

## The 4 R's of Healthier Living

Written by Liu Chun-yin

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Plastic bags and packaging are an icon of the convenience culture that permeates modern society. According to Taiwan's Environmental Protection Administration, a whopping 18 billion plastic bags are used in Taiwan each year—an average of more than 700 bags per person, per year. Equally alarming is the fact that less than ten percent of those bags are recycled. The vast majority of the non-biodegradable bags are just thrown away. When buried, they block drainage systems and waterways and impede the flow of underground water. When incinerated, PVC plastic packaging materials release highly toxic carcinogens, such as dioxins, into the air. Either way, plastic waste is harmful to the environment as well as humans.

Much as the recycling of plastic bags is an imperative, the most effective solution to the problem is simply changing our lifestyles and habits by adhering to the 4 R's: refuse, reduce, reuse and recycle.

The use of plastic bags and all kinds of food and other packaging materials has spread worldwide since these things were invented at the start of the 20th century. As merchants have done the world over, those in Taiwan have embraced the convenience and cost-effectiveness of such bags. Plastic bags can be found hanging at every corner in Taiwanese markets, and shoppers carrying plastic bags of various colors and sizes are a common sight along the streets.

Such bags are convenient and cheap. It is little wonder they are such an established part of our modern culture of convenience. Such a culture, however, has become an increasing threat to the environment.



### **A must-do despite all difficulties**

Wearing a pink hat and a face mask, Yang Li-shu (楊麗淑) keeps her hands busy sorting out clear plastic bags from colored ones. Yang is a single mother who has raised three kids on her own. She lives in Taipei and makes a living by mending and altering clothing. She has also been a Tzu Chi recycling volunteer for close to 20 years.

Concerned that she would wear herself out, Yang's children asked her to cut down on her recycling work. However, she is firmly committed to her eco-mission. "Since we started collecting plastic bags at our recycling station, I've worried about not having enough time for recycling. How can I possibly do less?"

Yang volunteers at the Tzu Chi Wanhua Recycling Station in Taipei. Since the station began handling used plastic bags in 2008, the sight of plastic bags flying about in the streets has filled her with anxiety. It seems an impossible task to pick them all up. Conventional methods of waste disposal are not suitable for plastic bags; no matter how they are disposed of, they result

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in pollution. Whenever Yang thinks of the harm plastic bags bring to the environment, she would prefer to abandon their use, regardless of the inconvenience.

Yang searched everywhere for recycling companies that would buy discarded bags. She wanted to help recycle as many as possible. She even visited a landfill to learn how plastic bags and packaging were disposed of. She discovered that due to a shortage of manpower at the landfill, only clean items are picked out for recycling. Huge quantities of soiled bags are dumped into the ground, along with the other waste.

“It pains me to think of the damage this is causing to the environment,” said Yang. So, she made up her mind to press on with the work of collecting plastic bags for recycling, no matter how difficult it may be for her.



### Prior to recycling

Chen Qing-yun (陳靜雲) is in charge of the Tzu Chi Bagualiao Recycling Station in Kaohsiung, southern Taiwan. She has been involved in recycling for 17 years. Since she converted the courtyard of her old ancestral home into the recycling station, she has never thought of quitting. Like Yang, she is fully committed to plastic bag recycling.

Chen says that when it comes to the recycling of plastic bags and packaging, finding recycling companies that buy them was the first and foremost priority. Seven years ago, after searching everywhere, she finally found a company that did. Soon after that, the Bagualiao recycling station started collecting plastic bags.

Volunteers first began by collecting only clean polyethylene (PE) plastic bags. Now they generally sort out five categories based on the materials the bags and packaging are made of. The first three types are polyethylene (PE—used in transparent plastic bags for food, translucent plastic bags, etc.); polypropylene (PP—disposable plastic cups, food packaging, etc.); and polyvinyl chloride (PVC—packaging for bed sheets or blankets, thick raincoats, shrink film, etc.). The last two categories are composite plastics and sealing film.

In addition, each type of plastic bag or package can be further classified based on whether it is all-white or colored, and whether it is hard or soft. Those that do not fall into any of the above five categories or are made of mixed materials must be sorted out for another group.

In addition to collecting clean plastic bags, Chen also searched for recycling firms that would accept soiled ones. Two and a half years ago, she found a newly opened company in Taoyuan, northern Taiwan, that washes soiled plastic bags clean for recycling. The company was founded on the ideal of caring for the environment. The company founders noted that since there were already many recycling companies that collected clean plastic bags, they decided to collect and recycle soiled ones.

With the discovery of this recycling company, Tzu Chi volunteers started collecting soiled plastic

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bags and packages, so long as they were not too badly soiled or greasy. Volunteers also encouraged residents to use gray water—previously used but not too dirty—when rinsing their plastic bags before giving them to recycling stations. Rinsing bags like this is a good strategy to conserve water.

### Recycling vs. incineration

Tzu Chi recycling stations encountered many difficulties at first. The wide variety of materials was confusing enough for younger volunteers, let alone the elderly. Most of the elderly volunteers didn't know English; it filled them with dread to have to distinguish between PE, PP, PVC, etc. Moreover, some of the bags and packages given to recycling stations contained smelly leftover food. This definitely put most people off.

Volunteer Gao Yu-ying (高玉英) vividly remembers the difficulties and struggles of promoting plastic bag recycling at the beginning. Nobody wanted to sort the bags, and every piece she brought back would be thrown away.

Undeterred, Gao continued picking up and bringing back plastic bags. Her persistence and perseverance finally paid off when a volunteer offered to help her load sorted plastic bags onto the truck. Right then, Gao knew that she had gained the support of another volunteer.

At the Xinqiang recycling station in Kaohsiung, some committed volunteers used a different approach to address other volunteers' complaints about the hassle of collecting bags and packages for recycling. They told the reluctant volunteers that if these items were not recycled, they would be incinerated, releasing harmful chemicals into the air. So even though recycling plastic bags didn't bring in much money, they should do it for the sake of the environment. Their words touched the consciences of the resistant volunteers. Gradually, they became more aware of the enormity of the problem and began pitching in to help out.

### Refuse and reduce rather than recycle

Initially, some neighborhood residents would give brand-new plastic bags to the recycling stations. This made the volunteers wonder if their recycling promotion efforts had accidentally misled people into using even more plastic bags.

Volunteer Chen Qing-yun realized it was impossible for modern-day people to stop using plastic bags completely, but at least they didn't need to use so many. "Those who have had the experience of sorting plastic bags at a recycling station will naturally start using fewer of them," said Chen. "The sight of thousands of used plastic bags and packages lying on the floor serves as an excellent wake-up call. When people see them, they realize how serious the problem is and how much trouble it is to sort them."

Plastic bags and packages need to be washed, shredded and then melted before they can be made into various recycled products. A lot of carbon dioxide is produced in the process. Therefore, refusing, reducing, reusing and recycling plastic bags is the most effective means of resolving the problem.

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