ENERGY FOUNDATION
能源基金会

CAAC
中国清洁空气联盟
Clean Air Alliance of China

10 Principles for Local AQM

LIJIAN ZHAO
ENERGY FOUNDATION CHINA
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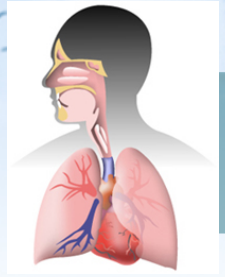
Why Need AQM Principles?



Establish Goals

建立环境目标

Determine Emission Reduction Targets

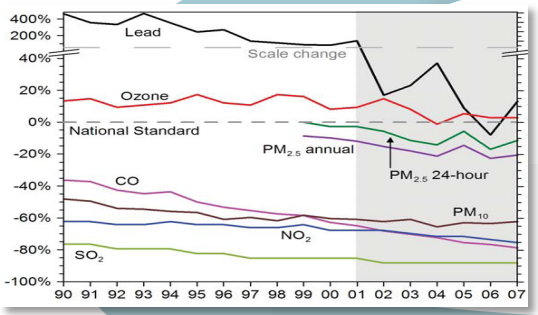
确定减排目标

Control Strategies

控制措施

Scientific Research

科学研究



On-going Evaluation

跟踪评估

Implementation Programs

项目实施

About the “10 principles”

Working Group:




Workshop on April 14, 2014:

- USEPA experts
- CAEP
- CRAES
- Tsinghua University
- RTI

The 10 Principles

1. Establish a sound local air quality management structure
2. Assure sufficient human and financial resources
3. Apply state-of-the-art scientific analysis
4. Establish emergency episode forecasting and response system
5. Develop control measures and prioritize based on cost -effectiveness
6. Embrace BACTs/BATs
7. Optimize co-benefits for air pollutants and GHGs
8. Ensure adequate implementation and enforcement with incentives and penalties
9. Enhance transparency and encourage public participation
10. Conduct regular monitoring and evaluation for continuous improvement

Principle 1: a sound local air quality management structure

- Commitments from leadership (governor, mayor, etc.)
- Identify leading agency
- Involve all related agencies：
  - Environment
  - Economic development and planning
  - Transport
  - Energy, energy efficiency
  - Finance
  - Construction and housing, etc.
- Clarify roles and responsibilities, and working mechanism
- Regional cooperation system

Principle 2: Assure sufficient human & financial resources

- Regular needs assessments;
- Hire new staff, reassign existing staff, or purchase outside technical services to meet the needs;
- Enough training opportunities and upward mobility for staff
- Stability of staff base

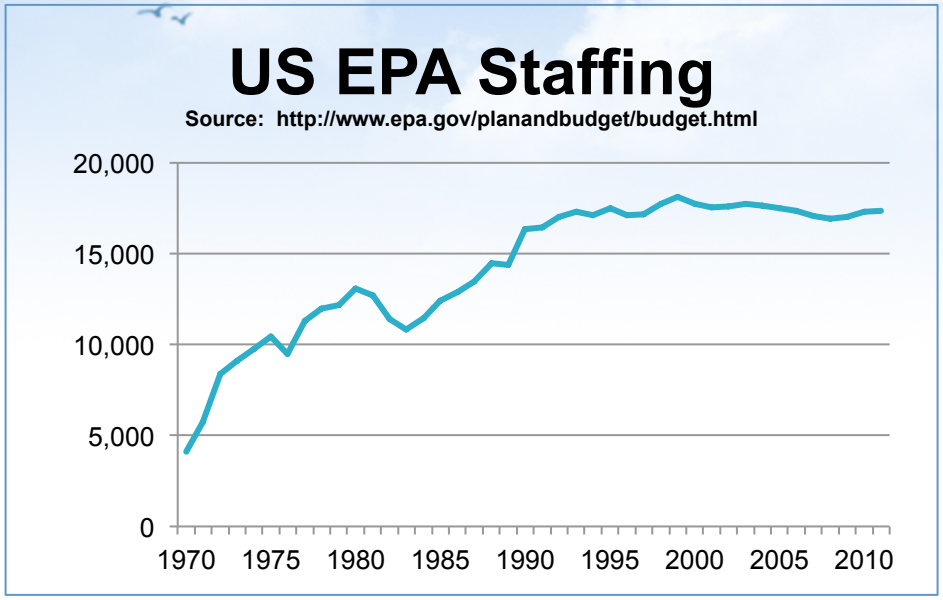
Number of US EPA employees working on air quality

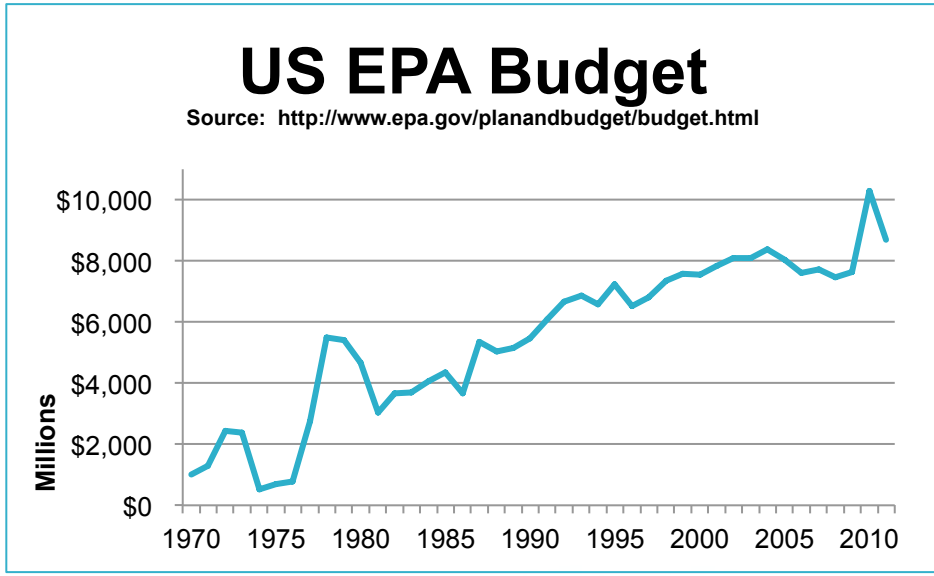
	Headquarters	10 Regions
Staff	**524**	**550**
S&T* Staff	**362**	

**Science and Technology*

- **Substantially greater resources needed to support quantified and specified air quality management**
  - **US EPA: ~1400 personnel**
  - **MEP: dozens personnel**

USEPA staffing and budget from 1970-2010





California Environmental Protection Agency Budget for 2012-2013

Department	Staff	Funding (millions)	% of total funding
Office of the Secretary	78	$26	1%
Water Resources Control Board	1500	$712	44%
Air Resources Board	1273	$555	34%
Toxic Substances Control	979	$237	15%
Pesticide Regulation	410	$83	5%
Environmental Health Hazard Assessment	120	$20	1%
Totals, Staff Positions and Expenditures	4360	$1,633	100%

Principle 2: Assure sufficient human & financial resources

- Develop diverse funding sources: central gov.; local gov.; industry (permit fees, emission fees)

- Criteria for funding:
  （1）government expenditures as a percent of GDP
  （2）Funding stability
  （3）Effectiveness: spending money wisely

Principle 3: Apply state-of-the-art scientific analysis

- Monitoring;
- Emission inventory;
- Source apportionment;
- Air quality modeling (carrying capacity);
- Emission trends forecast for future 5, 10, 20 years
- Assess effectiveness of control programs;
- Gap analysis and contingency measures

Principle 4: Establish emergency episode forecasting and response system

- Develop a forecasting system, dedicated group like AIRNow
- Identify short-term measures；
- Determine threshold that triggers emergent measures
- Public education

Principle 5: Develop control measures and prioritize based on cost-effectiveness

- All scopes of control measures
- Cost-benefit analysis
- Evaluate impacts on the economy (GDP) and jobs if possible
- Prioritize measures with a set of criteria

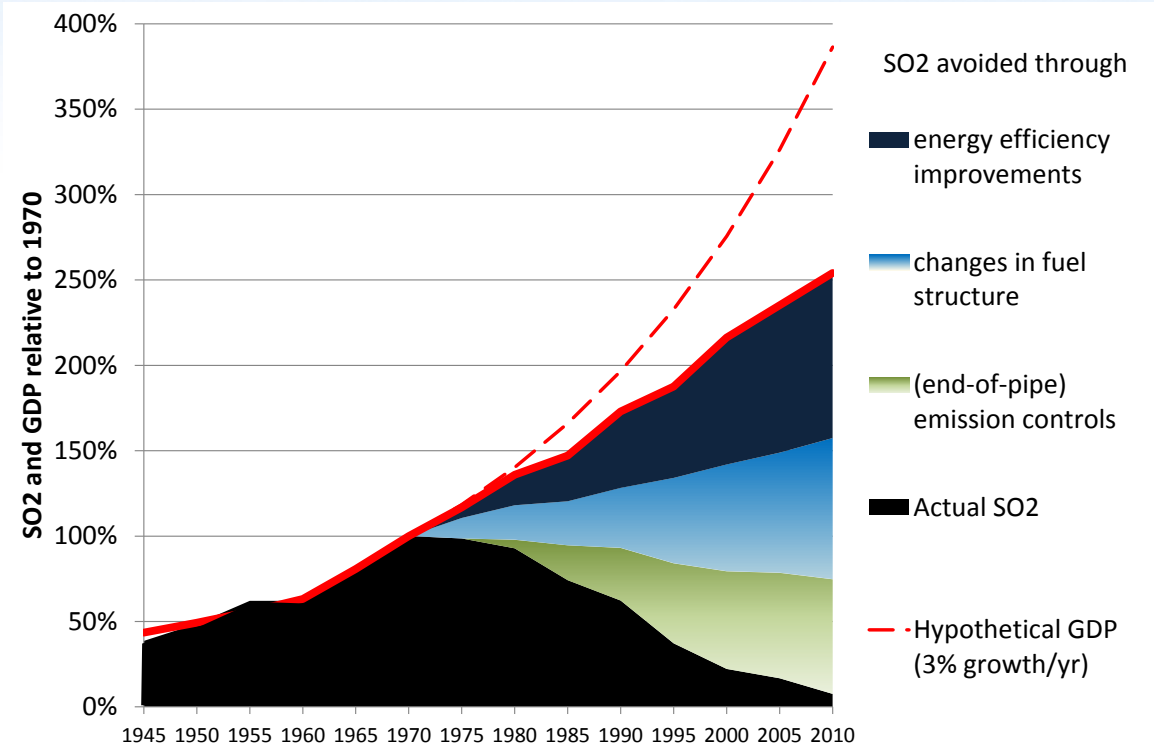
Example criteria: air quality benefits, costs, political will and public acceptance, impacts on GDP, etc.

Principle 6: Embrace BACT&BAT

- New sources
- Existing sources, especially at times of modernization
- BACT/BATs includes a mix of end-of-pipe, root-of-pipe and whole process controls

Principle 7: Optimize co-benefits for air pollutants and GHGs

Decoupling between GDP and SO_2 emissions in Western Europe (1945-2010)



Source: IIASA
http://gains.iiasa.ac.at

Principle 8: Ensure adequate implementation and enforcement with incentives and penalties

- Government： performance evaluation; restriction of permits
- Enterprise level： enforcement activities; record keeping; enough penalty level
  - ✧ Operating permit

Principle 9: Enhance transparency and encourage public participation

- Disclosure: air quality planning, implementation, and monitoring and evaluation
- Timely respond, use new communications tools
- Invite inputs (public hearings, community roundtables)

Note:

✧ It takes a long time to finally clean the air, important to get public support along the way.

Principle 10:Conduct regular monitoring and evaluation for continuous improvement

- Annual assessment
- Formal review every 3 years, mid-term review, final review
- Timely adjust with new scientific findings or regulatory changes
- Evaluate the effectiveness of control measures, and adjust accordingly
- Provides solid foundation for future cost-benefit analysis

Thank You!