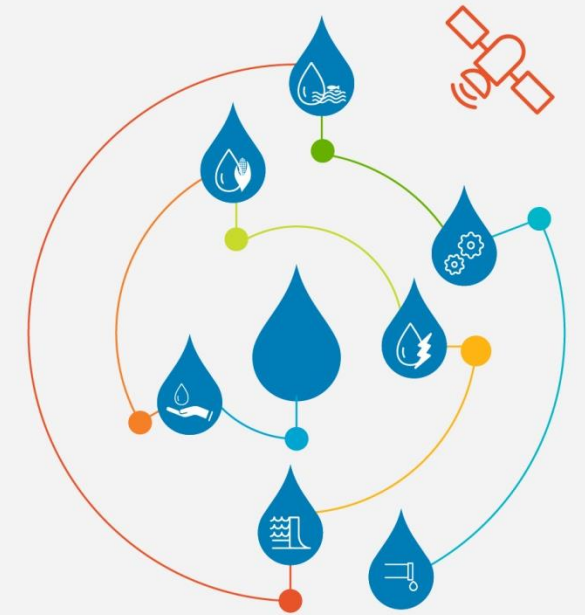


# Novel Technique and Instrument for Early-warning of Pollution and Identification of Pollution Discharge Source

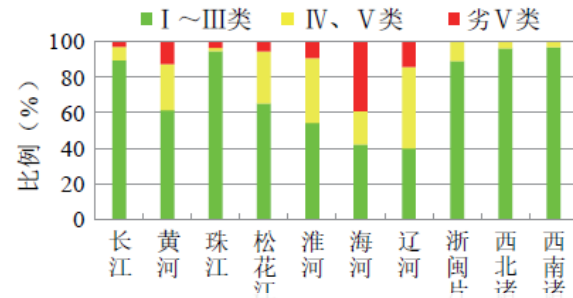


Jing WU  
Tsinghua University, China  
Oct., 2018

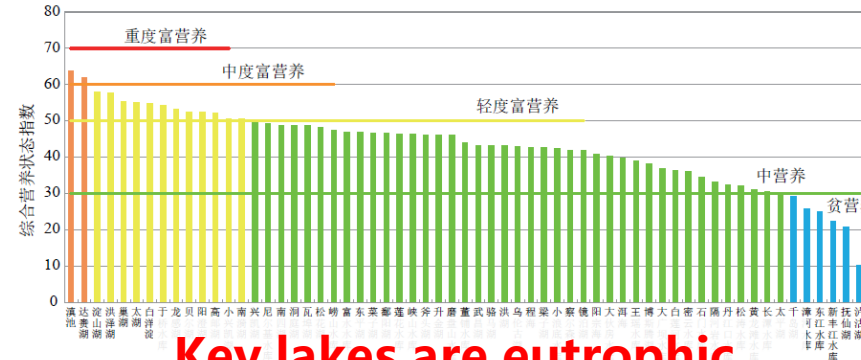
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# Background: Environmental Pollution and Pollution Incidents in China



Seven major river basins are polluted



Key lakes are eutrophic



Polluted drinking water

Water quality is alarming

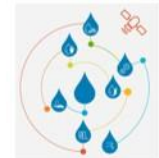
Water pollution incidents happens frequently

Water security has risen to the national public security level

“The green water and mountains are gold mountains and silver mountains”

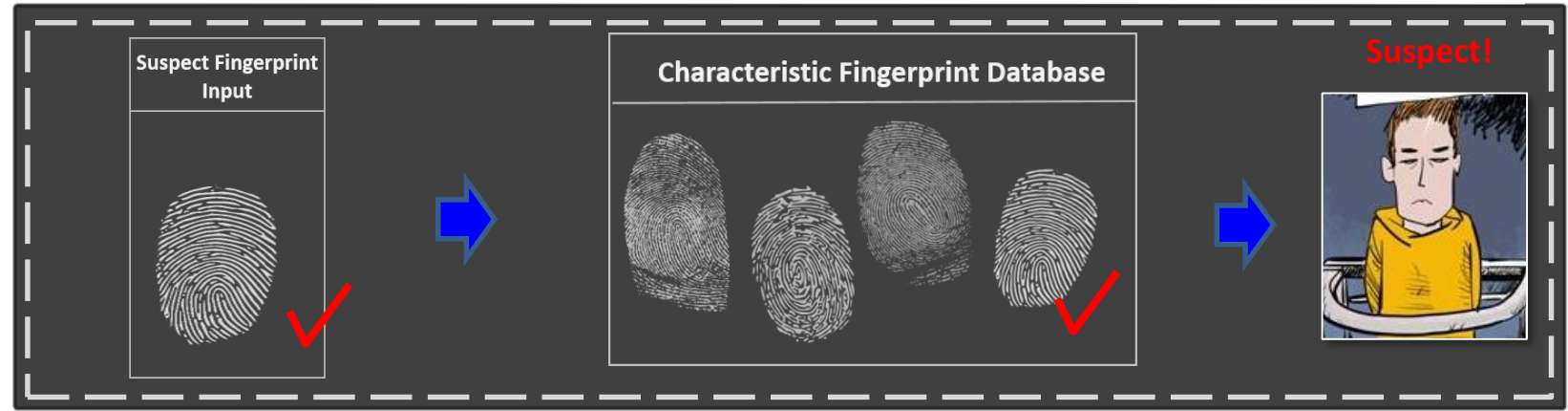
- 2015.04.26, Action plan for water pollution control
- 2015.07.26, Construction program of ecological environment monitoring network
- Since 2016.12.11, government officials are hired as river chiefs

Emission source control is crucial.

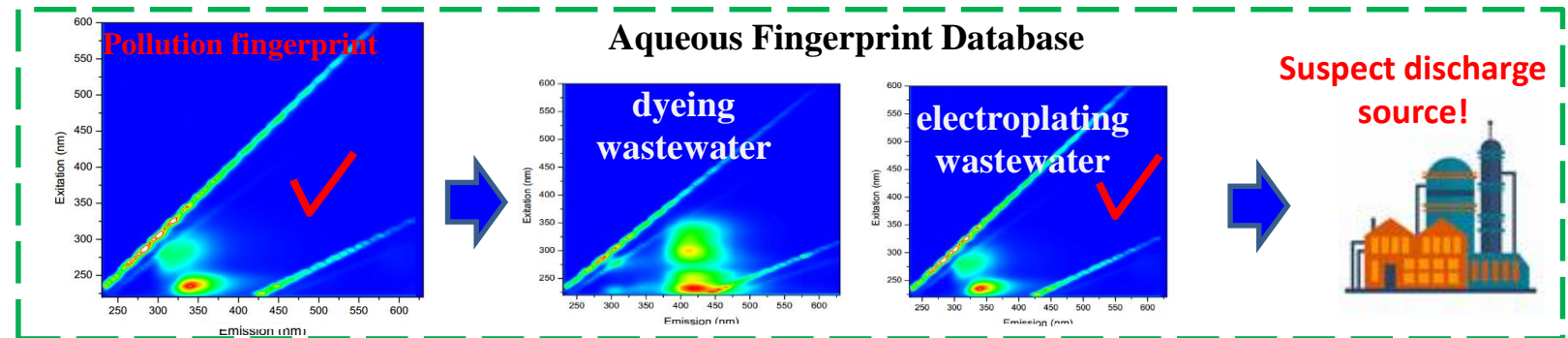


# Working principle: Fingerprint comparison

Criminal investigation



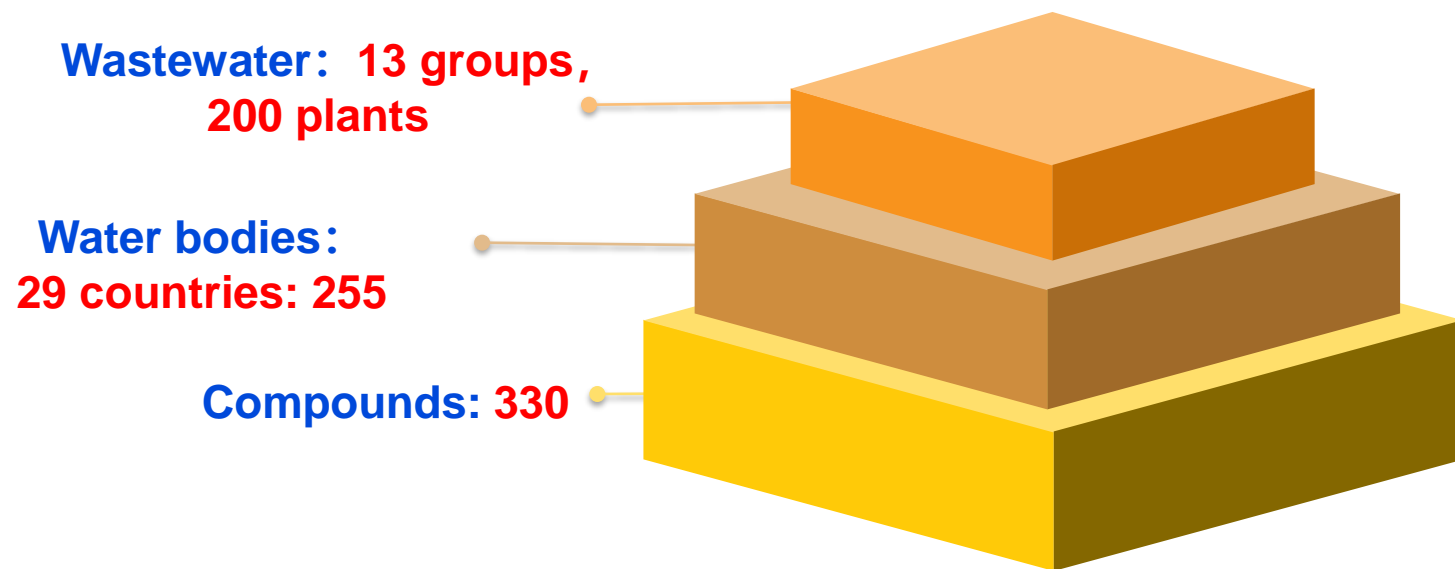
IPDS in water pollution



- The spectrum is a one-to-one correspondence with pollution discharge source, thus is called as **Aqueous Fingerprint**.
- Pollution discharge source can be identified rapidly through “fingerprint comparison”.

# Working principle: Fingerprint comparison

## Fingerprint database



清华大学  
Tsinghua University



国潮·GSeeker  
利民利国 | 溯本溯源



# Instruments

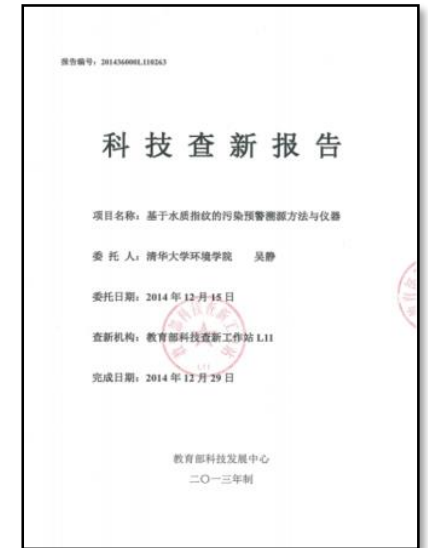
**In-line IEWPIPD**



**mobile IEWPIPD**

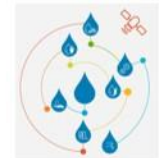


**desktop IEWPIPD**



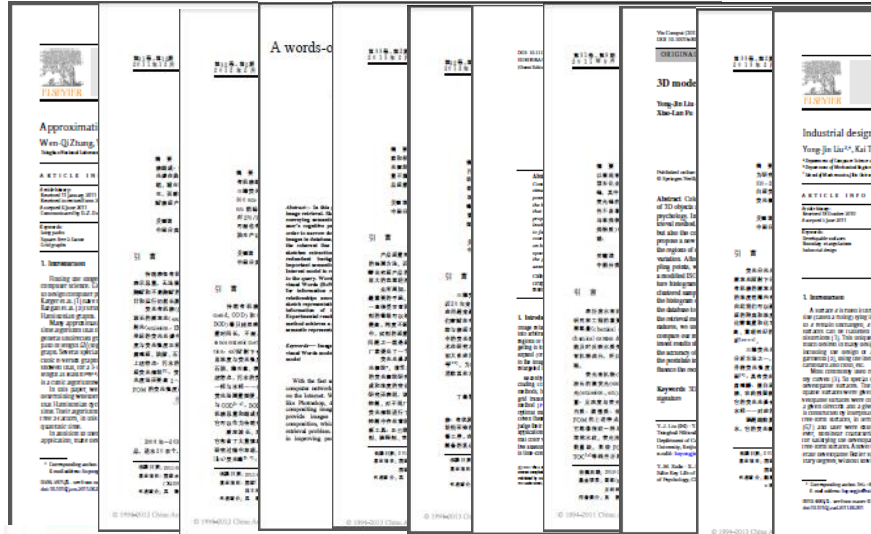
**Function: early-warning + pollution discharge source identification + pollution evidence**

**Accurate + sensitive + fast + easy use and Maintenance**

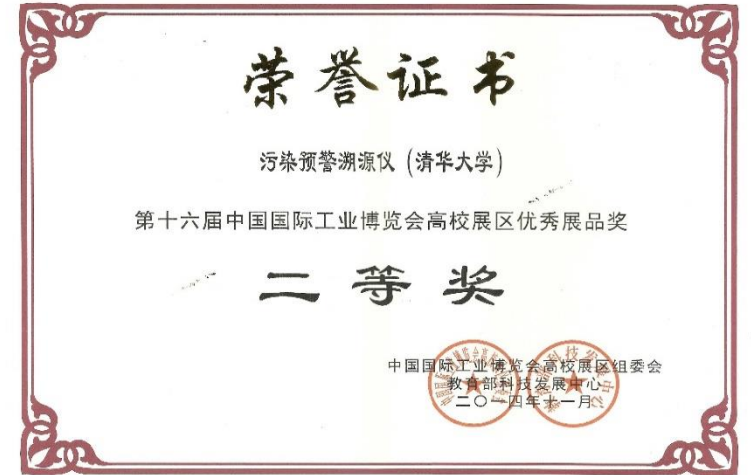




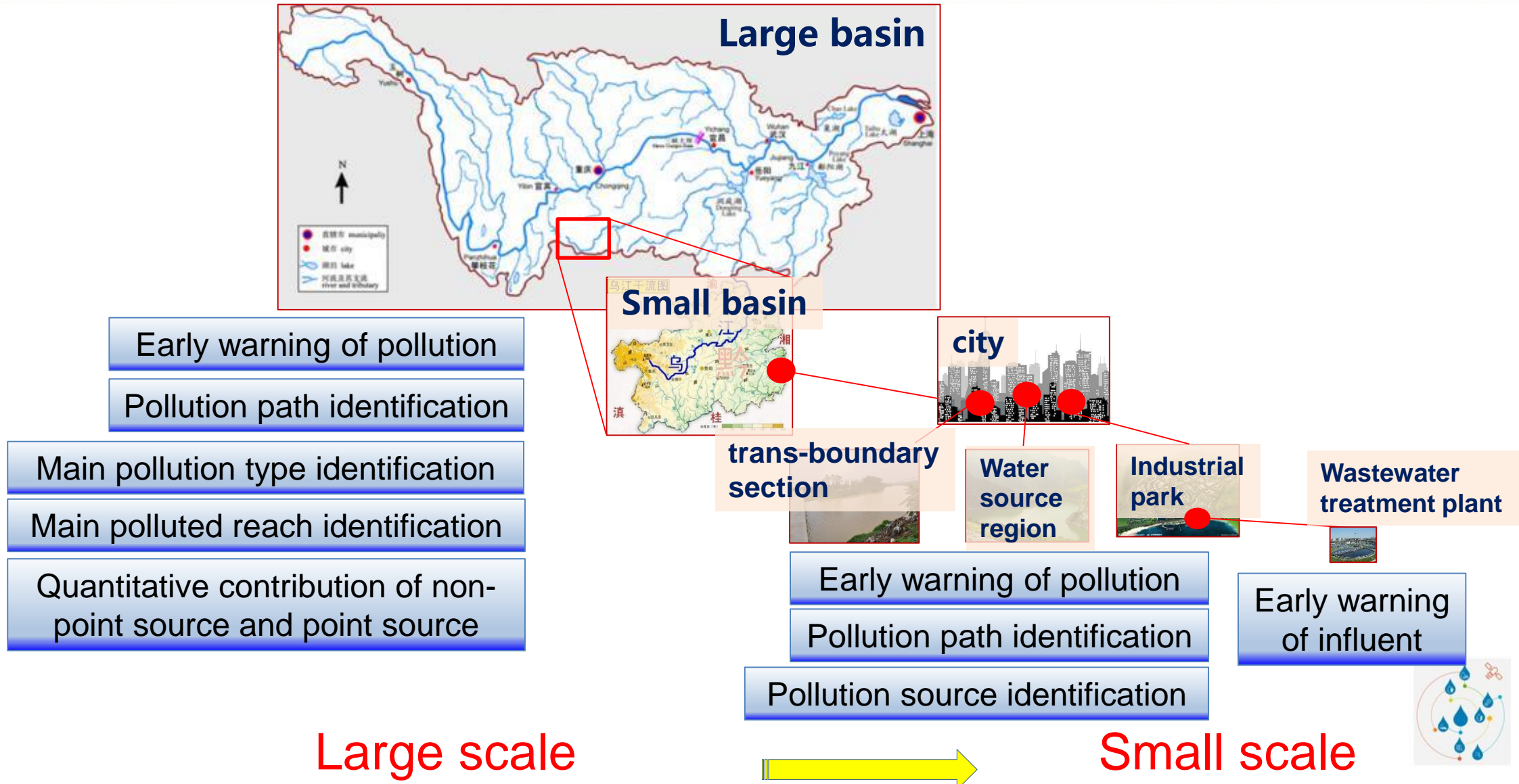
# Publications, patents and awards



In 2017, Genève International Exhibition of Inventions



# Multi-scale identification technic system of pollution discharge sources



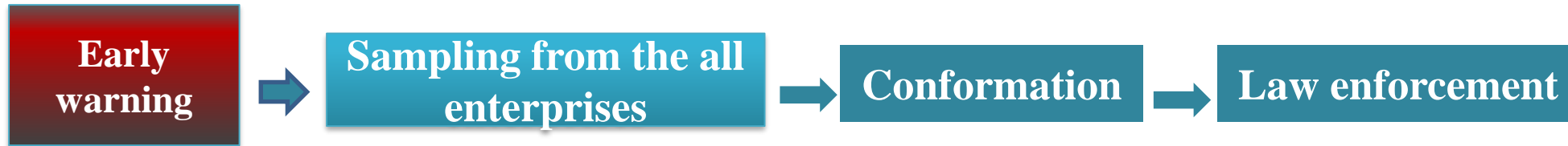




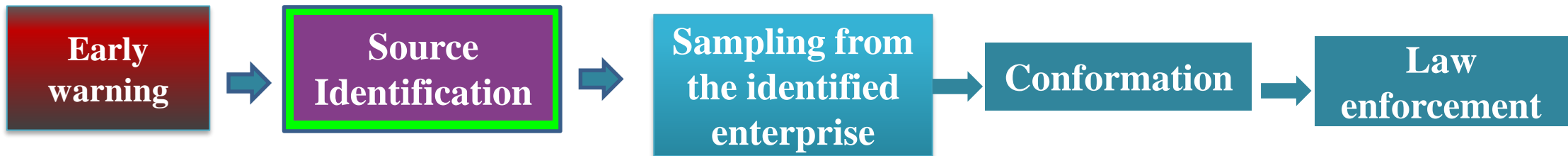
# Advantages

✓ **High-efficiency working mode is formed (upgrade by 20 folds) .**

● **Conventional: 40-60days+40-50 persons + 60000-80000\$**



● **Interconnected Early-warning, Source Identification and Law enforcement mode  
5 days+2 persons +100\$**



✓ **Low input to improve water quality due to ‘surgical’ source control.**



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# Thank You !

**Jing WU**

**wu\_jing@tsinghua.edu.cn**

**+8613801353077**

**+86-10-62789121**

**Environment School, Tsinghua University, Beijing, China**

