

A CHINA ENVIRONMENTAL HEALTH PROJECT FACTSHEET

Pesticides and Environmental Health Trends in China

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China is the world's biggest user, producer, and exporter of pesticides. The growing use of pesticides and chemical fertilizers over the past twenty years has helped promote larger crop yields, but increasingly at a major cost to the environment (e.g., declines in soil and water quality) and human health.

Magnitude of Pesticide Use

According to *Xinhua* (China's main state news agency), the annual pesticide use in China is about 1.2 million tons, on approximately 300 million hectares farmlands and forests.[1] Official statistics shows that China produces about 300 types of pesticides and an additional 800 types of pesticide mixtures. In 2005, China produced 1,039,000 tons of pesticides and exported 428,000 tons.[2]

Drivers of the Problem

China has nearly one-fifth of the world population, but only seven percent of the world's arable land. In order to meet the food requirements of its large population, increasing food production has long been the priority of the Chinese government. Starting in the 1980s, agricultural outreach offices under local governments began a strong push to promote the use of chemical fertilizers and pesticides as a means to increase yields. These offices were rewarded for promoting sales of fertilizers, which catalyzed the rapid decrease in the use of human and animal wastes on crops.[3] Many Chinese farmers over apply pesticides and fertilizers to get greater yields, in part because they fear some are actually fake—a common problem in China. Farmers thus need more pesticide information and user education to help them use pesticides and other farm chemicals properly.[4]

Environmental Problems from Pesticide Overuse

Official statistics indicate that about seven percent of China's cropland has been polluted due to improper use of pesticides and fertilizers.[5] This growing pesticide contamination is exacerbating the loss of agricultural land in China, which is also degraded due to salinization, desertification and erosion, as well as heavy metal and radioactive pollution.[6]

Agricultural runoff is also becoming a major pollutant of rivers and coastal areas. For example, according to a 2004 China marine environment report, about 2,480,000 tons pesticide and fertilizer flow into the Zhu River every year, which has seriously polluted river

and coastal waters in Guangdong Province.[7]

The use of high-toxicity pesticides also is killing beneficial insects, causing many pest disasters in China. For example, in 2001 over one million hectares of cotton fields in Xinjiang were attacked by aphids and spider mites, causing an \$85 million loss.

Growing Health Threats

One *China Watch* report noted that every year approximately 12 million tons of China's crops are contaminated with heavy metal residues that threaten public health.[1] For example, many insecticides and germicides in China use bluestone solution, a copper sulfate compound that has contaminated many fruit crops and can actually poison consumers.

According to State Environmental Protection Administration (SEPA) statistics, about 12 million tons of crops are polluted with heavy metal residues every year, a direct economic loss of more than \$2.5 billion. Various reports and studies highlight the seriousness of pesticide residue problems:

- *China Watch* recently reported that vegetables in southern China have a very high level of nitrate (about 70 percent higher than the national standard).[8]
- One extensive market survey in 1997-1999 in Hebei Province showed that more than a half of vegetables samples exceeded China's maximum pesticide residue levels.[9]
- In their own studies, the Pesticide Action Network North America has estimated approximately 49 percent of fruits and vegetables in China contain pesticide residues exceeding China's standards for banned organophosphate and carbamate pesticides.[10]

The Chinese government figures show that 53,300 to 123,000 people are poisoned by pesticides each year.[11] Many Chinese farmers are not willing, or able, to invest in protective clothing and equipment for safe pesticide use, which has greatly increased the risk of pesticide poisoning. Thus, 300 to 500 farmers die each year due to improper use of pesticides. A survey indicates that many farmers suffer liver, kidney, nerve and blood problems due to pesticide poisoning, as well as eye problems, headaches, skin effects and respiratory irritations.[12]

Efforts Promoting Safer Food

Tightening Regulations and Improving Training

About 30 percent of the total pesticides consumed in China are highly toxic. In 2004, China began to reduce the use of five high-toxicity pesticides—methamidophos, parathion, methyl parathion, monocrotophos and dimecron—and their use was banned completely on 1 January 2007. The use of these five pesticides accounted for about 25 percent of China's total pesticide application. Notably, some cities in southern and eastern China also have phased out other highly toxic pesticides (e.g., omethoate, isocarbophos, and phorate). The Chinese government also has mandated the reduction of additional highly toxic pesticides between 2008 and 2010.[13]

The Ministry of Agriculture has recommended fifteen pesticides as substitutes for the five highly toxic pesticides. To help decrease the use of other harmful pesticides the National Development and Reform Commission (NDRC) will invest 5 billion Yuan in low-interest loans for research into substitutes for highly toxic pesticides.

The 2006 law on Agricultural Product Quality and Safety included a new standard for pesticide residue limits on food items in China, which if properly enforced could help solve the pesticide overuse problem. Key to promoting this law are 200 new farm schools, created in 2006 to educate farmers to more safely apply new pesticide products.

NGO Involvement

China has one environmental nongovernmental organization (NGO) that focuses exclusively on pesticide issues. Pesticide Eco-Alternatives Center (PEAC) was established in 2002 in Yunnan Province to: (1) prevent pesticide pollution, (2) improve the development of ecological agriculture, (3) promote alternative ecological forms of pest control, and (4) ultimately protect the human health and ecological health for sustainable development. For five years, PEAC has carried out many pesticide workshops and research projects working with scientists, local governments and communities on initiatives such as the Kunming Seminar for GE Crop/Rice Risk Assessment and an elearning program focused on Thailand's sustainable agriculture practices. PEAC also published the *China Pesticide Development Report* in June 2005, which is the most comprehensive report about pesticide development in China.

Another Chinese NGO active on pesticide issues in Yunnan Province is EcoWomen, which carries out environmental educational training to help rural women learn the effects of pesticide use on women's health. They also carried out a pesticide pollution survey in Yunnan province.

One international NGO that has been fairly active in China on this issue is the Pesticide Action Network Asia and Pacific, which in China and other Asian countries has: (1) carried out training of facilitators on community-based pesticide action monitoring, (2) published *The Pesticide Monitor* that helps raise awareness of pesticide problems and solutions, and (3) in 1998 designated December third each year as the global "No Pesticide Use Day," to commemorate the world worst chemical disaster in 1984 when a pesticide factory exploded in Bhopal, India.

Prioritizing Consumer Safety

Consumer safety has become a more prominent issue and some research centers, cities, and NGOs have been using the Internet to better inform the public. For example, the Chongqing government developed a new website for people to check whether the products they buy violate the pesticide residue limits. In early 2005, the China Environment and Sustainable Development Reference and Research Center (CESDRRC) (a sub-unit of SEPA) began publishing a new monthly newsletter, *Organic Trends*. This publication aims to improve public awareness of China's expanding organic sector. CESDRRC has also partnered with Friends of Nature and Global Village Beijing—China's two oldest NGOs—to set up a new webpage called Green Choice. This webpage discusses food safety and organic produce.

Organic Food

China has three kinds of agriculture product certifications: organic food, green food, and pollution-free food.[14] The only one truly pesticide free is organic food, which the government and business sectors began promoting in 1990 to enhance the competitiveness of Chinese agriculture products on the international food market. There has been

tremendous growth in the Chinese organic sector—as of the end of 2005, China had 1,249 organic products, with a total amount of 669,000 tons, generating 3.71 billion Yuan in annual revenue and \$136 million in export revenue.[15] Given that China had only 231 organic products, with annual sale of 910 million Yuan and export revenue of \$39.88 million in 2003, this is a remarkable achievement.[16] In 2003, the Ministry of Agriculture began to certify organic food and in the same year the Certification and Accreditation Administration issued Provisions on Organic Food Certification Management. China's organic food certification for exports has become more standardized, and is increasingly able to meet international standards.

Despite the rapid development, China organic food production still faces big challenges. First, China's organic food products only occupy 0.1 percent of the total agriculture production and 0.76 percent of the total arable land in China. By comparison, organic food makes up 3 to 5 percent of the overall agriculture products on the world food market, and organic arable land comprises 5 to 10 percent of the world arable land.[17] In addition, China's organic food exports make up less than one percent of the world organic food supply. China's major organic export products are tea, beans and rice, mainly produced in its coastal regions.

China's organic food initially targeted export markets, and only in 2000 did a domestic market for pesticide-free food begin developing. The regulation and standards for domestic organic markets have not evolved very well, mainly due to price and credibility issues. First, the price of organic food is usually 3 to 5 times higher than non-organic products. The main organic consumer is China's middle class, which is starting to pay more attention to food safety, as reports of pesticide residues have grown. Organic markets in China are thus dubbed “markets for the nobility” and do not yet attract many consumers. Second, many consumers are leery of the credibility of organic food certification and the quality of the organic products. According to one recent *China Daily* report, about ten percent of the organic food sampled in Beijing was counterfeit. However, there is a big potential market for organic food in China, as China's middle class is expanding and a growing number of people appreciate the value of pesticide-free food.[18] Walmart in China has notably opened created an organic produce section in its stores, which will also help promote the development.

Green Food

Green food refers to the food grown with limited amount of pesticide and chemical fertilizer. In order to improve food quality, The Ministry of Agriculture established a China Green Food Development Center in 1990s. Since then, green food has built a reputation as high-quality and safe food in China. To some degree, the popularity of green food makes the organic food development in China more difficult.

Besides the low public awareness, the domestic market for organic food was slow to develop because of the high producing cost and certification fees. Additionally, in spite of its high nutritional value and good taste, organic food does not look very attractive. Furthermore, it is difficult not to use pesticide at all, as pesticides play an important role in protecting crops.

Facing the strict food products standards in the international market and the severe environmental situation, China realized that it is necessary to develop organic food, the items grown without the use of pesticide and chemical fertilizer. China Environment and

Sustainable Development Reference and Research Center (CESDRRC) launched a new monthly newsletter “organic trends” to help improve public awareness on China’s expanding organic sector.

International Initiatives

Some foreign pesticide companies, such as Syngenta, Dow, Dupont, FMC, BASF, and Sumitomo Chemical, have been working actively with Chinese central and local governments to promote the substitutes for the five banned pesticides to farmers. They also have helped local governments set up farmer schools and hold meetings to promote the new substitutes. A sample of some multilateral assistance pesticide projects on include:

- *FAO-EU IPM Program for Cotton in Asia (1999-2004)*: This program is funded by EU and implemented by FAO. The purpose of this program was to help some Asian countries, including China, Bangladesh, India, Pakistan, Philippines and Vietnam, solve the problem of rising cotton production, such as environmental problems from pesticide overuse and health impacts on farmers. The program has successfully created professional teams to help educate farmers to apply pesticides properly in Anhui, Hubei, Shandong, and some areas in Henan and Sichuan provinces.[19]
- *FAO Regional Vegetable IPM Program in Asia*: This FAO program has been funded by the Netherlands, Australia, and Norway. In the second phase of this program (2002-2007) the focus is on major crops and pesticide training and research for farmers in Yunnan Province (China), Cambodia, Lao PDR, Thailand, and Vietnam.

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