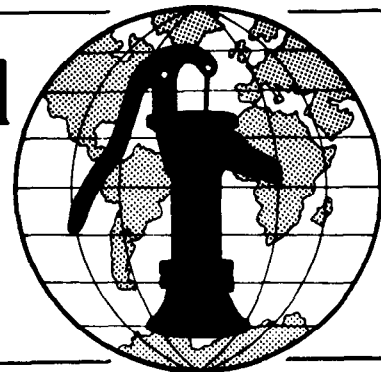


Water for the World



Operating a Solid Waste Collection System

Technical Note No. SAN. 3.O.3

Operating a solid waste collection system involves removing solid waste from houses, yards, marketplaces, factories, or public buildings and transporting it to a landfill, composting area, or biogas plant. Required maintenance includes cleaning and repairing equipment, containers, and vehicles, and continuing the routine of collection.

This technical note describes how to operate and maintain three types of solid waste collection systems. Read the entire technical note before beginning operation.

Useful Definitions

GARBAGE - Food and crop wastes from growing, harvesting, storing, preparing, cooking, or serving of food; these materials rot quickly.

RUBBISH - All material other than garbage that is thrown away, including broken dishes, utensils, and furniture; useless scraps of wood, metal, or glass; sweepings from house, yard, or street; and anything else that is discarded.

SOLID WASTE - Garbage, rubbish, animal manure, dead animals, and ashes.

Materials Needed

Before operations can begin, you need:

1. A materials list similar to Table 1 given to you by the project designer.

2. All personnel and materials described on the materials list; and, if a paid-worker system has been designed.

3. A scheduling chart similar to Figure 1 also given to you by the project designer.

Table 1. Sample Materials List

Item	Description	Quantity	Estimated Cost
Labor	Supervisor (for one year)	1	---
	Workers (for one year)	4	---
Supplies	Equipment: shovels	---	---
	brooms	---	---
	dust pans	---	---
	Containers: 200-liter metal drum with lids	---	---
	Vehicles: animal-drawn carts	---	---
	Other: gloves	---	---
	boots	---	---
	first-aid kit	---	---
	other	---	---
	Total Estimated Cost =		

Route For Saturday P.M.

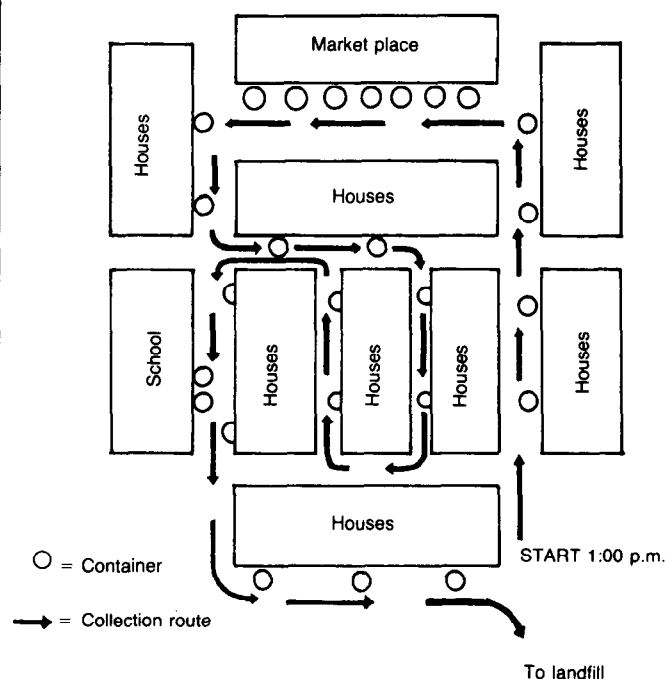


Figure 1. Sample Schedule Chart.

Caution!

When lifting heavy containers, use leg muscles and not back muscles to avoid injuries. See Figure 2.

Treat cuts immediately.

Wash hands after handling solid waste.

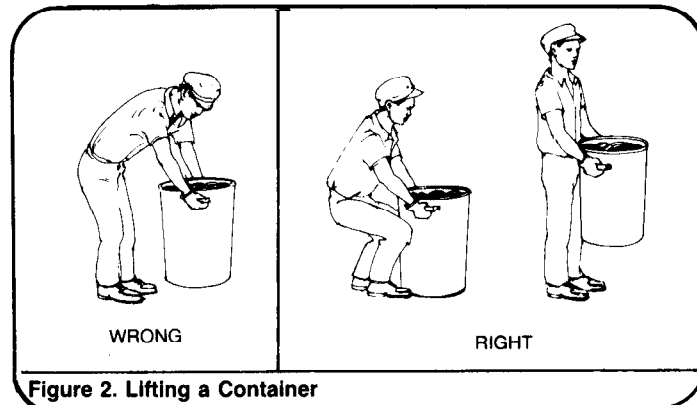


Figure 2. Lifting a Container

Operating a Household Collection System

In this system, solid waste is removed from houses or yards and carried or carted to an on-lot site for disposal or reuse. See "Operating and Maintaining a Landfill," SAN.3.0.1, "Operating and Maintaining a Composting System," SAN.3.0.2, and "Operating and Maintaining a Biogas System," SAN.3.0.4.

Place a garbage can with a lid in the kitchen or near the house, perhaps on a stand to keep it away from animals. Put food scraps in the can after each meal. Every two or three days carry the can to the on-lot compost stack or landfill. When the can has been emptied, clean it out and return it to the kitchen or stand. See Figure 3.

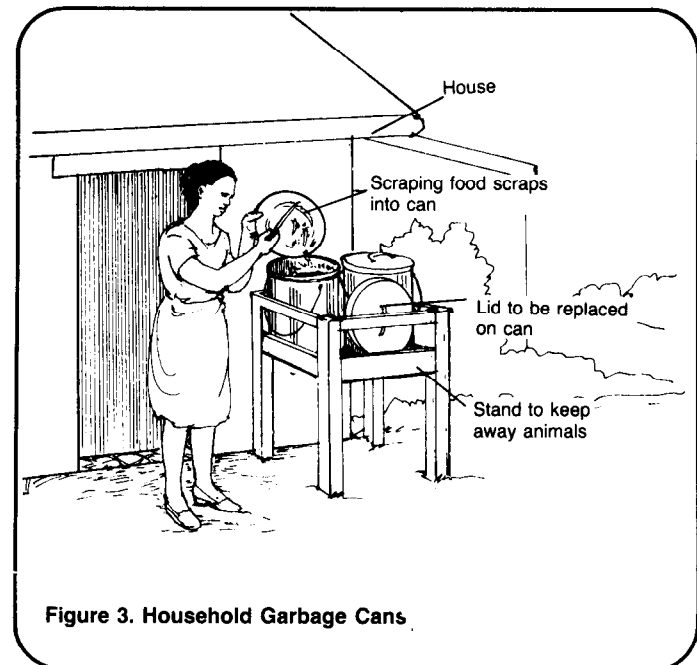


Figure 3. Household Garbage Cans

Once or twice a week, shovel animal manure from the yard, stable, or corral into a container or cart. Spread straw in the container or cart beforehand to soak up excess liquid. Transport the manure to the compost stack, biogas plant, or landfill. When the cart is empty, thoroughly clean it out. See Figure 4.

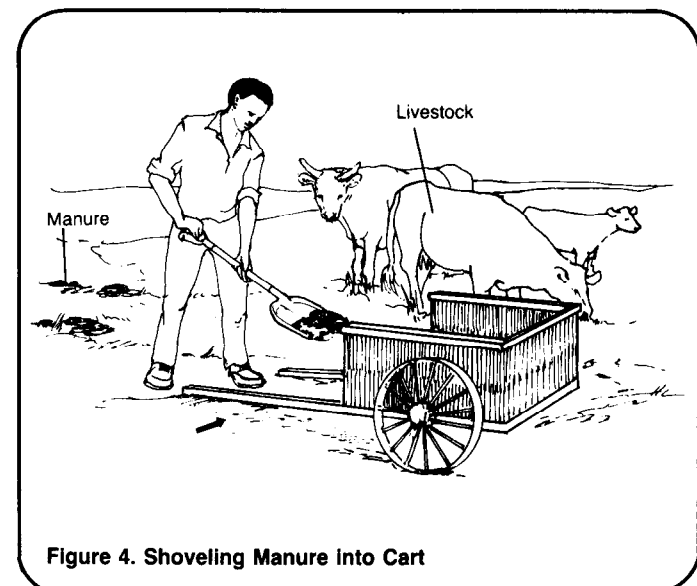


Figure 4. Shoveling Manure into Cart

Keep a metal bucket or other metal container near the house for ashes from cooking and heating fires. Store cold ashes in the container for use in privies if the village has them. See "Operating and Maintaining Privies," SAN.1.0.1.

Keep a basket or box with a lid near the house. At least three times a week, sweep out the house with a broom and dust pan and place the sweepings in the basket or box. When the container is half full or more, carry it to the landfill, empty it, and return it to the house.

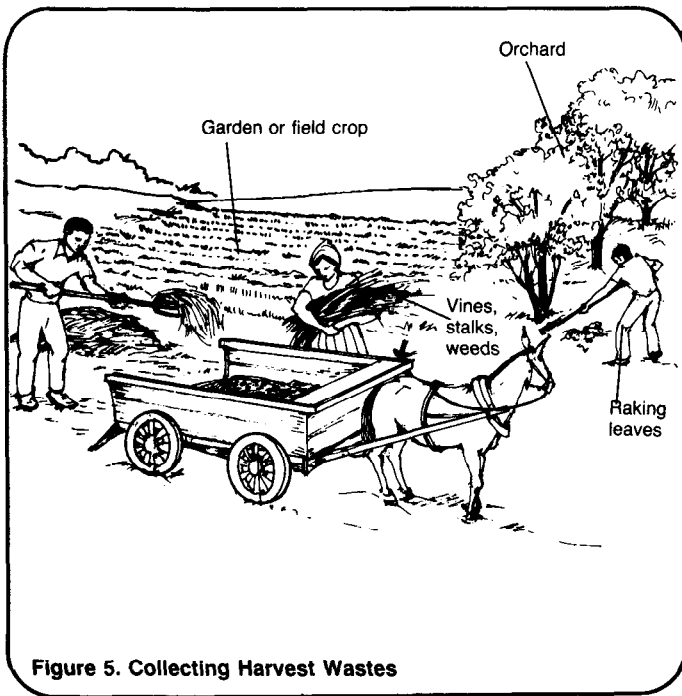


Figure 5. Collecting Harvest Wastes



Figure 6. Neighbors Helping Each Other Collect Wastes

Once each month rake wastes from field, orchard, or garden into piles, load them into a basket or cart, and take them to the on-lot compost stack or landfill. See Figure 5.

Keep all containers covered with lids.

Operating a Community Collection System

In this system, householders, marketplace vendors, and other members of the community periodically clean out living and working areas and transport the waste to a community site for reuse or disposal.

Keep one or two barrels or baskets with lids near each house. If a composting system is being used, put garbage in one container and rubbish in another. If a landfill alone is being used, no separation of solid wastes is necessary. Once each week load the containers onto a cart. To lessen the workload, community members can help each other load and transport containers. Perhaps one cart can carry containers from a number of households. See Figure 6.

Keep one or more 50 to 200-liter containers with lids near each stall in the marketplace. Place wastes in the containers daily. At the end of each market day, thoroughly clean out the stalls and place sweepings in the containers. Load the containers on a cart and transport them to the community disposal site. When they have been emptied, clean them out and return them to the marketplace. For this system to be effective, every stall must be cleaned out, not just a few. Post signs promoting cleaning out living and working areas. See Figure 7.

Keep all containers covered with lids.

Operating a Paid-Worker Collection System

In this system, community members place solid waste in containers and paid workers transport the waste to a community disposal site.

Build a storage shed near the disposal site. The shed should be made of locally available materials. It must be large enough to hold all collection vehicles, replacement parts, tools, and spare containers. It should be weatherproof and have a door with a lock.

The supervisor of the system should inform the community members of the day and time of waste collection and where to place their containers for pick-up. It may be helpful to mark the pick-up points with paint marks or stakes. The supervisor should lead workers along the collection route from the starting point to the disposal site and show them the pick-up points. Keep a record sheet similar to Table 2, showing the route number, if more than one, the collection date, and the number of pick-up points, and noting any repairs, personnel changes, and changes in the route.

On collection day, the workers should load empty containers on the vehicle, travel along the established collection route, leave an empty container and pick up a full or partially

full one at each collection point, and transport the full containers to the disposal site. Containers may be emptied into a vehicle built for holding wastes for transport. Keep equipment and vehicles in good repair. Wear boots and gloves while working. Use leg muscles, not back muscles, to lift heavy containers. Treat cuts and scratches immediately. Always wash hands after work and before eating.

On collection day the community members should be certain that containers are at the pick-up points. Solid waste must not be piled on the ground. Get more containers if necessary. Users should periodically wash out empty containers.

Keep all containers covered with lids.

Table 2. Sample Record Sheet

Route	Day	Collection Points	Notes
A	Sat. August 8	22	
B	Wed. August 12	18	Replaced two missing container lids
A	Sat. August 15	22	
B	Wed. August 19	18	Repaired wheel on large wagon at end of route
A	Sat. August 22	22	Fired Jose, hired Juan
B	Wed. August 26	21	Three new collection points added to route B
A	Sat. August 29	22	
	Tues. Sept. 1		cleaned and inspected all equipment and vehicles. Okay.
B	Wed. Sept. 2	21	

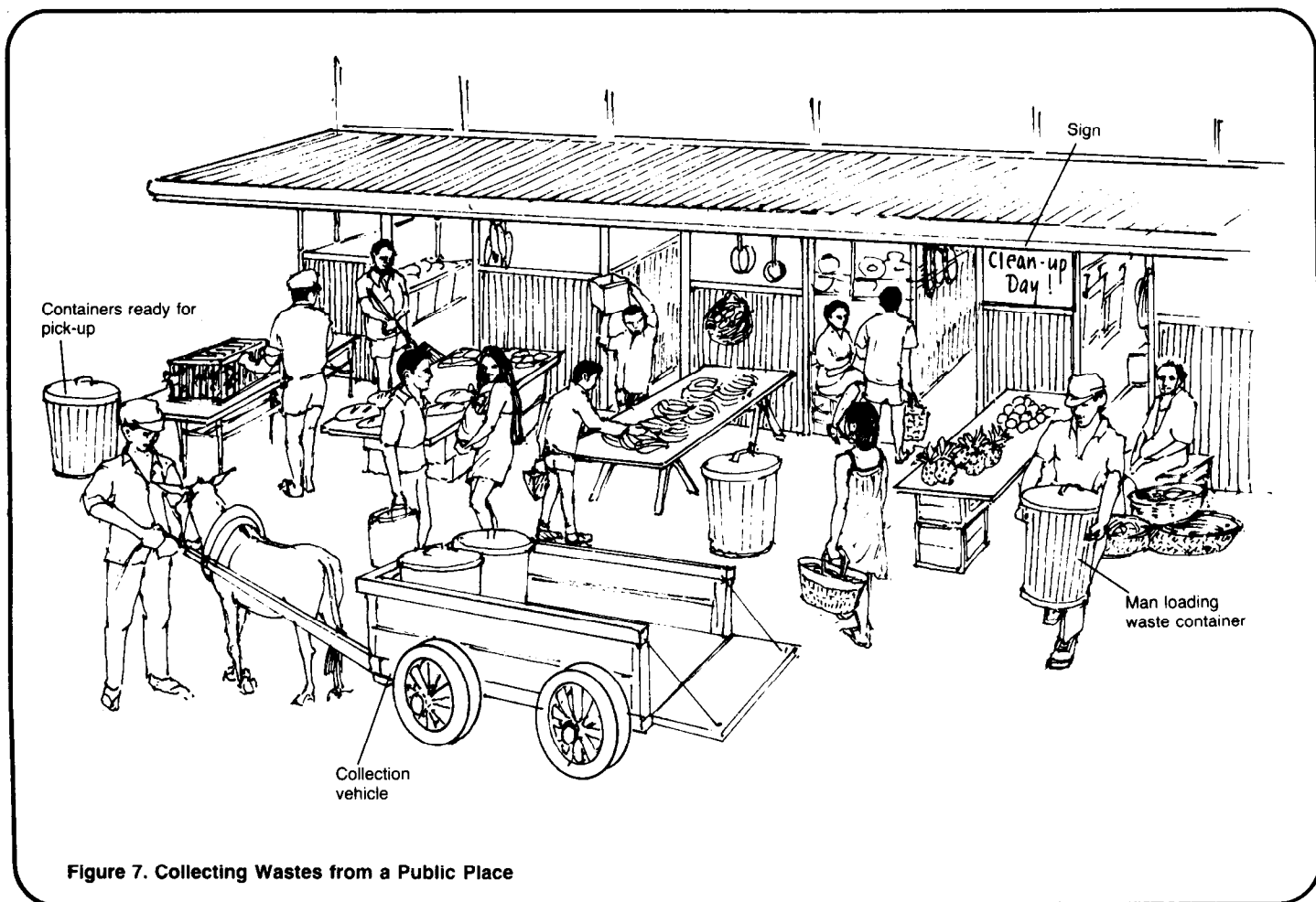


Figure 7. Collecting Wastes from a Public Place

Maintaining a Solid Waste Collection System

Once or twice each month, inspect the storage shed and vehicles for damage or excessive wear. Repair or replace broken or worn-out parts. Once each week, thoroughly clean all containers, vehicles, and tools.

Once the routine of collection has been established, continue with it. This is important for all systems: household, community, and paid-worker. A collection system will last for as long as you want it to. As long as it lasts, the community will be a clean, healthy, and pleasant place to live and work.