China: Occupational health issues and new arising challenges in a growing economy

Zhijun ZHOU
Department of Occupational Health and Toxicology
School of Public Health, Fudan University
Shanghai 20032, China
E-mail: zjzhou@fudan.edu.cn
# Introduction to China

<table>
<thead>
<tr>
<th>Table 1.1</th>
<th>Demographic structure and social demographics of China, 1980–2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (million)</td>
<td>981.2</td>
</tr>
<tr>
<td>Female (%)</td>
<td>48.4</td>
</tr>
<tr>
<td>By age: 0–14 (%)</td>
<td>35.4</td>
</tr>
<tr>
<td>15–64 (%)</td>
<td>59.5</td>
</tr>
<tr>
<td>Over 65 (%)</td>
<td>5.1</td>
</tr>
<tr>
<td>Annual population growth rate (%)</td>
<td>1.3</td>
</tr>
<tr>
<td>Population density (number of people/km²)</td>
<td>105.2</td>
</tr>
<tr>
<td>Total fertility rate (%)</td>
<td>2.7</td>
</tr>
<tr>
<td>Crude birth rate (per 1000)</td>
<td>18.21</td>
</tr>
<tr>
<td>Proportion of urban population (%)</td>
<td>19.4</td>
</tr>
<tr>
<td>Dependency ratio (%)</td>
<td>68.0</td>
</tr>
</tbody>
</table>

*Source: World Bank, World Development Indicators, 2014*
Introduction to China
(People, language and religion)

• A total of 56 ethnic groups inhabit China. Han, accounting for 91.5% of total population. Large ethnic minorities include Zhuang, Manchu, Hui, Miao and Uyghur;

• A multilingual country, with over 80 languages spoken and some 30 written languages. Hui and Manchu use Mandarin. Other ethnic minorities have their own language. 21 ethnic minorities have a total of 27 written languages different from Chinese characters;

• Freedom of religious worship stipulated by The Constitution. Various religions flourish and coexist in China, including Buddhism, Islam, Christianity and Taoism.
Introduction to China (Administration structure)

• Under the leadership of the Communist Party of China (CPC), the political system consists of multiparty cooperation and political consultation, regional autonomy of ethnic minorities, and community level self-governance;

• The National People’s Congress (NPC) is the highest organ of state power;

• The functions and powers of the NPC include amending the Constitution, supervising the enforcement of the Constitution, enacting basic laws, electing and dismissing leaders of state organs, examining and approving the plan for national economic and social development and reporting on its implementation, and examining and approving the state budget and reporting on its implementation.
Introduction to China
(Administration structure)

• State political, economic, cultural, military and foreign affairs are administered by administrative organs, as stipulated by the Constitution and relevant laws;
• The administrative system is composed of the State Council, local governments at the levels of provinces, municipalities, counties and townships;
• Departments of governments, the lower level under the leadership and technical guidance of their respective superior departments at a higher level;
• The CPC organizations, in state administrative organs at each level, formulation of roadmaps, guidelines and policies for the work of the organs.
### Table 1.2  Macroeconomic indicators of China, selected years

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross domestic product (GDP, billion US$)</td>
<td>189.4</td>
<td>306.7</td>
<td>360.0</td>
<td>728.0</td>
<td>1198.5</td>
<td>2256.9</td>
<td>8229.5</td>
</tr>
<tr>
<td>GDP at PPP (current international $, billion US$)</td>
<td>-</td>
<td>-</td>
<td>1110.0</td>
<td>2151.4</td>
<td>3616.3</td>
<td>6470.2</td>
<td>14782.7</td>
</tr>
<tr>
<td>GDP per capita (US$)</td>
<td>193.0</td>
<td>291.8</td>
<td>314.4</td>
<td>604.2</td>
<td>949.2</td>
<td>1731.1</td>
<td>6092.8</td>
</tr>
<tr>
<td>GDP per capita at PPP (current international $)</td>
<td>-</td>
<td>-</td>
<td>1006.6</td>
<td>1785.6</td>
<td>2864.1</td>
<td>4162.9</td>
<td>10944.5</td>
</tr>
<tr>
<td>Annual GDP growth (%)</td>
<td>7.5</td>
<td>15.2</td>
<td>4.1</td>
<td>13.1</td>
<td>7.6</td>
<td>11.3</td>
<td>7.7</td>
</tr>
<tr>
<td>Public expenditure (% of GDP)</td>
<td>14.9</td>
<td>14.4</td>
<td>14.1</td>
<td>13.8</td>
<td>15.8</td>
<td>14.3</td>
<td>13.7</td>
</tr>
<tr>
<td>Value added in industry (% of GDP)</td>
<td>48.2</td>
<td>42.9</td>
<td>41.3</td>
<td>47.2</td>
<td>45.9</td>
<td>47.4</td>
<td>45.3</td>
</tr>
<tr>
<td>Value added in agriculture (% of GDP)</td>
<td>30.2</td>
<td>28.4</td>
<td>27.2</td>
<td>20.0</td>
<td>15.1</td>
<td>12.1</td>
<td>10.1</td>
</tr>
<tr>
<td>Value added in services (% of GDP)</td>
<td>21.6</td>
<td>28.7</td>
<td>31.5</td>
<td>32.8</td>
<td>39.0</td>
<td>40.5</td>
<td>44.6</td>
</tr>
<tr>
<td>Unemployment rate (%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.5</td>
<td>4.5</td>
<td>4.1</td>
<td>4.5</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>-</td>
<td>-</td>
<td>0.32</td>
<td>-</td>
<td>-</td>
<td>0.43</td>
<td>-</td>
</tr>
<tr>
<td>Engel’s coefficient* of urban households (%)</td>
<td>56.9</td>
<td>53.3</td>
<td>54.2</td>
<td>50.1</td>
<td>39.4</td>
<td>36.7</td>
<td>36.2</td>
</tr>
<tr>
<td>Engel’s coefficient of rural households (%)</td>
<td>61.8</td>
<td>57.8</td>
<td>58.8</td>
<td>58.6</td>
<td>49.1</td>
<td>45.5</td>
<td>39.3</td>
</tr>
<tr>
<td>Inflation rate (%)</td>
<td>-</td>
<td>-</td>
<td>3.1</td>
<td>16.9</td>
<td>0.3</td>
<td>1.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Official exchange rate [yuan per US$]</td>
<td>1.5</td>
<td>2.9</td>
<td>4.8</td>
<td>8.4</td>
<td>8.3</td>
<td>8.2</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Constitution in China

---- Footstone for Occupational Safety and Health Laws

• The Constitution adopted at the Fifth Session of the Fifth National People's Congress on December 4, 1982, includes the following major provisions related to occupational safety and health:

• **Item 42**: The citizens have rights and duties to work. The State creates conditions for employment, enhances occupational safety and health, improves working conditions and, on the basis of expanded production, increases remuneration for work and welfare benefits. The State provides necessary vocational training for citizens before they are employed;
Constitution in China

---- Footstone for Occupational Safety and Health Laws

• **Item 43**: Working people have the right to rest. The State expands facilities for working people’s rest and recuperation, and prescribes working hours and vacation entitlements for workers and staff;

• **Item 45**: Citizens have the right to material assistance from the State and society when they become old, ill or disabled. The State is to develop social insurance, social relief and medical and health services to which citizens are both entitled and have a right to;

• **Item 48**: Women enjoy equal rights with men in all spheres of life, including political, economic, cultural, social and family life. The State is to protect the rights and interests of women, and apply the principle of ‘equal pay for equal work’ to men and women alike.
Hierarchies of legislation system in China

1. National People's Congress or its Standing Committee adopts the laws, such as the Law on Prevention and Control of Occupational Diseases;
2. State Council promulgates the regulations, such as the Regulations on Prevention of Pneumoconiosis (issued in 1987) and Regulations on Labor Protection in Workplaces Where Toxic Substances Are Used (issued 2002);
3. The Departments of State Council, such as the National Health and Family Planning Commission (NHFPC, former MOH) and the State Administration on Work Safety (SAWS), which function are directly related to occupational safety and health, issue the regulations (or rules) based on their duties;
4. The national standards (or criteria) are announced by the Departments of State Council, for example, the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ, website: http://english.aqsiq.gov.cn/), NHFPC and SAWS;

- The English abbreviation of such standards are GB(/T), GBZ(/T) and AQ(T). Single character of G, B, Z, AQ and T is first character of alphabetic writing in Chinese and means the National, the Standard, the Occupational, the Safety and the Recommendation, respectively. Without T means this is mandatory;

5. At the level of province, or municipality or autonomous region, their People's Congress or its Standing Committee adopt the local laws according to their specific situation.
Important laws regulations related OH

- **Two Laws**
  - The Work Safety;
  - The Law on Prevention and Control of Occupational Diseases

- **Two catalogues**
  - The Catalogue of Occupational Hazards
  - The Classification and Catalogue of Occupational Diseases
The Work Safety

- adopted in 2002, amended in 2009 and 2014, respectively;
- Generally thinking, this Law handles the safety issues, including accidental poisoning and prescribe the responsibility of both employer and employee;
- There are 7 chapters with 114 items in the Law, including: (1) General Provisions; (2) Safeguards for Work Safety of Business Entities; (3) Rights and Obligations of Employees; (4) Work Safety Supervision and Administration; (5) Emergency Rescue, Investigation and Handling of Work Safety Accidents; (6) Legal Liability; and (7) Supplementary Provisions;
- January 2017 the General Office of the State Council announced the 13th Five-year Planning of Work Safety, and according to this planning the news that this Law will be amended has been open by the SAWS.
The Law on Prevention and Control of Occupational Diseases

- Coming into effect in 2002., amended two times in Dec. 2011 and June 2016, respectively, to adjust it to the new administrative and economical situation;
- Administrative role of government agencies, specifically NHFPC and SAWS, was re-adjusted. Simply, the SAWS governs the occupational hazards at workplaces and the NHFPC governs the worker’s heath.
The Law on Prevention and Control of Occupational Diseases （7 chapters）

• **General Principles:** Based on the Constitution towards protecting workers’ health; and promoting sustainable economy development

• **Pre-production Prevention:** Relying on “Prevention first” through proactive measures at the beginning of projects being operated

• **Preventive and Protective Measures at Workplace:** Control measures required and emphasizing corporate social responsibility in compliance with OH/IH requirements, particularly for the OELs
The Law on Prevention and Control of Occupational Diseases （7 chapters）

- **Diagnosis of Occupational Diseases & Compensation**: Medical surveillance, early detection, diseases diagnosis, treatment, rehabilitation; and compensation/pension

- **Supervision & Inspection**: Health supervision and inspection at county and above levels

- **Penalty**: Including fines, revocation of business license even criminal suited. If violation of the Law, SAWS may propose penalties of up to 500,000 RMB (ca. 80000 $), and even more request local government to order a shut down.

- **Supplemental Provisions**: Defined terminology frequently used in this law
The Law on Prevention and Control of Occupational Diseases

To Prescribe:

- Role of governmental agency: supervision and inspection;
- The responsibility, right and advantage of employers;
- The responsibility, right and advantage of employees;
- The responsibility, right and advantage of occupational health service agencies;
- The legal relationship among governmental agency, employers, employees and occupational health service agencies
Employers must

• Provide employees with healthy and safety workplaces, ensure concentration or intensity of occupational hazards at workplaces is in compliance with OELs;
• There are effective facilities against occupational hazards;
• The workshop should be reasonably located to avoid mutual contamination;
• There are necessary auxiliary facilities, such as dressing, bath and rest rooms;
• The equipment, tools and appliances should comply with the requirement for protecting the well being (ergonomics);
• There are necessary warning signs and emergency rescue facilities;
• Appropriate PPEs must be provides if needed.
Employers must（2）

Have a management system against occupational hazards, including:

- Professional staff in the area of occupational health;
- Planning and program in written form to control occupational hazards;
- Management system and operation procedures in occupational health;
- Establishment /maintain of archives of occupational health activity and health records of employees;
- Monitoring occupational hazards and assessment;
- Emergency rescue planning.
Employers must （3）

- Report the occupational hazards to the SWAS;
- Prepare the report of pre-assessment of occupational hazards while the company is planning to construct;
- Prepare report of effectiveness assessment of facilities against occupational hazards and organizing the acceptance testing of these facilities at pre-running stage;
- Entrust the authorized occupational health service agency to carry out the monitoring of occupational hazards at workplaces;
- Entrust the authorized medical institute to carry out occupational health surveillance.
The Catalogue of Occupational Hazards

- Issued on November 17 2015, jointly by the NHFPC, Ministry of Human Resource and Social Security, SAWS, and All-China Federation of Trade Unions, based on the first version issued in 2002 by the Ministry of Health (name changed into NHFPC in 2014);
- Totally 6 groups of occupational hazards listed in this updated catalogue with open items, including: (1) dusts (51 kinds); (2) chemicals (374 kinds); (3) physical agents (14 kinds); (4) radiation (7 kinds); (5) biological agents (5 kinds); and (6) others (3 kinds, i.e. metal fume, poor work condition in underground mine, and scarping process);
- Under classified groups of dusts, chemicals, physical agents, radiation and biological agents, there is an open item at the end to address other agents that have not mentioned specifically;
- It can be induced that all occupational hazards have been included. But in the practice, only clearly named agents in the list have been managed.
The Classification and Catalogue of Occupational Diseases

- Issued in December, 2013 jointly by the NHFPC, Ministry of Human Resource and Social, SAWS, and All-China Federation of Trade Unions, based on first version issued in 2002 by the both former Ministry of Health and former Ministry of Labor and Social Security;

- 10 groups of occupational diseases listed: (1) pneumoconiosis (12 kind) and other occupational respiratory diseases (6 kinds); (2) occupational skin diseases (8 kinds); (3) occupational eye diseases (3 kinds); (4) occupational otorhinolaryngologic and oral diseases (4 kinds); (5) occupationally chemical poisonings (59 kinds); (6) occupational diseases caused by physical agents (7 kinds); (7) occupational radiation-induced diseases (10 kinds); (8) occupational infectious diseases (5 kinds); (9) occupational cancers (11 kinds); and (10) others (3 kind);

- Open items in groups of pneumoconiosis, skin disease, chemical poisonings, and radiation-induced diseases, to address other issues not being mentioned specifically, e.g. other chemicals with direct causal relationships between occupational exposure and occupational diseases;

- Typical work-related diseases, such as the musculoskeletal diseases, e.g. low back pain or tendonitis from repetitive motion work, the cardiovascular disease from long working hours, and the psychiatric diseases from psychological stress, can’t be diagnosed as occupational diseases.
Diagnosis of occupational disease

- Made by the qualified medical doctors in the authorized hospitals after the suspected case starts his/her application;

- Based on:
  1. the worker’s employment records,
  2. the qualified records of qualitative and quantitative exposure to occupational hazards at workplaces, and
  3. the clinical manifestation and results of auxiliary examinations.

- This is compensatory to confirmed cases. The treatment still covered by the medical insurance.

- The insurance not covering all for the farmers, then there is huge poverty-stricken for farmers with pneumoconiosis
Two important standards (1)

• GBZ1, the hygienic standard for the design of industrial enterprises, announced by Ministry of Health in 2010, the primary guideline for employers to design their plants, including:
  • Location requirements;
  • the building (plane and vertical layout);
  • the prevention/control of dusts, toxic chemicals, heatstroke and cold, noise and vibration, ionization and non-ionization radiation;
  • lighting and illumination;
  • microclimate at worksite;
  • the auxiliary room and/or facilities; and
  • emergency rescue.
Two important standards (2)

- **GBZ2**, The occupational exposure limits for hazardous agents in the workplaces, current valid version announced in 2007.
  - Part 1: chemical hazardous agents (GBZ2.1), 339 chemicals, 47 types of dusts and 2 biological agents (beauveria bassiana and subtilisins) having been listed.
  - Part 2: physical agents (GBZ2.2)
- The concept of MAC (maximum allowable concentration), PC-TWA (permissible concentration-time weighted average) and PC-STEL (permissible concentration-short term exposure) is present, which is just similar to the concept used by ACGIH.
Supervision on occupational health work

To supervise the occupational health work of employers, the SAWS issued several regulations, such as:

- Regulation on reporting of occupational hazards (No 48);
- Administrative Regulation on supervision on occupational health work at workplace (No 47);
- Management catalogue of risk classification of occupational hazards in construction project (2012 version);
- Administrative Regulation on supervision on occupational health surveillance work of employer (No 49);

The risk of occupational hazards in construction project classified into 3 groups, i.e. the common, the less severe and the severe. The enterprises, with severe risk of occupational hazards, or employed more than 100 staff, must set up a specific unit to handle work related to occupational health.
Supervision on occupational health work

- To supervise the authorized occupational health service agency, SAWS issued the temporary management methods of occupational health service agency (No 50) in 2012, in which the requirements of human resources, the instrument, internal control system, and the service quality assurance system of the authorized agency are clearly stated.

- To supervise the authorized medical institutes providing service of occupational health surveillance and/or diagnosis of occupational diseases, NHFPC issued regulations, such as Regulation on Occupational Health Examination (No 5), and the Regulation on Diagnosis and Appraisal of Occupational Diseases (No 91).
Occupational health problems ---- announced by the government

- The National Program on Prevention and Control of Occupational Diseases (2016-2020) announced by the General Office of the State Council showed:
  - Ca.30,000 cases of occupational diseases reported annually, mainly distributed in the industries of coal, chemical, non-ferrous metals and light industry;
  - Some employers didn't fulfil the responsibility and duty, provide worker with healthy working environment and appropriate protective equipment;
  - Occupational health work, such as monitoring of occupational hazards and health surveillance, were not fully implement;
  - The right and interest of farmer workers and temporary-employee or dispatched workers were not well ensured;
  - Lower capability of both occupational health supervision and service;
  - Incomplete national data of occupational health work;
  - Lower monitoring ability of some important or new hazards
Some awful picture of working environments, released by SAWS

Quartz dusts
Some awful picture of working environments, released by SAWS
Some awful picture of working environments, released by SAWS

Metallic dust
Some awful picture of working environments, released by SAWS

Chemical (solvents) pollution in the cabinet making
National reporting data of occupational diseases in 2014

- Totally 29972 cases, including: pneumoconiosis, 26873 (coalworker pneumoconiosis 13846, silicosis 11471); acute poisoning 486 (most due to CO); chronic poisoning 795 (benzene, lead, arsenic, etc.); the others 1818 (cancer 119, radiation-induced diseases 25, noise deafness 825, infectious diseases 427, etc.);
- Distribution of industries, coal mining 11396; nonferrous metal mining 4408, and other mining activities 2935, accounting for 62.52%
Ten leading reported occupational diseases

- Lung diseases: silicosis, coal workers' pneumoconiosis, foundry pneumoconiosis, asbestosis, byssinosis, occupational asthma;
- Metal poisonings: lead, arsenic, mercury, manganese, cadmium, chromium;
- Pesticide poisoning: OPs, pyrethroids;
- Organic solvent and aromatic amine poisonings: benzene, toluene, carbon disulfide, n-hexane, dichloroethane, TCE, aniline, TNT;
- Irritants and suffocating gas poisonings: chlorine, ammonia, nitrogen oxide, phosgene, carbon monoxide, hydrogen sulfide;
- Dermatitis and chemical burns;
- Noise-induced hearing loss;
- Vibration disease;
- Arc-welder's eye-flash;
- Occupational cancers: lung cancer, mesothelioma, bladder tumor, leukemia, skin and liver cancers.
Small Scaled Industries (SSI)

• Have experienced dramatic growth since the concept was developed when China started economic reforms in 1978;
• They are a major source of employment, creating more than 120 million jobs.
• Covering manufacturing, construction, mining, transport and communications, commerce, services and other businesses.
• Adverse impact on the environment has become a major concern both for the Government and the public.
Worker Safety and Health in SSIs

• The protection of workers' safety and health lags far behind the economic performance;
• Causes include general lack of awareness, low level of education of managers and workers, outdated technology, & non-availability of technical and financial support.
Migrant Workers

• In occupational disease prevention, one important concern is the large number of migrant workers in SSIs.

• Male migrant workers are commonly found in the most hazardous industries, particularly construction and mining.
Discrimination Against Migrant Workers

- Migrant workers are usually not covered by social insurance like old age insurance, even if such schemes exist at the location of TVEs.

- Their migrant status results in a lower level of attention to their protection, as well as practical difficulties in promoting OSH through training and awareness raising.
Remarks

- Occupational health in China has undergone many changes and got significantly improved over the past decades;
- Occupational health legislation has been playing a vital role in recognition, evaluation and reduction of exposures to a variety of hazardous at work;
- Government reforms its administrative structure and mode, the work on occupational health will become more fruitful since legal compliance is more and more respected.
Professionalism is to be visible and to inspire trust

Thanks!

谢谢！