



国家煤矿安全监察局

State Administration of Coal Mine Safety

To control coal mine accidents through improved government law enforcement and the identification and control of hidden hazards by enterprises

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**State Administration of Coal Mine Safety**



## Outline

- 1. China's coal mining industry
- 2. Improved state supervision capacity and legal systems and relevant mechanisms
- 3. Implementation of risk prevention and control, the identification and control of hidden hazards by enterprises
- 4. Outcome of state supervision and the prevention and control measures by enterprises
- 5. Problems of China's coal mines



## 1. China's coal mining industry

### Total output and consumption volume

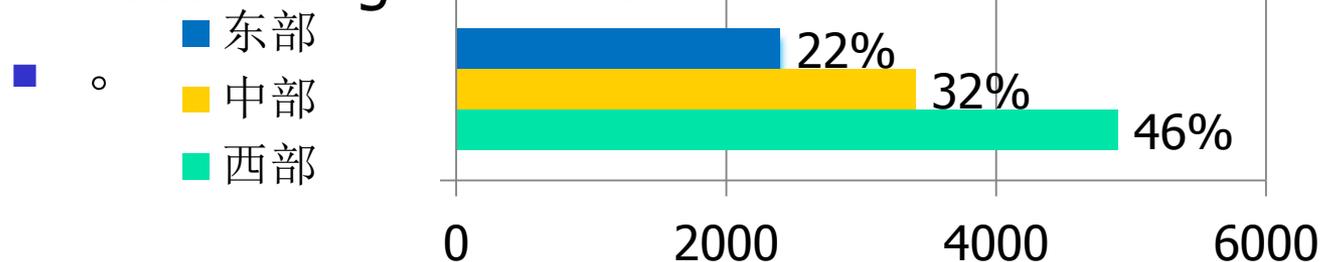
- Consumption volume: nearly 4 billion tons in 2014, taking up 66% of total primary energy consumption
- Output volume: coal as important fundamental energy source for China, total output 3.87 billion tons, nearly half of world total coal output
- Import volume: 300 million tons in 2014, accounting for 7.5% of total consumption volume, in decline since the beginning of 2015
- Coal output capacity and volume are excessive



## 1. China's coal mining industry

### Distribution of coal mines

- Distribution of coal: uneven, resources in western areas account for 80% of the total, middle areas relatively small, eastern areas face coal resources exhaustion
- Number and structure: more than 10,000 coal mines, most located in mid-west; 3400 in middle areas, accounting for 32%; 4900 in western areas, accounting for 46%, 2400 in eastern areas, accounting for 22%



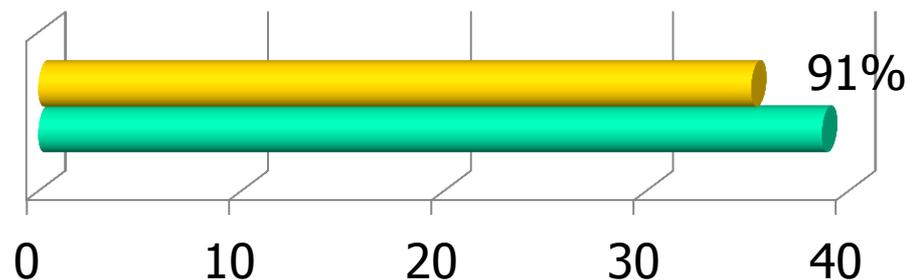


## 1. China's coal mining industry

### Distribution of coal mines

- Output and structure: 8 provinces with coal output capacity over 100 million tons each, 4 are in the west; 19 city-regions with coal output capacity over 50 million tons each, 14 are in Shanxi, Shaanxi and Inner-Mongolia; 10 counties with coal output capacity over 50 million tons, 10 are in Shanxi, Inner-Mongolia and Ningxia; Large coal bases and coal companies are concentrated in the mid and west areas, total output reached 3.52 billion tons in 2014, accounting for 91%, major coal supply source

- 中西部地区产量
- 全国总产量



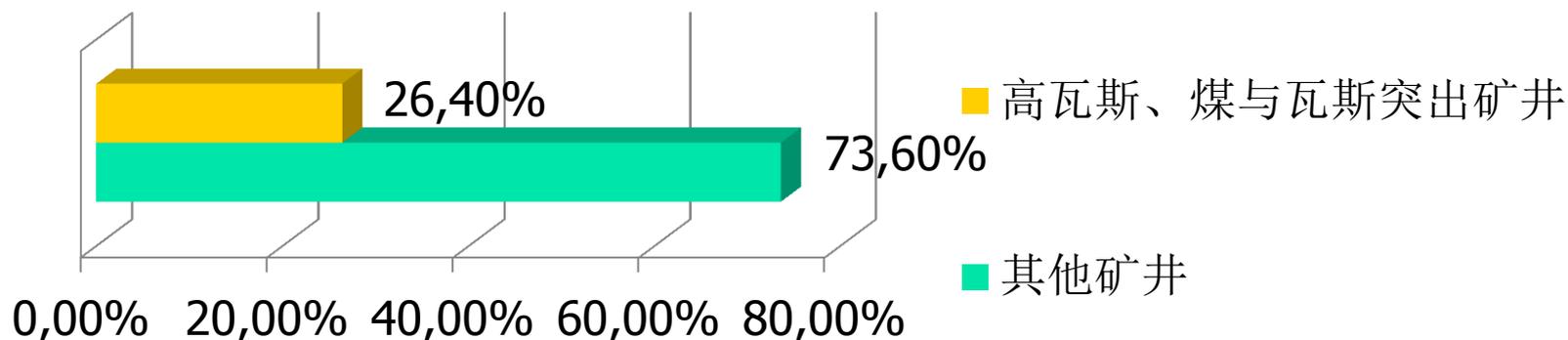


## 1. China's coal mining industry

### Mine disasters

Most coal mines in China are geologically complicated. 91% are underground mines, facing the threat of various disasters.

- Gas: 1624 coal mines with high gas concentration, 1218 with coal and gas outburst, accounting for 26.4% of the total





## 1. China's coal mining industry

- **Mine Disasters**
- Rock burst: average depth of medium and large size coal mines 460 meters underground, 47 coal mines with depth more than 1000 meters; 71 coal mines threatened by rock burst
- Water disaster: 905 coal mines with complicated hydrogeological conditions, accounting for 8.4% of the total ; From 2010-2014, 147 water-related accidents occurred, causing 706 fatalities, accounting for 3.3% of total accidents and 9.1% total fatalities respectively

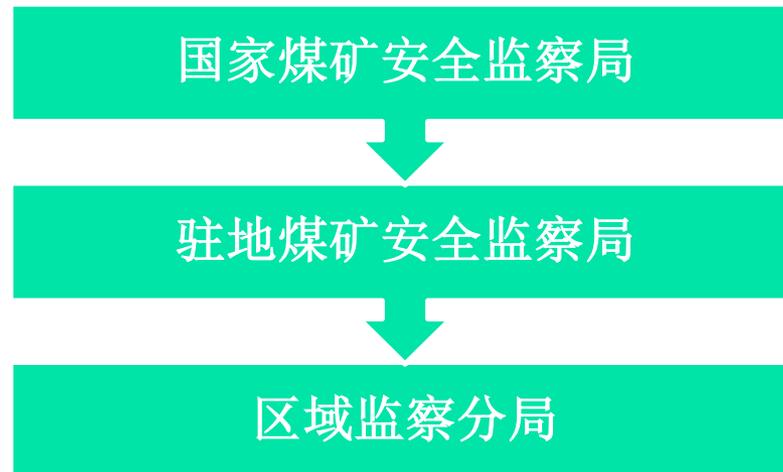


## 2. State Supervision and Improved law enforcement

### 1. Vertical supervision system

Supervision system

Three levels: State Administration of Coal Mine Safety  
Coal Mine Safety Bureaus in Prefectures; Regional Coal  
Mine Safety Bureaus, with 3000 inspectors in total





## 2. State Supervision and Improved law enforcement

### 1. Vertical supervision system

- Working mechanism: “state supervision, prefectural supervision and enterprises being responsible”, a working pattern featured by coordinated government leadership, departmental supervision based on law, enterprises being fully responsible, social partners’ engagement, media and public supervision has been established.
- Functions of coal mine safety administrations/bureaus: coal mine safety supervision and law enforcement, safety permission, issuance of coal mine safety license, accident investigation and treatment, guiding the work of local coal mine safety bureaus, drafting policies, guiding the fundamental safety management, guiding the management of local coal mining industry, supervising coal production and prevention and control of occupational hazards of enterprises



## 2. State Supervision and Improved law enforcement

### 2. Improve safety regulations and standards

Positioning: Coal Mine Safety Supervision Regulations, ensuring coal mine safety supervised by the state

Prescribed powers: Regulations on the Pursuit of Accountabilities in Major Accidents, Safety License Regulations and Regulations on Accident Report, Accident Investigation and Treatment, empowering the state in coal mine safety supervision

Identify hidden hazards: Special Regulations on the Prevention of Coal Mine Accidents, clarifying the standards and approaches in the identification of major hidden hazards

Regulation revision: Coal Mine Safety Regulations revised 9 times based on the lessons learnt, as technical standards in coal mine safety

Standards: more than 30 departmental safety rules, 1400 safety standards



## 3. Prevention and control of risks and identification and control of hidden hazards

### (1) Standards regarding hidden hazards

- Work Safety Law: national standards and sectoral standards, standards regarding hidden hazards that could lead to major accidents in relevant industries
- The Special Regulations on Coal Mine Safety: 68 hidden hazards have been prescribed, which fall into 15 categories; enterprises are required to establish the system of hidden hazards identification, treatment and report
- Functions of state supervision and local government's supervision have been clarified, procedures of law enforcement, penalty and pursuit of accountability stipulated



## 3. Prevention and control of risks and identification and control of hidden hazards

### (2) Supervision by local departments

- Supervision by local government departments: prescribed in the Work Safety Law, some departments must know the number of coal mine enterprises, establish inspection mechanism on hidden hazards identification and treatment by enterprises, establish information management system
- Local coal mine safety administrations/bureaus: prescribed in the Special Regulations on Coal Mine Safety, functions of inspection and penalization clarified.



## 3. Prevention and control of risks and identification and control of hidden hazards

### (3) Risk prevention and control by enterprises

Based on identification of hidden hazards and risk assessment, taking risk prevention and control as core, considering unsafe behaviors

- Establish procedures: recognize systematic risks, evaluate risks, monitor, precaution and monitor risks, share information
- Establish systems: apply closed management system, consider potential risks before making procedures, ensure risk prevention and control management in order from the perspectives of organizational structure, systems and culture
- Establish organizations: representatives are needed from various posts to coordinate and supervise risk prevention and control
- Analyze sources of hazards, prevent the evolvement to hidden hazards



## 3. Prevention and control of risks and identification and control of hidden hazards

### (4) Enterprises being responsible for hidden hazards identification and control

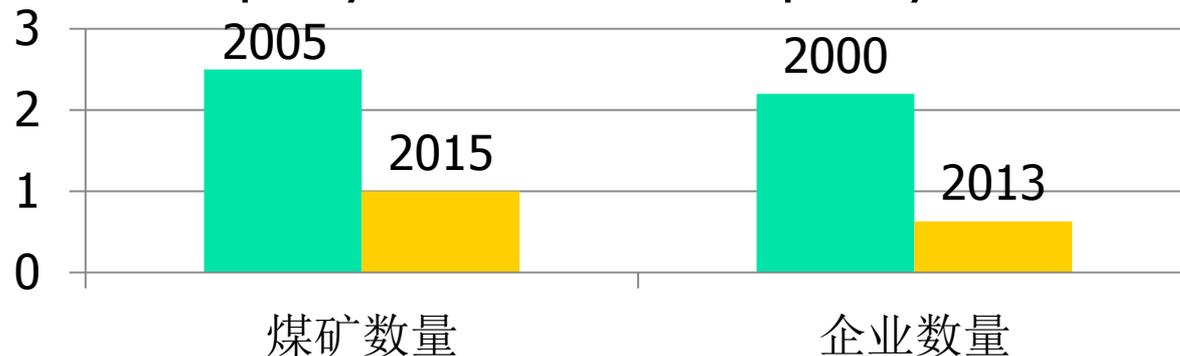
- Establish systems: identification, registration, reporting, monitor, rectification, evaluation, de-registration, statistics, examination
- Enterprises being responsible, report to supervision bodies that further check whether enterprises have treated hidden hazards fairly



## 4. Outcome of improved law enforcement and management

### (1) Changes in the number of coal mines

- Total number: more than 10,000 today from 25,000 in 2005
- Number of enterprises: reduced to 6300 in 2013 from 22,000 in 2000, 9 enterprises with individual coal output capacity over 100 million tons
- Number of closures: 13,000 small coal mines closed, from 2006-2010 9316 closed, 4000 closed since 2011, 800 million tons per year outdated capacity eliminated

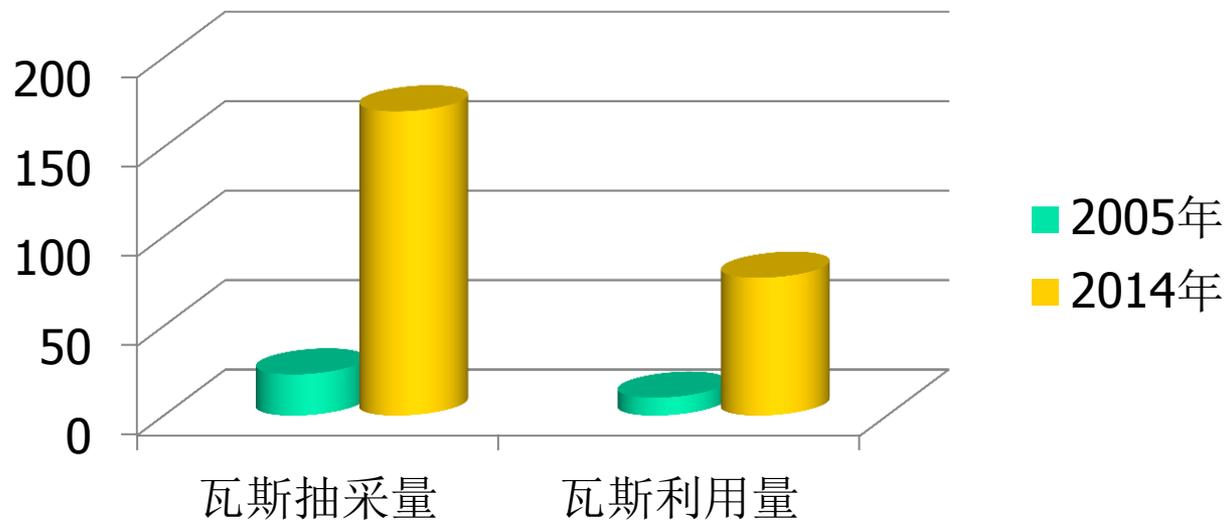




## 4. Outcome of improved law enforcement and management

### (2) Gas drainage and utilization

- From 2.3 billion cubic meters in 2005 to 17 billion cubic meters in 2015, an increase by 639%; utilization 1 billion cubic meters in 2005 to 7.7 billion cubic meters in 2014, an increase by 670%





## 4. Outcome of improved law enforcement and management

### **(3) Changes of coal mine types and structure**

- Growing number of large coal mines: 1070 large coal mines with individual output capacity over 1.2 million tons per year, output accounting for 84% of total
- Increasing output capacity of large coal mines: over 20 million tons per year
- Stable number of medium-sized coal mines: 1800 with individual output capacity between 0.3-1.2 million tons per year
- Reducing number of small coal mines: 7900 with individual capacity below 300 million tons per year, total output capacity 800 million tons, 5400 with individual capacity below 90,000 tons per year



## 4. Outcome of improved law enforcement and management

### **(4) Technology and equipment**

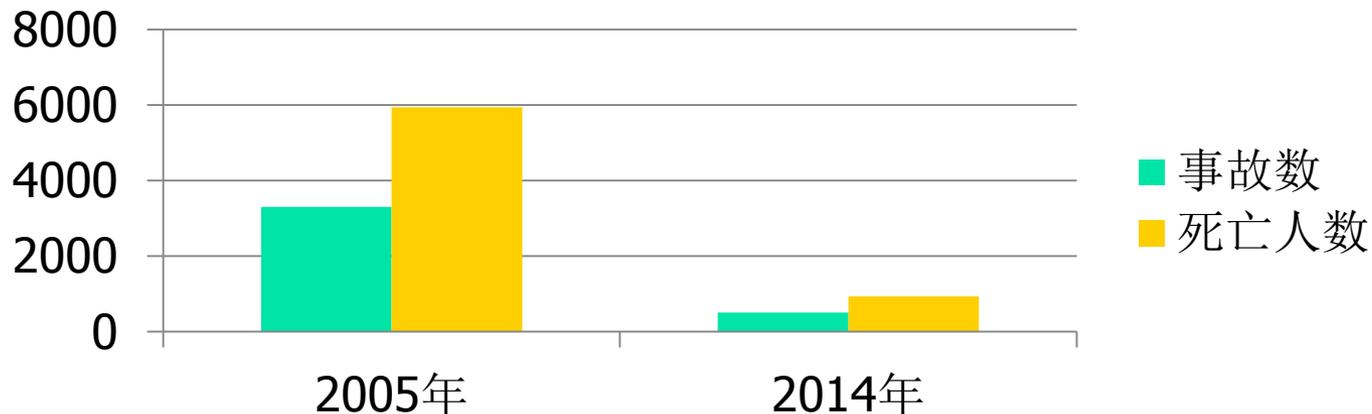
- Mechanization: mechanization level in 2013 reached 75%, comprehensive mechanization level reached 65%, 100% mechanization realized in more than 1000 large coal mines, partial mechanization materialized in 1300 small coal mines
- Automization: world leading, automatic mining through remote control from monitor center on hydraulic support, shearer, conveyer, loader, crusher, sealing-tape machine, pump station and switch



## 4. Outcome of improved law enforcement and management

### (5) Decline of coal mine accidents

Decline of total number: 3306 accidents and 5938 fatalities in 2005, 509 accidents and 931 fatalities, reduced by 2797, 5007 respectively, namely 84.6% and 84.3% respectively, for the first time fatalities per year reduced to below 1000, not extraordinarily accidents have happened in the past 30 months

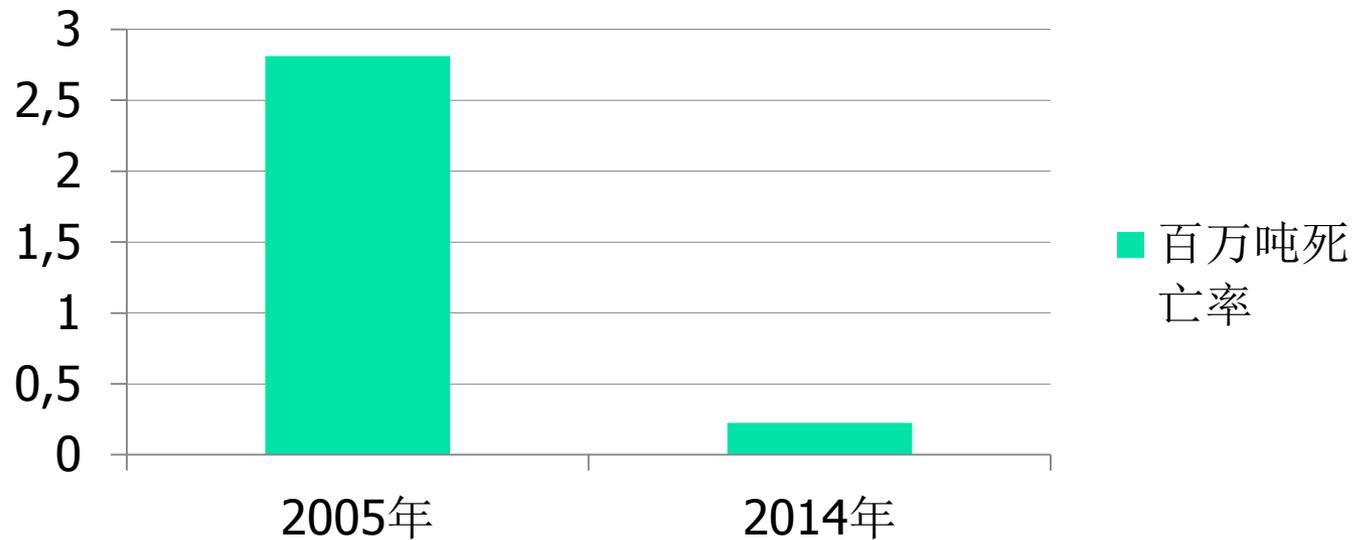




## 4. Outcome of improved law enforcement and management

### (5) Decline of coal mine accidents

- Fatality rate per million tons coal mined reduced to 0.225 in 2014 from 2.811 in 2005





## 5. Problems of China's coal mines

- Large number of small coal mines: 7900 coal mines with individual output capacity below 300,000 tons per year among the 10,000 mines, 5400 below 9,000 tons per year; industrial concentration to be improved.
- Exacerbating threat of disasters: intensified and deepened mining leading to the exacerbation of gas, rock burst and heat; coal and gas outburst can be reduced through drainage in advance
- Growing number of old mines: 150 coal mines face resource exhaustion and eternal closure



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Thank you!

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