

INAIL Department of Occupational Medicine - Formerly ISPESL
National Institute of Occupational Safety and Prevention

An international cooperation project to improve health and safety in the coal mines:
the Sino-Italian cooperation experience

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Research
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SINO-ITALIAN COOPERATION PROJECT

Occupational Safety and Health in coal mining sector

Participants

- INAIL, Dept of Occupational Medicine (formerly ISPESL)
- Health Care Unit, Italian Embassy in Beijing
- Fuxin City Social Security Administration Bureau, Fuxin City Health Bureau
- Liaoning Technical University
- Fuxin Mining Group Ltd.

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OCCUPATIONAL DISEASES IN CHINA

Pneumoconiosis are included in the list of occupational diseases.

In 2005 China had 600.000 cases of pneumoconiosis, with an incidence of 15.000 of new cases / year

In 2% of these cases exposure to dust was less than 2 years with a mean age of 40,9 years (shortest exposure: 3 months; youngest age of onset: 20 years)

Hearing loss and hypoacusia are as well included in the list, but the attribution of this impairment to occupational causes is very low

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THE SITUATION IN FUXIN CITY

Sanitary surveillance for the Fuxin Mining Group's coal miners is carried out by the FMG's Occupational Medicine service, which makes about 10.000 controls / year consisting of medical examination, spirometry and chest X-rays.

In case of ill-health the active miners receive free medical care and assistance at FMG's General Hospital.

The Social Security Administration Bureau has 13 "Stations" that cover the entire municipality area of Fuxin City, paying allowances to retired miners and medical assistance to those with recognized occupational diseases

The same Bureau holds the "Old miners hospital", where examiners with recognized occupational diseases receive medical assistance

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Technical OSH measures in coal mines

Implementation of ventilation technology.

Dust control and removal systems.

Promotion of professional training in OSH.

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Health
must be included into the work of occupational safety, being one of the principal requirements for occupational safety actions*.

*Jian Liu, School of Safety Engineering, Liaoning Technical University, PR China
(Seminar on "Sino-Italian Cooperation on Occupational Medicine and Safety within the framework of the health Reform", Fuxin (PR China), 8th December 2009)

COOPERATION PROJECT LAYOUT

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May 2009: 1st visit of Chinese experts to Italy to meet Italian OSH experts



December 2009: 1st visit of Italian experts to China to get acquainted with Social Security and Local Health systems and to meet safety engineers from the Liaoning Technical University and occupational doctors of the Fuxin Mining Group Ltd.

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COOPERATION PROJECT LAYOUT

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June 2010: 2nd visit of Chinese experts to Italy to visit different kind of mines and quarries and get acquainted with specific health and safety measures as well as environment protection systems



Underground talc mine



Travertine open quarry



Balangero Asbestos mine



Coal power plant

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COOPERATION PROJECT LAYOUT

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October 2010: 2nd visit of Italian experts to China to visit underground and open air coal mines to assess the safety measures and working conditions and evaluate OH Services delivery to active miners.



Quinghemmen underground coal mine



Haizou open coal pit, ground vision



Haizou open coal pit, satellite vision

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MATERIALS AND METHODS

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The Fuxin Mining Group (FMG) Ltd. is a State-owned coal mining company which holds 8 active underground coal mines and 1 open-air coal pit in the Fuxin City area (PRC's north-eastern Province of Liaoning).

The annual output of FMG is of 2 million tons of coal.

Total workforce of 55.000 units, with 44.000 active miners.

Italian experts visited the underground Quinghemmen coal mine, that has about 5000 employees, with about 3500 active miners.

Sanitary surveillance is based on yearly health examinations aimed at detecting possible occupational diseases affecting the miners' respiratory system (medical check-up and chest X-rays).

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MATERIALS AND METHODS

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Analysis of national legislation as well as the official list of occupational diseases, to understand intervention priorities and gaps respect to the health needs of the working population employed in the mining sector

Appraisal of the Quinghemmen coal mine's monitoring and alarm systems for gas and/or toxic substances' escapes (172 spots), dusts concentration (365 spots) and noise levels (252 spots).

Assessments have been extended to safety issues related to machineries' safety, electric supply, air conditioning and microclimate, personal equipment (general and protective)

General assessments on environmental impact

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MATERIALS AND METHODS

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Through

- ✓ Experts' meetings
- ✓ Field visits
- ✓ Seminar (December 8th, 2009)

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RESULTS - general safety measures

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The underground galleries of Qinghemen coal mine are served by a narrow-gauge railway at the entry level (- 600 m) and by a rack-railway which reaches the inclined shafts where the coal is dug from.



Along the railway runs a system of piping for water and electric supplies. The fire-preventing system is represented by oilskin bags hanging from the ceiling, which can be opened by pulling a rope.



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RESULTS - Occupational Health

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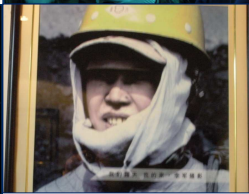


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RESULTS - Occupational Health

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Protection devices for respiratory tract (both for prevention of dust inhalation and for emergency protection from gas escapes) appear to be quite weak, without any guarantee of efficient prevention



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RESULTS - Occupational Health

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Boots cannot be considered as accident prevention devices either because they are quite uncomfortable and can easily cause slips, and because they do not have any kind of support to protect feet and toes from crushing.



Apparently, any kind of protection for the hands is used



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RESULTS - Occupational Health

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Microclimate

Inside the mine there is a very wide temperature range, from 3-4°C at the entry level (where ventilation shafts bring in fresh air) up to 35-38°C with a 90% of humidity inside the digging galleries.

The absence of any kind of protection from the cold (such as the coats given to the experts when exiting the galleries), may facilitate acute respiratory syndromes which could foster a premature onset or a fastest worsening of occupational respiratory tract diseases.



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CONCLUSIONS

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Popular Republic of China is one of the fastest growing economies in the world

but

the analysis of human development's indicators gives the picture of a Country affected by

- ✓ Relevant environmental issues
- ✓ Low health assistance accessibility
- ✓ Unhomogeneous wealth distribution
- ✓ Growing social inequalities

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Advices

- ✓ on the aspects of OSH policy development
- ✓ on practical issues related to personal protection equipment
- ✓ on further development of the occupational diseases' list, for the inclusion of other relevant occupational health issues that may affect miners during and because of their work.

will

This international cooperation project and its good results, demonstrated that a strong **will** of cooperation joint with a good capacity of **integration** and each other's attitudes **respect** can attain excellent results that can be translated into a better protection of workers health, an effective reduction of occupational diseases' incidence and a more efficient social security system.

integration

respect

The Chinese experts decision to keep on with the exchange of scientific knowledge and practical experience over the end of the grant project (which means at their own expense!) can be considered one of the best indicators of the cooperation project success.

Thank you for attention!

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