Facing up to “invisible pollution”

Xu Qi

January 29, 2007

Soil contamination has grown unnoticed across China’s landscape. Now, reports Xu Qi, a major geochemical survey is under way, designed to diagnose the extent and severity of the problem.

Food safety is a basic need for any population, yet we hear warnings of hidden dangers on the dining-room table – of unsafe rice and poisoned vegetables. With the launch of the China Soil Survey, pollution of our soil is now receiving the kind of attention once accorded to air and water, solid waste and noise.

Soil pollution has been called the “invisible pollution.” While other forms of pollution have obvious warning signs – visible contamination of a river, for example, or an airborne stench – soil pollution is easier to miss. And so this grave threat has been growing unnoticed in our fields.

In some areas of China, soil already suffers from varying degrees of pollution. According to the State Environmental Protection Administration (SEPA), the situation is worsening and already represents a threat to the environment, to food safety and to sustainable agriculture. According to a scientific sampling, 150 million mu (100,000 square kilometres) of China’s cultivated land have been polluted, with contaminated water being used to irrigate a further 32.5 million mu (21,670 square kilometres) and another 2 million mu (1,300 square kilometres) covered or destroyed by solid waste. In total, the area accounts for one-tenth of China’s cultivatable land, and is mostly in economically developed areas.

Soil pollution presents a genuine danger. An estimated 12 million tonnes of grain are contaminated by heavy metals every year, causing direct losses of 20 billion yuan (US$2.57 billion). Harmful substances accumulate in crops and, via the food chain, find their way into our bodies, where they can cause a variety of illnesses. Soil pollution also damages ecosystems and ultimately threatens their safety.

Measures to prevent soil pollution are weak in China. Currently, given the amount of land in question, the degree of the pollution in specific locations is unclear, making both prevention and remedy difficult. There are no laws or environmental standards regarding soil. Funding is limited, too, so there is little advanced scientific study of China’s soil taking place. The severity of the pollution is not understood by either the public or business, and the situation is worsening.
More worryingly, treating soil pollution – especially that caused by heavy metals – is costly, and such contamination is difficult to eliminate completely. According to Liu Xiaoduan, a specialist at China’s National Research Centre for Geoanalysis (NRCGA), heavy metals are naturally widespread in the soil and cannot be removed. But they can form organic compounds or build in some organisms, and thus end up in the human body, where they accumulate.

“Some time ago, the focus of our work shifted from prospecting for ore, and we now have a number of different aims,” says an official with the China Geological Survey’s department of geological investigation. The aim of agricultural security grew from ensuring quantity to ensuring safety; soil management has become about quality rather than quantity, and environmental awareness is ever increasing. Geochemistry is playing a greater role in both the economy and society.

The science and technology behind prospecting for ore is now the basis for environmental geochemistry, which includes the earth’s atmosphere and hydrosphere, ecosystems and geology – allowing China to carry out detailed and precise soil surveys. It allows geochemistry to play a role in studies of the environment, agriculture, soil quality, oceans and prospecting, and also helps scientists to develop geochemical theory and new technology.

Lu Anhuai, of Peking University’s school of earth and space sciences, says that surveys have found regional geochemical abnormalities which impact upon the environment of cities and villages, and even upon China as a whole. The survey group proposed a number of economic measures to help protect the environment, which were given serious consideration by the government. Surveys of 21 provinces found localised geochemical issues, such as areas of high disease incidence, and various environmental problems in areas which produce particular crops or which surround mines.

China previously carried out two national soil surveys, in the late 1950s and in the ’70s. Both studies focused on soil fertility and agricultural productivity, rather than soil pollution. However, the aim of the latest government-funded appraisal -- costing 1 billion yuan (US$128.6 million) -- is to study the overall state of China’s soil in a comprehensive, systematic and accurate manner. It is intended to: identify the type, degree and cause of soil-pollution hotspots; evaluate associated risks; set environmental classifications for soil; select and trial soil-recovery technology; put together a system of laws and standards regarding soil pollution; and improve environmental management of soil.

Due to conclude in 2008, the survey will focus on protected farmland and grain production areas. The soil-pollution survey will focus on the Yangtze and Pearl River basins, the area surrounding the Bohai Gulf, the former heavy-industrial areas of the north-east, the plains of Sichuan and Shanxi, and major mining cities. The formation of a system to oversee soil environmental quality will focus on improving testing ability and drafting soil pollution laws.
The Geological Survey bureau says three million square kilometres of soil in the Yangtze and Yellow River basins, the plains of the northeast, developed coastal areas and the west of China. One million square kilometres have been surveyed already; and a further one million will be examined in the time of the 11th Five Year Plan, which runs to 2010. Completion is due in the period of the 12th Five Year Plan. Regional situations will be summarised and a “National Geochemical Map” produced, which will finally allow us to fully grasp the truth of soil pollution in China.

This article was adapted from China Environmental Times, December 28, 2006.

Qi Xu is a journalist for China Environmental Times.

Homepage photo by Ari Moore

http://www.chinadialogue.net/article/show/single/en/724-Facing-up-to-invisible-pollution-