



The current state and upcoming strategies of China's soil pollution control and management

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- Conception of soil pollution
- Features of soil pollution
- Soil pollution in China
- Countermeasures and roadmap



Soil pollution

Conception of soil pollution

- Soil contaminated by **inorganic** and **organic** pollutants at a certain degree due to the **human activities**.

Soil
pollutants

Inorganic:
heavy metal, acid, alkali, etc.

Organic:
PHCs, PCBs, PAHs, etc.

Conception of soil pollution

Sources of soil pollutants

Agriculture activity

sewage irrigation
chemical fertilizer
pesticide

Industry activity

pollutant emission
mining waste

Household activity

household waste

Features of soil pollution

- Heterogeneity

- Up to thousands times of concentration difference for one pollutant in a certain area.
- Difficult for monitoring and prediction.

Features of soil pollution

- Chronicity
 - Changes very slowly, researchers usually use 5-10 years to observe the variation of soil pollution. (**very challenging topic**)
 - The pollutants take years to affect the environment and human.

Features of soil pollution

- Indirect contact
 - Human do not directly uptake the pollutant from soil.
 - The soil pollutant delivers the risk to human through food chain.

Features of soil pollution

- Heterogeneity
- Chronicity
- Indirect contact

The hidden pollution



Soil pollution in China

The evolution

Generally
fine

Lack of
management

Problems
boom

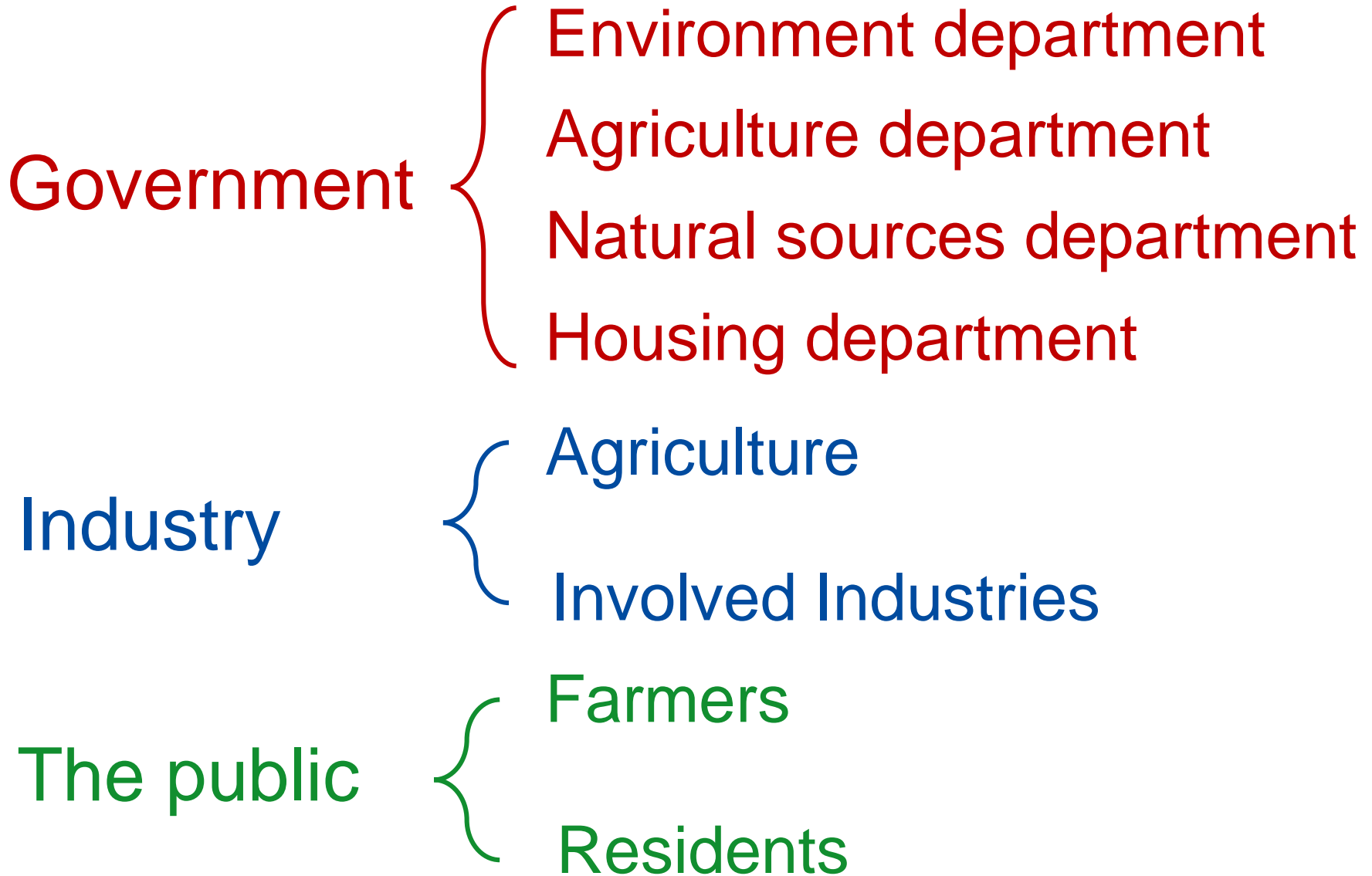
Take
actions

1980

1990

2000

2010



- Officially national wide soil survey in China

1. 1986-1990



2. 2000-2015

3. 2005-2013

4. 2012-2015

5. 2016-2020

Very frequent soil surveys after 21th century.

- Complex causes
 - The causes of China's soil pollution were composited with **high background value** and rapid development of **industry, agriculture.**

- Different soil types and pollutant sources
 - Land utilization type in China includes **agricultural land** and **industrial land**.
 - Pollutants from atmospheric sedimentation, wastewater discharge, solid waste piles.

- Protection and remediation in parallel
 - Protect the unpolluted soil avoid contaminating.
 - Reduce the polluted soil area by remediation.

Countermeasures of China



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There are 10 action plans,
we call it “**土十条**”。

国务院关于印发土壤污染防治行动计划的通知

国发〔2016〕31号

各省、自治区、直辖市人民政府，国务院各部委、各直属机构：

现将《土壤污染防治行动计划》印发给你们，请认真贯彻执行。

国务院

2016年5月28日

（此件公开发布）

- Action plan for soil pollution control issued by **State Council of China** in 2016.

1. Conduct **soil quality survey** to know the status of soil environment in China.
2. Carry out the **legislation** for soil protection.
3. Manage **agriculture land in 3 categories** to ensure the safety of agriculture production.

4. Manage **construction land** in entry permission way.
5. Enhance protection for **unpolluted land** from pollution.
6. Reinforce the regulation of **pollution sources**.
7. Conduct **soil remediation** to improve the regional soil quality.

8. Propel technology **R & D** and environment industry development.
9. **Government** plays leading roles to build the soil protection system.
10. Target assessment and accountability for **stakeholders**.

Roadmap of China for soil protection

Action
plan

Restraint
deterioration

Stable
environment

Great
improvement

2016

2020

2030

2050



Thank you!