



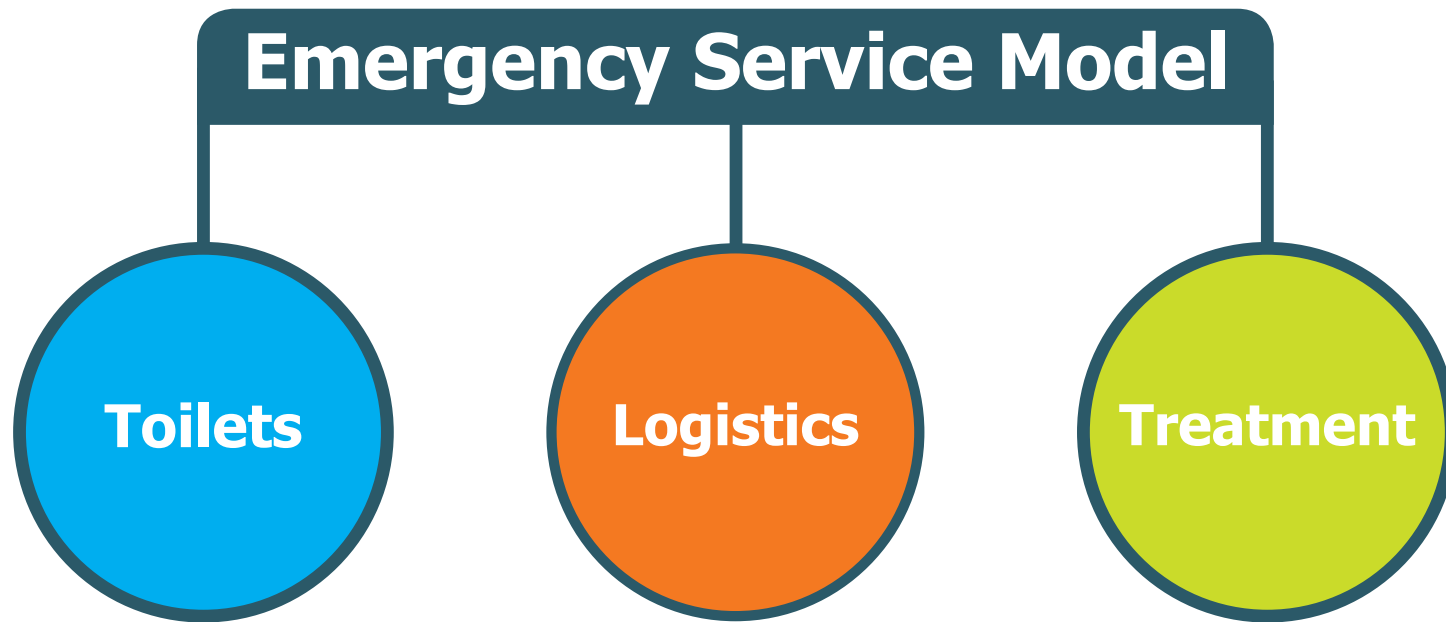
sustainable
sanitation
design

SUSTAINABLE SANITATION DESIGN (SUSAN DESIGN) IS A BUSINESS MINDED FOUNDATION. OUR MISSION IS TO:

- **Develop and deliver innovative service concepts and products to form a sustainable sanitation value chain assuring schools, high density cities and refugee camps with quality sanitation systems.**
- **SuSan Design has in cooperation with Natural Event created a quality concept for an emergency sanitation value chain with products, service delivery, treatment that are incentive based and flexible to the phases of the emergencies**

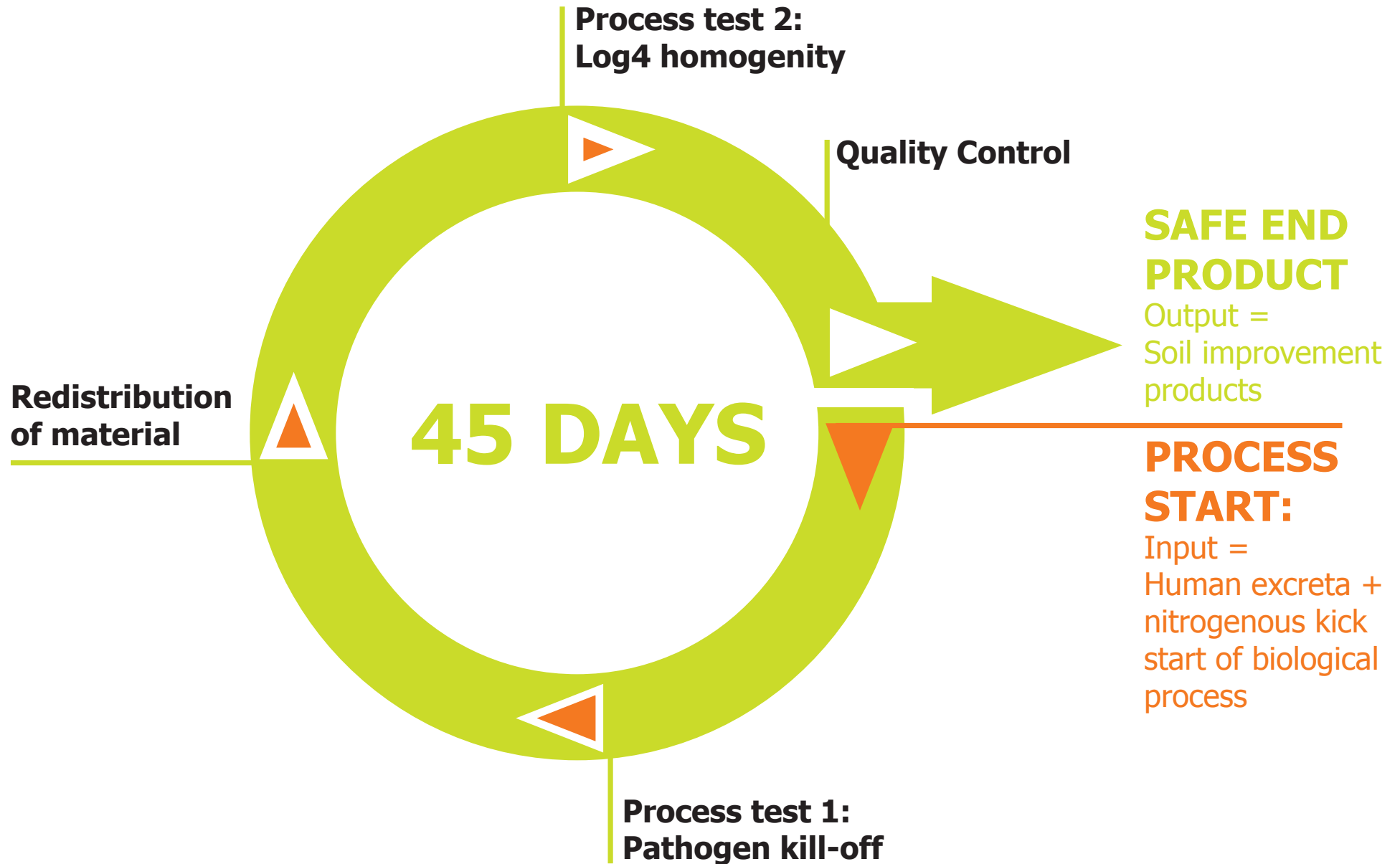


Emergency Service Model



Emergency Service Model





1. HEALTH IMPLICATIONS:

Ease of adhering to safety, health and environmental norms and standards during operation and maintenance

- **Above ground toilets with portable containers following the whole value chain from toilet via treatment minimizes disease transmission hazard.**
- **If black water transported by suction truck: Safe connection to tank with matching capacity (water adds treatment cost)**
- **The system is flexible in how the excreta arrives to the treatment unit**
- **The treatment system gives incentives to dry toilets or minimum water use**
- **Less water minimizes cost, risk by spillage, flies and smell**
- **In all scenarios: Workers are not directly exposed to pathogenic material**
- **Cost of treatment should be viewed in terms of disease prevention with health cost savings for camp operator.**

2. DEPLOYMENT:

Ability to deploy the facility within short period upon arrival in the field (weeks)

- **Where trained operators are available: Deployment from day 1**
- **Treatment can start 24 hours after arrival of units - start up system can be flown in - full system can arrive by container**
- **Treatment unit needs two staff during start up**
- **Training of local staff can start upon arrival - monitored by SuSan Design staff**
- **Treatment site must be relatively planar. If area is sloping some extra cost and time for levelling and securing fixed tanks**
- **After initial investment by the emergency camp operators we will strive to transfer the unit to the local community based on its capacity to produce as a self sustaining part of the community infrastructure development.**

3. MODULAR CONFIGURATION AND SCALABILITY:

Should be modular (so e.g. one unit should be able to handle low volumes and can easily be upgraded to high volumes by adding more units)

- **Modular configuration: Any size container with a fixed and tight lid can be treated. Preferrably tanks possible to handle by one man/two men**
- **Treatment in actual collection container - Same container in the whole value chain from toilet via treatment and out to reuse or safe deposit**
- **Important for logistics: If possible one container size for faecal matter in all mobile units - this improves treatment efficiency and logistics**
- **If suction systems are used they should have same configuration to link well with our tanks.**
- **Unlimited scalability but space is needed. If space is limited it will add extra cost.**

4. TREATMENT EFFICIENCY

- Pathogen Log₄ reduction (99,99%) in 45 days



5. TREATMENT CAPABILITY:

Ability to process different types of sludge (liquid, solid, semi liquid)

- **Designed for UDDT toilets, urine (liquid) and faeces (semi dry) handled separately**
- **We have also hygienized sludge from pit latrines (semi liquid) and from septic tanks (liquid) with safe results**



6. TIME CONSUMPTION AND TREATMENT

- **Pathogenic matters are hygienized to Log4 reduction (99,99%) in 45 days**
- **Treatment method: Ammonia hygienizing**
- **Less efficient in tempered climates (efficiency is proportional with ambient temperature)**
- **Treatment cost of matter from drytoilets \approx US cents 2-3,- per user**
- **Treatment of water based materials, more expensive (volume drives cost)**



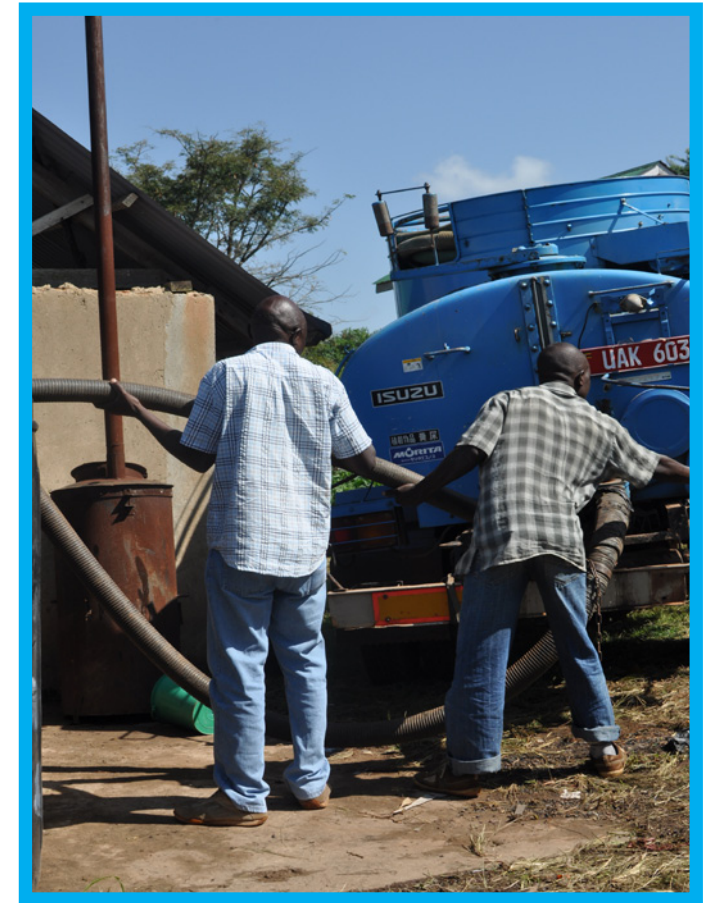
7. ADAPTABILITY:

Can be easily adapted or has the ability to function above ground (for areas with hard surface or at risk of flooding)

- **No digging needed: The SuSan system, both toilets and treatment are above ground systems.**

8. THE OUTPUTS PRODUCED BY THE UNIT SHOULD BE ACCESSIBLE BY STANDARD EMPTYING/TRANSPORT DEVICES

- Containers easy to handle by workers
- System connects to standard equipment



9. POWER SUPPLY:

If power supply is required, the disposal method should include a stand-alone power generator

- **No power needed - Off grid treatment**

10. TREATMENT EFFECTIVENESS

- **Minimum Log4 reduction (99,99%)**
- **The pathogen free human excreta can be reused in rehabilitation of local forests, bamboo production or local agriculture.**





Thank you very much for your attention!

www.susan-design.org