

## **8.2 ZeroWaste Project**

### 8.2.1 Objectives

1. To investigate the response of NUS community towards paper recycling
2. To identify the potential needs of having paper recycle bins for exam period
3. To promote student awareness about the importance of recycling
4. To encourage student to recycle wastepaper and notes
5. To foster an environmentally friendly culture within NUS campus

### 8.2.2 Current Situation

1. There is no special arrangement to put extra recycle bins in special event
2. There are only two paper recycle bins in the identified location and they are located far away from the main door of MPSH Exam Hall
3. Furthermore, it is hypothesized to generate high amount of waste paper or to dispose of lecture notes after exam

### 8.2.3 Research Methodology

#### 8.2.3.1 Research Setup

#### **I) Special Event**

The special event chosen as research is NUS 2007/2008 Semester 2 examination.

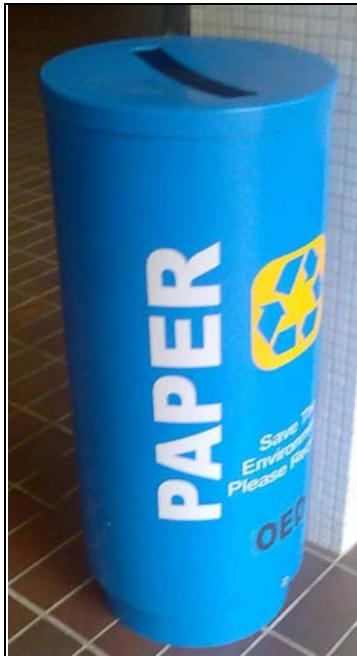
#### **II) Monitoring Period**

This research is held from 24 April 2008 to 10 May 2008 (18 days). The paper recycle bins were placed 3pm on 22 April 2008. They were being removed on 3pm on 14 May 2008.

### III) Resources Used

With the collaboration of Mr Supari, OED provided 10 paper recycle bins in total

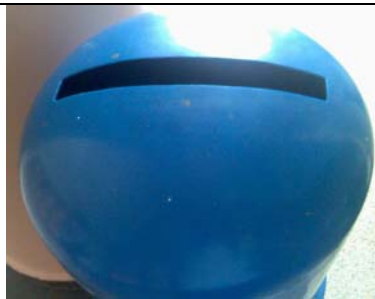
- a) Existing: 2 of 85L paper recycle bins (*Picture 1*)
- b) Additional: 3 of 85L (*Picture 1*) and 5 of 120L paper recycle bins (*Picture 2*)



*Picture 1: Slit Opening of 85L Paper Recycle Bin*



*Picture 2: Round Opening of 120L Paper Recycle Bin*



*Picture 3: Narrow Slit Opening That only Allow A4 paper*

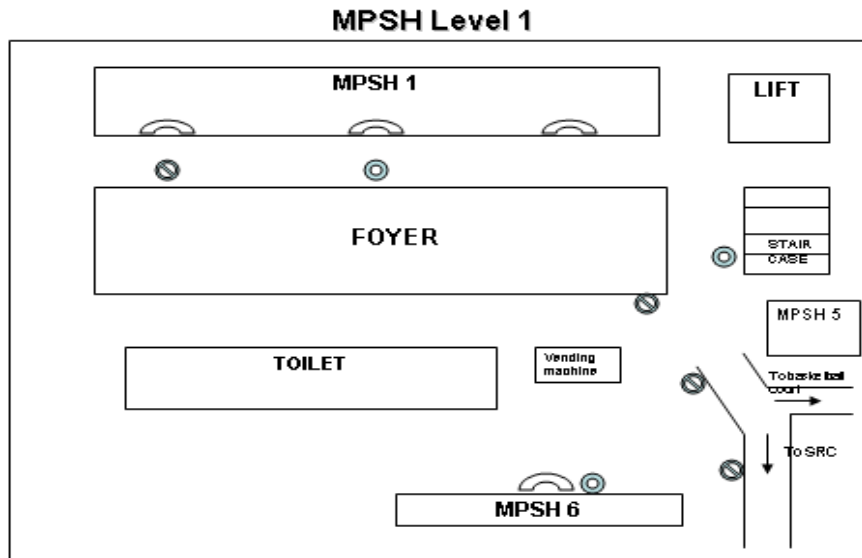


*Picture 4: Wide Round Opening*

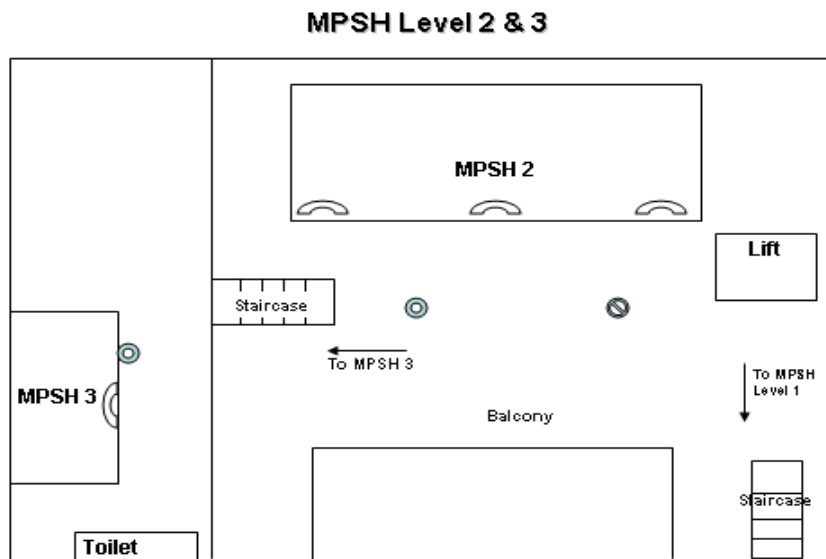
#### IV) Location

The bins were placed outside the exam halls, MPSH 1 to 6, Sport and Recreation Centre. Detail Floor Plan as shown in the *Picture 5 & 6*. Snapshots for the placement of recycle bins are shown in *Picture 7, 8 & 9*.

- ⊗ Symbol for Slit Opening of 85L Paper Recycle Bin (*Picture 1*)
- ⊙ Symbol for Round opening of 120L Paper Recycle Bin (*Picture 2*)



*Picture 5: Location of Paper Recycle Bins at MPSH Level 1 (outside MPSH 1, 5 and 6)*



*Picture 6: Location of Paper Recycle Bins at MPSH Level 2 & 3 (outside MPSH 2 and 3)*

		
<p><i>Picture 7: Paper recycle bin with poster located beside staircase</i></p>	<p><i>Picture 8: Paper recycle bins located outside MPSH 2</i></p>	<p><i>Picture 9: Paper recycle bins located outside MPSH 5</i></p>

## V) Procedure

- a) NUSSU SAVE paper collector monitored the recycle bins once in two days to ensure the recycle bins were not causing any inconvenience caused to NUS community.
- b) The paper recyclables were removed once it reached sufficient amount according to the collector's experiences and judgments.
- c) The condition of recycled bins was being reported to internship student. If the recycling bins were full of non-recyclables, internship students were required to remove it with the help of cleaner to ensure the cleanliness of recycle bins.
- d) Upon Completion of Experiment, all the recycle bins were removed.

### 8.2.3.2 Publicity

With the collaboration of NUSSU SAVE,

- a) Email regarding the Zerowaste project was mass emailing to students. This was to encourage them to recycle the notes and paper.
- b) Posters were putting up at each paper recycle bins location (*Picture 10*)



*Picture 10: Zero Waste Poster*

Special thanks to NUSSU SAVE.

## 8.2.4 Finding

### 8.2.4.1 Paper Recyclables

Total weight of paper collected in the monitoring period: 109 kg

Average recyclable paper collected: 6.1 kg/day

Monitoring Period	Weight of paper collected (kg)
23 April – 2 May	50
2 May – 5 May	5
5 May – 6 May	8
6 May – 8 May	30
8 May – 9 May	8
9 May – 10 May	8

### 8.2.4.2 Non-recyclables

Lots of non-recyclables were found in the recycle bins. They are mostly consisting of food waste: coffee cups & food paper packaging and also recyclables: plastic bottles & can drinks (*Picture 12*). The food waste has caused cleanliness problems.

		
<p><b>Picture 11:</b> Paper recyclables in one of the recycle bins</p>	<p><b>Picture 12:</b> Lots of non-recyclables in two of the paper recycle bins</p>	

#### 8.2.4.3 Observation and Analyses

I) Monitoring of paper recycle bins placed was done by internship student on 5 May 2008. 5 out of 10 paper recycle bins (50%) were just fully filled with non-recyclables and were required to change new black plastic bag. This showed that the non-well utilization of the paper recycle bins by NUS community. This may be due to the lack of publicity for Zerowaste project. This situation should not be due to the lack of trash bins around the area. It has been observed that for some location, the paper recycle bins were still full with non-recyclables although the trash bins were just placed beside it. Moreover, sufficient recycle bins were provided. Therefore, it is highly to be believed that it is the insensitivity of NUS community towards recycling due to the same situation is being observed at other location too.

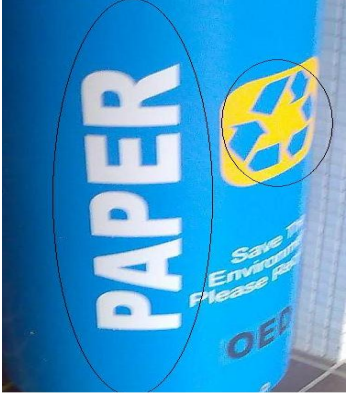


II) Among the 5 fully filled with non-recyclables paper recycle bins, it comprised 4 wide round opening of 120L paper recycle bins (*Picture 2*) and 1 narrow slit opening of 85L Paper Recycle Bin (*Picture 1*). This showed that the utilization of paper recycle bins is better for narrow slit opening (*Picture 3*) than wide round opening paper recycle bins (*Picture 4*). This may due to the narrow slit can avoid other recyclables being thrown into the paper recycle bins which will destroy the quality of paper collected.



*Picture 13: Comparing design (Round Opening) between trash bins and paper recycle bins*



Furthermore, it may also owing to the design of 120L paper recycle bins are almost the same with trash bins provided especially the wide round opening (*Picture 13*).

		
<p><b>Picture 14:</b> White/Colors words on recycle bins</p>	<p><b>Picture 15:</b> Black color words on recycle bins</p>	<p><b>Picture 16:</b> Misplaced of sign for recycle bins</p>

The words written on the recycle bins also a factor that affects the visibility of the bins. White color or colors word (*Picture 14*) is more outstanding compare to black colors word (*Picture 15*). From this observation, this can be concluded that the design of the recycle bins is an important factor that affected the type and amount of the recyclables collected.

III) The words written on the paper recycle bins were hidden due to the misplaced of the bins (*Picture 16*). This will decrease the visibility of the bins. For users that do not notice the sign of recycle bins, they will take it as trash bins since the design is almost the same with trash bins provided (*Picture 13*).



## 8.2.5 Possible Recommendation

### 8.2.5.1 Design of Recycle Bins

Use of narrow slit opening (*Picture 3*), obvious color as words indicator (*Picture 14*) and try to avoid having same design with the trash bins (*Picture 13*). It is recommended that words indicator not only written on the side of the recycle bins but also on top of the recycle bins to increase the visibility of the recycle bins. Pictures of the recyclables are also a better way to notify the user about the type of recyclables rather than only words as indicator.

### 8.2.5.2 Publicity

Publicize the recycling project event earlier and wisely

### 8.2.5.3 Special Event

From this research, this is noticeable that more recyclables will be generated when special event hold. Ideas to put more recycle bins for special event can be considered.

Recommended event: NUS Open House, Commencement, Rag and Orientation

Lots of generation of cans drinks and plastic bottles was observed

### 8.2.5.4 Campaign /Education

Campaign to increase the awareness of NUS community towards recycling is needed. Education about type & things that can be recycled and the importance of recycling should be given to them in detail. Attitude and mindset of NUS community is believed to be the main reason for non-well utilization of recycle bins in NUS.

## 8.2.6 Summary

The hypothesis of this project is only partially reached. The paper recycle bins are not well-utilized by NUS community. The main proposed reason is owing to the insensitivity of NUS community towards recycling. The effort to increase the awareness of NUS community and to encourage them to recycle is needed to be continued.