



In South Korea, 50 000 miners are exposed to coal dust. Inhaling it over a long period can cause serious lung problems.

PNEUMOCONIOSIS

IN SOUTH KOREA

By DENIS MARCHAND

South Korea has massive underground reserves of anthracite, a hard form of non-bituminous coal. As the country's main source of energy, coal is chiefly used in the form of briquettes for domestic cooking and heating. In 1985 total production was expected to reach 22 million tonnes, which places it among the highest in the world.

There are currently 333 coal mines in operation, employing more than 55 000 people. Recent statistics show that 16 percent of the 50 000 miners directly exposed to coal dust are suffering from a debilitating lung disease called pneumoconiosis.

This disturbing situation has induced the Preventive Medicine Department of the Catholic Medical College of Seoul to carry out an in-depth study on the nature, causes and course of this industrial disease. "In a way we are pioneers," says Dr Yun Im Goung, the principal investigator on the research project. "No one in Korea has yet paid any attention to the problem. In 1980 ours was the only hospital diagnosing pneumoconiosis and giving the proper care to people who had it. The medical community was not much aware of industrial disease, and that lack of knowledge made diagnosis difficult or even impossible."

Research has concentrated on 22 mines. Medical examination of their 12 800 miners rapidly revealed 2003 cases of pneumoconiosis, of which 13 were in an advanced stage. Most of the vic-

tims identified worked in places with a very high concentration of coal dust, namely underground at the coal face or in the transportation of the mineral.

Several factors favor the prevalence of this disease in anthracite mines: the friability of the mineral (that is, the ease with which it crumbles), the depth of the pits, the traditional mining methods used, and the poor quality of the work environment.

The coal mined in South Korea is different from the bituminous coal found in Germany, Japan and Canada, which is imported by South Korea for use by its heavy industries such as cement and steel plants. Anthracite is soft and friable and produces a great deal of dust. It is the mineral resource best suited to the manufacture of domestic briquettes. But it is also difficult to apply sophisticated mining techniques to it, according to Hee Bock Eun, a mining engineer. The mining companies use this situation as an excuse for not modernizing their operations.

Coal is extracted with manual tools — hammers, pickaxes, pneumatic drills, and mechanical cutters — in narrow borings which are sometimes as much as 600 metres underground. Overpowering heat and excessive concentrations of dust, which result from inadequate ventilation, make for a harsh work environment — one in which the miners inhale dust.

DEVELOPMENT OF THE DISEASE

The dust deposited in the lung tissues remains there for many years before causing slow deterioration of certain lung functions. Pneumoconiosis is not easy to diagnose and its development can be monitored by radiography only when it has reached an advanced stage.

Symptoms of pneumoconiosis are difficulty in breathing, thick saliva, expectorations (mucous discharge from the lungs) containing blood, persistent cough, and continuous chest pains.

Without proper treatment, there can be serious complications. These include pulmonary emphysema (excessive permanent dilation of the alveolar spaces in the lungs), bronchiectasis (dilation of the bronchial tubes), and perforation of the lungs, all of which involve permanent respiratory difficulties and can even cause death.

The current research project has made it possible to alert many of those involved to the dramatic and burdensome impact of pneumoconiosis on Korean society. It has been a significant tool in the establishment of new preventive medicine programs. At the governmental level, the Ministry of Labour has taken an interest in this research as an aid to formulating new regulations for the health and safety of workers in certain sectors of industry.

Industry management is also trying to tackle this alarming health problem. Several mining companies have modified their systems for air quality control, ventilation, and dust exhaustion, and employees are now given regular medical examinations.

REMARKABLE PROGRESS

"Health in the industrial sector in developing countries is a touchy question," says Dr Yun. "It involves large sums of money

which few people are willing to spend. Even so, progress in the area is remarkable and encouraging."

With financial support from IDRC, the Department of Preventive Health has been able to gain relevant knowledge about pneumoconiosis. This is why it has taken on the task of alerting the South Korean medical community which at present is still only slightly aware of the disease although there are now 9000 recorded cases in South Korea.

Since pneumoconiosis is not included in programs of medical studies, specialists from the Catholic Medical Centre are now periodically invited to lecture students and doctors. The publication of their reports is valuable to those who want to know more about it. There are now seven hospitals throughout the country which pay special attention to the disease and can provide appropriate care.

"It isn't possible to change everything

quickly," Dr Yun says. "We have managed to awaken the interest of many people, and that's important. We have gone a long way in a few years with much patience. Our task is not finished."

South Korea is currently experiencing phenomenal industrial growth. The country is the second largest exporter of ships in the world and the 13th largest producer of steel with recorded exports of over US\$2 billion. Unfortunately, industrial diseases are growing at a corresponding rate. The Catholic Medical Centre, therefore, hopes to continue with its research, particularly in the shipbuilding yards where there is a high rate of lung disease. □

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Photo: Denis Marchand

A mobile X-ray service has made it possible to give preventative lung examinations to thousands of miners.