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# Discussion on the Present Situation and Development Trend of the Polluted Land Restoration

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## Abstract

**In recent years, land pollution has become increasingly serious, aggravating the contradiction between supply and demand of land resources and seriously threatening the red line of cultivated land and food security. In order to alleviate the contradiction, ensure the red line of cultivated land, protect food security and increase the construction land, it is necessary to combine the government policy guidance and use engineering technology to turn the polluted land into usable land. Through literature review and research on policy orientation of polluted land, combined with the engineering and technical experience of polluted land restoration in recent years, this paper discusses and summarizes the current situation of polluted land, policy orientation and technical means of polluted land restoration, and finally prospects the development trend of global polluted land restoration technology.**

## Keywords

**Defiled land; Policy orientation; Repair technology; Looking forward to.**

## 1. Defiled Land and Current Situation of Defiled Land Restoration

Land resources are the mother of wealth and the material basis for human survival and development. With the deepening of global industrialization and urbanization, a series of social and environmental problems have resulted in the contradiction between supply and demand of land resources. Defiled land refers to the land pollution and damage caused by human activities or natural factors. The quantity of existing land is reduced, but the quality is more damaged, so that the land completely or partially loses its original use value and construction function, including land pollution and land damage. The problem of land defilement not only existed in the past and present, but also may exist in the future. Land pollution poses a serious threat to the red line of arable land and food security, and poses a huge survival risk to 7.3 billion people around the world [1, 2].

During the tenth five-year Plan and eleventh five-year Plan period, through the "863" program of the Ministry of Science and Technology, environmental protection and public welfare science and technology projects, we focused on supporting the technical research on remediation of contaminated soil such as heavy metals, pesticides, persistent organic pollutants and petroleum, and carried out small-scale demonstration and verification work. During the 12th Five-Year

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Plan period, the "863" program of the Ministry of Science and Technology launched a major project of "Contaminated soil remediation Technology and Demonstration" in the field of resources and environment technology, which promoted the innovation of key technologies and equipment for soil remediation. A group of independent research and development of soil restoration technology into engineering demonstration phase, a batch of domestic and foreign advanced technology and equipment and repair material to use, a batch of farmland soil pollution treatment and repair of pilot projects and pollution land restoration project to start, engaged in soil pollution treatment and repair of consultants, the number of professional repair and supporting services has increased dramatically, Soil remediation industry and market are developing rapidly and have gradually become the growth point of emerging environmental protection industry and economic pillar industry.

## 2. Policy Guidance of Defiled Land Restoration

In defiled the land management, comprehensive management experience of developed countries, summarizes the following three characteristics: one is to formulate laws and regulations, implement the most stringent protection system, drew 1.8 billion mu of arable land red line no breakthrough, peri-urban "permanent basic farmland", defined limit urban expansion of cultivated land occupied and destroyed; Second, encourage and guide enterprises to actively participate in protection and restoration through fiscal and tax policies and other preferential measures; The third is to pay attention to the public participation in the whole process of the treatment and development of polluted land, establish a database of polluted land, regularly publish the information of polluted land, and mobilize the enthusiasm of all stakeholders.

Based on these three features, we can take five measures to strengthen soil environmental protection and pollution control, and resolutely declare war against soil pollution.

One is soil pollution prevention and control to improve soil environmental quality as the core, to ensure the safety and environment health of agricultural products as a starting point, driven by reform and innovation, on the basis of legal system construction, adhere to the source control, implementing classified management, strengthening science and technology support, constantly give play to the role of the market, guide the public to participate in, do it in 2020, The worsening trend of soil pollution across the country has been effectively curbed, soil environmental quality has generally remained stable, soil environmental safety on agricultural and construction land has been basically guaranteed, and soil environmental risks have been basically controlled.

Second, accelerate the legislative process of soil environmental protection and establish a sound system of laws and standards. Make clear provisions on the way and type of legal liability (such as civil liability, administrative liability and criminal liability) and the identification department of land pollution, and prevent people from defiling and damaging land through the setting of liability. By 2020, a system of laws and regulations for the prevention and control of soil pollution will be basically in place. Local governments can formulate local laws and regulations for the prevention and control of soil pollution in light of their actual conditions.

Third, we will further investigate soil pollution. On the basis of the existing soil pollution status investigation, the organization of soil pollution status detailed investigation, further find out the soil environmental quality, better combined with the actual situation, study the corresponding control measures. At present, the overall implementation plan has been preliminarily formed.

Fourth, the implementation of soil remediation projects. We will move faster to protect and restore the ecosystems of mountains, rivers, forests, farmland and lakes, so as to improve their landscape, stabilize their systems, and improve their functions. Timely implementation of mine

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environmental governance and restoration, promote land remediation and pollution remediation, promote river basin water environmental protection and governance, coordinate urban overground and underground construction, promote the construction of sponge city, so as to make the city not only "face", but also "interior", and achieve comprehensive comprehensive governance and restoration.

Fifth, we will strengthen soil environmental oversight. The state will strengthen soil environmental supervision and establish a mechanism for lifelong accountability for soil pollution. Strengthen the supervision and inspection of the treatment of waste water, waste gas and waste residue of enterprises involving heavy metals; We will strictly control the misuse and abuse of agricultural inputs in agricultural production, and standardize the collection, storage, transfer, transportation, treatment and disposal of hazardous wastes to prevent new soil pollution.

## 3. Technical Means for the Restoration of Defiled Land

At home and abroad in terms of defiled the land through repair measures such as physics, chemistry, biology, and reduce the risk or harm, thus gradually restore its function, but because of the complexity of the soil pollution, sometimes by a single method is difficult to repair, need to use a variety of form a complete set of technology, need a lot of money and a long time for repair[3,4].

The foreign soil remediation technology has developed from a single remediation technology to a multi-technology combination and comprehensive integration of engineering remediation. In the equipment, from fixed equipment based on ectopic repair to mobile equipment in situ repair; In terms of application, it has moved from a single site site to a complex site in megacities, and developed from a single restoration technology to a site soil-groundwater comprehensive integrated restoration with multi-technology and multi-equipment coordination for atmospheric and water monitoring.

Land engineering comprehensive technology compared to other dirty repair technology, can realize to dial fast clock the evolution of natural restoration and soil quality, in a relatively short time frame completely solve desolate land for the development of human society, effective disposal of toxic chemical pollution, delay the decline of forest resources, eliminate waste by ecological problems, such as, Contribute to the continuous improvement of human living environment; It can not only greatly shorten the restoration cycle of polluted land, improve restoration efficiency, accelerate ecological restoration, but also save the cumulative cost of restoration and reduce ecological environmental risks, especially for damaged land, it is difficult to achieve land reclamation without land engineering [5, 6].

## 4. Prospects for the Restoration of Defiled Land

The concept of polluted land restoration should integrate the concepts of innovation, coordination, green, openness and sharing, establish the four-in-one concept of "quantity, quality, ecology and humanity", take "sustainable development" as the development orientation, and strengthen the overall restoration of the life community of "mountains, rivers, forests, fields and lakes". The goal of land restoration should take into account the security of food supply, urban development and ecological environment, and finally realize the synchronous reconstruction of regional production, life and ecology. The restoration mode of polluted land should be changed from "homogeneous assimilation" to "differential regulation", and precise policy should be adopted. The funds for the restoration of defiled land should be changed from "financial burden" to "multiple contributions" to ensure the continuous and orderly progress of the restoration work [7].

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"Everything grows in soil", the quality of soil determines the quality of everything. In order to ensure the safety of human food and living environment, it is necessary to implement the "pure land" strategy and formulate the "prevention, control and restoration" action plan of defiled land. This requires governments and society around the world to strongly support the research and development of remediation technologies for polluted land. Scientists at home and abroad should communicate with each other, learn from each other, strengthen cooperation, learn from each other, give full play to the wisdom and strength of the group, and make contributions to the world at the same time, make human and nature coexist more harmoniously on the earth.

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