

Ministerial Ordinance Determining Engineering Standards Pertaining to Final Disposal Site for Municipal Solid Wastes and Final Disposal Site for Industrial Wastes

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In accordance with the provisions of Paragraphs 2 and 4 of Article 8, and Paragraphs 2 and 3 of Article 15 of the Waste Management and Public Cleansing Law (Law No. 1037 of 1970), the order determining the engineering standards pertaining to the final disposal site for municipal solid wastes and final disposal site for industrial wastes is provided as set forth in the following.

Ordinance Determining Engineering Standards Pertaining to Final Disposal Site for Municipal Solid Wastes and Final Disposal Site for Industrial Wastes

(Engineering Standards Pertaining to Final Disposal Site for Municipal Solid Wastes)

Article 1

The engineering standards of the final disposal site for municipal solid wastes according to the provisions of Item 1) of Paragraph 1 of Article 8-2 of the Waste Management and Public Cleansing Law (Law No. 137 of 1970; hereinafter referred to as "Law") shall be as follows.

- 1) Around the site of landfill disposal, there shall be provided an enclosure capable of preventing people entering in the landfill site without permission (or an enclosure, piles or other equipment capable of clearly defining the range of landfill site in the case of using the closed landfill site for any other purpose than land fill according to the provision of Item 17) in the following Paragraph).

- 2) There shall be provided, at a readily observable place of the entrance, a board of notice or other equipment indicating the final disposal site of municipal solid wastes according to Form 1.
- 3) Where it is required to prevent land slide or settlement of equipment provided in the final disposal site, there shall be provided an adequate landslide or settlement prevention work.
- 4) There shall be provided, for preventing runoff of municipal solid wastes for land fill, a retaining wall, embankment or other equipment complying with the following requirements (hereinafter referred to as “retaining wall or the like”).
 - a. To be safe in structural yield strength against the self weight, earth pressure, water pressure, wave force and/or seismic force.
 - b. Having an adequate measure taken for effectively preventing corrosion in accordance with the properties of municipal solid wastes to be filled, surface water, ground water and soil.
- 5) There shall be taken the measures listed below for preventing contamination of public water area and ground water by leaching from the landfill site (or section or sections of landfill disposal for the landfill site having the landfill disposal executed with the inside sectioned by partition equipment; same in the following in this Item and Item 6), and Item 12) of the following Paragraph). The preceding shall not apply to the municipal solid waste landfill sites having necessary measures taken for preventing contamination of the public water area and ground water.
 - a. That in the landfill sites (except for those having over the whole underground surface a layer of a thickness of 5m or more and a permeability coefficient of 100nm per second or less (or a Luzeon value of 1 in the case of a bedrock) or a layer having an equivalent or higher impervious effect (hereinafter referred to as “impermeable layer”); same in the following in a.), there shall be provided a seepage control work complying with the following requirements or a seepage control work having an equivalent or higher seepage controlling effect to prevent leaching of the retained water in municipal solid wastes and rain water (hereinafter referred to as “retained water or the like”) from the landfill site except for the opening for introduction of municipal solid wastes and the part of the equipment for collection and drainage of retained water or the like

specified in d. Provided, the preceding shall not apply to those parts of the internal side and bottom of the landfill site which have an impermeable layer on the surface.

- (1) That the site shall have an impermeable layer having any of the following requirements or an impermeable layer having an equivalent or higher effect. Provided, of the ground where the impermeable layer is laid (hereinafter referred to as “foundation ground”), the preceding shall not apply to those parts which have a gradient of 50% or more and a height exceeding the height threatened by the level of retained water or the like and which have a impervious sheet having a necessary impervious effect and strength and durability for preventing leaching of retained water or the like onto the surface of mortar sprayed on the foundation ground (hereinafter referred to as “impervious sheet”) or gum asphalt or a substance having an equivalent or higher impervious effect, strength and durability laid as an impermeable layer.
 - (a) That the impervious sheet is laid on the surface of a layer of clay or other material having a thickness of 50cm or more and a permeability coefficient of 10nm per second or less.
 - (b) That the impervious sheet is laid on the surface of a layer of asphalt concrete of a thickness of 5cm or more and a permeability coefficient of 1nm per second or less.
 - (c) That double impervious sheets (limited to those impervious sheets which have provided between the sheets a non-woven fabric or any other material which has a sufficient thickness and strength for preventing simultaneous damage of both impervious sheets by the running of vehicles used for landfill disposition, impacts of the works or any other load) are laid on the surface of a non-woven fabric or any other material (limited to those which are capable of preventing damage of double impervious sheets from contact with the foundation ground).
- (2) That the foundation ground shall have a necessary strength for preventing damage to the impermeable layer due to the load of municipal solid wastes to be disposed by landfill or any other expected load and be in a flat condition.
- (3) That the surface of the impermeable layer be covered with an non-woven fabric having a necessary effect of shield for preventing its

deterioration by sunlight or any other material providing an equivalent or higher effect of shielding and having an equivalent or higher strength. Provided, this shall not apply where it is recognized that the deterioration of the impermeable layer by sunlight is not threatening.

- b. That in the landfill sites (limited to those which have an overall impermeable layer in the underground; same in the following in b.), there shall be provided, except for the opening, a seepage control work provided with any of the following requirements or a seepage control work having an equivalent or higher effect of seepage control to prevent leaching of retained water or the like from the landfill site.
 - (1) That the ground around the landfill site is solidified to said impermeable layer to a Luzeon value of 1 or less by grouting of chemicals.
 - (2) That there is provided a wall of a thickness of 50cm or more and a permeability coefficient of 10nm per second or less around the landfill site to said impermeable layer.
 - (3) That there are provided steel sheet piles (limited to those which have measures taken to prevent leaching of retained water or the like from the part of joint with the other sheet piles) around the landfill site to said impermeable layer.
 - (4) Requirements listed in “(1) through (3) of a.”
- c. Where the seepage control work is subject to damage by ground water, there shall be provided a rigid and durable channel capable of effectively collecting and draining ground water or any other collecting facility(hereinafter referred to as “collecting facility”).
- d. In the landfill site, there shall be provided a channel or other collecting facility of rigid and durable structure which is capable of effectively collecting and quickly draining retained water or the like (or, for the water surface landfill site, a spillway of rigid and durable structure or other drainage facility which is capable of effectively draining retained, water or the like; hereinafter referred to as “retained water or the like collecting facility”). Provided, the preceding shall not apply to those landfill sites which have necessary measures taken to prevent entry of rain water (except for the landfill sites of water surface landfill disposal) and have only the municipal solid wastes which are not perishable and not producing retained

water.

- e. There shall be provided a regulating reservoir of waterproof structure which is capable of regulating the quantity and quality of retained water or the like collected by the retained water or the like collecting facility and flowing into a leachate treatment facility specified in f.. Provided, the preceding shall not apply to the final disposal site performing the water area landfill disposal or final disposal site specified in proviso of f.
- f. There shall be provided a leachate treatment system which is capable of adapting the quality of the effluent pertaining to the retained water or the like collected by the retained water or the like collecting facility (for the landfill sites performing water area landfill disposition, retained water or the like discharged by the retained water or the like collecting facility; same in the following) to the numerical value where such numerical value is specified to be attained of the quality of effluent in the effluent standards listed in the lower column of appended Table 1 in accordance with the item listed in the upper column of the same Table and the Program Concerning Maintenance of Municipal solid wastes Disposal Facilities provided in Item 7) of Paragraph 2 of Article 8 of the Law (hereinafter referred to as "Maintenance Program") (except for the numerical values concerning dioxins)referring to dioxins specified in Paragraph 1 of Article 2 of the Law Concerning Special Measures against Dioxins, Law No.106 of 1999))(hereinafter referred to as "effluent standards") and to the allowable limits of dioxins specified in the lower column of Appended Table 2, Regulations of the Law Concerning Special Measures against Dioxins (Prime Minister's Office Ordinance No. 67 of 1999 (or where attainment of severer value is specified in the Maintenance Program, such value). Provided, the preceding shall not apply to final disposal site where a storage tank of waterproof structure and sufficient capacity is provided for storing the retained water or the like collected by the retained water or the like collecting facility and the retained water or the like stored in the storage tank is processed by a water treatment system which is provided at a place other than that of the final disposal site and which has a capacity equivalent to, or higher than, that of the leachate treatment facility

specified in the main text.

- 6) Around the landfill site, there shall be provided an open duct or any other equipment capable of preventing inflow of surface water to the landfill site through the opening of the landfill site.
- 2) The engineering standards for maintenance of the final disposal site of municipal solid wastes according to the provision of Article 8-3 of the Law shall be as follows.
- 1) Take necessary measures to prevent the municipal solid wastes from scattering or run-off to the outside of the landfill site.
 - 2) Take necessary measures to prevent exhalation of foul smell to the outside of the final disposal site.
 - 3) Take necessary measures to prevent fire, and provide fire extinguishers and other fire extinguishing equipment.
 - 4) Take necessary measures including spraying of chemicals to prevent habitation of rats and breeding of mosquitoes, flies and other noxious insects.
 - 5) The enclosure provided according to the provision of Item 1) of the preceding Paragraph shall be so designed as to be capable of preventing people from entering into the landfill site without permission. Except when the closed landfill site according to the provision of Item 17) is used for any other purpose than landfill disposal, the confine of the landfill site shall be clearly represented by the enclosure, piles or other equipment provided in accordance with the parenthesized provision in Item 1) of the same Paragraph.
 - 6) The notice board and other equipment provided according to the provision of Item 2) of the preceding Paragraph shall be kept in a readily observable condition at all times, and in the event of alteration of the matters to be indicated, rewriting or other necessary measures shall be taken promptly.
 - 7) Retaining walls provided according to the provision of Item 4) of the preceding Paragraph shall be periodically inspected, and when it is recognized that the retaining walls may collapse, necessary measures shall be taken to prevent occurrence.
 - 8) When it is recognized that the seepage control work provided according to the provision of a. or b. (except for (1) through (3)) of Item 5) of the preceding Paragraph may be damaged by the load of the municipal solid wastes to be buried or any other expected load, the surface of the seepage

control work shall be covered by sand or any other material before landfill of the municipal solid wastes.

- 9) The seepage control work provided according to the provision of a.or b. of Item 5) of the preceding Article shall be periodically inspected, and when it is recognized that the seepage control effect may decrease, necessary measures shall be taken promptly for recovery of the effect.
- 10) Water quality inspection shall be made of the ground water collected at two or more places which are suitable for judgment of any effect of the leachate from the final disposal site upon the quality of ground water in the surrounding of the landfill disposal site or the effluent ground water from the underground collecting facility (in the case of a final disposal site performing water area landfill disposal, water of the water area or ground water collected from two or more places which are suitable for judgment of any effect of the leachate from the landfill site upon the quality of water of the water area or ground water in the surrounding of the final disposal site) according to the following.
 - a. Before start of landfill disposal, measure the electric conductivity and chloride ion of the items listed in the upper column of the appended Table 2 (hereinafter referred to as “ground water or the like inspection items”) and record them. Provided, for the final disposal site for which it is not adequate to use the electric conductivity and chloride ion concentration as an index of contamination of the ground water around the final disposal site (referring to the water in the surrounding or ground water in the periphery for the final disposal site performing water area landfill disposition; hereinafter referred to as “ground water or the like”), the preceding shall not apply to the electric conductivity and chloride ion.
 - b. After start of the landfill disposition, conduct measurements about the ground water or the like inspection items once a year (or once in every six months for the final disposal site specified in proviso of a. and record the measurements. Provided, for the items apparently free from the contamination of ground water or the like in view of the types of municipal solid wastes and quality of the retained water or the like collected by the retained water or the like collecting facility, the preceding is not applicable.

- c. After start of the landfill disposal, the electric conductivity and chloride ion shall be determined at least once a month and recorded. This shall not apply to the final disposal site specified in proviso of a..
 - d. When abnormality is observed in the electric conductivity or chloride ion concentration determined according to the provision of c., measurement shall be made immediately of the ground water or the like inspection items, and the measurements be recorded.
- 11) When degradation of the water quality is noted as the result of the water quality inspection pertaining to the ground water or the like inspection items according to the provision of a., b. or c. of the preceding Item (except when the cause is obviously outside of the final disposal site), necessary measures shall be taken for investigation of the cause and conservation of living environment.
 - 12) For the landfill site specified in proviso of e. of Item 5) of the preceding Paragraph, necessary measures shall be taken to prevent entry of rain water into the landfill site.
 - 13) The reservoir provided according to the provision of e. of Item 5) of the preceding Paragraph should be periodically inspected, and if it is recognized that the reservoir may break, necessary measures should be taken promptly to prevent this.
 - 14) Maintenance of the leachate treatment equipment provided according to the provision of f. of Item 5) of the preceding Paragraph, shall be made according to the following.
 - a. Maintenance shall be so made that the quality of effluent will comply with the effluent standards.
 - b. The functions of the leachate treatment equipment shall be periodically checked, and if abnormality is observed, necessary measures shall be taken promptly.
 - c. Inspection of the quality of effluent shall be made according to the following.
 - (1) Measure, at least once a year, the items specified in the effluent standards (except for the items specified in (2)) and record the measurements.
 - (2) Measure the hydrogen ion concentration, biochemical oxygen demand, chemical oxygen demand, amount of suspended solids and nitrogen

content (limited to those cases specified in Note 4 of Appended Table 1) once a month (or once a year for the items which have apparently no contamination caused to the public water area and ground water in view of the quality of the types of landfill municipal solid wastes and the quality of retained water or the like), and record the measurements.

- 15) Maintain the functions of the open duct and other equipment provided according to the provision of Item 6) of the preceding Paragraph, and for preventing runoff of the municipal solid wastes to the outside of the landfill site through said equipment, promptly remove the earth and sand deposited in the open duct and take any other necessary measures.
 - 16) Provide ventilation apparatus to discharge gas generated from the landfill site.
 - 17) The landfill site having the landfill disposal completed (or, for the landfill site having the landfill disposal made by sectioning the site by internal partition equipment, the section having the landfill disposal completed; same in the following in this Item and d. of Item 1) of Paragraph 2 of the following Article) shall have the opening closed by a covering of earth and sand of a thickness of generally 50cm or more or any other similar covering. Provided, the landfill site provided in proviso of d. of Item 5) of the preceding Paragraph shall be closed by a covering having the surface of the non-woven fabric laid in the impervious layer conforming to any of the requirements in (a) through (c) of (1) of a of the same Item covered by earth and sand or any other covering have an equivalent or higher effect of seepage control, effect of shielding light, strength and durability.
 - 18) For the landfill site closed according to the provision of the preceding Item, take necessary measures for preventing of damage to the covering specified in the same Item.
 - 19) There shall be prepared the records of the type and quantity of landfill municipal solid wastes and also of the inspections and other actions taken for maintenance of the final disposal site, and the records shall be preserved until disuse of the final disposal site.
- 3 The engineering standards for disuse of the final disposal site of municipal solid wastes according to the provision of Paragraph 5 of Article 9 of the Law (including those applied under Paragraph 10 of Article 9-3 of the Law) shall be, for the final disposal site of municipal solid wastes having the wastes disposed, as set forth in the following and, for the final disposal site of municipal solid

wastes having no waste disposed, that the wastes are not disposed.

- 1) That the final disposal site is not recognized that it is not complying with the engineering standards provided in Paragraph 1 (excluding Item 1), Item 2) and e. and f. of Item 5)).
- 2) That necessary measures are taken to prevent dissipation of foul smell to the outside of the final disposal site.
- 3) That necessary measure are taken to prevent occurrence of a fire.
- 4) That necessary measures are taken to prevent habitation of rats and breeding of mosquitoes, flies and other noxious insects.
- 5) That it is recognized that the quality of ground water or the like collected according to the provision of Item 10) of the preceding Paragraph does not come under any of the following as the result of he water quality inspection cited in the following, except where deterioration of the water quality is not observed as the result of the water quality inspection pertaining to the ground water or the like inspection items under the provision of a., b. or d. of the same Item (except where the cause is obviously outside of the final disposal site).
 - a. That as the result of the water quality inspection pertaining to the ground water or the like inspection items according to the provision of b. or d. of Item 10) of the preceding Paragraph, the quality of the ground water or the like does not actually comply with the standards cited in the lower column of the appended table pertaining to the ground water or the like inspection items for any of the ground water or the like inspection items.
 - b. That as the result of the water quality inspection pertaining to the ground water or the like inspection Items according to the provision of a., b. or d. of Item 10) of the preceding Paragraph, the quality of the ground water or the like may fail to comply with the standards cited in the lower column of the appended Table 2 pertaining the ground water or the like inspection items for any of the ground water or the like inspection items in the light of fluctuation of the values obtained through the inspection.
- 6) That the quality of the retained water or the like collected by the retained water or the like collecting system is recognized to be complying with the effluent standards for all items as the result of the water quality inspection over two years (or where the properties of the landfill municipal solid

wastes were greatly changed, two years after the change) or more at a frequency cited in a. and b. for the items cited in a. and b.. Provided, the preceding shall not apply to the landfill sites specified in proviso of d. of Item 5) of Paragraph 1.

- a. Items pertaining to the effluent standards (except for the items cited in b.) :Once every six months or more.
 - b. Items provided in (2) of c of Item 14) of the preceding Paragraph:
Once every three months or more.
- 7) That the generation of gas from the landfill site is scarcely observed, or that no increase of the generation of gas is observed over two years or more.
 - 8) That the inside temperature of the landfill site is not abnormally high as compared with the ground temperature in the surrounding.
 - 9) That the opening is closed by the covering specified in Item 17) of the preceding Paragraph.
 - 10) That the covering specified in proviso of Item 17) of the preceding Paragraph has no settlement, cracking nor other deformation observed.
 - 11) That the effects of the leachate or gas from the landfill site on the living environment of the surrounding area and other effects of the final disposal site on the living environment in the surrounding area are actually causing no hazard to conservation of the living environment.

(Engineering Standards Pertaining to Final Disposal Site of Industrial Wastes)

Article 2

The engineering standards of the final disposal site of industrial wastes according to the provision of Item 1) of Paragraph 1 of Article 15-2 of the Law shall be as set forth in the following unless otherwise specified in Item 3) of Paragraph 1 of the preceding Article.

- 1) There shall be provided, at a readily observable place of the entrance a board of notice or other equipment indicating according to Form 2 that the site is a final disposal site of industrial wastes (referring to those final disposal site of industrial wastes cited in a. of Item 14) of Article 7 of the Cabinet Order of the Waste Management and Public Cleansing Law (Cabinet Order No. 300 of 1971; hereinafter referred to as “Cabinet Order”) (such landfill site being hereinafter referred to as “strictly controlled type landfill

site”) which are the final disposal site of harmful specially controlled industrial wastes if used for landfill disposal of specially controlled industrial wastes cited in (1) through (6) of a. of Item 3) of Paragraph 1 of Article 6-5 of the Cabinet Order or the final disposal site of harmful industrial wastes if not used for landfill disposal of specially controlled industrial wastes).

- 2) The strictly controlled type final disposal site shall satisfy the following requirements unless otherwise provided in Item 6) of Paragraph 1 of the preceding Article.
 - a. Around the landfill site, there shall be provided an enclosure capable of preventing entry of people into the site without permission.
 - b. The landfill site shall have a boundary equipment having the following requirements provided except for the opening for introduction of industrial wastes.
 - (1) That the boundary is a water-tight reinforced concrete construction having a unconfined compressive strength of 25 newton per square millimeter or more as measured according to JIS A1108 “Concrete compressive strength testing method” and a thickness of 35cm or more or an equivalent control effect.
 - (2) That it is provided with the requirements cited in a. of Item 4) of Paragraph 1 of the preceding Article.
 - (3) That the surface coming into contact with the landfill industrial wastes is fully covered by a material having an effect of seepage control and an effect of preventing corrosion.
 - (4) That effective measures are taken for prevention of corrosion in accordance with the properties of surface water, ground water and soil.
 - (5) That it is so constructed as to allow visual check of any damage.
 - c. The landfill site having an area exceeding 50m² or landfill capacity exceeding 250m³ shall be divided in sections by internal partitioning equipment satisfying the requirements cited in (1) through (4) of b. so that the area of one section will not generally exceed 50m² or that the landfill capacity of one section will not generally exceed 250m³.
- 3) The final disposal site of industrial wastes cited in b. of Item 14) of Article 7 of the Cabinet Order (hereinafter referred to as “inert type landfill site” in the following) shall comply with the following requirements unless otherwise provided in Item 4) of Paragraph 1 of the preceding Article.

- a. Around the landfill site, there shall be provided an enclosure preventing entry of people into the site without permission (for the landfill sites closed under the provision of g. of Item 2) of the following Paragraph, an enclosure, piles or other equipment defining the confine of the landfill site).
 - b. Where it is recognized to be necessary for maintenance of the stability of retaining walls, there shall be provided an equipment allowing discharge of the rain water inside the landfill site.
 - c. There shall be provided an equipment capable of collecting seepage water (referring to rain water or the like passing through the layer of the inert type industrial wastes (referring to the inert type industrial wastes specified in a. of Item 3) of Paragraph 1 of Article 6 of the Cabinet Order); same in the following) from the landfill site (such equipment hereinafter referred to as “collecting equipment”) for use in water quality inspection in order to check any adhesion or admixture of wastes other than the inert type industrial wastes to or in the landfill industrial wastes.
- 4) The final disposal site of industrial wastes cited in c. of Item 14) of Article 7 of the Cabinet Order (hereinafter referred to as “controlled type landfill sites”) shall be subject to application of the provisions in Item 1) and Items 4) through 6) of Paragraph 1 of the preceding Article.
- 2 The engineering standards for maintenance of the final disposal site of industrial wastes shall be as set forth unless otherwise provided in Items 1) through 4) and Item 6) of Paragraph 2 of the preceding Article.
 - 1) Maintenance of the strictly controlled type landfill sites shall be as set forth in the following unless otherwise provided in Items 10) through 12) and Item 15) of Paragraph 2 of the preceding Article.
 - a. The enclosure provided according to the provision of a. of Item 2) of the preceding Paragraph shall be so designed as to be capable of preventing entry of people in the site without permission.
 - b. Water accumulated in the landfill site (or section of landfill disposal for the landfill site having the landfill disposal made by dividing the site into sections) shall be removed prior to start of the landfill disposal in said landfill site or section.
 - c. The boundary equipment provided according to the provision if b. of Item 2) of the preceding paragraph and the internal partition

equipment provided according to the provision of c. of the same Item shall be periodically inspected, and when it is recognized that there is the possibility of damage of such equipment or leaching of the retained water of landfilled industrial wastes, delivery of the industrial wastes to the final disposal site and landfill disposal shall be immediately suspended, and necessary measures shall be taken for preventing damage of such equipment or leaching of the retained water of landfilled industrial wastes.

- d. The landfill site having the landfill disposal completed shall be promptly closed by a covering satisfying the requirements cited in (1) through (4) of b. of Item 2) of the preceding paragraph.
 - e. For the landfill site closed according to the provision of d. (or, for the landfill site having the landfill disposal made through sectioning by internal partition equipment, the section closed according to the provision of d.), the covering shall be periodically inspected, and when it is recognized that there is the possibility of damage of the covering or leaching of the retained water of landfilled industrial wastes, necessary measures shall be promptly taken for preventing damage of the covering or leaching of the retained water of landfilled industrial wastes.
 - f. There shall be prepared the records of the types and quantities of the landfilled industrial wastes in the final disposal site (or, for the landfill site having the landfill disposal executed through sectioning according to the provision of c. of Item 2) of the preceding paragraph, the section having the landfill disposal made) and of the inspections and other actions made for maintenance of the final disposal site, and such records shall be preserved until disuse of said final disposal site.
- 2) Maintenance of the inert type landfill site shall be according to the following unless otherwise provided in Items 7) and 19) of Paragraph 2 of the preceding Article.
- a. The enclosure provided according to the provision of a. of Item 3) of the preceding paragraph shall be so designed as to be capable of preventing entry of people in the site without permission. Provided, for the landfill site closed according to the provision of g., the confine of the landfill site shall be clearly defined by the enclosure, piles or other equipment provided according to provision of a. of the same Item.

- b. Prior to landfill, the industrial wastes carried to the final disposal site shall be developed and inspected visually for any adhesion or admixture of wastes other than inert type industrial wastes to or in said industrial wastes, and when adhesion or admixture of wastes other than inert type industrial wastes is observed, said industrial wastes shall not be landfilled.
- c. Inspection of the ground water collected at two or more places which are adapted for judgment of any effect on the quality of ground around the final disposal site by permeating water shall be made according to the following.
 - (1) Before start of the landfill disposal, measurements shall be made of the ground water or the like inspection items and be recorded.
 - (2) After start of the landfill disposal, measurements shall be made of the ground water or the like inspection items at least once a year and be recorded. Provided, for the items which are obviously of no possibility of contamination of the ground water in the surrounding of said final disposal site in the light of the quality of the permeating water, the preceding shall not apply.
- d. Where deterioration of the water quality is noted as the result of the water quality inspection according to the provision of c. (except when the cause is present in the outside of said final disposal site), necessary measures shall be taken for investigation of the cause and conservation of the living environment.
- e. Inspection of the quality of permeating water collected by the collecting equipment shall be made of the items listed in (1) and (2) and at a frequency listed in (1) and (2), and the results be recorded.
 - (1) Ground water or the like inspection items; at least once a year.
 - (2) Biochemical oxygen demand or chemical oxygen demand; at least once a month (in the case of landfill sites having the landfill disposal completed: at least once in every three months).
- f. In the cases listed below, introduction of the industrial wastes to the final disposal site and landfill disposal shall be promptly suspended, and necessary measures for conservation of the living environment shall be taken.
 - (1) When, as the result of the water quality inspection pertaining to the items cited in (1) of e., any of the ground water or the like inspection

items is not complying with the standards cited in the lower column of the appended Table 2 pertaining said ground water or the like inspection items.

(2) When, as the result of the water quality inspection pertaining to the items cited in (2) of e., the biochemical oxygen demand is in excess of 20mg per λ or the chemical oxygen demand is in excess of 40mg per λ .

g. When the landfill site having the landfill disposal completed is used for any other purpose than landfill disposal, the opening shall be closed by a covering of earth and sand or the like of a thickness of generally 50cm or more.

h. For the landfill site closed according to the provision of g., necessary measures shall be taken to prevent damage of the covering specified in g..

3) Maintenance of the controlled type landfill site shall be according to the provisions in Item 5) and Items 7) through 19) of Paragraph 2 of the preceding Article (except for Item 16) for the final disposal site filling only slag, flyash and other industrial wastes which are of no possibility of generating gas.

3 The engineering standards for disuse of a final disposal site of industrial wastes according to the provision of Paragraph 5 of Article 9 of the Law which is applied mutatis mutandis in Paragraph 3 of Article 15-2-4 of the Law shall be as follows unless otherwise provided in Items 2) through 4) and Item 11) of Paragraph 3 of the preceding Article, and for final disposal site of industrial wastes having no wastes landfilled, it shall be taken that the wastes are not landfilled.

1) For the strictly controlled landfill sites, the following shall apply unless otherwise provided in Item 5) of Paragraph 1 of the preceding Article.

a. That the final disposal site is not recognized that it is not complying with the engineering standards provided in Item 3) of Paragraph 1, and b. of Item 2) of Paragraph 1 of the preceding Article which are specified as applicable in Paragraph 1.

b. That the landfill site is closed by a covering provided in d. of Item 1) of the preceding Paragraph.

c. That the measures determined by the Director General of Environment Agency and the Minister of the Environment are taken for the industrial wastes landfilled in the final disposal site or the boundary

equipment provided according to the provision of b. of Item 2) of Paragraph 1.

- 2) For the inert type landfill sites, the following shall apply unless otherwise provided in Items 7) and 8) of Paragraph 3 of the preceding Article.
 - a. That it is not recognized that the final disposal site is not complying with the engineering standards provided in Item 3) of Paragraph 1 of the preceding Article which is specified as applicable in Paragraph 1 and Item 4) of Paragraph 1 and b. of Item 3) of Paragraph 1 of the preceding Article which are specified as applicable in Item 3) of Paragraph 1.
 - b. That it is recognized that the quality of the ground water collected according to the provision of c. of Item 2) of the preceding Article does not come under either of the following as the result of either of the water quality inspections cited below. Provided, the preceding shall not apply if aggravation of water quality is not recognized as the result of the water quality inspection according to the provision of c. of the same Item (except where the cause is existing obviously outside of the final disposal site).
 - (1) That as the result of the water quality inspection according to the provision of (2) of c. of Item 2) of the preceding Paragraph, the quality of the ground water is not actually complying with the standards cited in the lower column of the appended table pertaining to the ground water or the like inspection items with respect to any of the ground water or the like inspection items.
 - (2) That as the result of the water quality inspection according to the provision of c. of Item 2) of the preceding Paragraph and in the light of fluctuation of the values obtained by the inspection, the quality of the ground water may come to fail to comply with the standards listed in the lower column of the appended Table 2 pertaining to the ground water or the like inspection items with respect to any of the ground water or the like inspection items.
 - c. That as the result of the water quality inspection conducted of the water quality of the seepage water collected by the collecting equipment about the item listed in the upper column of the following table, the standard listed in the lower column of the same table is complied with.

Ground water, etc. inspection item
Standard listed in lower column of appended Table 2

Biochemical oxygen demand
20mg perλ or less

Ground water, etc. inspection item
Standard listed in lower column of appended Table 2

Biochemical oxygen demand
20mg perλ or less

- d. That the opening is closed by a covering of earth and sand or the like of a thickness of generally 50cm or more.
- 3) For the controlled type landfill sites, they shall not be recognized as not complying with the engineering standards under the provisions of Items 5) through 10) of Paragraph 3 of the preceding Article and further provided in Item 3) of Paragraph 1 of the same Article specified as applicable in Paragraph 1 and also in Items 4) through 6) (except for e. and f. of Item 5)) of Paragraph 1 of the same Article specified as applicable in Item 4) of Paragraph 1.

(Method of Water Quality Inspection)

Article 3

The water quality inspection according to the provisions of Item 10) of Paragraph 2 of Article 1 (including the cases specified as applicable in Items 1) and 3) of Paragraph 2 of the preceding Article), c. of Item 14) of Paragraph 2 of Article 1 (including the cases specified as applicable in Item 3) of Paragraph 2 of the preceding Article), Item 6) of Paragraph 3 of Article 1 (including the cases specified as applicable in Item 3) of Paragraph 3 of the preceding Article), and c. and e. of Item 2) of Paragraph 2 of the preceding Article and c. of Item 2) of Paragraph 3 of the same Article shall be according to the method

determined by the Minister of the Environment.

Appended Table 1 (Related to Article 1)

Alkyl mercury compound
not to be detectable

Mercury or a compound thereof
0.005mg/liter or less

Cadmium or a compound thereof
0.1mg/liter or less

Lead or a compound thereof
0.1mg/liter or less

Organic phosphorous compound (limited to parathion, parthion-methyl, demeton-methyl, and ethylparanitrophenylthiono benzenephosphonate)
1mg/liter or

Hexavalent chromium compound
0.5mg/liter or less

Arsenic or a compound thereof
0.1mg/liter or

Cyanide compound
1mg/liter or

Polychlorinated Biphenyl
0.003mg/liter or less

Trichloroethylene
0.3mg/liter or less

Tetrachloroethylene
0.1mg/liter or less

Dichloromethane
0.2mg/liter or less

Carbon tetrachloride

0.02mg/liter or less

1,2-dichloroethane
0.4mg/liter or less

1,1-dichloroethylene
0.2mg/liter or less

Cis-1,2-dichloroethylene
0.4mg/liter or less

1,1,1- trichloroethane
3mg/liter or less

1,1,2- trichloroethane
0.06mg/liter or less

1,3-dichloropropene
0.02mg/liter or less

Thiram
0.06mg/liter or less

Simazine
0.03mg/liter or less

Thiobencarb
0.2mg/liter or less

Benzene
0.1mg/liter or less

Selenium or compound thereof
0.1mg/liter or less

Hydrogen ion concentration (hydrogen index)
5.8 or more and 8.6 or less for those discharged into the public water area other than sea area
5.0 or more and 9.0 or less for those discharged into sea area

Biochemical oxygen demand
60mg/liter or less

Chemical oxygen demand
90mg/liter or less

Suspended solids
60mg/liter or less

N-hexane extract content (mineral oils content)
5mg/liter or less

N-hexane extract content (animal and vegetable oil and fat content)
30mg/liter or less

Phenols content
5mg/liter or less

Copper content
3mg/liter or less

Zinc content
5mg/liter or less

Soluble iron content
10mg/liter or less

Soluble manganese content
10mg/liter or less

Chromium content
2mg/liter or less

Fluorine content
15mg/liter or less

No. of coliform group
the daily average to be 3,000/cm³ or less

Nitrogen content
120mg/liter or less (the daily average to be 60mg/liter or less)

Phosphorus content
16mg/liter or less (the daily average to be 8mg/liter or less)

NOTE:

1. "Not detected" means that when tested by the method specified by the Minister of the Environment under the provision of Article 3, the result is falling below the quantitative limit of the said testing method.

2. Criteria by "daily average " are specified on the average polluted condition of the effluent during one day.

3. Final effluent discharged into sea and lakes shall exclude biochemical oxygen demand and final effluent discharged into other public water area shall exclude chemical oxygen demand.

4. Criteria of nitrogen content in effluent shall only apply to effluent

discharged into lakes specified by the Minister of the Environment as those where nitrogen is likely to cause the significant increase of phytoplankton of lakes, sea area specified by the Minister of the Environment as those where nitrogen is likely to cause the significant increase of phytoplankton of sea (including lakes where chlorine ion content in the water is over 9,000mg/liter and it will apply the same hereinafter) and public water area where the water flow in the above mentioned areas.

5. Criteria of phosphorus content in effluent shall only apply to effluent discharged into lakes specified by the Minister of the Environment as those where phosphorus is likely to cause the significant increase of phytoplankton of lakes, sea area specified by the Minister of the Environment as those where phosphorus is likely to cause the significant increase of phytoplankton of sea and public water area where the water flow in the above mentioned areas.

Appended Table 2 (Related to Articles 1 and 2)

alkyl mercury

Not to be detected

total mercury

0.0005mg /liter or less

cadmium

0.01mg /liter or less

lead

0.01mg /liter or less

hexavalent chromium
0.05mg /liter or less

arsenic
0.01mg /liter or less

total cyanide
Not to be detected

polychlorinated biphenyl
Not to be detected

trichloroethylene
0.03mg /liter or less

tetrachloroethylene
0.01mg/liter or less

dichloromethane
0.02mg/liter or less

carbon tetrachloride
0.002mg/liter or less

1,2-dichloroethane
0.004mg/liter or less

1,1-dichloroethylene
0.02mg/liter or less

cis-1,2-dichloroethylene
0.04mg/liter or less

1,1,1-trichloroethane
1mg per/liter or less

1,1,2-trichloroethane
0.006mg/liter or less

1,3-dichloropropene

0.002mg /liter or less

Thiuram

0.006mg/liter or less

Simazine

0.003mg/liter or less

Thiobencarb

0.02mg/liter or less

benzene

0.01mg/liter or less

selenium

0.01mg/liter or less

Note:

“Not to be detected” means that when tested by the method specified by the Minister of the Environment under the provision of Article 3, the result is falling below the quantitative limit of the said testing method.