University of Strathclyde Glasgow

Alternative Technologies for the Safe Water

I-Dream

2nd June 2015

Migeun Park





What is the matter?

“One in eight people worldwide lack safe water and lack of safe water and sanitation are the world's single largest cause of illness.”

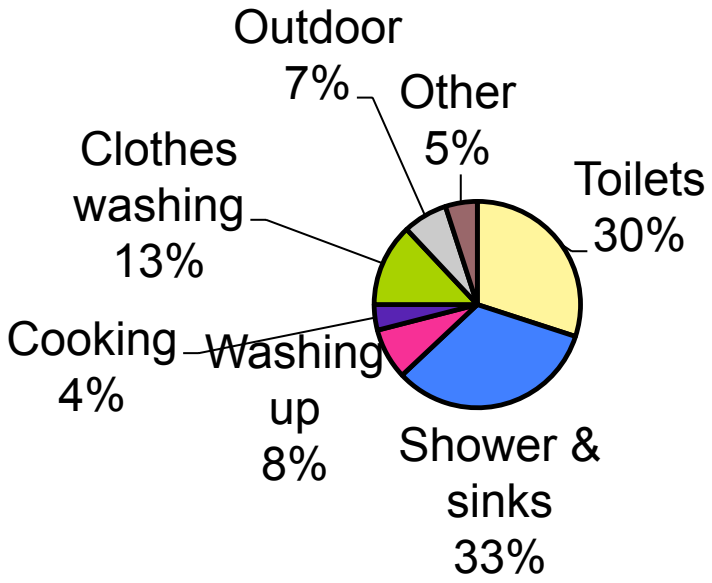
WATER RELATED DISEASES CAUSED BY EACH CATEGORY OF PATHOGENS

- Bacteria
  - Typhoid fever, Cholera, Legionellosis, Salmonellosis

- Viruses
  - Hepatitis A, Norwalk agent, Rotavirus
- Protozoa
  - Cryptosporidiosis, Giardiasis
- Helminths (intestinal parasites)
  - Ascariasis (roundworm), Taeniasis (tapeworm), Schistosomiasis (bilharzias- blood flukes)

Water Usage in UK

UK Average 150 litres per day per person



While
Mozambique 8 litres per day per person
America 350 litres per day per person

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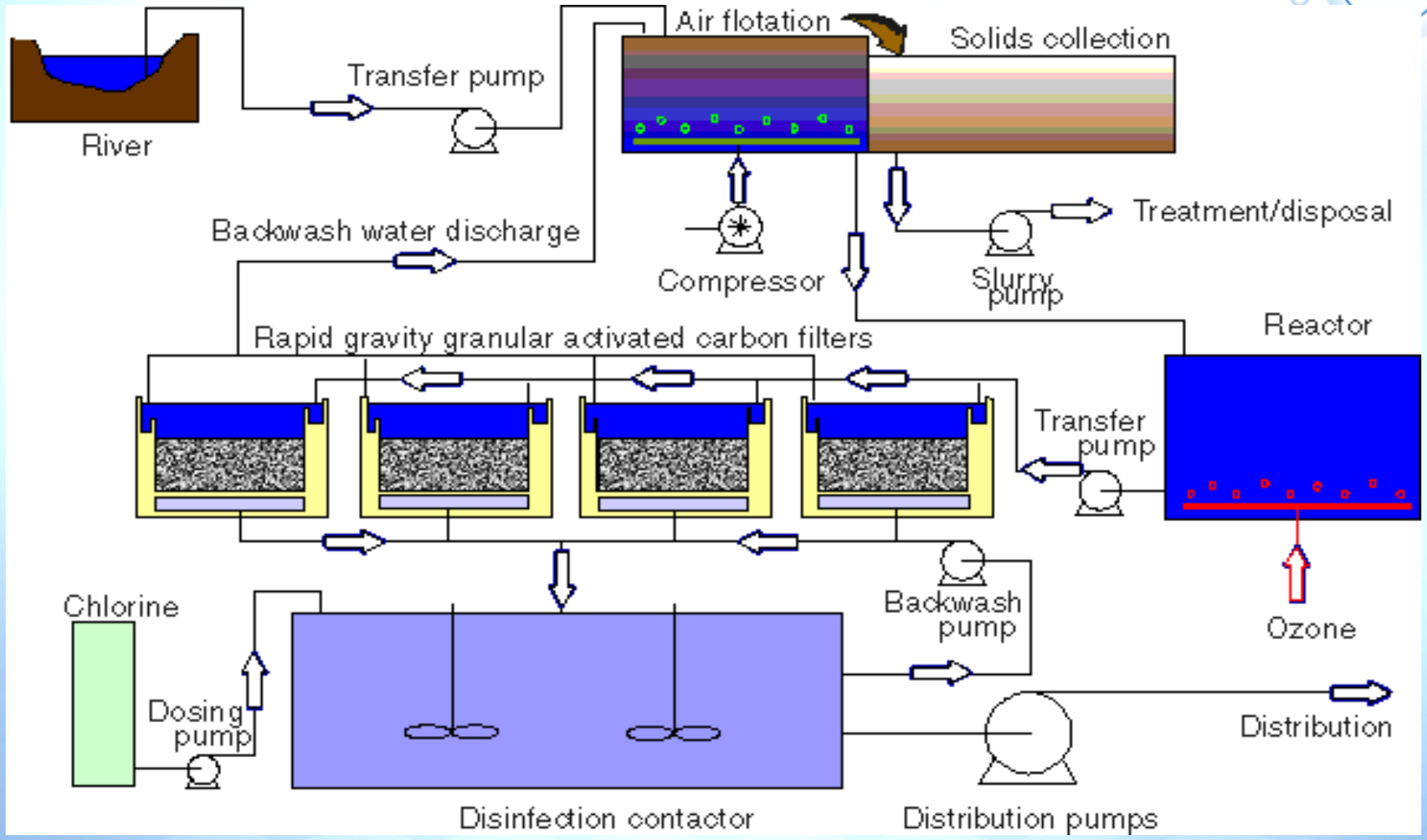
EXAMPLE OF WATER TREATMENT IN THE DEVELOPED COUNTRY



NATIONAL REQUIREMENTS in UK

Parameters	*Concentration or Value*	*Units of Measurement*
Aluminium	200	µgAl/l
Colour	20	mg/l Pt/Co
Iron	200	µgFe/l
Manganese	50	µgMn/l
Odour	<1 at 25°C	Dilution number
Sodium	200	mgNa/l
Taste	<1 at 25°C	Dilution number
Tetrachloromethane	3	µg/l
Turbidity	4	NTU

MICROBIOLOGICAL PARAMETERS in UK

Parameters	*Concentration or Value*	*Units of Measurement*
Enterococci	0	number/100ml
Escherichia coli (E. coli)	0	number/100ml
Coliform bacteria	0	number/100ml
Escherichia coli (E. coli)	0	number/100ml

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CHEMICAL PARAMETERS in UK I

Parameters	*Concentration or Value*	*Units of Measurement*
Acrylamide	0.1	µg/l
Antimony	5	µgSb/l
Arsenic	10	µgAs/l
Benzene	1	µg/l
Benzo(a)pyrene	0.01	µg/l
Boron	1	mgB/l
Bromate	10	µgBrO3/l
Cadmium	5	µgCd/l
Chromium	50	µgCr/l
Copper(ii)	2	mgCu/l
Cyanide	50	µgCN/l

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CHEMICAL PARAMETERS in UK II

Parameters	*Concentration or Value*	*Units of Measurement*
1, 2 dichloroethane	3	µg/l
Epichlorohydrin	0.1	µg/l
Fluoride	1.5	mgF/l
Lead (ii)	10	µgPb/l
Mercury	1	µgHg/l
Nickel (ii)	20	µgNi/l
Nitrate (iii)	50	mgNO3/l
Nitrite (iii)	0.5	mgNO2/l
Pesticides (iv)(v)	0.1	µg/l

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CHEMICAL PARAMETERS in UK III

Parameters	*Concentration or Value*	*Units of Measurement*
Aldrin	0.03	µg/l
Dieldrin	0.03	µg/l
Heptachlor	0.03	µg/l
Heptachlor epoxide	0.03	µg/l
other pesticides	0.1	µg/l
Pesticides: Total (vi)	0.5	µg/l
Polycyclic aromatic hydrocarbons (vii)	0.1	µg/l
Selenium	10	µgSe/l
Tetrachloroethene and Trichloroethene (viii)	10	µg/l
Trihalomethanes: Total (ix)	100	µg/l
Vinyl chloride	0.5	µg/l

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ALTERNATIVE SOLUTIONS

- 3.575 million people dying each year from water-related disease
- Half of the world's hospital beds are occupied by those suffering from illness brought on by limited access to safe drinking water, poor hygiene and sanitation.
- Here are 6brillant designs for water purify devices and let's talk about how they work and what we can do with them

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Life Straw



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Ceramic Water Filters



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Water Purifying Bicycle



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Life Sack



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“Pure” Water Bottle Filters Water With UV Ray



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Hamster Ball-Shaped Solarball



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Thank you



Ross Priory, University recreational facility at Loch Lomond

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