BIOCONVERSION OF PRODUCED MSW IN BIOREACTOR LANDFILLS AND MADE MSW - IN MUNICIPAL BIOREACTORS.

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In my Manuscript mathematically argued is shown objectivelly existing Threat of Avalanche-like Increase of Quantity of Organic MSW of People of Planet, Made and Accumulated in Landfills. On our forecast, already in nearest ten-year periods the Quantity of Organic MSW Accumulated in Landfills in tens times exceeds Quantity of Organic MSW, which can spontaneously are decomposed in Landfills without Appreciable Pollution of Environment, and to 2100 year Pollution of Environment by Landfills makes Environment Unsuitable for Life of the People. By us was developed General Conception of total Utilization for all Organic MSW, formerly Produced and Buryed in Landfills, by Conversion of all Landfills, also - Mixed Landfills, in huge Bioreactor Landfills and by way of Equiption of all of Regions of Planet by sufficient quantity of Municipal Bioreactors of sufficient Productivity for accelerated Bioconversion of all continuously Made Organic MSW. For realization this Conception by us was developed Hi-Tech Technology of Conversion of Usual Landfills, also - Mixed Landfills, in Bioreactor Landfills and was developed Hi-Tech Technology of Operation for Bioreactor Landfills, enabling to produce in Process of Bioconversion of MSW not only Landfill Gas, but also Organic Fertilizers, by us was developed Hi-Tech Technologies for Accelerated Bioconversion of MSW in Municipal Bioreactors and was developed Designs of Process Equipment for Practical realization for all these Hi-Tech Technologies. By us was produced Technical and Economic Ground of Base Project for Conversion of Usual Landfill of city with Population of 1 million Persons in Bioreactor Landfill with subsequent Extraction and Utilization of Landfill Gas in Energy and for Greenhouses.

1.0 INTRODUCTION

With the purpose of protection of Environment from pollution by continuously increasing quantity of Organic Wastes, by our Private Scientific, Technical, Methodical and Healthing Centre "AVATARA", by Industry Partner of US EPA (Environmental Protection Agency), with account of developed by us yet in 1994 Physical and Mathematical model of process of Bioconversion of Organic Wastes and with account of my Experience of work on Boring Enterprises on Extreme North, was developed Technological and Technical decisions, enabling:

1. Effectively transform Landfills in Bioreactor Landfills with controlled Bioconversion of Organic Wastes, buried in its entrails.
2. To create High-Technology Municipal Bioreactors with growthed structure by use of unified modules, which can be produced serially.

From similar Technologies of conversion of Landfills in Bioreactor Landfills, developed and studied in USA by Florida Centre of Management by Firm and Hazardous Wastes and by Company of Waste Management Investment, our Technology differs by theme, that permits more effectively involve in Process of Bioconversion the Organic Wastes, creating more comfortable conditions for migration for Aerobic and Anaerobic Bacterias and essentially accelerating thus the Process of Biochemical decomposition for Organic Wastes and the Process of generation for Landfill Gas.

By us are developed the Base Project for city with population of 1 million of inhabitants, including in itself:

1. Conversion of Landfill with earlier buried Wastes in Bioreactor Landfill and subsequent controlled Bioconversion of Organic Wastes in Entrails of that Bioreactor Landfill.
2. Construction of Modular Municipal Bioreactor and accelerated (on comparison with Bioreactor Landfill) Bioconversion of all made by city Organic Wastes in that Municipal Bioreactor.

The comparative analysis of technical and economic dates of our Base Project for Extraction of Landfill Gas from Landfill and already realized on practice in Canada of Project of Extraction of Landfill Gas from Landfill of city Vancouver has shown the vicinity of calculated and actual technical and economic parameters, that confirms the high reliability developed by us the method of account of design parameters.

2.0 MATHEMATICALLY JUSTIFIED FORECAST OF AVALANCHE-LIKE INCREASE OF QUANTITY OF ORGANIC MSW, MADE BY POPULATION OF PLANET AND ACCUMULATED IN LANDFILLS

On the basis of analysis of statistical dates of Organizations of United Nations, by us was found the mathematical expression, prognosing expected quantity of Population of Planet in different years, with deviation from quantity of Population of Planet, indicated in statistical dates of Organizations of United Nations for periods with 1800 year till 2000, not exceeding 2.9 %.

In view of tendency of Population of Planet to continious increase of quantity of Organic Wastes of its living activity and with account of real existing opportunity of Nature to process these Wastes by natural way, by us are found correlated with mathematical expression, prognosing expected quantity of Population of Planet, the mathematical expressions for forecasting of relative quantity of Organic Wastes, made in process of living activity of Population of Planet and of quantity of Organic Wastes, accumulated in Landfills in kind of unprocessed by Nature the Organic Wastes, representing by itself the biological Mines of slowed down actions, the continious natural decomposition of which conducts to all increasing pollution of Environment by products of natural decomposition of these Wastes, quantity of which already in 2006 in 10 time exceeds the natural opportunity of Nature independently process these Wastes.

The close conformity of prognosing by us and actual quantity of Population of Planet on continue 200 years, from 1800 year till 2000, permit us to assume the Reliability of Forecasting with help of found by us mathematical models of expected quantity of Population of Planet, of Quantity Made and of

Quantity Accumulated in Landfills of Planet Organic MSW and on subsequent period of time, from 2000.

3.0 GENERAL CONCEPTION OF TOTAL UTILIZATION FOR ALL ORGANIC MSW, FORMERLY PRODUCED AND BURYED IN LANDFILLS AND CONTINUOUSLY MADE TODAY

Continious and Avalanche-like Increase during time from 2000 till 2100 years of Quantity of Population of Planet, of Quantity Made and of Quantity Accumulated in Landfills of Planet Organic MSW requires the revision of conventional Concept of Utilization of Organic MSW, providing them Burying in Landfills and them Burning in furnaces of Waste-Burning Plants.

In series Industrially and Economically advanced countries of World (in USA, in Canada, in France, in Australia) already appear tendency more effective Utilization of Produced Organic MSW in Landfills by conversion these Landfills in Bioreactor Landfills and tendency more effective Utilization continuously made Organic MSW in Specialized Municipal Bioreactors instead of burning of these Organic MSW in furnaces of Waste-Burning Plants.

However, Technologies of conversion of Landfills in Bioreactor Landfills, used in these countries, permit to transform in Bioreactor Landfills only the limited quantity Separate Landfills of Suitable Construction and with Suitable structure of Organic MSW and do not permit to transform in Bioreactor Landfills the Mixed Landfills, which make the main quantity Landfills in the World.

Municipal Bioreactors, used in these countries, represent the Technological Objects of completed Designs, designed on certain productivities and requiring for maintenance of the work of creation of additional Infrastructures.

By us was developed General Conception of total Utilization for all Organic MSW, formerly Produced and Buryed in Landfills, by Conversion of all Landfills, also - Mixed Landfills, in huge Bioreactor Landfills and by way of Equiption of all of Regions of Planet by sufficient quantity of Municipal Bioreactors of sufficient Productivity for accelerated Bioconversion of all continuously Made Organic MSW.

4.0 TECHNOLOGY OF CONVERSION OF USUAL LANDFILLS, ALSO - MIXED LANDFILLS, IN BIOREACTOR LANDFILLS

For realization of our General Conception of total Utilization for all Organic MSW, formerly Produced and Buryed in Landfills, by us was developed Hi-Tech Technology of Conversion of Usual Landfills, also - Mixed Landfills, in Bioreactor Landfills.

At development of Hi-Tech Technology of Conversion of Usual Landfills, also - Mixed Landfills, in Bioreactor Landfills was used developed by us in 1994 year mathematical model of Process of Bioconversion of Organics by Aerobic and Anaerobic Bacterias and my Experience of work on Boring Enterprises on Extreme North.

The distinctive feature of our Technology of Conversion of Landfills in Bioreactor Landfills is equipment of Landfills by Multifunction Bores of our Design, enabling to produce Extraction of Landfill Gas and to execute

Circulation of Gases and Liquids, required for maintenance work of Landfills as Bioreactor Landfills.

Developed by us Hi-Tech Technology of creation of such Multifunction Bores and of subsequent Activization of Process of Bioconversion in Entrails of Landfills permits more fast and more cheap, in comparison with other known Technologies, Convert Separate Landfills in Bioreactor Landfills, as well as permits Convert into Bioreactor Landfills the Mixed Landfills, that it is impossible at use of other known Technologies.

5.0 DESIGN OF OUR MUNICIPAL BIOREACTOR

In difference from other known Bioreactors, our Municipal Bioreactor represents Module Growing Design, which consists of the same type Multifunction Modules, quantity of which is determined by required productivity of Municipal Bioreactor and which can be entered in structure Municipal Bioreactor or to be removed from its structure even while in service Municipal Bioreactor. Design of our Municipal Bioreactor is Energy Saving, and Technological regime inside of each of Module can to be supervised and to be operated with high accuracy in any moment of time.

6.0 TECHNOLOGY BIOCONVERSION COMPLEX ON BASE OF BIOREACTOR LANDFILL OR MUNICIPAL BIOREACTOR

By us was developed Technology Bioconversion Complex on base of Bioreactor Landfill (or Municipal Bioreactor), during work of which as in Entrails of Bioreactor Landfill as Inside of Modules of Municipal Bioreactor the Organic MSW are Converted in Organic Fertilizers and in Landfill Gas.

Extracted from Bioreactor Landfills through Multifunction Bores of our Design, the Organic Fertilizers are subjected Endogenic (inside of Bioreactor Landfills) and Exogenic (outside of Bioreactor Landfills) Refine from Heavy Metalls, from Radionucleouds and from another Biologically Harmful Substances and turn into Ecologically pure Organic Fertilizers.

Landfill Gas, which also are extracted from Bioreactor Landfills through Multifunction Bores of our Design, also is subjected Endogenic (inside of Bioreactor Landfills) and Exogenic (outside of Bioreactor Landfills) Enrichment, in process of which it is cleared from Sulphur and in it is increased the concentration of Methane.

Inside of a Bioreactor Landfills the part of Carbon Dioxide, which together with Methane is a part of Landfill Gas, is used for production of additional quantity of Methane, and outside of a Bioreactor Landfills the part of Carbon Dioxide, with help Enrich Equipment of our Design, is separated from Landfill Gas, increasing the concentration of Methane in it, and consequently increasing Heat-Producing ability of Landfill Gas.

Cleared and enriched Landfill Gas is used for production Electrical and Thermal Energy, and Products of burning of Landfill Gas (Water Steam and Carbone Dioxide), together with Electrical and Thermal Energy and with Organic Fertilizers are used for production the Vegetable and Animal Products in Technology Equipment of our Design "BIOTRON", which presents by itself any like Greenhouse improved Design.

Organic Fertilizers and Vegetable and Animal Products from "BIOTRON" are used for preparation of Granular Organic Fertilizers and Granular Fodders.

Like it are used in that Technology Complex the Organic Fertilizers and Biogas (Landfill Gas) from our Module Municipal Bioreactor.