Sanitation Safety Planning (SSP)
Lessons from SSP Trials
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Sanitation Safety Planning (SSP)

• protects public health, and
• protects integrity of RRR businesses

because:

1. Encourages a multi-sector team approach to identify and manage health at-risk people
2. Targets limited resources to highest risks through progressive improvements
3. Focuses on simple operational monitoring and corrections
Background: Overview of SSP trials

Lima, Peru
Benavente, Portugal
Accra, Ghana
Morogoro, Tanzania
Bangalore, India
Kampala, Uganda
Hanoi, Vietnam
Manila, Philippines
Kuala Lumpur, Malaysia
Peru
Indirect reuse
Portugal
Inter-town SSP

Domestic WWTP

Cleaning

Dairy

Crops for fodder
1. SSP encourages a multi-sector team approach to identify and manage health to at-risk people

- Multi-sectoral teams give a **collective eye opener** to integrated sanitation system safety
- SSP stimulates national-level discussions on content and inter-operability of national regulations on reuse.
- System approach and exposure groups focus attention on the human health impacts along the sanitation chain
- SSP gets the health sector more strongly engaged in sanitation resource/recovery

Image: from http://www.medkinetics.com/
Exposure groups: W – Waste Handlers or Utility Workers | F – Farmers | L – Local Community | C – Consumers

Exposure Routes: Ingestion after contact with wastewater/sludge/slurry or manure, vector borne with flies/mosquitoes, inhalation of aerosols and particles, dermal contact with overflowing/leaking contents/contaminated storm water drains/wastewater/sludge/slurry or manure/contaminated groundwater or surface water, and ingestion of contaminated water or crops/food.
2. SSP targets limited resources to highest risks through progressive improvements

- Risks are prioritised
- Improvement Plans
  - are risk based
  - consider potential controls from the perspective of:
    - Technical effectiveness
    - Acceptability
    - Reliability
    - Cost efficiency
  - are progressive

Examples Peru, Hanoi
### Hazardous Exposure Event Risk Assessment

<table>
<thead>
<tr>
<th>Description</th>
<th>Exposure route</th>
<th>Exposure Group</th>
<th>Likelihood</th>
<th>Severity</th>
<th>Score</th>
<th>Risk category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>River catchment system</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic wastes dumped in river</td>
<td>A, B, C</td>
<td>1, 2, 3, 4</td>
<td>Almost certain</td>
<td>Mod</td>
<td>20</td>
<td>High</td>
</tr>
<tr>
<td>Livestock waste dumped into river</td>
<td>A, B, C</td>
<td>1, 2, 3, 4</td>
<td>Possible</td>
<td>Minor</td>
<td>6</td>
<td>Med</td>
</tr>
<tr>
<td>Dumping sewage into canal</td>
<td>A, B, C</td>
<td>1, 2, 3, 4</td>
<td>Almost certain</td>
<td>Mod</td>
<td>20</td>
<td>High</td>
</tr>
<tr>
<td>Mining wastes dumped into river</td>
<td>B, C</td>
<td>1, 2, 3, 4</td>
<td>unlikely</td>
<td>Minor</td>
<td>4</td>
<td>Low</td>
</tr>
<tr>
<td>Pollution of the river water resource</td>
<td>A, B, C</td>
<td>1, 2, 3, 4</td>
<td>Almost certain</td>
<td>Significant</td>
<td>40</td>
<td>V High</td>
</tr>
</tbody>
</table>

| **Irrigation and green areas**       |                |                |            |          |       |               |
| Pathogen contamination in water      | A              | 2              | Almost certain | Significant | 40 | V High |
| Pathogen contamination in soil       | A              | 2              | Possible   | Mod      | 12    | Med           |

### Improvement Plan Option Evaluation

<table>
<thead>
<tr>
<th>Description</th>
<th>Risk Priority</th>
<th>Option for Imp Plan</th>
<th>Reliability</th>
<th>Effectiveness</th>
<th>Acceptability</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>River catchment system</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination of water resource</td>
<td>Very High</td>
<td>Control of river discharges</td>
<td>High</td>
<td>Med</td>
<td>High</td>
<td>18</td>
</tr>
<tr>
<td>Contamination from domestic wastes</td>
<td>High</td>
<td>Fines for infringements</td>
<td>High</td>
<td>Low</td>
<td>Med</td>
<td>6</td>
</tr>
<tr>
<td>Pathogen contamination of lagoons</td>
<td>Very High</td>
<td>On-site sanitation systems</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>27</td>
</tr>
</tbody>
</table>

**Peru Hazardous Exposure Event Risk Analysis**

**Peru Implementation Plan Comparison**
Short term plans:
- Targeted **education**
  - to improve farmer/worker hygiene, for children in/near the wastewater irrigation sites
  - safe handling of crops, especially those crops eaten raw
- Increased **mosquito spraying**
- **De-worming** of targeted populations every 6 months
- **Improved pre-harvest food protection** (e.g. 1-2 day before harvest, stop irrigation with poor quality wastewater)

Medium/long term plans:
- Reduce chemical contaminates of wastewater being irrigated (e.g. improved enforcement of regulations)
- Increase treatment in the system upstream to improve quality of water discharged to the canal from which the farmers draw irrigation water
3. SSP focuses on simple operational monitoring

- Operational monitoring focuses on control measures, not end product (i.e. stops problems before they occur)
- Often visual observations or operational compliance techniques e.g. retention times
- This is simpler and cheaper

Example: Operational monitoring plan for Advocacy/ Information, Education, and Communication to change current farmers’ practices to use proper personal protection
<table>
<thead>
<tr>
<th>Operational Limits</th>
<th>Operational Monitoring of the Control Measure</th>
<th>Corrective action when the operational limit is exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td>80% of the farmers of village use proper PPE</td>
<td><strong>What is monitored</strong></td>
<td>Frequency of use of personal protection used by the farmers</td>
</tr>
<tr>
<td></td>
<td><strong>How it is monitored</strong></td>
<td>Observation, survey</td>
</tr>
<tr>
<td></td>
<td><strong>Where it is monitored</strong></td>
<td>Village farming area</td>
</tr>
<tr>
<td></td>
<td><strong>Who monitors it</strong></td>
<td>Farmers’ Association, local health center</td>
</tr>
<tr>
<td></td>
<td><strong>When it is monitored</strong></td>
<td>2 times/week</td>
</tr>
<tr>
<td></td>
<td><strong>Who to inform</strong></td>
<td>Local government Ward office</td>
</tr>
</tbody>
</table>

**What action is to be taken**

Find out why farmers not using protective methods and change IEC mtl.

**When it is taken**

If use of PPE <80%

**Who takes the action**

Farmers’ Association

**Not complicated**
Summary: SSP protects public health and integrity of RRR businesses because

1. Encourages a multi-sector team approach to identify and manage health risks to at-risk people

2. Targets limited resources to highest risks through progressive improvements

3. Focuses on simple operational monitoring and corrections

- Public health
- RRR businesses