

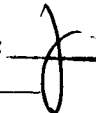
SEVENTEENTH CONGRESS OF THE)
REPUBLIC OF THE PHILIPPINES)
First Regular Session)



'16 JUL 19 P2:07

SENATE

S. No. 506

RECEIVED BY: 

Introduced by Senator Antonio "Sonny" Trillanes IV

AN ACT
PROMOTING AND PERMITTING THE USE OF WASTE-TO-ENERGY
TECHNOLOGY, AMENDING FOR THIS PURPOSE REPUBLIC ACT NUMBERED
8749, OTHERWISE KNOWN AS THE CLEAN AIR ACT OF 1999

EXPLANATORY NOTE

Waste management has become an issue and has posed serious problems in the country. Evidently, we need an approach that can deal with the worsening problem of waste disposal, which at the same time, can also contribute to the conservation of the environment. This does not only mean that waste must be properly disposed of; but this also requires that waste should be disposed of in a manner such that it would not become a significant environmental burden.

Existing technology permits the incineration of waste as a mode of waste disposal while at the same time, generating much needed electric power. Although there are serious environmental concerns about incineration, advances in emission control designs, along with strict standards and monitoring system, have caused large reduction of pollution in the atmosphere. In Japan, concerns over the health effects of Dioxin and furan emissions from incinerators have been proven to be significantly lessened by advances in emission control designs and very stringent new governmental regulations that have resulted in large reductions in the amount of dioxins and furans emissions.

Incineration reduces the volume of waste very effectively and destroys disease-causing bacteria. This is suitable for use in the country since it is difficult to secure final disposal sites due to our becoming limited land space. It is estimated that when incinerated, waste shall be reduced to approximately one-tenth of its weight and one-twentieth of its volume. More importantly, incinerators can be used for generating electricity or to provide energy in other forms such as generating steam for heating. Such a use is known as waste-to-energy (WTE) or energy recovery.

This bill aims to amend Republic Act No. 8749, otherwise known as the "Clean Air Act of 1999", by repealing the original Section 20 thereof and revising the same to take advantage, promote and/or permit the use of recent advances in waste-to-energy (WTE) technology. Through incineration, the most common waste-to-energy implementation, this bill intends to promote WTE technology.

This technology provides for the safe disposal of waste without harmful emissions to the atmosphere, and at the same time, offers maximum benefits from the recovery of the valuable contents of the wastes from our cities.

In view of the foregoing, the immediate approval of this bill is earnestly sought.


ANTONIO "SONNY" F. TRILLANES IV
Senator



SEVENTEENTH CONGRESS OF THE)
REPUBLIC OF THE PHILIPPINES)
First Regular Session)

'16 JUL 19 P2:07

SENATE

S. No. 506

RECEIVED BY: *[Signature]*

Introduced by Senator Antonio "Sonny" Trillanes IV

**AN ACT
PROMOTING AND PERMITTING THE USE OF WASTE-TO-ENERGY
TECHNOLOGY, AMENDING FOR THIS PURPOSE REPUBLIC ACT NUMBERED
8749, OTHERWISE KNOWN AS THE CLEAN AIR ACT OF 1999**

*Be it enacted by the Senate and the House of Representatives of the Philippines in
Congress assembled:*

1 **SECTION 1. *Definition of Terms.*** - Section 5 of Republic Act No. 8749, otherwise
2 known as "The Clean Air Act of 1999", and herein referred to as the Act, is amended to read
3 as follows:

4
5 "SEC. 5. Definitions. - As used in this Act:

6
7 A. "*Air pollutant*" means any matter found in the atmosphere other than
8 oxygen, nitrogen, water vapor, carbon dioxide, and the inert gases in their
9 natural or normal concentrations, that is detrimental to health or the
10 environment, which includes, but not limited to smoke, dust, soot,
11 cinders, fly ash, solid particles of any kind, gases, fumes, chemical mists,
12 steam and radioactive substances;

13
14 B. "*Air pollution*" means any alteration of the physical, chemical and
15 biological properties of the atmospheric air, or any discharge thereto of
16 any liquid, gaseous or solid substances that will, or is likely to, create or
17 to render the air resources of the country harmful, detrimental, or
18 injurious to public health, safety or welfare or which will adversely affect
19 their utilization for domestic, commercial, industrial, agricultural,
20 recreational, or other legitimate purposes;

21
22 C. "*Ambient air quality guideline values*" means the concentration of air
23 over specified periods classified as short-term and long-term which are
24 intended to serve as goals or objectives for the protection of health and/or
25 public welfare. These values shall be used for air quality management
26 purposes such as determining time trends, evaluating stages of
27 deterioration or enhancement of the air quality, and in general, used as
28 basis for taking positive action in preventing, controlling, or abating air
29 pollution;

30

- 1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
- D. "*Ambient air quality*" means the general amount of pollution present in a broad area; and refers to the atmosphere's average purity as distinguished from discharge measurements taken at the source of pollution;
 - E. "*Certificate of Conformity*" means a certificate issued by the Department of Environment and Natural Resources to a vehicle manufacturer/ assembler or importer certifying that a particular new vehicle or vehicle type meets the requirements provided under this Act and its rules and regulations;
 - F. "*Department*" means the Department of Environment and Natural Resources;
 - G. "*Eco-profile*" means the geographic-based instrument for planners and decision makers which present an evaluation of the environment quality and carrying capacity of an area. It is the result of the integration of primary data and information on natural resources and antropogenic activities on the land which were evaluated by various environmental risk assessment and forecasting methodologies that enable the Department to anticipate the type of development control necessary in the planning area;
 - H. "*Emission*" means any air contaminant, pollutant, gas stream or unwanted sound from a known source which is passed into the atmosphere;
 - I. "*Greenhouse gases*" means those gases that can potentially or can reasonably be expected to induce global warming, which include carbon dioxide, oxides of nitrogen, chloroflourocarbons, and the like;
 - J. "*Hazardous substances*" means those substances which present either: (1) short-term acute hazards such as acute toxicity by ingestion, inhalation, or skin absorption, corrosivity or other skin or eye contact hazard or the risk of fire explosion; or (2) long-term toxicity upon repeated exposure, carcinogenicity (which in some cases result in acute exposure but with a long latent period), resistance to detoxification process such as biodegradation, the potential to pollute underground or surface waters;
 - K. "*Infectious waste*" means that portion of medical waste that could transmit an infectious disease;
 - L. "*Medical waste*" means the materials generated as a result of patient diagnosis, treatment, or immunization of human beings or animals;
 - M. "*Mobile source*" means any vehicle propelled by or through combustion of carbon-based or other fuel, constructed and operated principally for the conveyance of persons or the transportation of property goods;
 - N. "*Motor vehicle*" means any vehicle propelled by a gasoline or diesel engine or by any means other than human or animal power, constructed and operated principally for the conveyance of persons or the

1 transportation of property or goods in a public highway or street open to
2 public use;

3
4 O. "*Municipal waste*" means the waste materials generated from
5 communities within a specific locality;

6
7 P. "*New vehicle*" means a vehicle constructed entirely from new parts that
8 has never been sold or registered with the DOTC or with the appropriate
9 agency or authority, and operated on the highways of the Philippines, any
10 foreign state or country;

11
12 Q. "*Octane Rating or the Anti-Knock Index (AKI)*" means the rating of the
13 antiknock characteristics of a grade or type of automotive gasoline as
14 determined by dividing by two (2) the sum of the Research Octane
15 Number (RON), plus the Motor Octane Number (MON); the octane
16 requirement, with respect to automotive gasoline for use in a motor
17 vehicle or a class thereof, whether imported, manufactured, or assembled
18 by a manufacturer, shall refer to the minimum octane rating of such
19 automotive gasoline which such manufacturer recommends for the
20 efficient operation of such motor vehicle, or a substantial portion of such
21 class, without knocking;

22
23 R. "*Ozone Depleting Substances (ODS)*" means those substances that
24 significantly deplete or otherwise modify the ozone layer in a manner that
25 is likely to result in adverse effects of human health and the environment
26 such as, but not limited to, chloroflourocarbons, halons and the like;

27
28 S. "*Persistent Organic Pollutants (POPs)*" means the organic compounds
29 that persist in the environment, bioaccumulate through the food web, and
30 pose a risk of causing adverse effects to human health and the
31 environment. These compounds resist photolytic, chemical and biological
32 degradation, which shall include but not be limited to dioxin, furan,
33 Polychlorinated Biphenyls (PCBs), organochlorine pesticides, such as
34 aldrin, dieldrin, DDT, hexachlorobenzene, lindane, toxaphere and
35 chlordane;

36
37 T. "*Poisonous and toxic fumes*" means any emissions and fumes which are
38 beyond internationally - accepted standards, including but not limited to
39 the World Health Organization (WHO) guideline values;

40
41 U. "*Pollution control device*" means any device or apparatus used to prevent,
42 control or abate the pollution of air caused by emissions from identified
43 pollution sources at levels within the air pollution control standards
44 established by the Department;

45
46 V. "*Pollution control technology*" means the pollution control devices,
47 production process, fuel combustion processes or other means that
48 effectively prevent or reduce emissions or effluent;

1 W. *"Standard of performance"* means a standard for emissions of air
2 pollutant which reflects the degree of emission limitation achievable
3 through the application of the best system of emission reduction, taking
4 into account the cost of achieving such reduction and any non-air quality
5 health and environmental impact and energy requirement which the
6 Department determines, and adequately demonstrates; and
7

8 X. *"Stationary source"* means any building or immobile structure, facility or
9 installation which emits or may emit any air pollutant;
10

11 Y. **BIOCHEMICAL PROCESS - CONSISTS OF ANAEROBIC
12 DIGESTION, HYDROLYSIS, AND FERMENTATION USING
13 ENZYMES THAT PRODUCE LOW HEAT IN SLOW REACTION
14 TIMES;**
15

16 Z. **BOILER - A CLOSED VESSEL IN WHICH WATER OR OTHER
17 FLUID IS HEATED. THE HEATED OR VAPORIZED FLUID
18 EXITS THE BOILER FOR USE IN VARIOUS PROCESSES OR
19 HEATING APPLICATIONS;**
20

21 AA. **BOTTOM ASH - ONE OF THE RESIDUES GENERATED IN
22 THE COMBUSTION OF COAL, GENERALLY-CAPTURED
23 FROM THE BOTTOM OF THE FURNACE;**
24

25 BB. **BUBBLING FLUIDIZED-BED - A COMBUSTION
26 TECHNOLOGY USED TO SUSPEND SOLID FUELS ON
27 UPWARD-BLOWING JETS OF AIR DURING THE
28 COMBUSTION PROCESS. THE RESULT IS A TURBULENT
29 MIXING OF GAS AND SOLIDS. THE TUMBLING ACTION,
30 MUCH LIKE A BUBBLING FLUID, PROVIDES MORE
31 EFFECTIVE CHEMICAL REACTIONS AND HEAT TRANSFER;**
32

33 CC. **CAUSTIC SODA - USED TO DRIVE CHEMICAL REACTIONS
34 AND ALSO FOR THE NEUTRALIZATION OF ACIDIC
35 MATERIALS;**
36

37 DD. **ECONOMIZER - MECHANICAL DEVICES INTENDED TO
38 REDUCE ENERGY CONSUMPTION, OR TO PERFORM
39 ANOTHER USEFUL FUNCTION LIKE PREHEATING A FLUID;**
40

41 EE. **FABRIC FILTER BAGHOUSE - FABRIC COLLECTORS USE
42 FILTRATION TO SEPARATE DUST PARTICULATES FROM
43 DUSTY GASES;**
44

45 FF. **FLUE GAS - GAS THAT EXITS TO THE ATMOSPHERE VIA A
46 FLUE, WHICH IS A PIPE OR CHANNEL FOR CONVEYING
47 EXHAUST GASES FROM A FIREPLACE, OVEN, FURNACE,
48 BOILER OR STEAM GENERATOR;**
49

1 GG. FLY ASH - ONE OF THE RESIDUES GENERATED IN THE
2 COMBUSTION OF COAL. FLY ASH IS GENERALLY
3 CAPTURED FROM THE CHIMNEYS OF COAL-FIRED POWER
4 PLANTS;

5
6 HH. GASIFICATION AND MELTING FURNACE - A FACILITY
7 THAT THERMALLY DECOMPOSES WASTE INTO GAS AND
8 CARBIDE IN A GASIFICATION FURNACE AND BURNS THESE
9 IN A MELTING FURNACE TO CONVERT THEM INTO WASTE
10 GAS AND SLAG;

11
12 II. PARTICULATE MATTER - REFERS TO THE GENERIC TERM
13 USED FOR A TYPE OF AIR POLLUTION THAT CONSISTS OF
14 COMPLEX AND VARYING MIXTURES OF PARTICLES
15 SUSPENDED IN THE AIR;

16
17 JJ. ROTARY FURNACE TYPE INCINERATORS (ROTARY KILNS) -
18 A HORIZONTAL CYLINDRICAL INCINERATOR, THE INNER
19 SURFACE OF WHICH IS COVERED WITH REFRACTORY
20 MATERIAL THAT IS ROTATED AND WHERE WASTE IS
21 DRIED AND BURNT;

22
23 KK. SELECTIVE CATALYTIC REDUCTION - CATALYTIC
24 OXIDATION USING METAL OXIDE CATALYSTS THAT ARE
25 PRESENTLY COMMONLY USED FOR REDUCING NO_x
26 EMISSIONS;

27
28 LL. SLAG - THE BY-PRODUCT OF SMELTING ORE TO PURIFY
29 METALS;

30
31 MM. SMELTING - A CHEMICAL REDUCTION USED TO
32 PRODUCE A METAL FROM ITS ORE;

33
34 NN. SUPERHEATER - A DEVICE THAT HEATS THE STEAM
35 GENERATED BY THE BOILER, INCREASING ITS THERMAL
36 ENERGY AND DECREASING THE LIKELIHOOD THAT IT
37 WILL CONDENSE INSIDE AN ENGINE;

38
39 OO. THERMOCHEMICAL TECHNIQUE - CONSISTS OF
40 COMBUSTION, GASIFICATION, AND PYROLYSIS THAT
41 PRODUCE HIGH HEAT IN FAST REACTION TIMES;

42
43 PP. WASTE-TO-ENERGY TECHNOLOGY - REFERS TO:

44
45 a. TECHNOLOGY THAT INVOLVES THE CONVERSION
46 OF VARIOUS ELEMENTS OF MUNICIPAL SOLID
47 WASTE SUCH AS PAPER, PLASTICS, AND WOOD TO
48 GENERATE ENERGY BY EITHER THERMOCHEMICAL
49 OR BIOCHEMICAL PROCESSES;

1 b. ANY WASTE TREATMENT THAT IS ABLE TO
2 PRODUCE ENERGY FROM A WASTE;
3

4 c. TECHNOLOGY WHICH REDUCES OR ELIMINATES
5 WASTE THAT OTHERWISE WOULD BE TRANSFERRED
6 TO A GREENHOUSE GAS;
7

8 **QQ. WASTE TREATMENT - ACTIVITIES WHICH SEEK TO**
9 **ENSURE (NECESSITATE) THAT WASTE HAS THE LEAST**
10 **PRACTICABLE IMPACT ON THE ENVIRONMENT."**
11

12 **SEC. 2.** Section 15 of The Act is hereby amended to read as follows:
13

14 "SEC. 15. Air Pollution Research and Development Program.- The
15 Department, in coordination with the Department of Science and Technology
16 (DOST), other agencies, the private sector, the academe, NGO's and PO's, shall
17 establish a National Research and Development Program for the prevention [and],
18 control of air pollution **AS WELL AS WASTE-TO-ENERGY TECHNOLOGY**
19 **UTILIZATION.** The Department shall give special emphasis to research on and the
20 development of improved methods having industry-wide application for the
21 prevention [and], control of air pollution **AND WASTE-TO-ENERGY**
22 **TECHNOLOGY UTILIZATION.**
23

24 Such a research and development program shall develop air quality guideline
25 values and standards in addition to internationally-accepted standards of maintaining
26 environmentally-sound practices in waste treatment. It shall also consider the socio-
27 cultural, political and economic implications of air quality management [and],
28 pollution control **AND WASTE-TO-ENERGY TECHNOLOGY**
29 **UTILIZATION."**
30

31 **SEC. 3.** Section 15 of The Act is hereby further amended by adding a sub-section to
32 read as follows:
33

34 **SEC. 15-A. WASTE-TO-ENERGY TECHNOLOGY. - PURSUANT TO**
35 **SECTION 15 OF THIS ACT, WASTE-TO-ENERGY TECHNOLOGY IS**
36 **HEREBY PROMOTED WITH THE FOLLOWING OBJECTIVES:**
37

38 **A. REDUCE THE VOLUME OF ORIGINAL WASTE AND AT THE**
39 **SAME TIME PRODUCE ENERGY FROM THE SAME;**
40

41 **B. CONDUCT WASTE STREAM ANALYSIS THAT AVOIDS A**
42 **SITUATION WHERE ASH BECOMES HAZARDOUS WASTE;**
43

44 **C. TREAT ALL TYPES OF WASTE, INCLUDING HAZARDOUS AND**
45 **TOXIC MATERIALS, WITHOUT LEAVING BEHIND WASTE**
46 **RESIDUES AND HARMFUL EMISSIONS TO THE ATMOSPHERE;**
47

48 **D. RECOVER ALL VALUABLE CONTENTS OF WASTES AT HIGHLY**
49 **ECONOMIC CONDITIONS;**
50

1 **E. RECYCLE VALUABLE MATERIALS AND RECOVER MORE**
2 **ENERGY;**

3
4 **F. CONTINUOUSLY PROMOTE DEVELOPED TECHNOLOGY THAT**
5 **PRODUCES NO HARMFUL EMISSIONS OR RESIDUES,**
6 **COMPLYING WITH THE STANDARDS AND REGULATIONS**
7 **WHICH PROTECT THE ENVIRONMENT.”**

8
9 **SEC. 4.** The Act is hereby further amended by repealing the original Section 20 of the
10 said Act and amending and revising the same to read as follows:
11

12 **"SEC. 20. ALLOWING INCINERATION. – INCINERATION**
13 **SHALL BE ALLOWED FOR THE TREATMENT OF WASTE,**
14 **AND IN EFFECT, THE CONVERSION OF SUCH WASTE**
15 **INTO ENERGY. TO CONTROL AIR POLLUTION, THE**
16 **INCINERATOR SHALL BE DESIGNED IN SUCH A WAY**
17 **THAT PRODUCT COMBUSTION GASES SHALL BE**
18 **PROPERLY TREATED AND HARMFUL EMISSIONS SHALL**
19 **BE REMOVED BEFORE GASES ARE RELEASED INTO THE**
20 **ATMOSPHERE. ADVANCED EMISSION CONTROL DESIGN**
21 **AND STRINGENT REGULATION SHALL ENSURE THAT**
22 **WASTES ARE DISPOSED OF WITHOUT DETRIMENTAL**
23 **IMPACT TO THE ENVIRONMENT.**

24
25 **(1) *INCINERATION AS AN INTERMEDIATE TREATMENT***
26 ***TECHNOLOGY.* - INCINERATION SHALL BE**
27 **GENERALLY USED FOR INTERMEDIATE WASTE**
28 **MANAGEMENT. COLLECTED DOMESTIC WASTE**
29 **SHALL BE TRANSPORTED DIRECTLY TO AN**
30 **INTERMEDIATE TREATMENT FACILITY - THE**
31 **INCINERATION PLANT. AFTER BEING COLLECTED**
32 **AND TRANSPORTED, WASTE SHALL BE SUBJECTED**
33 **TO INTERMEDIATE TREATMENT TO BECOME**
34 **SUITABLE FOR FINAL DISPOSAL.**

35
36 **THERE SHALL BE AN ENFORCEMENT REGULATION**
37 **DETERMINED BY THE DEPARTMENT THAT SHALL**
38 **DEFINE A STRUCTURAL STANDARD FOR**
39 **INCINERATION PLANTS FOR DOMESTIC WASTE, IN**
40 **WHICH, IT SHALL BE REQUIRED TO KEEP**
41 **COMBUSTION GAS TEMPERATURES ABOVE 800°C FOR**
42 **INCINERATION, TO KEEP THE TEMPERATURE OF GAS**
43 **FLOWING IN THE DUST CHAMBER BELOW 200°C AND**
44 **TO PROVIDE A WASTE GAS TREATMENT FACILITY.**

45
46 **WASTE INCINERATION SHALL BE CLOSELY RELATED**
47 **TO THE MEASURES ADOPTED AGAINST HAZARDOUS**
48 **SUBSTANCES CONTAINED IN WASTE GAS,**
49 **ESPECIALLY DIOXINS, AND THE RECOVERY OF HEAT**
50 **(THERMAL RECYCLING) FROM INCINERATION**

1 PLANTS. TO REDUCE THE GENERATION OF DIOXIN
2 WITH COMPLETE HIGHTEMPERATURE
3 COMBUSTION, GASIFICATION AND MELTING
4 FURNACE SHALL BE INTRODUCED. THIS SHALL
5 ENSURE THAT:

6 A. THE AMOUNT OF HEAT HELD IN THE WASTE IS
7 UTILIZED TO MELT AND SOLIDIFY ASH AND
8 THEREFORE RENDER THE ASH HARMLESS AND
9 THE MOLTEN SLAG UTILIZED EFFECTIVELY;
10 AND

11 B. ONLY A SMALL AMOUNT OF AIR IS REQUIRED
12 FOR COMBUSTION SO THAT HIGH-EFFICIENCY
13 HEAT RECOVERY WITH A SMALL AMOUNT OF
14 EXHAUST GAS IS POSSIBLE.
15

16 (2) *MODERN INCINERATION.* - THE INCINERATION PLANT
17 SHALL BE EQUIPPED WITH TWO 200 TID
18 ATMOSPHERIC BUBBLING FLUIDIZED BED (BFB)
19 INCINERATION BOILERS. A BFB UNIT SHALL
20 OPERATE BY COMBINING FUEL AND COMBUSTION
21 AIR IN HOT SAND UNDER VIGOROUS MIXING. THERE
22 SHALL BE BASICALLY THREE ZONES IN THE
23 VERTICALLY ORIENTED INCINERATOR: THE
24 FLUIDIZED BED, THE FREEBOARD AND THE BOILER.
25 AT THE BOTTOM OF THE VESSEL SHALL BE THE
26 DENSE BED, WHERE FLUIDIZING AIR SHALL ENTER
27 THROUGH A HORIZONTAL TUBING GRID
28 (DISTRIBUTOR) JUST ABOVE THE INCINERATOR
29 FLOOR. AT A HIGHER ELEVATION IN THE FLUIDIZED
30 BED, PRIMARY COMBUSTION AIR (APPROXIMATELY
31 7,550 NM/H) SHALL BE INJECTED. TEMPERATURE IN
32 THE BED SHALL BE MAINTAINED AT ABOUT 550-
33 630°C, HOT ENOUGH TO DRIVE OFF VOLATILES AND
34 FULLY COMBUST THE MUNICIPAL SOLID WASTE
35 (MSW), WHICH SHALL BE FED AT THE TOP OF THE
36 BED.
37

38 IN CASE THE TEMPERATURE RISES ABOVE 630°C,
39 COOLING WATER SPRAYS SHALL BE ACTIVATED
40 AUTOMATICALLY. ASH AND SAND THAT
41 PERIODICALLY MIGRATE DOWNWARD SHALL BE
42 REMOVED AT THE INCINERATOR BOTTOM. SAND
43 SHALL BE SEPARATED FROM THE ASH, GRADED, AND
44 RETURNED TO THE TOP OF THE DENSE BED. EACH
45 INCINERATOR SHALL CONTAIN 57 M' OF SAND (90 T),
46 SOME OF WHICH SHALL BE LOST AS FINES THROUGH
47 FLUE GAS STREAM AND WITH FABRIC FILTERS AT A
48 TEMPERATURE LESS THAN 2000°C.
49

1 ABOVE THE DENSE BED SHALL BE A TALL REGION
2 KNOWN AS THE FREEBOARD, WHERE SECONDARY
3 COMBUSTION AIR (APPROXIMATELY 28 800 NM³/H)
4 SHALL BE INJECTED AT SEVERAL LEVELS TO
5 COMPLETELY BURN OFF THE VOLATILES. IN THIS
6 REGION, THE TEMPERATURE RISES STEADILY FROM
7 ABOUT 710°C TO 1030°C (AUTOMATIC COOLING
8 WATER SPRAYS ARE ACTIVATED SHOULD THE
9 TEMPERATURE EXCEED 1070°C), AND GAS VELOCITY
10 IS SUCH THAT A RESIDENCE TIME (AT 850°C) OF AT
11 LEAST TWO SECONDS SHALL BE ACHIEVED, FOR
12 DIOXIN DESTRUCTION. IN ADDITION TO FLY ASH,
13 SOME SAND FINES MAY STILL BE CARRIED BY THE
14 GASES IN THE FREEBOARD, BUT THESE ARE
15 MINIMIZED BY PRUDENT VELOCITY CONTROL.
16

17 ABOVE THE FREEBOARD IS THE BOILER. WITH NO
18 COMBUSTIBLES REMAINING IN THE GAS, AND WITH
19 THE AID OF COOLER AIR INJECTION, TEMPERATURE
20 SHALL DROP RAPIDLY PRIOR TO CONTACT WITH
21 THE BOILER TUBES (APPROXIMATELY 480-580°C).
22 THIS NATURAL CIRCULATION WATER-TUBE BOILER
23 SHALL BE EQUIPPED WITH A SUPERHEATER. STEAM
24 SHALL BE GENERATED AT A MAXIMUM RATE OF 33.3
25 T/H FROM EACH UNIT, USUALLY AT 3.14 MPA (ABS)
26 AND 300D C. THE HIGH-PRESSURE STEAM SHALL BE
27 ROUTED TO A HIGH-PRESSURE STEAM HEADER,
28 WHILE THE FLUE GASES SHALL EXIT THE BOILER
29 THROUGH AN ECONOMIZER TO A QUICK-QUENCH
30 COOLING TOWER.
31

- 32 (3) *AIR POLLUTION CONTROL SYSTEM.* - FLUE GAS
33 TREATMENT SHALL BEGIN AT THE EXIT OF THE
34 ECONOMIZER, WHERE A WATER SPRAY COOLING
35 TOWER QUICKLY QUENCHES THE GASES TO ISODC,
36 MINIMIZING DIOXIN FORMATION. AT THE
37 ENTRANCE TO THE FABRIC FILTER BAGHOUSE,
38 SLAKED LIME AND POWDERED ACTIVATED CARBON
39 SHALL BE INJECTED INTO THE FLUE GASES TO
40 REMOVE HEAVY METALS, DIOXINS/FURANS AND
41 NON-COMBUSTED ORGANICS, WHILE THE
42 BAGHOUSE SHALL REMOVE PARTICULATES. THE
43 DESIGN GAS TREATMENT RATE IN THE BAGHOUSE
44 SHALL BE ABOUT 75,000 -109,000 NM³/H (DRY).
45

46 ONCE LEAVING THE BAGHOUSE THROUGH AN
47 INDUCED DRAFT FAN, THE FLUE GASES ENTER A
48 WET CAUSTIC SODA SCRUBBING TOWER WHICH
49 SHALL REMOVE ACID GASES (SULPHURIC AND

1 HYDROCHLORIC ACIDS), AT A GAS TREATMENT
2 RATE SIMILAR TO THE BAGHOUSE.
3

4 UPON EXITING THE SCRUBBER, THE FLUE GASES
5 SHALL BE DRIED AND HEATED, BY HEAT EXCHANGE
6 WITH STEAM GENERATED IN THE PLANT, TO 210°C
7 BEFORE ENTERING THE SELECTIVE CATALYTIC
8 REDUCTION (SCR) REACTOR. HERE, AMMONIA
9 SHALL BE INJECTED INTO THE GAS STREAM AS IT
10 PASSES THROUGH A HONEYCOMB CATALYST TO
11 REMOVE NITROGEN OXIDES (NOX).
12

13 FROM THE SELECTIVE CATALYTIC REDUCTION
14 (SCR), FLUE GASES ENTER THE STACK CONTAINING
15 TWO FLUES (ONE FOR EACH INCINERATOR) AND AN
16 ELEVATOR (FOR MAINTENANCE). THE INLET
17 TEMPERATURE TO THE SCR SHALL BE CHOSEN FOR
18 TWO REASONS: TO IMPROVE THE RATE OF
19 CATALYTIC CONVERSION OF NOX (ALTHOUGH A
20 TEMPERATURE OF 250-350°C WOULD HAVE BEEN
21 MORE APPROPRIATE); AND TO ENSURE AN INVISIBLE
22 PLUME EMANATING FROM THE STACK.
23

- 24 (4) *LAWS AND ORDINANCES RELATED TO POLLUTION.* - TO
25 TREAT WASTE PROPERLY, IT SHALL BE NECESSARY
26 TO PREVENT SECONDARY POLLUTION FROM WASTE
27 MANAGEMENT FACILITIES. THE TREATMENT OF
28 WASTE MUST THEREFORE COMPLY WITH THE
29 EMISSION STANDARDS, SUCH AS THE NATIONAL
30 EMISSION STANDARDS AND AMBIENT AIR QUALITY
31 STANDARDS, EMISSION STANDARDS INDICATED IN
32 THE IMPLEMENTING RULES AND REGULATIONS OF
33 THE CLEAN AIR ACT OF 1997, AND OTHER EMISSION
34 STANDARDS SET AND MAY BE PRESCRIBED BY THE
35 DEPARTMENT AND/OR BOARD AND/OR THE
36 APPROPRIATE LGU.
37

38 WASTE INCINERATORS, MUST, AS FACILITIES WHICH
39 EMIT SOOT AND SMOKE, COMPLY WITH THE
40 EMISSION STANDARDS RELATED TO DUST,
41 NITROGEN OXIDE AND OTHERS.
42

- 43 (5) *MEASURES AGAINST HAZARDOUS SUBSTANCES.* -
44 WASTE CONTAINS A HAZARDOUS SUBSTANCE AND A
45 HAZARDOUS SUBSTANCE MAY BE
46 UNINTENTIONALLY GENERATED IN THE COURSE OF
47 WASTE MANAGEMENT, WHICH MAY RESULT IN
48 SECONDARY POLLUTION. AS SUCH, IT SHALL BE
49 NECESSARY TO REMOVE HAZARDOUS SUBSTANCES
50 CONTAINED IN WASTE DURING DISPOSAL AND TO

1 PREVENT SECONDARY POLLUTION FROM
2 OCCURRING IN THE TREATMENT PROCESS.
3 MEASURES AGAINST HAZARDOUS SUBSTANCES
4 SHALL REQUIRE VARIOUS TECHNOLOGIES,
5 ADAPTED TO INDIVIDUAL HAZARDOUS SUBSTANCES.
6 SUCH MEASURES INCLUDE THE FOLLOWING:

- 7 A. WASTE THAT IS EXPLOSIVE, TOXIC OR
8 INFECTIOUS OR THAT MAY BE HARMFUL TO
9 HUMAN HEALTH OR THE LIVING
10 ENVIRONMENT SHALL BE DESIGNATED AS
11 WASTE UNDER SPECIAL CONTROL.
- 12 B. CONCRETELY, PARTS FROM HOME ELECTRIC
13 APPLIANCES THAT CONTAIN
14 POLYCHLORINATED BIPHENYLS (PCB), SOOT
15 AND DUST GENERATED IN MUNICIPAL WASTE
16 INCINERATORS AND INFECTIOUS WASTE
17 GENERATED IN MEDICAL INSTITUTIONS SHALL
18 BE DESIGNATED AS GENERAL WASTE UNDER
19 SPECIAL CONTROL.
- 20 C. WASTE PCB, PCB-CONTAMINATED MATTER,
21 WASTE ASBESTOS AND MATTER CONTAINING
22 CONCENTRATED HAZARDOUS SUBSTANCES,
23 SUCH AS MERCURY, THE CRITERIA
24 CONCENTRATIONS OF WHICH EXCEED A
25 CERTAIN VALUE, SHALL BE DESIGNATED AS
26 INDUSTRIAL WASTE UNDER SPECIAL CONTROL.
- 27 D. COUNTERMEASURE TECHNOLOGIES AGAINST
28 HAZARDOUS SUBSTANCES SHALL BE
29 INTRODUCED, TAKING AS EXAMPLES
30 MERCURY, PCB AND ASBESTOS AS
31 REPRESENTATIVE HAZARDOUS SUBSTANCES
32 CONTAINED IN WASTE; DIOXINS AS
33 SECONDARY POLLUTANT SUBSTANCES
34 GENERATED IN THE WASTE MANAGEMENT
35 PROCESS, AND INFECTIOUS WASTE.
- 36 E. VARIOUS TECHNOLOGIES SHALL BE USED AS
37 COUNTERMEASURES AGAINST EXHAUST GAS
38 IN ORDER TO CONTROL SULFUR OXIDES,
39 NITROGEN OXIDES, AND OTHER SUBSTANCES
40 THAT ARE GENERATED BY INCINERATION
41 FACILITIES OR TO TREAT DRAIN WATER FROM
42 INCINERATION FACILITIES AND LANDFILL
43 SITES, THUS PREVENTING THE OCCURRENCE
44 OF SECONDARY POLLUTION IN THE WASTE
45 MANAGEMENT SYSTEM.

46
47 IN ORDER FOR THE SITE SELECTION FOR A WASTE
48 MANAGEMENT FACILITY TO BE ACCEPTED BY
49 THE PEOPLE LIVING IN THE AREA, SECONDARY
50 POLLUTION PREVENTION MEASURES, TO BE

1 DETERMINED BY THE DEPARTMENT, SHALL ALSO
2 BE NEEDED TO BE TAKEN. MEASURES AGAINST
3 HAZARDOUS SUBSTANCES SHALL COMPLY WITH
4 ALL LAWS AND ORDINANCES RELATED TO
5 POLLUTION, AS INDICATED IN SECTION 20-D
6 HEREOF.
7

- 8 (6) *INFECTIOUS WASTE* - FOR INFECTIOUS WASTE, IT
9 SHALL BE REQUIRED TO REMOVE INFECTIOUSNESS
10 WITH AN INCINERATOR AND MELTING FACILITY. IT
11 SHALL ALSO BE MANDATORY TO USE AN
12 INCINERATOR OR A MELTING FACILITY THAT CAN
13 COMPLETELY INCINERATE OR MELT WASTE AND TO
14 PREVENT THE LIVING ENVIRONMENT FROM BEING
15 POLLUTED BY THE EXHAUST GASES OF SUCH
16 FACILITY.
17

18 IN ORDER TO APPROPRIATELY TREAT INFECTIOUS
19 WASTE, A ROTARY KILN TYPE INCINERATOR SHALL
20 BE USED, IN WHICH INFECTIOUS WASTE SHALL BE
21 BURNED TOGETHER WITH OTHER INDUSTRIAL
22 WASTE THAT PLAYS THE ROLE OF COMBUSTION
23 IMPROVER, TO DESTROY INFECTIOUS BACTERIA, TO
24 DETOXYIFY INFECTIOUS WASTE, AND TO REDUCE ITS
25 VOLUME.
26

- 27 (7) *REINFORCEMENT OF THE RESPONSIBILITY*. - THE
28 WASTE MANAGEMENT ACT, CLEAN AIR ACT AND ITS
29 RELATED LAWS AND ORDINANCES SHALL
30 ACCELERATE THE DEVELOPMENT AND
31 INTRODUCTION OF TECHNOLOGIES RELATED TO
32 THE PROPER TREATMENT OF WASTE BY DEFINING
33 STANDARDS FOR THE INSTALLATION OF
34 TREATMENT FACILITIES FOR GENERAL WASTE AND
35 INDUSTRIAL WASTE TO ENSURE PROPER
36 TREATMENT.
37

38 A CLASSIFICATION OF WASTE THAT MAY INFLICT
39 HARM ON HUMAN HEALTH OR THE LIVING
40 ENVIRONMENT DUE TO HAZARDOUS
41 CHARACTERISTICS SUCH AS EXPLOSIVENESS,
42 TOXICITY AND INFECTIOUSNESS AS SPECIAL
43 MANAGEMENT WASTE SHALL BE PROMOTED FOR
44 THE DEVELOPMENT AND INTRODUCTION OF
45 TECHNOLOGIES FOR THE PROPER TREATMENT OF
46 SPECIAL MANAGEMENT WASTE.
47

48 IN ORDER TO PREPARE A SYSTEM FOR THE PROPER
49 TREATMENT OF WASTE AND TO PREVENT IMPROPER
50 TREATMENT, PROHIBITION OF ANY INCINERATION

1 **OF WASTE OTHER THAN INCINERATION ACCORDING**
2 **TO THE WASTE MANAGEMENT STANDARDS SHALL**
3 **BE PUT FORWARD."**
4

5 **SEC. 5. Separability Clause.** - If any provision of this Act shall at any time be found
6 to be unconstitutional or invalid, the remainder thereof not affected by such declaration shall
7 remain in full force and effect.
8

9 **SEC. 6. Repealing Clause.** - All laws, decrees, rules or regulations inconsistent with
10 the provisions of this Act are hereby repealed or modified accordingly.
11

12 **SEC. 7. Effectivity Clause.** - This Act shall take effect after fifteen (15) days
13 following its complete publication in the Official Gazette or in at least two (2) newspapers of
14 general circulation.

Approved,