Preliminary result of pit latrine of ger district zone of the Ulaanbaatar city

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Introduction

The world population rising very fast and it has resulted in increasing the area of polluted soil, water and air. In order to cater to the demands of the people, the rapid expansion of industries, vehicles, etc. is necessary. But all of these developments make our world, especially urban area, heavily polluted. And many kind of contaminant substances showing bad effects to human health.

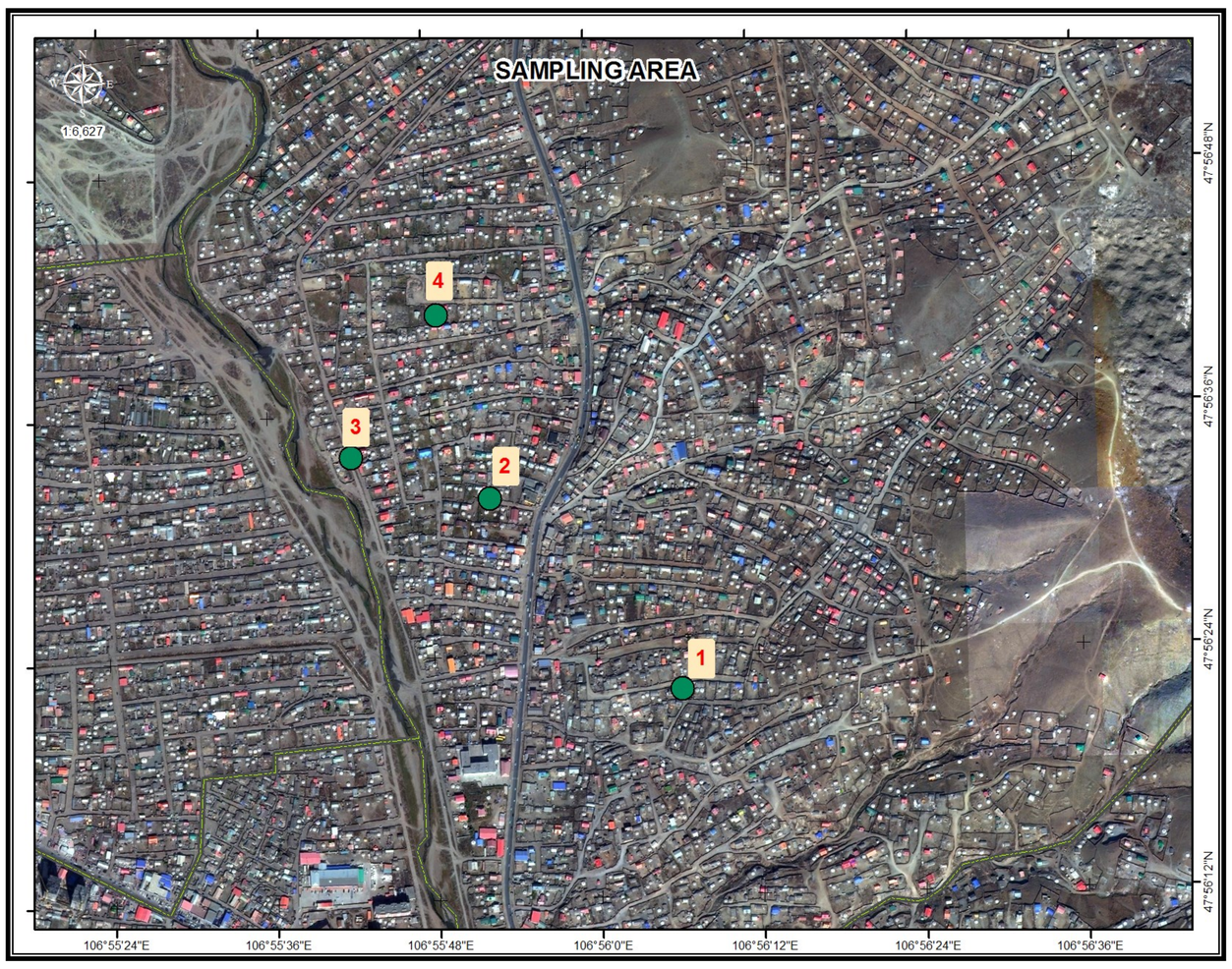
Our research work aimed to assess to Ulaanbaatar city soil contamination using sanitary microbiological and bacterial studies. Recently conducted 88% of all of soil samples have revealed Salmonella, Cl.perfringen, E.coli, and Citrobacter bacteria of Ulaanbaatar city soil. In detail: A total of 12 percent non contaminated and 53% slightly, 24% moderate, 11% of the high contaminated.

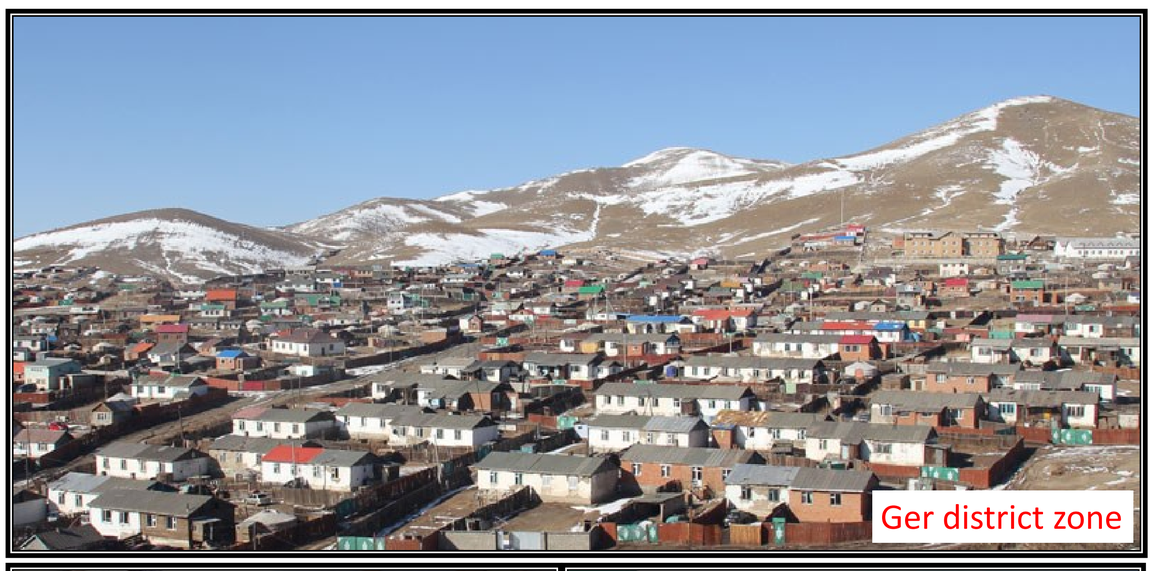
The Soil pollution main source in the Ger District can be attributed mainly to the lack of sewage systems. In ger areas, the large majority of households use pit latrines.

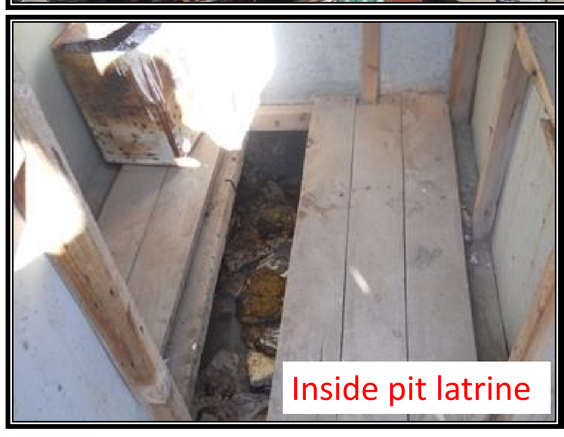
Sampling area

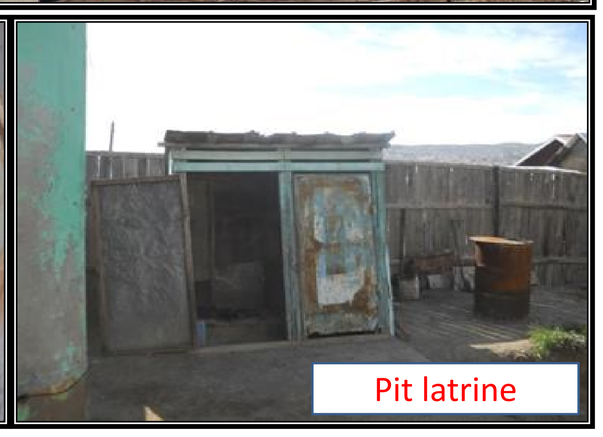
The population of Ulaanbaatar is ever increasing. Influx of migrants to Ulaanbaatar has been on the rise since 2000. As of 2014, approximately 736,000 people reside within Ger district.

Sampling area located in the 27th khoroo, Bayanzurh district of Ulaanbaatar. This area is the high risk zone of soil bacterial pollution and surface water. Also Sampling area close to Selbe river, distance is 70-440 meters.









A pit latrine is a large hole in the ground used as a toilet in each hashaa (Family). Commonly, Each hole has a structure over it to provide privacy. The deposited faces has a significant negative impact on soil pollution as each hashaa has a pit latrine. Eventually, the hole in the ground will fill up with manure and a new hole will have to be dug. This happens every 3-4 years. Since hashaas are limited in size, only so many new latrines can be dug. It is clear that pollution related to the Ger District affects public health and that changes need to be made in the foreseeable future

TEST RESULT AND DISCUSSION

According to the study total number of 2.2 x 10^6--7.3x10^6 (2016. Sep.25) and 2.9 x 10^6--5.4x10^6 (2016. Oct.07) is generally high concentrations. Total bacteria number reduction was observed for during observations (14 days). Anaerobic microorganisms Cl.Perfringens site-BZD-27-C-64 has revealed sampling number BZD-27-9-215. Group intestinal microorganisms revealed from all sites (E.coli 0.01-0.0001), Proteus revealed 0.01-0.001, indication of soil polluted with bacteria from human faces.

We were used EM technology that sites, After that experiment some of results totally changed. For example, Group of Intestinal microorganism has removed 100-1000 times and Anaerobic microorganisms 10-100 times removed and get neutral. EM technology very effective to soil microbial pollution.

Pollution has been linked to issues of public health. Pollution detected by infectious disease risks arise adversely affect the spread of human health.

Table-1. Non activity

№	Sample name	Test performance standards	Test Specification			
			Total bacteria	Group of intestinal microorganisms	Anaerobic microorganisms	Intestinal group autologous disorder
				0	0	Undetectable
			MNS 5668-06	MNS 4697-98	MNS 4694-1998	MNS 6340-2003
1	BZD-27-35-1842	4.1x10^6		*E.coli*, *Proteus* - 0,01 revealed	Anaerobic no	25 ml in *Salmonella* revealed
2	BZD -27-9-215	2.2 x10^7		*E.coli*-0,0001 revealed	*Cl. perfringens* 0,001 revealed	25 ml in *Salmonella* revealed
3	BZD -27-C-64	7.3x10^6		*E.coli* -0,01 revealed	*Cl. perfringens* 0,01 revealed	25 ml in *Salmonella* revealed
4	BZD -27-16-389	5.4 x10^6		*E.coli, Proteus* - 0,001 revealed	Anaerobic no	25 ml in no pathogens

Sample number	Family	Water consumption, day /liter	Liquid waste years / m³	Used term / year	the total Waste Liquid volume (m³)	Pit latrines volume (m³)	Selbe river distance (m)
BZ-27-35-1842	4	28.6	10.4	27	281.6	6.0	440
BZ -27-9-215	8	57.1	20.9	15	312.9	6.0	205
BZ -27-C-64	8	54.3	19.8	12	237.8	8.0	71
BZ-27-16-389	7	50	18.25	5	91.25	1.0	247

Table-2.Used EM technology

№	Sample name	Test performance standards	Test Specification			
			Total bacteria	Group of intestinal microorganisms	Anaerobic microorganisms	Intestinal group autologous disorder
				0	0	Undetectable
			MNS 5668-06	MNS 4697-98	MNS 4694-1998	MNS 6340-2003
1	BZD-27-35-1842	5.2x10^6		*E.coli*, *Proteus* - 0,1 revealed	Anaerobic no	25 ml in *Salmonella* revealed
2	BZD -27-9-215	3 x10^6		*E.coli*-0,1 revealed	*Cl. perfringens* 0,1 revealed	25 ml in *Salmonella* revealed
3	BZD -27-C-64	2.9x10^6		*E.coli* - not revealed	*Cl. perfringens* 0,1 revealed	25 ml in *Salmonella* revealed
4	BZD -27-16-389	5.4 x10^6		*E.coli, Proteus* - 0,01 revealed	Anaerobic no	25 ml in no pathogens

Table-3.Used EM technology

The Ger district because large areas have been polluted 20-30 years (10.4-20.9 m³/year) Soil accumulation of liquid waste manure in the soil during the warm season. This is likely to be a further cause pollution of ground water and surface water.

CONCLUSION

- Mechanism of microorganisms in control of environmental pollution is still being explored (EM). Microbiological characteristics of soil bacterial quantitative assessment of the cities surveyed in Ulaanbaatar city ger district of pit latrines.
- Ulaanbaatar city soils have been contaminated with the bacteria (E-coli, Salmonella, Cl. Perfringens).
- We will sampling test in the winter time. For most of the bacteria don't living in cold conditions.
- Ger districts have pit latrines 200000 people live in Ulaanbaatar. Therefore, the house has areas to reduce soil contamination from pit latrines and implement measures to individuals and entities, long-term comprehensive approach involving state agencies to reduce pollution and use of eco-toilet.