http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html
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WAste Reduction Model (WARM)

NEW VERSION: Updated August 2008

EPA created the WAste Reduction Model (WARM) to help solid waste planners and organizations track and voluntarily report greenhouse gas emissions reductions from several different waste management practices. WARM is available both as a Web-based calculator and as a Microsoft Excel spreadsheet (317K WinZip archive).

WARM calculates and totals GHG emissions of baseline and alternative waste management practices—source reduction, recycling, combustion, composting, and landfilling. The model calculates emissions in metric tons of carbon equivalent (MTCE), metric tons of carbon dioxide equivalent (MTCO2E), and energy units (million BTU) across a wide range of material types commonly found in municipal solid waste (MSW).

WARM is periodically updated as new information becomes available and new material types are added. Users may refer to the model history to better understand the differences among various versions of WARM. WARM was last updated August, 2008.

WARM now recognizes 34 material types, which are presented in the table below; their emission factors are available for viewing in units of metric tons of carbon equivalent (MTCE) or metric tons of carbon dioxide equivalent (MTCO2Eq). Note that the emission factors represent the GHG emissions associated with managing 1 short ton of MSW in the manner indicated. GHG savings should be calculated by comparing the emissions associated with the alternative scenario with the emissions associated with the baseline scenario, as opposed to simply multiplying the quantity by an emission factor. For instance, the GHG savings of recycling 1 short ton of aluminum instead of landfilling it would be calculated as follows:

(1 short ton x -3.73 MTCE/short ton) - (1 short ton x 0.01 MTCE/short ton) = -3.74 MTCE

Frequent Questions

Frequently Asked Questions about WARM

Note

ReCon and WARM were developed for purchasers and waste managers, respectively. ReCon calculates the benefits of alternative recycled content purchasing decisions. WARM, on the other hand, calculates the benefits of alternative end-of-life waste management decisions. Both tools calculate the benefits of an alternative scenario versus a business-as-usual scenario.

The WARM and ReCon tools are based on a life-cycle approach, which reflects emissions and avoided emissions upstream and downstream from the point of use. As such, the emission factors provided in these tools provide an account of the net benefit of these actions to the environment. This life-cycle approach is not appropriate for use in inventories because of the diffuse nature of the emissions and emission reductions within a single emission factor.

Material Types Recognized by WARM

Aluminum Cans	Branches	Carpet
Clay Bricks	Concrete	Copper Wire
Corrugated Cardboard	Dimensional Lumber	Fly Ash
Food Scraps	Glass	Grass
HPDE	LDPE	Leaves
Magazines/ 3rd -Class Mail	Medium-Density Fiberboard	Mixed Metals
Mixed MSW	Mixed Organics	Mixed Paper (general)
Mixed Paper (primarily from offices)	Mixed Paper (primarily residential)	Mixed Plastics
Mixed Recyclables	Newspaper	Office Paper
Personal Computers	PET	Phonebooks
Steel Cans	Textbooks	Tires
Yard Trimmings		

Using WARM

NEW VERSION: Updated August 2008

WARM is available in a Web-based calculator format and as a Microsoft Excel spreadsheet. The WARM User's Guide will help you get up and running with the WARM software.

To download and open the Excel version of WARM, follow the directions below:

To download the zip file:

> Save this file (warm.zip 317 kb WinZip file) to your hard drive.
> Open it and extract the warm.xls file to your hard drive.

The installed program is a Microsoft Excel spreadsheet application. After you have installed the program, you may run the application:

Using Microsoft Excel 5.0

> To run the WARM program, open the warm.xls file.
> Select the "Read Only" option.
> You may then begin using the WARM application.

Using Microsoft Excel 97 or 2000

> To run the WARM program, open the warm.xls file.
> Select the "Enable Macros" option.
> You may then begin using the WARM application.

IMPORTANT: In order for WARM to function, your Excel settings must be set to permit the use of macros.