

PWMI Newsletter

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Plastic Waste Management Institute
JAPAN

Containers and Packaging

- Recycling Law: Creating a system for turning containers and packaging, the main component of household plastic trash, back into resources

People live their lives by consuming “things” that then become “trash” after consuming and discharging. Much of this trash actually consists of containers and packaging materials (in particular, plastics make up a high percentage of consumer trash, and 95% of plastic trash consists of containers and packaging materials), and the “Containers and Packaging Recycling Law” (abbreviated name) provides for their collection and recycling. The formal name of this law is the “Law for Promotion of Sorted Collection and Recycling of Containers and Packaging.”

This law first went into effect in 1997 targeting polyethylene terephthalate (PET) bottles and glass bottles. In April of this year, moreover, it added containers and packaging made of other plastics and paper as well, and has therefore been a full-scale “Containers and Packaging Recycling Law” for about a half a year. This law, however, is still said to be difficult to understand. In this issue, therefore, we would like to give a straightforward explanation of the Containers and Packaging Recycling Law and report on the present state of its implementation.

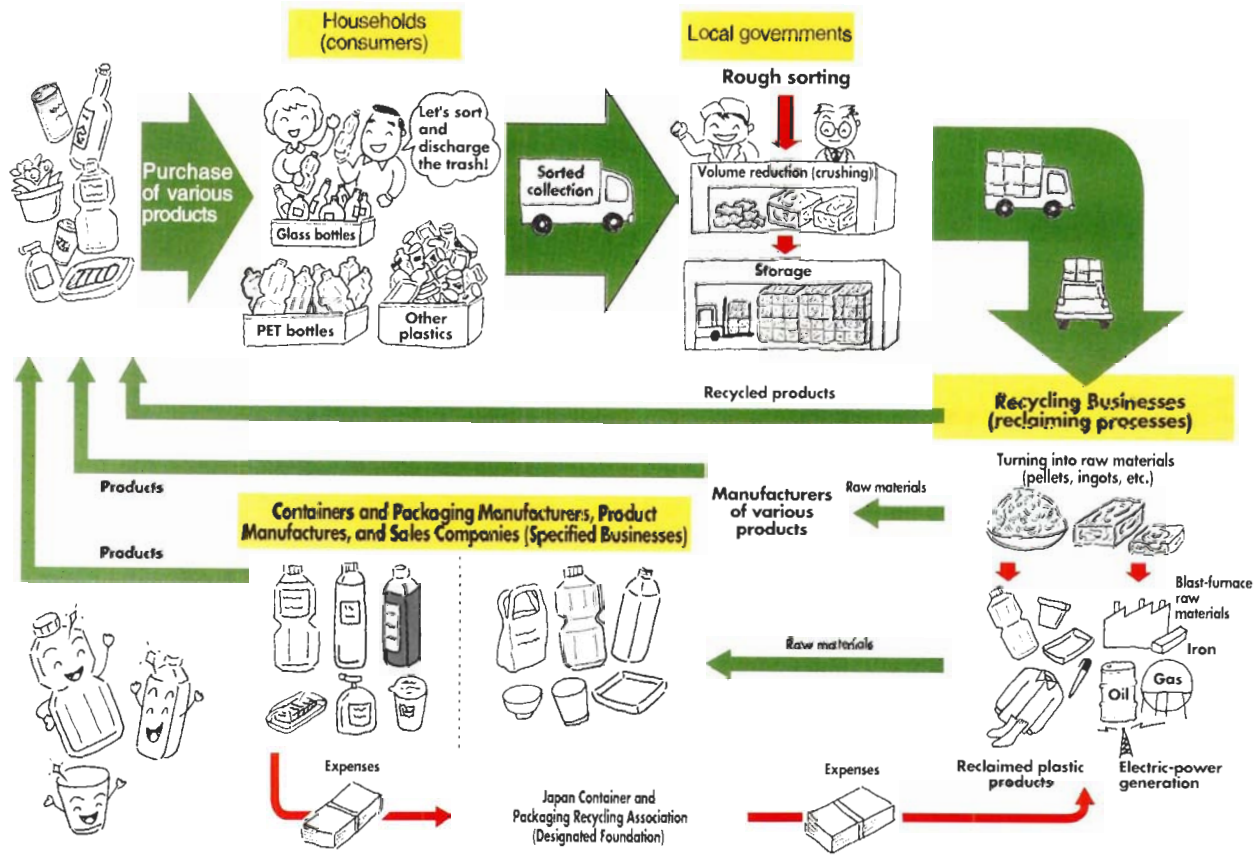
Containers and Packaging Recycling Law: Aiming to recycle most household trash

The general flow of a recycling society as envisioned by the Containers and Packaging Recycling Law is as follows. Containers and packaging that become trash are sorted and

discharged by consumers with their own hands. This sorted trash is then collected by local governments that decide to participate in sorted collection, roughly sorted (to remove

foreign materials, excessive dirt, etc.), compacted (crushed to decrease volume and facilitate transport and storage), and stored. These compacted containers and packaging are then handed over to recycling businesses that turn them into

various kinds of products and raw materials. Finally, in the last stage of this cycle, these products and materials are passed on to other kinds of businesses that make them available once again for use in our daily lives.



Containers and Packaging Recycling Law: A necessity in a recycling society

● Minimizing waste and using trash more effectively

We live our lives by purchasing and consuming a large number of products. First and foremost are perishable foods, followed by a diversified range of products including daily necessities and clothes. Any one of these products makes use of containers and packaging, and these must be discharged as everyday trash after the product is consumed.

Such trash, moreover, tends to increase with higher standards of living or change in lifestyles, and against this background, household trash became an issue of discussion. For example, it was argued that the throwing out of containers and packaging simply as trash is a huge waste of resources, and that efforts should be made to decrease the amount of waste as much as possible through recycling. This kind of thinking eventually led to the establishment of the

Containers and Packaging Recycling Law, which basically calls for the reclaiming of resources from trash for reuse in daily life and for the manufacture of new products.

The Containers and Packaging Recycling Law also is also important because of its positive effects with respect to the disposal of trash in landfills. Specifically, the difficulty of securing landfill sites and the expectation that present landfills will run out of space in the near future means that a decrease in trash would be beneficial.

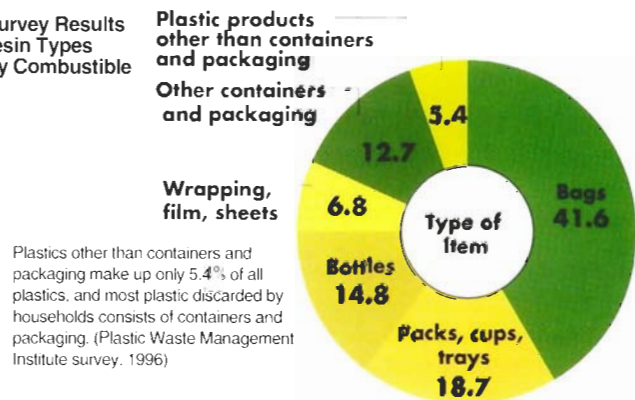
In short, the Containers and Packaging Recycling Law becomes a necessity in a recycling society that aims to minimize the dumping of trash and to utilize trash more effectively. Four ministries in Japan support this law: the Ministry of Health and Welfare, Ministry of International Trade and Industry, Ministry of Agriculture, Forestry and Fisheries, and Ministry of Finance.

● Containers and packaging make up most plastic trash from households

The Containers and Packaging Recycling Law was established to recycle containers and packaging trash discharged from households. It might then be asked why a recycling society needs such a specific law. The answer is that most trash coming out of households is composed of containers and packaging materials. To put it another way, promoting the recycling of containers and packaging materials makes it possible to recycle most household trash.

Graph of Yokohama City Survey Results
Waste Plastic Items and Resin Types
(Example of Yokohama City Combustible
Trash, 1995)

In particular, containers and packaging make up a large part of trash discharged from households, and most plastic trash from households (about 95%) consists of containers and packaging materials.



Containers and Packaging Recycling Law targets the recycling of household trash

The collection of newspapers and magazines and beverage cans and bottles has been going on around us for a long time. Similarly, though not well known by the general consumer, the recycling of plastics

began some time ago (centered about waste material discharged from factories). In fact, recycled plastics have frequently been used for artificial trees in parks, flooring materials, and gardening pots, for example. Nevertheless, lots of household trash was not recycled in the past. The Containers and Packaging Recycling Law aims to fill this gap.

Three Cooperative Operations Supporting the Containers and Packaging Recycling Law

● Sorting of containers and packaging by one household

The Containers and Packaging Recycling Law defines containers and packaging as material designed to hold or wrap products that becomes unneeded after the product is consumed. Some examples are containers made out of plastic material and white-colored trays and cups used to hold food.

With that being said, we might wonder what specific kinds of plastic trash are targets of this law. As mentioned above, sorted collection of PET bottles began three years ago and that for other types of plastics began in April of this year. The following is a list of containers and packaging materials manufactured with other types of plastics.

- 1 Bottles and tubes for beverages, condiments, toiletries, detergents, shampoo, toothpaste, cosmetics, gardening products, car products, body soap, and the like.
- 2 Packs for foodstuffs like side dishes, box lunches, tofu (bean curd), natto (fermented soybeans), fruit, and

vegetables, and cups for miso (fermented soybean paste), egg tofu, ramen (Chinese noodles), yogurt, pudding, jelly, and the like (Styrofoam or non-Styrofoam in any case)

- 3 White-colored trays for fish, sashimi (fresh slices of raw fish), processed food, sliced ham, and the like, and indented sheets for toothbrushes, cosmetics, bacon, processed fish, and the like (Styrofoam or non-Styrofoam in any case).

- 4 Large- or medium-size bags for frozen food, pouch-packed foods, tsukemono (pickled vegetables), tsukudani (shellfish boiled in sweetened soy sauce), gardening products, and the like, check-out-counter bags, and small bags for seasonings, candy, soups, and the like.

- 5 Caps and stoppers used in bottles for beverages, foodstuffs, and daily necessities.

- 6 Plastic wrap and film

- 7 Boxes and cases for toys, dehumidifiers, deodorizers, foods, and the like.

- 8 Materials for protecting and fixing products.

- 9 Other barrels, buckets, etc.

● Identification marks to be implemented

Despite descriptions like the one above, it still may be difficult to determine whether a certain item is a target of the Containers and Packaging Recycling Law. For this reason, it has been decided to label products with identification marks that anyone can understand.

While Pet bottles will continue to be labeled as usual (see left figure below), other plastic containers and packaging will have to be labeled with a new identification mark (see right figure below; indication of plastic type to be entrusted to the company) after a two-year grace period beginning in April of next year.



PET

PET bottles



Other types of plastic

● Cooperative operations: the roles of consumers, local governments, and businesses

① Household (consumer): Sort trash

Everyone is well aware that oil is a limited resource. It therefore stands to reason that plastics, which are made from oil, are an important resource, and it is the objective of the Containers and Packaging Recycling Law to convert plastics back into raw materials that can then be used again to make products.

An efficient process for achieving this objective begins with the household where unneeded containers and packaging are “sorted” according to predetermined rules and placed in specified locations for pickup. In other words, the role of the consumer is to observe these rules closely at the trash “exit.” (Sorting also means excluding excessively dirty items.)

* Sorting rules are determined independently by local governments. Consumers should contact their local government for details.

② Local government: Collect, compact, and store trash

Local governments take on an important role as follows. First, they collect containers and packaging that

have been sorted by the consumer. Such sorted and collected trash, however, will invariably contain foreign materials like metals and kitchen garbage. Excessively dirty trash (such as non-empty containers and unwashed lunch-box containers) occurs frequently as well. This trash cannot be stored or transported if such undesirable matter is not removed, and rough sorting for this purpose must therefore be performed. After this, the trash is “compacted” (crushed to decrease volume) and then “stored.”

Containers and packaging that are temporarily stored in this manner are passed on to recycling businesses to be reprocessed into recycled products or recycled raw materials.

In addition, sorted containers and packaging that have been collected by a local government are subjected to competitive bidding under the supervision of the Japan Container and Packaging Recycling Association (designated foundation). Then, at a later date, expenses incurred in the recycling processes are paid to the recycling businesses by this designated foundation. This mechanism is employed since recycling involves a variety of processes that generate expenses.

③ Manufacturers and sales companies (specified businesses): Take on recycling expenses

The Containers and Packaging Recycling Law launched in April 1997 originally required manufacturers of PET bottles and glass bottles and companies that sell products using such containers to recycle.

From April of this year, however, other types of plastic as described above as well as paper containers and packaging will be added to the law, resulting in a dramatic increase in the number of businesses to which recycling will be imposed. Specifically, we can expect about 160,000 companies to be targeted comprised of manufacturers of paper containers and packaging, manufacturers of plastic containers and packaging, manufacturers of products using such containers and packaging, and companies that sell these products (including importers in the agricultural, lumber, fishing, manufacturing, retail, and wholesale businesses).

These businesses take on the role of paying the designated foundation the expenses incurred in the recycling of used containers and packaging in accordance with manufacturing and usage amounts of

items targeted by the Containers and Packaging Recycling Law.

Then, from these expenses borne by the above businesses, the designated foundation pays the recycling businesses the expenses incurred by recycling processes, as described above.

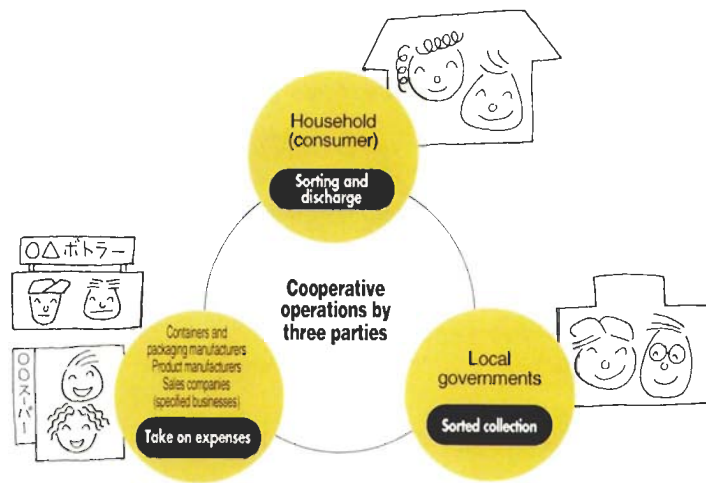
● Recycling companies (businesses that turn trash back into products) perform actual recycling

Cooperative operations as specified by the Containers and Packaging Recycling Law are therefore achieved through the roles taken on by the three parties described above. The recycling cycle, however, is also facilitated by other kinds of businesses. One kind in particular are the “recycling businesses” mentioned above that specialize in various types of recycling.

Recycling businesses have the role of turning sorted containers and packaging that have been collected, compacted, and stored by local governments into raw

materials and recycled products. Here, raw materials achieved by recycling processes are delivered to various kinds of product manufacturers or supplied directly to the distribution market.

There are also companies separate from the above recycling businesses that receive supplies of such raw materials to make into various types of plastic products. In short, recycling is supported by many businesses in addition to cooperative operations by the three parties described above since recycled products may be purchased by consumers or used as industrial materials.



A Diversified Recycling Society

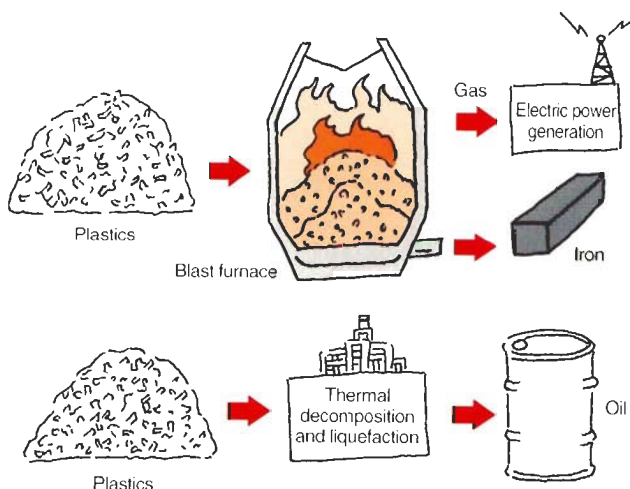
● Containers and packaging recycled into products and raw materials

It is well known that the Containers and Packaging Recycling Law promotes “material recycling,” that is, the recycling of paper into paper and plastics into plastics. However, the law also provides for “chemical recycling,” in which containers and packaging are used as industrial raw materials to manufacture other products, and for “thermal recycling,” in which heat is reclaimed and used for electric power generation and other applications.

Because PET bottles, white-colored trays, and the like are made with only a single type of plastic and are easy to sort and collect, they are extremely conducive to material recycling. The end result is a variety of new plastic products.

To give some examples, recycling of containers and packaging materials gives birth to clothes, daily

necessities and miscellaneous goods, stationary, bottles for detergents, non-woven fabrics, building and industrial materials, landscaping materials, benches, tables, etc., gardening supplies, civil engineering materials, and materials for the agricultural and fishing industries.



On the other hand, there are other types of plastic containers and packaging that use a combination of different resins and that are difficult to sort and collect. Material recycling is in fact difficult for such composite plastics.

As a result, much attention has recently been focused on chemical recycling in which various types of plastics can be recycled without sorting (material recycling in a broad sense).

Some examples are "liquefaction" that thermally

decomposes plastics to produce oil: "blast-furnace raw materials" in which plastics are made into pellets and used as a reducing agent for making iron: "gasification" whereby plastics are thermally decomposed to extract carbon monoxide and hydrogen in gas form for use as raw materials in the chemical industry; and "coke-furnace chemical materials" in which plastics are used instead of coal in coke furnaces. In other words, chemical recycling results in the production of non-plastic industrial materials.

Present State of Activities by Local Governments in Japan

● A growing number of participating local governments

As mentioned above, the full-scale implementation of the Containers and Packaging Recycling Law began in April of this year. At that time, there were 1,348 local governments (out of 3,233 throughout Japan) that had made plans for the sorted collection of plastic containers and packaging, that is, "other plastics" (according to surveys by the Ministry of Health and Welfare and the Japan Container and Packaging Recycling Association). However, those that actually performed sorted collection numbered only 493 (that is, the number of local governments that applied to the designated foundation for pickup of compacted trash as of June 2000).

While this is a somewhat small number compared to the 1,762 local governments (about 55%) engaged in the sorted

collection of PET bottles three years ago, it really can't be helped considering that this is the first fiscal year of full-scale implementation.

● Estimates of future collection capacities

To what degree then are local governments actually collecting plastic containers and packaging materials? The plan for fiscal year 2000 was to collect 72,700 tons of PET bottles and 153,000 tons of plastic containers and packaging (other plastics). (In the table below, these numbers indicate amounts that can be turned into new products.) Here, the amount of PET bottles actually collected was as planned while that of plastic containers and packaging (other plastics) is expected to be about 10,600 tons or 50,000 tons short of that planned.

FY 2000 Implementation Figures

Applications for pickup from local governments to the designated foundation

	No. of Local Governments that Made Plans for Sorted Collection	No. of Local Governments that Applied for Pickup with the Designated Foundation
Glass bottles (colorless)	2,778	1,138
Glass bottles (brown)	2,801	1,228
Glass bottles (other colors)	2,747	1,397
PET bottles	2,536	1,762
Plastic containers and packaging	1,348	493
Paper containers and packaging	303	112

Amounts applied for pickup from local governments to the designated foundation (Unit:tons)

	Amount that can be Turned into New Products	Amount Applied for Pickup
Glass bottles (colorless)	270,000	112,668
Glass bottles (brown)	200,000	133,013
Glass bottles (other colors)	140,000	106,125
PET bottles	72,700	72,787
Plastic containers and packaging	153,000	106,418
Paper containers and packaging	66,000	17,859



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