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Short Communication

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Residential Multistory Building on Its Waste Provides the Needs of Residents for Heat, Electricity, Produces Building Materials

Oleg Khalidullin

Kazakh National University, Kazakhstan

Corresponding author
Khalidullin OH, Kazakh National University, Kazakhstan.

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Buildings with dozens, hundreds of apartments in which people spend more than half of their lives are not just consumers, but also environmental pollutants. Using a variety of resources, in the form of electricity, heat, water, gases, food, a wide variety of items, apartment residents turn it all into waste. Some of them go into the sewer, ventilation. The rest and the main solid waste must be stored in the apartment, sorted, taken out, stored again near the house, paid for disposal and again stored in landfills. On a global scale, recycling is becoming a disaster for the entire planet - problems in ecology, the economy have appeared and become more complicated, the climate is changing. The total area of garbage around the world covers an area equal to the territory of Mexico and is constantly expanding. The soil covered with waste is deprived of the natural circulation of water, every drop of which must enter the soil and provide life for underground creatures. The total mass of underground inhabitants in the form of bacteria, fungi, insects is about 20 tons per hectare of natural soil. And every living cell recycles water and turns it into a substance - the basis of natural evaporation [1].

In nature, everything is interconnected and all substances must have their circulation with the highest possible speeds. Each item is made up of many natural elements. At landfills, these elements get stuck for quite a long time. Humanity must return everything taken away, as quickly as possible, back to nature.

One of the biggest sources of waste is an ordinary high-rise building. It is from it that the bulk of the waste comes out, which is stored in landfills. The functionality of multi-storey buildings is protection from the weather, comfort, satisfaction of the physiological and other needs of residents. There are buildings with landscaping of roofs and vertical walls. A variety of "Smart Home" systems have been invented with subsystems that provide security, communications, entertainment, climate control, and lighting of all this, only landscaping can be considered not contrary to nature. Everything else requires external inputs. Humanity should start thinking about reducing the impact on nature, consume less energy resources, and dispose of unnecessary things at minimal cost.

The majority of the population lives in such housing and this housing is the biggest polluter of nature. If you pay attention to the end point of the movement of waste, you can notice a rather interesting phenomenon. A landfill compressed with many layers of waste heats up over time and ignites with the release of gases and heat. Quite serious means and forces are thrown to put out fires and localize secretions. The thought arises - what if we take this process under control and get a benefit?

This is suggested by the Gravity Bioreactor at [2]. On a city scale. It offers waste collection from the entire city. And if you apply this within the same multi-storey building? There is no need for waste disposal - everything is recycled on site. Modern materials make it possible to create such structures and technologies that expand the functionality of residential buildings. The process of waste processing, right in the house, makes it possible to autonomize - to receive their own electricity, heat, building materials, fertilizers. Unprecedented technology that will be profitable, will reduce the mass of resources and return to nature seized substances. Landfills will disappear - anthropogenic impact on nature disappears

To do this, the existing waste chute is converted into a disposal device, more precisely, a variable temperature furnace. More precisely, it will not be a garbage chute, but a mine with a diameter of up to a meter, maybe up to 5 meters. It has to be determined experimentally. The walls must be heat-gas-moisture-tight. In the center of this garbage chute, or rather the shaft, a vertical pipe with a diameter of 200-500 mm is suspended. Pipes for the supply and selection of liquids, gases, and sewerage are also reinforced along the entire height. Also, throughout the entire volume of the mine, it is necessary to hang temperature, pressure, and humidity sensors in pipes.

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All organic garbage is dumped into the main container, the cavity of the mine from the very top - from the attic: food waste, rags, paper, wood, leather - everything that oxidizes, rots, decomposes, smolders, burns, rusts. And in the central pipe - with a diameter of 200 - 500 mm, inorganic garbage is dumped separately: glass, ceramics, metals, cans, and most importantly - polyethylene and all types of plastic products. To the very top, the whole mu rubbish from all apartments.

Sorting into two categories can be carried out by the residents themselves or a small workshop can be created in the attic. About squeamishness. Feces from the upper floors flow past us behind the wall ... and here it will be possible to add them to this mass. Practice, analysis and calculations will have to show the volumes, quality, types of waste, determine the shape, location, size, fastening of pipes. After the complete filling of both pipes, these same heating processes begin. Heating zones are located in the middle of the entire column. Here, the mass is heated in the same way as in landfills up to 200 - 300 degrees Celsius. However, here the temperature is controlled by the circulation of water in special pipes and does not allow ignition. Cold water enters and pressurized steam exits. The steam turns the turbine of a generator installed in the attic or basement, and the resulting electricity is consumed by the residents themselves, and the excess goes to the power supply network.

Waste steam and condensate is sent to the heating and hot water system of the house. The process is under the control of automation, which controls the speed of movement of water, gases, oxidation of waste, the movement of the entire variable mass, the selection of harmful gases, in general, all decomposition products, by means of valves and actuators. After the exhaustion of the heating energy - almost burning - we do not allow combustion itself, maintaining the maximum allowable temperature level. the settling mass is cooled by the water supply. It is possible that additional ingredients will be required from third parties - waste from local industry, for example, sawdust, textile scraps and ordinary soil, clay, sand, grass, leaves - the main components that form compost.

Everything indigestible, inorganic is dumped into the central - smaller pipe. Under the action of high temperature, the plastic in the pipe melts and envelops everything solid. As it slides down, a smooth and even cylinder comes out of this pipe at the very bottom. From it you can make supports, pillars, walls. The pipe can be square, rectangular, any other section - then it can be sawn into bricks and used in construction, as paving slabs.

The emitted gases are sent through special pipes to the furnace and burned, heating the water, which is added to turn the turbine. As it decomposes, the mass under the influence of gravity continuously and slowly moves down. When the temperature drops, water, oxygen, bacteria, earthworms are supplied there through perforated pipes. The transformation of waste into compost begins. As we move further, at the very bottom of the mine, the compost is loaded into trucks and taken out for sale. The process goes on continuously and is regulated by the supply of water, gases, depending on the filling, processing speed, and other parameters.

Experimental design and scientific research of processes can become the basis for the concept of building new houses with fully autonomous power supply, hot water supply, heating, building materials, fertilizers.

Thus, the house acquires new functionality. It does not just protect us from bad weather and provides comfort, but turns into a production complex. If all the houses of the whole city become like this, then many industries will become unnecessary, for example, garbage trucks, waste sorting and recycling plants.

The implementation of such technology can reduce the number and area of landfills and restore nature to its natural hydrological cycle, on which climate change and the very future of the planet depend.

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