

Creating a healthy environment in China

Professor Sian Griffiths

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As Co-Chair of the SARS (severe acute respiratory syndrome) enquiry for the Hong Kong government, I was made highly aware not only of the global public health challenges we face today, but in particular the public health challenges faced by China – and Hong Kong as part of China. SARS demonstrated that the fight against infectious disease entails not just the clinical aspects of disease control, but also the conditions in which food is produced, the design of our housing and the need for occupational safety.

Following the work with the government, I was invited to the School of Public Health of the Chinese University of Hong Kong where I now work, which has given me new perspectives on the challenges the environment poses for the health of populations in our part of the world.

Necessarily, my account today will be impressionistic. I have to emphasize that I am not an expert on environmental health, and I want to thank my colleagues at The Chinese University of Hong Kong School of Public Health, and Professor Shelly Tse in particular, for their help preparing materials for this lecture.

I will start with some definitions and descriptions, and then go on to consider the physical environment and the health issues relevant to safe water, air, food and occupation, referring to the economic transition which has created a huge migrant work force, and the new challenges for those concerned with creating a healthy population.

Definitions

When we consider health, we do not think just about doctors and illness but about 'wellness'. If we use the World Health Organization (WHO) definition – 'Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' – then the scope for creating a healthy environment is clearly not limited to hospitals and doctors' surgeries, but includes the myriad factors that influence health: agriculture and food, education, housing, employment status and working environment, water and sanitation, and health care services, as well as hereditary factors and lifestyle choices such as smoking.

A historical analysis of public health tells us that we need to be aware of all these factors, and the influence of the environment does not just involve the conditions in which we work and live – whether



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we have water, sanitation, good housing or health-promoting workplaces – but also how we live our day-to-day lives, and how we communicate with and support each other within our societies. High-rise tower blocks in Hong Kong may be less conducive to children going out to play in the park, as mothers will be anxious about letting them go on their own, predisposing them not only to less physical activity and a greater chance of obesity but also to psychological stress.

Thus environmental influences can be social, physical, economic and political. I will focus on the physical but briefly touch on the others, as it is not possible to discuss health in China without doing so.

Mainland China has a population of 1.31 billion people living in 22 provinces, five autonomous regions and four municipalities. Since 1949, there have been tremendous advances in the health of the people. The two indicators used to reflect the health and well-being of a country are life expectancy and infant mortality. In both of these areas China has made terrific strides forward. The average life expectancy of a Chinese citizen, for example, rose from just 35 years in 1949 to 70 in 1997. By 2004 a resident of Shanghai might have expected to live to 80.

This has been brought about by an increase in national wealth (China's current annual rate of GDP growth is around 8-10 per cent), and this has seen areas such as the Pearl River Delta expand at an amazing pace to become a production centre for the world. In the late 1970s Shenzhen, for example, was a sleepy rural area with a population of around 370,000 farmers and fishermen. Today, the population is 12 million and growing, comprising 2 million permanent residents, 6.5 million temporary residents and a large floating migrant population.

While 60 per cent of China's population is in rural areas, rapid urbanization due to industrialization and marketization has led to a huge migrant population. The impact on health has been mixed, with diseases of affluence emerging in the richer eastern cities where obesity is increasing; while in the rural west, poverty-related diseases are still having an impact. Health inequalities continue to exist, with life expectancy a good 10 years longer in the cities than in the most impoverished rural areas, and infant mortality almost 10 times higher in the most impoverished rural areas than in the larger cities. As the economic boom continues, disparities in resource allocation also continue to grow, with a disproportionate effect on the nation's health.



Unrestricted economic and industrial development has caused a deterioration in the environment as the impact and demands of economic growth put stresses on infrastructure and produce harmful side effects. The consequence for well-being is that the health gains of a more affluent society are counterbalanced by the impact of environmental pollution – which is causing increasing morbidity and mortality, and putting stress not only on the inadequate health care system but on people's pockets – to the extent that paying medical bills is the most common cause of people going into poverty. In a 2007 survey medical concern topped the league of social concerns. I want to focus on the impact of the physical environment on health and the challenges this poses by looking at five themes: air, water, food, the working environment and climate change.

How safe is our air?

In 2008 Beijing is to host the Olympics and, as everyone is aware, there is great concern about the health implications for the athletes, such that there is even the potential of rescheduling the games, or at least some events. Air pollution has become a major concern – particularly for its impact on quality of life. There are countless pictures of smog in our cities, not least in Beijing, Shanghai and Hong Kong. We seldom see a clear sky, and of 585 cities surveyed in 2006, only 38 per cent registered air quality that reached national health standards, down from 45 per cent in a 2005 study. Air pollution is a direct result of uncontrolled rapid economic growth. Its sources are combustion of gasoline and other hydrocarbon fuels in growing numbers of cars, trucks and aeroplanes.

And then there are the sources of indoor pollution, for example the burning of fossil fuels, with coal still the major source of energy for much of China. In addition, much domestic cooking makes use of wood alongside fossil fuels, contributing to indoor air pollution. Indoor pollution is exacerbated by the high rates of smoking among men (60 per cent) and recent figures show that smoking continues to rise amongst the younger population. While efforts are being made to stem the tide, there is a long way to go and major considerations such as tobacco production and tax revenue need to be actively addressed. Other sources of air pollution include insecticides and herbicides, radioactive fallout and dust, especially from construction and industrial processes.

While there have been some attempts in Hong Kong to control sources of pollution such as outdoor burning, which has been banned since 1996, comparisons between the pollutant concentrations in cities



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of the Pearl River Delta and other international conurbations show that levels are woefully high. Many expatriates are leaving Hong Kong, citing the poor air quality as their reason – including the conductor of the Hong Kong Philharmonic Orchestra, Edo de Waart, whose son was suffering from asthma. Studies in our schools have shown increased hospitalization associated with air pollution.

How safe is our water?

Water is a prerequisite for life – and clean water a prerequisite for health. China faces a major challenge in providing clean water to its citizens. Many water sources are becoming polluted and industrial wastewater has led to 70 per cent of the water in five major river systems being unsuitable for human use. At present it is estimated that 700-800 million people are drinking contaminated water on a daily basis. Communities along the major river systems are beginning to show the harmful effects and there have been reports of increased rates of cancers, stunted growth, spontaneous abortion and also a negative impact on IQ.

The village of Shangba in Guangdong province is just one example of the problems that can be created by water pollution. Here a government-owned mineral mine and other privately owned smaller mines dumped toxic waste into the local rivers. It is estimated that 250 people died of cancer related to the toxins between 1987 and 2005.

There have been many more stories, including the highly publicized growth of algae turning lakes green with the result that water is unfit for drinking. Other examples of contamination include:

- Cadmium: contamination of the Bei River from mining led to suspension of the water supply downstream.
- Lead: more than 300 children were poisoned following contamination of the village water supply in Hui county, Guansu province.
- Arsenic: 160 people were poisoned following a leak from a smelting plant in Liaoning province.

And contamination also has impacts on the food chain. But of course contamination is not the only problem of the water supply. Having water in the first place is also a very important issue, and the increasing demand for water as living conditions improve and industry booms is confounded by a growing water shortage. The per capita supply is only 25 per cent of the global average, particularly in

the south, and 60 million people find it difficult to get water for their daily needs. Riverbeds dry up, fish die and water quality deteriorates.

How safe is our food?

Food scares are commonplace. In Hong Kong we have had a series of alarms: malachite green in fish farming; contaminated vegetables; oily fish; *Streptococcus suis* in pork; and of course H5N1 avian influenza in our chickens.

The response in Hong Kong has been to create a special government body – the Centre for Food Safety – with regulatory powers. In Shenzhen, food safety and food security have become important issues of concern. With the millions of migrant workers living in dormitories, many in cramped and not too hygienic conditions, the risks of food-borne disease pose a challenge to the local Centre for Disease Control, which has responsibility for control of outbreaks of food poisoning. A recent incident of poisoning resulted in two deaths and a number of hospital admissions – the source being an unlicensed noodle bar.

Issues of food export from China have become highly sensitive – as demonstrated by the recent debate about whether or not New Year dumplings had been sabotaged.

How safe is our workplace?

The pace of change and urban expansion have led to short cuts in many industrial processes. As the WHO report says: ‘The trend towards globalization of trade, while economically beneficial, is introducing a host of occupational hazards to developing countries, where 75 per cent of the global workforce lives and where the technical and social infrastructure is lacking to protect workers from these hazards.’ In the United States of America the mission of the Occupational Health and Safety Act is ‘to assure so far as possible every working man and woman in the nation safe and healthful working conditions’, and is supported by legislation, but in China, the rapid pace and scale of change make this seem a monolithic struggle.

Occupational hazards can be grouped as:

- Physical (noise, vibration, ionizing or non-ionizing radiation, thermal environment, air pressure).



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- Chemical (gases and vapours, organic compounds, metals and dusts).
- Biological.
- Ergonomic.
- Psychosocial.
- Safety.

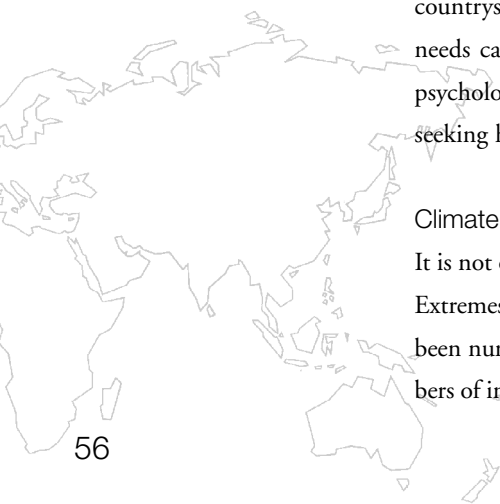
It should be pointed out that occupational accidents may be **environmental** – due to unsafe conditions – or **personal** – due to unsafe acts.

Inevitably, considerations of occupational safety link back to the nature of the working population and the impact of migration. Employers in, for example, the mining industry, often take short cuts in their rush to deliver the coal needed for the electricity supply for industry. Coal mining accidents are not an infrequent occurrence and account for 80 per cent of all accidental deaths. Other occupational hazards, for the example the high cadmium levels found amongst workers in Huizhou, raise further concerns about the lack of awareness and adherence to occupational health standards, particularly amongst the many small village enterprises.

Not only are there issues around physical safety but social equity is a major concern – along with the responsibility of employers. The migrant workforce is often unskilled, in insecure employment, living in an unstable community and as part of a marginalized group in society. Its members earn less than urban residents, although their income will be higher than what they could have expected in the countryside. While they may be at risk from the environmental factors of their workplace, their health needs can be complex. Not only do they need to understand safe working practices, there are also psychological factors affecting them. In a recent study in Shenzhen the most common complaints for seeking help from a doctor included insomnia and stress-related disorders.

Climate change

It is not only the changing material environment but also its wider impacts that can have health effects. Extremes of temperature are becoming more common, and last winter was no exception. There have been numerous press reports of the big freeze across China. In Hong Kong, this resulted in large numbers of influenza cases admitted to hospital and worries about the impact of hypothermia on the elderly.



This cold winter followed on from a hotter-than-average summer in which parts of China also suffered the impact of heat waves. An added concern is that the impact of heat waves will further contribute to the already widening health and social inequalities since it is the elderly and poorer members of society who are most at risk.

The United Nations Development Programme, in its *Human Development Report 2007/2008*, expresses particular concern for the developing world as the impacts of climate change increase:

The early warning signs are already visible. Today, we are witnessing at first hand what could be the onset of major human development reversal in our lifetime. Across developing countries, millions of the world's poorest people are already being forced to cope with the impacts of climate change. These impacts do not register as apocalyptic events in the full glare of world media attention. They go unnoticed in financial markets and in the measurement of world gross domestic product (GDP). But increased exposure to drought, to more intense storms, to floods and environmental stress is holding back the efforts of the world's poor to build a better life for themselves and their children. Climate change will undermine international efforts to combat poverty...

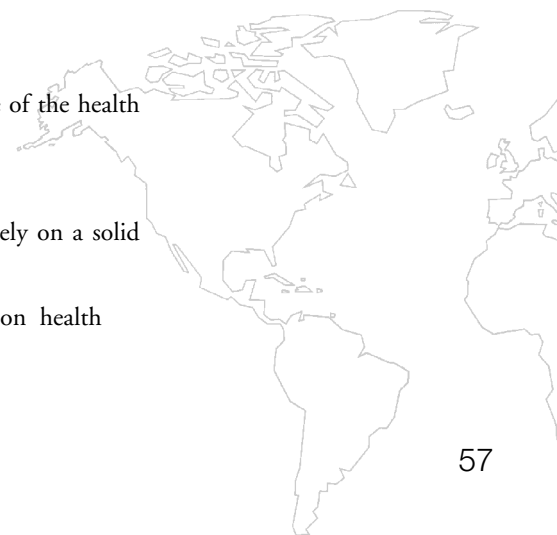
However – we need not sit passively and say it is all inevitable. As the WHO has highlighted: ‘fortunately, much of the health risk is avoidable through existing health programmes and interventions. Concerted action to strengthen key features of health systems and to promote health development choices can enhance public health now as well as reduce vulnerability to future climate change.’

So what are the challenges for the future?

Inevitably in the time available I have been able to do little more than highlight some of the health aspects of the major environmental risks created by the rapid urbanization of China.

There have been huge advances in China, but the sustainability of progress will rely on a solid infrastructure which protects the health of the people. I would suggest four As:

- Awareness – develop and sustain awareness of the environmental impacts on health amongst the public, politicians and key actors.
- Anticipation – targeting on prevention and preparation.



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- Action – at all levels: national, regional, local and individual.
- Advocacy – by those concerned with creating a healthier society.

I would like to finish with a quote from Hu Jintao:

Social development is closely related to the people's well-being. More importance must therefore be attached to social development on the basis of economic growth to ensure and improve people's livelihood, carry out social restructuring, expand public services, improve social management and promote social equity and justice. We must do our best to ensure that all our people enjoy their rights to education, employment, medical and old-age care, and housing, so as to build a harmonious society.

