

Analysis of Rural Environmental Pollution in the Field of Ecological Anthropology

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Abstract: This paper discusses the problem of rural environmental pollution from the Angle of ecological anthropology. It is pointed out that rural environmental pollution has important effects on health, crops and ecosystem. The causes of pollution include agriculture, population growth and rural industrial development. In view of the existing problems, the study proposes to develop an integrated strategy, including technical means, policy recommendations and community participation, and the government should pay attention to the key role of social impact and conscious awareness in governance. It aims to promote environmental pollution control and sustainable development in rural areas.

1. Introduction

Rural environmental pollution is one of the important problems facing the world. With the continuous development of agricultural production and rural industry, the problems such as domestic sewage, air pollution, water pollution and soil pollution are increasingly serious, bringing great challenges to the health of farmers and the growth of crops. In order to protect the environment and promote the sustainable rural development, we need to explore integration strategies, technical means and policy suggestions, strengthen community participation, raise awareness, realize the benign interaction between environmental protection and rural development, and ensure the health of the ecosystem and the protection of biodiversity.

2. Rural environmental pollution from the perspective of ecological anthropology

2.1 Basic concepts and research categories of ecological anthropology

2.1.1 Basic concepts

Ecological anthropology is an interdisciplinary discipline designed to study the interrelationships and interactions between humans and the environment. It integrates the theories and methods of many disciplines, including ecology, anthropology, sociology and geography, to explore the problems of human adaptability, cultural change and sustainable development under different environmental conditions. Ecological anthropology emphasizes the close connection between human beings and the natural environment, recognizes the influence of human activities on the environment, and explores how to realize the harmonious coexistence between man and the environment. By studying the interaction of human lifestyle, resource utilization and environmental

change, ecological anthropology provides us with a more comprehensive and comprehensive perspective to understand the complex relationship between human society and the natural environment.

2.1.2 Research category

Environment and Culture: The study of environment and culture focuses on the close interaction and influence between human society and the natural environment. Under different cultural backgrounds, humans have different perception, attitudes and behaviors towards the environment. Culture shapes people's understanding and values of the environment and influences decisions about its conservation and sustainable utilization. In-depth study of the relationship between the environment and the culture can help to promote cross-cultural environmental cooperation and achieve more sustainable and inclusive environmental management^[1].

Adaptability and Sustainable Development: The study of Adaptability and Sustainable Development explores the adaptive strategies and lifestyles under different environmental conditions. It aims to realize the harmonious coexistence of people and the environment, and to advocate sustainable resource utilization and ecological protection. A deeper understanding of the principles of adaptive and sustainable development will facilitate the development of sustainable strategies that meet specific environmental requirements and promote common social, economic and environmental prosperity.

Natural resources and social life: the study of human dependence on and utilization of natural resources, including food, water, energy, etc., and the impact of the utilization of these resources on social life, economic development and cultural inheritance. A deep understanding of the relationship between natural resources and social life is helpful to develop sustainable resource management strategies, ensure the long-term and stable supply of resources, and promote the healthy development of society.

Environmental change and social response: The impact of environmental change on human society is the core of research, including climate change, biodiversity loss, land degradation and so on. At the same time, the cognition, adaptation and coping strategies of human society to environmental changes are discussed. A deeper understanding of the relationship between environmental change and social responses will help develop strategies to address climate change and ecosystem threats and promote sustainable global development.

Ecosystem service and social well-being: Ecosystem service studies the value of ecosystem service to human society, including the supply of natural resources, ecosystem regulation and cultural significance, etc. It also discusses how to protect and manage the ecosystem to safeguard social well-being. A deep understanding of the relationship between ecosystem services and social well-being helps to formulate appropriate protection policies, achieve the harmonious coexistence between man and nature, and promote the long-term well-being of society^[2].

2.2 Concept and characteristics of rural environmental pollution

2.2.1 Concept

Rural environmental pollution refers to the pollution and damage to the environment caused by agricultural production and rural life activities in rural areas. Rural environmental pollution mainly includes soil pollution, water pollution, air pollution and noise pollution. In agricultural production, excessive use of chemical fertilizers, pesticides and livestock and poultry waste will lead to soil and water pollution, which will affect the quality of crops and the safety of agricultural products. In addition, there are also problems in rural areas, such as improper disposal of agricultural waste and

untreated direct discharge of rural domestic sewage, which make the surrounding water bodies polluted. At the same time, there are also air pollution and noise pollution problems in rural areas, such as the soot and noise generated by agricultural straw burning and mechanical operations. These rural environmental pollution problems not only affect the health and quality of life of farmers, but also adversely affect the stability and sustainable development of the ecosystem. Therefore, it is of great significance to strengthen the prevention and control and treatment of rural environmental pollution and promote the improvement and sustainable development of rural environment.

2.2.2 Features

Agricultural activities are the leading: the main source of rural environmental pollution is agricultural activities, such as farmland fertilization, pesticide use, breeding waste treatment, etc. These agricultural practices have led to the pollution of large amounts of farmland and breeding farms, becoming the main source of pollution. Farmers' living habits and waste disposal methods also have a negative impact on the environment. With the advancement of agricultural modernization, the rural environmental pollution control becomes particularly urgent, and it is necessary to adopt comprehensive and sustainable treatment strategies to ensure the sustainable development of agriculture.

Dispersalized pollution sources: a characteristic of rural environmental pollution is that pollution sources are widely distributed and scattered. In rural areas, there are a large number of farmland, farmhouses, livestock and poultry farms and other areas. These small-scale and scattered pollution sources make the management and supervision work complicated and difficult. Effective governance needs the implementation of scientific and technological support, policy guidance, and the improvement of farmers' environmental awareness, to form a joint force to jointly solve the environmental challenges brought by decentralized pollution sources^[3].

Coexistence of various types of pollution: rural environmental pollution involves many types of pollution, including soil pollution, water pollution, air pollution and noise pollution. These different types of pollution interweave and influence each other, forming a situation of compound pollution and increasing the complexity of treatment. Comprehensive and systematic environmental control measures should be taken to deal with different types of pollution to ensure the environmental quality in rural areas.

Affect the safety of agricultural products and people's health: rural environmental pollution directly affects the safety of agricultural products, such as soil and water pollution will lead to heavy metals and other harmful substances in crops. Long-term intake of contaminated agricultural products may pose a potential threat to human health. Therefore, to ensure the safety of agricultural products, to ensure the health of the people, is the primary goal of rural environmental pollution control.

Lack of awareness and means: compared with urban environmental pollution, rural areas lack sufficient awareness and means of governance. The level of economic development is relatively low, environmental awareness is generally weak, the lack of effective environmental protection mechanism and technical means. In order to change this situation, it is necessary to strengthen government guidance, enhance farmers' awareness of environmental protection, promote advanced governance technology, and ensure that the rural environment is effectively managed and protected^[4].

2.3 The connection between ecological anthropology and rural environmental pollution

Environmental influencing factors: Ecological anthropology has studied the interaction and

influence between human beings and the environment, and rural environmental pollution is one of the results of this interaction. Ecological anthropology can help us to understand the pollution and destruction of the environment caused by different human activities in rural areas, and to analyze the influencing factors and mechanisms.

Agricultural production and resource utilization: Rural environmental pollution mainly comes from the use and discharge of chemical fertilizers, pesticides and breeding wastes in the process of agricultural production. Ecological anthropology studies the relationship between agricultural production and resource utilization, including soil quality, water resources utilization, biodiversity protection and other aspects, so as to deeply explore the causes and solutions of rural environmental pollution^[5].

Sociocultural background: Ecological anthropology emphasizes the close connection between human society and the natural environment, and examines the human cognition, attitude and behavior of the environment under different cultural backgrounds. Rural environmental pollution is also affected by social and cultural factors, such as farmers' awareness of environmental protection, traditional agricultural customs and concepts, etc. By understanding these social and cultural backgrounds, ecological anthropology can provide reference and guidance for rural environmental pollution control.

Sustainable development: Ecological anthropology emphasizes the concept of sustainable development, which is the harmonious coexistence between human beings and the natural environment. Rural environmental pollution poses a threat to sustainable development, and ecological anthropology can study how to achieve sustainable agricultural production and environmental protection in rural areas to mitigate the negative impact of rural environmental pollution on ecosystems and social economy.

3. Types and sources of rural environmental pollution

3.1 Air environment pollution

Atmospheric environmental pollution refers to the phenomenon that harmful substances in the air in rural areas exceed the degree of environmental tolerance and have a negative impact on air quality and ecosystem. The main sources of air pollution in rural areas include agricultural straw burning, soot generated from agricultural machinery operations, volatilization of pesticides and chemical fertilizers, household coal burning, etc. Small-scale industry and transportation that usually exist in rural areas also produce certain emissions of air pollutants. These pollutants, including particulate matter, sulfur dioxide, nitrogen oxides, and volatile organic compounds, have potential risks to both human health and the ecological environment. Therefore, to strengthen air pollution control and control and reduce air emissions in rural areas is of great significance to improving rural environmental quality and protecting people's health^[6].

3.2 Water body and environment pollution

Water environmental pollution refers to the phenomenon that the pollutants existing in water bodies in rural areas exceed the degree of environmental tolerance and have a negative impact on water quality and ecosystem. The main sources of water pollution in rural areas include agricultural wastewater, erosion of pesticides and fertilizers, and discharge of breeding waste. In rural areas, the pollution of irrigation water, aquaculture ponds and household water is widespread, leading to pesticide residues, excess nutrients and organic pollution in water bodies. These pollutants pose a threat to water quality, not only the safety of agricultural products and people's health, but also the balance of water ecosystems. Therefore, it is of great significance to improve the rural water

pollution control and improve the drainage treatment capacity of farmland and breeding farms, and strengthen the rational use of pesticides and fertilizers to improve the rural water environment and protect water resources.

3.3 Soil environmental pollution

Soil environmental pollution refers to the phenomenon that the harmful substances existing in the soil in rural areas exceed the degree of environmental tolerance and have a negative impact on the soil quality and ecosystem. The main sources of soil pollution in rural areas include the use of chemical fertilizers and pesticides in agricultural production and the application of farming waste. These pollutants can lead to problems with heavy metals, pesticide residues and excess nutrients in the soil, seriously affecting the quality of crops and the safety of agricultural products. In addition, in rural areas, there are also problems of direct stacking or landfill, making the soil subject to secondary pollution. Therefore, it is of great significance to strengthen the prevention and control of soil pollution, make rational use of pesticides and fertilizers, and strengthen the treatment and utilization of aquaculture waste to protect rural soil resources and improve the quality of agricultural products.

3.4 Agricultural pollution sources such as pesticides and chemical fertilizers

Pesticides and chemical fertilizers are one of the most important sources of rural environmental pollution. Pesticide use plays a role in controlling pests and diseases and improving crop yield in agricultural production, but excessive and improper use will lead to the pollution of farmland and water body. Pesticide residues accumulate in the soil and enter into crops, ultimately affecting people's health. In addition, pesticides may also enter the water body through runoff and leakage from farmland, causing harm to aquatic organisms and ecosystems. Fertilizer is an important means to increase crop yields, but excessive application of fertilizer can lead to problems such as excess nutrients and soil acidification. Nutrient surplus not only wastes resources, but also may be washed into the water body, causing the problem of water eutrophication. Soil acidification will change the chemical properties of soil and affect the plant growth and the stability of soil ecosystem. In addition, there is also the discharge problem of breeding waste in rural areas. Breeding waste contains a large amount of nitrogen, phosphorus and other nutrients. If it is directly discharged or used to farmland without proper treatment, it will cause water and soil pollution. The organic matter in the aquaculture waste may also be decomposed to produce odor and leakage, causing adverse effects on the surrounding environment^[7].

4. The impact of rural environmental pollution

4.1 Impact on farmers' health

Rural environmental pollution poses a direct threat to the farmers' health. The pollutants in the air, water and soil not only affect the natural environment, but also enter the daily life of farmers. Long-term exposure of farmers to these polluted environments may lead to various health problems, such as respiratory diseases, skin diseases, digestive system problems, etc. Among them, harmful particles in the air may cause respiratory diseases, water pollution may cause digestive system problems, and soil pollution may stimulate skin irritation. This long-term potential health threat reduces the quality of life of farmers and also increases their healthcare burden. Therefore, rural environmental pollution is not only a health problem, but also a social problem, and comprehensive measures need to be taken to protect the health of farmers.

4.2 Influence on crops, agriculture and livestock

Rural environmental pollution has a direct negative impact on crops and agriculture and livestock. First, contaminated soil may lead crops to absorb water and nutrients containing harmful substances, affecting the growth, development and quality of crops. Second, contaminated water sources may be used for farmland irrigation, thus affecting the growth environment of crops. The deterioration of water quality may pose a serious threat to crop growth. At the same time, the long-term exposure of agriculture and livestock to the polluted environment may lead to decreased productivity, weakened immunity, and even affect the food safety of human access through agriculture and livestock. This has caused serious hidden dangers to agricultural production and food safety in rural areas, which requires timely and effective supervision and governance^[8].

4.3 The Effects of the Ecosystem and Biodiversity

Rural environmental pollution has seriously damaged the balance of ecological system and caused irreversible effects on the interaction of nature and ecological chain. Pollution has a negative impact on soil microorganisms, water ecology, plant species and animal diversity, leading to the breaking of ecological balance. This poses a serious threat to the sustainable development of agriculture, ecological protection and the stability of the whole ecosystem. For example, the contamination of soil microorganisms can affect soil fertility and ecological function, the destruction of water ecology will threaten fishery resources, and the reduction of plant and animal diversity will affect the stability of ecosystems. These impacts have posed a severe challenge to the restoration and protection of the rural ecological environment, which requires the joint efforts of the whole society to achieve the sustainable development goals.

5. Analysis of the causes of rural environmental pollution

5.1 Agricultural production mode

One of the fundamental causes of rural environmental pollution is the excessive reliance on chemical pesticides and chemical fertilizers. In order to increase production, farmers use chemical fertilizers and pesticides extensively, but these chemicals are often not properly used and managed, and are overapplied to soil, plants and water, causing pollution of water, soil and air. In addition, the single crop cultivation and the lack of agricultural ecological balance measures such as crop rotation and fallow also aggravate soil degradation and become a driving factor for environmental pollution^[9].

5.2 Population growth and rural industrial development

Population growth and rural industrial development are the two major driving forces of rural environmental pollution. As the population grows, demand for food and agricultural products surges, causing farmers to overuse pesticides and fertilizers in pursuit of high yields. At the same time, the development of rural industry has also added new sources of environmental pollution, and industrial waste gas, waste water and waste discharge have become an important cause of pollution. The non-standard discharge and ineffective treatment of rural industries make the pollutants directly discharged into the soil and water bodies, seriously damaging the ecological balance.

5.3 Environmental governance policies

Rural environmental governance policy lag and ineffective implementation are also one of the reasons for environmental pollution. The government has a lag in the formulation and implementation of policies in environmental governance, which is not timely enough to keep up with the development and changes of environmental problems. Insufficient supervision causes some enterprises and farmers cannot be constrained, and the damage to the environment is difficult to be effectively contained. In addition, the lack of perfect environmental protection laws and regulations and effective punishment mechanism also makes some people do not fear the environmental pollution law. Environmental governance policies are not sound and the implementation is not in place, so that the problem of environmental pollution cannot be effectively solved^[10].

6. Rural environmental pollution control and sustainable development

6.1 Integration strategy of environmental protection and rural development

To realize the integration of environmental protection and rural development, it is necessary to formulate an integrated development strategy and pay attention to coordinated development, green development and sustainable development. First, the government and relevant social institutions need to promote agricultural modernization, use scientific and technological means to improve agricultural production efficiency, reduce the use of fertilizers and pesticides, and reduce the pressure on the environment. Second, the government should strengthen rural environmental education, improve farmers' awareness of environmental protection, promote farmers' participation in environmental protection, encourage rural development of eco-tourism and green industries, and achieve a win-win situation of economic and environmental benefits. The government should increase policy support, provide fiscal and tax incentives, and promote coordinated progress between rural development and environmental protection.

6.2 Technical means and policy suggestions for rural environmental pollution control

Aiming at the problem of rural environmental pollution, various technical means can be adopted to control it. First, the government should promote clean energy and clean production technologies and reduce the emission of pollutants from rural industries. Secondly, the government and related enterprises need to build rural sewage treatment facilities to achieve sewage purification and reuse and reduce pollution to water bodies. In addition, the government and enterprises need to strengthen the restoration and protection of farmland soil, promote organic agriculture, reduce the use of chemical fertilizers, and improve soil quality.

In terms of policy, we should strengthen the construction of laws and regulations, improve the legal system of environmental protection, and increase the punishment for environmental pollution behaviors. We will formulate incentive policies to encourage farmers to participate in environmental governance, and give preferential tax treatment and financial support to the environmental protection industries. We will strengthen the construction of environmental information disclosure and monitoring system, improve the transparency and scientificity of governance, and promote the cooperation and cooperation of all social parties in rural environmental governance. Most importantly, the government should increase the investment to improve the financial and technical guarantee of the rural environmental governance, and ensure the sustainable development of the rural environment.

7. Community participation and social impact in rural environmental pollution control

7.1 Importance of community participation in rural environmental governance

Community participation is an important part of rural environmental governance and has many importance. First, the community has the deepest understanding of the environmental problems in the region, so it provides valuable information and insights to help develop targeted governance programs. Secondly, the community residents are a group directly affected by the environment, and their participation in governance can enhance the attention and sense of responsibility for environmental issues. Third, community participation can improve farmers' awareness of environmental protection, cultivate their environmental awareness, and promote the dissemination and construction of rural environmental protection culture. Finally, community participation can enhance community cohesion, strengthen the communication and cooperation among community members, and form a joint force of joint governance, which is conducive to sustainable environmental protection and community development.

7.2 Social influence and conscious awakening

Community participation in rural environmental pollution control is not only limited to environmental problems, but also involves social influence and awareness. First, community participation can increase residents' awareness of environmental pollution and its potential health risks. By participating in environmental protection activities, residents can have a deeper understanding of the impact of environmental issues on their lives, thus forming a positive awareness of environmental protection. Secondly, community participation can stimulate residents' enthusiasm and initiative to participate in environmental protection activities, cultivate civic sense of responsibility, and strengthen their confidence in collective actions. Finally, community participation can promote the development of the community, improve the overall image and quality of life of the community, attract more residents to participate in environmental protection actions, and form a good environmental protection atmosphere.

8. Conclusion

We will strengthen environmental protection in rural areas, provide farmers with a healthy and safe living environment, and ensure their livelihood and well-being. Farmers are closely linked to nature and rely on natural resources such as land, water and air. Through rational management of land use, control of the use of pesticides and fertilizers, and promote sustainable agriculture, reduce the release of pollutants and land degradation, and create a livable environment. Rural environmental protection also provides a foundation for the sustainable development of rural economy. Protect the environment to improve the quality and safety of agricultural products, increase competitiveness, and create economic opportunities and income. In the context of the increasingly prominent global environmental problems, everyone should play a role in protecting the rural environment. The government, farmers, social organizations and enterprises should strengthen cooperation, formulate and implement environmental protection policies and measures, strengthen monitoring and law enforcement, enhance farmers' awareness and ability of environmental protection, and promote the all-round development of rural environmental protection. We should work together to protect the rural environment, leave a beautiful and sustainable home, and realize the harmonious coexistence between man and nature.

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