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FEATURES OF GARBAGE RECYCLING IN NANTUN, JIANGSU PROVINCE, CHINA

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The composition and harm of rubbish from Nantong, Jiangsu Province, China, summarized the nantong traditional processing method of garbage and industrial power generation method and its related technology, combined with actual examples in nantong implements classified collection, garbage disposal and recycling, so as to realize the reduction and recycling of waste treatment.

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The purpose of the research. Nantong's garbage is of great value and provides many jobs. Due to the lack of industrial policies for garbage recycling in Nantong city, garbage disposal has not formed an industrial scale. Therefore, according to the economic strength of Nantong city, it is necessary to carry out classified collection, harmless treatment and recycling of garbage, turn waste into treasure, and realize the reduction and recycling of garbage treatment. From the original mechanism and management system to seek a breakthrough, let the garbage treatment into the market operation mode. Attract and support private enterprises and capital to participate in urban waste treatment from the perspective of industrial policy, taxation and finance.

Field investigation was used research results: according to the field investigation in nantong, waste composition and harm of mainly includes the following 3 kinds:

1.1 the living garbage, including waste paper, plastic, glass, metal and organic waste, including packaging and occupied the main part of food waste in the kitchen.

1.2 construction waste and clean up garbage, including soil, stones and concrete blocks, the blocks, waste wood, waste such as pipelines, sweepings public bins in the waste, public places and pavement damage after waste, etc.

1.3 electronic waste and medical waste, including waste electrical appliances, electrical waste, batteries, fluorescent tubes, such as thermometer, hospital contain viruses, bacteria or chemicals of medical waste, inflammable and explosive items and special industry waste containing radioactive substances. This kind of garbage generally cannot be mixed with ordinary garbage.

The garbage investigated above mainly refers to the solid wastes generated by urban residents, excluding the solid wastes generated in industrial and agricultural production activities.

The amount of garbage per person in Nantong city is 1-2 kg per day, and its composition is related to residents' material living standard, habits, recycling degree of waste materials and municipal construction. Direct dumping and simple landfill are many municipal waste treatment methods, the level of harmless treatment is very low, this treatment method will produce a series of serious environmental problems; Aggravate environmental pollution, soil, groundwater, atmosphere will cause realistic impact and potential danger, seriously harm nantong city environment and residents' living conditions. Leachate from natural landfills, in particular, has led to serious water pollution in some areas because it has not been collected and treated as necessary. Even more, landfill or landfill methane explosion and long-term spontaneous combustion phenomenon.

In fact, people are throwing away a lot of recyclables every day. According to the statistics of Nantong Environmental Protection Foundation, there are 362,000 tons of waste plastic in nantong city's annual garbage, and 1 ton of waste plastic can produce 0.37 to 0.73 tons of oil, and every 1 ton of plastic recycled beverage bottles can gain 8 000 yuan of profit. There are 388,000 tons of waste paper, every 1 ton of waste paper can be recycled, 0.85 tons of good paper, save 3 m3 of wood, It can save 300 kg of alkali and reduce 74 % of pollution compared with the production of good paper. There are 150 thousand tons of waste glass. It can save 10-30 % of energy by reproducing glass from broken glass, reduce 20 % of air pollution and 80 % of abandoned slag from mining. There are 237 million waste batteries, using waste batteries can recover cadmium, nickel, manganese, zinc and other precious heavy metals, while reducing the pollution of heavy metals to the environment and harm to human health. There are 35 thousand tons of scrap metal. For every 1 ton of scrap steel recovered, 0.9 tons of steel can be refined, which can reduce 75 % air pollution, 9.7 % water pollution and solid waste, and save 47 % smelting cost compared with making steel with ore. There are 1.23 million tons of waste food and vegetation. Every 1 ton of waste can produce 0.6 tons of organic fertilizer and waste fuel for power generation and heating. According to the prediction of experts from the Emerging Forecast Council of Developed Countries, 10 emerging technologies will emerge in the fields of energy, environment, agriculture and medicine in the next 10 years, among which the emerging technologies related to waste treatment will be ranked second, and the waste treatment industry will become a new economic growth point in the 21st century.

The traditional garbage treatment methods in Nantong city mainly include landfill, composting and incineration. The three methods are relatively simple in technology, low resource recovery rate and secondary contamination:

2.1 landfill: landfills in less investment, large quantity and technical requirements is not high, covers an area of large, permanent pollution caused by the great potentials. In developed countries, landfill pollution has occurred after decades.

2.2 compost: by waste composting treatment, can make the waste into organic fertilizer. But the fertilizer effect of this kind of garbage fertilizer is low, sale is limited, development leeway is not big.

2.3 burning, burning garbage has the advantage that the recovery of heat energy and the most thorough reducing trash (after burning garbage volume decreased by 80-95 %), but this way is expensive. The construction of an incinerator with a capacity of 1 000 tons of waste per day and its attached thermal energy recovery equipment will cost about $100 million to $120 million. Incineration if not well controlled, will produce! Dichalky substances, causing serious air pollution.

At present, there are three main industrial methods of garbage recycling, namely landfill composition! Biogas field electricity, waste incineration recycling heat power generation and through biological engineering technology, so that waste into fertilizer. Either way, there are endless opportunities.

Biogas field power generation, is the current technology mature, less investment, low cost, easy to use and management, favored by developed countries a way of urban waste treatment. By the end of the 20th century, there were more than 140 around the world! The waste gas field power station is in operation. The UK has a capacity to generate 18MW of electricity from waste biogas fields. The landfill biogas plant in Illinois, USA, covers 61 hm^2, fills 1.8 million tons of waste, and has a generating capacity of 1 600 kW, equivalent to using 28 thousand barrels of oil per year.

The establishment of waste incineration plant, in the incineration process to recover its heat energy, and used for power generation, can realize waste incineration energy. Germany and the United States were the first countries to generate electricity by recycling heat from burning waste. In the 1960s, incinerators were established in the former West Germany, benefiting 2.45 million people. By the 1980s, electricity had been provided to 21.2 million people, accounting for 34.4 % of the total beneficiaries. The United States had invested in incineration plants since the 1980s, with an annual capacity of 30 million tons of waste. In the 1990s incineration accounted for 18 % of America's total waste disposal. The city of Detroit in the United States has the world's largest garbage processing power plant of 4 000 tons per day. Japan's largest waste thermal power plant has a maximum capacity of 22 MW.

Bioengineering treatment methods are low investment, high efficiency and safe. Bioengineering technology is to make use of the microorganism's rapid metabolism and efficient fermentation to transform all the decomposed organic matter in the waste into a stable state of efficient bio-organic fertilizer in a short time. Organic matter that can be decomposed in garbage includes leftover food, rotten vegetable leaves, paper, wood, coal ash, feces, feathers, slaughterhouse waste, etc. Chinese experts on the biological engineering technology treatment of economic analysis, the use of waste to produce 1 t of efficient organic fertilizer cost of about $50.65. Based on current market conditions, a plant that processes 600 tons of garbage a day and produces 300 tons of finished fertilizer a day can make an annual profit of $4.03 million.

To sum up, the landfill and incineration compost treatment of nantong municipal solid waste have their own advantages, but also have unavoidable disadvantages. The solution is to use mineral processing technology and equipment to recycle most of the useful substances (50-80 %) after the household waste is classified and collected, and then send the remaining parts that cannot be recycled (50-20 %) to landfill, incineration or composting. In this way, the municipal solid waste can be harmless, reduced and re- resource, and save a lot of money.