

Guideline of Food Waste Measurement

1. Aims

- ✧ Environmental Protection Department is committed to encouraging schools for implementing green lunch measures in particular on-site meal portioning, so as to reduce food waste and the use of disposable lunch boxes and cutleries at schools. Apart from implementing on-site meal portioning in a centralized location in the campus, schools can adopt other green lunch practices by taking into account the actual school situations, such as conducting the meal portioning according to the grade of students at classrooms on each floor, or distributing lunch boxes containing different amount of food on a need basis.
- ✧ To evaluate the effectiveness of the green lunch practices, schools are recommended to measure and record the food waste quantity BEFORE and AFTER implementing the green lunch practices. By referring to the food waste data, schools can monitor their food waste generation, review their food waste reduction measures and targets, and so formulate suitable food waste reduction action plan for schools.
- ✧ Food waste data can be obtained from lunch suppliers or gathered on schools' own. Schools are recommended to appoint students as Food Waste Ambassadors to measure food waste and disseminate waste reduction messages at school.
- ✧ In case green lunch practice is yet to be implemented at schools, we also recommend the schools to refer to this guideline and conduct the measurements, in order to get some primary understanding about the food waste generation at schools, ultimately formulate appropriate food waste reduction measures.

2. Equipment Used

- ✧ Data sheet, scales, garbage bags and food waste collection bins, etc.

3. Collection of Data Before and After Implementing Green Lunch Practices

Before implementing green lunch practices:

- ✧ Schools should measure and record the amount of food waste produced from lunch before implementing green lunch arrangements. *(Depending on the number of days after which the lunch menu repeats, it is recommended to collect data for at least five days and take average. For example, if lunch menu are different everyday on 5 weekdays, please collect data for five days; or if lunch menu are repeated within a week, please also collect data for five days.)*
- ✧ Starting from Monday, collect data every day and continue for at least five days until the lunch menu is repeated. For example, lunch menu from 5th to 9th are different while that on 5th and 12th are same. Collect data from 5th to 9th and take average.

Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

After implementing green lunch practices:

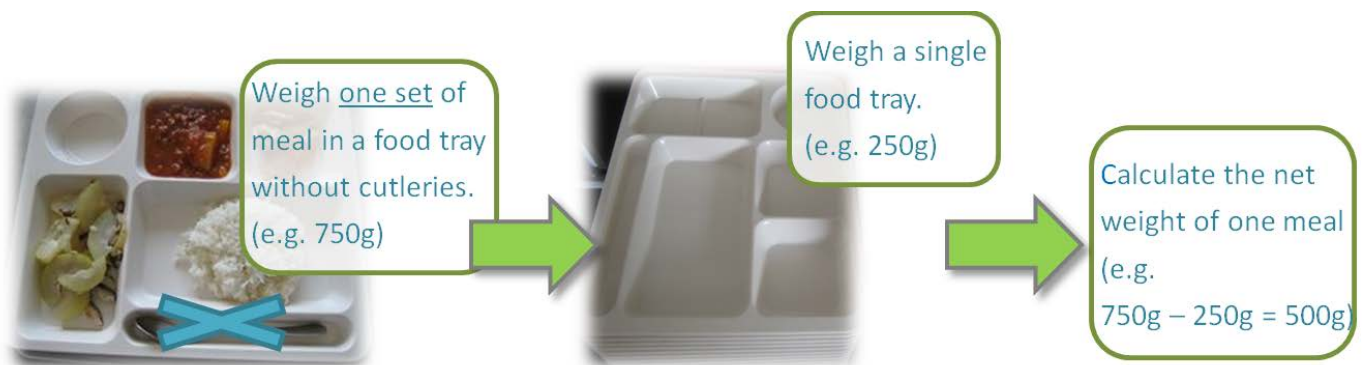
- ✧ After implementing on-site meal portioning, schools should measure and record quantity of food waste every school day for monitoring the effectiveness of the measures taken.

4. Procedures of Measuring Amounts of Food and Food Waste

- ✧ Schools may have single type of lunch arrangement or simultaneously with more than, including
 - On-site meal portioning: Facilities are installed at school for on-site cooking of rice and vegetables. Lunch served in trays are distributed to students in dining area or classrooms by the lunch supplier.
 - Provision of Lunch Boxes: Rice and vegetables are cooked in food factories and pre-packed in lunch boxes. The lunch supplier delivers the lunch to schools.
 - Other lunch arrangements: Rice and vegetables are cooked in food factories and then delivered to schools for on-site meal portioning. Students have lunch served in food trays in dining area or classrooms.
- ✧ Daily total amounts of food supplied and food waste generated can be obtained from lunch suppliers or taken on schools' own. Procedures of measurement are illustrated as follows.

Step 1: Measuring weight of food provided by lunch suppliers

a) Measuring food quantity from on-site meal portioning:



b) Measuring food quantity in lunch box:

- Weigh one lunch box with food inside. (e.g. 550g)
- Weigh one empty lunch box. (e.g. 50 g)
- Calculate the net weight of one meal (e.g. 550g – 50g = 500g)

c) Measuring food quantity from other lunch arrangements:

Draw reference from above methods.

Step 2: Measuring weight of food waste

a) Measuring food waste quantity from on-site meal portioning:



☺ : If food like banana and chicken wings are provided in the lunch menu, food waste including fruit peel and bone will be unavoidable, so please take into account the variation of lunch menu every day when carrying out the data collection and analysis.

a) Measuring food waste left in lunch boxes:

- I. Weigh the food waste container (such as a garbage bag) (e.g. 50g)
- II. Pour all the food waste from the lunch boxes into a garbage bag, then weigh the food waste together with the garbage bag. (e.g. 1500g)
- III. Calculate the net weight of food waste (e.g. $1500g - 50g = 1450g$)

b) Measuring food waste generated from other lunch arrangements:

Draw reference from above methods.

☺ Schools can separately collect food waste produced from different lunch arrangements for comparison and reference.

(e.g. Food waste collected from on-site meal portioning → 15kg;
Food waste collected from lunch boxes → 30kg)

Step 3: Calculation and Analysis

Example

Data collected over 5 days before implementing on site meal portioning

	Day 1	Day 2	Day 3	Day 4	Day 5
Weight of each meal (g)	500	450	500	450	500
Weight of food waste (kg)	30	32	34	36	38
No. of meals provided/No. of students having lunch from the supplier at school	150	160	150	160	150

Examples of calculating the 5-day average before implementing on site meal portioning:

1. Weight of each meal = $(500g + 450g + 500g + 450g + 500g) / 5 \text{ days} = 480g$

2. Total weight of food waste per day = $(30\text{kg}+32\text{kg}+34\text{kg}+36\text{kg}+38\text{kg})/5 \text{ days} = 34\text{kg}$
 3. No of meal provided per day (No of students having lunch at school per day)
= $(150+160+150+160+150)/5 \text{ days} = 154$
 4. Total weight of food provided at school per day = Weight of each meal (480g) x No of meal provided per day (154) = 73.92 kg
 5. Weight of food waste generated per student = Total weight of food waste per day (34kg)/ No of students having lunch at school per day (154) = 0.22kg
 6. Apart from weights, percentage of total amount of food converting to food waste after lunch can be calculated for reference = Total weight of food waste per day (34kg) / Total weight of food provided at school per day (73.92kg) x100% = 46%
- ✧ **Comparisons can be made between the food waste data BEFORE & AFTER the implementation of onsite meal portioning, in order to evaluate the effectiveness of the measures taken.**

5. Data Record and Monitoring

- ✧ Schools should keep records of food waste data to monitor the effectiveness of the green lunch measures. Those records can be posted on the bulletin boards at schools or disseminated to students for increasing awareness on green lunch and food waste reduction.

6. More Information for Green Lunch

- ✧ To obtain more detailed information of green lunch, please visit the websites below:

Hong Kong Waste Reduction Website – Green Lunch

<https://www.wastereduction.gov.hk/en/green-lunch.html>

Food Wise Hong Kong Campaign Website – Food Waste Reduction Good Practice Guide for Educational Sector

http://www.foodwisehk.gov.hk/pdf/School_GPG_ENG.pdf

Education Bureau Website – Guidelines on Meal Arrangements in Schools

http://www.edb.gov.hk/attachment/en/sch-admin/admin/about-sch/meal%20arrangement%20guidelines_Eng_2015.pdf

Centre for Food Safety of Food and Environmental Hygiene Department Website – Guidelines on How to Ensure School Lunches Ordered are Safe

http://www.cfs.gov.hk/english/multimedia/multimedia_pub/files/school_lunches_ordered_are_safe.pdf

7. Enquiry

- ✧ Should you have any questions about this guide or implementation of green lunch by schools, please contact the Customer Services Centre of Environmental Protection Department.
(Tel no.: 2838 3111; Email: enquiry@epd.gov.hk)

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