Study on Domestic Waste Treatment of Urban Residents in China

Hongyan Xue, Limin Ma, Cuijuan Gao, Youci Wang and Qiong Zhang

ABSTRACT

With the increase of urban population and the expansion of urban scale in China, the number of domestic waste of urban residents has been increasing year by year. The current main method of domestic waste disposal in China is landfill and incineration power generation. However, compared with foreign countries, there are still many problems in the treatment of municipal solid waste in China. For example, the nature and classification of domestic wastes make it more difficult to dispose of domestic waste, the overall level of municipal solid waste disposal is low, and some foreign waste disposal technologies are implemented in China. Supervision and planning of the waste treatment industry in China need to be strengthened, and it is necessary to reduce the amount of household waste, pay attention to the classification of domestic waste, encourage the recycling of domestic waste, increase the use of municipal solid waste, and increase investment in research. The development of technology and the strengthening of the government departments' standard management of waste disposal companies will improve the scientific and resourceful treatment of municipal solid waste.

KEYWORDS

Domestic Waste, Waste Classification, Waste Recycling

1Hongyan Xue, Cuijuan Gao, Youci Wang, Qiong Zhang, School of Economics and Management in Northeast Petroleum University, Daqing, China Limin Ma, Northeast Petroleum University Institute of Petroleum and Economic Management Daqing, China E-Mail: dqxuehongyan@126.com
THE NECESSITY OF SCIENTIFIC DISPOSAL OF DOMESTIC WASTE IN URBAN RESIDENTS IN CHINA

Urban domestic waste refers to garbage that is excluded from industrial and construction waste in cities. With the increase of urban population and the expansion of urban scale in China, the number of domestic waste of urban residents in China has been increasing year by year. At present, the cumulative stockpiling of urban domestic waste in China exceeds 6.5 billion tons, and approximately 3.5 billion square meters of land are invaded, and more than 660 cities in China, 2/3 of the large and medium-sized cities have been surrounded by garbage, and a quarter of the cities have been forced to extend the way to solve the garbage crisis to the countryside, resulting in secondary pollution of garbage in rural areas, and rapid deterioration of the environment in urban and rural areas. Dealing with the issue has become a problem that has attracted the attention of the whole society. In December 2016, Chairman Jinping Xi proposed at the Central Conference that “the general implementation of the garbage classification system”. In March 2017, Premier Keqiang Li also proposed in the government work report that “Generally promote garbage classification system. Comprehensive Work Plan for Energy Saving and Emission Reduction in the 13th Five-Year Plan” (GF (2016) No. 74) pointed out that “promotion of kitchen waste, construction waste, garden waste, urban sludge and waste textiles centralized treatment and utilization of typical wastes, and promotion of municipal waste generation such as coal-fired coupled sludge, and selection of about 50 cities at or above the prefecture level planning low-value waste co-processing base, should be achieved 30%. As far as the world is concerned, there is almost no absolute “zero pollution” waste disposal method at present, and the fundamental method for solving the problem of urban domestic waste is to realize waste reduction and scientific disposal. Waste reduction and scientific disposal can improve cities environmental and life quality of residents, also improve the living environment of residents, and promote the recycling of useful resources in domestic waste.

THE STATUS OF DOMESTIC WASTE DISPOSAL OF URBAN RESIDENTS IN CHINA

The main disposal methods for domestic waste of urban residents in China are landfill and incineration; the main treatment methods for food waste are feed, compost, and anaerobic fermentation. At present, the incineration rate of municipal solid waste in China has accounted for 25% of the total treatment volume. China's domestic waste aerobic composting technology started earlier and introduced advanced foreign sorting technology to build a demonstration project. However, due to the differences between China's garbage and foreign countries’ garbage, China's domestic waste aerobic composting technology can’t
achieve good results, and because of odor and other issues, waste compost technology is no longer the mainstream technology. In China, there are large differences in the level and methods of garbage disposal in various provincial cities. Most municipal waste disposal has just started. Sanitary land filling is the main treatment and disposal method for most municipal solid waste disposal, and some cities just have very fairly simple landfills to operate. In municipalities such as Hainan, Zhejiang, Jiangsu, and Yunnan, the incineration rate of municipal solid waste is relatively high, reaching or exceeding 50%.

Most of the existing waste treatment plants in China are landfills. Most of them are supported by the state finance. The government allocates funds to these waste treatment plants. Compared with foreign landfills, China's landfill sites still have a large gap in terms of biogas recycling and leachate treatment. The current landfill treatment in China has many defects such as large land area occupation, secondary pollution, explosion and collapse, etc. In areas with high population density, especially in the economically advanced provinces of eastern China, landfill treatment methods have encountered more difficulty.

**STATUS OF FOREIGN URBAN DOMESTIC WASTE DISPOSAL**

In order to manage the utilization of domestic waste effectively, various countries have legally regulated the recycling of domestic waste and formulated relevant standards and norms. Japan has achieved international leading level in the garbage classification and treatment of domestic waste. The classification knowledge is spread from childhood, and garbage classification is strictly defined. In order to encourage the effective implementation of the recycling and utilization of domestic waste, other countries improved the charging system, followed the principle of “Who pollutes, who will burdens” and also adopted different types of incentive policies: New York city reduced the use of renewable raw materials by more than 50% of tax amount; German sellers of products are obliged to put labels on disposable containers and packaging, and to collect charges from consumers; Switzerland has increased subsidies for enterprises that build and manage domestic waste incineration plants since 1996; the British government has given electric power distribution companies subsidizing subsidies for the purchase of electricity produced by domestic waste incineration plants; France is promoting the development of domestic waste incineration power generation, and the government will provide support through capital subsidies.
PROBLEMS IN THE TREATMENT OF DOMESTIC WASTE DISPOSAL IN CHINA

The Current Status and Classification of Municipal Solid Waste Make It More Difficult to Dispose of Domestic Waste

Affected by the living habits of residents, the main components of urban domestic waste in China are kitchen waste and biological waste. Non-combustible ingredients are high, and there are not many compost ingredients. The relatively large proportion of domestic waste is kitchen garbage, China's processing technology is still relatively backward. China's current waste classification is not implemented efficient in many places, residents have weak awareness of waste classification, the source classification work is not efficient, The classified garbage is often mixed transportation in the transportation section. It often needs two sorting. On the contrary, the acquisition stations and scavengers are the main collectors and sorters of recyclable urban garbage in the city.

The Overall Treatment Level of Municipal Solid Waste is Low

In China, the hidden dangers of domestic waste disposal facilities are relatively large, and the pollution caused by municipal solid wastes is relatively serious. In addition, some cities only pay attention to the absorption of waste, while neglecting the construction of pollution control facilities in the construction of waste treatment plants. Some garbage has not been completely safely land filled and piled up at random, which may cause pollution of air, water, and soil. Many existing landfills do not have anti-seepage measures and leachate treatment facilities, and most of them which have leachate treatment facilities can’t meet discharge standards. Many landfills do not have landfill gas guides and treatment devices.

Some Foreign Waste Disposal Technologies Are Difficult To Implement in China

China's garbage management started late relatively. At present, the disposal and disposal of garbage is still at the stage of improving the harmless treatment rate. The utilization rate of domestic waste is low and the gap between China and other developed countries is very large. The traditional municipal solid waste composting technology has obstacles in our country. At present, most of the anaerobic digestion of food waste in China is imported into foreign countries. due to the large differences between China's food waste and European countries, the mature technologies of western developed countries have certain limitations, and it is urgent to find a technical route and equipment suitable for the processing of food waste in China., it is also urgent for companies to develop equipment and technologies for the current status of domestic waste in China.
Supervision and Planning of the Waste Treatment Industry in China Needs To Be Strengthened

Although China's waste separation and treatment standards are very strict, the effect is not very good. Strict standards are short of technology and funds. For example, the combination of anaerobic digestion of biomass gas with food waste, kitchen waste, and sewage sludge can greatly increase the efficiency of anaerobic digestion and investment and operating costs for sludge and food and kitchen. However, because the sludge and kitchen garbage are managed separately in different departments, it is difficult to harmonize and unify the work of these two departments, resulting in the slow process of marketization and industrialization of the combined anaerobic digestion of the sludge and food CHF and the unnecessary waste.

MEASURES TO IMPROVE THE DISPOSAL EFFICIENCY OF DOMESTIC WASTE OF URBAN RESIDENTS IN CHINA

Implement the Reduction of the Source of Domestic Waste, and Pay Attention to the Classification of Domestic Waste

In the field of management policies, it is necessary to strengthen the reduction of the source of domestic waste and formulate relevant policies to encourage and guide it. China government should increase the publicity and implementation of waste classification work, encourage more volunteers and relevant departments to persuade and encourage the classification of household waste, and also reduce the production of waste from the production link. Enterprises should use environmentally materials when producing products and prolong the service life of goods and repetition rate of goods, reduce unnecessary packaging. Some old articles that can be used can be directly reused without re-manufacturing in the used goods market and the old goods trading platform. We should scientifically set up product categories suitable for incineration or landfill disposal, some useless garbage can be simply incineration or landfill, but the environmental and atmospheric pollution of domestic waste needs to be treated in a more scientific and safer way.

Encourage the Recycling of Domestic Waste

Urban garbage contains a large amount of organic matter, nitrogen, phosphorus and other resources, it not only can extract biomass energy, but also can supplement the soil organic matter, prevent soil mineralization, supplement nitrogen, phosphorus and other nutrients through the use of land. If the organic matter in the waste is converted into energy, it will have huge environmental and social benefits. and the nutrients in the waste are fully recycled, it will reduce the
emissions of greenhouse gas too. Therefore, our country should make full use of the opportunity to start the garbage disposal, encourage the utilization of municipal solid waste actively, and adopt preferential subsidy policy to strengthen the research and popularization of the waste resource utilization technology.

**Increase the Treatment of Municipal Solid Waste and Scientific Research Investment and Encourage the Development of New Technologies**

In recent years, the state, enterprises, and universities have paid great attention to the development of new technologies for waste treatment and disposal and have made great progress. However, the waste treatment technology is far from meeting the needs of huge markets. China should continue to increase the standard research, new technology development and industrial R & D investment for the utilization of waste disposal and disposal. Our government should set up some new technology demonstration projects in a planned way. These projects should take full account of the actual situation of domestic waste disposal and make use of the huge market in our country. These new technologies should reach the world's advanced level in the harmless and resourceful aspects of domestic waste disposal. They should provide technical support for the recycling of urban garbage in China.

**Strengthen the Standardized Management of Waste Disposal Companies By Government Agencies**

The utilization of waste treatment and disposal resources needs the coordination of multiple departments. The government departments should make clear the subject of responsibility, formulate and improve the corresponding standards and standards, and guide the technology, industry and policy in the field of garbage disposal and disposal.

Due to the large amount of capital investment and policy support required for waste treatment and disposal, it is necessary to formulate safeguard and incentive measures for the construction and operation of waste treatment and disposal facilities to guide and promote the healthy development of the industry. In accordance with the strict standards and requirements of the disposal of domestic waste, the government should improve the policy of charge guarantee, financial and tax preferential policy, investment and operation policy, industry supervision policy and so on, and gradually improve the reasonable charging system of garbage disposal and disposal. The government should adopt financial and tax preferential measures to encourage and support the development of the garbage disposal industry, guide and support enterprises to engage in garbage disposal with economic levers such as financial subsidies, tax and fee reduction and so on.
CONCLUSIONS

There are still many problems in the treatment of municipal solid waste in China. The nature and classification of domestic wastes make it more difficult to dispose of domestic waste, the overall level of municipal solid waste disposal is low, and some foreign waste disposal technologies are implemented in China. Supervision and planning of the waste treatment industry in China need to be strengthened, and it is necessary to reduce the amount of household waste, pay attention to the classification of domestic waste, encourage the recycling of domestic waste, increase the use of municipal solid waste, and increase investment in research. The development of technology and the strengthening of the government departments' standard management of waste disposal companies will improve the scientific and resourceful treatment of municipal solid waste.

ACKNOWLEDGMENTS

This research was financially supported by the University Youth Social Science Foundation of Northeast Petroleum University: the research on the management of urban residents' living garbage reduction and management (NEPUQN2014-104)

And it is supported by another project which is Philosophy and social sciences of Heilongjiang Province Planning Project: research mode and path of energy cooperation between China and Russia Belt and Road Initiative strategic perspective (16GJB01)

REFERENCES

1. Yang He, Guiyang municipal solid waste disposal problems and thinking, resource conservation and environmental protection, 2014 (8).