

Summary Analysis of Municipal Waste Combustor Class II Recycling Program Waste Characterization Studies completed in February & March 2011

310 CMR 19.300 requires Massachusetts combustion facilities to conduct waste characterization studies within 18 months of receiving their Class II Recycling Program certifications from the Massachusetts Department of Environmental Protection (MassDEP). Six facilities have completed this requirement. These studies are posted on the MassDEP web site along with this summary analysis.

This summary analysis has been prepared by the Massachusetts Department of Environmental Protection using the data in these studies. This analysis provides a weighted average composition by material category based on the amount of in-state waste that each facility received in calendar year 2009, as shown below.

	Saugus	North Andover	Millbury	Rochester	Haverhill	Springfield	Combined Total
MA tons accepted	409,435	386,583	382,226	1,183,591	565,480	121,310	3,048,625
% of Combined Total	13%	13%	13%	39%	19%	4%	100%

The summary composition analysis for primary material categories is shown on the second sheet titled Primary Material Categories.
 The summary composition analysis for detailed material categories is shown on the third sheet titled Detailed Material Categories.
 Data for the studies published in 2011 was collected during Fall and Winter 2010.

Aggregate Categories	Saugus	North Andover	Millbury	Rochester	Haverhill	Springfield	Average	Weighted Average
Paper	28.2%	28.0%	26.7%	23.7%	27.3%	20.1%	25.7%	25.8%
Plastics	15.4%	15.4%	16.3%	13.4%	11.6%	13.5%	14.3%	14.0%
Metals	5.5%	5.1%	5.7%	5.5%	5.7%	4.6%	5.4%	5.5%
Glass	2.9%	2.7%	3.3%	1.7%	1.8%	1.4%	2.3%	2.2%
Organic Materials	19.8%	20.4%	17.0%	21.3%	22.3%	21.6%	20.4%	20.6%
Construction and Demolition	13.3%	13.1%	16.3%	13.2%	15.0%	13.2%	14.0%	13.9%
Household Hazardous Waste	4.5%	4.7%	3.7%	2.9%	1.7%	2.9%	3.4%	3.2%
Electronics	2.0%	2.2%	2.0%	4.1%	3.4%	6.3%	3.3%	3.3%
Other Materials	8.4%	8.6%	9.1%	14.2%	11.3%	16.5%	11.4%	11.6%
	100%	100%	100%	100%	100%	100%	100%	100%

Overall Waste Composition By Primary Material Category - Fall & Winter 2010 Sampling

Detailed Material Categories

	Saugus	North Andover	Milbury	Rochester	Haverhill	Springfield	Average	Weighted Average
Paper								
Uncoated Corrugated Cardboard/Kraft Paper	5.8%	5.6%	6.7%	9.2%	13.9%	5.5%	7.8%	8.7%
Waxed Cardboard	2.3%	2.2%	2.2%	0.1%	0.7%	0.1%	1.3%	1.0%
High Grade Office Paper	1.4%	1.3%	1.1%	0.9%	1.2%	0.9%	1.1%	1.1%
Magazines/Catalogs	2.2%	2.2%	2.0%	1.4%	1.3%	1.1%	1.7%	1.7%
Newsprint	2.7%	2.7%	2.5%	1.5%	1.0%	2.0%	2.1%	1.9%
Other Recyclable Paper	2.8%	2.7%	2.3%	4.6%	3.6%	4.4%	3.4%	3.6%
Compostable Paper	8.9%	9.2%	7.8%	4.7%	4.4%	4.6%	6.6%	6.2%
Remainder/Composite Paper	2.1%	2.1%	2.1%	1.4%	1.2%	1.5%	1.7%	1.6%
Plastic								
PET Beverage Containers (non-MA deposit containers)	0.6%	0.6%	0.6%	0.6%	0.5%	0.4%	0.6%	0.6%
PET Containers other than Beverage Containers (which originally contained non-hazardous material)	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%
Plastic MA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2%	0.1%
HDPE Bottles, colored and natural, (which originally contained non-hazardous material)	0.7%	0.7%	0.8%	0.4%	0.9%	0.9%	0.7%	0.6%
Plastic Tubs and lids (HDPE, PP, etc)	0.7%	0.7%	0.7%	0.2%	0.4%	0.2%	0.5%	0.4%
Plastic Containers #3-#7 (which originally contained non-hazardous material)	0.3%	0.3%	0.3%	0.4%	0.3%	0.4%	0.3%	0.3%
Expanded Polystyrene Food Grade	0.7%	0.7%	0.5%	0.4%	0.4%	0.7%	0.6%	0.5%
Expanded Polystyrene Non-food Grade	0.2%	0.1%	0.2%	0.3%	0.1%	0.1%	0.2%	0.2%
Bulk Rigid Plastic Items	2.3%	2.6%	2.4%	3.1%	2.0%	3.9%	2.7%	2.7%
Film (non-bag clean commercial and industrial packaging film)	1.0%	0.8%	0.9%	0.2%	0.3%	0.5%	0.6%	0.5%
Grocery and other Merchandise Bags	1.6%	1.7%	1.4%	0.5%	0.3%	0.4%	1.0%	0.9%
Other Film means plastic film	4.0%	4.0%	3.9%	3.2%	4.4%	2.9%	3.7%	3.7%
Remainder/Composite Plastic	3.0%	2.8%	4.2%	3.7%	1.8%	2.8%	3.1%	3.2%
Metal								
Aluminum Beverage Containers (non-MA deposit containers)	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.1%
Aluminum MA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.1%	0.0%	0.2%	0.2%	0.1%
Tin/Steel Containers	0.8%	0.8%	0.7%	0.7%	1.1%	0.7%	0.8%	0.8%
Other Aluminum	0.7%	0.6%	1.2%	0.2%	0.2%	0.3%	0.5%	0.4%
Other Ferrous and non-ferrous	2.3%	1.8%	2.2%	1.7%	1.6%	1.1%	1.8%	1.8%
White Goods	0.6%	0.7%	0.5%	0.6%	0.3%	0.3%	0.5%	0.5%
Remainder/Composite Metal	0.9%	0.8%	0.9%	2.2%	2.3%	1.9%	1.5%	1.7%
Glass								
Glass Beverage Containers (non-MA deposit containers)	1.1%	1.0%	1.1%	0.4%	0.6%	0.4%	0.8%	0.7%
Other Glass Packaging Containers (non-MA deposit containers)	0.7%	0.7%	0.6%	0.3%	0.4%	0.3%	0.5%	0.5%
Glass MA Deposit Beverage Containers	0.4%	0.4%	0.3%	0.3%	0.5%	0.3%	0.4%	0.4%
Remainder/Composite Glass	0.7%	0.6%	1.2%	0.6%	0.3%	0.4%	0.6%	0.6%
Organic Materials								
Food Waste	14.8%	15.2%	12.8%	14.4%	18.1%	15.6%	15.2%	15.1%
Branches and Stumps	0.3%	0.3%	0.3%	1.9%	0.9%	0.6%	0.7%	1.0%
Prunings, Trimings, Leaves and Grass	1.9%	2.0%	1.5%	2.7%	2.5%	3.8%	2.4%	2.4%
Manures	1.5%	1.6%	1.0%	0.6%	0.0%	0.1%	0.8%	0.8%
Remainder/Composite Organic	1.3%	1.3%	1.5%	1.8%	0.8%	1.4%	1.4%	1.4%
Construction and Demolition (in the MSW stream)								
Asphalt Pavement, Brick, and Concrete	1.0%	1.0%	0.7%	0.1%	0.1%	0.0%	0.5%	0.4%
Aggregates, Stone, Rock	1.0%	0.8%	1.5%	0.5%	0.0%	0.1%	0.7%	0.6%
Wood – Treated	3.0%	3.0%	3.8%	5.4%	4.1%	2.4%	3.6%	4.2%
Wood – Untreated	2.9%	3.2%	4.1%	2.5%	4.9%	2.2%	3.3%	3.3%
Asphalt Roofing	0.8%	0.9%	0.8%	0.5%	0.8%	0.2%	0.7%	0.7%
Drywall/Gypsum Board	0.6%	0.4%	1.1%	0.4%	0.4%	1.4%	0.7%	0.6%
Carpet and Carpet Padding	2.5%	2.5%	2.1%	2.8%	3.7%	5.4%	3.2%	2.9%
Remainder/Composite Construction and Demolition	1.4%	1.2%	2.1%	1.0%	1.0%	1.4%	1.4%	1.2%
Household Hazardous Waste								
Ballasts, CFLs, and Other Fluorescents	0.6%	0.8%	0.4%	0.0%	0.0%	0.0%	0.3%	0.2%
Batteries – Lead Acid	0.1%	0.1%	0.1%	0.1%	0.0%	0.4%	0.1%	0.1%
Batteries – Other	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Paint	0.2%	0.1%	0.4%	0.1%	0.0%	0.2%	0.2%	0.1%
Bio-Hazardous	2.9%	3.0%	2.3%	2.4%	1.5%	2.2%	2.4%	2.4%
Vehicle and Equipment Fluids	0.5%	0.5%	0.3%	0.0%	0.0%	0.1%	0.2%	0.2%
Empty Metal, Glass, and Plastic Containers (that originally contained toxic materials)	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%
Pesticides and Fertilizers	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

Other Hazardous or Household Hazardous Waste		0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
	Electronics								
Computer-related Electronics		0.4%	0.4%	0.5%	0.9%	0.4%	1.0%	0.6%	0.6%
Other "brown goods"		1.2%	1.2%	1.1%	2.1%	2.2%	2.9%	1.8%	1.8%
Televisions and Computer Monitors		0.4%	0.6%	0.4%	1.1%	0.8%	2.4%	1.0%	0.9%
	Other Materials								
Tires and other rubber		0.9%	0.9%	1.0%	2.1%	1.3%	1.3%	1.3%	1.5%
Textiles		3.5%	3.4%	4.3%	6.0%	4.3%	8.4%	5.0%	4.9%
Bulky Materials		2.9%	3.0%	2.6%	3.4%	3.4%	3.8%	3.2%	3.2%
Restaurant Fats, Oils and Grease		0.3%	0.3%	0.2%	0.0%	0.0%	0.1%	0.2%	0.1%
Other Miscellaneous		0.9%	0.9%	1.1%	2.6%	2.3%	3.0%	1.8%	1.9%
		100%	100%	100%	100%	100%	100%	100%	100%

Overall Waste Composition By Primary Material Category - Fall & Winter 2010 Sampling

Summary Analysis of Municipal Waste Combustor Class II Recycling Program Waste Characterization Reports completed in February 2014

310 CMR 19.300 requires Massachusetts combustion facilities to conduct an initial waste characterization study within 18 months of receiving their Class II Recycling Program certifications from the Massachusetts Department of Environmental Protection (MassDEP) and to conduct a new study every three years thereafter. Six facilities have completed this requirement. These studies are posted on the MassDEP web site along with this summary analysis.

This summary analysis has been prepared by the Massachusetts Department of Environmental Protection using the data in these studies. This analysis provides a weighted average composition by material category based on the amount of waste that each facility burned in calendar year 2013.

Note that 2013 sampling was done during spring and summer months, while 2010 sampling was done during fall and winter months.

	Saugus	North Andover	Millbury	Rochester	Haverhill	Springfield	Combined Total
Total Tons Burned*	405,759	446,558	485,361	1,118,703	591,721	162,478	3,210,580
% of Combined Total	13%	14%	15%	35%	18%	5%	100%

*Total Tons burned = total tons accepted - pre combustion metal recovery based on Annual Solid Waste Facility Reports

The summary composition analysis for primary material categories is shown on the second sheet titled Primary Material Categories.

The summary composition analysis for detailed material categories is shown on the third sheet titled Detailed Material Categories.

Data for the studies published in 2014 was collected during Spring and Summer 2013.

Aggregate Categories	Saugus	North Andover	Millbury	Rochester	Haverhill	Springfield	Average	Weighted Average
Paper	25.0%	22.9%	26.4%	25.0%	24.7%	21.2%	24.2%	24.7%
Plastics	14.5%	12.1%	14.1%	14.8%	15.9%	14.0%	14.2%	14.4%
Metals	4.3%	3.7%	6.3%	3.0%	3.9%	4.6%	4.3%	4.0%
Glass	1.4%	2.2%	1.7%	2.2%	2.0%	1.5%	1.8%	2.0%
Organic Materials	26.9%	28.4%	24.6%	27.9%	23.1%	31.0%	27.0%	26.6%
Construction and Demolition	14.4%	18.0%	15.0%	8.9%	13.5%	13.0%	13.8%	12.8%
Household Hazardous Waste	2.4%	2.3%	2.6%	2.8%	2.6%	3.1%	2.6%	2.6%
Electronics	1.1%	1.4%	1.3%	1.6%	2.2%	1.2%	1.5%	1.6%
Other Materials	9.9%	9.0%	7.9%	13.8%	12.1%	10.5%	10.5%	11.3%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Overall Waste Composition By Primary Material Category - Spring and Summer 2013 Sampling

Detailed Material Categories	North						Weighted	
	Saugus	Andover	Millbury	Rochester	Haverhill	Springfield	Average	Average
Paper								
Uncoated Corrugated Cardboard/Kraft Paper	8.1%	6.4%	8.1%	6.8%	8.6%	3.5%	6.9%	7.3%
Waxed Cardboard	0.4%	0.3%	0.8%	0.9%	0.1%	1.4%	0.7%	0.6%
High Grade Office Paper	1.2%	0.8%	1.3%	1.0%	1.1%	0.8%	1.0%	1.1%
Magazines/Catalogs	1.2%	1.1%	0.7%	1.8%	1.1%	1.0%	1.2%	1.3%
Newsprint	1.2%	1.8%	1.2%	1.8%	0.9%	0.9%	1.3%	1.4%
Other Recyclable Paper	2.2%	3.8%	3.8%	4.0%	2.8%	5.1%	3.6%	3.5%
Compostable Paper	9.6%	7.1%	9.2%	6.9%	7.9%	7.4%	8.0%	7.8%
Remainder/Composite Paper	1.2%	1.5%	1.4%	1.8%	2.2%	1.1%	1.5%	1.7%
Plastic								
PET Beverage Containers (non-MA deposit containers)	0.6%	0.5%	0.5%	0.6%	0.8%	0.4%	0.6%	0.6%
PET Containers other than Beverage Containers (which originally contained non-hazardous material)	0.2%	0.2%	0.1%	0.2%	0.2%	0.3%	0.2%	0.2%
Plastic MA Deposit Beverage Containers	0.1%	0.3%	0.2%	0.1%	0.3%	0.1%	0.2%	0.2%
HDPE Bottles, colored and natural, (which originally contained non-hazardous material)	0.5%	0.5%	0.3%	0.6%	0.8%	0.4%	0.5%	0.6%
Plastic Tubs and lids (HDPE, PP, etc)	0.6%	0.1%	0.7%	0.5%	0.6%	1.7%	0.7%	0.6%
Plastic Containers #3-#7 (which originally contained non-hazardous material)	0.3%	1.1%	0.6%	0.7%	0.6%	0.8%	0.7%	0.7%
Expanded Polystyrene Food Grade	0.9%	0.5%	0.5%	1.7%	0.5%	0.4%	0.8%	1.0%
Expanded Polystyrene Non-food Grade	0.2%	0.4%	0.1%	0.1%	0.5%	0.1%	0.2%	0.2%
Bulk Rigid Plastic Items	2.5%	2.5%	4.1%	1.6%	1.7%	1.2%	2.3%	2.2%
Film (non-bag clean commercial and industrial packaging film)	0.7%	1.1%	1.2%	1.2%	2.2%	0.6%	1.2%	1.3%
Grocery and other Merchandise Bags	1.6%	0.4%	0.6%	0.7%	0.5%	0.6%	0.7%	0.7%
Other Film means plastic film	4.7%	3.2%	3.8%	4.9%	4.5%	4.8%	4.3%	4.4%
Remainder/Composite Plastic	1.6%	1.3%	1.3%	1.7%	2.6%	2.6%	1.9%	1.8%
Metal								
Aluminum Beverage Containers (non-MA deposit containers)	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%
Aluminum MA Deposit Beverage Containers	0.2%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.1%
Tin/Steel Containers	0.9%	0.5%	0.6%	0.5%	0.9%	0.7%	0.7%	0.6%
Other Aluminum	0.4%	0.3%	0.4%	0.4%	0.3%	0.3%	0.4%	0.4%
Other Ferrous and non-ferrous	1.1%	0.6%	1.9%	0.4%	1.1%	0.8%	1.0%	0.9%
White Goods	0.0%	0.0%	0.0%	0.4%	0.4%	0.9%	0.3%	0.3%
Remainder/Composite Metal	1.8%	2.1%	3.2%	1.0%	1.0%	1.6%	1.8%	1.6%
Glass								
Glass Beverage Containers (non-MA deposit containers)	0.4%	1.1%	0.4%	0.7%	0.8%	0.6%	0.7%	0.7%
Other Glass Packaging Containers (non-MA deposit containers)	0.3%	0.4%	0.2%	0.4%	0.5%	0.5%	0.4%	0.4%
Glass MA Deposit Beverage Containers	0.5%	0.3%	0.2%	0.6%	0.3%	0.1%	0.3%	0.4%
Remainder/Composite Glass	0.2%	0.5%	0.9%	0.3%	0.4%	0.3%	0.4%	0.4%
Organic Materials								
Food Waste	19.2%	16.3%	16.8%	20.5%	18.1%	19.9%	18.5%	18.7%
Branches and Stumps	0.4%	0.7%	0.0%	0.0%	0.0%	0.2%	0.2%	0.2%
Prunings, Trimings, Leaves and Grass	6.0%	7.9%	2.0%	3.4%	2.1%	7.2%	4.8%	4.1%
Manures	0.3%	0.2%	1.4%	0.1%	0.4%	0.1%	0.4%	0.4%
Remainder/Composite Organic	1.1%	3.3%	4.4%	3.9%	2.4%	3.5%	3.1%	3.2%
Construction and Demolition (in the MSW stream)								
Asphalt Pavement, Brick, and Concrete	0.1%	0.0%	0.2%	0.3%	0.1%	0.1%	0.1%	0.2%
Aggregates, Stone, Rock	0.9%	0.5%	0.2%	0.3%	0.1%	0.5%	0.4%	0.4%
Wood – Treated	5.0%	5.1%	8.2%	2.2%	4.1%	2.4%	4.5%	4.2%

Wood – Untreated	2.6%	4.1%	1.5%	0.8%	3.2%	1.7%	2.3%	2.1%
Asphalt Roofing	0.0%	1.3%	0.2%	0.0%	0.1%	0.4%	0.3%	0.2%
Drywall/Gypsum Board	0.9%	0.5%	0.9%	0.8%	1.0%	1.5%	0.9%	0.9%
Carpet and Carpet Padding	2.4%	4.6%	2.8%	1.8%	2.8%	2.0%	2.7%	2.6%
Remainder/Composite Construction and Demolition	2.6%	2.0%	1.0%	2.7%	2.1%	4.4%	2.5%	2.3%
Household Hazardous Waste								
Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.1%	0.1%
Batteries – Lead Acid	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Batteries – Other	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Paint	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	0.1%
Bio-Hazardous	1.9%	1.9%	2.1%	2.2%	2.0%	2.6%	2.1%	2.1%
Vehicle and Equipment Fluids	0.1%	0.0%	0.1%	0.1%	0.2%	0.0%	0.1%	0.1%
Empty Metal, Glass, and Plastic Containers (that originally contained toxic materials)	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.0%
Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%
Electronics								
Computer-related Electronics	0.3%	0.1%	0.0%	0.6%	0.8%	0.3%	0.4%	0.4%
Other “brown goods”	0.5%	0.5%	0.4%	0.8%	0.3%	0.8%	0.6%	0.6%
Televisions and Computer Monitors	0.4%	0.8%	0.8%	0.2%	1.2%	0.0%	0.6%	0.6%
Other Materials								
Tires and other rubber	1.3%	1.0%	1.9%	2.5%	1.4%	1.5%	1.6%	1.8%
Textiles	5.9%	5.8%	4.7%	5.2%	4.7%	5.9%	5.4%	5.2%
Bulky Materials	1.0%	0.5%	0.2%	4.3%	4.9%	2.4%	2.2%	2.7%
Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
Other Miscellaneous	1.7%	1.7%	1.1%	1.7%	1.1%	0.8%	1.4%	1.5%
Total	100%							

Overall Waste Composition By Detailed Material Category - Spring and Summer 2013 Sampling