

Presentation Title :
Significance of rainwater and reclaimed water for sustainable urban water use
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Abstract :

Climate change and increased water demand through rapid urbanization have caused water scarcity in Asian developing countries. Concern about the sustainability of urban water use is the strong motivation to understand the potential use of rainwater and reclaimed water in urbanized cities. In this presentation the past and current practices on utilization of rainwater and reclaimed water in Japan are summarized. As well as general miscellaneous water use, a new type of rainwater use for water supply to heated road surface is highlighted, which is recently introduced to mitigate urban heat-island phenomena.

To promote the rainwater and reclaimed water use, water quality and facilities standards have been established to secure sanitary safety and aesthetic appearance/amenity as well as to prevent trouble in facility functions. Two types of water quality standards are defined for i) watering, landscaping, and cleansing and ii) toilet flushing purposes in buildings in the Act on Maintenance of Sanitation in Buildings. pH, odor, appearance E-coli, and residual chlorine are established for toilet flushing, while turbidity is added for the other purposes. As well as establishment of water quality guidelines, it is necessary to provide more basic and scientific knowledge on water quality and its dynamics.

Regarding to rainwater use, it is good idea to promote rainwater infiltration for recharge of groundwater as well as direct rainwater harvesting. Rainwater infiltration is beneficial to reduce runoff peak flow and combined sewer overflow and to mitigate urban non-point source pollution. However, there is a concern on ground water contamination by infiltration of road runoff. Appropriate management is required for road runoff infiltration facility. We conducted water quality monitoring work at infiltration facilities. For the use of reclaimed water, microbial regrowth can cause the problems such as health concerns, aesthetic deterioration, and bio-fouling. We evaluated biodegradable organic matter in different water reclamation systems and reclaimed water distribution system in Japan.

Rainwater and reclaimed water have been applied to meet the increased water demand in urban area. From the viewpoint of sustainable water use, they have been recognized as precious urban self-owned water resources. However, they should be utilized under appropriate water quality management.

