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## **PROGRESS IN ENVIRONMENTALLY SOUND MANAGEMENT AND DISPOSAL OF POPS PESTICIDE WASTES AND OTHER POPS WASTES IN CHINA**

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# OUTLINE

- » Background information on Pesticide POPs waste in China
- » Legal and regulatory framework of PPW
- » The progress of PPW elimination in China
- » Conclusion

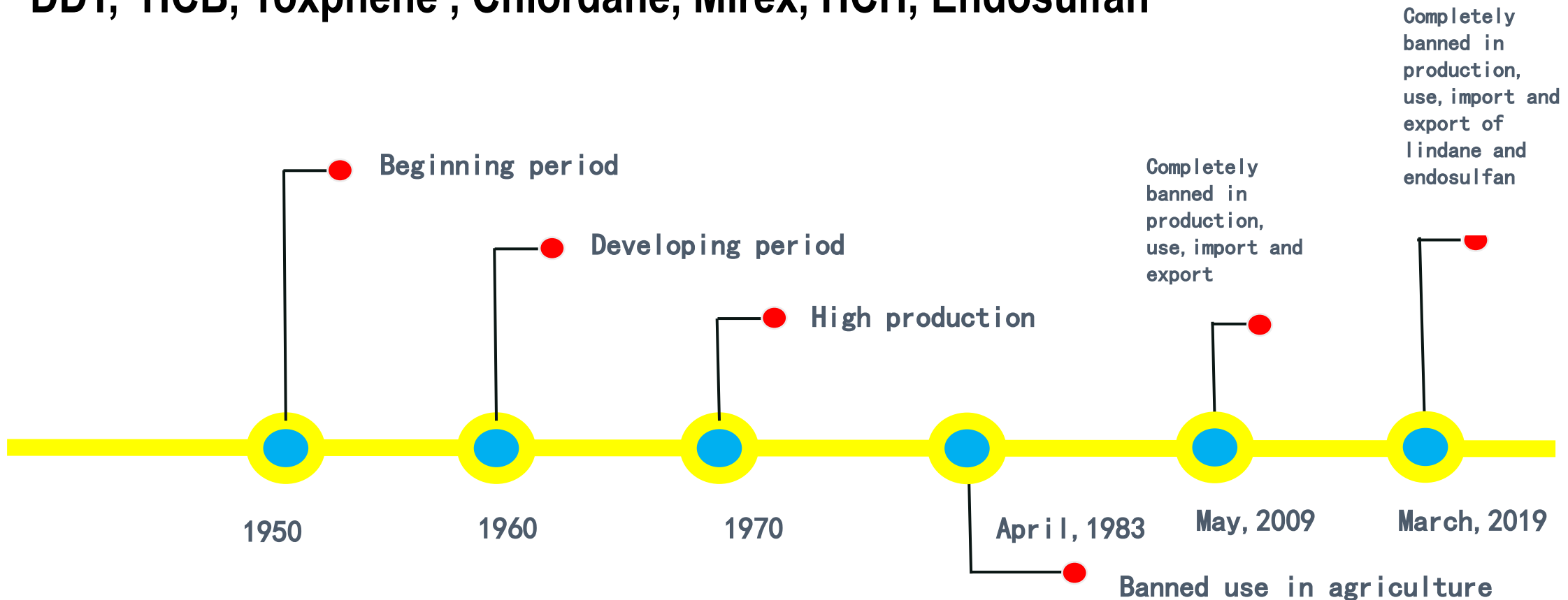
# Status of Pesticide POPs and proposed pesticide POPs to list in Stockholm Convention

Classification	Pesticide POPs
The legacy POPs	Aldrin ,Chlordane,Chlordecone , Dieldrin , Endrin , Heptachlor , Hexachlorobenzene (HCB), Mirex , Toxaphene,DDT
New pesticide POPs	Dicofol , Pentachlorobenzene Alpha hexachlorocyclohexane , Beta hexachlorocyclohexane , Lindane, Pentachlorophenol and its salts and esters , Technical endosulfan and its related isomers, Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF)
Proposed pesticide POPs to list	Methoxychlor, Chlorpyrifos

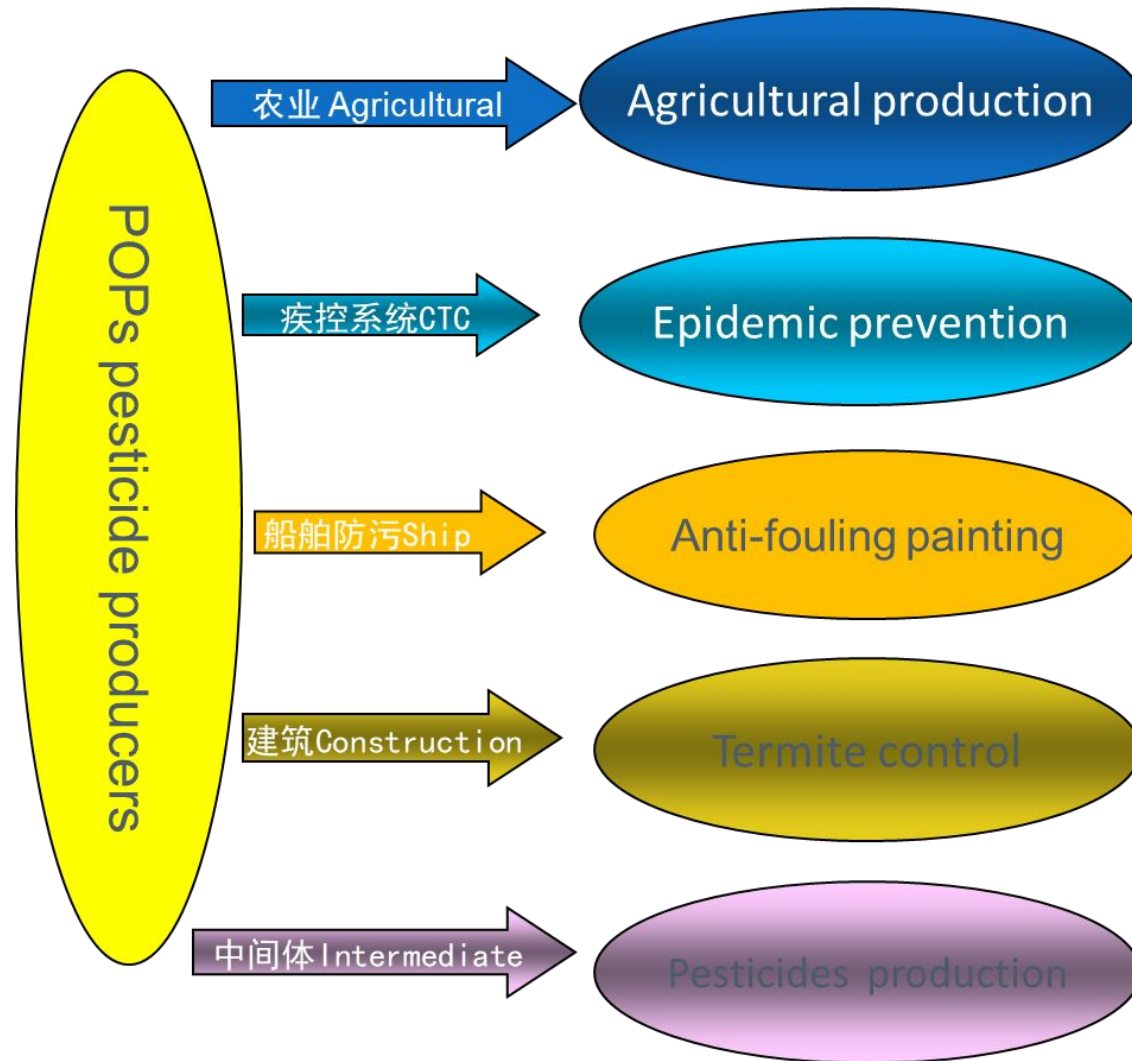
# HISTORY OF POPs PESTICIDE USE IN CHINA

China, the largest developing country in the world, has been undergoing rapid economic growth in the past two decades. Synchronously, large quantities of organic chlorinated pesticides have been used in agriculture and non-agriculture areas.

DDT, HCB, Toxphene , Chlordane, Mirex, HCH, Endosulfan



# Main sources of POPs pesticide in China





Waste generated in organic chlorinated pesticides in production and distribution field in China



露天贮存DDT



坍塌的仓库



POPs与其它废物混合在一起



DDT废液/渣

① 过期废弃的杀虫剂；      ② 储存和堆存混合性POPs杀虫剂废物；      ③ 杀虫剂类POPs污染场地相关的重污染土壤和清理过程废物。



过期和废弃的杀虫剂



储存和堆存混合性POPs杀虫剂废物

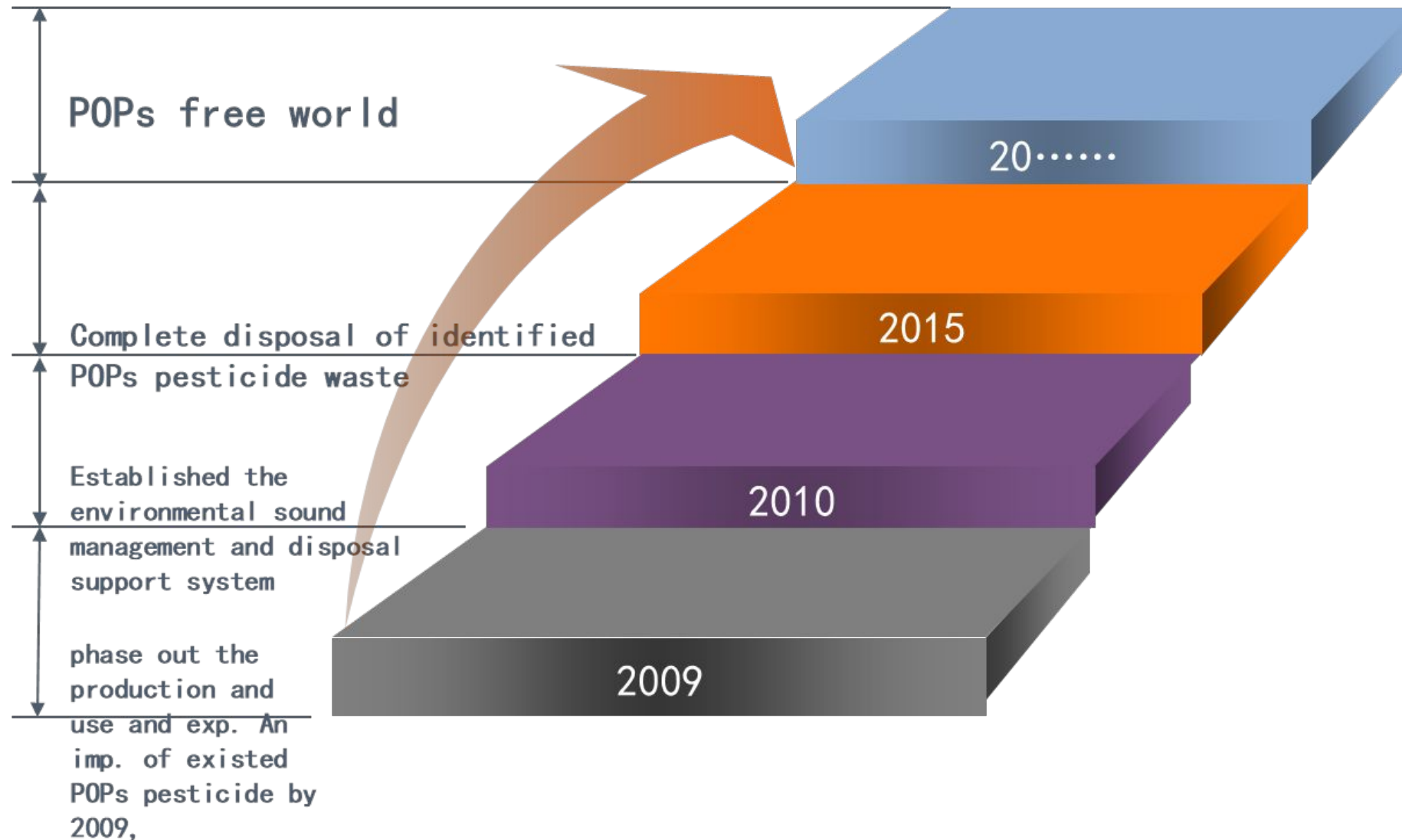


杀虫剂类POPs污染土壤

# Requirement of environmental sound management for POPs pesticide waste



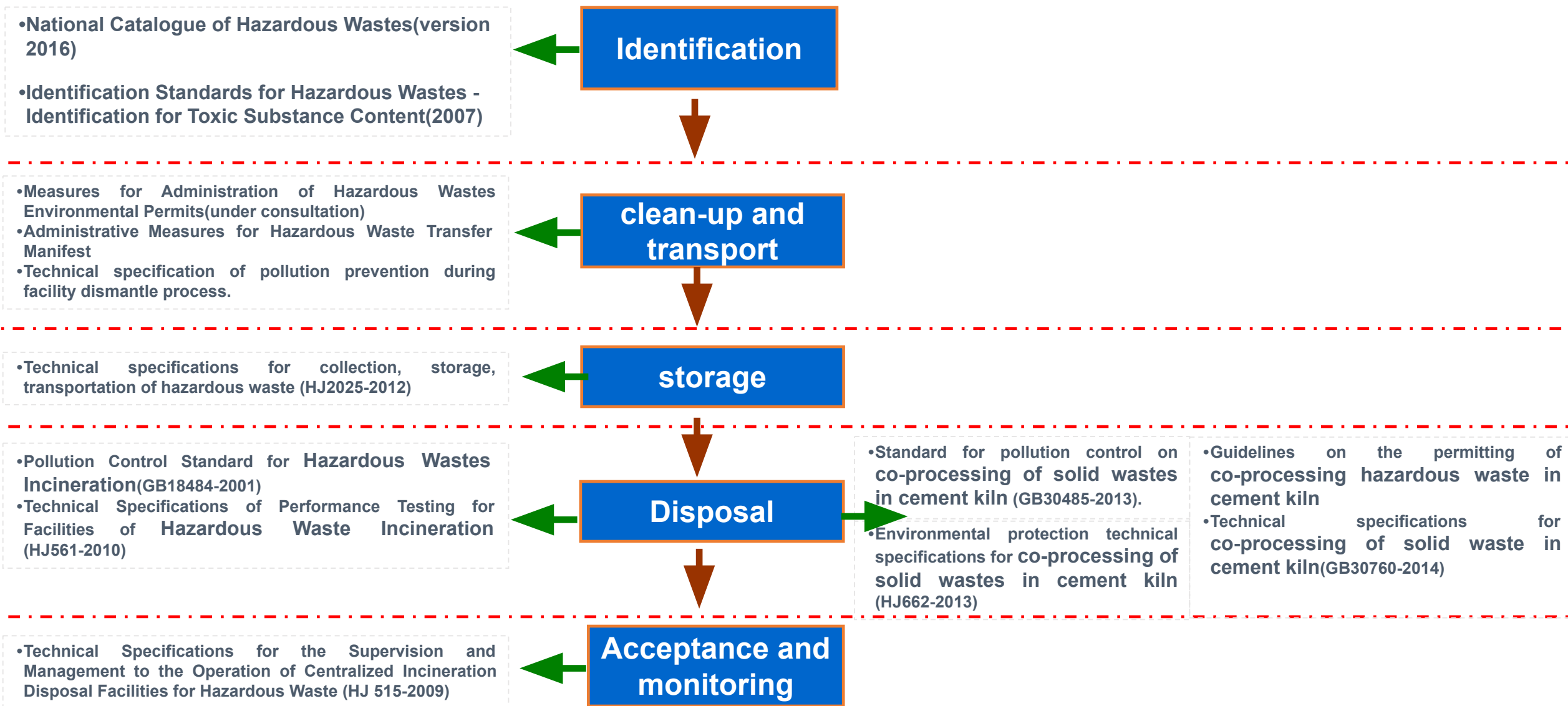
# Objective for Pesticide POPs waste in NIP of China





# Chinese Hazardous Waste Management Regulations and Standards

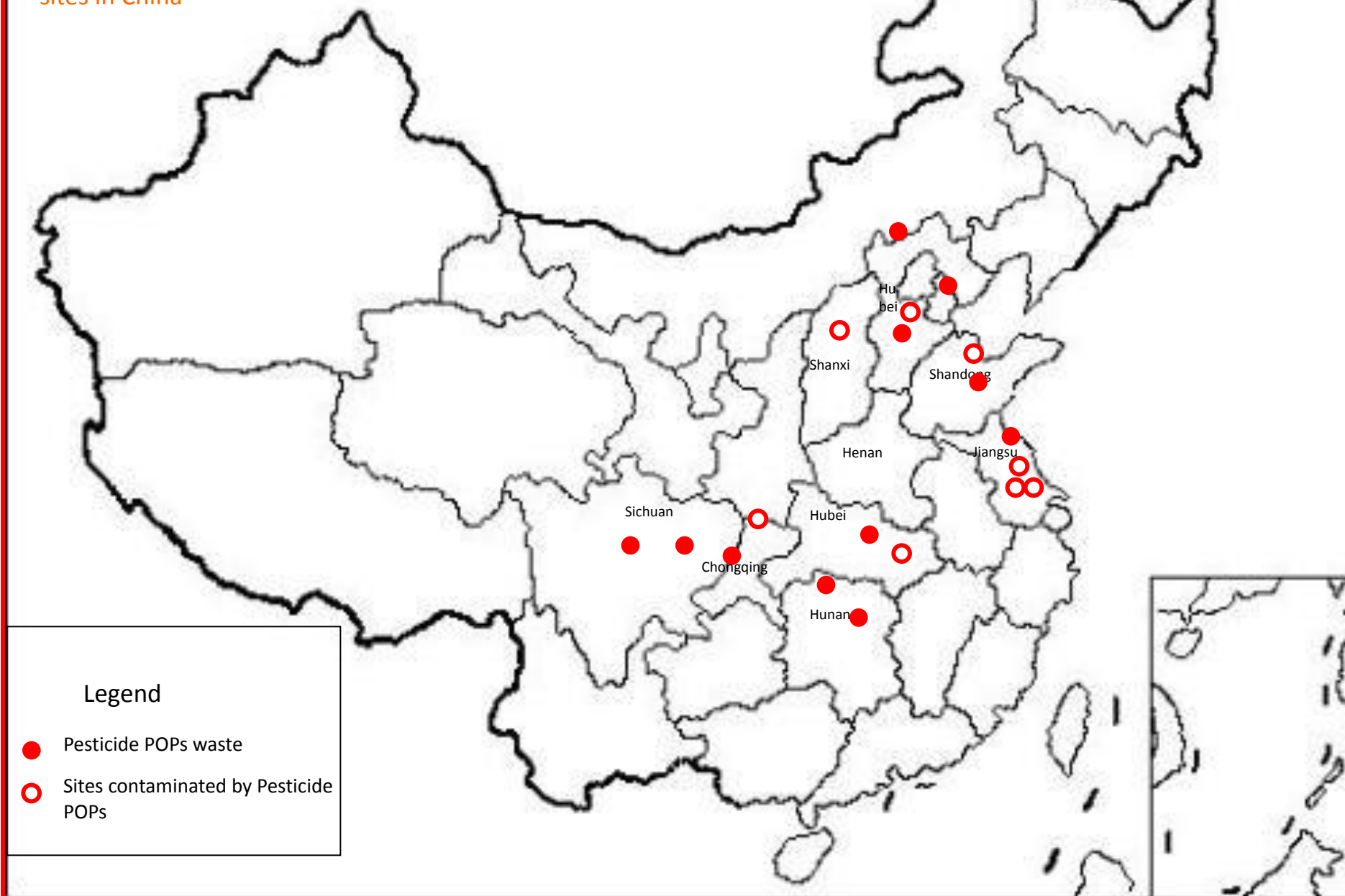
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# Content Limit of POPs pesticide waste of hazardous waste in China

	POPs	Limit as hazardous waste in China	Low POPs contents
Legacy POPs	Aldrin		
	Chlordane		
	DDT		
	Dieldrin		
	Endrin	50mg/kg	50mg/kg
	Dieldrin		
	Heptachlor		
	Mirex		
The new POPs	Toxaphene		
	Chlordecone	30000 mg/kg	50mg/kg
	$\alpha$ -HCH, $\beta$ -HCH,Lindane	30000 mg/kg	50mg/kg as a sum
	Pentachlorobenzene	--	50 mg/kg
	Pentachlorophenol and its salts and esters	--	100 mg/kg
	Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	--	50 mg/kg
	Technical endosulfan and its related isomers	30000 mg/kg	50 mg/kg

## Geographic distribution of identified POPs waste and contaminated sites in China



# Environmental sound disposal technology of PPW

□ Concerning the requirement of Stockholm and Basel convention for POPs waste disposal , and comply with the requirement for Hazardous Waste(HW) in China

- — PCDD/Fs flue gas concentration < 0.1ng-ITEQ/Nm<sup>3</sup>
- — DRE>99.9999%
- — High chlorine content waste
- — technical and economic feasibility

Disposal technology



Type	Technology Status	Geographical distribution	Disposal cost
High temperature incineration	Need to retrofit to meet with BAT/BEP requirement	Wide existed	3000-5000R MB/ton
Cement kiln co-processing	Satisfy with the above requirement	Limited number of plants qualified with permit for HM disposal	2000-4000R MB/ton

# Waste disposal



2010



2012



2015



2018



2011



2014



2016





## Waste disposal

省/市	类型	已处置 (吨)
湖北省	混合型废弃杀虫剂	2247.39
河北省	滴滴涕废物和含滴滴涕废液	2242.686
湖南省	混合型废弃杀虫剂	1361.11
湖南省	高浓度POPs污染土壤	43731
重庆市	混合型废弃杀虫剂	184
天津市	DDT废物	88
山东省	DDT废物	2.13
四川省	杀虫剂类POPs	1.5015
江苏省	杀虫剂类POPs	164.02
山西省	杀虫剂类POPs	8.3
吉林省	杀虫剂类POPs	20
西藏	杀虫剂类POPs	30
广东省	杀虫剂类POPs	4
上海市	杀虫剂类POPs	0.6
合计总量 (吨)		6353.74

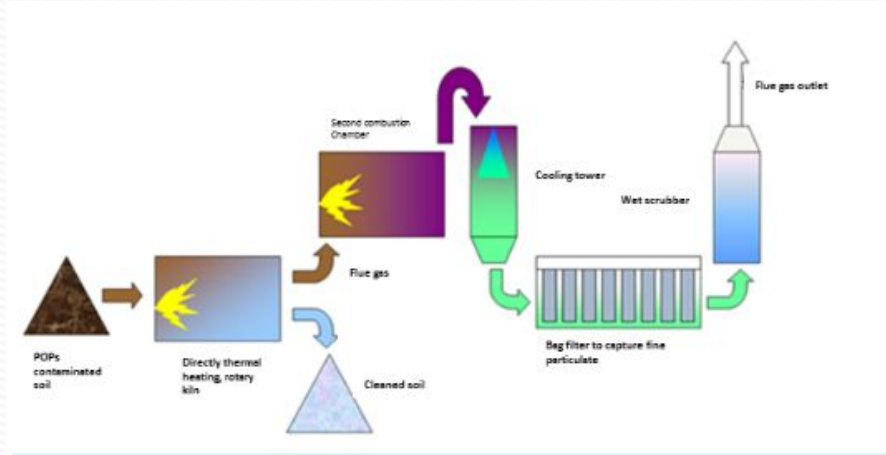
注: POPs 高浓度土壤指 POPs 总浓度超过 50PPM 的污染土壤。



6352.13 tons of POPs pesticide waste were safely disposed, in which, 4167.1 t (65.6%) ,1878.4 t ( 29.6%) and 306.6t (4.8%) of the total were disposed by cement kiln co-processing, high temperature incineration and safety landfill

# Waste disposal

## Disposal of Pesticide POPs contaminated soil



42000 tons of POPs contaminated soil with POPs (DDT,HCH)concentration over 50 ppm were remediated by thermal desorption

# Conclusion

- 6,352 t pesticide POPs (DDT/HCH) were soundly disposed (All POPs pesticides identified in China during 2010-2018 ).42000 t soils contaminated by DDT/HCH were soundly disposed.
- Technological trials, lessons learned and research supported by the project contributed to 30 plans, regulations, standards and guidelines that have been integrated into public administration agencies operating at the national, provincial, city and county levels.
- Firms will need to ensure that kiln staff is sufficiently trained on hazardous waste management.



# THANK YOU FOR YOUR ATTENTION

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