

Analysis of Shanghai living garbage classification and processing

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Abstract: garbage classification is the reform of the traditional waste management recycling method, and garbage disposal of the scientific method in the face of growing garbage output and accompanied by environmental degradation, how to minimize waste processing to maximize resource utilization, improve environment and promote the stable and balanced ecological system, is one of the most important problems in today's world attention garbage classification management regulations of Shanghai municipality on implementing the first, and take concrete actions from the unit enterprise to the strict garbage classification.

1. Introduction

With the development of economy and the improvement of people's living standard, garbage problem is becoming more and more urgent. Two-thirds of China's 668 cities are surrounded by garbage rings. These wastes are buried and incinerated, resulting in increased emissions and improper treatment, causing pollution and damage to soil and water bodies, damaging the ecology, polluting the environment and wasting resources. Therefore, garbage classification and recycling and treatment is extremely urgent.

It is necessary to control the quantity of household waste, and classification is a necessary tool to reduce the quantity of household waste. However, the garbage classification system is being implemented slowly and it is difficult to promote. It is of great practical significance to evaluate the current situation of garbage classification policy and analyze the reasons.

According to the national bureau of statistics and the OECD, in recent years, China's domestic garbage production has been growing at an annual rate of 5%. In 2018, China's annual domestic garbage collection volume reached 228 million tons. In 2018, China surpassed the United States as the world's largest garbage producer. Before, most of the garbage in China was not disposed of innocently, and a large amount of household garbage was directly stacked or incinerated without treatment, which caused a great waste of resources and caused great damage to the environment. Therefore, garbage classification is very necessary



Fig.1 Clearance of municipal solid waste in China from 2014 to 2018

In recent years, China's ability of harmless disposal of waste has been greatly improved. From 2009 to 2017, this capacity showed a trend of continuous growth, from 356.130 tons/day in 2009 to

679,889 tons/day in 2017, and the rate of harmless disposal of household waste reached 97.7%. Basic do completely innocent treatment of garbage. Although China's garbage disposal capacity continues to increase, but the system still exist certain defects in system still rely mainly on landfill and incineration both garbage disposal way, 2017 210.342 million tons of waste disposal, there are 120.376 million tons of landfills, 84.633 million tons were burned, processing 5.333 million tons of other ways. Garbage disposal still needs to be improved and not carried out in the same way as before.

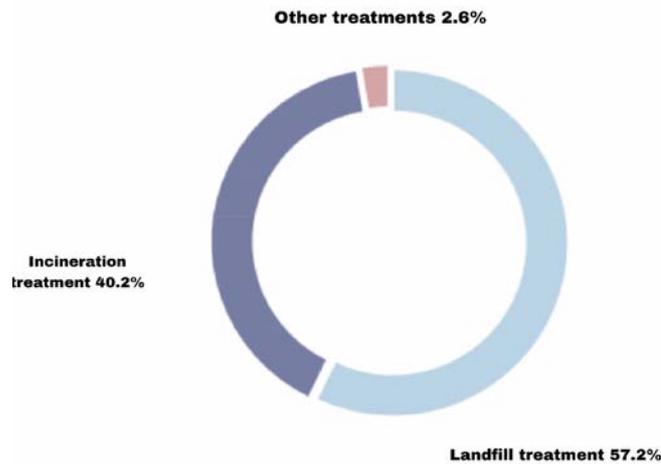


Fig.2 Distribution of harmless treatment of municipal solid waste in China in 2017

At present, there are four major categories in China: recyclable waste, toxic and harmful waste, kitchen waste and other waste. Specifically, recyclable waste, including paper, plastic, glass, metal and cloth; Toxic and harmful waste, including waste batteries, waste fluorescent tubes, mercury thermometers, waste paint, expired medicines, etc. Kitchen waste, including fruits, vegetables, fish residue, plastic bags, etc. Other garbage, including in addition to the above several types of garbage, tile ceramics, waste soil, toilet paper, etc.

In the past, the goal of solving garbage problem was to reduce, recycle and dispose of garbage harmlessly. There are three main methods: sanitary landfill, composting and incineration. Landfill technology is characterized by simple operation and can handle all kinds of garbage. However, it covers a large area with serious secondary pollution, such as groundwater and soil contaminated by landfill leachate. The odor produced by waste dump seriously affects the air quality around the site. In addition, methane produced by waste fermentation is not only a potential fire and explosion hazard, but also a greenhouse effect when it is discharged into the atmosphere. Incineration technology has a high degree of volume reduction, volume reduction and harmlessness in waste incineration treatment. The heat generated during incineration process can be used to generate electricity to realize energy conversion of waste, which is a better waste treatment method. However, if the incineration conditions are not properly controlled, there will be a problem of flue gas pollution and huge investment in equipment. On the other hand, the economy of power generation by waste incineration deserves further discussion. Compared with conventional coal-fired power generation, the installed capacity of refuse incineration power plant is very small, and because of corrosion problems, the efficiency of refuse incineration power generation is generally less than 15%, far below the level of coal-fired power generation. The technology of composting is also relatively simple, suitable for the treatment of garbage with high content of perishable organic matter. Some components of garbage are used for resource utilization, and the investment of garbage treatment with the same quality is much lower than that of incineration treatment alone. Composting technology started early in European and American countries and has reached the level of industrial application. However, the huge investment in importing foreign technology is not suitable for China's national conditions. In response to this situation, some research institutions and enterprises in China have begun to work in this area, and have made some achievements.

At present, the status quo of garbage classification is not optimistic, there are great problems, and improper garbage classification will bring a variety of problems. Firstly, land resources are wasted, a large number of garbage remains in the soil, and harmful substances spread in the soil. Some substances in domestic waste are not easy to be decomposed by microorganisms and degraded, causing serious damage to land resources. Secondly, it brings about environmental pollution. Waste batteries are discarded at will, among which toxic substances will cause damage to the environment; waste plastics in the soil will affect soil fertility and reduce crop yields; garbage is eaten by animals by mistake, leading to animal deaths from time to time. Finally, it will result in waste of resources. With the improvement of people's living standards, the use of plastic fast food boxes and disposable Tableware will not only waste resources and destroy the environment, but also make it difficult to reuse these domestic garbage by inappropriate recycling methods, which does not conform to the principle of recycling. The classification of garbage is low, and most people or enterprises are combined. Without the awareness of waste classification, it is difficult to classify and recycle garbage.

2. Reasons for the Difficulty of Policy Implementation

In the past, it was difficult to implement the garbage classification policy in China mainly because of the following reasons. Firstly, it was difficult to implement the policy and lack of feasibility. Second, deeply ingrained ideas and habits, not for ordinary people to pervasive propaganda and education, and fundamentally improve the residents know degrees of the knowledge on the one hand, the third, the imperfection of the relevant laws and regulations, the lack of corresponding policy support. Fourth, lack of innovative, not out of the cage of traditional painting, making the work no substantive progress. Fifth, imperfect supporting facilities, simply advocate recycling garbage classification, but a basket of processing, make the classification of work before.

3. Advanced Experience of garbage Classification in Shanghai

At present, Shanghai on July 1, began to implement strict garbage classification policy management, in accordance with the "Shanghai living garbage management byelaw" regulation, garbage, wet to dry the living garbage into the garbage, hazardous waste and recycling waste four categories, at the same time has been clear about the violation of delivery, transport enterprise for individuals during "conventional", end of the life garbage disposal enterprise not to carry out the punishment rules of classification. Currently Shanghai hazardous waste, dry wet garbage, garbage, recycling waste, take a different approach to recycling and disposal, different kinds of garbage with different color can collect, different garbage trucks to transport, and adopt a different approach: hazardous waste is in the form of heat treatment, chemical decomposition and free-pollution disposal; Use biochemical treatment, marsh production, composting and other methods for resource utilization or harmless disposal of wet waste; Dry waste is disposed innocently by means of incineration; Recyclable waste is transported to relevant enterprises for recyclable treatment. At present, from the source to the process to the result, Shanghai runs through the 3R principle to realize reduction, recycling and reuse, so as to promote the sustainable development of economy and society to a certain extent. At the front end: anchoring more than 4 million green accounts, online and offline recycling platforms complement each other, building recycling service points in various districts, realizing the integration of resources collected at the front end of recyclables; at the middle end, relying on Hongkou, Huangpu, Changning, Yangpu, Qingpu and other district-level transit stations and Xupu, Hulin two major collection and transshipment bases to realize life. Garbage classification compression, classification transportation, classification transfer. Nineteen vertical compression equipment have been upgraded in two major bases; at the end: bottom support function, adhere to the strategic positioning of bottom support for solid waste disposal, build the ecological and environmental protection base of Laogang, and build wet garbage, construction garbage and other classified disposal facilities in Songjiang, Qingpu, Jiading, Jinshan, Fengxian and

Chongming districts. At present, there are preliminary dry and wet garbage dumps in Shanghai, which can realize the classification of garbage. It also fundamentally guarantees the status of package disposal after the end of classification, and makes the whole process of garbage recycling and treatment. The wet garbage disposal center is Yangpu District wet garbage resource disposal center. After the completion of the project, it also includes dry garbage transfer center, recyclable classification and distribution center, hazardous garbage temporary storage and transfer center, etc. Laogang Waste Disposal Park has garbage incinerator and landfill, which undertakes the dry garbage disposal in most urban areas of Shanghai. Three thousand tons of garbage can be incinerated here every day. The second phase under construction is expected to increase the amount of garbage incineration by six thousand tons. In the latter stage, construction projects will be gradually expanded to gradually improve the capacity of each garbage plant to accommodate the corresponding garbage, thereby further saving resources and improving the environment.

Shanghai has many advantages in the policy of garbage classification and treatment. Firstly, The government plays an extremely important guiding role. First, government organizations set out to formulate policies, implement them from top to bottom, and take relevant laws as the guarantee, which can promote the better implementation of policies from multiple aspects, including the source, process and results All aspects of management, to ensure that the policy implement. Secondly, the government strengthens the infrastructure investment, increasing investment in waste plant, from the technology, capital and other aspects to give support, acting on all kinds of waste recovery after appropriate treatment. Set production who pay system, from the source to reduce garbage? Second, strengthen the participation of the masses and the sense of responsibility, let the people involved in the garbage sorting things, and to give the public supervision, civic awareness, let people clear specific classification and disposal methods, as well as to understand after they sort the garbage. The compulsory measures to the public for public Third, all departments should work together to implement this policy. Party and government officials are on duty to guide residents to classify and dispose of garbage on the spot.

Garbage classification recycling has a lot of benefits. First, the classification of garbage recycling is the most direct benefits, can make the resource utilization efficiency is highest, to recycle can be repeated use of the resources, improves the utilization ratio of resource, reduced the demand for primary resources, to a certain extent, save the resources. Second, protect the environment, focus on hazardous waste recycling and processing, reduce its mishandling the harm of water and soil resources, and to a certain extent, reduce the invisible harm. Third, reduces the utilization of land resources, changed the traditional composting and landfill treatment alone Garbage, garbage is more reasonable approach, reduces the problem of land utilization. Fourth, reduced the cost, residents from source garbage classification, not only can realize efficient garbage classification, effectively reduce the cost, more make the garbage sorting cost reduction, conducive to the rational allocation of social resources. More conducive to achieve the reduction, the garbage is more advantageous to according to the construction of a resource-conserving environment friendly society. Fifth, to improve the quality of the public, to strengthen the public participation, to a certain extent can improve the public's personal qualities, not littering, classification, timing point, is more advantageous to the construct of the harmonious society to build. Sixth, to stimulate the improvement and update of recycling technology and equipment, as well as the new recycling and treatment mode of waste, there is a big gap in the market. The gap in the market will stimulate the emergence and development of new industries, which is conducive to the improvement and update of corresponding technology and equipment, and more conducive to the update and upgrading of industrial structure. Seventh, bring obvious economic benefits, benefit from waste classification, make waste into treasure, and bring additional economic benefits.

4. Experience of garbage Classification in Japan

At present, our garbage classification is in its infancy, so we should actively learn from foreign experience, such as Japan, which has a long history in garbage classification. There are many experiences for us to refer to and learn from. Their experience can be discussed in the following

aspects. First, we should formulate and improve the relevant garbage classification laws and regulations. Since the 1960s, Japan has started the legislative work of garbage sorting treatment. After that, the legislation has been gradually supplemented and perfected to make it more suitable for the development and needs of society and form a rigorous and meticulous legal system. However, there are still deficiencies in China's system, which needs to be further developed and perfected to clarify rewards, penalties and penalties. The system of precautions will make the legal system more perfect and comprehensive. Secondly, in law enforcement, the law must be strictly enforced and the law must be prosecuted. In terms of garbage recycling and disposal, China must strictly enforce the law, strengthen the supervision of garbage classification and disposal related affairs, and fundamentally ensure the normal operation of garbage classification. Secondly, we should continue to increase the propaganda and education of garbage classification. As the main force of garbage classification, residents' ideology and behavior are extremely important. As a guarantee at the source, the importance of residents has become increasingly prominent. As the main body of garbage classification, its behavior has a very important contribution to the development of circular economy. Thirdly, increase investment in garbage classification industry. In order to promote the rational use of resources by industrial development, the Japanese government plays a role of the government to increase investment in research and development of waste disposal technology related to enterprises, and to adopt certain economic and tax incentives, tax relief policies and credit support for enterprises, so that enterprises can support their needs in funds, and then gain weight in technology. Fourthly, the formulation of policies should be in line with the national conditions and should not be rigidly applied. As the current garbage classification in China is still in its initial stage, it can only be carried out step by step and step by step. Enhancing residents' awareness of environmental protection and increasing guidance and support to garbage disposal enterprises from the residents' level and from the government's level. The government plays the role of market mechanism and actively guides relevant enterprises. It is not for the government to participate in their affairs and play the role of invisible hands of the market. The government guides them and propels the health of the industry correctly development.

5. Conclusion

Garbage classification involves many links. China is in the preliminary stage of garbage classification and recycling. There is still a long way to go to improve the modern garbage classification system in China. Compared with the United States, Germany and Japan, garbage classification in China started relatively late, with a lower degree. Therefore, it is more necessary for the government to play a leading role, and the people of enterprises in various units actively cooperate with each other. The pilot garbage classification work in Shanghai has aroused wide public concern, and more cities will join in promoting garbage classification and treatment in the future. In addition to guiding the active participation of the masses, the government needs to do a good job in the top-level design of science, formulate policies, laws and regulations, classify the delivery, collection, transportation and treatment, make comprehensive use of all aspects, give full play to the principle of the whole process of circular economy, according to the different regions of the economy, environment and infrastructure. To formulate effective waste classification standards and comprehensively promote the development and improvement of China's waste classification and treatment system.

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