

Interpretation

**Product Certification Criteria No.118 for  
“Plastic Products Using Recycled Materials Version 2.0 ”**

**<Excerpt>**

Revised: September 1, 2005

\* This is the excerpt from the original Japanese version. For more details, refer to the original version.

**4. Certification Criteria**

For setting up the criteria, environmental load over the whole life cycle of a product was considered, using a life stage environmental load item selection table. As a result, load items that are considered to be important to establish criteria for Eco Mark certification were selected in view of environmental loads over the whole life cycle of the product. For these items, qualitative or quantitative criteria were considered.

Environment load items considered for the category of "Plastics Products Using Recycled Materials" are as shown in the "Table 1 Environmental impacts at each stage of the product life cycle" (XX and X in the table). Out of these items, the following items were finally selected as the environment-related criteria: A-1, B-1, B-2, B-3, B-5, B-6, B-7, B-8, B-9, C-1, C-2, C-5, C-7, D-1, D-7, D-8, D-9, E-2, E-3, E-5, E-7, E-8, F-1, F-2, F-7 and F-9 (XX in the table). The blank columns in the table show items which were out of the range of review or which were reviewed in combination with other items. Following is the history of setting up the environment-related criteria.

Table 1 Environmental impacts at each stage of the product life cycle

Environmental Impact Item	Product Life Stage					
	A. Resource Extraction	B. Manufacturing	C. Distribution	D. Use/Consumption	E. Disposal	F. Recycling
1. Resource consumption	XX	XX	XX	XX		XX
2. Emission of substances affecting global warming	X	XX	XX	X	XX	XX
3. Emission of ozone-layer-depleting substances		XX			XX	
4. Deterioration of the ecosystems	X				X	
5. Emission of air pollutants		XX	XX	X	XX	
6. Emission of water pollutants		XX				
7. Waste and its disposal		XX	XX	XX	XX	XX
8. Use and emission of hazardous substances	X	XX		XX	XX	
9. Other environmental impacts		XX		XX		XX

4-1. Environmental Criteria

**A. Resource Extraction stage**

A-1 Resources consumption

<p>(1) Use of recycled materials</p> <p>(2) The product is made consideration to less use of material, and reduction in size and weight, within the range not to detract the function and strength of the product, compared to the traditional product.</p> <p>(3) Use of biodegradable plastic</p>
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Regarding (1), this item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-1. (1) and (2)]

>From the resource consumption viewpoint, it is ideal that material recycling is conducted for plastics as much as possible, and energy collection by thermal recycling, etc. shall be conducted eventually. It was judged that the promotion of material recycling of recycled plastic is necessary to prevent them from

incineration or landfill easily. Therefore, this item has been selected as an item for which criteria shall be established in Version 2.0.

Regarding use of recycled materials, the following three points were revised in Version 2.0.

- 1) The denominator for calculating the containing ratio of recycled materials was changed from “total weight of the product” to “weight of used plastic part”.

Plastic is light in specific gravity compared to metals or wood, therefore the product with the other materials than plastic becomes heavier in its total weight due to the weight of metals or wood. To satisfy the standard ratio of recycled plastic contents, it was essential to increase the use of recycled materials. In Version 2.0, the weight of plastic part in the applicable product is set as 50% or more of the total weight basically, then “weight of used plastic part” was selected as the denominator for calculating the containing ratio of recycled materials. In case of using the other materials than recycled plastic, those materials are not calculated as recycled materials.

- 2) Enhancing competitive advantage of post-consumer material

For enhancing competitive advantage of post-consumer material which utilize used product as recycled material, post-consumer material was compared with pre-consumer material generated from a disposal route in a product manufacturing process, and examined. As a result, the difference of standard containing ratio between of which the use of pre-consumer material and the use of post-consumer material was more expanded on that in Version 2.0 than that in Version 1.0. To evaluate the mixed post-consumer material, in Version 2.0, for calculating the containing ratio of recycled material, the weight of post-consumer material is multiplied by a factor; then adds up the weight of pre-consumer material. As a result, it would enhance competitive advantage of post-consumer material, and also it would give advantage for post-consumer material even if it is mixed with pre-consumer material.

- 3) The concept of “auto recycling product” was introduced.

The concept of "auto recycling product" is aim to promote horizontal recycling, not cascade recycling by using recycled plastic material as the material for the same product. For the promotion of auto recycling product, it is essential that the manufacturer/sales enterprises of auto recycling products establish the collection system and recycling system by themselves, and they ensure the materials for reproduction. It is considered that establishing and operating the collection system and recycling system as mentioned on the above is more difficult than obtaining recycled materials from the others. Therefore, for the purpose of promoting the spread of this system, the standard containing ratio of recycled material was set as 20%. This is lower than the standard containing ratio of general post-consumer material which was set as 25%.

Since the adoption of this system is for promoting horizontal recycling, it

is the essential condition to use the material obtained from recycling the “auto recycling product” (“auto recycling material”) as recycled plastic material to be used for the material for auto recycling product. Therefore, in Certification Criteria, to satisfy the standard containing ratio by weight percentage of auto recycling material has become essential. In addition, for recycled plastic material not derived from auto recycling product, we have decided that there is no limit for their use, but they are not added to the weight percentage of recycled material. Moreover, regarding auto recycling product, it is examined that the collection ratio of used product would set as 50-70% for the criteria. However, we decided not to set the collection rate for criteria, since auto recycling product is new effort for many enterprises and setting high collection rate may block their project development. While, the percentage of material recycling was set as 90%, with considering to avoid disposal of collected materials as much as possible.

Regarding (2), there was an opinion that less use of material within the range not to detract the function and strength of the product is necessary for the purpose of reducing resource consumption and disposal amount. Also, there was an opinion that to prevent increase of disposal amount by using bad-quality recycled materials is essential. Based on the above understanding, this item was selected as an item for which criteria shall be established. However, it is difficult to establish quantitative Certification Criteria for this item, qualitative contents were set as criteria, such as submitting documents to explain that the product does not use materials more than necessary, etc.  
[Establishing Certification Criteria 4-1-1. (15)]

Regarding (3), this item was not selected as an item for which criteria shall be established. The spread of plastic produced from recyclable resource (not from oil resource) such as plant plastic, etc. is worthy for reducing resource consumption. However, it is difficult in current condition to evaluate biodegradable plastic or plant plastic, because there are many unclear points such as 1) effects for ecosystem by developing and cultivation of recombinant plant, and 2) effects for soil microorganism brought by waste biodegradable plastic. In addition, in current recycling of waste plastic, biodegradable plastic is not applicable for recycled material. Based on the above understanding, it was considered that biodegradable plastic and plant plastic could not be evaluated from the aspect of resource consumption, and this item was not selected as an item for which criteria shall be established.

## A-2 Emission of substances affecting global warming

(1) Energy consumption or emission of global warming gases (CH <sub>4</sub> , CO <sub>2</sub> )
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This item was not selected as an item for which criteria shall be established.

Discussions were also made for this item in A-4 and A-8. In present and future, it is considered that environmental impacts can be generated such as changing of land-use or emission of harmful substances, in oil extraction for plastic material and/or manufacturing stage of synthetic polymer. Also in the process of raw material production of plant plastic, which was not adopted in Version 2.0 eventually, wreaking ecosystem may happen by cultivating recombinant plants.

However, it was judged regarding this item that it is difficult to ask manufacturer to track back to resource extraction stage. Therefore, the manufacturer of the product is expected to act with consideration for environmental impacts generated in resource extraction stage, and we confine this item to describe in the Interpretation.

#### A-4 Deterioration of the ecosystems

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| (1) Wreaking of ecosystem by recombinant plant<br>(2) Destroying of ecosystem at resource extraction stage |
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These items (1) and (2) were not selected as an item for which criteria shall be established. These items were examined in A-1 (3) and A-2, and details are omitted in this column.

#### A-8 Use and emission of hazardous substances

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| (1) Emission of hazardous substances at resource extraction stage |
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This item was not selected as an item for which criteria shall be established. This item was examined in A-2 together, and details are omitted in this column.

### **B. Manufacturing Stage**

#### B-1 Resources Consumption

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| (1) Consumption of fossil resource<br>(2) Inhibition of recycling of compound material<br>(3) Resource consumption by adding plasticizer, etc. |
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Regarding (1), it was examined in A-1 together since they had the same contents, and this item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-1. (1) and (2)]

Regarding (2), it was well examined in E-7 from the viewpoint of reducing

waste at disposal stage, and this item was selected as an item for which criteria shall be established. Details are omitted in this column. [Certification Criteria 4-1-2. (4) and (5)]

Regarding (3), this item was not selected as an item for which criteria should be established. Use of additives such as plasticizer is necessary to satisfy the required properties for products or plastic materials. Therefore, it was judged that the amount of used additives for virgin materials can be reduced by regulating the mixing ratio of recycled polymer to be used for the products.

#### B-2 Emission of ozone-layer-depleting substances

(1) Energy consumption at manufacturing stage or emission of global warming gases

This item was selected as an item for which criteria shall be established, because it is essential to avoid greater increase of resource consumption to produce the products which use recycled plastic or biodegradable plastic, compared to the amount of resource consumption of using virgin materials. [Establishing Certification Criteria 4-1-4. (17)]

Making efforts to reduce energy consumption for production, emission of CO<sub>2</sub> and waste made by manufacturer is considered to be effective. However, it is difficult to grasp the environmental impacts for each product. Therefore it was set that manufacturing plants of applied products shall report their activity in this criteria. In addition, it is confirmed that not only the manufacturing plant but also the applicant shall work on voluntary environmental conservation activities.

#### B-3 Emission of ozone-layer-depleting substances

(1) Use of ozone-layer-depleting substances at foaming stage

This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-3. (6)]

In the process of making foamed polystyrene, etc., ozone-layer-depleting substances such as CFC's substitute may be used. To avoid the use of ozone-layer-depleting substances including CFC's substitute, this item was selected in Version 2.0 in the same manner as item in Version 1.0.

#### B-5 Emission of air pollutants

(1) Emission of NOx

This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-4. (16)]

Regarding emission of air pollutants at manufacturing stage, it was judged that environmental impacts can be reduced by complying with related environmental laws and pollution- control regulations.

#### B-6 Emission of water pollutants

(1) Emission of water pollutants

This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-4. (16)]

Regarding emission of water pollutants at manufacturing stage, it was judged that environmental impacts can be reduced by complying with related environmental laws and pollution- control regulations in the same manner as item B-5.

#### B-7 Waste and its disposal

(1) Increase of waste

This item was examined in B-2 together. This item was selected as an item for which criteria shall be established, because the possibility was pointed out that the amount of solid waste discharged from manufacturing process would increase due to utilize the bad-quality recycled plastic. [Establishing Certification Criteria 4-1-4. (17)]

#### B-8 Use and emission of hazardous substances

(1) Addition and emission of hazardous substances

This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-3. (12)]

Hazardous substances included in products would diffuse in to environment at use/consumption stage and disposal stage. Therefore, this WG has been considered that environmental impact is generated mainly at use/consumption stage and disposal stage. However, it was pointed out that Certification Criteria shall be established for manufacturing stage because of the followings; 1) hazardous substances in products can be controlled at manufacturing stage, and 2) also use and emission of hazardous substances in manufacturing plants can be considered. Based on the above understanding, by utilizing the existing PRTR Law, to report discharge and moving amount of Class 1 designated chemical

substances used in the manufacturing process of the products was set as Certification Criteria.

#### B-9 Other environmental impacts

(1) Discharge of noise and odor
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This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-4. (16)]

Regarding discharge of noise and odor at manufacturing stage, it was judged that environmental impacts can be reduced by complying with related environmental laws and pollution- control regulations.

In the process of recycling treatment of waste plastic, odor can be discharged derived from food residue attached on waste plastic. In the manufacturing process of polymer and plastic in which hazardous substances are treated, it is essential to comply with laws and regulations from the aspect of workplace safety and health.

#### C. Distribution stage

##### C-1 Resource consumption

(1) Consumption of fossil resource
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This item was examined in A-1 (2) together. This item was selected as an item for which criteria shall be established, because reducing in weight of the product is effective for reducing resource consumption at distribution stage.

[Establishing Certification Criteria 4-1-4. (15)]

##### C-2 Emission of substances affecting global warming

(1) Emission of substances affecting global warming by fuel consumption
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This item was examined in A-1 (2) together. This item was selected as an item for which criteria shall be established, because reducing in weight of the product is effective for reducing emission of substances affecting global warming by fuel consumption at distribution stage.

[Establishing Certification Criteria 4-1-4. (15)]

##### C-5 Emission of air pollutants

(1) Emission of NOx and air pollutants accompanied by fuel consumption
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This item was examined in A-1 (2) together. This item was selected as an item for which criteria shall be established, because reducing in weight of the product is effective for reducing emission of air pollutants by fuel consumption at distribution stage.

[Establishing Certification Criteria 4-1-4. (15)]

#### C-7 Waste and its disposal

(1) Increase of waste accompanied by disposal of packaging materials

This item was selected as an item for which criteria shall be established, because simplification of the product packaging and improving convenience of recycling would contribute to reduce environmental impact, which is generated at disposal stage of resource to be used as packaging materials and packaging materials.

[Establishing Certification Criteria 4-1-4. (14)]

#### D. Use/consumption stage

##### D-1 Resource Consumption

(1) Consumption of fossil resource

This item was selected as an item for which criteria shall be established.  
[Establishing Certification Criteria 4-1-4. (13)]

It is not appropriate for Certification Criteria to accept “throwaway product” which leads to mass consumption and mass disposal. Therefore “throwaway product” was decided not to be applicable in Version 2.0 in the same manner as item in Version 1.0.

##### D-2 Emission of substances affecting global warming

(1) Reducing energy consumption at use/improving heat-retaining property of the product

This item was not selected as an item for which criteria shall be established.

Regarding a mount of energy consumption at use or heat-retaining property, it shall be examined for every product. It was judged that establishing Certification Criteria is difficult in this Product Category, because this Product Category has wide range of applicable product.

#### D-5 Emission of air pollutants

(1) Emission of NOx
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This item was not selected as an item for which criteria shall be established.

Regarding emission of air pollutants such as NOx related to plastic products, it shall be examined for every product. It was judged that establishing Certification Criteria is difficult in this Product Category, because this Product Category has wide range of applicable product.

#### D-7 Waste and its disposal

(1) Excluding “throwaway product”
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(2) Promoting “reduce and reuse”
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Regarding (1), this item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-4. (13)] This item was examined in D-1 together, and details are omitted in this column.

Regarding (2), This item was not selected as an item for which criteria shall be established. To break out of mass-production/mass- consumption society and to realize circulative society, it is considered that promoting reduce by extending the product-life and reuse of used products become more important. However, for implementation of reduce/reuse, consideration for purpose, life and structure of the product is essential, and it is difficult to establish unified Certification Criteria for evaluating the reduce/reuse activities conducted to every product, because this Product Category has wide range of applicable product.

#### D-8 Use and emission of hazardous substances

(1) Emission of hazardous substances
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(2) Eluting endocrine disrupting chemicals by heating
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Regarding (1), this item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-3. (7), (8), (9), (10) and (12)]

For the product used recycled materials, there is an opinion that confirming safety, securing structural safety and limitation for purpose of use, etc. shall be considered. Since this Product Category has wide range of applicable product, it is necessary to control chemical substances which are appropriate for their use and location to be used. Therefore, it was judged that chemical substances added during manufacturing shall follow the positive lists specified by industry's own

standard. [Establishing Certification Criteria 4-1-3. (7)]

For the additives which can be controlled at manufacturing stage by manufacturer, it was set as criteria item that no adding chemical substances which show hazardous property for human being such as heavy metals and carcinogen shall not be added as prescribed constituents. In addition, for food and cosmetic containers, toys for baby and infant, they shall satisfy the standard of hazardous substances described in Food Sanitation Law and EN71-Part3. [Establishing Certification Criteria 4-1-3. (8), (9) and (10)]

PRTR Law does not mandate all products to attach MSDS, but it is desirable for Eco Mark product to provide information for helping consumer's choice. Therefore, to prepare MSDS by following the contents, items and order described in JIS Z 7250 was set as criteria item. MSDS is the data sheet for safety of chemical substances originally, but in this item, items on MSDS are used for the purpose of briefly showing the product information of the applied product. [Establishing Certification Criteria 4-1-3. (12)]

For the use of flame-retardant agents, criteria in the implementation guideline of Eco Mark shall be applied, and it was not selected as an item for which criteria shall be established in this column.

Regarding (2), this item was not selected as an item for which criteria shall be established.

“Strategic Plan for Endocrine Disrupters, SPEED 1998” by Ministry of the Environment points out bisphenol-A and phthalate ester as endocrine disrupters suspicious among plastic-related chemical substances, and their action has been examined and evaluated. As a result, endocrine disrupting action to human body was not confirmed clearly for all chemical substances. However, endocrine disrupting action to ecosystem except fish has been slightly confirmed. In addition, these chemical substances may elute from used products to be disposed, and we can not determine that there is no effect for ecosystem at all.

The WG discussed that elution test for the products shall be the criteria item for these chemical substances. However, this item was not selected as an item for which criteria shall be established, because the WG judged that large risk brought by these chemical substances has not proved and test cost, etc. would be a great burden to the applicant.

#### D-9 Other environmental impacts

(1) Providing information regarding resource consumption, disposal and hazardous substances for users
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This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-4. (18)]

It is desirable to separate by every material of the used product at disposal stage for the purpose of utilizing used plastic products effectively. However, the

social system of separation and segregation has not completed by now. Anyway, there are some areas to conduct separation and segregation of plastic waste in accordance with Containers and Packaging Recycling Law, and it is the first choice to follow the rules for disposal determined by municipalities in the areas. It is considered that the conscious of person to dispose is also important for smooth recycling by separation and segregation. Based on the above, it is necessary to indicate the contents to promote separation and segregation on the product or catalogues as for reminder of users. Regarding polymer, materials shall be indicated with using symbols of JIS or ISO for recycling. In addition, regarding the product for which material indication was obliged by laws and regulations, the indication can be replaced.

#### **E. Disposal stage**

##### **E-2 Emission of substances affecting global warming**

(1) Emission of substances affecting global warming accompanied by treatment of used product

This item was selected as an item for which criteria shall be established, from the viewpoint that to promote material recycling of used products can reduce emission of substances affecting global warming by incineration. [Establishing Certification Criteria 4-1-2. (4) and (5)]

This item was examined in E-7 together, and details are omitted in this column.

##### **E-3 Emission of ozone-layer-depleting substances**

(1) Emission of ozone-layer-depleting substances by incineration

This item was selected as an item for which criteria shall be established, from the viewpoint that to promote material recycling of used products can reduce emission of ozone-layer-depleting substances by incineration. [Establishing Certification Criteria 4-1-2. (4) and (5)]

This item was examined in E-7 together, and details are omitted in this column.

##### **E-4 Deterioration of the ecosystem**

- (1) Deterioration of the ecosystem by disposed biodegradable plastic
- (2) Being introduced disposed product to organic bodies
- (3) Expansion of chemical substances which possess eco toxicity

Regarding (1), this item was not selected as an item for which criteria shall be established. This item was examined in A-1 (3) together, and details are omitted in this column.

Regarding (2), this item was not selected as an item for which criteria shall be established. This item was examined from the viewpoint of prevention to be introduced plastic products which were illegally disposed and left in natural environment to organic bodies of wildlife, but it is difficult to establish concrete criteria.

There was an opinion that it is one of the solutions to adopt biodegradable plastic for the product which is tend to be left in natural environment, but it was not selected because of the difficulty of general evaluation for biodegradable plastic at this moment.

Regarding (3), this item was not selected as an item for which criteria shall be established. Waste plastic as raw material for the recycled product may include any chemical substances, and there is an opinion that toxicity for human being and influence for wild life shall be considered. However, it is difficult to evaluate eco toxicity and establish quantitative Certification Criteria currently. The WG examined this item to certify as criteria for implementation of organic test in accordance with the JIS's acute toxicity test for fish to promote the consideration of eco toxicity by applicant. However, it was not selected as an item for which criteria shall be established, because it would be the excess burden for applicant.

#### E-5 Emission of air pollutants

(1) Emission of air pollutants such as NOx and dioxins by incineration

This item was selected as an item for which criteria shall be established, from the viewpoint that to promote material recycling of used products can reduce emission of air pollutants by incineration. [Establishing Certification Criteria 4-1-2. (4) and (5)]

This item was examined in E-7 together, and details are omitted in this column.

#### E-7 Waste and its disposal

(1) Increase of waste by plastic products and containers

This item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-2. (4) and (5)]

It is effective to promote material recycling for reducing environmental

impacts such as resource consumption by plastic product consumption, emission of substances affecting global warming, emission of ozone-layer-depleting substances and emission of air pollutants.

To reduce environmental impacts by material recycling, the conditions shall be as follows; 1) high yield ratio and less reduce of quality/grade at material recycling stage, and 2) less amount of energy for material recycling compared to that for using virgin material at material recycling stage. However, the followings were pointed out that it is difficult for manufacturer to grasp and control the yield ratio and amount of energy consumption, and collection system of used product has not completed currently.

In the situation as mentioned on the above, it is significant to promote the product which was manufactured with consideration for recycling at design and manufacturing stages, for the purpose of reducing environmental impacts at material recycling stage, and also for expanding recycling system in the future.

Therefore, this item was selected as an item for which criteria shall be established in this Product Category for the product with consideration of recycling for the aspects of material indication, easier separation and segregation.

#### E-8 Use and emission of hazardous substances

- (1) Environmental impacts by dioxins generated by incineration of halogenated compounds
- (2) Emission of hazardous substances

Regarding (1), this item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-1. (3)]

The following discussion was made for environmental impacts generated by halogenated compounds.

Because of the enforcement of Special Dioxins Law, etc., the performance of waste incinerators of municipalities has been improved. The amount of dioxins discharged from waste incinerators has been decreasing from 6,500 g-TEQ/year (100%) in 1997 to 145g-TEQ/year (2.2%) in 2003 <sup>1)</sup>. For generation of dioxins, chlorine source is required, and not only chlorine contained in halogenated compounds such as polyvinyl chlorine but also inorganic chlorine such as table salt would be the chlorine source of dioxins. Therefore, reducing halogenated compounds such as polyvinyl chlorine mixed in general waste does not lead to reducing emission amount of dioxins. Based on the above, there was an opinion that if plastic products which use halogenated compounds such as polyvinyl chlorine are incinerated with general waste, the risk of dioxins generated from waste incinerator would not increase, and special treatment for products added with halogenated compounds does not need.

Dioxins are generated from imperfect combustion in the process of combustion in waste incineration and the process of exhaust gas treatment. Therefore, it is important for reducing generated dioxins to burn completely in

incinerators. For perfect combustion, the following measures are conducted such as keeping the temperature 800 °C or more, breathing 2nd air for burning into the incinerator, retaining longer time, etc. In the exhaust gas treatment process, the amount of dioxins discharged into air is controlled by keeping low temperature during the process and installing bug filter.

However, there is a problem that incineration facilities are declined by chemical substances such as hydrochloric gas generated from burning halogenated compounds. In addition, for effective use of waste plastic such as blast-furnace reducer, additional processes including eliminating polyvinyl chlorine in pre-treatment, neutralizing chlorine gas in post-treatment, etc. are required. Therefore, for promoting effective use of waste plastic, separation of halogenated compounds from waste plastic is desirable.

Moreover, in “Law for the Promotion of Effective Utilities of Resources (April 26, 1991, Law No. 48)”, building materials made of polyvinyl chloride (pipe made of hard polyvinyl chloride, drip molding and window frame, and floor material and wall paper made of polyvinyl chloride) are designated specified indication product to promote segregation, and manufacturers of pipe and pipe connection made of hard polyvinyl chloride are designated specific reuse industry. For these products and vinyl chloride film for agriculture, collection and recycling have conducted. For instance, the material recycling ratio of whole vinyl chloride products is 24%, and it shows higher rate compared to the other plastic products. In addition, the result of LCA shows that material recycles of polyvinyl chloride resin generate less environmental impacts compared to virgin material production <sup>2)</sup>. Therefore, certain reducing of environmental impacts can be expected by promoting material recycling.

Based on the above understanding, the products toward which efforts for collection and recycling of used products have been made will be selected in this Product Category even though the products tend to be general waste, from the viewpoint that it makes waste plastic recycling easier and with consideration of property of polyvinyl chloride product for which recycling is promoted.

Regarding (2), this item was selected as an item for which criteria shall be established. [Establishing Certification Criteria 4-1-4. (11)]

2.76 million tons (28%) among 9.9 million tons of total waste plastic generated in a year are landfilled. It was selected as Certification Criteria that eluting substances from landfilled plastic product shall satisfy elution standard of Soil Pollution Control Law, to prevent soil and underwater contamination by hazardous substances eluted from the products. Among 26 substances specified in Soil Pollution Control Law, result of elution test is asked to submit for the eight substances including cadmium, lead, hexavalent chromium, arsenic, total mercury, PCB, benzene and selenium, excluding the substances which are considered not to be included in the plastic products applied to this Product Category.

Note: <sup>1)</sup> “Concentration of Dioxins in Exhaust Gas at Waste Incineration

Facilities” August 6, 2004, Waste Division of Waste and Recycling Department,  
Environment Minister’s Secretariat

2) “Vinyl Chloride Fact Book” 2003 edition, Vinyl Environmental Council

## **F. Recycling stage**

### **F-1 Resource consumption**

(1) Inhibition of recycling

This item was selected as an item for which criteria shall be established.  
[Establishing Certification Criteria 4-1-2. (4) and (5)]

This item was examined in E-7 together, and details are omitted in this column.

### **F-2 Emission of substances affecting global warming**

(1) Energy consumption at recycling stage

This item was selected as an item for which criteria shall be established.  
[Establishing Certification Criteria 4-1-2. (4) and (5)]

This item was examined in E-7 together, and details are omitted in this column.

### **F-7 Waste and its disposal**

(1) Discharge of waste

This item was selected as an item for which criteria shall be established.  
[Establishing Certification Criteria 4-1-2. (4) and (5)]

This item was examined in E-7 together, and details are omitted in this column.

### **F-9 Other environmental impacts**

(1) Noise at recycling stage

This item was selected as an item for which criteria shall be established.  
[Establishing Certification Criteria 4-1-4. (16)]

This item was examined in B-9 together, and details are omitted in this column.