MINISTRY OF ENVIRONMENTAL PROTECTION, PHYSICAL PLANNING AND CONSTRUCTION

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Pursuant to Article 104, paragraph 1, item 6 of the Waste Act (Official Gazette 178/04 and 111/06), the Minister of Environmental Protection, Physical Planning and Construction, hereby issues the

ORDINANCE

ON METHODS AND REQUIREMENTS FOR THERMAL TREATMENT OF WASTE

I GENERAL PROVISIONS

Article 1

(1) This Ordinance prescribes the requirements for start-up of operations, operating conditions, requirements for shut-down of operations, method of entry control of waste, method of air, soil and water protection and management of residues in the process of thermal treatment of waste.

(2 This Ordinance refers to all waste incineration or co-incineration plants including installations for waste pyrolysis and installations and equipment which incinerate waste for the purpose of energy generation.

Article 2

The objectives of this Ordinance are to prevent or limit the pollutant emissions into the air, soil, surface water and groundwater, and the resulting risks to human health caused by the incineration and co-incineration of waste.

Article 3

The provisions of this Ordinance shall not apply to the thermal treatment of:
– vegetable waste from agriculture or forestry;
– vegetable waste from the food processing industry, if the heat generated is recovered;
– fibrous vegetable waste from virgin pulp production and from production of paper from pulp, if it is co-incinerated at the place of production and the heat generated is recovered;
– wood waste with the exception of wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives, coating, or adhesives and which includes in particular such wood waste originating from construction and demolition waste;

– cork waste;
– radioactive waste,
– animal carcasses,
– waste resulting from the exploration for, and the exploitation of, oil and gas resources from off-shore installations and which is incinerated directly on the location i.e. on board the exploitation installation;
and to experimental plants used for research, development and testing in order to improve the incineration process and which treat less than 50 tonnes of waste per year.

Article 4

For the purpose of this Ordinance, the following waste shall not be regarded as hazardous waste:
– combustible liquid/liquefied waste, including waste oil with the specific net calorific value of at least 30 MJ per kilogramme, whose mass content of polychlorinated aromatic hydrocarbons, e.g. polychlorinated biphenyls (PCB) or pentachlorinated phenol (PCP) is not higher than 5 mg/kg nor shows hazardous properties set out in the relevant special regulation on types of waste,
– any combustible liquid/liquefied wastes whose combustion products cannot cause emissions or higher concentrations of emissions than those resulting from the combustion of extra light gas oil.

Article 5

Specific terms used in this Ordinance shall have the following meaning:
1. *"Plant for the thermal treatment of waste" or "incineration plant"* means any stationary or mobile technical unit dedicated to the thermal treatment of waste with recovery of the combustion heat generated. This includes incineration by oxidation of waste as well as other thermal treatment processes such as pyrolysis, gasification or plasma processes in so far as the substances resulting from the treatment are subsequently incinerated.
The definition *"plant for the thermal treatment of waste" or "incineration plant"* covers also the site on which the plant is located, including all incineration lines, waste reception and storage, on-site pretreatment lines, waste-fuel and air-supply systems, boilers, system for the treatment of exhaust gases, on-site facilities for treatment or storage of residues and waste water, stack, devices and systems for controlling incineration operations, recording and monitoring incineration conditions.
2. *"Plant for the co-incineration of waste" or "co-incineration plant"* means any stationary or mobile plant whose main purpose is the generation of energy or production of material products and which uses waste as its regular or additional fuel or in which waste is thermally treated for the purpose of final disposal. If co-incineration takes place in such a way that the main purpose of the plant is not the generation of energy or production of material products but rather the thermal treatment of waste, the plant shall be regarded as an incineration plant.
The definition *"plant for the co-incineration of waste" or "co-incineration plant"* covers also the site on which the plant is located, including all incineration lines, waste reception and storage, on-site pretreatment lines, waste-fuel and air-supply systems, boilers, system for the treatment of exhaust gases, on-site facilities for treatment or storage of residues and waste water, stack, devices and systems for controlling incineration operations, recording and monitoring incineration conditions.
3. *"Nominal capacity of incineration plant"* means the sum of the capacities of all furnaces of which the incineration plant is composed (specified by the constructor and confirmed by the

treatment operator) with due account being taken, in particular, of the calorific value of the waste, expressed as the quantity of waste incinerated per hour (t/h).
4. *"Pretreatment"* means the processing step used for the preparation of waste for incineration and/or co-incineration on the site of the plant itself in processes such as crushing/grinding, mixing or some other chemical or physical treatment.
5. *"Waste gas; smoke gas"* means the gaseous mixture consisting of gaseous products of waste incineration and combustion air which are generated in incineration plants as well as of gaseous components from the production process in co-incineration plants, including also suspended liquids and/or solids.
6. *"Emission"* means the direct or indirect release of pollutants from point or diffuse sources into the air, water and/or soil; within the broader definition, emission also means harmful effects of noise, vibrations and light.
7. *"Emission limit value"* (hereinafter: ELV) means the highest permitted value for certain measurement or operation conditions, which may not be exceeded during one or more time intervals, and which is defined in detail pursuant to special regulations in the field of air and water protection.
8. *"Dioxins and furans":* polychlorinated dibenzo-p-dioxins and dibenzofurans (PCCD/F), expressed as 2,3,7,8-TCDD-equivalent (I-TEF) defined in detail pursuant to special regulations in the field of air protection.
9. *"Waste thermal input"* means the amount of heat released through incineration of waste in the period of one month recalculated to an hourly average.
10. *"Fuel thermal input"* means the amount of heat released by combustion of fuel, without waste, in the period of one month recalculated to an hourly average.
11. *"Total thermal input of combustible substances"* means the sum of inputs of combustible substances comprising of waste and fuel together during combustion.
12. *"Residue"* means any solid, liquid/liquefied waste generated by combustion or during the waste gas or waste water treatment or other processes within the incineration or co-incineration plant, including bottom ash and slag, fly ash and boiler dust, residues generated by gas purification, sludge from wet purification of smoke gases, spent catalysts and spent activated carbon.
13. *"Authorised expert persons or bodies"* means natural or legal persons authorised pursuant to special regulations for carrying out chemical and/or physical testing of waste, as well as technical testing of emissions of waste gases or waste waters.
14. *"Treatment operator"* means any natural or legal person who operates the waste incineration or co-incineration plant, who is authorised and responsible for plant operations.

II PERMIT FOR OPERATION OF WASTE INCINERATION AND CO-INCINERATION PLANT

Article 6

No waste incineration and co-incineration plant shall be allowed to operate without a permit to carry out the activities of thermal treatment of waste pursuant to the Waste Act.

Article 7

In addition to the application for the permit to carry out the activities of thermal treatment of waste in the waste incineration and co-incineration plant and other requirements prescribed by the Waste Act, it is also required to enclose the following:
1. List of waste planned to undergo incineration and co-incineration with accompanying

labels in accordance with the special regulations on types of waste and foreseen quantities of waste
2. Information on the average composition of municipal waste foreseen to undergo incineration at the waste incineration plant
3. Information on the maximum content of certain pollutants in hazardous waste which may result in emissions harmful to human health or environment, in particular PCB, PCP, chlorine, fluor, sulphur and heavy metals; information on the maximum content of mercury in the waste reduced to the lower calorific value of waste of H_d = 25 MJ/kg
4. Information on the minimum and maximum mass flows of hazardous waste (in kg/h) as well as the lowest and maximum calorific values of that waste (in MJ/kg)
5. The nominal capacity and total capacity of incineration and co-incineration of waste in a plant
6. Description of the measures which guarantee and prove the following:
– that the plant is designed, built and equipped in such a manner as to comply with the requirements of the existing regulations on air, water and soil protection;
– that the heat generated during the thermal treatment process is recovered through the generation of electric power, combined generation of heat and power, the generating of process steam or other industrial purposes, tertiary activities, for district heating or other;
– that the residues and their harmful effects have been minimised and that they are recovered, where appropriate, in accordance with waste management regulations
– that the disposal of residues which cannot be avoided is carried out in conformity with waste management regulations
7. Evidence that the plant complies with the prescribed requirements pursuant to regulations in the field of air, water and soil protection (measurement results from laboratories and institutions authorised pursuant to other relevant regulations)

III ABNORMAL OPERATING CONDITIONS

Article 8

The treatment operator managing the waste incineration or co-incineration plant must comply with the measures prescribed pursuant to special regulations in the field of air and water protection, referring to the maximum permissible period of any technically unavoidable disturbances, failures or stoppages of the purification devices or the measurement devices at the plant, and these measures shall determine during which concentrations of substances in the emissions into the air and waste water may exceed the prescribed ELVs pursuant to special regulations.

IV ENTRY CONTROL AND RECEPTION OF WASTE

Article 9

(1) Any input of waste in the waste incineration and co-incineration plant shall be monitored.
(2) The treatment operator shall keep a register on the received quantities, type and category of waste.

Article 10

(1) At the entry of the waste incineration and co-incineration plant, the treatment operator receives and controls the following:

1. Accompanying form for the waste,
2. Declaration on physical and chemical properties of waste pursuant to a special regulation and/or
Report on the testing of physical and chemical properties of waste pursuant to the Waste Act which shall at least contain the following:
- burning point,
- heat value,
- percentage of halogen, water, sulphur, ash, polychlorinated biphenyl PCB and heavy metals: Cr, Cd, Hg, Pb, Ni, V.
4. Other supporting documents on waste prescribed pursuant to other special regulations
(2) Treatment operator may also request additional testing of waste for incineration and co-incineration except for those referred to in paragraph 1, item 2 of this Article such as viscosity, neutralisation number, mechanical contaminations, etc., which are required for the purpose of operational safety of the plant in accordance with the conditions referred to in this Ordinance.

Article 11

(1) At the entry to the waste incineration and co-incineration plant, the treatment operator shall, by weighing, visually and organoleptically to the extent to which it is possible and harmless, check whether the shipment is in line with the quantities listed in the accompanying form, information on physical-chemical properties listed in the accompanying form and the declaration on physical and chemical properties of waste and/or the report on the testing of physical and chemical properties of waste.
(2) At the entry to the plant, the treatment operator shall take representative samples of waste in the manner prescribed by other relevant regulations and shall keep them for at least one month after completing the treatment of waste.
(3) The provision of paragraph 2 of this Article shall not apply to infectious waste and to any other type of waste where this would result in endangering persons, property or the environment.

Article 12

(1) The treatment operator shall not be allowed to accept the shipment of waste which is not in conformity with the information from the supporting documentation or if the supporting documentation is incomplete i.e., if the necessary prescribed information is missing.
(2) In the case of reasonable doubt relating to the accuracy of information in the accompanying form and/or declaration on physical and chemical properties of waste and/or report on the testing of physical and chemical properties of waste, the treatment operator shall return the shipment or, in agreement with the consignor, temporarily store the shipment and the consignor shall ensure verification of the information and shall bear the costs of waste re-testing and storage.

V OPERATING CONDITIONS FOR WASTE INCINERATION AND CO-INCINERATION PLANTS

Article 13

(1) Incineration and co-incineration plants must achieve a level of incineration such that the slag and bottom ash Total Organic Carbon (TOC) content is less than 3 % or their loss on

ignition is less than 5 % of the dry weight of the material.
(2) Incineration and co-incineration plants shall be designed, built, equipped and operated in such a way that they comply with the following requirements:
- The temperature of gases near the inner wall of the combustion chamber is raised, after the last injection of combustion air and even under the most unfavourable conditions, to a temperature of at least 850 °C,
- All smoke gases have to be raised to a temperature of 850 °C for at least two seconds, if hazardous waste containing halogenated organic substances is incinerated with a total halogen content, expressed as chlorine, of more than 1 % of waste mass, the required temperature referred to in previous items has to be raised to at least 1 100 °C at which all smoke gases have to be held for at least two seconds.

Article 14

(1) Each line of the waste incineration plant shall be equipped with at least one auxiliary burner which switches on automatically when the temperature of the waste gases after the last injection of combustion air falls below 850 °C or 1 100 °C pursuant to Article 13, paragraph 2, of this Ordinance.
(2) The burner must be activated during plant start-up and shut-down operations in order to ensure and maintain the lowest temperature pursuant to Article 13, paragraph 2, of this Ordinance at all times during plant operation for as long as unburned waste is in the combustion chamber.
(3) During plant start-up and shut-down operations and when the temperature of the combustion gases falls below the temperatures referred to in Article 13, paragraph 2, of this Ordinance, the burner shall not be fed with fuels which can cause higher emissions than those resulting from the burning of extra light gas oil, or natural gas or liquefied gas.

Article 15

Waste incineration and co-incineration plants shall be equipped with an automatic system to prevent waste feed into the combustion chamber, which must be activated in the following cases:
- at start-up of incineration and co-incineration process, until the minimum required temperature referred to in Article 13, paragraph 2 of this Ordinance has been reached,
- whenever the temperature falls under the temperature referred to in Article 13, paragraph 2 of this Ordinance or whenever the residence time prescribed in Article 13, paragraph 2 of this Ordinance is decreased,
- whenever one of the continuously measured emission limit values is exceeded or whenever disturbances in the waste gas treatment system occur.

Article 16

Any heat generated by the waste incineration or co-incineration process shall be maximally recovered as far as it is technically and economically practicable.

Article 17

Infectious or potentially infectious waste is to be placed directly into the furnace, without first being mixed with other categories of waste and without direct handling.

VI PROTECTION OF AIR, SOIL AND WATER

Article 18

(1) Waste incineration and co-incineration plants, including waste handling and storage in the plant must comply with all regulations on air protection including all obligations to measure, control measurement devices, record, report and keep records.
(2) Waste incineration and co-incineration plants, including waste handling and storage in the plant have to be built and equipped in such a way as to, even in cases of unauthorised operation or accident, reliably avoid release of any polluting substances into soil, groundwater and surface water.
(3) Waste water from the entire plant site shall be treated in accordance with the regulations on water protection.
(4) Rainwater run-off from the entire plant site shall be built in such a way as to enable the retention of accidentally contaminated waters e.g., from waste spillage or fire-fighting operations, in an intermediate container of appropriate capacity.
(5) Retained waters shall be tested, treated and, after complying with water legislation requirements pursuant to the special regulation on water protection, discharged into the receiver.

Article 19

(1) Unless a special regulation on water protection prescribes more stringent values for limit concentrations of pollutants in waste waters generated by the smoke gas purification process at the waste incineration plants, the following emission limit values shall apply:

Polluting substance	Highest permitted value of mass concentration of polluting substance in unfiltered samples	
1. Total suspended solids	95 % (mass)30 mg/l	100 % (mass)45 mg/l
2. Mercury and its compounds, expressed as mercury (Hg)	0,03 mg/l	
3. Cadmium and its compounds, expressed as cadmium (Cd)	0,05 mg/l	
4. Thallium and its compounds, expressed as thallium (Tl)	0,05 mg/l	
5. Arsenic and its compounds, expressed as arsenic (As)	0,15 mg/l	
6. Lead and its compounds, expressed as lead (Pb)	0,2 mg/l	
7. Chromium and its compounds, expressed as chromium (Cr)	0,5 mg/l	
8. Copper and its compounds, expressed as copper (Cu)	0,5 mg/l	
9. Nickel and its compounds, expressed	0,5 mg/l	

as nickel (Ni)	
10. Zinc and its compounds, expressed as zinc (Zn)	1,5 mg/l
11. Dioxins and furans, defined as the sum of individual dioxins and furans	0,3 mg/l

(2) Concentrations of polluting substances lower than the emission limit values referred to in paragraph 1 of this Article shall under no circumstances be achieved by dilution.

Article 20

The work areas of waste incineration and co-incineration plants, including waste handling and particularly waste storage, while excluding offices, changing rooms etc., shall be equipped with devices for air suck-off and air outtake into the plant combustion chamber. During plant operation the air is sucked-off and lead to the combustion chamber and when the combustion chamber is shut-down, it is lead to the stack.

VII RESIDUES

Article 21

(1) Residues resulting from the operation of the waste incineration or co-incineration plant shall be treated and/or recovered directly in the plant, where appropriate, or outside the plant in accordance with waste management regulations. The amount and harmful properties of residues must be minimised; they have to be recovered or recycled to the greatest possible extent. Residues which cannot be avoided or recovered shall be stored or finally disposed in accordance with the relevant waste management regulations.
(2) Prior to determining the processes for treatment, recovery or final disposal, appropriate tests shall be carried out to establish the physical and chemical properties of the residues, the total polluting substances fraction, the total soluble substances fraction and heavy metals soluble fraction. Records of analysis reports shall be kept for at least one year.
(3) The handling, shipment, transport and intermediate storage of dry residues in the form of dust from the treatment of waste gases, shall take place in such a way as to prevent their dispersal into the air or the environment.

VIII TRANSITIONAL AND FINAL PROVISIONS

Article 22

Existing waste incineration and co-incineration plants must be brought into line with the provisions of this Ordinance no later than 31 December 2008.

Article 23

Articles 7, 8, 9 and 10 of the Ordinance on requirements for handling waste (Official Gazette 123/97) and Articles 16, 17, 18, 19, 20, 21, 22 and 23 of the Regulation on requirements for handling hazardous waste (Official Gazette 32/98) shall cease to have effect by virtue of the entry into force of this Ordinance.

Article 24

This Ordinance shall enter into force on the eighth day after the day of its publication in the Official Gazette.

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Zagreb, 24 April 2007

Minister
Marina Matulović Dropulić, m.p.