World Health Organization

SSP FOR WASTEWATER IN AGRICULTURE

HANOI, VIETNAM

CASE STUDY

General data

Location	Hanoi, Vietnam
Scope: SSP boundaries and focus sanitation activities	Informal farming area using raw wastewater
Scale of SSP system	38 m^3 per day of raw wastewater to a manually intensive farming area of about 850 hectares. The water was a mixture of wastewater and stormwater drainage from the greater Hanoi area. Vegetables gown include: morning glory and wormwood (year-round), neptunia (from April to August), watercress and water dropwort (from September to March) and houttuynia and pumpkin buds.
SSP objectives	Not specifically stated as the draft SSP manual at that time did not include setting specific objectives
SSP teams	Total of seven. Hanoi Sewerage and Drainage Company (HSDC) (5), National Institute of Occupational and Environmental Health (NIOEH) (1 No.) and Hanoi Preventative medicine Centre (1 No.)
Key stakeholders	Lead organizations plus local famers cooperative Local People Committee, and local Public Health center, farmer's and women's association collaborated and assisted the SSP team to provide additional related sanitary data, agricultural data and disease data.
SSP timelines	First Workshop: April 2013. Final SSP development: December 2013
Lead organizations and supporting agencies	HSDC NIOEH- National Institute of Occupational and Environmental Health (NIOEH) World Health Organization

HSDC workers cleaning waste canal.

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Farmer harvesting produce.

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Pertinent context

This case study focuses on only the farming component of the broader SSP for the wastewater conveyance system owned and operated by HSDC.

Apart from a series of upstream lakes which provided informal treatment although under variable and relatively uncontrolled conditions and some small localised treatment plants, the wastewater has no formal treatment.

In conjunction with this SSP, a health impact assessment was also carried out under the lead of Swiss Tropical and Public Health Institute (Switzerland) and the Center for Public Health and Ecosystem Research (CENPHER) at Hanoi School of Public Health (Vietnam). Particular emphasis in this assessment was placed on the wastewater reuse in agriculture and aquaculture in urban and peri-urban transition zones of the districts Hoang Mai and Thanh Tri.

The following Vietnamese institution were involved in the data collection and analysis: Department of Parasitology at the National Institute of Malaria, Parasitology and Entomology (NIMPE), National Institute of Hygiene and Epidemiology (NIHE), the National Institute of Veterinary Research (NIVR) and the Hanoi Sewerage and Drainage Company (HSDC).

Key identified risks

The key high risks were associated with:

Sanitation step	Hazardous event	Existing controls
Farmers working in the fields	Hookworm and similar infections through feet during farming operations. Dermatitis in hands. Inadvertent consumption of contaminated soil/ water.	No treatment. No rules or practice or protective clothing.
Consumers of farm produce and surrounding community members	Deliberate consumption of farm produce via faecal – oral route	Washing of vegetables with tap water before eating or cooking (post-harvest).
	Mosquitoes via vector borne routes	Mosquito nets. Insecticide use for mosquito control.
Local community (farmers & families near the re-use site and children playing in the fields)	Skin (esp. for nematode egg via bare feet). Inadvertent consumption of contaminated soil/ water	Little controls

Farmer harvesting produce.

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HSDC workers cleaning waste.

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Vision for scaling and next steps

There is large scale use of wastewater for agricultural production in Vietnam, although much of this is seen as informal. The SSP showed that relevant stakeholders are very interested in applying the principles and approaches of SSP. It also demonstrated the potential of SSP to complement occupational health and safety at workplaces where wastewaters are used or re-used.

Success factors

Despite the significant inter-sectoral challenges noted below, the lead organisation (which was the owner and operator of the drainage and wastewater system) was successful in including farming representatives and health officials as part of what was originally perceived as a traditional engineering system.

Challenges

Lead organisation (HSDC) was not a health or agricultural agency.

By its nature, managing wastewater use is a multi-disciplinary task involving authorities, ministries and agencies of health, agriculture, environment, urban planning and academic institutions. Working across sectors was the largest challenge in this SSP scheme. The informality of this farming sector led to challenges in coordinating of and taking responsibility of action to reduce farmer's and consumer's risks.

MORE INFORMATION/REFERENCES

- SSP manual Example 4.5
- Jackson, D., Vuong, T.A., 2014, *Sanitation Safety Planning in Hanoi helps identify and manage health risks to workers, farmers and consumers from reuse of wastewater*, Briefing paper No. 1899, Proceedings 37th WEDC International Conference, Hanoi, Vietnam, 2014 available at https://wedc-knowledge.lboro.ac.uk/details.html?id=21893 accessed 15 January 2016