

# WARM

## Work Adjustment for Recycling and Managing Waste

Action manual for waste collectors and communities to promote their joint actions in improving safety, health and efficiency in waste collection and management

Tsuyoshi Kawakami  
Ton That Khai





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# Preface

Safe and efficient waste collection systems are the foundation for recycling and managing waste and protecting our environment. Waste collectors contribute to the cleaning of our environment through their daily collection work. However, waste collectors often face many risks associated with their collection work, such as handling heavy and dangerous waste, traffic accidents, or a hot working environment.

We, the ILO as the agency promoting Decent Work, are concerned with the working conditions of waste collectors and have developed the WARM (Work Adjustment for Recycling and Managing Waste) training manual to help waste collectors, managers and the community to improve their safety, health and working conditions. Recently, the ILO has been promoting the Green Jobs Initiatives to further strengthen work which can contribute to greening our environment. Certainly, waste collection work is essential for realizing a green environment. The WARM manual is easy-to-read with illustrations of many good examples that waste collectors, managers and the community can put to immediate use. ILO's participatory training approaches are fully applied in the manual. The manual also promotes community cooperation in building safe and efficient collection systems.

This manual was born from the joint efforts of the ILO and JICA (Japan International Cooperation Agency), and was developed in cooperation with Waste Minimization and Recycling Promotion Project in the Republic of the Fiji Islands. It was a timely opportunity for the two agencies to associate their technical expertise and to aim at the joint improvements in environmental protection and in safety and health of waste collectors. This presented a unique opportunity for cooperation between the two agencies which is expected to grow further.

I would like to express my sincere appreciation to JICA, especially for its technical support and financial contribution towards the creation of this manual. My thanks should also go to all the team members of the JICA Project in Fiji led by Mr Juichiro Sasaki, Resident Representative of JICA Fiji Office, Mr Kazuya Suzuki, Global Environment Department of JICA, Mr Junji Anai, Project Leader, Mr Josefa R Vucago, Special Administrator of the Lautoka City Council, Mr Aisea Tuidraki, Special Administrator of the Nadi Town Council, Mr Gyneshwar Rao, Acting Director of Health Department, the Lautoka City Council, and Ms Premila Chandra, Acting Director of Health Department, the Nadi Town Council. Mr Mimpei Ito, Representative of JICA Thailand Office provided managerial support. Dr Tsuyoshi Kawakami and Dr Ton That Khai, the specialist team in occupational safety and health in ILO Subregional Office for East Asia, drafted the manual and supervised the development of illustrations by using their experiences in participatory training approaches. Ms Yumi Nabeshima, ILO Office in Japan, and Ms Surkafa Katafono, ILO Office for Fiji, Papua New Guinea, Kiribati and other Pacific Island Countries, provided the programming support and Mr Teerasak Siriratanonthai, ILO Subregional Office for East Asia, the secretarial assistance.

I have no doubt this manual will promote practical collaborative actions between waste collectors, managers and the community in establishing safe and efficient waste collection systems in Fiji and other countries.

February 2010

Sachiko Yamamoto  
Regional Director for Asia and the Pacific  
ILO



## Table of contents

	Page
Preface .....	iii
Introduction	
- Scope of the WARM training manual - .....	1
Guide for manual users .....	3
Action checklist for waste collectors and the community .....	5
Chapter 1 Safe waste handling and community cooperation .....	17
Chapter 2 Safety of waste collection trucks .....	33
Chapter 3 Work environment and personal protective equipment .....	49
Chapter 4 Welfare facilities and work organization .....	61





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# **INTRODUCTION**

## **- Scope of the WARM training manual -**

We are pleased to present the WARM (Work Adjustment for Recycling and Managing Waste) training manual for improving the safety, health and working conditions of waste collectors (collectors and truck drivers). The WARM manual intends to promote joint efforts and actions between waste collectors and the community towards efficient and sound waste collection and management systems.

The points mentioned in the WARM manual are already available solutions we have learned from existing good practices of collectors and the community. We understand that the city council (government) is responsible for establishing waste collection and management systems, and setting rules and policies. The points listed in the WARM manual are not rules or regulations. The manual does not intend to define the responsibilities of collectors and the community, either. Instead, this manual aims to promote their dialogue towards joint improvements. For this purpose, the WARM training has the following scope:

### **1. Promoting dialogue and cooperation between waste collectors and the community**

Day-to-day cooperation between waste collectors and the community is essential to improving the safety and efficiency of waste collection work, and realizing government policy towards sound waste management systems. Both waste collectors and the community can share benefits and achievements through this cooperation.

### **2. Learning from local good practices**

The WARM manual applies good practice approaches and stresses the importance of

learning from existing local good examples. The ideas waste collectors and the community will find in the WARM manual are concrete, practical and can be implemented at low-cost. These ideas come from good examples developed by waste collectors and the community in Fiji.

### **3. Applying participatory, action-oriented training (PAOT) approaches**

The WARM training manual applies participatory, action-oriented training (PAOT) approaches. The WARM training promotes active participation of waste collectors, the community and other stakeholders for the improvement of safety, health and efficiency of waste collection work.

The action-checklist exercise in an actual waste collection area, and group discussions to identify workable solutions, are promoted in the WARM training. These approaches are all aimed at promoting the direct participation of waste collectors and the community to strengthen their self-help initiatives for safe and efficient waste collection work. Participants are encouraged to look at multi-faceted aspects of waste collection work and start with low-cost improvements as an entry point for sustainable improvement actions.

### **4. Implementing improvements in a step-wise manner**

The WARM training manual supports the implementation of improvements for waste collectors and the community in a step-wise manner. They are encouraged to start with simple, low-cost solutions and gradually work up to more challenging and expensive ones later. They can seek support from the city council to disseminate and implement

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practical ideas for improving safety, health and working conditions in waste collection work.

### **5. Networking waste collectors and communities for a wider impact**

Starting with small, low-cost actions at the grassroots level, collaborative networks among waste collectors and communities should be widened continuously. Promote the exchange of experiences among different waste collection teams and communities for a wider impact and cooperation. It is equally important to strengthen cooperation with scavengers and other informal waste pickers. The city council (government) will assist these efforts to build sound waste management systems.

### **6. Linking safe and efficient waste collection to overall environmentally sound waste management**

In the broader scope, waste collection work is an essential part of building environmentally sound waste management systems. Many countries are increasing their efforts to promote 3R (reduce, reuse and recycle waste). Waste collectors can play a key role as front-line workers to promote a greener environment. The WARM manual intends to assist both collectors and the community in this direction.

The scope of the present manual focuses mainly on the work of formal waste collectors in urban areas. We regard this WARM manual as the first step in contributing to overall waste

management systems through building safe and efficient waste collection work. We are hoping that in future we will be able to expand the scope of WARM training in a step-wise manner and support the improvement of safety, health and working conditions of other waste collectors, including informal waste pickers and scavengers.

We do hope that this manual will be useful to many waste collectors and waste truck drivers who aim to improve their safety, health and working conditions. Your feedback on the experience of using this manual is important for us to continuously improve the content of this manual. We would appreciate it if you could inform us of how you have used this manual and your ideas for improvements. You can contact us through [kawakami@ilo.org](mailto:kawakami@ilo.org) or [drkhai@gmail.com](mailto:drkhai@gmail.com)

Learning from your initiatives and practices, we will continue to grow the WARM manual together.

February 2010

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## ***Guide for manual users***

The WARM training manual is designed to promote cooperative actions by waste collectors and the community. The following are typical ways to use the manual in the WARM training.

### **1. Visit a real waste collection area and apply the WARM action-checklist**

Visit a real waste collection area and apply the WARM action-checklist. This worksite visit should be carried out at the beginning of the training. The training organizer should select a typical waste collection area where training participants can find both good points and also points to be improved in terms of safety and efficiency of the work of waste collectors.

By observing the conditions of the waste collection area, each participant completes all the checklist items based on his or her own ideas. The checklist items help participants to identify key safety and health points and to find corresponding practical solutions. The WARM action-checklist with illustrations of good examples is shown on pages 5-16 of this manual.

The action-checklist exercise encourages participants to learn from existing good

practices of waste collection work and to find workable safety and health improvement ideas.





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## 2. Organize four technical sessions and group discussions to prioritize actions

After returning from the visit to a waste collection area with the WARM checklist completed, the participants attend four technical sessions and discuss good points and points to be improved in the collection area they have visited.

The four technical sessions are on: (1) Safe handling of waste and community cooperation, (2) Safety of waste collection trucks, (3) Work environment and personal protective equipment, and (4) Welfare facilities and work organization. These four areas address common safety issues in everyday waste collection work and also include improvement points that can be implemented at low-cost through cooperation between waste collectors and the community. Trainers show practical improvement guides, illustrations and photos showing good local examples.

After the trainer presentations, participants are divided into small groups of five or six people. Each group discusses and identifies three good points and three points to be improved in the waste collection area they visited at the beginning of the training. They are encouraged to discuss the strong points of the collection area first and not its weaknesses, and focus on three most important actions that can be implemented using available local materials and wisdom.

## 3. Develop improvement proposals and plan follow-up activities

Participants develop proposals to improve safety, health and efficiency in waste collection work, referring to the local good examples shown in the four technical sessions. They can also refer to the WARM manual to confirm their ideas for improvements. The city council (government) will assist their ideas for implementation whenever necessary. A few

months after the training workshop, the trainers should visit the participants to see their improvements and provide advice for continual improvement.



## ***WARM Training Programme***

# ***ACTION CHECKLIST FOR WASTE COLLECTORS AND THE COMMUNITY***

### **HOW TO USE THE CHECKLIST**

#### **How to use the checklist:**

1. Define the work area to be checked.
2. Spend a few minutes walking around the work area.
3. For each action, select NO or YES:  
If the action has already been applied or it is not needed, select NO; if you propose the action, select YES.
4. Choose a few urgent actions, and tick PRIORITY for these actions.
5. Put your suggestions under REMARKS.

## I. SAFE WASTE HANDLING AND COMMUNITY COOPERATION

1. *Have a safe and convenient place to store waste.*

Do you propose action?

No       Yes       Priority

Remarks: .....  
.....  
.....



2. *Place waste at waist level of collectors.*

Do you propose action?

No       Yes       Priority

Remarks: .....  
.....  
.....



3. *Use safe waste containers of appropriate size.*

Do you propose action?

No       Yes       Priority

Remarks: .....  
.....  
.....



4. *Attach grips or handles to all waste containers.*

Do you propose action?

No       Yes       Priority

Remarks: .....  
.....  
.....



5. Carry heavy waste or containers between two collectors.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



6. Reduce the amount of waste as much as possible.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



7. Separate bottles, cans and other waste for recycling.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



8. Use special containers for sharp materials and attach warning labels.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



**Action checklist**

---

9. *Keep dogs inside.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....



10. *Park cars properly so as not to inconvenience waste collection trucks.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....



11. *Keep waste stations clean and in good condition.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....



**II. SAFETY OF WASTE COLLECTION TRUCKS**

12. *Stay away from rotating panels.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....





13. Confirm that emergency stop switches work.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....

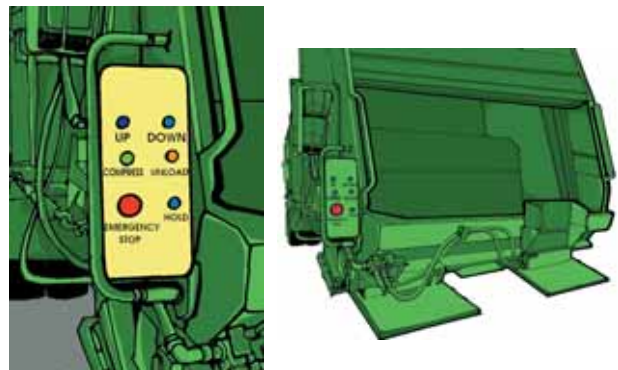


14. Make controls or switches easy to distinguish by attaching simple labels in the local language.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



15. Keep the driver's cabin clean and comfortable.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



16. Sit in the driver's cabin while the truck is moving.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



**Action checklist**

---

17. *Park the truck in a safe place.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



18. *Walk safely from one waste station to another.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



19. *Discharge waste from waste trucks to dumping sites safely.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



20. *Ensure that all scavengers stay away from waste trucks while the trucks are discharging waste.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



21. Wash waste trucks safely.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



22. Maintain trucks for safety.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



### III. WORK ENVIRONMENT AND PERSONAL PROTECTIVE EQUIPMENT

23. Protect waste collectors from heat stress.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



24. Manage noise and dust at work.

Do you propose action?

- No       Yes       Priority

Remarks: .....  
.....  
.....



**Action checklist**

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25. *Ensure safe work on rainy days.*

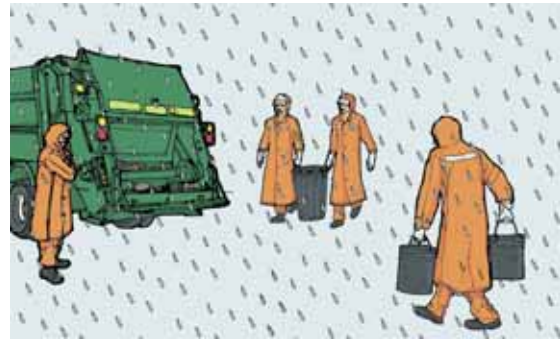
Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



26. *Be aware of hazardous substances.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



27. *Handle sharp items safely (glass, needles, etc.).*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



28. *Prevent animal bites and hazards (dogs, birds, rats, insects, etc.).*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



29. *Wear a cap, gloves and safety shoes.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....



30. *Wear highly visible safety clothes with reflectors.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....



31. *Wear glasses and gloves when handling hazardous materials.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....



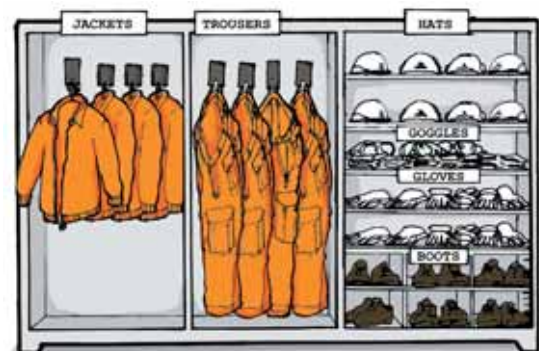
32. *Maintain protective devices in good condition.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....  
.....





#### IV. WELFARE FACILITIES AND WORK ORGANIZATION

33. *Provide sanitary toilets and washing facilities.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



34. *Provide rest areas.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



35. *Provide appropriate eating places (canteen).*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



36. *Provide first aid kits and ensure that everybody knows how to use them.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



37. Provide recreation facilities.

Do you propose action?

No       Yes       Priority

Remarks: .....

.....  
.....



38. Discuss and plan your work in the team to make collection easier.

Do you propose action?

No       Yes       Priority

Remarks: .....

.....  
.....



39. Have appropriate work time, take short breaks and regular holidays.

Do you propose action?

No       Yes       Priority

Remarks: .....

.....  
.....



40. Establish a safety and health committee of employers and waste collectors.

Do you propose action?

No       Yes       Priority

Remarks: .....

.....  
.....



**Action checklist**

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41. *Exercise in the morning before starting work.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



42. *Report accidents and diseases to ensure early treatment.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



43. *Discuss unsafe events and safety and health risks with the team to prevent accidents or injuries.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....



44. *Provide safety and health training to all workers.*

Do you propose action?

- No       Yes       Priority

Remarks: .....

.....

.....





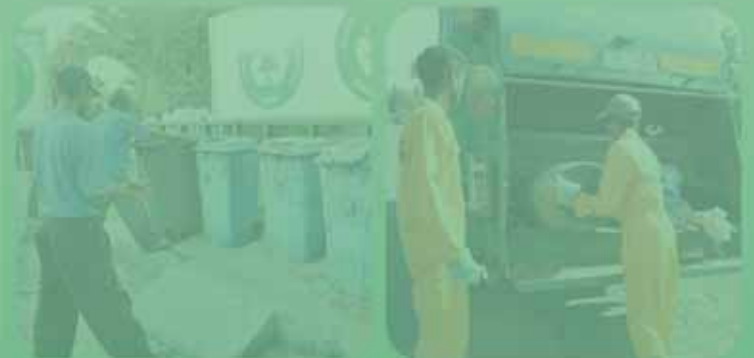
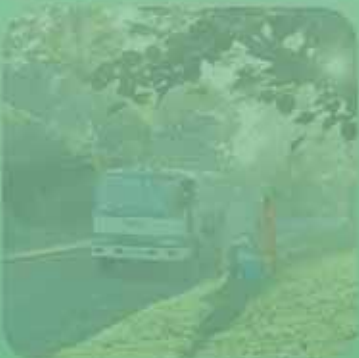
# Chapter 1

## Safe waste handling and community cooperation

(CHECKPOINT 1 – 7)

There are many practical ways to ensure safety in waste handling. This chapter provides some hints for both waste collectors and the community to facilitate their cooperation in the safe and efficient handling of waste.

- CHECKPOINT 1: *Have a safe and convenient place to store waste*
- CHECKPOINT 2: *Place waste containers at waist level of collectors*
- CHECKPOINT 3: *Use appropriate-sized waste containers with grips*
- CHECKPOINT 4: *Carry heavy waste or containers between two collectors*
- CHECKPOINT 5: *Separate bottles, cans, and other waste for reusing and recycling*
- CHECKPOINT 6: *Use special containers for sharp materials and attach warning labels*
- CHECKPOINT 7: *Keep waste stations clean and in good condition*



## CHECKPOINT 1

### *Have a safe and convenient place for waste storage*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Good waste storage contributes to safe and efficient waste collection systems and benefits both waste collectors and communities. Waste is often heavy, varied in shape and difficult to handle. Good waste storage will improve the safety of collectors, increase the efficiency of their work, and contribute to developing clean communities. Needless to say, communities where waste and waste containers are scattered are not comfortable places to live in.

There are many simple, low-cost ways to improve waste storage. Examples of low-cost improvements are: regular cleaning of waste storage and collection areas, developing a community waste storage platform, and separation of waste for recycling. There are many other practical, low-cost examples that have already been implemented in several communities.

#### **HOW TO IMPROVE**

1. Observe waste storage collection points in your community. Are they clean and well-organized?
2. Select waste storage points in a place that is safe and convenient for both collectors and the community.
3. Clean storage areas and remove unnecessary materials.
4. Look at the location of storage areas. Select a place which minimizes the distance waste collectors need to carry waste to the waste trucks.
5. Select a waste storage place waste collection trucks can park close to. Otherwise, collectors would have to walk long distances carrying heavy waste.

#### **WAYS TO PROMOTE COOPERATION**

Waste collectors and the community can share their ideas for joint improvements. Walk around community waste collection areas together. Discuss practical ways to improve safe storage with them and learn from existing good examples. Some communities, for example, have community waste storage areas and keep them clean. Start with simple, small improvements first. Provide regular opportunities for cooperation between waste collectors and communities. Make improvements in a step-wise manner, and maintain joint improvement efforts on an on-going basis.

#### **SOME MORE HINTS**

1. Waste collection areas should be as even and smooth as possible. As much as possible, avoid sloped areas and bumpy roads. Where appropriate, pave them with cement.
2. Avoid muddy or slippery areas to store waste. Collectors may slip and fall accidentally.
3. Keep the waste storage area clean. Make sure waste, scraps, etc. do not remain in the areas after collection.

#### ***POINTS TO REMEMBER***

Clean and well-organized storage areas can make waste collection work easier and prevent accidents.



Figure 1-1: Select a safe and convenient place to store waste.



Figure 1-2: Good waste storage makes communities clean.

## CHECKPOINT 2

### *Place waste containers at waist level of collectors*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors have to bend forward frequently during their work and have a high risk of suffering from back discomfort. Often small waste bags are placed directly on the street and collectors are forced to bend their body forward to pick up such waste. Waste collectors with back problems cannot work safely and efficiently. Simple changes in waste storage areas can help collectors avoid frequent bending.

Placing waste containers at the waist level of collectors improves this situation. Collectors do not need to bend their body and therefore reduce the risk of low back pain. This will make their waste collection work much easier and contribute to efficient waste collection and clean communities. Community cooperation is essential in making these changes.

#### **HOW TO IMPROVE**

1. Observe waste storage areas. Adjust the height of waste containers or bags to allow a waste collector to collect them without bending his body.
2. Look at the height of the point where waste collectors hold the waste. If waste containers are used, the grips of the containers should be at the waist level of collectors.
3. If waste containers are small, use a platform to adjust the working height to the waist level of waste collectors.
4. Waste collectors should not hurry when collecting and handling waste. When in a hurry, back muscles need more strength and there is a higher risk of back pain and accidents.

#### **WAYS TO PROMOTE COOPERATION**

There are many ways to adjust the working height of waste collectors to avoid frequent forward bending posture. Many communities already have good examples including adjusted waste storage areas and platforms or the use of containers of appropriate size. Waste collectors know such good examples through their everyday work. Find and learn from existing local good examples.

#### **SOME MORE HINTS**

1. Frequent twisting postures also increase the risk of low back pain in waste collectors. Rearrange waste storage areas to allow collectors to minimize a twisting posture.
2. Waste collection trucks should park close to the collection area so that collectors can avoid extended bending and twisting postures.
3. Teamwork among waste collectors is important. Handle waste together to decrease bending postures.

#### ***POINTS TO REMEMBER***

Placing waste at waist level improves the work posture of waste collectors and increases safety and efficiency.





**Figure 2-1:** Adjust the height of waste containers to waist level of collectors.



**Figure 2-2:** Waste collection work becomes much easier when waste is placed at waist level of collectors.

## CHECKPOINT 3

### *Use appropriate-sized waste containers with grips*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste containers of an appropriate size are easy to handle and make the work of waste collectors safe and efficient. Large waste containers and sacks are difficult to move and can be very heavy. Some communities use many small sacks to store their waste. This situation is also difficult for waste collectors to manage. They have to bend their bodies more often and take a longer time to clear all the waste.

Appropriate-sized waste containers and plastic bags that have a grip point at around waist level of collectors make their work easier. If waste is too heavy, it should be divided into smaller containers. These smaller containers should be kept at around waist level of collectors at the waste storage station.

Waste containers should have grips or holding points for easy handling. Waste collectors can hold the container safely and clear the waste efficiently.

#### **HOW TO IMPROVE**

1. Choose waste containers or plastic bags that have a grip point at around waist height of collectors.
2. When using smaller containers or bags, use a platform to raise the height of the waste for easy handling.
3. Divide heavy waste and put it into separate containers or bags for safe handling.
4. Attach firm grips or holding points to all waste containers for easy and safe handling.

#### **WAYS TO PROMOTE COOPERATION**

Visit community waste storage areas and observe the containers used. Find appropriate-sized containers. Listen to the opinions of experienced waste collectors as they know good examples. When you find good containers, contact the family who use them and learn from them how they have obtained or made them. Community cooperation is important in developing and using appropriate containers for safety and efficiency. Waste collectors should actively participate in these community improvement efforts.

#### **SOME MORE HINTS**

1. Use containers of a similar size in one waste storage area as much as possible. This will make the work of collectors easier.
2. Attach holding points if you use a carton or wooden box as waste containers.
3. Attach warning signs to containers of dangerous waste such as broken glass. If available, use transparent sacks. Collectors can see inside and know there is a dangerous waste inside.
4. When using small waste containers, use a platform to adjust the height of waste containers.
5. It is desirable to attach wheels to large waste containers for easy and safe handling.

#### ***POINTS TO REMEMBER***

Appropriate-sized waste containers improve the safety and efficiency of waste collection work.



**Figure 3-1:** Use appropriate-sized containers with wheels.

**Figure 3-2:** Divide waste into two bags if too heavy. This will help collectors.



**Figure 3-3:** Waste containers should have grips for easy handling.

## CHECKPOINT 4

### *Carry heavy waste or containers between two collectors*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors often have to handle heavy waste containers which contain a large amount of waste. Two collectors should carry these heavy containers between them for safety and efficiency. If only one collector carries a heavy container, he will have a higher risk of low back injury. The collector also has a higher risk of upturning the container by accident. Waste would be scattered around and pollute the community environment.

Two collectors may need to take a little longer time to carry a single heavy container together compared to carrying a container on their own. However, the cooperation of two collectors much reduces the risk of accidents and injuries and contributes to establishing efficient waste collection systems.

#### **HOW TO IMPROVE**

1. Waste collectors should establish a cooperative habit where two collectors always carry heavy containers together and should avoid moving them on their own.
2. When a collector finds a heavy container, he should call for the assistance of another collector immediately. This teamwork protects waste collectors from serious accidents.
3. The community should discuss improvements as well and avoid putting heavy waste into a single container. Heavy waste should be divided into two or more containers.
4. Raw and wet waste, including vegetable, fruits or other food waste, is often heavy. The community should make an effort to

reduce the amount of such waste. Raw waste can be recycled as fertilizer or animal food, etc.

5. Factories and home workplaces should not submit their industrial waste to the public household waste collection systems. Industrial waste is often bulky and hazardous, and includes heavy materials such as metal or liquid waste. It must be handled through a separate industrial waste collection system.

#### **WAYS TO PROMOTE COOPERATION**

Community cooperation is important to reduce heavy waste. Each household can observe how their waste is collected and discuss how to reduce the amount of their household waste, or use it for recycling and reuse. Listen to the voices and experiences of waste collectors. They know existing good examples of how to reduce heavy waste and have practical ideas for improvements.

#### **SOME MORE HINTS**

1. The amount of waste changes day by day or season by season. People may have more waste after a festival or a public event. Waste collectors should make a plan when collecting such large amounts of waste to ensure it is collected safely and efficiently.
2. Plastic bags may tear if they contain heavy waste. People should not use plastic bags to hold heavy waste.

#### **POINTS TO REMEMBER**

Two collectors should help to carry heavy waste containers. The community should divide heavy waste into lighter pieces.





**Figure 4-1:** Two collectors should cooperate to carry heavy waste containers.



**Figure 4-2:** Teamwork by two collectors contributes to safe waste collection.

## CHECKPOINT 5

### *Separate bottles, cans, and other waste for reusing and recycling*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Reducing the amount of waste contributes to safe and efficient waste collection systems. Bottles and cans can often be reused for some other purposes at home and do not need to go into waste containers immediately. Waste collectors can handle the reduced amount of waste more safely since they do not need to rush. The community can more easily maintain the cleanliness of waste storage areas.

There are many ways people can reduce the amount of waste. Promote the reuse and recycling of waste before throwing it into a rubbish bin. Waste collectors and the community can exchange ideas on how to reduce the amount of waste. Collectors often know good examples and can convey this information to other communities. Their joint initiatives would contribute to establishing efficient waste management systems and become the foundation for promoting green environments and jobs.

#### **HOW TO IMPROVE**

1. Look in your waste bins. Is there any waste that can be reused or recycled? If yes, please do so.
2. Learn from local good practices to reduce the amount of waste. For example, glass bottles can be used to store juice or cooking sauce, or to hold a flower. Food and other raw waste can become home-made fertilizer by using a compost system.
3. Separate waste as much as possible. Follow the guidance of the city council. Separating waste would promote reuse and recycling. If different types of waste

are all put together, it is very difficult to reuse them.

#### **WAYS TO PROMOTE COOPERATION**

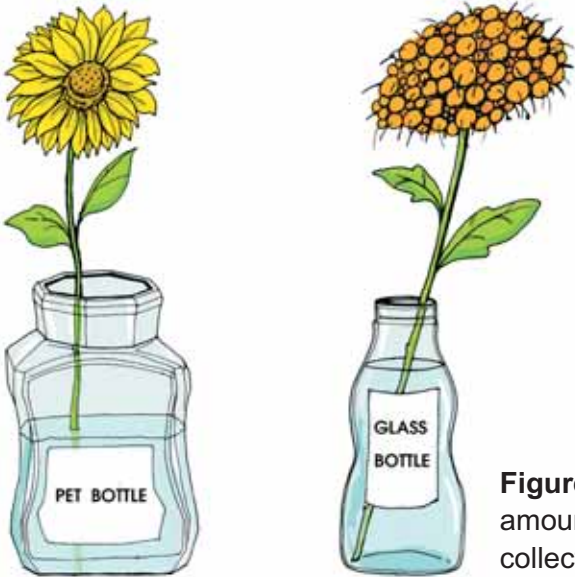
Community cooperation is essential in reducing the amount of waste. Many good practices already exist in reuse and recycling. Local people should share practical methods for reuse and recycling such as compost systems or other methods. The city council can provide guidance and assistance. Training should be useful for both the community and waste collectors. They can share the benefits by reducing the amount of waste and establish stable waste collection and management systems.

#### **SOME MORE HINTS**

1. Find an opportunity to talk with scavengers who collect bottles and cans, and also factory managers who use and process recycled bottles, cans and other reusable waste. Listen to their ideas on collecting separated waste more efficiently for recycling.
2. If a community cooperates together, they can develop a larger system to promote reuse and recycling. For example, they may be able to establish a community compost system and produce a larger amount of fertilizers at low cost.
3. The city council provides rules and guidance. Obtain the information from them.

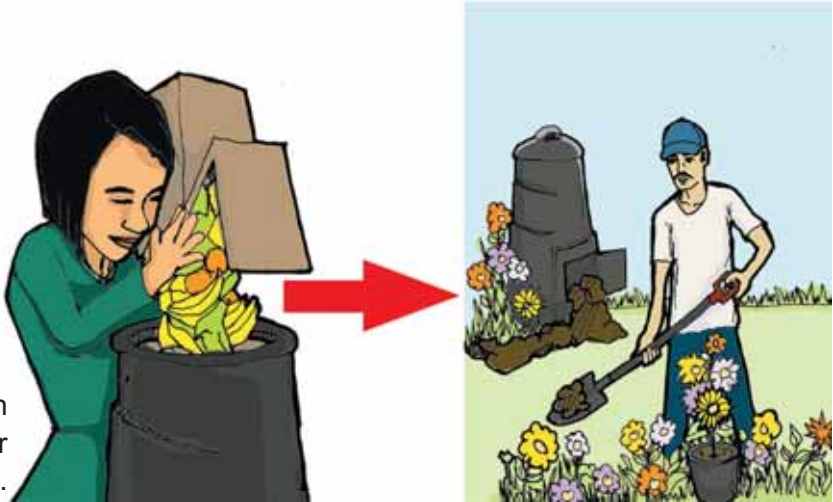
#### **POINTS TO REMEMBER**

Reducing the amount of waste is an important way of establishing safe and efficient waste management systems.



**Figure 5-1:** Reuse glass and pet bottles. Reducing the amount of waste is the basis for safe, efficient waste collection.

**Figure 5-2:** Raw garbage can become home-made fertilizer through a compost system.



**Figure 5-3:** Separate waste as much as possible for recycling.

## CHECKPOINT 6

### *Use special containers for sharp materials and put warning labels*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Sharp materials placed inside waste containers are a common cause of accidents among waste collectors. Broken bottles, glass, used needles, or sharp metal pieces are hazardous to waste collectors. If these hazards exist in the waste collection area, waste collectors have to spend extra time to avoid hazards and cannot work smoothly. Local people should avoid putting such waste in waste containers as much as possible.

When people need to put sharp materials such as broken glass into waste containers, they should use strong containers with clear warning signs. Avoid using a plastic bag since sharp materials may stick out suddenly when collectors handle the bag. Through community cooperation to deal with sharp materials, waste collectors can work safely and smoothly without worrying.

#### **HOW TO IMPROVE**

1. Separate sharp materials such as broken glass, needles, or metal pieces, etc. from other waste. Don't mix sharp materials with other general waste.
2. The separated sharp waste materials should be put in a carton or other strong container so as not to allow the sharp materials to stick out. Don't use a plastic bag as sharp materials will easily stick out.
3. Waste collectors should wear appropriate goggles and safety gloves while handling sharp items.
4. Put a warning label on the containers so that waste collectors can be aware of the danger and prevent injuries.

5. Don't place industrial waste in the community waste collection area. It is difficult for waste collectors to protect themselves from such hazards.
6. Medical waste such as needles, used gauze and other hospital waste should not be put in the community waste collection area. Follow the guidance of the city council, which is responsible for developing hospital waste treatment systems.

#### **WAYS TO PROMOTE COOPERATION**

The community and waste collectors should discuss practical ways to handle sharp and hazardous materials properly and avoid injuries. The community should establish rules on what sharp materials they can ask waste collectors to collect and what they must not. The city council will assist this community effort. The community should also set a rule to attach a proper warning sign to sharp materials. Invite the opinions and ideas of waste collectors to improve the situation.

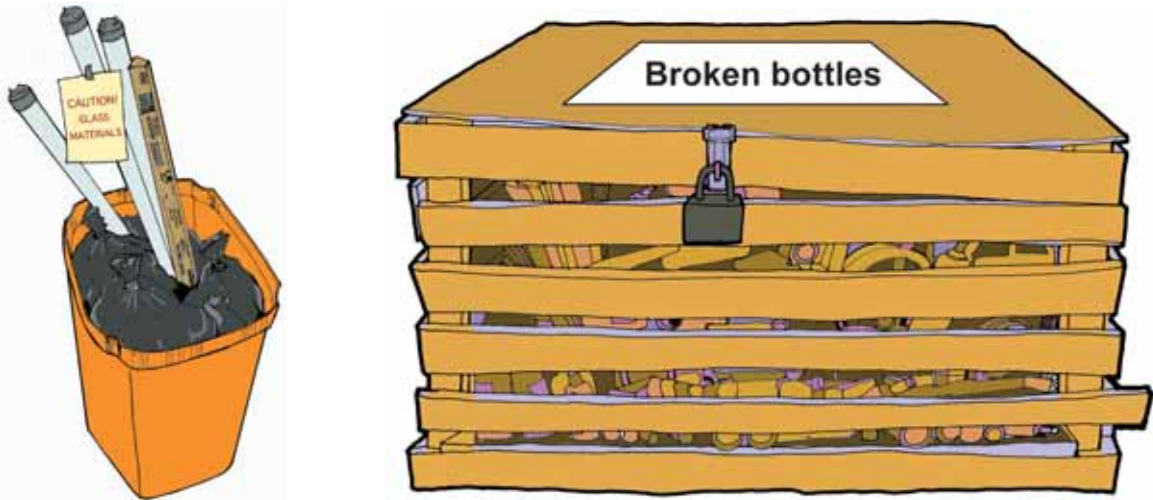
#### **SOME MORE HINTS**

1. Warning labels should be clearly written in big letters. If the writing is small and unclear, busy waste collectors may miss the labels.
2. Ask the city council how to treat industrial and medical waste.
3. Containers of broken glass should not be thrown into rotating panels. Broken glass might fly into the collectors.

#### **POINTS TO REMEMBER**

Sharp waste materials should be handled properly. The community should cooperate to prevent injuries in waste collectors.





**Figure 6-1:** Separate sharp materials such as glass, sharp items or metal pieces, etc. from other waste. Attach a warning label for waste collectors.



**Figure 6-2:** Medical and hospital waste should not be placed in community waste collection areas. It should be collected through a separate medical waste disposal system.



**Figure 6-3:** Handle sharp materials with caution. Wear protective gloves and goggles.

## CHECKPOINT 7

### *Keep waste stations clean and in good condition*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste stations and storage areas in good condition contribute to developing a clean community. Dirty stations would make community life uncomfortable due to the smell and the untidy appearance. Waste stations and storage areas should be cleared after the waste collection and there should not be any left-over waste.

Community cooperation is important to keep waste stations clean. People can work together to clean the waste station. People should not store their waste for too long. The waste should be stored shortly before the waste truck comes. This is also important in preventing animals and birds from coming to the storage area.

#### **HOW TO IMPROVE**

1. The community should establish a rule about the time to store waste. They should bring the waste just before the waste truck comes and should not store the waste for too long.
2. The community should also cooperate to clean the left-over, small waste debris together. This would also prevent animals and wild birds from coming to the left-over raw garbage and making the community area dirty.
3. Check collection areas and stations regularly. If the waste storage stations are not in good condition, repair them.

#### **WAYS TO PROMOTE COOPERATION**

It is important to learn from the good practices of other communities. There are already many good examples of how to keep waste col-

lection and storage areas clean. Successful communities have a system of cooperation within the community and clean their station regularly. They can also advise the community about the time to store waste and other community cooperation rules.

#### **SOME MORE HINTS**

1. Good communication between the community and waste collectors is useful for keeping waste stations clean. Just saying "Thank you" will greatly improve cooperation and communication. Waste collectors know many storage areas and have ideas to improve the conditions.
2. Advise people who don't cooperate on the time to store waste to observe the community rule for the convenience of everyone.
3. People should not submit difficult waste to waste collection areas. Examples of this waste are very heavy waste, waste stored in an easily broken plastic bag, waste with a very strong smell, or hazardous waste such as medical or industrial waste. It is difficult for waste collectors to clear this waste and it may remain in the collection area for a long time. That would also be a danger to the community.

#### ***POINTS TO REMEMBER***

Community cooperation is the key to keeping the waste collection area clean and in good condition.



**Figure 7-1:** The community can keep waste collection areas safe and hygienic.



**Figure 7-2:** Good communication between waste collectors and the community is the basis for developing safe and efficient waste collection systems.





# Chapter 2

## Safety of waste collection trucks

(CHECKPOINT 8 – 14)

Waste collection trucks are the engine of efficient waste collection. Waste collectors, waste truck drivers and the community can jointly enhance the safety of waste collection trucks through their cooperation. The safe operation of waste trucks creates efficient waste management systems.

**CHECKPOINT 8:** *Stay away from rotating panels*

**CHECKPOINT 9:** *Make all switches easy to understand*

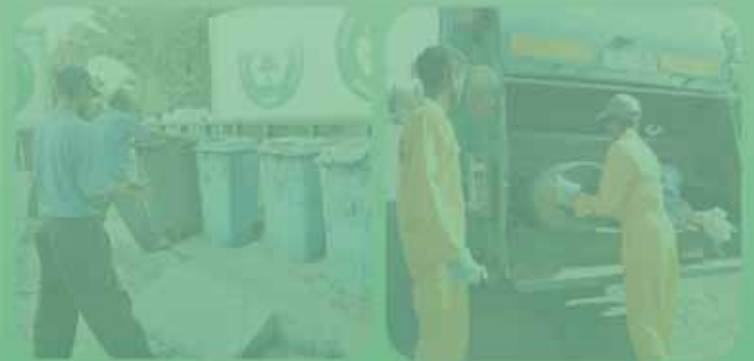
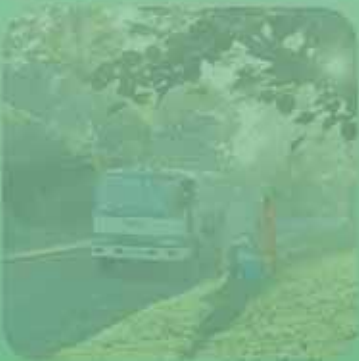
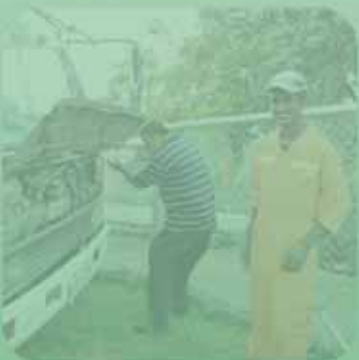
**CHECKPOINT 10:** *Keep the driver's cabin clean and comfortable*

**CHECKPOINT 11:** *Walk safely from one waste collection area to another*

**CHECKPOINT 12:** *Park waste collection trucks in a safe place*

**CHECKPOINT 13:** *Discharge wastes safely in dumping sites and land-filling areas*

**CHECKPOINT 14:** *Wash waste trucks safely and maintain them in good condition*



## CHECKPOINT 8

### Stay away from rotating panels

#### BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES

The rotating panel installed in the hopper of the waste collection truck is very dangerous. The rotating panel might roll a collector and cause a serious accident. This type of accident can also happen to members of the community if some of them come close to the truck and try to throw their waste directly into the hopper.

Waste collectors need to learn the safe procedure for throwing waste into the hopper of a waste truck. Members of the community should not be allowed to throw waste directly into the hopper. They should also teach children not to approach the waste collection trucks.

#### HOW TO IMPROVE

1. Observe the work of a waste collector and see how he throws the waste into the hopper. Discuss safe procedures for waste collectors.
2. If available, always use mechanical lifters for waste containers to throw the waste into the hopper safely.
3. Waste collectors should never put their arms in the hopper even if some waste is stuck in the hopper. The collector or his colleague must stop the panel first before removing the stuck waste.
4. Two collectors should work together when throwing heavy waste into the hopper to avoid an accident.
5. Protect members of the community and do not allow them to approach the back of the truck.
6. Don't throw bottles, glass materials into the rotating panel. They will be broken

into pieces and may fly into the face of a collector.

7. Wear safety goggles and glasses to protect the eyes of waste collectors from flying objects.
8. The emergency stop switch of the rotating panel should be highly visible and able to be easily reached for immediate use.

#### WAYS TO PROMOTE COOPERATION

Waste collectors and members of the community can jointly observe the waste collection work and the potential dangers of the rotating parts of the waste truck. They can jointly agree on the prohibition of the community to approach the hopper of the waste collection truck. Waste collectors should also discuss it among themselves to establish safe work procedures. Clarify the roles as to who is responsible for starting and stopping the rotation panel. Cooperation of the team is very important to ensure safe use of the panel.

#### SOME MORE HINTS

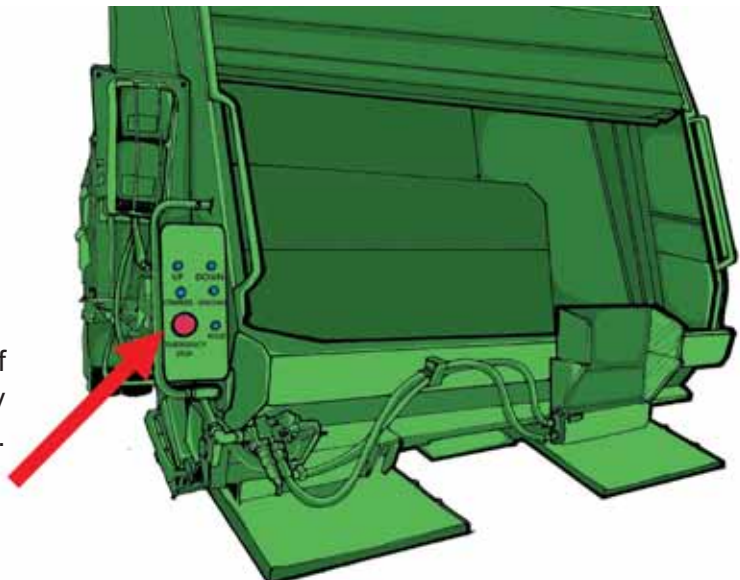
1. Plastic bags containing wet garbage are easily broken in the rotating panel. The dirty liquid may fly into the face of a collector. Wear goggles or glasses.
2. The community should put glass or bottles in separate containers which collectors can recognize easily.
3. Tell children not to approach waste trucks while collectors are working.

#### **POINTS TO REMEMBER**

Don't approach the rotating panels while they are in motion.



**Figure 8-1:** Stay away from rotating parts of the waste truck for safety. Use mechanical lifters if available.



**Figure 8-2:** Emergency stop switch of the rotating panel should be highly visible for immediate use.



**Figure 8-3:** Don't allow members of the community to throw their waste directly into the hopper.



**Figure 8-4:** Protect children from the danger of the rotating panel.

## CHECKPOINT 9

### *Make all switches easy to understand*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

There are many switches and controls for lifting and lowering waste containers and for operating the rotation panels on waste collection trucks. The operation of these switches should be easy to understand. The label on the switch should be written in the local language so waste collectors can read the label. Some waste trucks are imported from foreign countries and the instructions are written in a language the waste collectors cannot read.

Emergency stop switches are important to prevent injuries to waste collectors and even members of the community. In the past, some waste collectors have been rolled in the rotating panel and have had serious injuries. If the panel is stopped immediately, this could save their lives. The emergency switches need to be clearly visible and outstanding for immediate operation.

#### **HOW TO IMPROVE**

1. Check the conditions of all switches and control panels on the waste collection truck. Some control switches might also exist in the drivers' cabin.
2. Attach labels on the switches and controls to indicate their functions.
3. The labels and the instructions for operations should be written in the language waste collectors can easily understand.
4. Labels written in the language of the export countries should be replaced with those written in the local language.

5. Make emergency stop switches for the rotating panel clearly visible by using a bright colour so that any waste collector can stop the panel immediately.
6. Let all waste workers know how to operate the emergency stop switches. Train newcomers to know all the switches and controls.

#### **WAYS TO PROMOTE COOPERATION**

Members of the community should never operate the rotating panel and lifting device by themselves. However, a member of the community might need to use the emergency stop switches when someone is rolled in a dangerous part. That is why the emergency switches should be clearly visible to everybody.

#### **SOME MORE HINTS**

1. Prepare a concise (1-page) instruction sheet on switches and controls and keep it in the truck. It will be useful not only for new collectors but also for experienced collectors to review.
2. Discuss the role of each waste collector in the team. Define the person responsible for operating switches and controls.
3. Call out loud always before a waste collector activates the lifting device or the rotating panel.

#### ***POINTS TO REMEMBER***

Clearly visible, easy-to-understand switches ensure safe and efficient waste collection work.



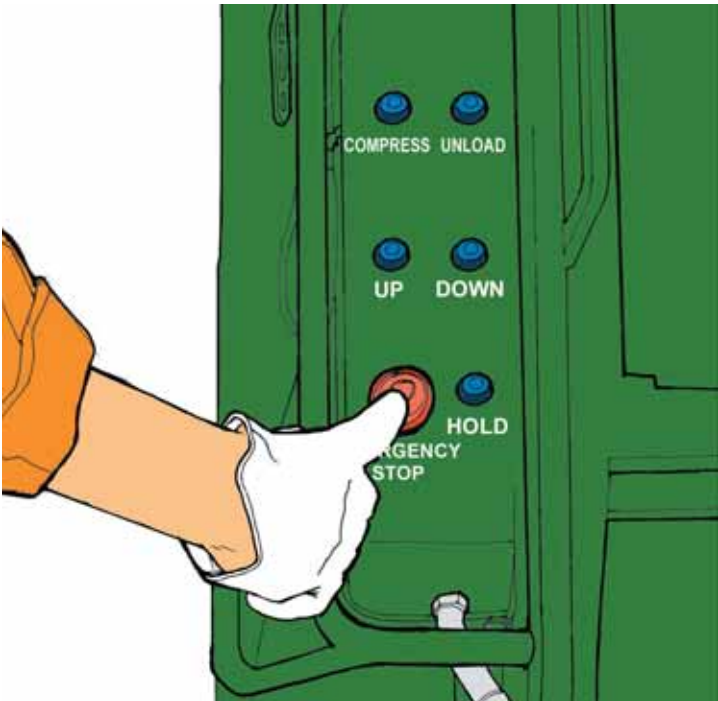


Figure 9-1: Emergency stop switches should be clearly visible.

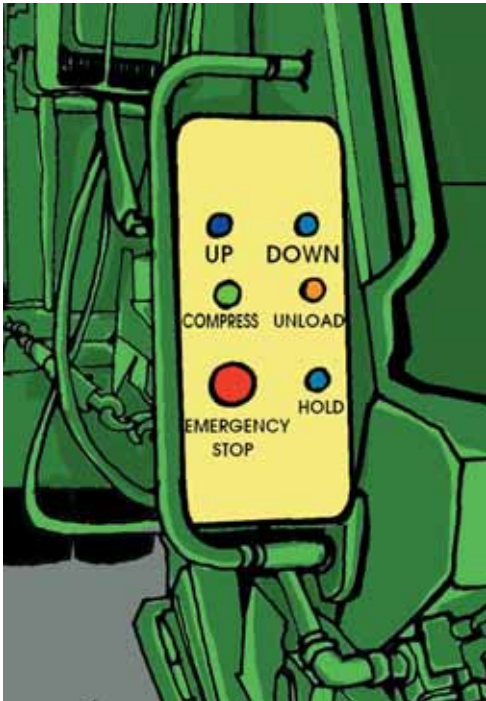


Figure 9-2: All switches should have clear labels for their operation.

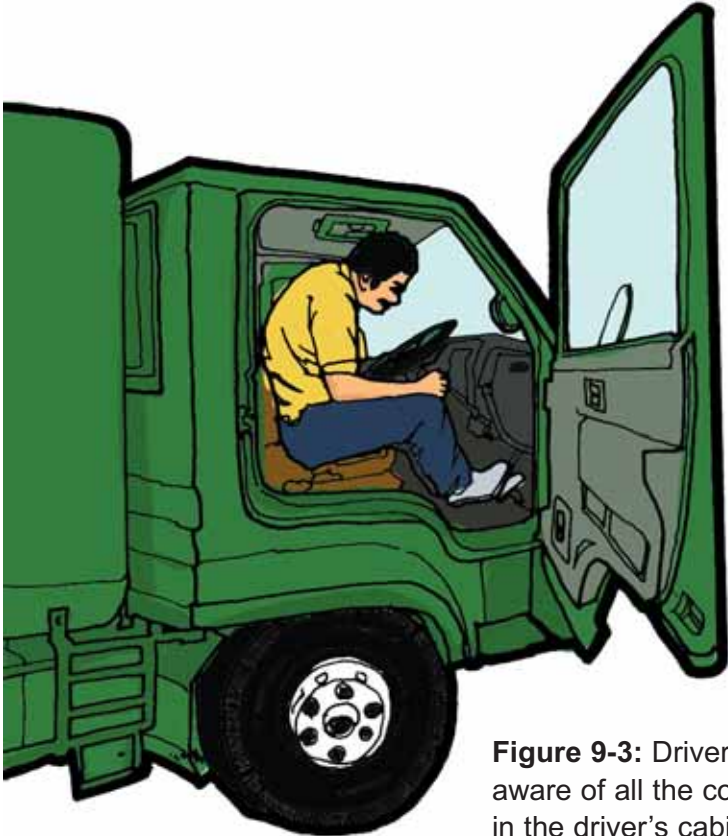


Figure 9-3: Drivers should be well aware of all the controls and switches in the driver's cabin.



## CHECKPOINT 10

### *Keep the driver's cabin clean and comfortable*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Drivers of waste collection trucks need clean, comfortable and well-organized cabins to be able to drive safely. Drivers cannot concentrate on driving if their cabins are messy and this could potentially cause an increased possibility of traffic accidents.

Drivers' cabins are also the places where waste collectors sit when moving from one collection area to another. Clean and comfortable cabins facilitate recovery from fatigue and help collectors work safely and efficiently. Drivers and collectors can enjoy talking to each other in a comfortable cabin and increase their communication for their work efficiency.

#### **HOW TO IMPROVE**

1. Remove unnecessary items from drivers' cabins and make sufficient space for the comfort of the driver and collectors.
2. Clean the cabin after work everyday. Rubbish, food, or water bottles should be taken out after work. It should be convenient to prepare small cleaning devices.
3. Adjust the height and location of the seats in the cabin. The driver should have a good front view and a comfortable posture for safe driving.
4. Both drivers and collectors in the truck should wear seat belts while driving. Maintain the seat belts in good condition.
5. Good rear view and wing mirrors are essential for safe driving. Adjust them to the appropriate angles to secure good views for safe driving.

6. Clean windows before and after the collection work to ensure that the driver has a good view for safe driving.

#### **WAYS TO PROMOTE COOPERATION**

Waste collectors should cooperate in keeping the driver's cabin clean and comfortable. They should not leave their personal belongings or any waste materials in the cabin. They can clean the cabin everyday as part of their team work. If someone finds any problem with the seat, mirrors, safety belts or others, they should work together to fix the problem swiftly.

#### **SOME MORE HINTS**

1. Personal materials such as clothes, goggles or other items should not be kept in the driver's cabin.
2. Open the window after work and during the rest time and encourage fresh airflow in the cabin. This will also remove the waste smell.
3. Check the condition of air conditioners in the truck regularly and keep them in good condition.
4. A driver's cabin is usually designed well to accommodate three persons: a driver and two collectors as a team. Don't allow too many people in the cabin. That is unsafe and uncomfortable.
5. Look behind before opening the door of the driver's cabin so as not to hit any person or car.

#### **POINTS TO REMEMBER**

Clean and comfortable driver's cabins promote safe waste collection work.



**Figure 10-1:** Comfortable driver’s cabin increases communication in the team.



**Figure 10-2:** Drivers can concentrate on safe driving in clean and comfortable cabins.



**Figure 10-3:** Comfortable and clean driver’s cabin facilitates waste collectors’ recovery from fatigue.

## CHECKPOINT 11

### *Walk safely from one waste collection area to another*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors have to walk repeatedly from one waste collection area to another. Walk carefully, and don't run. Safe walking from one area to another ensures effective collection work. By walking safely and not rushing, collectors can largely reduce the risk of accidental falls and slips, and also the risk of being hit by other cars.

Collectors should pay attention to working safely in crowded areas. They often work in downtown areas where there are many people and cars passing by. The community can cooperate to increase safety and efficiency through choosing safer waste collection areas.

#### **HOW TO IMPROVE**

1. Waste collectors should walk safely when they move from one collection area to another. The waste collection team should help each other walk safely.
2. Pay extra attention to safe walking in crowded shopping or market areas. Avoid bumping into other people.
3. Walk slowly and safely in wet or muddy areas. They are slippery. On rainy days even more attention to safe walking is needed.
4. Collectors should get on and off the waste collection truck carefully and not be in a rush. By working this way, collectors can prevent falls from the step of the driver's cabin.

#### **WAYS TO PROMOTE COOPERATION**

The waste collection team should discuss how to move safely from one area to another,

especially in the crowded downtown area. Agree that collectors should walk safely and rather slowly to prevent accidents and injuries. Members of the community can wait for collectors to finish collection and encourage them to walk steadily from one collection area to another. People and car drivers in the community and shopping areas should also not push collectors and waste trucks to move quickly.

#### **SOME MORE HINTS**

1. The community can also assist safe collection practices. They can encourage collectors to walk more slowly and not to run. This would benefit the community, too. Collectors in a rush may miss some waste items, or bump into someone. In the long run, slow work benefits both collectors and the community by promoting safe and efficient collection.
2. Don't rush when collecting waste. Bending bodies forward and backward in a rush would cause serious muscle pains in the upper or lower back of collectors. It would be difficult for affected collectors to continue their work. They might even lose their jobs and incomes as a result.
3. Pay extra attention to safe walking and movements in the dark. Collectors often work in the very early morning when it is still dark.

#### **POINTS TO REMEMBER**

Safe walking from one waste collection area to another is the basis for an efficient waste collection system.



Figure 11-1: Walk safely from one waste collection area to another. Don't run.



Figure 11-2: Walk carefully when working on a busy shopping street.



## CHECKPOINT 12

### *Park waste collection trucks in a safe place*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collection trucks are larger than ordinary cars and need appropriate spaces to park safely. The truck starts and stops frequently every day and needs to prevent traffic accidents. Private cars parked near the waste collection area block the view of truck drivers and cause accidents.

It is important to define areas for the parking of waste trucks. This is particularly true in busy business streets or the downtown area where there are many houses, shops and people. Waste trucks sometimes cannot avoid entering narrow streets and reversing to collect the waste.

#### **HOW TO IMPROVE**

1. Observe waste collection areas carefully and identify safe parking places for waste trucks. Exchange ideas among the collection team and agree on the places where the truck should stop to collect the waste.
2. Ask for community cooperation to secure safe parking places for waste collection. The city council can also support this community effort for safe, efficient waste collection.
3. All private cars should have their own parking spaces in their residence or in designated parking areas, and should not be parked on the street.
4. On busy shopping and business streets, place sign boards to secure the parking place for waste trucks and prohibit the parking of other cars.
5. Waste collectors should guide truck drivers when approaching collection areas. This is particularly important when

the truck has to reverse into the collection area.

6. Guide the truck driver carefully if the truck has to enter narrow roads or muddy and bumpy roads to collect the waste.

#### **WAYS TO PROMOTE COOPERATION**

Community cooperation is essential to ensure safe parking spaces for waste trucks. The city council can support this effort. The community should select safe and easy-to-approach areas for waste collection and avoid narrow streets or other places that are potentially dangerous for the truck and people. Once the community has selected waste collection areas, it is ideal to mark the place and let all people know this is the place where waste trucks park.

#### **SOME MORE HINTS**

1. It should be the waste collector who guides the waste truck driver to park safely. It is dangerous for members of the community to stand close to the truck to guide it.
2. On busy business streets, shops and companies should work together to secure a safe parking space for the waste truck. It is desirable to secure sufficient parking places for their customers as well so that they will not park their cars on the busy street and block the way of waste trucks. These efforts will make their business areas cleaner and attract more customers.

#### **POINTS TO REMEMBER**

Find safe parking spaces for waste collection trucks through community cooperation.





**Figure 12-1:** Private cars should be parked in their parking space and not on the street.



**Figure 12-2:** Waste collectors should help drivers to park waste trucks safely.



**Figure 12-3:** Specify waste truck parking spaces on busy streets.



**Figure 12-4:** Restaurants and shops should have parking areas for their customers.

## CHECKPOINT 13

### *Discharge wastes safely in dumping sites and land-filling areas*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collection trucks discharge their waste into dumping sites (landfills). Collectors and drivers should know the risk of potential accidents in the dumping site and prevent them. There is a lot of left-over waste in the site, including sharp materials. The roads to the sites are often not paved and can be muddy and slippery, especially when it is raining. Many scavengers wait for the waste to pick up recyclable waste and approach the truck while it is discharging the waste. The waste collection team has to be careful to prevent accidents.

Some waste trucks need to discharge the waste into a big waste container before transferring the waste to the dumping site. Waste trucks have to reverse to the container and there is a high risk of the truck driving over the edge. Teamwork between collectors and drivers is important to prevent such an accident.

#### **HOW TO IMPROVE**

1. Drive slowly in the dumping area. The roads are bumpy and not paved. Some waste, including sharp materials which other trucks have dropped, might be on the roads.
2. Be careful around scavengers and prevent accidents. They may approach the truck to collect recyclable waste before the truck stops completely.
3. Before discharging the waste, a collector should get off the truck and guide the driver to ensure safe discharging.
4. The collector guiding the driver should call scavengers and other workers to stay away from the moving truck.

5. The collector also guides them to stay away from the discharge area until the truck completes the discharge and leaves.
6. When waste trucks discharge waste into a big waste container, a waste collector should get off the truck and guide the driver to ensure safe dumping.

#### **WAYS TO PROMOTE COOPERATION**

At the dumping site (landfill), it is important that the waste collection team communicates with scavengers and the city council staff to prevent accidents. The city council staff should take the lead to ensure safe procedures when discharging the waste at the site. They can guide the waste trucks to appropriate slots to discharge their waste safely. The city council can also plan to maintain good road conditions in the dumping site area.

#### **SOME MORE HINTS**

1. The waste collection team should exchange ideas with scavengers to ensure safe dumping procedures and propose improvements to the city council.
2. Scavengers need safe and decent working conditions. Scavengers, the city council and the waste collection team exchange ideas to improve safety, health and working conditions of scavengers as part of waste management systems.

#### ***POINTS TO REMEMBER***

Know the safety risk in the dumping site and prevent accidents.



**Figure 13-1:** Guide waste trucks carefully to prevent the trucks going over the edge in the dumping area.



**Figure 13-2:** Prevent accidents with scavengers in the land-filling area.

## CHECKPOINT 14

### *Wash waste trucks safely and maintain them in good condition*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors and drivers need to wash their trucks every day after finishing the collection work. This is important to keep the truck clean and remove smells. There is a risk of accidents when washing trucks, such as the sudden fall of the rear cover and the hopper. Waste collectors and drivers should know how to prevent accidents. The community and outsiders should not come close to the washing area.

Waste collection trucks need to be in good condition to provide a quality public service. Trucks with problems are dangerous to both waste collectors and the community. Maintaining the waste truck in good condition is essential for safe and efficient waste collection services. The waste collection team (a driver and collectors) should check the truck condition every day to ensure the truck is well-maintained.

#### **HOW TO IMPROVE**

1. Secure a safe place or a garage to park waste trucks after work. Ensure that nobody will approach the truck at night.
2. The parking area needs to be equipped with sufficient water supply, hoses and other equipment to wash the truck.
3. Ensure the rear cover of the hopper is secured open to prevent it suddenly falling. Use an additional bar to support the rear cover of the hopper while washing.
4. Use safety signs and don't allow outsiders to come into the washing area.
5. Avoid going inside the hopper to wash it. Wash it from outside as much as possible.

6. Every morning before starting work, drivers should check the condition of waste trucks.
7. Check them again every day after work.
8. Waste collectors should inform the driver of any possible problems they have found.
9. The waste collection team should have regular maintenance programmes in consultation with experienced auto mechanics.

#### **WAYS TO PROMOTE COOPERATION**

Waste collectors should discuss how to wash and maintain their trucks. Members of the community should not enter the washing area. However, anyone who finds a problem with the waste trucks can inform the driver and collectors of the problem so improvements can be made.

#### **SOME MORE HINTS**

1. Consider the security of the truck at night. Nobody except the waste collection team should enter the parking area at night and on holidays.
2. Exchange ideas about effective maintenance methods with other waste collection teams.
3. Communicate regularly with auto mechanics for their advice.
4. Dirty water after washing waste trucks should go into waste canals, and not directly into rivers or ponds.

#### **POINTS TO REMEMBER**

Well-maintained waste trucks are the basis for safe and efficient waste collection systems.





**Figure 14-1:** Clean the waste truck after work. Ensure safety during washing and don't allow any outsiders to come close to the truck.



**Figure 14-2:** Use stop bars to hold up the rear cover of the waste truck and prevent it accidentally falling.



**Figure 14-3:** Check and maintain all points of the waste truck for safety.



**Figure 14-4:** Collectors should immediately inform drivers of any points that need to be fixed.





# Chapter 3

## Work environment and personal protective equipment

(CHECKPOINT 15 – 19)

Waste collectors are working in an open-air environment. Their work is always affected by natural environmental factors such as strong sunshine, rain, or animals, birds and insects. Hazards stemming from community waste such as chemicals, dust and noise also influence their working conditions. This chapter provides tips to reduce these risks and improve safety and health in waste collection work. Once again, the chapter stresses the importance of community cooperation as they can do many things to improve the situation for safe and efficient waste collection and management systems.

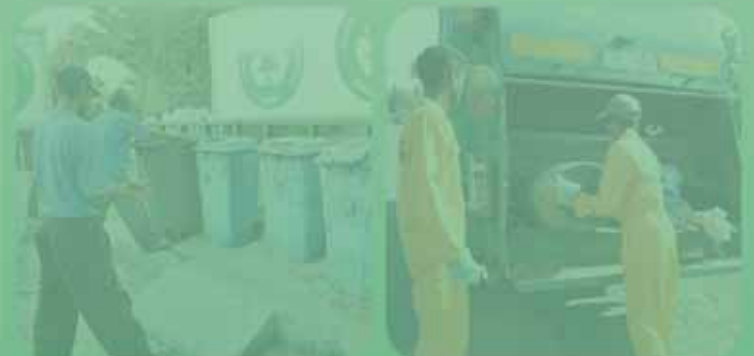
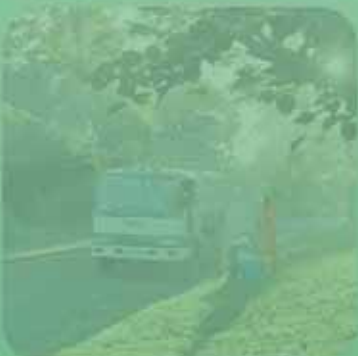
**CHECKPOINT 15:** *Protect waste collectors from heat, dust and noise*

**CHECKPOINT 16:** *Ensure safe work on rainy days and in the dark*

**CHECKPOINT 17:** *Be aware of hazardous substances*

**CHECKPOINT 18:** *Prevent animal bites and hazards*

**CHECKPOINT 19:** *Wear a cap, gloves, safety shoes, safety clothes and maintain them in good condition*



## CHECKPOINT 15

### *Protect waste collectors from heat, dust and noise*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors work outside for long hours every day picking up waste. They need to avoid heat stress and prevent dehydration. Heat from the sun increases the fatigue of collectors and also adversely affects the quality of their work. The community can help reduce this heat stress by placing waste collection areas in shaded areas, such as under a large tree.

Protecting waste collectors from dust and noise is also important for their safety and the quality of their services. Some waste containers contain sand or broken bricks and can spread a lot of dust when they are collected. Similarly, waste containers of bottles and cans can cause a high-pitched noise. Dust and noise affect the health of waste collectors and interrupt their work. Dust and noise also affect the quiet living environment of communities, especially in the early morning.

#### **HOW TO IMPROVE**

1. Select shaded areas as waste collection areas to place waste containers. This is helpful in reducing the heat stress of waste collectors.
2. Select waste collection areas in convenient places where waste collection trucks can park close to. This will allow waste collectors to minimize the distance they carry heavy waste and reduce heat stress.
3. Waste collectors and drivers should drink sufficient clean drinking water during their work to avoid dehydration.
4. Handle containers of cans and other metal waste as gently as possible to reduce noise.

5. It is ideal that bottles and cans have separate collection systems for recycling and not be collected with other general waste. The city council works toward this development.

#### **WAYS TO PROMOTE COOPERATION**

The community can minimize heat stress of waste collectors by relocating waste collection areas. For example, they can select a shady area and keep their waste containers together. Communities can tell waste collectors that they are ready to offer drinking water when needed. People also should use appropriate lids to cover waste containers of dusty materials and add a label mentioning, "Be aware of dust!"

#### **SOME MORE HINTS**

1. Use a strong plastic container instead of a metal container when placing bottles and glass materials to avoid noise.
2. Tie up the opening of waste containers if their contents are dusty.

#### ***POINTS TO REMEMBER***

Cooperation between waste collectors and communities minimizes heat, noise and dust sources in the waste.



**Figure 15-1:** Locate waste collection areas in a place where waste collectors can avoid strong heat from the sun, for example, under a large tree.



**Figure 15-2:** Waste collectors and drivers should have sufficient drinking water during their work.



**Figure 15-3:** Disposing of glass waste is noisy. Handle glass gently to prevent excessive noise.

## CHECKPOINT 16

### *Ensure safe work on rainy days and in the dark*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors always work in the open air environment, even on rainy days, to provide a quality service for the community. Waste collection work on rainy days is more dangerous as collectors carry heavy waste on slippery roads. In addition, waste collectors work in a wet and humid environment and easily become exhausted. Community cooperation is required, for example, by reducing the amount of waste on rainy days to make the work of collectors easier.

Waste collectors and drivers often have to work in the dark as they start their work in the early morning before sunrise. Some collectors may need to work at night for particular reasons. Waste collectors should work with special caution to prevent accidents due to slipping, stumbling or falling. Waste truck drivers also need to drive safely and carefully. As much as possible, waste collectors should minimize working in the dark by adjusting their work times.

#### **HOW TO IMPROVE**

1. Work at a slower pace on rainy days to avoid the possibility of accidents due to slipping.
2. Walk carefully between one collection area to another. Never run !
3. Wear a raincoat before starting the collection work. Ensure good visibility in front for safe work.
4. Suspend collection work temporarily during heavy rain. Wait until the heavy rain stops.
5. Minimize work in the dark by adjusting the collection time.

6. When working in the dark, provide a forehead lamp for the waste collectors.
7. Provide sufficient lighting to allow collectors to see dangerous moving parts of the waste truck, such as hydraulic power arms, rotating panels and wheels.
8. Drivers should drive slowly and safely in the dark.

#### **WAYS TO PROMOTE COOPERATION**

Working in the rain is dangerous and community cooperation and understanding are important for safe work. Try to reduce the amount of waste on rainy days. The community should also understand that collection services will be slower on rainy days for safety reasons. In the community where collection trucks come in the early morning, people should place their waste near a public light or private house lights where possible.

#### **SOME MORE HINTS**

1. Provide good quality personal protective equipment for waste collectors to ensure safe work on rainy days or in the dark.
2. The city council should call for public understanding about the slower service and changing collection time on rainy days.

#### ***POINTS TO REMEMBER***

Waste collectors need to work slowly and carefully on rainy days and in the dark; this requires public understanding.





Figure 16-1: Work slowly and carefully in the rain.



Figure 16-2: Good lighting increases the safety of waste collectors working in the dark.



Figure 16-3: Drive safely in the dark.

## CHECKPOINT 17

### *Be aware of hazardous substances*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors should be very careful when they find unknown, potentially dangerous waste. These are, for example, hazardous waste such as chemicals, medical waste, or smelly decayed materials. Waste collectors should report these to the office or the council and should not touch them. Also tell members of the community to stay away from these materials. Carelessly placed hazardous waste affects safe living in the community, too.

Hazardous waste from factories, markets or hospitals should be collected separately in industrial waste collection systems and not in public waste collection systems. Unfortunately, this hazardous waste is sometimes mixed with normal household waste without any notification. This is dangerous to both waste collectors and the community. Community cooperation is important to avoid placing hazardous waste into public waste collection areas.

#### **HOW TO IMPROVE**

1. Look at waste containers and contents carefully before picking them up. If in doubt about the type of waste, don't touch it.
2. Wear goggles, a mask and safety gloves when handling the waste.
3. Inform people in the community of the potential danger of the waste and tell them to stay away from the waste. Place a warning board if necessary.
4. Call the council and ask them to check it.
5. Smelly wet waste such as decayed vegetable or fruit waste is risky as well.

Wear protective goggles, a mask and gloves when handling the waste. Dirty liquids may cause eye infections in waste collectors.

#### **WAYS TO PROMOTE COOPERATION**

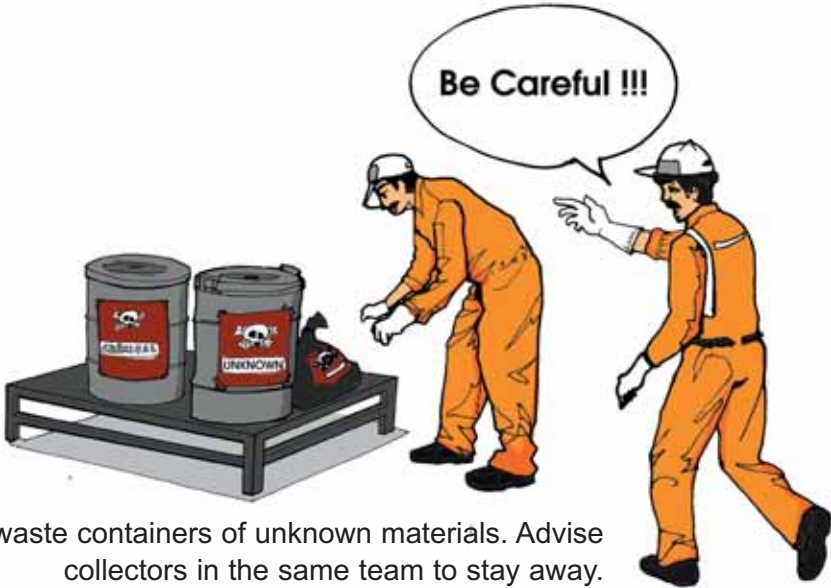
Ensure that all members of the community know that they are not allowed to place chemicals and other hazardous waste into the public waste collection systems. Design leaflets or other information materials to spread this instruction and distribute them to households. Tell people to contact the city council when they need to dispose of potentially hazardous waste. The council will instruct them on how to handle the waste safely.

#### **SOME MORE HINTS**

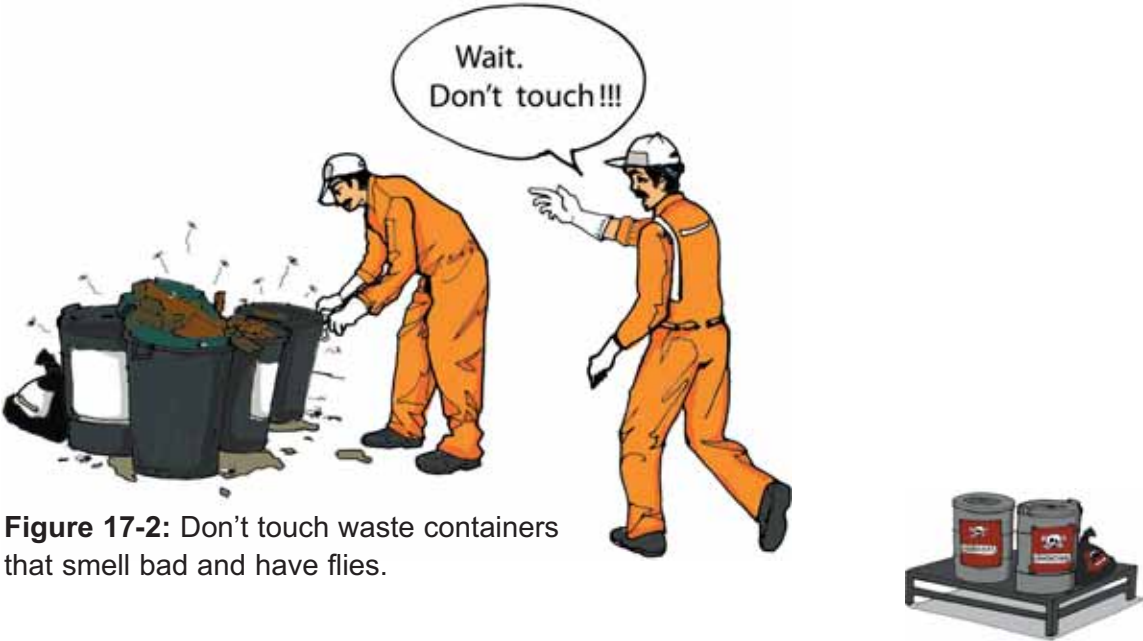
1. Provide training to waste collectors on how to identify hazardous chemicals and medical and other hazardous waste. Guide them on the reporting procedures to the council.
2. Provide adequate protective equipment for waste collectors to deal with different types of hazardous waste.

#### ***POINTS TO REMEMBER***

Train waste collectors to identify hazardous waste and not touch it.



**Figure 17-1:** Don't touch waste containers of unknown materials. Advise collectors in the same team to stay away.



**Figure 17-2:** Don't touch waste containers that smell bad and have flies.



**Figure 17-3:** Investigate hazardous materials placed in collection areas.

## CHECKPOINT 18

### *Prevent animal bites and hazards*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Animals, birds and insects such as dogs, cats, rats, crows, cockroaches, flies, ants, etc. come to waste storage areas to eat food and other waste. Some of them bite waste collectors, and others transmit infectious diseases. They are dangerous to communities, too. Cooperation between the community and waste collectors is important to prevent animal bites and hazards.

It is important to keep waste collection areas clean to prevent dogs, cats, crows and other animals and insects from coming. The community should not store waste for a long time in the storage area so that these animals and insects do not come. Waste collection areas damaged by animals and insects make collection work difficult and waste collectors take a longer time to collect the waste. Community life also suffers due to bad smells and unhygienic conditions. Looking for practical solutions to control disturbance by these animals is a priority for both waste collectors and the community.

#### **HOW TO IMPROVE**

1. Cover all waste containers with lids. When using plastic bags to store waste, tie up the opening of them tightly. It would be better to keep them inside waste containers.
2. Keep waste containers on a platform of an appropriate height to prevent dogs and insects getting to the waste. The height of the grips on the containers should be at around waist level of collectors for easy handling.
3. Clean waste storage and collection areas every day and keep them hygienic. Don't leave any left-over waste.
4. If there are many crows and birds, enclose waste containers in steel frames. Or, cover the containers and platforms with nets to keep them away.
5. Ensure that all dogs are kept inside and not allowed to stroll around the street. Families with dogs cooperate.

#### **WAYS TO PROMOTE COOPERATION**

Encourage the cooperation of everybody in the community for hygienic waste storage and collection. Tell them that dogs, cats and other animals and insects disturb the smooth waste collection and damage the comfortable community environment. Full collaboration from the community is useful in improving the situation. Discuss how to develop a community cooperation programme to keep waste collection areas clean and hygienic.

#### **SOME MORE HINTS**

1. Waste collectors and the community can discuss the waste pick-up time and inform everybody of the time set. This allows people to bring waste to the collection areas just in time for immediate pick-up, and avoid having dogs and other animals coming to the waste.
2. Waste collectors should immediately report injuries caused by dogs or other animals to the manager.

#### **POINTS TO REMEMBER**

Community cooperation prevents dogs, cats, birds, rats, cockroaches, and flies coming to waste collection areas.

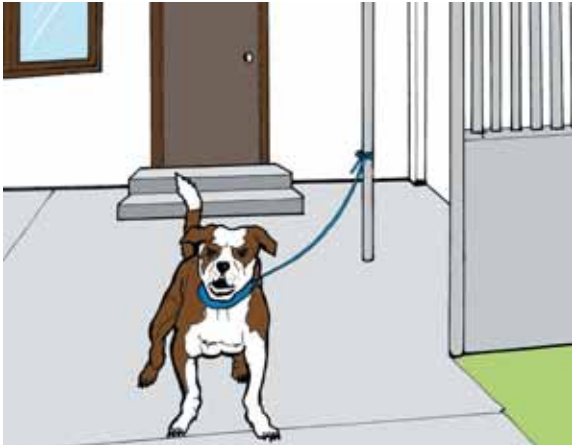




**Figure 18-1:** Keep waste collection areas clean and prevent animals, birds and insects from getting into the waste.



**Figure 18-2:** Enclosing waste containers can prevent animals and birds from coming to waste areas.



**Figure 18-3:** Keep dogs inside and don't allow them to come out. Prevent waste collectors from being bitten by dogs.



## CHECKPOINT 19

### *Wear a cap, gloves, safety shoes, safety clothes and maintain them in good condition*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Personal protective equipment (PPE) such as a safety cap, safety gloves, shoes and clothes, protect waste collectors from various hazards. A safety cap, for example, protects collectors from the sun and prevents heat stress. Safety goggles protect their eyes from sudden spillages of hazardous substances from waste containers. Safety gloves protect their hands from sharp items or insect bites. Bright coloured safety clothes help car drivers to easily see waste collectors working on the street and avoid traffic accidents. Using PPE promotes safety in collection work as well as the efficiency of waste management systems.

PPE needs to be well-maintained to be effective. Clean them after use, and place them in a designated area. If broken or torn, fix the problem immediately or change for a new one.

#### **HOW TO IMPROVE**

1. Provide waste collectors and drivers with a safety cap, safety shoes, gloves, goggles and clothes.
2. Safety clothes should be in a highly visible colour like yellow or orange to prevent traffic accidents during work on the street.
3. Managers and waste collection companies are responsible for providing adequate PPE to all collectors and drivers. The local government should also provide support.
4. Ensure that every collector receives the PPE which fits his body size.

5. Collectors should always use PPE while working.
6. Designate a PPE storage place to avoid losing them as well as to maintain them. Check the condition of the PPE regularly.
7. When a safety gear is broken or worn out, repair it swiftly. Don't use a broken one. If it cannot be repaired, change to a new one.

#### **WAYS TO PROMOTE COOPERATION**

Confirm that the best safety and health practices are to remove hazards themselves rather than to ask collectors to just wear PPE. The community, managers and waste collectors should continue to improve safety and health of waste collection systems and should not be satisfied with just providing PPE to collectors. PPE is not perfect. We can prevent accidents and injuries only when we have strong community cooperation.

#### **SOME MORE HINTS**

1. Train waste collectors in the correct use and maintenance of PPE.
2. Provide appropriate masks or respiratory gear when collectors have to handle dusty waste or chemical waste. There are PPEs specially designed to protect workers from these hazards.
3. Provide rain coats for work on rainy days.
4. A forehead lamp and appropriate lighting are needed for safe work in the dark.

#### **POINTS TO REMEMBER**

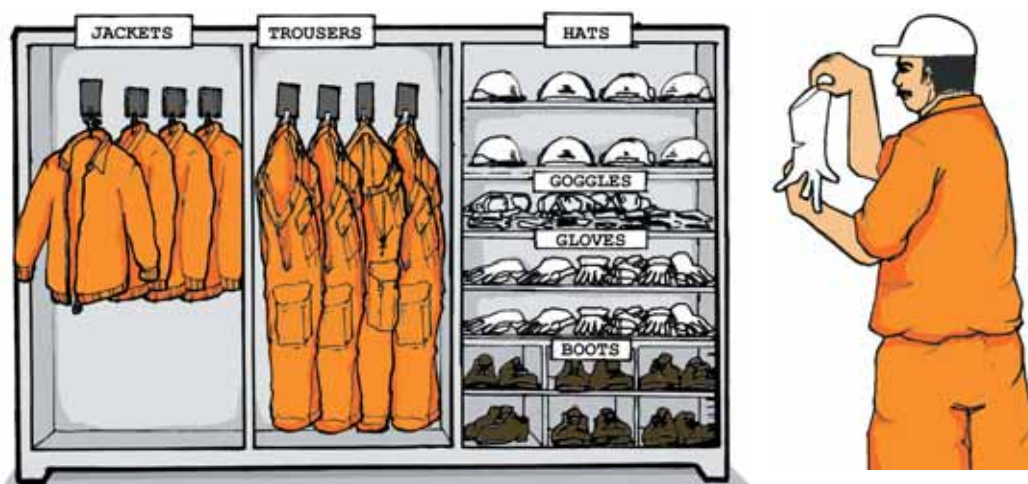
Select and use the correct PPE for its effective use.



**Figure 19-1:** Wear safety gloves and shoes. Work clothes should be in a highly visible colour to prevent traffic accidents.



**Figure 19-2:** Check your safety shoes and other protective gear regularly to ensure they are in good condition.



**Figure 19-3:** Maintain personal protective equipment in good condition. Change to a new one as soon as possible if broken or torn.



# Chapter 4

## Welfare facilities and work organization

(CHECKPOINT 20 – 27)

Waste collectors need adequate welfare facilities such as safe drinking water, toilets, comfortable eating places, or recreation facilities. Appropriate work time arrangements, training and team work development promote good work organization that can contribute to safe and efficient waste collection systems. This chapter offers some practical ideas on how to establish well-organized waste collection work. Cooperation between waste collectors and the community is the key to the success.

**CHECKPOINT 20:** *Provide sanitary toilets and washing facilities*

**CHECKPOINT 21:** *Provide resting corners and recreation facilities*

**CHECKPOINT 22:** *Have appropriate eating places*

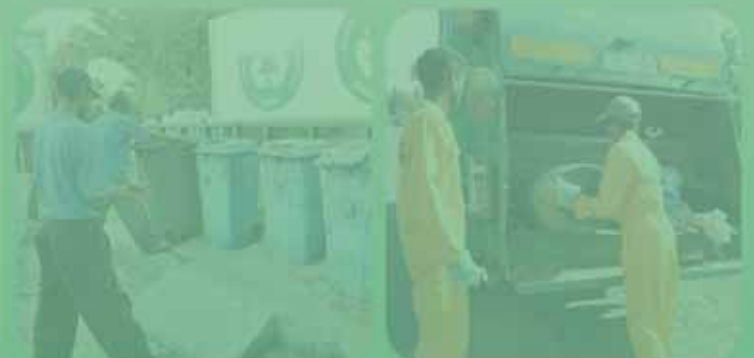
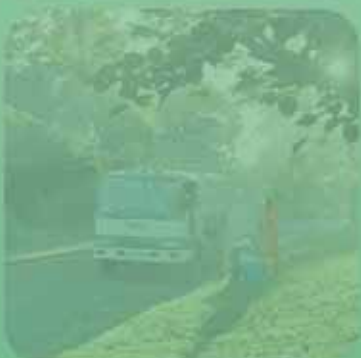
**CHECKPOINT 23:** *Provide first aid kits and ensure that everybody knows how to use them*

**CHECKPOINT 24:** *Discuss and plan waste collection work in the team for safer and easier collection*

**CHECKPOINT 25:** *Have appropriate work times, take short breaks and regular holidays*

**CHECKPOINT 26:** *Report accidents and injuries for swift treatment and discuss unsafe events with the team to prevent accidents*

**CHECKPOINT 27:** *Provide safety and health training to all workers*



## CHECKPOINT 20

### *Provide sanitary toilets and washing facilities*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors need sanitary toilets, washing facilities and sufficient drinking water for safe and efficient waste collection work. They cannot concentrate on work if toilets are not available when needed. It is important to allow waste collectors to use public toilets during waste collection work.

Washing facilities are equally important for waste collectors. They need to wash their hands from time to time during the collection work to ensure safety, especially after handling wet or hazardous waste. Some public facilities should allow waste collectors to use available washing facilities. Community cooperation and understanding are required to find both appropriate toilets and washing facilities for waste collectors.

#### **HOW TO IMPROVE**

1. Key facilities for waste collectors such as offices, sites for parking and washing trucks, and waste dumping areas should have clean toilets and washing facilities.
2. A sufficient number of toilets and washing basins should be available for waste collectors and drivers. Several waste collection teams and other workers may use the facilities at the same time.
3. The toilets and washing facilities should be cleaned regularly to keep them in good condition.
4. Waste collectors should know where there are available toilets for their needs. They can also use public toilets in parks and other public places.
5. It is ideal for waste collectors to take a shower after waste collection work before going home.

#### **WAYS TO PROMOTE COOPERATION**

Toilets and washing facilities are fundamental needs for waste collectors. The availability of these facilities affects the safety and efficiency of the collection work. Communities and city councils should help locate available toilets and washing facilities for the safety and health of waste collectors. As well as public facilities, collectors may need to use toilets or washing facilities in the community or in private houses for their immediate needs.

#### **SOME MORE HINTS**

1. Waste collectors need to wash off hazardous substances from their bodies immediately after being exposed to them. The community should allow collectors to use showering and washing facilities in an emergency.
2. Have a toilet break whenever a collector in the team needs it. Collectors may be at risk of an accident when continuing their work without going to the toilet.
3. Collectors should have washing facilities for their work uniforms and also lockers to store them.
4. Waste collectors should have sufficient drinking water during their work to prevent dehydration.

#### ***POINTS TO REMEMBER***

Toilet and washing facilities are the basic needs of waste collectors and should be available during their work.



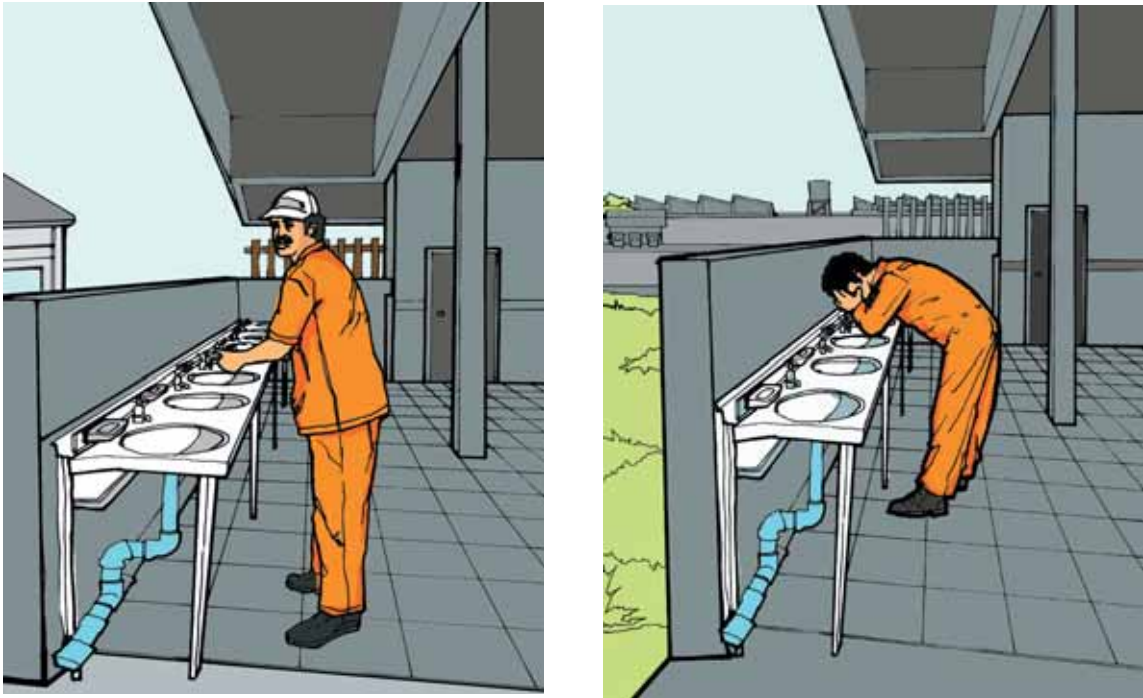


Figure 20-1: Waste collectors need convenient washing facilities.

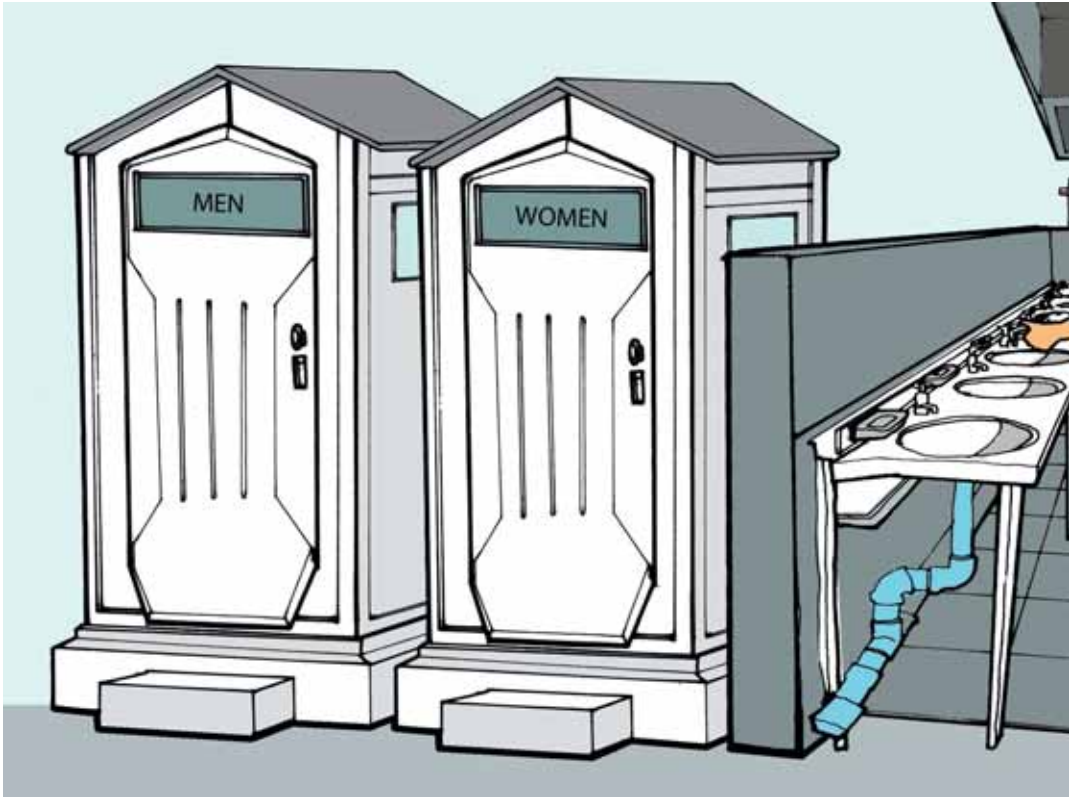


Figure 20-2: Toilets should be kept hygienic and separated for men and women.

## CHECKPOINT 21

### *Provide resting corners and recreation facilities*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Comfortable resting corners make short breaks pleasant and effective for waste collectors. These facilities can be made at low-cost and help collectors recover from fatigue. Tired collectors lose attention to safety needs and can be at a higher risk of accidents. Fatigue also lowers the quality of the collection work service.

Simple recreation facilities made by using available spaces make the waste collectors' break time more pleasant. Waste collectors can enjoy sports and games. Adequate exercises would have benefits for health and are also good for team building.

#### **HOW TO IMPROVE**

1. Establish resting corners by using available spaces. Start with the provision of simple facilities such as tables, chairs or benches. Improve the resting area step-by-step. Exchange ideas with other collectors.
2. Choose a pleasant, comfortable place for the resting corner. For example, near a big tree for shade out of the sun, or flowers for fun. Avoid places near toilets or waste.
3. Provide simple board games, newspapers or magazines in the resting corner for the enjoyment of everybody. The waste collection team may be able to enjoy sports by using available spaces.
4. It would be nicer if the resting corner could have clean drinking water, and facilities to make tea and coffee.
5. Some waste collectors may want to lie down during the break time. Arranging simple sofas or carpets would help.

#### **WAYS TO PROMOTE COOPERATION**

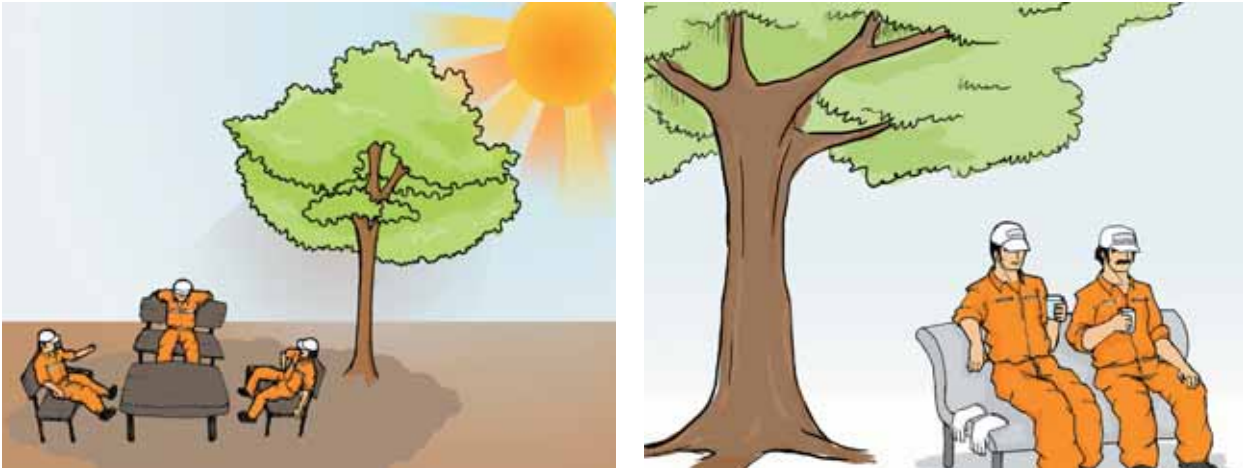
The community can assist collection workers in establishing their resting corners. Someone's used chairs and tables can be reused in the resting corner for waste collectors. The city council may be able to find some space for resting corners. There should be some occasions when a waste collection team and the community enjoy sports and games together. Certainly, these activities increase communication and cooperation to create better waste collection and management systems.

#### **SOME MORE HINTS**

1. Waste collectors need appropriate break times to avoid becoming over-fatigued during their work.
2. Collectors can bring flowers and small trees to the resting area. They would make the corner more pleasant and comfortable.
3. Resting areas can be the place for communication of collectors with other collection teams or other workers engaged in the waste management system. They can jointly develop, use and further improve their resting corners and recreational facilities.
4. A closed space should be prepared for female workers, particularly nursing mothers.

#### **POINTS TO REMEMBER**

Pleasant resting corners increase communication and cooperation among waste collectors.



**Figure 21-1:** Convenient, low-cost resting facilities facilitate the recovery of waste collectors from fatigue and ensure safe and efficient work.



**Figure 21-2:** Simple game facilities make the break time of waste collectors pleasant and help strengthen their teamwork.



**Figure 21-3:** Recreational activities also strengthen teamwork. Collectors can enjoy some sport activities after work by using available spaces.

## CHECKPOINT 22

### *Have appropriate eating places*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors need a good lunch between the morning and afternoon work. Appropriate eating places for collectors make the lunch pleasant and help them recover from fatigue. Afternoon work without having lunch is not recommended. Hungry collectors may make mistakes in the work and can have an increased risk of accidents. Pleasant lunch breaks for collectors promote quality waste collection services to the community.

It is important to find an appropriate eating place for collectors. They may use, for example, the waste collection office, a parking area for waste trucks, or a restaurant for lunch. They may also need to secure a parking spot for their truck during the lunch break.

#### **HOW TO IMPROVE**

1. Ensure lunch breaks and find an appropriate place to have lunch.
2. Exchange ideas among the waste collection team. There should be several options for an eating place such as the waste company office, the office of a waste dumping area, a public park, or a private restaurant.
3. Consult the city council to secure an appropriate lunch place and also secure a parking space during the lunch break.
4. The eating place should have washing facilities for waste collectors to wash hands before having lunch. If there are no washing facilities, an option is to wash hands and then move to an eating place.

#### **WAYS TO PROMOTE COOPERATION**

Securing an appropriate lunch place is a challenge for waste collectors. Cooperation

from the city council and the community are very important. They can help collectors to find an appropriate eating place for their lunch and also assist in identifying a parking spot during the lunch break. Waste collectors can continue quality collection services in the afternoon after having a decent lunch break.

#### **SOME MORE HINTS**

1. Make the eating environment pleasant and comfortable. For example, plant a tree or flowers near the eating area.
2. During lunch breaks, waste collectors can enjoy reading the newspapers, or playing simple games.
3. Having a short nap during the lunch break is useful for recovering from fatigue and promoting safe and efficient work in the afternoon.
4. Take a good breakfast even if starting work early in the morning. Hungry collectors who have not had breakfast could have a higher risk of an accident.
5. Waste collectors should have balanced eating habits. They should take breakfast, lunch and dinner regularly.
6. It is ideal to have a canteen for waste collectors and drivers and waste workers. Cooperate with other waste collection teams or companies to discuss the possibility of establishing this. The city council and community may help.

#### **POINTS TO REMEMBER**

Appropriate eating places ensure pleasant lunch breaks for waste collectors and enhance the quality of the afternoon work.





**Figure 22-1:** A comfortable canteen for waste collectors makes their lunch more pleasant.



**Figure 22-2:** Eating places should have washing facilities to clean hands before eating.



**Figure 22-3:** Greenery makes a pleasant eating environment.



## CHECKPOINT 23

### *Provide first aid kits and ensure that everybody knows how to use them*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Appropriate first aid could save the life of waste collectors in case of an accident and emergency. There are many risks of injury in waste collection work. They are, for example, cutting injuries from sharp materials, injuries from slips and falls, skin problems from hazardous substances contained in the waste. First aid is important to provide an immediate remedy. All the waste collectors should know where the first aid kit is and how to use it.

Representatives of waste collectors should have basic first aid training. Managers and the city council would help make such an opportunity. The first-aiders regularly check the contents of the first aid equipment. In an emergency, they provide a patient with first aid treatment before the patient is transferred to hospital.

#### **HOW TO IMPROVE**

1. Keep the first aid kit in an easy-to-see place in the waste truck. Let all collectors and drivers know where it is.
2. Select the drugs and equipment for the first aid kit that are necessary for emergency injury treatment. They are: sanitary cotton, gauzes, alcohol and other antiseptics, bandages, scissors, etc.
3. Prepare an emergency plan in the waste collection team in cooperation with other teams. Identify a clinic or hospital near the workplace and secure transport measures in case of an emergency.
4. The waste collection team can add drugs to relieve common symptoms to the first aid kit, for example, drugs for a common

cold, fever or diarrhea. These common drugs should be in a separate compartment from the emergency treatment set and need to be kept in a dark and cool place.

#### **WAYS TO PROMOTE COOPERATION**

Community cooperation is required to ensure that there are no dangerous materials in the waste storage that can cause injuries. The city council can help develop basic rules about separation of waste and also prohibition of types of waste. The council can also help waste collection teams with basic first aid training and also with developing an emergency plan in consultation with clinics and hospitals. The community can also cooperate, for example, by transferring patients to the hospital in an emergency.

#### **SOME MORE HINTS**

1. There should be regular maintenance of the first aid kits and equipment. Replace old kits with new ones.
2. The trained first-aiders should also have follow-up support. The trained aiders may gather together regularly to exchange experiences.
3. The first aid kit should be located out of reach of children.

#### **POINTS TO REMEMBER**

Prepare for an emergency. Having first aid kits is the important starting point.

**Figure 23-1:** First aid kits should be available in all waste trucks to provide immediate treatment.



**Figure 23-2:** Train first aiders in the waste collection team.



**Figure 23-3:** Prepare an emergency plan to transfer injured waste collectors to the nearest hospital.

## CHECKPOINT 24

### *Discuss and plan waste collection work in the team for safer and easier collection*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Every member of the waste collection team, collectors and drivers, has many practical ideas for safer and easier collection through the experiences of their everyday work. It is important to use their ideas to establish efficient waste collection systems. The city council and the community cooperate for practical actions. The improvements should also include aspects of traffic safety of waste collection systems.

Waste collectors should have regular opportunities to exchange ideas for improvements. For example, they can have a 5-minute morning safety talk before starting work, or monthly safety and health committee meetings. Other waste collector teams, community representatives and the council can also participate in these safety talk opportunities for putting their ideas into practice.

#### **HOW TO IMPROVE**

1. Schedule a short meeting of the waste collection team to improve safety and health in the collection work. They should have many ideas from their work experiences.
2. You may organize this meeting with other waste collection teams or workers engaged in the waste collection work.
3. Based on the discussion, try to come up with concrete improvement proposals.
4. Ask for cooperation from the city council and the community. Invite them to join the discussion to make their ideas happen.
5. It is always a good idea to visit an actual collection area to see the real situation.

Discussion in the actual collection area could be even more practical and concrete.

6. Make the meetings a regular practice among the waste collection team. Five-minute morning talks everyday on safety and health, or monthly occupational safety and health (OSH) committee meetings are possible examples.

#### **WAYS TO PROMOTE COOPERATION**

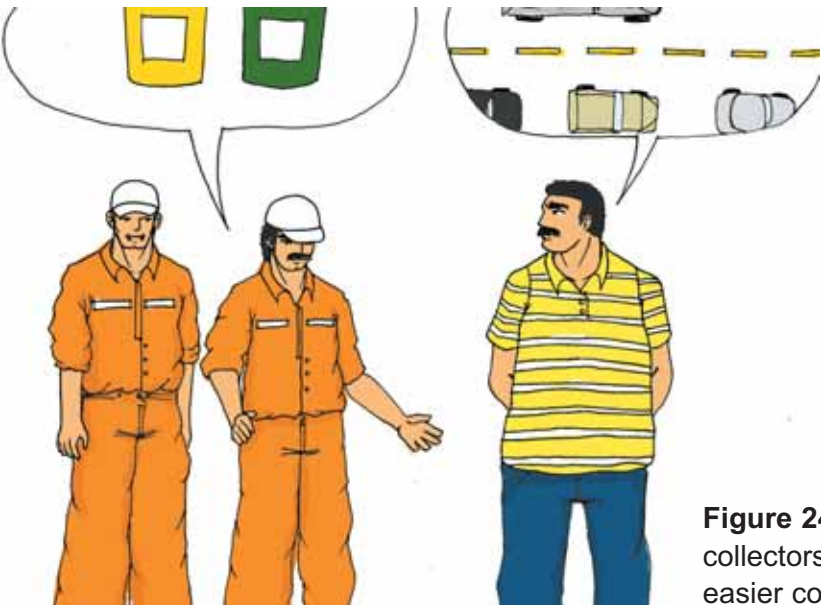
Representatives of the community and the city council can actively contribute to the collectors' discussion for improvement. Schedule a joint meeting at a convenient time for everyone. Collect examples of existing local good practices which make waste collection work safer and more efficient. Learning from good examples, the discussions can be more productive for joint actions.

#### **SOME MORE HINTS**

1. Start with simple, low-cost improvement ideas first and then challenge onto more expensive solutions step-by-step.
2. Be positive and constructive. Don't blame anyone and don't focus on bad examples in the meeting.
3. Apply the WARM manual checklist together with other waste collector teams and representatives of the community and the city council.

#### **POINTS TO REMEMBER**

Gathering everybody's ideas can create safe and efficient waste collection systems.



**Figure 24-1:** Exchange ideas among waste collectors and drivers about safer and easier collection work.



**Figure 24-2:** Organize a joint visit to waste collection areas to discuss possible improvements.



**Figure 24-3:** Invite the community to reflect on their ideas for improvements.



## CHECKPOINT 25

### *Have appropriate working time, short breaks and regular holidays*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors need an appropriate work schedule that avoids long working hours without breaks and can ensure their safety and health. A well-organized work schedule prevents over-fatigue and ensures the safe and efficient work of collectors. It is also important to insert frequent short breaks. Long working hours without breaks cause over-fatigue of collectors.

Waste collectors need regular weekend holidays as well as seasonal long holidays such as the new year holiday. They are particularly important to their family lives and good work-life balance. After the weekend and long holidays, waste collectors can return to work with a fresh attitude and able to work actively and safely.

#### **HOW TO IMPROVE**

1. The work time per day should be not longer than around 8 hours. Insert a lunch break and at least two short breaks, one in the morning and another in the afternoon.
2. Secure regular weekend holidays and adjust the work schedule for this purpose.
3. National holidays and seasonal holidays should also be holidays for waste collectors.
4. Avoid working in the dark as much as possible. Adjust the work times season by season to avoid working in the dark in the early morning.

#### **WAYS TO PROMOTE COOPERATION**

The waste collection team should discuss appropriate daily and annual work schedule arrangements. The city council can help to

gain consensus with the community so that both sides receive the maximum benefits. Let the community know the collection schedules and holidays for waste collection. Ask for community cooperation not to place waste in waste collection areas when waste collectors are not working.

#### **SOME MORE HINTS**

1. Pay attention to seasonal changes in work load to adjust work schedules. For example, there would be a lot of waste after a festival.
2. Discuss how the team can ensure safe practices when you cannot avoid working in the dark.
3. Secure five to ten minutes for morning physical exercises before starting work. Warming up muscles before work would help waste collectors avoid back injuries.
4. If waste collectors cannot take weekend holidays or national holidays due to unavoidable public needs, provide them with special supplement holidays to rest.
5. Waste collectors can use their time off to study their needs and promote their work careers.
6. Allow waste collectors and drivers sick leave when they are injured or sick. Ensure that their jobs are secure. Working before full recovery could worsen the problem and increase the risk of accidents at work.

#### **POINTS TO REMEMBER**

Sound work time arrangements are the basis for safe and efficient waste collection systems.





**Figure 25-1:** Prepare a sound work plan to avoid over work. Work in the dark should be minimized.



**Figure 25-2:** Take regular weekend holidays for a happy family life.



**Figure 25-3:** Secure 10 minutes for morning physical exercises before starting work.



**Figure 25-4:** Frequent short breaks facilitate recovery from fatigue.

## CHECKPOINT 26

### *Report accidents and injuries to ensure early treatment and discuss unsafe events with the team to prevent accidents*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors need to immediately report accidents and injuries caused by their work to their manager in the waste collection company. Examples could be sudden back injuries because of heavy waste, cuts from sharp objects, dog bites, or skin problems caused by hazardous substances. The managers should keep records and review them to prevent future accidents and diseases. Collectors should also report unsafe events and potential hazards to the team and the manager to discuss improvements.

Accidents and injuries to waste collectors affect the community. Many in the community would be embarrassed if waste collectors were accidentally injured because of unsafe waste coming from their community. Quality collection services by experienced waste collectors might be suspended due to accidents. Cooperation of the community is quite important for safe and efficient collection systems.

#### **HOW TO IMPROVE**

1. Waste collectors should quickly report any injury and disease caused by the work to the manager to ensure early treatment.
2. Collectors should inform the manager of unsafe events and unsafe collection areas.
3. The manager and collectors should jointly review the accident and injury records. Develop an improvement proposal and send it to the city council.
4. Collectors may directly inform the community of certain accidents and unsafe events and seek their cooperation

for improvements in a constructive manner.

5. Injured collectors and drivers should have adequate medical treatment for a quick recovery.

#### **WAYS TO PROMOTE COOPERATION**

The waste collection team, the community and the city council should work together to prevent accidents and unsafe events. They should have opportunities to share information and have meetings and discussions for continuous improvements. They can take immediate action to fix minor problems. If the problem is bigger and needs the cooperation of many people, they can fix the problem step-by-step. Their constant communications with the community are important to keep the collection systems running safely and efficiently.

#### **SOME MORE HINTS**

1. Injured waste collectors need cooperation from their team to take sick leave, or slow down the speed of collection work. The team should help the injured collector and work out a solution together.
2. The managers and council should secure the employment of injured collectors and support their efforts to recover.
3. Discuss and identify appropriate employment injury insurance schemes for waste collectors and drivers.

#### **POINTS TO REMEMBER**

Reporting accidents and injuries is important for prevention as well as for treatment.



Figure 26-1: Report injuries and diseases quickly to the manager.



Figure 26-2: Keep records of accidents and injuries to waste collectors. Discuss practical measures to prevent them.



Figure 26-3: List unsafe waste collection areas and discuss proposals for improvements.

## CHECKPOINT 27

### *Provide safety and health training for all workers*

#### **BENEFITS FOR WASTE COLLECTORS AND COMMUNITIES**

Waste collectors and drivers need practical training to make their work safe and efficient. Trained collectors know how to avoid danger in their collection work and contribute to efficient waste management in the community as a professional.

Collectors should be trained in several ways. They can learn about possible safety and health risks associated with their collection work and also about how to use personal protective equipment. Drivers need to learn the safe use of waste trucks during their collection work. Equally important is that trainees visit real collection areas and see how experienced collectors work. Waste collectors should also learn how to cooperate with communities to promote reuse and recycling of waste.

#### **HOW TO IMPROVE**

1. Waste collectors and drivers should train newcomers in practical safety and health practices. Use this WARM training manual to provide practical information on the safe handling of waste, the safety of waste trucks, the work environment and personal protective equipment, and welfare facilities and work organizations.
2. Take new waste collectors to actual collection areas and let them see how experienced collectors and drivers perform their work safely.
3. Collectors and drivers should also meet community representatives and listen to their opinions on how to improve collection work. Training is an opportunity to build a collaborative tie with the

community for better waste management systems.

#### **WAYS TO PROMOTE COOPERATION**

Training should avoid the one-way teaching and promote interactive discussions between trainees and trainers to discuss joint improvements. Experienced waste collectors, managers, representatives of the city council and the community can use local good examples of safe collection work in the training. The training should apply group work methods to encourage trainees to find safety and health risks and propose improvements.

#### **SOME MORE HINTS**

1. Experienced collectors can also learn from newcomers as they come with fresh eyes to look at existing conditions in waste collection work. Ask them about ideas for improvements.
2. Training is a continuous procedure. Plan a follow-up training opportunity.
3. Whenever there is a change in the work method, collectors and drivers should be informed of the change and trained in the new methods. For example, should there be a new rotation panel attached to the collection truck, a new style of waste containers, or new safety clothes, collectors and drivers should receive training in any changes required.

#### ***POINTS TO REMEMBER***

Training helps waste collectors and communities develop effective waste management systems.





**Figure 27-1:** All waste collectors should be trained in how to protect themselves from safety and health risks in their work.



**Figure 27-2:** Waste collectors should know how to use fire extinguishers.



**Figure 27-3:** New collectors can learn safe methods of collection work from experienced collectors on site.





Safe and efficient waste collection systems are the foundation for recycling and managing waste and protecting our environment. Waste collectors contribute to cleaning our environment through their collection work day-by-day. However, waste collectors often face many risks associated with their collection work such as handling heavy and dangerous waste, traffic accidents, or hot working environment.

The WARM (Work Adjustment for Recycling and Managing Waste) training manual aims to improve the safety, health and efficiency of waste collection work. The manual was born from the joint effort of the people in Fiji, ILO's Green Jobs Initiatives and JICA's initiatives to promote 3R (reduce, reuse and recycle wastes). The manual uses many illustrations of good examples that waste collectors and managers can put to immediate use. ILO's participatory training approaches are fully applied in the manual. The manual promotes practical collaborative actions between waste collectors and the community for establishing safe and efficient waste collection systems in Fiji and other countries.

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