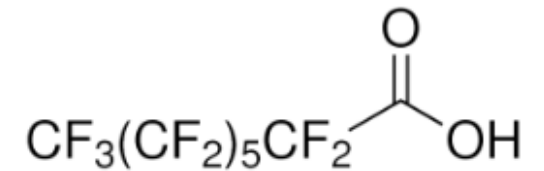
# SCCPs

- Short Chain Chlorinated paraffins (SCCPs) can be used as a plasticizer in rubber, paints, adhesives, flame retardants for plastics as well as an extreme pressure lubricant in metal working fluids.
- Chlorinated paraffins are produced by chlorination of straight-chained paraffin fractions. The carbon chain length of commercial chlorinated paraffins is usually between 10 and 30 carbon atoms. Short-chained chlorinated paraffins is between C10 and C13. **The production of SCCPs has decreased globally as jurisdictions have established control measures.**
- **In the past, SCCP was produced in Brazil, but no current use has been identified.** SCCP may be present in chlorinated paraffins of other carbon chain length.



# PFOA

- The PFOA, its salts and PFOA-related compounds **were listed in 2019** under Annex A to the Stockholm Convention, **with specific exemptions**. PFOA is a perfluorinated substance, commonly used as a surfactant in industrial applications, and can be used in the synthesis of polymers and other substances.
- The American company 3M began PFOA production in 1947 (KEMI, 2015). In 1951, another company, DuPont, purchased the compound for use in the manufacture of a fluoropolymer, polytetrafluoroethylene (PTFE), under the trade name Teflon.
- **It was not possible to identify past uses or stockpiles of PFOA, its salts and PFOA-related compounds in Brazil.**

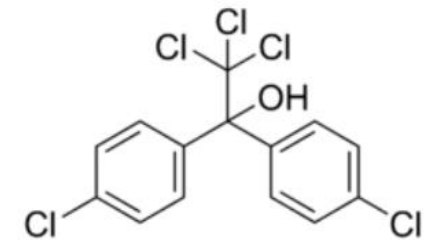




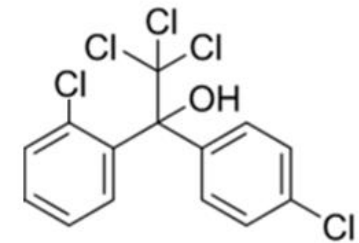
# Dicofol

- Dicofol is an organochlorine pesticide used primarily as an acaricide. Composed of two isomers: p,p'-dicofol and o,p'-dicofol.
- Dicofol can be manufactured by hydroxylation of DDT, or directly without isolation of DDT by the reaction of trichloroacetaldehyde with monochlorobenzene in the presence of oleum (SO<sub>3</sub> and H<sub>2</sub>SO<sub>4</sub>), followed by dehydrochlorination, chlorination and hydrolysis.
- **In Brazil, dicofol was used as an acaricide for cotton, citrus and apple crops. However, these uses were prohibited after the registration for the use of dicofol as a pesticide was removed in 2015.**

2,2,2-trichloro-1,1-bis(4-chlorophenyl)ethanol



2,2,2-Trichloro-1-(2-chlorophenyl)-1-(4-chlorophenyl)ethanol



# Next steps

- Final phase of the NIP Update Project - MMA
- Review and Approve the Action Plans for New POPs
- Endorse the NIP Updated – social participation
- Publish the final version and transmit it to the Stockholm Convention
- PCB Project BRA/21/G31: Eliminating 15,000 tons of PCB- contaminated waste; benefiting the entire Brazilian population.
- Special Programme Project: Strengthening Institutional Capacity for the Environmentally Appropriate Management of Chemical Substances in Brazil.

# Proposals and priorities for development and training



Stakeholder engagement and institution coordination



Legislation and monitoring program



Waste Management

# Thanks!

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# Thanks!

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