

Water quality and food safety

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Water quality and food safety: a global public health priority

- More than half of the world population lives in urban areas (70% by 2050)
- 884 million people in the world do not have access to safe water (37% in Sub-Saharan Africa)
- 2 million people die annually for causes related to unsafe water, poor sanitation and hygiene.
- > 1.5 million children < 5 years of age die annually of diarrhoeal disease
 - Diarrhoea kills more children every year than AIDS, malaria and measles combined



Episodes of diarrhoea in over fives per year around the world

Water contaminants and Food Safety

Microbiological contaminants

- Water can be an important vehicle for transport of pathogens from human and animal sources into food

Examples

- Cholera in Haiti
 - > 100,000 illnesses to date
 - Poor or non-existent sanitary infrastructure
 - Food potentially contaminated during production and preparation
- Cryptosporidium in Sweden
 - > 11,000 illnesses
 - Contamination of municipal water supply
 - Potential for food contamination during preparation

Chemical contaminants

- Water can be an important vehicle for transport of heavy metals from the ground and/or persistent organic pollutants and endocrine disruptors (EDs) from the environment into the food chain

Examples

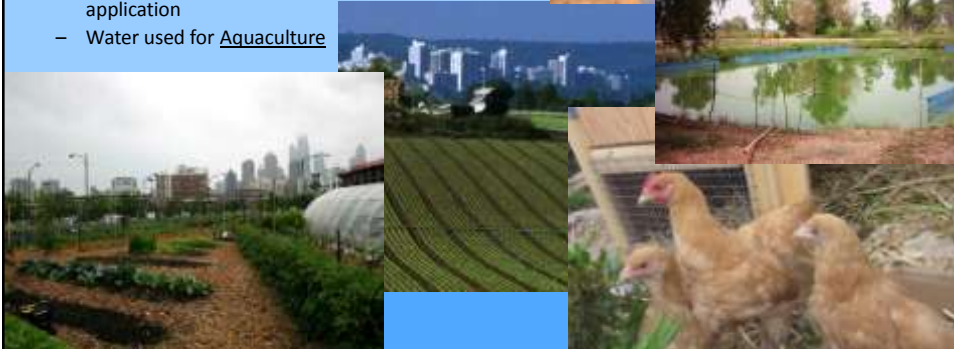
- Arsenic in Bangladesh
 - 57 millions exposed to As through drinking water and rice (~50%);
 - rice potentially contaminated during production and preparation;
- EDs in urban wastewater in US and EU
 - effluents from sewage treatment plants;
 - surface water run-off from settlements, road system and agriculture;
 - direct discharge into waters;
 - leakage from septic tanks and landfill sites

Food Safety is strongly linked to the quality of water used at each step of the food chain from production to consumption

Water and Food Production

Primary production:

- Surface run-off – can carry contamination from other sites (animal production units)
- Ground water – issue for heavy metals and other chemical contaminants
- Irrigation water – source, method of application (fresh produce)
- Wastewater – as irrigation water or due to uncontrolled release
- Water source for pesticide, fertilizer application
- Water used for Aquaculture



Water and Food Processing



Processing

- Good practices at primary production can be undone if they are not followed up with good practices at this stage
- Water used for washing, cleaning (source and quality)



Water and marketing



Marketing

- Source and quality of water available in food markets and for street food vendors



Water and food preparation/ consumption



Food preparation and consumption

- Source and quality of water available at the household level for food preparation, washing hands and utensils

The way forward...

Ensuring a safe food supply when availability of clean water is decreasing...

A great challenge in urban and peri-urban Agriculture

What can we do?

- **Education and awareness**
 - Public awareness and understanding of FS (from Municipal Authorities, to food producers, retailers and consumers)
- **Integrate Water Management, Public Health and Food Safety into joint policies and decision making**
 - Evaluate Food Security implications when planning
 - Multi-sectorial approaches
- **Capacity development and new approaches/ technologies**
 - Irrigation methods
 - Workers hygiene and sanitation
 - Post-harvest handling and marketing practices
 - Waste water treatments and use
 - Water recycling and treatment - new and emerging technical solutions (e.g. nanotechnologies) - balancing low and high tech options feasible and tailored to the local situation



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