

GAS ANALYSIS REPORT
 by ATLANTIC ANALYTICAL LABORATORY (AAL, Whitehouse, NJ)
 ACRION'S CO2 WASH PROCESS DEMONSTRATION UNIT
 NJ ECOCOMPLEX / BURLINGTON COUNTY LANDFILL / November 2001

	Raw Landfill Gas AAL 6696		CO2 Product AAL 6695	
<i>Non-Condensable Gases</i>	vol%	DL vol%	ppm v/v	DL ppm v/v
Nitrogen	7.5	0.01	--	10
Oxygen	--	0.10	--	4
Argon	--		--	4
Hydrogen	--	0.10	--	10
Carbon Dioxide	38.3	0.01	--	4
<i>Volatile Hydrocarbons</i>	ppm volume	DL ppm	ppm volume	DL ppm
Methane	54.3%	1	nd	1
Ethylene	4	1	nd	1
Acetylene	nd	10	--	
Ethane	3	1	nd	1
Propylene	nd	1	nd	1
Propane	47	1	67	1
Isobutane	13	1	nd	1
n-Butane	9	1	nd	1
Butenes	nd	1	nd	1
Isopentane	2	1	nd	1
n-Pentane	2	1	nd	1
Hexanes +	370	1	nd	1
<i>Volatile Sulfur Compounds</i>	ppm volume	DL ppm	ppm volume	DL ppm
Hydrogen Sulfide	nd	0.05	nd	0.05
Carbonyl Sulfide	1.00	0.05	0.25	0.05
Sulfur Dioxide	nd	0.05	nd	0.05
Methyl Mercaptan	nd	0.05	nd	0.05
Ethyl Mercaptan	nd	0.05	nd	0.05
Dimethyl Sulfide	5.00	0.05	nd	0.05
Carbon Disulfide	1.20	0.05	nd	0.05
Isopropyl Mercaptan	nd	0.05	nd	0.05
Methyl Ethyl Sulfide	0.06	0.05	nd	0.05
n-Propyl Mercaptan	nd	0.05	nd	0.05
t-Butyl Mercaptan	nd	0.05	nd	0.05
Dimethyl Disulfide	0.13	0.05	nd	0.05
sec-Butyl Mercaptan	0.21	0.05	nd	0.05
Isobutyl Mercaptan	0.19	0.05	nd	0.05
Diethyl Sulfide	nd	0.05	nd	0.05
n-Butyl Mercaptan	0.05	0.05	nd	0.05

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<i>GC/MS Results</i> <i>TO-14 Target List</i>	Raw Landfill Gas AAL 6696		CO2 Product AAL 6695	
	ppm volume	DL ppm	ppm volume	DL ppm
Freon-12	1.6		--	
Methyl Chloride	nd	0.5	--	
Freon-114	0.5		--	
Vinyl Chloride	0.7		nd	0.5
Methyl Bromide	nd	0.5	--	
Ethyl Chloride	nd	0.5	--	
Freon-11	nd	0.5	--	
Vinylidene Chloride	nd	0.5	--	
Freon-113	nd	0.5	--	
Dichloromethane	nd	0.5	--	
1,1-Dichlorethane	nd	0.5	--	
cis-1,2-Dichloroethylene	0.9		--	
Chloroform	nd	0.5	--	
1,1,1-Trichloroethane	nd	0.5	--	
1,2-Dichlorethane	nd	0.5	--	
Benzene	0.6		nd	5 ppb
Carbon Tetrachloride	nd	0.5	--	
1,2-Dichloropropane	3.1		--	
Trichloroethylene	0.5		--	
cis-1,3-Dichloropropylene	nd	0.5	--	
trans-1,3-Dichloropropylene	nd	0.5	--	
Toluene	26.0		nd	0.2
1,1,2-Trichloroethane	nd	0.2	--	
1,2-Dibromoethane	nd	0.5	--	
Tetrachloroethylene	0.8		--	
Chlorobenzene	nd	0.2	--	
Ethyl Benzene	9.3		nd	0.2
m+p-Xylenes	13.0		nd	0.2
Styrene	3.1		--	
o-Xylene	3.6		nd	0.2
1,1,2,2-Tetrachloroethane	nd	0.2	--	
4-Ethyltoluene	3.5		--	
1,3,5-Trimethylbenzene	0.8		--	
1,2,4-Trimethylbenzene	0.8		--	
1,3-Dichlorobenzene	nd	0.2	--	
1,4-Dichlorobenzene	nd	0.2	--	
Benzylchloride	nd	0.2	--	
1,2-Dichlorobenzene	nd	0.2	--	
1,2,4-Trichlorobenzene	nd	0.2	--	
Hexachlorobutadiene	nd	0.2	--	
Other Organics	--		nd	1

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<i>GC/MS Results</i>	ppm	DL	ppm	DL
<i>Non-TO-14 Target List</i>	volume	ppm	volume	ppm
Methanol	--		nd	2
Ethanol	--		nd	2
Propane	47		67	
Isobutane	13		nd	1
Acetone	19		--	
Methylethyl Ketone	9.1		--	
2-butanol	26		--	
Iso-Butanol	--		nd	0.5
C6H12O2	19		--	
C8 Aliphatic Hydrocarbon	--		nd	0.5
C9 Aliphatic Hydrocarbon	3.6		--	
Alpha-Pinene	9.5		--	
C11 Aliphatic Hydrocarbon	15		--	
D-Limonene	7.3		nd	0.5
<i>GC/MS Results</i>	ppb	DL	ppb	DL
<i>Toxic Substances Sub-17</i>	volume	ppb	volume	ppb
Freon-12			--	
Vinyl Chloride			nd	500
Chloroform			--	
1,2-Dichloroethane			--	
Benzene			nd	5
Carbon Tetrachloride			--	
Trichloroethylene			--	
1,4-Dioxane			--	
1,1,2-Trichloroethane			--	
1,2-Dibromoethane			--	
Tetrachloroethylene			--	
1,1,2,2 Tetrachloroethane			--	
Methylene Chloride			--	
1,1,1-Trichloroethane			--	

Analysis not performed on raw landfill gas

NOTES:

AAL 6696: raw landfill gas after compression to 200 psig and water knockout
 AAL-695: product CO2 bottom of stripper
 DL = Detection Limit, if not shown, reported result is greater than DL
 nd = concentration is less than stated DL
 -- = test not performed
 ppm = parts per million
 ppb = parts per billion