

# **EMFACT**<sup>TM</sup> Introduction

# Terri Goldberg Northeast Waste Management Officials' Association (NEWMOA)

December 2009



- How does EMFACT<sup>™</sup> relate to green chemistry?
- What is EMFACT<sup>TM</sup>?
- What reports can EMFACT<sup>TM</sup> produce?
- EMFACT<sup>TM</sup> example spray booth



- EMFACT<sup>™</sup> is an acronym for Energy & Materials Flow & Cost Tracker
- Product of collaboration between government assistance providers in pollution prevention & other topics relating to sustainability:
  - Northeast Waste Management Officials' Association (NEWMOA)
  - Massachusetts Office of Technical Assistance & Technology (MA OTA)
- EMFACT<sup>TM</sup> is a **free** software tool

– www.newmoa.org/prevention/emfact/register.cfm

# EMFACT – Green Chemistry & Materials Accounting

EMFACT Energy & Materials Flow and Cost Tracker

- Green chemistry focuses on developing chemicals & products that are effective, relatively less toxic/hazardous, reduce non-product output, & maximize the efficient use of resources
- Increased supply chain pressures & demands for greater transparency in products – public attention & pressure

WMOA

- Environmental Management Accounting or Materials Accounting enhances the ability of manufacturers & others to make decisions & set priorities related to use of resources (i.e., chemicals, materials, energy, water) through tracking & analyzing the flow through the process & associated costs
- Small & medium-sized firms have not had software tool for materials accounting - managing & analyzing materials & energy use information



- The objectives of EMFACT<sup>TM</sup> are to provide:
  - A fully developed easy-to-use & well-documented energy, materials, chemicals, releases, & associated costs tracking & data analysis tool
  - Well-developed training support materials & a user's guide to support the implementation of the tool
  - Online downloadable free access to the software application as well as the training materials & user's guide
  - Training workshops

# EMFACT<sup>TM</sup> Developers EMFACT<sup>TM</sup> Team

- Sponsors:
  - NEWMOA
    - Nate Bisbee
    - Andy Bray
    - Terri Goldberg \*
  - MA OTA
    - David Haas
    - Morgan Mihok
    - Phil Milmoe
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- Sullivan
  - Kathy Bates
  - Joan Cianciolo
  - Betsy Cottle
  - Liz Ostwald
- EMARIC
  - Deb Savage
- EPA ORD
  - Collaborative Science & Technology for Sustainability

#### \* Primary managers



➤ In Phase 1, EMFACT<sup>™</sup> was designed to help users understand & analyze their materials (including water & fuels) & chemical use in one or more facilities

➤ EMFACT was designed to help track fuels, (i.e., oil, natural gas, coal, or bio-based fuels); treats these material inputs the same as others

➢ For Phase 1, EMFACT<sup>™</sup> was not designed to enable users to fully track & evaluate all of their energy use, particularly their use & purchasing of electricity



### **EMFACT**<sup>TM</sup> Procedure Flow



#### **EMFACT - Procedure Flow**

The Energy & Materials Flow and Cost Tracker (EMFACT) is an easy-to-use, well-documented tool to assist the small and medium size enterprise manage their fuel, water and materials usage. Using EMFACT, companies can track air emissions, wastewater, solid/hazardous waste, and related costs associated with the day-to-day operations of their business. Several reports are available to assist, along with a calendar to set up due dates and reminders.

The purpose of this document is to provide a high-level overview of the entire EMFACT process. Refer to specific training and documentation for additional details.



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## EMFACT<sup>TM</sup> Dashboard



EMFACT Energy & Materials Flow and Cost Tracker

The EMFACT<sup>™</sup> Dashboard displays seven distinct areas of functionality accessed via icons or Toolbar menus:

- 1. Setup
- 2. Define
- 3. Link
- 4. Input
- 5. Output
  - Product
  - Non-product
- 6. Reports
- 7. Reminders

#### **EMFACT<sup>™</sup> Toolbar**





- EMFACT<sup>™</sup> designed to enable data input & data analysis/reports based on equipment, production unit, or entire facility – maximizes flexibility depending on interest/needs of the user
- Manages lists of equipment & materials/chemicals
- Pre-populated with numerous lists focusing on federal regulatory lists & thousands of CAS numbers



- EMFACT includes 21 boiler plate reports to help users track products, air, water, & waste on a variety of levels
- Filters enable user to define report parameters ;
   Search window enables searching by a variety of fields output can be printed or saved to Excel
- Access the EMFACT Reports Procedure Guide from Contents in the Help menu: pg\_emf\_reports.pdf



- Materials & chemicals Purchased & Used & Non-Product Output per equipment, per production unit, per facility; costs
- Materials & chemicals Purchased & Used incorporated into product vs. into non-product output; costs
- Non-product output reports for air emissions, including 12- month rolling averages; costs
- Water pollutant outputs as well as water usage; costs
- Waste activity reports; group data by waste type; costs

Energy & Materials Flow and Cost Tracker (EMFACT)         Edit Setup Define Link Inputs Outputs Reports Reminders Window Help         Waterials Equipment Prod Unit Produces Link Equip Link PrUnit Import Input Water Input Air Dat Water Out Materials Used: Weight per CAS Number Report         Include Data for No Equipment/Prod Unit AND:       Scope         Output:       01-2007         Ioo 51       Filter Data         Ioo 51       Filter Data         Ioo 51       Ioo Date:         Ioo 51       Ioo Date:         Ist Name:       Ioo Date:         Ist Name:       Ioo Date:         Ist Name:       Ioo Date:         Ist Name:       Ioo:	EMFACT Energy & Materials Flow and Cost Tracker
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Total for 100 51 6: \$2 10 17 0539	
107-98-2 Propylene Glycol, 1-Monomethyl Ether	
PAINT 100 Product Paint \$.00	
Total for PAINT 100: \$4.65 26.9306	
Total for 107-98-2: \$4.65 26.9306	
28064-14-4 Bisphenol F Epoxy Resin	
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J.C.						ACT / & Materials Flow	and Cost Tracker
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Salast Donarti	Filter Re	port by:					
Activity Costs	<ul> <li>Activity</li> </ul>	Date From:	01-2007 🔽	To: 10-2007	V Hazardou	us?: Yes or No 🔽	Refresh Data
03/01/2008 16:05:10	Waste Ma	nagement	Report - Acti	vity Costs		Page 1 of 1	^
Waste Type	Activity Type	Activity Date	Weight in Lbs.	Internal Cost in \$	Vendor Cost in \$	Total Cost in \$	
Cardboard		Hazardous?					
Ship	ment for Disposa	l 10/04/2007	220	\$.00	\$.00	\$.00	
Ship	ment for Disposa	l 10/04/2007	22	\$22.00	\$11.00	\$33.00	
Shi	oment for Recycle	e 10/15/2007	-80	\$-50.00	\$-300.00	\$-350.00	
Total Weight F	For Waste Type:	Cardboard	162	\$-28.00	\$-289.00	\$-317.00	
Oil, Hazardous Waste		Hazardous?	<ul> <li>Image: A start of the start of</li></ul>				
Ship	ment for Disposa	I 10/04/2007	2,200	\$444.00	\$121.00	\$565.00	
· · · · ·	Offsite Treatmn	t 10/17/2007	100	\$500.00	\$44.00	\$544.00	
al Weight For Waste 1	Type: Oil, Hazar	dous Waste	2,300	\$944.00	\$165.00	\$1,109.00	

Example: 12-month Rolling Air Emissions	
EMFACT Energy & Materials Flow and Cost Track	ker
🔄 Energy & Materials Flow and Cost Tracker (EMFACT)	
File Edit Setup Define Link Inputs Outputs Reports Reminders Window Help	
De De De Contra la contra contra contra la contra contr	
🔮 Air Emissions: Weight per Pollutant with 12 Month Rolling Report	
Filter Data       Include Data for Prod Unit:       Refresh Data         Report Detail Level:       Monthly       From Date:       01-2007	
02/02/2009 12:55:39 Air Emissions: Weight per Pollutant with 12 Month Rolling Report Page 1 of 1 From 01-2007 To 12-2008	
Usage Current Month Totals 12 Month Rolling Totals	
Monun Hours Usage Pollutant Total Emissions Hours Usage Pollutant Total Emissions	
12-2008 4.00 33.88 TSP 0.4812 Lbs. 0.00 33.88 TSP 0.4812 Lbs	
Grand Total: 4.00 33.88 TSP 0.4812 Lbs.	
Test Facility	16



- Mass Balance Reports available at many levels
- Complex reports to generate need all inputs & outputs in same units (generally pounds)
- EMFACT<sup>™</sup> helps user to make sure units are consistent & appropriate conversions are made

	Ex	ample: I	Mass Balance	for <u>Purch</u>	nased Inputs
J					& CT & Materials Flow and Cost Tracker
Mass Balance Report					
Filter Data Production Unit/Equipm	<u>nent ID:</u>	<u>▼</u> <u></u>	From Date:         01-2007         Include I           To Date:         04-2008         Input	Data for Prod Unit: ut as Prod Unit ut for Equipment where part	of the Prod Unit Clear Filter
04/14/2008 16:18:31		Mass Balance Pu	rchased Report	Page 1 of 2	
	(IN) Mater	ials Purchased: \	Veight per Material		
Material ID	Material	Name	P	urchase Qty in Lbs.	
003	Material 3			30.00	
BETSY	Betey			33.00	
GLIDDEN1	Glidden Eggsh	ell Paint		73.00	
			Total Purchased Weight:	136.00	
	(OUT) Pro	oduct: Weight per	Material Report		
Material ID / Name	Product Model	Intermediate Prod	luct No. Pro	duct Output in Lbs.	
FAC PAINT1	Krylon Ultra Fl	at Black 1602			
V100	Product Na	ame			
	IP101	Part 101		18,975.0000	
	IP103	Part 103		236,241.0666	
			Total for V100:	255,216.0666	
			Total for FAC PAINT1:	255,216.0666	5

#### Example : Mass Balance Air Output Report NEWMOA EMFACT Energy & Materials Flow and Cost Tracker ~ GLIDDEN1 Glidden Eggshell Paint V100 Product Name IP101 Part 101 14,375.0000 Total for V100: 14,375.0000 Total for GLIDDEN1: 14,375.0000 **Total Product Weight:** 269,591.0666 (OUT) Air Emissions: Lbs. per Pollutant Pollutant Emission Qty in Lbs. CO 5,068.0000 Lead 10,200.0000 NOx 11,515,420.9001 PM10 84,693.0000 SOx 23,198,866.0000 TSP 1.263.6852 VOC 6.600.4033 **Total Air Emissions Weight:** 34,822,111.9886 ¥

# Example: Mass Balance Output Report



	-							
Energy	8	Mate	rials	Flow	and	Cost	Trac	kei

(OUT): Wastewater Discharg	je: Lbs. per Pollutant	
Pollutant		Discharge Qty in Lbs.
BARIUM		0.9623
CADMIUM		3.9203
Total Wast	tewater Discharge Weight:	5.8427
(OUT) Waste: Lbs. per Waste	е Туре	
Waste Type	Hazardous?	Waste Weight in Lbs.
Acid Sludge	<b>v</b>	170.0000
Acids, Non-hazardous		22.0000
Cardboard		162.0000
Filters with Paint	$\checkmark$	135.0000
Oil, Hazardous Waste		2,300.0000
Scrap		3,330.0000
	Total Waste Weight:	6,119,0000

# Compliance Reporting & Reminders

- EMFACT<sup>TM</sup> incorporates lists of regulated chemicals:
  - SARA 313
  - Hazardous Air Pollutants (HAPs)
  - Ozone Depleting Substances Classes I & II
  - Ability for users to add their own chemical lists (i.e., priority pollutants, state regulated chemicals)
- Reminders:
  - Screens to list/describe permits
  - A calendar with event reminders (e.g., permit renewal)

### **Example:** Reminders

Calendar Ev	ent List	Jucts Link Equip	) Link Pr Unit Imp	oort Input Wate	r InputAir InputM	lati Air Out	Water Out	Waste Dut	New	Delete	Hetneve	Save	Print E	
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	Event S	tatus: Ope	n 👻				Recur	ring? N	0 🔻				More	Detai
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						<u> </u>								
Due Date	Event No	. Site Code	2	Event Na	me	_	Event Lo	ocation	1	Init Re	minder	Final	Reminder	Eve
3/31/2008	0000001	ABC	Permit Exp	iration for:	2008-0001					00/00/	0000	00/00/	0000	Open
8/12/2008	0000002	ABC	Permit Rer	newal Due	for: 2008-000	1				00/00/	0000	00/00/	0000	Open
8/05/2008	0000003	ABC	Permit Rer	newal Start	for: 2008-000	01				00/00/	0000	00/00/	0000	Open
8/31/2008	0000004	ABC	Permit Exp	iration for:	2008-0001					00/00/	0000	00/00/	0000	Open
6/30/2008	0000005	ABC	Permit Exp	iration for:	2008-0001					00/00/	0000	00/00/	0000	Open
9/30/2008	0000006	ABC	Permit Exp	viration for:	2008-0001					00/00/	0000	00/00/	0000	Open
2/31/2008	0000007	ABC	Permit Exp	iration for:	2008-0001					00/00/	0000	00/00/	0000	Open

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EMFACT Energy & Materials Flow and Cost Tracker

#### Reminders

The **Reminders** feature enables users to track the renewal and expiration dates of permits, regulations, etc.

When permits and regulations are first set up, users have the option of entering the Issue, **Expiration**, **Renewal Due** and **Renewal Start Dates** 

When this is done, EMFACT automatically creates calendar events and reminders

Users can also set up independent calendar events for other reasons (e.g., audit reminders, etc.)

# Example: Reminders Detail



#### Reminders

#### The Event Details

window provides a full screen view of all fields available to manage events

hergy & Materials Flow and Cost Tracker (EMFACT)	low Holp						
Luit Secup Dennie Link Inputs Outputs Reports Reminders Wind sids Equipment ProdUnit Products Link Equip Link Pruhi Import Input Water Input Air Inp	put Matl Air Out	📸 🛤 Water Out Waste I	Car Dut New	Delete R	<b>Lá Lá</b> letrieve Sa	a 🖄	Dr. Ex
Calendar Event Detail: 0000001							
vent No.: 0000001 <u>Site Code:</u> ABC <u>Due Date</u> 03/31/2	2008	Sta	tus: Oper	ו <b>ד</b>			<u></u>
Name: Permit Expiration for: 2008-0001	-	_ocati	on:				
Desc:							-
Contact Persor BAS - Basic User				Last L	Jpdate:		
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Reminder	artmen						
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Recurring Event						Cro	eate
Recurring? Yes No requency:	✓ of Occu	urrences:	Event	No.:		Eve	ents
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Event No. Event Name		Final Remi	nder Due	Date St	tatus		
© 0000004 Permit Expiration for: 2008-0001			03/31	/2008 0	pen		
0000005 Permit Expiration for: 2008-0001			06/30	/2008 0	pen		
0000006 Permit Expiration for: 2008-0001			09/30	/2008 0	pen		
0000007 Permit Expiration for: 2008-0001			12/31	/2008 O	pen		
	Remind	ers Window	v Help				
	Cale	endar Remin	der List			1	
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	e Viev	w Calendar I	vents Co	ming Du	e		
Enable Advanced Fields					1	1 of 4 Reco	ords 1002

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Energy & Materials Flow and Cost Tracker (EMFACT)	<b>Example</b> – "Contents" displays FMFACT <sup>M</sup>
File Edit Setup Define Link Inputs Outputs Reports Reminders Window Help	
😂 🌝 🍃 🎦 📑 🔯 🗖 Contents Materials Equipment Products Link Equip Link Pr Unit Import Input Water Input Air Input Me	Shift+F1 documentation; click the button next to the
EMFACT Dashboard Welcome Kathy Bates Contacts.	
<b>About</b>	(Adobe PDF)
Energy & Materials Flow and Cost Tracker	Net call point call and an and a state state of the state
Toolbar - Help	EMFACT Dashboard       Welcome Kathy Bates 
Help menu on the Toolbar	Procedure Flows: I outline the sters within a procedure identifies the required fields for each ster
provides access to various	High Level EMFACT procedure flow       Define procedure flow       Outputs procedure flow         Setup procedure flow       Inputs procedure flow       Reminders procedure flow
EMFACT <sup>an</sup> help resources	Procedure Guides: provides detailed steps for completing a particular process. Procedure Guides are process-based.
	Setup procedure guide     Inputs procedure guide     Reminders procedure guide
	Define procedure guide     Outputs procedure guide
	Report Guide: describes the available reports and includes the steps for running the reports.
	EMFACT reports guide
	Close SETOR
	F

## **EMFACT<sup>TM</sup>** Cue Cards

Energy & Materials Flow and Cost Tracker (EMFACT)		
File Edit Setup Define Link Inputs Outputs Reports Reminders Window Help		
😕 😕 🗁 📑 🛅 🏜 🗌 📰 📓 🕌 💑 🏷 Materials Equipment Produkts Link Equip Link Pr'Unit Import Input Air Input Air Input Made Air Dut. Water Dut Waste Dut. New Delete	Retrieve Save Print	<b>∏</b> • Exit
Cue Cards for Materials Definition	- 0 ×	
MASTER MATERIAL LIST QUESTIONS		
EMFACT comes pre-loaded with common chemical/cas numbers and names to be used as material constituents but the list can be altered.		
Do you want to:		
1. Add materials to the list or edit data for an existing material?	Yes No	utput
2. Alter the list of chemical/cas numbers and names?		Product
MATERIAL LIST DETAILS QUESTIONS		
Please use question 1 to select a material for editing. Note that once you are comfortable using the		Product
material summary window for editing, you do not need to return to the cuecard for questions 3, 4 & 5.		rioudet
Do you want to:		n-product
3. Add a chemical ingredient/constituents for the material or edit data for an existing constituent?		
4. Associate a synonym or alias for the material?		
5. Add a purchased container size for the material or edit data for an existing container size?		Air
To skip to a question click on the text of the desired question		
Previous Question Close To skip to a question, click on the text of the desired question		Wastewater
Please note that all of the options available on this cuecard are also available on the menu under DEFINE and then Materials	E110000	63
	EHBUIZ	<b>I</b>
Reminders	Reports	Waste
User: Kathy Bates		
Facility Location KNOX - KGB Manufacturing		Heln
		merp

Each Cue Card contains a series of questions. Users click **Yes** or **No** to the questions. When answering **Yes**, the appropriate EMFACT<sup>™</sup> window will display. If answering **No**, the prompt advances to the next question.



"Cue Cards" are provided for users to guide them through the logical series of tasks associated with EMFACT<sup>™</sup> windows

Cue Cards are displayed when users click a dashboard icon

To access a window without using Cue Cards, select the desired functionality from the Toolbar menus

# EMFACT<sup>TM</sup> Basic or Advanced User Level

						Drop Down Lists	
User IC	User Name	User Type				Facility Locations Buildings	s
PAS	Pasis User	Dasic	Advanced			Departments	•
KATUN	Kethu Deter	Basic	Advanced			System Utilities	
KATHY	Katny Bates	P. Basic	Advanced				
💠 Energy & Mate	rials Flow and Cost Tracker (EMFACT)						
File Edit Setup	Define Link Inputs Outputs Reports I	Reminders Window Help	* • * *	12 N A	<b>I</b> +		
Materials Equipment	Prod Unit Products Link Equip Link Pr Unit Import Inp	out Water Input Air Input Matt. Air Dut. W	/ater Duit Waste Duit New Deleti	e Retrieve Save Print	Exit		
Material List							
Filter	Data				Refresh Data	1	
	Material ID:	Synonym:			Clear Filter		
м	iterial Name:	Manufacturer Name:			Clear Pilter		
A	aterial Type:	<ul> <li>CAS Number:</li> </ul>		•	More Detail	J	
Materi	al ID Material Name	Material T	vpe Manufacturer	Name Density VOC	% Mfr Written	Date Mn Rev	
FUEL	Sample Fuel Oil	Fuel	Unknown	7.1 0.00	00/00/0000	00/00/01	
OTHER	Sample Other Material	Composite	Unknown	19.0 0.00	00/00/0000	00/00/01	
PAINT	Sample Paint	Paint	Unknown	10.84 0.00	00/00/0000	00/00/01	
WATER	Water - Do Not Delete	Water	Control & Materials Flow and G	8 3 00	00/00/0000	00/00/01	
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			Material List     Filter Data				
			Material ID:		Synonym:		R
			Material Name:	Manul	facturer Name:		0
			Material Type:		CAS Number:		
			Material ID FUEL Sam	Material Name	Material Typ Fuel	e Manufacturer lame Density	Y OC % N
			OTHER Sam	ple Other Material	Composite	Unknown 19.0	0.00 0
			PAINT Sam	ple Paint	Paint	Unknown 10.84	0.00 0
			DALA THE PL		vvater	8.3	00 00
			WATER Wat	er - Do Not Delete	and a second		
14.	nable Advanced Fields		WATER Wat	er - Do Not Delete			
	nable Advanced Fields		WATER Wat	er - Do Not Delete			

EMFACT Energy & Materials Flow and Cost Tracker

Access Setup → Users to indicate if a user has a Basic or Advanced permission level as a default

Advanced users have access to more data entry fields. **Basic** users default to less data entry fields

Click the Enable Advanced Fields

checkbox and the additional data entry fields will change from gray to white



## In this example, the **Search For Materials** window is launched



- EMFACT<sup>™</sup> is programmed in Oracle Express (free downloadable version of Oracle)
- Need to first install Oracle Express and then EMFACT<sup>TM</sup>
- If already have Oracle installed, do not need to reinstall
- Online instructions explain process for downloading/installing EMFACT<sup>™</sup>



- Training slides available on EMFACT<sup>™</sup> webpage along with documentation & support materials – www.newmoa.org/prevention/emfact/register.cfm
- Seeking opportunities for additional workshops around the U.S. – would like your help/partnership
- Developing online e-learning support for EMFACT<sup>TM</sup>

# For more information For more information $\underbrace{\mathsf{EMFACT}}_{\mathsf{Energy \& Materials Flow and Cost Tracker}}$

- More on what is EMFACT<sup>™</sup> http://newmoa.org/prevention/emfact/about.cfm
- Downloading EMFACT<sup>™</sup> (including registration) http://newmoa.org/prevention/emfact/register.cfm
- EMFACT<sup>™</sup> Version 2 seeking support to upgrade/improve
- For more information:

Terri Goldberg NEWMOA (617) 367-8558 x302 tgoldberg@newmoa.org www.newmoa.org



report Materials Flow and Cost Tracker (MFACT) - [Factifity Location List]         report Materials Flow and Cost Tracker (MFACT) - [Factifity Location List]         report Notice Tracker (MFACT) - [Factifity Location List]         State Code:       report Notice Tracker (MFACT)         report Notice Tracker (MFACT) - [Factifity Locatio			Set	Up:	Fac	ility									
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ergy fit Materials Flow and Cost Tracker (EMFACT) - [Facility Location List]											nergy	& Mate	rials Fl	low an	d Cost Tra
Compose being being bin points reports remindes whom rep      Topman Protoco Produce Protoco Latting Location Name: Sample Location     Address1:     City Name:     C	ergy & Materials Flow	and Cost Tra	ker (EMFAC	T) - [Facilit	y Location	List]									_ 2 🛛
Eacility Location Code: ABC   Eacility Location Name: Sample Location   Address1: Image: Country:   External Phone No: Image: Country:   Eacility Location Code: NEW   Eacility Location Code: NEWMOA   Address2: Image: Country:   City Name: Image: Country:   External Phone No: Image: Country:   Image: Country: Image: Country:	i Edik Secup Denne i Bili Cayloniat Prod Unit	Producta Link Equip	Link Pr Unit in	port kput VV	window H	ep I lepet Muti A	Dut Vinis	н Уынсон	< New	So Delete	Retrieve	ian a	Print 1	De tat	
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Set-Up: Building	
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Energy & Materials Flow and Cost Tracker (EMFACT)	
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Manarials Equipment Prod Unit Products Link Equip Link Pr Unit Import Input Water Input Air Input Mutt Air Out Water Out Water Out New Delete	Retrieve Sure Print Esit
Building List	
Code: ABC Building Code: 1A Name: Building 1A	
Facility Location     TEST     Building Code:     100     Name:     Main Building	⊂ Output –
	Product
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	Product
	Non-product
1 of 2 Records SETIONA	
	Wastewater
Enable Advanced Fields	ds Waste
User: Terri Goldberg	
Facility Location: TEST - Test Facility	Help 33

#### NEWMOA **Define: Materials & Materials List** EMFACT Energy & Materials Flow and Cost Tracker Energy & Materials Flow and Cost Tracker (EMFACT) - [Material List] 67 File Edit Setup Define Link Inputs Outputs Reports Reminders Window Help - 8 X 10 194 Ć 6 1 B B B 0 <u>iks</u> 0 deb 1 Input Mull Water Out Waste Out Delute Print Materiale Equipment Prod Unit Products Air Out New Retrieve Stee Esit Link Equip Link Py Linit Import Input Water Input Air **Filter Data Refresh Data** Material ID: Synonym: **Clear Filter** Material Name: Manufacturer Name: More Detail Material Type: ~ CAS Number: \* Material ID **Material Name Material Type** Manufacturer Name Density VOC % Mfr Written Date Mfr Re Krylon Ultra Flat Black 1602 FAC PAINT 1 Paint 6.52 52.00 00/00/0000 00/00/00 FUEL Fuel Fuel Unknown 7.1 0.00 00/00/0000 00/00/00 OTHER Sample Other Material Unknown 19.0 0.00 0000/00/000 00/00/00 Composite PAINT Sample Paint Paint Unknown 10.84 0.00 00/00/0000 00/00/00 PAINT 100 Product Paint Paint 10.84 0.00 00/00/0000 00/00/00 PAINT 101 Product Paint Paint 10.85 0.00 00/00/0000 00/00/00 WATER Water - Do Not Delete Water 8.3 0.00 00/00/0000 00/00/00 < > 1 of 7 Records La, Enable Advanced Fields DEFOOL 34

	= De	fine:	Ma	aterials Det	ail			
3-5					EM F Energy	ACT & Materi	als Flow	and Cost Tracker
Energy & Materials Flow and Co	st Tracker (EMF)	ACT) - [Materia	al Detail:	FAC PAINT 1]				- 7 🔀
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Material ID: FAC PAINT 1	v w	ritten Date: O	0/00/0000	Revision Date: 00/00/0000	Active?	2		
Material Type: Paint Trade Name:		~	<u>Ma</u> <u>N</u>	iterial Krylon Ultra Flat Black 1602 ame:	Co	STS .		
Life Names			Haz	zardous Warnings:				
Density: 6.52	VOC % 52.00			Target Organs:				
File Name:	TOC AL PLAD			operate Date: 07/31/2008	GO			
Constituent Synonyms Con	tainer							
CAS Number	From %	To %	Avas	Chemical Name:	Update Date			
108-88-3	.0	0 3	3.0	Toluene	07/31/2008			
74-98-6	.0	.0 1	8.0	Propane	07/31/2008			
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be Ext stup Ceffne Likk Topds Outputs Reports Reminders Window Help     bit     bit     ception     bit        bit        bit           bit                 bit                       bit	Energy & Material	s Flow and Cost Trac	iker (EMFACT) - [E	iquipment Lis	t]						3	- 6 🛛
Filter Data       Equipment ID:       Eveloping:       Image: Category:       Image: Category:       Image: Clear Filters         Name:       Department:       Image: Category:       Image: Category:       Image: Clear Filters         Upment ID:       Name:       Building       Building Name       Category:       Image: Category:         11       Paint Spray Booth       100       Main Building       Paint Spray Booth         11W       Paint Spray Booth Washer       100       Main Building       Washing Machine, Industrial         I1W       Paint Spray Booth Washer       100       Main Building       Washing Machine, Industrial         I1W       Paint Spray Booth Washer       100       Main Building       Washing Machine, Industrial         I1W       Paint Spray Booth Washer       100       Main Building       Washing Machine, Industrial         I1W       Paint Spray Booth Washer       100       Main Building       Washing Machine, Industrial         I1W       Paint Spray Booth Washer       100       Main Building       Image: Category         I1W       Paint Spray Booth Washer       100       Main Building       Image: Category         I1W       Paint Spray Booth Washer       100       Main Building       Image: Category <tr< th=""><th>File Edit Setup Di</th><th>efine Link Inputs Out </th><th>puts Reports Remi</th><th>Inders Window</th><th>Help</th><th>Verov Verov</th><th>- Nov</th><th>Dukts R</th><th><b>Lá</b></th><th>an Print</th><th>De Lak</th><th>_ 8 ×</th></tr<>	File Edit Setup Di	efine Link Inputs Out 	puts Reports Remi	Inders Window	Help	Verov Verov	- Nov	Dukts R	<b>Lá</b>	an Print	De Lak	_ 8 ×
Name:       Category:       Category:       Department:	Filter Data Equipment II	D:	Building:	V Pro	oduction Unit ID:		~	Refres	h Data	Save		
Water Building       Building       Paint Spray Booth         11       Paint Spray Booth Washer       000       Main Building       Washing Machine, Industrial         11-W       Paint Spray Booth Washer       000       Main Building       Washing Machine, Industrial	Nam	e:		]	Category: Department:		*	Clear	Filters			
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perev & Materials F	low and Cost Tracker (EMFACT)	Production Unit List 1		Energy	o wateria:	5 F10W		
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Production U	nit ID:	Department:	Refr	esh Data				
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	NYNNNYHIN ()		Cle	arrines				
			Cle	2 Detail				
			Cle	e Detail				
oduction Unit ID I-LINE	Name Painting Line	Loca Column H	tion Dep Departme	artment ent 1111	Line of Paint			
oduction Unit ID 1-LINE	Name Painting Line	Loca Column H	tion Dep Departme	artment ent 1111	Line of Paint			
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oduction Unit ID 1-LINE	Name Painting Line	Loca Column H	tion Dep Departme	artment ent 1111	Line of Paint			

N		Define: Outputs	- Produ	cts			
	4			EMFAC	T		
				Energy & N	laterials Flo	ow and Cost 1	Fracker
ð 1	on R Materials Flow and Cost	Tracker (IMEACT) . [Droduct List]					I.
File	Edit Setup Define Link Inputs	Outputs Reports Reminders Window Help				- 7 ×	
Maria	is Equipment ProdUkk Products Link	SEquep Lak Pr Unit Input to kept Vator Input Air Dan V	😤 😝 🦣	Delete Betrieve Sav	e Print	0+ Ea	
				More Detail			
	Product Model No	Product Name	Weight in Lbs.	Update Date			
Ū	SAMPLE2	Sample 2 Product	50.00	0772472008			
	Comments: Sample Product	t for testing only					
				Costs			
	V100	Painted Case	1,000.00	02/02/2009			
	Comments: This is a produc	t we make					
				Costs			
	V200	Product V200	5,000.00	02/02/2009			
	Comments: Another product						
				Costs			
Ja,	Enable Advanced Field	ls	1	of 3 Records			
	,			DEF008			
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Test Facility

	Define:	Outpu	ts —	Air So	ourc	es			
3-						MFAC hergy & M	T Materials FI	ow and Cos	t Tracker
Energy & Materials Flow and C	ost Tracker (EMFACT) -	[Air Source List]	- 1-						
Alterials Equipment Prod Unit Products	Link Equip Link Pr Unit Import	eminders window H	leip	💽 🚟	📰 Waste Out	New 1	🆄 😭 Delete Retriev-	e Save	Print Exit
Filter Data Air Source ID: Category:	Bu	iilding: 100 Status:		<ul><li>✓</li><li>✓</li></ul>			Refresh Data Clear Filter More Detail		
Air Source Exit ID Direction R-001 Vertical ✓	Air Source Lining Metal Ambien	Air Source <u>Category</u> t Air Vents - Sky v	Through Roof? ✓	Emission?	Rainhat?	Active?	Building Code	Permi No PERMIT-100	t E>
									<u>&gt;</u>
Enable Advan	ced Fields							1 of 1 Red	ords

Define: Air Source Detail	
EMFACT Energy & Materials Flow and Cost Track	ker
Air Source Detail 123	
Air Source ID:       123       Category:       Air Intake       Active?         State Source ID:       123A       Building:       200       •         Permit No:       •       Other Building       •	
Gas Information:	
Dimensions:       Exit Information:         Diameter:       1.0 Ft       Width:       0.0 Ft         Height:       3.0 Ft       Depth:       0.0 Ft	
Area: 2.0 Sq Ft	
Questions:       Update Date: 07/20/2007 <u>Through Roof?:</u> ○ Yes ○ No       Rainhat?: ○ Yes ○ No         Fugitive Emission?:       ○ Yes ○ No	
File Name:	
Enable Advanced Fields	40

NEWMOA De	fine: Wastewater Disch	arges
J.		EMFACT Energy & Materials Flow and Cost Tracker
Water Discharge Point List		
<b><u>DSN:</u></b> 123-456	Description: Water Discharge	<u>Active?</u> ✓
Discharge Point Type: NPDES	Permit Nbr: 12345	Update Date: Costs
Receiving Entity: CT River		12/07/2007
<u>DSN:</u> 234-567	Description: Basement System	<u>Active?</u> ✓
Discharge Point Type: Sanitary	Permit Nbr:	Update Date: Costs
Receiving Entity:		11/06/2007

	Define: Waste Types				
	EMFAC Energy & M	: T Iaterials Flow	and Cos	t Tracker	
4	Energy & Materials Flow and Cost Tracker (EMFACT) - [Waste Type List]				
	Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reports Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reminders Window Heip         Image: Securp Derine Link Inputs Outputs Reminders View         Image: Securp Derine Derine Link Inputs Outputs Reminders View         Image: Securp Derine Derine Link Inputs Outputs Reminders View         Image: Securp Derine De	🏂 😭 Delete Retriev	e Save	📑 Print	<b>I</b> Ex
	Waste Type         Hazardous?         Physical State         Cost p	er Lb. in \$	<u>~</u>		
l	🕼 Absorbents, Saturated Media 🛛 🗹 Liquid 💿 Solid 🔍 Sludge 🔍 Other	.00			
l	Update Date: 07/25/2008	Codes			
l	Filters	.00			
	Update Date: 02/02/2009 EPA	A Codes			
	Filters with Paint	10.00			
	Update Date: 07/31/2008 EPA	Codes			
	Oil, Used Oil, Used Other	.00			
l	Update Date: 02/21/2008 EPA	Codes			
	Paint cans (drv)	.00			
		Codes			
			~		
	Enable Advanced Fields	1 of 6 Record	ds		



Linking – production unit with materials, products, air sources, emissions, air factors, discharges, water pollution, waste products, products



Linking – production unit with materials, products, air sources, emissions, air factors, discharges, water pollution, waste products, products

		Die: Linkin	g Produc		D Pro	ba. Unit
nergy & Materials Flow and Cost	Tracker (EMFACT)			Ener	gy & Mate	
Edit Setup Define Link Inputs O b Company Com	utputs Reports Reminders	Window Help	Value Dat Value Dat	Danda Rute	i Mi	Print Exit
Production Unit Links for: PB11-	LINE					
Location: Column H	Name: Painting Lin	e	Department:	Active	2 🗹	
scription: Line of Painting Operation	ations					
aterials Products Air So	ource Emission Ai	r Factors) Discharge We	ater Poll Waste			
Product Model No.				Active?	Update Da	te
r V100 ▼	Painted Case				2/2/2009	
Intermediate Product:	IP101	Painted Part 101				
Comments:						
V100	Painted Case				2/2/2009	
Intermediate Product:	IP102	Painted Part 102				
Comments:						
∨100 💌	Painted Case				2/2/2009	
Intermediate Product:	IP103	Painted Part 103				
Comments:						



Once Set-Up, Define, & Linking are Completed, Ready for Day-to-Day Use to Manage, Store, & Analyze Data on Materials Use, Fuel/Paint, & Water Use, Product, & Non-Product Output

#### Input – Materials Purchased

Manage List



#### **Input Material Purchased**

There are two methods to enter **Material Purchased** – electronically through a file upload (data upload template provided with EMFACT) or manually.



	💻 Inpi	ut – Wa	ter Us	se						
- J.F.						EMFA		jale Ele	Wand	Cost
nergy & Materials Flow and	Cost Tracker (EMF/	CT) - [Enter Water Use ts Reminders Window 1	ige]			Energy	a water	iais F10	vv and	
🕞 😂 😂 😂	ctor Link Equip Link Pr Unit	import lapat Vator lapat Air	Input Muti Air Out	Var De Var De		Defent Partners	Sars.	Print .	De tak	
oduction Unit/ PB11-W	Paint Spray	Booth Washer		De	partmer	nt: 1111	~			
	Material ID:	Usage Date	<u>Usage</u> (	<u>)ty</u> Uni	ts	Frequency				
	WATER	12/10/2008	3,6	Gallo Gallo	ns	Per Month	~			
Save Usage Cost (US \$):	0.00	Comment:								
ntered Data so far		Start		Otv						
quipment ID Material I	D Date	Oty/Units	Frequency	in Lbs.						
Usage Report			Enable Adva	anced Fields			INP101			
									те	est Facility