Soil contamination industry report

China finally discloses results of 2006-2009 land survey; reveals 3.3m hectares of farmland too polluted

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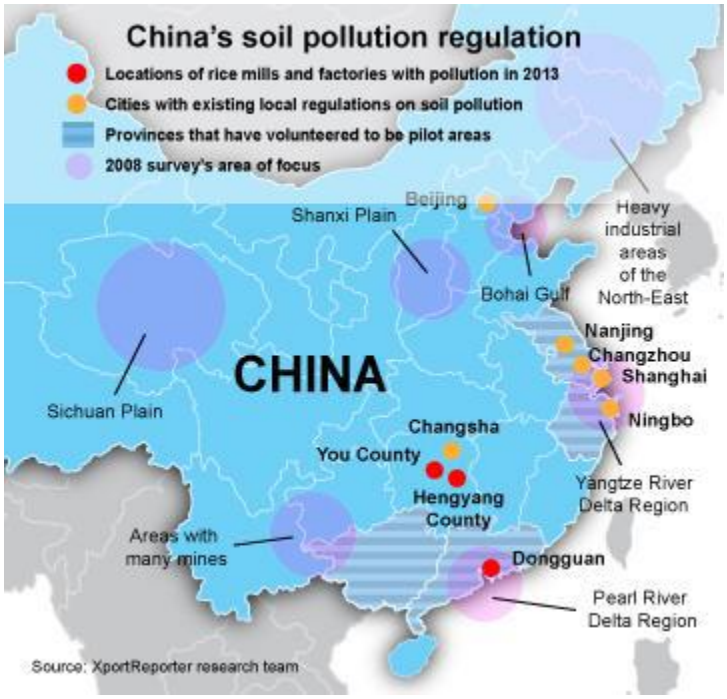
Overview

Prevention and control of soil pollution has become the latest environmental issue to reach the top of China's legislative agenda in recent months, following revelations earlier this year that portions of the country's rice supply was tainted with the toxic heavy metal, cadmium. The country's Ministry of Environmental Protection (MEP) plans to release a comprehensive action plan on soil pollution soon, the ministry announced on 8 December.

The MEP has also set a timeline though 2017 for legislative measures.
Soil remediation is still a relatively new concern for the country, which has a host of other environmental issues it has pledged to tackle. Investment in soil remediation is expected to reach the thousands of billions yuan, exceeding funds planned for water and air pollution control measures, which are also large financial undertakings by the government. This could open a soil restoration market in the country, which currently accounts for just 3.7% of China's environmental services industry. The huge gap between China's soil remediation technological capabilities and those that exist in advanced economies presents opportunities for foreign companies specializing in this area. As part of the policy guidelines to facilitate environmental protection industry released in August, the government put emphasis on developing in-situ immobilization, ectopic fixative, bio-remediation, safe disposal, and resource utilization technologies.

Soil remediation will also drive the growth of heavy metal source monitoring for protecting farmland and water resources, controlling sources of pollution and risk management of contaminated land.
However, problems still exist that are constraining the development of the market. As an infant industry, China lacks well established technological standards, fee-charging standards and market mechanisms for soil remediation. Some domestic companies focus more on temporal efficiency, which compromise the long-term goal by adding a secondary pollution.

Recent Developments



- On 30 December, China's Ministry of Land and Resources and the National Bureau of Statistics released the results of a 2006-2009 land survey. Previously, in February 2013, the Ministry of Environmental Protection, a separate government entity, had refused requests to release information regarding the survey on the grounds that they comprise state secrets.

- 3.3 million hectares of farmland, roughly 2.5% of China's arable land, had become too polluted by heavy metals and chemicals to farm, said Wang Shiyuan, the vice minister of the MLR, at a briefing to discuss the survey's results on 30 December.

- The government will spend "tens of billions of yuan" each year on demonstration projects of heavy metal contaminated soil restoration and over-exploited groundwater comprehensive treatment, said Wang.

- Much of the polluted land is located in developed regions of eastern and central China, such as the Yangtze River Delta, the Pearl River Delta, the industrial base in northeastern China and central province Hunan, Wang said.

Regulatory summary

China's State Council released the Current Arrangements for Soil Environment Protection and Control in January 2013. The plan is a delayed five-year-plan, which was originally scheduled to be released in 2012, as previously reported. The plan stated goals by the end of 2015:

- To make clear of the status of China's soil environment.

- To establish a serious environmental protection regulation for cultivated land and water resources in order to stop the increase of soil pollution and ensure the compliance rate of environmental survey of China's cultivated land is no less than 80%.
- To establish the regular survey and monitoring regulations.
- To complete the monitoring network of the soil environment quality of 60% of the whole cultivated land and water resources serving a population more than 500,000.
- To increase the soil environment comprehensive monitoring ability.
- To be capable of controlling the risk of reusing the polluted land.
- To select typical areas for pilot soil contamination treatment and remediation.
- To establish the general soil protection policies, laws and standards.
- Furthermore, by the end of 2020, China's basic system of soil contamination and control should be developed.
- In December 2013, the MEP finished drafting Soil Environmental Protection and Comprehensive Treatment Action Plan, which is part of the series of plans regulating air, water, and soil pollution. The action plan is said to be released soon with stricter goals, spanning from 2013 to 2017.
- In October 2013, the Standing Committee of the 12th National People's Congress (NPC) included introducing soil pollution prevention and control law on its five-year legislative agenda. This indicates that soil remediation will have its legal basis by the year of 2017.
- Earlier in June 2013, Ministry of Land Resources (MLR) started to compile a nationwide pollution map to gauge the level of heavy metal contamination in soil. The survey included collecting soil samples across the country and inspecting levels of 78 chemical elements in both topsoil and soil a meter underground.
- In May 2013, Guangzhou municipal Food and Drug Administration released a report suggesting almost half of the 18 rice samples tested in the market were found to be tainted with cadmium that can damage kidneys and bones. Two subsequent local surveys in the broader area surrounding Guangzhou showed contamination levels of 5.8% and 1.4% of provincial supplies. The reports drew increased public attention into the country's soil contamination from both home and abroad.

In February 2013, MLR refused requests to release the data gathered from a national soil survey from 2006 to 2009, the second soil survey since 1996, on the grounds that the information was a state secret. The government spent USD 160m (CNY 1bn) on the survey, and the data was compiled on December 31, 2009. On December 30, MLR and the National Bureau of Statistics released the survey results. Based on the survey, China's farmland per capita is only 0.101 hectare, which decreased from 1.106 hectare in the first survey conducted in 1996. The number is less than half of the world average level. The result also showed that 2.5% of China's 135m hectares of farmland were so polluted that planting crops on it should not be allowed.

Supply chain
Chinese companies in soil remediation and related services:

Hunan Yonker Environmental Protection Co., an environmental engineering company
that offers programs of exhaust gas disposal for the high- polluted and energy -intensive industries and enterprises. The company introduced the country's first heavy metal soil remediation chemical production line, and it's the first company to implement desulfuration and dedusting for offshore drilling platform oil boilers.

BCEG Environmental Remediation Co., a subsidiary of Beijing construction Engineering Group. It provides environmental remediation services. It carried out China's first soil remediation project, the first pesticide contaminated site remediation project, the first coking field and petrochemical filed remediation projects.

Beijing GeoEnviron Engineering & Technology, a professional high-tech enterprise focusing on environmental technology research and general pollution control solutions. Their services cover petrochemical industry, mining and metallurgy, municipal solid waste management, water landscape construction, site remediation, and industrial hazardous waste management, etc.

Beijing Dingshi Environmental Engineering Co. (**北京鼎**实环境工程有限公司) is specialized in environmental remediation, foundation engineering, and earth and rock engineering. It business covers polluted site remediation, mining site remediation, environmental treatment, solid waste treatment, and others.

Jiangsu Welle Environmental Co. (**江**苏维尔**利**环保科技股份有限公司), a high-tech enterprise, specializes to deliver complete solutions and relevant services ranging from design, equipment supply, installation and commissioning, operation in the fields of waste treatment, leachate treatment and industrial wastewater treatment.

Jiangsu DDBS Environmental Remediation Co. is a leading engineering firm providing full remediation services for contaminated soil and groundwater sites in China. Its services include contaminated site investigation, characterization, and risk assessment; design optimal comprehensive remediation plan, conduct treatability and pilot studies; and implementation of ex situ and/or in situ remediation projects

Hunan Kaitian Environmental Technology Co. integrates scientific research, development, manufacturing, engineering, installation, service and operation and specializes in the environmental protection business such as environmental improvement, air pollution control, solid waste disposal, desulphurization, denitration and demercuration of flue gases, etc. It owns two subsidiaries: Zhuzhou Kaitian Environmental Protection Technology Co., Ltd. and Hengyang Kaitian Environmental Protection Technology Co., Ltd.

Sound Group. Its main business scope is as follows: system integration of solid waste treatment projects, municipal wastewater treatment projects in certain areas, and investment and operation of municipal water supply treatment projects. It is the only company currently listed on the A-share market whose main business revolves around solid waste treatment and disposal.

Chinese companies in measurement and testing equipment sector:

Center Testing International Corp. is China's leading product testing, inspection, certification, and consulting firm. Providing comprehensive services for virtually all consumer products, CTI ensures quality and enables companies to sell their products to markets worldwide.

Focused Photonics (Hangzhou) Inc. (聚光科技（杭州）股份有限公司), a public listed company, specializes in analytical instruments innovation and manufacturing in the field of iron/steel refinery, chemical, petrochemical, waste incineration, power supply, environmental protection, and others.

Shenzhen Techand Ecology & Environment Co. (深圳市铁汉生态环境股份有限公司) is a listed company, with its main business includes ecological environmental construction, with a whole supply chain from design, research, engineering, to planning and resource recycling.

Jiangsu Skyray Instrument Co. is a Hi-tech corporation specialized in the R&D, production and sales of analytical and measuring instruments in Spectroscopy, Chromatography and Mass Spectroscopy fields.. It has two wholly-funded subsidiaries: Beijing Bandwise Technology Development Co., Ltd. and Shenzhen Skyray Instrument Co., Ltd.

Dongjiang Environmental Co. is a high technology driven environmental enterprise specialized in waste collection and transportation, wastes environmental friendly treatment and final disposal, wastes comprehensive utilization, and environmental engineering design, construction and operation.

Pony Test International Group (普尼测试), a large-scale comprehensive testing organization with service branches around the country. It offers a broad testing spectrum, including environmental impact assessment, environmental protection check and acceptance, environmental management system certification, and others.

Existing or potential suppliers

RAW Group, based in UK, offers services in the remediation of contaminated soils and groundwater on brownfield sites. The company partnered with Yonker Environmental Protection Co. on Linwu County heavy metal pollution control project in Xiangjiang River basin in Hunan. RAW provided technology services and specialized equipment needed for blending remediation agents with soil for the project.

Dekonta AS, based in Czech Republic, supplied soil treatment technology to Changzhou Deshen Environmental Protection Co., such as in-situ and ex-situ treatment solutions. It also deploys gravitational segregation, flocculation, reverse osmosis technology, oxidation, and neutralization to combat pollution at the underground level.

In Situ Solutions Co., a subsidiary of Japan-based subsidiary of Enbio Holdings Inc., is currently running a trial project in a site contaminated by a cluster of chemical plants in the Qixia district of Najing, where the China Petrochemical Corporation (Sinopec), formerly operated a chemical plant.

TPS Tech SA, a Belgian company, partnered with Jiangsu DDBS Environmental Remediation Co., to offer the latter Gas Thermal Remediation technology, an in-situ remediation technology suitable for in-depth contaminated land in a confined area. The technology is on trial at a Suzhou project.

Geosyntec Consultants Inc, based in Atlanta, Georgia, is seeking Chinese partners to provide its environmental investigation and assessment services for soil remediation, especially nano-remediation.

Apex Companies, a Rockville, Maryland-based environmental consultancy, signed an agreement with China North Engineering investigative Institute. The company planned to offer towed array sonar equipment, site scanning technology and a variety of other hardware for a typical remediation project.

Soil remediation will also drive the growth of heavy metal source monitoring. Foreign companies making heavy metal monitoring equipment include US-based Ubibest International, Canada based Tekran Instruments Corp and Switzerland – based Metrohm AG.

Provincial projects

The Government of Hunan Province has released a three-year implementation scheme for the protection and remediation of the Xiangjiang River and surrounding areas in December 2013. The provincial government plans to invest roughly USD 833m (CNY 5.1bn) by 2015. Just for the city Zhuzhou alone, it will launch a total of 279 projects for wastewater treatment, soil remediation, and groundwater treatment.

Hunan province has been targeting soil pollution for longer time than other areas in the country, because that the province produces 11% of the country's staple food annually, but struggles with sever heavy metal pollution. In August 2011, Department and Reform Commission of Hunan issued Xiangjiang River Basin Heavy Metal Pollution Prevention and Control Implementation Plan, which is the country's first regional heavy metal control plan approved by the State Council. The project is projected to draw a total investment of USD 9.8bn (CNY 59.5bn).

Guangdong province is also actively involved in addressing soil pollution and contamination treatment. Guangdong's Department of Environmental Protection is establishing a soil quality monitoring system, which will be capable of regular monitoring by the year of 2015. The local government has also released a working plan and technical solutions on pollution remediation for arable land. Related soil treatment plans are under review and expected to be in effect soon.

Some demonstration projects in Guangdong include the arable land remediation demonstration area in Shuitou town of Qingyuan city, and Dabaoshan mining area located in Shaoguan city.