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419 SOUTH SPRING ST., SUITE 900
LOS ANGELES, CA 90013
TEL: (213) 473-7934
FAX: (213) 473-7945

February 11, 2005

Ms. Rosario Marin, Chair
California Integrated Waste Management Board
Cal-EPA Building
1001 "I" Street
Sacramento, CA 95812-4025

Dear Madam Chair:

Re: CONVERSION TECHNOLOGIES REPORT TO THE LEGISLATURE

The City of Los Angeles (City) appreciates the opportunity to provide comments on the Conversion Technologies Report (CT Report) that the California Integrated Waste Management Board (CIWMB or the Board) will be submitting to the Legislature. The City of Los Angeles has not taken a position on the recommendations of the report and is providing these comments in our role as a responsible agency. The City shares the same concerns with the Board members and all Californians on the rapid reduction of landfill space throughout our State. The City also applauds the Board in its leadership to investigate the feasibility of implementing innovative alternative technologies to convert non-recyclable solid waste for beneficial reuse.

The City recognizes the importance of diverting solid waste from landfills and to develop alternatives to landfills such as those utilized elsewhere in the world. As a matter of fact the City has hired URS, Inc. to conduct an in-depth report on alternative technology for solid waste disposal. The report will be completed by early March 2005.

In October 2004, a delegation of City Elected officials and Bureau of Sanitation management staff participated in a ten-day tour of Europe's alternative technologies for solid waste disposal. Countries visited included Germany, Spain, and Belgium. In Germany the delegation visited a waste-to-energy facility (Advanced Thermal Recycling, MullVerwertung Rugenberger (MVR) Plant in the City of Hamburg), a gasification facility (Thermoselect Plant in the City of Karlsruhe), and a pyrolysis facility (MPA Pyrolysis Plant in the City of Burgau); in Spain an anaerobic digestion facility (with pre-sorting material recovery facility, Ecoparc 2/ Valorga Plant in the City of Barcelona); and in Belgium an anaerobic digestion facility (dry anaerobic composting, OWS Brecht II Dranco Plant near the City of Brencht). Each of the visited facilities provided the City delegation with technical presentations, discussions, and plant tours. It is worth noting that in Germany the dominant alternative technology for solids waste disposal appears to be thermal recycling. The City delegation was most impressed with the operation of



the Germany's advanced thermal recycling facility. The facility is equipped with an advanced air emissions control system that meets and exceeds Germany's strict air pollutant limits. The facility utilizes an efficient energy process system that optimizes the energy production.

Following are our comments on the draft of the Conversion Technologies Report:

- 1. Emission data:** We agree with the assessments made by CIWMB's staff that there is a serious lack of data on the emissions from the conversion technology facilities. However, the data obtained from existing conversion technologies implemented overseas or in other US States may have different emission regulatory standards as compared to those imposed by the local jurisdictions. Furthermore, the emissions from different plants may also be different merely because of variations on the mode of operations and the characteristics of the incoming waste feedstock. The CT Report states that from lifecycle analyses prospective conversion technologies have many advantages over transformation (A.K.A. thermal recycling, combustion, waste-to-energy, etc) such as fewer emissions of NOx (pg 6). The report relies on data listed in Table 9, (pg 41). This statement is not entirely accurate as advanced thermal recycling has same or better emissions than some pyrolysis and gasification facilities. If the emission data from CT Report is compared with the MVR Thermal Recycling Plant's Environmental Statement Report 2004 (submitted to Hamburg Germany Regulatory Agency to demonstrate the facility's limits compliance) it will clearly illustrate that the NOx levels emitted from advanced thermal recycling facilities are in some cases lower than those from pyrolysis (Technip, Pyromex) and gasification (Thide-Eddith) facilities.

Furthermore, the hypothetical assessment for the Greater Los Angeles as presented in the Life Cycle Inventory Scenarios Analyzed (Pg. 47) need to be revised to include advanced thermal recycling. We urge the Board to further explore the advanced thermal recycling facilities since actual published data has demonstrated that advanced thermal recycling has advanced in both energy efficiency and air emission control systems.

- 2. Stakeholder Participation:** Stakeholders, including US EPA, Air Quality Regulators, Water Quality Regulators, should be invited to the workshops or meetings when conversion technologies issues are discussed. This is to bring them up to speed and give them an opportunity to provide their input into the process. This will inevitably relieve municipalities and private sectors the tremendous burden when seeking permits from these regulators.

In addition, AB 2770 mandates the Board to "consult with the State Energy Resources Conservation and Development Commission and other state, federal, or international government agencies in preparing the report."

We thus recommend that the stakeholders' meetings include representatives from power companies and members or staffs from the California Energy Commission and the California Public Utilities Commission. Their participation will potentially result in growing market for the renewable energy sources derived from conversion technologies.

3. **Facility Siting:** Based on previous experience with the incineration facilities, implementation of conversion technologies may face opposition from local communities, particularly when pertinent emission data is very limited. To ease the concerns, the report should emphasize the facts that advanced control systems that are currently available for conversion technologies including advanced thermal recycling are capable in reducing the emissions to levels with minimal impacts to the environment and public health.
4. **Costs:** It is anticipated that the implementation of conversion technologies will be quite costly. We thus urge the Board to direct its staff to conduct a detailed cost analysis for implementation of existing commercial-scale conversion technologies and to identify all funding opportunities to assist local municipalities in defraying the cost of conversion technologies.

Additional Comments:

5. **Market Impact Assessment, Pg 8:** Despite the apparent shortage of data on emissions, one may not be easily convinced that both thermochemical and biochemical conversion technologies may offer better solutions to combustion (thermal recycling) and that these technologies possess unique characteristics to reduce the amount of material that is ultimately landfilled. For instance, the City delegation has visited an anaerobic digestion facility with a pre-sorting material recovery facility (Ecoparc 2/ Valorga Plant) in the City of Barcelona, Spain, where it was observed that approximately 45% of the incoming solid waste was rejected, including unopened bags amounting to 4.5% of the total input. The rejects are baled and the bales wrapped before going to a local landfill. On the other hand, the delegation observed in a thermal recycling, the MVR plant, that the bottom ash was screened and then washed to produce road base material. Therefore, only the fly ash is landfilled, which is approximately 3% of the feedstock. Based on the aforementioned information, advanced thermal recycling may have advantages over biochemical conversion technologies. In addition the residue volume from advanced thermal recycling is equivalent to that of thermochemical conversion technology.
6. **Current Status, Thermochemical Conversion, Pgs 24, 25 and 26:** The City supports further data collection with the inclusion of advanced thermal recycling technologies as part of the investigation. Pages 24, 25, and 26 list both commercially active pyrolysis and gasification facilities using municipal solid waste (MSW), Table 1 and Table 2, respectively. The facilities listed in these tables were mainly from Japan and a few from Germany. Furthermore, on Page 26, the Thermoselect/JFE gasification plant in Karlsruhe, Germany is discussed as being an operating facility, however, during a visit to the facility back in October 2004, the City delegation learned that this conversion plant may be shut down by the end of 2004. In addition, the delegation was also informed that the JFE facility had experienced technical difficulties, as was the case with a similar facility in Furth, Germany. It should be noted that Table 9 (Page 41) does not include the Japanese limits and most of the emission data from the Japanese facilities listed were missing from this table. For better data comparisons, it is highly suggested Table 9 be revised to include the Japanese limits as well as other missing data on emissions.

7. Lifecycle Assessment, Pg 52: We are concerned with the lack of data, assumptions and scenario analysis, which may have influenced the results. Also, we have concern with the general use of the term “conversion technologies” when presenting results. Figure 16 (Pg. 53) depicts the hypothetical annual net NO_x emissions from various MSW treatment processes in the greater Los Angeles Region. As shown in this figure, the net NO_x emissions for the conversion technologies (CT) were found significantly lower than those from the thermal recycling technologies (WTE). However, the NO_x emissions from the pyrolysis/gasification facilities, as shown in Table 9 (Pg. 41) of the CIWMB’s report and cited in Table 1 below, appear to be comparable with the NO_x emission from the MVR, an advanced thermal recycling facility in Hamburg, Germany.

Table 1: Emission Results for Various Pyrolysis/Gasification facilities (mg/Nm³ unless noted)

	PM	NO _x	CO	VOC	SO ₂	Dioxins/ furan (ng/Nm ³)	HCl	HF	Cd	Pb	Hg
US EPA limits	18.4	219.8	89.2	-	61.2	-	29.1	-	0.01533	0.1533	0.0613
German limits	10	200	50	-	50	0.10	10	-	0.03	0.50	0.03
Brightstar	1.6-10	40-96	440-625	0.05	<0.1	0.0331	<1.0	0.59	<0.0002	0.0051	-
Compact Power	0.1 1	26.49	7.13	0.49	3.37		0.17	-	-	-	-
GEM	3	262	8	6	79	0.02	4	ND	ND	-	ND
Mitsui Babcock	-	75 ppm	5 ppm	-	8ppm	0.016	9 ppm	-	-	-	-
Mitsui Babcock	-	<35 ppm	-	-	<10ppm	<0.005	<31 ppm	-	-	-	-
PKA	2.3	54	38	-	7.7	0.02	2.3	0.15	0.002	-	0.002
Pyromex	1	135	38	-	20	0.005	1	0.03	-	-	-
Serpac	4.2- 5.2	61- 189	0.5- 2.5	-	0.0- 5.6	0.002	1.7-5	<0.1	-	-	0.05
Technip	3	180	10	-	5	0.001	5	ND	0.02		0.02
Thermoselect	0.8 4	21.76	2.95	-	0.16	0.0007- 0.0011			0.001	0.013	0.0018
Thide-Eddith	-	470	50	-	<200		30	<1	-	-	-
MVR* Hamburg, Germany	-	100	50		2	0.0027	3	0.1	0.002	0.05	0.02

Sources: * MVR Environmental Statement 2004, Vattenfall

8. Conclusion, Cleanest, Least Polluting Technologies, Pg 70: The City shares the view that Anaerobic Digestion (AD) process due to its relatively lower required temperatures may produce less air toxins. However, this technology is restricted to breaking down only biodegradable material, and the non-biodegradable material that remains after the process would have to be landfilled. The City recommend an air pollution mass balance study should be performed to demonstrate all of the environmental impacts associated with the implementation of AD technologies (landfill space, ground water contaminations, green house air emissions, etc) versus thermal technologies to determine the most beneficial alternative.

9. Recommendations:

The following comments are directly related to the four recommendations made by CIWMB's staff:

CT Report – Recommendation No. 1b:

The proposed definition “Combustion means the thermal destruction, in an oxygen-rich environment, of solid waste for the generation of heat and subsequent energy production” **should instead be read as** “Combustion means the **complete thermal conversion, in an air or oxygen rich** environment, of solid waste for the generation of heat and subsequent energy production”.

In addition, the Report should make recommendation that the terms “Thermal Recycling” and “Combustion” are equivalent and interchangeable.

CT Report – Recommendation No. 2:

In lieu of data gathering from other countries and facilities, we recommend that the Board consider the installation of a conversion technology facility in California where actual data can be obtained. It should be noted that emissions of many toxic contaminants, including metals, furans, dioxins, particulate matters, etc... depend on a number of factors, including conversion technologies' operating conditions, emission control systems, and the compositional characteristics of incoming feedstock. The emission data will then serve as underlying foundation for regulating and permitting.

CT Report – Recommendation No. 3:

We disagree with the recommendation on a proposed study to assess the impact of China's demand for recycled materials. We believe implementation of conversion technologies are likely to increase the amount of recycling in California because additional quantities of recyclables will be removed from the feedstock during the “pre-treatment process”. This in turn will result in increases in materials sent to traditional recycling and composting markets.

CT Report – Recommendation No. 4:

Diversion Credit: A conversion technology facility converts waste destined to be landfilled into recyclable products and green energy. This process should be recognized by providing jurisdictions with pre-sorted material from residential collection programs with 100 percent diversion credit.

The City appreciates your consideration of these comments and concerns, and we look forward to working with you and your staff. Should you have any questions, please contact Alex E. Helou at (213) 473-7926.

Sincerely,



Rifa L. Robinson
Director
Bureau of Sanitation

cc: Mayor's Office
CLA
EAD
Enrique C. Zaldivar, BOS
Alex E. Helou, BOS
Los Angeles County Integrated Waste Management Task Force
Los Angeles County Alternative Technology Advisory Committee
Central File