Maryland Green Registry MEMBER

The Maryland Green Registry promotes and recognizes sustainable practices at organizations of all types and sizes. Members agree to share at least five environmental practices and one measurable result while striving to continually improve their environmental performance.

Thermo Fisher Scientific

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www.thermofisher.com/us/en/home.html
Member since June 2011

Management and Leadership

☑ **Environmental Policy Statement**

Environmental Policy:
http://www.lifetechnologies.com/content/dam/LifeTech/Documents/PDFs/EHS-Policy.pdf

Sustainability Statement:
http://www.lifetechnologies.com/us/en/home/about-us/sustainability.html

☑ **Environmental Team**

At Thermo Fisher Scientific, environmental sustainability is an ongoing process that integrates the reduction of our carbon footprint into the company's business strategy. Resource conservation and waste minimization are key elements of the company's environmental sustainability agenda, while reducing emissions of greenhouse gases that increase the earth's temperature is our top priority. To help meet our environmental goals, our sites have established employee-led Green Committees.

Mission: Minimize Thermo Fisher Scientific's carbon footprint and foster environmentally sound, profitable and effective solutions as they relate to:

- *Energy consumption*
- *Carbon Dioxide (CO2) emissions*
- *Water consumption*
- *Waste disposal*

The Green Committee addresses issues such as: energy conservation, alternative energy usage, water conservation, waste minimization, recycling, green chemistry, packaging reduction, and green building (e.g. LEED certification on new buildings) and will seek to engage employees at work and at home.

Responsibilities: Our sites are responsible for creating and maintaining a Green Committee. This Committee is responsible for:

- *Aligning its initiatives and projects to the global environmental sustainability goals.*
- *Sponsoring and hosting an Earth Day event in April of each year and My Impact @ Frederick each October.*
- *Promoting a quarterly review of environmental sustainability performance at the site level.*
- *Educating the site on sustainability issues and methods by which individual employees can have a positive impact on the environment.*

Participation: The Green Committee at the Frederick Site started in 2008 and is made up of volunteers, although representation from EHS and Facilities is required. The Green Committee is sponsored by a member of the site's Leadership Team. Meetings are scheduled on a monthly basis. Members are expected to attend at least 9 meetings in a calendar year and dedicate an additional 5 hours per year toward green initiatives. Members shall elect a non-EHS and non-Facilities Committee Leader to facilitate meetings, manage activities and organize recognition events. The site leader shall attend global Green Committee meetings to ensure alignment and leverage global resources.

The Green Committee also maintains an active Intranet page with environmental tips, resources, and upcoming events, so all employees can receive updates.

Recognition: The Green Committee Leader shall organize an annual Recognition Event to identify and acknowledge the group and all other contributing parties. The Leader should also periodically inform the site of the Committee's efforts

☑ **Annual Environmental Goals**

Life Technologies' Environmental 2014 Goals are:

- *Purchase only what we need.*
- *5% reduction in energy, water, waste, and CO_2 compared to 2013.*
- *Zero Waste: 90% diversion from landfill of non-hazardous waste, where incineration for energy is a last resort.*
- *Offer cost-efficient, convenient product take-back from customers.*

- *Harvest high-value components for reuse and/or refurbishment.*
- *Meet or exceed local and global recycling requirements when components need to be disposed of or recycled.*
- *Apply green chemistry principles to decrease dangerous goods transportation by 25%.*
- *Incorporate low/no toxicity materials into product design.*
- *Minimize hazardous substances.*

The Frederick Site's Goals 2014 are:

- *Reduce energy consumption by 5% at the Frederick Site this year.*
- *Reduce water consumption by 5% at the Frederick Site this year.*
- *Reduce CO2 emissions by 5% at the Frederick Site this year.*
- *Reduce hazardous waste by 5% at the Frederick Site this year.*
- *Maintain Zero Waste (90% landfill diversion rate)*
- *Create revenue from waste streams.*
- *Complete at least one packaging reduction project this year*
- *Complete at least one raw material reduction project this year.*

☑ **Environmentally Preferable Products and Services**

We partner with our major customers to help them meet their environmental sustainability goals. Some examples include: the take back from our customers of Styrofoam coolers, dry shipper containers, and gel ice packs to be reused. In addition, we take back Ion Chips to be recycled.

In April 2014, our Trizol (a frequency ordered product) box was redesigned to be 3 inches shorter height. Now, more boxes of Trizol can fit on a pallet and the customer receives 6000 lbs less cardboard waste annually. This project saved us $40,000 annually.

In April 2014, Life Tech DNA Ladders have been retested to ship in ambient conditions instead of on dry ice. This is reducing the amount of dry ice used at the Frederick Site and saves around $25,000 annually.

In October 2013, a new process was started at the Frederick Site, where less dry ice was used in the afternoon due to less sublimation time while waiting for truck to leave. This reduced CO2 emissions by 50 tons, saved us $84,000 annually, and reduced the amount of dry ice that the customers needed to dispose of.

In June 2013, a Gaylord (bulk container) Optimization project was completed where we reduced the size of the bulk shipping container because our container had 8 inches of open space that was not being used. We reduced the size of the Gaylord,

to better fit our boxes and to reduce our customers' waste. This project saved the Frederick Site $180,000 in freight cost.

In May 2013, Frederick Distribution and Global Packaging redesigned our liquid nitrogen dewer dry shipper and shipping box to weigh less for the customer. In addition, the Frederick Site provides prepaid shipping for the customer to send back the dewer, box, and cardboard inserts to be reused for other shipments. Not only did it reduce the customers waste, the project also resulted in a $100,000 annual cost savings for us.

In 2013, the Frederick Distribution Center, lead a project to remove cardboard boxes from medium coolers that were shipped out. This will reduce our customers' waste by 50 tons annually and save at least $68,000 a year.

Prior to the end of 2012, CE Buffers were shipped in a combination packaging (+4 and -20C conditioned gel packs. Recently, CE buffers have been converted to Ambient Shipments. This reduces 9 tons of waste for our customers, saves $600,000, and reduces 3,500 tons of CO_2-e emissions (from making the coolers and transporting added weight).

In July 2012, the Frederick Distribution Center underwent a dry ice optimization project for shipments where packers weighed the dry ice prior to packing. This reduced CO2 emissions by 220 tons annually and saved $353,000 in freight and dry ice costs.

In 2012, The Frederick Distribution started using Ranpak (http://www.ranpak.com) as a recycled paper vendor to reduce the use of plastic air pillows within Distribution.

Our Ion Chip Recycling Program started, in 2012, provides customers with a free and convenient way to recycle used Ion chips. We do this by providing customers with pre-addressed, pre-paid postage labels and instructions for reusing the original chip box for shipment. We have partnered with Metech Recycling, an industry leader in electronic waste recycling for our U.S. customers.

As a company involved in improving the human condition, the company is dedicated to protecting the environment and promoting the health and safety of our employees, customers, and citizens in the communities in which we operate. As such, it is imperative to bring the greenest products possible to our market.

Life Technologies embraces chemistry as an environmental solution through eliminating the use or generation of hazardous substances in the design, manufacture and application of chemical products.

Life Technologies maintains a Design-for-the-Environment Intranet page that provides resources for employees to green our products.

For some customers, we are utilizing bulk reusable coolers in place of EPS coolers. Due to the improved thermal efficiencies of these units, we can reduce our dry ice consumption by 37,000 pounds and eliminate 9,000 pounds of one-way packaging material. We are looking to expand this program.

Furthermore in 2010, the Frederick Site began taking back our Styrofoam coolers from local customers, such as from the National Institutes of Health. The coolers are reused in new shipments to customers.

Examples of our application of green chemistry principles include:

- *Reformulating the Purelink™ Quick Gel Extraction Kit, making it non-hazardous for transport.*
- *Introducing the SYBR® Safe DNA Gel Stain as a non-toxic, non-mutagenic alternative to ethidium bromide (a chemical agent that changes the genetic material).*
- *Offering SimplyBlue™ SafeStain for protein research, which is non-flammable, non-toxic and non-corrosive. The competing product is corrosive and must be used with flammable and toxic solvents.*

Where feasible, we design new products that can withstand the rigors of ambient shipping conditions. For example, we have found that a portion of our trypsin product line can ship under ambient conditions; our competitors continue to ship this frozen in EPS coolers.

In addition, we are systematically evaluating potential product candidates to convert from cold chain to ambient shipment. In performing stability and performance tests, we seek to demonstrate that short-duration ambient transport has no effect on the immediate and long-term quality of certain products.

Recently, we have completed these tests on four classes of assays (TaqMan® Genotyping Assays, TaqMan® Gene Expression Assays, TaqMan® miRNA Assays, and the Megaplex™ PreAmp and RT primer pools). After subjecting these products to simulated ambient summer shipment conditions, they were found to meet the same quality-controlled stability and performance specifications throughout their stated shelf life as assays that were shipped on dry ice. By shipping at ambient conditions, we eliminate 70,000 cu. ft. of EPS (Styrofoam Coolers), which is equivalent to filling 694 standard dumpsters and 250,000 kg of dry ice annually as a company.

Beyond studying the ability of our products to withstand ambient shipping conditions, we also look at alternative manufacturing methods such as lyophilization and vitrification. These drying methods preserve the biological material by removing water, making it less susceptible to temperature variations and more convenient for transport.

One of the company's best-performing influenza detection kits is our newest lyophilized product. Our lyophilized reagents are being designed with an eye towards stability, both in transport and on customer shelves.

Right-sized coolers: By decreasing the wall thickness, material density, and size, we have reduced the usage of polystyrene by 30 percent—the equivalent of 52 truckloads per year as a company. We also stock a range of box sizes to optimize the weight and cooling requirements of the order. An extremely small cooler, the mini-mini, has been designed to ship our smallest products. This cooler uses 17 percent less EPS than the next larger size.

Reusable packaging: We piloted the internal use of bulk reusable coolers in place of EPS coolers. Due to the improved thermal efficiencies of these units, we can reduce our dry ice consumption by 37,000 pounds and eliminate 9,000 pounds of one-way packaging material. We are looking to expand this practice to our customers. Additionally, we enhanced our product supply centers so that bulk shipments can be received and broken into smaller shipments to go to customers, and/or be hand-delivered so that coolers can be reclaimed and reused.

Alternative materials: We are continually researching alternative packaging materials to EPS. We have tested felt, wax-insulated cardboard, insulated padded envelopes, air-filled plastic liner coolers, chiller bags, reusable thermal boxes, and more. Although none of these alternatives meets the thermal requirements necessary to maintain our product quality standards, we continue to search for innovative alternatives

☑ **Environmentally Preferable Purchasing**

In January 2014, the manufacturing group at Frederick upsized the Hepatic Preservation Media from 500mL to 1L and saved $88,000 annually. Now, 548 fewer bottles have to be opened and disposed of at the Frederick Site.

In October 2013, the Frederick Site began hosting the Raw Material Right Sizing Council for the Thermo Fisher Scientific sites via teleconference. This meeting is comprised of environmental health and safety, procurement, and manufacturing employees. Monthly, we share best practices, projects, and ask for suggestions on how to implement projects with employees all over the world. Currently, the Raw Material Right Sizing Council has $400,000 worth of Raw

Material Right Sizing Projects for 2013/2014 year that are completed or are being implemented at various sites around the world.

In 2012, we began working with OfficeMax to identify a reusable container that shipments could be brought into the site instead of in individual boxes. We are targeting end of 2013 for a solution.

In 2009, the Frederick Site stopped ordering Styrofoam cups for the break rooms and instead ordered recyclable paper cups. In addition, the Frederick Green Committee ordered reusable mugs for employees. This has reduced 660 lbs of Styrofoam cups being disposed of annually, which is equivalent to 40,000 feet stacked end to end of cups.

Frederick Green Procurement Policy:
Environmental Criteria – When ordering, preference should be given to the following:

Recycled content in paper, cardboard, etc.
Recyclable products – products that can be recycled or composted.
Products that create less or no waste.
Reduced packaging.
Energy efficient (i.e., Energy Star rated).
Substitution of traditional products with a green product.

The Frederick EHS department has collaborated with the Frederick Purchasing department to promote green alternatives to employees.

A Purchasing Representative attends Frederick Green events, such as Earth Day and My Impact @ Frederick Day and provides information and samples on green alternatives that employees can purchase from our preferred vendors.

The Green Committee conducts the Environmental Sustainability EHS Audit to ensure employees are ordering equipment, products, and supplies that meet the above environmental criteria.
Green Committee members will promote green alternatives with their department and other co-workers.
Environmentally Friendly Products ordering information is posted on the Frederick EHS LifeLink (Intranet) Page.
Facilities, Engineers, and outside contractors will reference the recommended Green Building Guidelines located in the Frederick EHS Indoor Air Quality Policy, when repairing, upgrading, and constructing of buildings and equipment in order to minimize energy, waste, and water in buildings, equipment, and during construction.

☑ **Environmental Restoration or Community Environmental Projects**

In 2014, we began designing and implementing a Frederick Site Community Garden for employees to grow their own fruit, vegetables, herbs,

and/or flowers. Site employees or groups of employees can sign up to rent a garden plot (6 feet X 12 feet) for the season from April to December 31st. Each plot owner is responsible for planting, weeding, watering, and harvesting it. At the beginning of the season, plot owners sign up for a work day on a Saturday, where they help with preparing the plots and other garden maintenance. Facilities has designed a rain water collection system that hold 300 gallons to water the garden, so no additional water is used for the garden.

Every year, on Global Volunteer Day, employees have the opportunity to participate in environmental restoration projects or community environmental projects on company time. The Frederick Green Committee often arranges additional environmental restoration projects outside of Global Volunteer Day.

Below are a few of the restoration projects that Frederick Site has participated in:

2014 - Trail Maintenance and Invasive Weed Pulling at Monocacy National Battlefield (Planned for June)
2013- Trail Maintenance and Invasive Weed Pulling at Monocacy National Battlefield
2013 – Thermo Fisher Scientific Life Technologies participated in a site wide cleanup our adopted road, Executive Way.
2012- Life Technologies began participating in the Maryland Adopt-A-Road Program and adopted Executive Way, which is cleaned up quarterly by the Frederick Site.
2012 - Trail Maintenance and Invasive Weed Pulling at Monocacy National Battlefield
2011 - Trail Maintenance and Invasive Weed Pulling at Monocacy National Battlefield
2011 - Tree Planting in Frederick with Community Living, Inc.
2010 - Tree Planting in Frederick with Community Living, Inc.
2010 - Trail Maintenance and Invasive Weed Pulling at Monocacy National Battlefield
2009 - Trail Maintenance and Invasive Weed Pulling at Monocacy National Battlefield
2008 - Tree Planting (over 100 trees and bushes) on site
2007 - Trail Maintenance and Invasive Weed Pulling at Gettysburg National Military Park
2007 - Trail Maintenance and Invasive Weed Pulling at Catoctin Mountain National Park
2006 - Trail Maintenance and Invasive Weed Pulling at Catoctin Mountain National Park
2005 - Participation in The Big Sweep to pick up trash and debris along Frederick County roadsides
2005 - Trail Maintenance and Invasive Weed Pulling at Cunningham Falls State Park
2005 - Trail Maintenance and Invasive Weed Pulling at the Izaak Walton Park

2005 - Invasive Weed Pulling at the Menare Preservation Foundation
2004 - Participation in The Big Sweep to pick up trash and debris along Frederick County roadsides
2004 - Trail Maintenance and Invasive Weed Pulling at Cunningham Falls State Park

☑ **Independently-Audited Environmental Management System**

On January 14, 2014, the Frederick Life Technologies Site was certified Zero Waste Site by Synergis – Zero Waste Group with a 91.29% landfill diversion rate of nonhazardous material without use of incineration.

Background of Audit-
Life Technologies Corporation (LT), the global life sciences company, has contracted with Synergis - Zero Waste Group (www.zerowastegroup.com 914.977.3400) to conduct an analysis of its diversion of solid waste from landfill at the Frederick, MD facility. This audit was performed in November and December of 2013.

Zero Waste Definition-
Life Technologies (LT) has adopted the following definition of zero waste: "A site will be designated Zero Waste after having achieved a 90% diversion from landfill of non-hazardous waste, where waste is incinerated for energy only as a last resort." However, the Frederick Site achieved Zero Waste, without any incineration of nonhazardous waste.

Methodology-
The methodology utilized by Synergis in auditing LT's zero waste program included the following:
· Review of all solid waste streams, including materials disposed, recycled, reused, or returned
· Review of programs that avoid waste
· Review of material collection data, provided by third party vendors who collect and/or process the discarded materials
· Review of additional data provided by LT
· Weight of each material was provided by vendors or LT
· All material streams were calculated by weight
· Contact with selected material markets, to confirm final disposition of materials in order to separately track items sent to landfill or incinerated
· Visit to selected material markets to view handling process
· Audit timeframe for each material was from 3 to 11 months during 2013 (monthly estimates were calculated for materials collected less frequently)
· All data used was normalized to a one month time period, to track tons per month
(TPM) of recycling, reuse, avoidance, incineration or disposal

Findings-
Based upon our analysis, we have determined that LT-Frederick has achieved a rate of waste diversion from landfill of 91.29% by weight:

Category	*Tons Per Month*	*Percent of Total*
Total Recycling, Reuse, and Waste Avoidance	*81.48*	*91.29%*
Total Incineration	*0.00*	*0.00%*
Total Landfill	*7.78*	*8.71%*
Total All Materials	*89.26*	*100.00%*

Diversion Rate Calculation:
(Total Recycling, Reuse, Waste Avoidance & Incineration)
(Total Recycling, Reuse, Waste Avoidance, Incineration & Landfill) = 91.29%

Waste

☑ **Solid Waste Reduction and Reuse**

January 2014, the Frederick Site was certified Zero Waste with a 91.29% landfill diversion rate, which saved us $36,000 annually due to reduction in landfill disposal and downsizing of landfill dumpsters. In addition, from May 2013 to April 2014, we have reduced our landfill waste by 47%.

In March 2014, we began reusing a cooler box that was received in from a new OEM. This reuse project saves us $2,200 annually and reduces our landfill waste by over 1060 lbs annually.

Below is the breakdown of material that is being reused or avoided from our January 2014 Zero Waste Audit Report:

Program Element	*Tons Per Month*	*Percent of Total*
REUSE:		
Air Pillows	*0.01*	*0.01%*
Bubble Wrap	*0.18*	*0.20%*
Donated Equipment	*0.03*	*0.03%*
Foam Coolers	*0.01*	*0.01%*
Gel Ice Packs	*4.91*	*5.50%*
Hazardous Material Cartons	*0.04*	*0.04%*
Jumbos Containers	*3.68*	*4.13%*
Lab Equipment Sold (Used)	*0.47*	*0.52%*
Lab Equipment Transferred to Other LT Facilities	*0.04*	*0.05%*
Pipette Tip Racks	*0.01*	*0.01%*
Thermosafe and Ion Torrent Cartons	*0.78*	*0.87%*
Wood Pallet	*40.08*	*44.91%*

WASTE AVOIDANCE:

Ambion Totes	*0.42*	*0.47%*
Big Blue Containers	*0.48*	*0.54%*
Cup Replacement	*0.09*	*0.11%*
Double Sided Printing	*0.60*	*0.67%*
Gibco Boxes	*0.01*	*0.01%*
Greenwaste (grass)	*6.10*	*6.84%*
Plastic Totes for Internal Transfer	*0.34*	*0.39%*
Plate Replacement	*0.10*	*0.11%*
Utensil Replacement	*0.05*	*0.06%*

Descriptions of Individual Program Elements

Air Pillows & Bubble Wrap: Air pillows and bubble wrap are collected from incoming shipments for reuse in outgoing shipments.

Ambion Totes: Reusable plastic bins fit inside Big Blue to be reused for multiple shipments.

Big Blue Containers: Reusable temperature controlled shipping crates are reused for multiple shipments.

Cups, Plates & Utensils: Durable cups, plates and utensils are provided in break rooms for employee use. Items are all washed and reused.

Donated Equipment: Surplus equipment is donated to schools and employees.

Double-Sided Printing: Employees print double-sided documents when practical. It is estimated that 90% of printing is double sided.

Foam Coolers: Foam coolers are reused in future shipments.

Gel Ice Packs: Gel ice packs are received inside inbound shipments, and are reused for outgoing shipments.

Gibco Boxes: Cartons from incoming Gibco product are reused for outgoing Gibco product.

Green Waste: Grass clippings are left on the lawn. Shrub and tree prunings and leaves are collected by Beechfield Landscaping and delivered to a composting facility

Hazardous Material Cartons: Cartons containing hazardous materials are reused for outgoing shipments.

Jumbos: Insulated gaylord boxes with attached pallets that are received, are reused for outgoing shipments.

Lab & Other Equipment and Furniture: Surplus equipment and furniture is sold, donated, or shipped to other LT facilities for reuse.

Pipette Tip Racks: Pipette tip racks are refilled for reuse when empty.

Plastic Totes for Internal Transfer: Plastic totes are used throughout LT Frederick to transfer materials between departments.

Thermosafe and Ion Torrent Carton: Thermosafe and Ion Torrent cartons from incoming shipments are saved and reused for outgoing product shipment.

Wood Pallets: Incoming wood pallets are saved and reused for outgoing shipments.

By January 2013, the Frederick Site reduced landfill waste by 80% per month compared to January 2012. From January to May 2012 we averaged 33.74 tons of

landfill waste compared to November to December 2012, which averaged 6.7 tons per month. We also reuse 930,000 lbs of wood pallets within the Frederick site and for outgoing shipments from May 2012 to April 2013.

Also in 2013, the Frederick Distribution Center began reusing E327 cooler boxes that were received in from a sub-company of Life Technologies. This will reduce our landfill disposal by 1.5 tons and save just under $10,000 a year. We currently, already reuse ThermoSafe brand E327s received in from other sites.

In November 2012, the Frederick Distribution Center implemented the Gel Ice Pack Reuse program, where they began reusing gel ice received in from other Life Technologies Sites. This reduced our landfill disposal by 55 tons annually and saved just under $30,000 a year.

In April of 2011, we began an internal Styrofoam Cooler return program between the Laboratory Building and the Distribution Center at the Frederick Site. The Styrofoam coolers are reused for outbound shipments to customers.

In 2011, we came up with two different packaging options for one of our Limited Quantity Dangerous Good product after performing stack and drop tests. The new packaging included a much smaller box that costs $0.32 a box and reusing the existing product box. As a result, we reduced the number of cardboard boxes we use by 1698, reused 412 cardboard boxes, reduced our waste by 100 cubic feet per year, and reduced our costs by $35,174 per year.

In 2010, the Frederick Site set all printers (where possible) to automatically print double sided. We are saving 127,000 sheets of paper (equivalent to 9 trees) and $1195 a year.

From waste reduction and recycling initiatives from 2008 to 2009, we reduced our waste by 67 tons.

☑ **Recycling**

From May 2013 to April 2014, we increased our landfill diversion by 31% (compared to May 2012 to April 2013) and diverted 2,038,037 lbs from the landfill.

In January 2014, we began collecting damaged Styrofoam coolers and recycling them through DART. We are on track to recycle 9500 lbs of Styrofoam in 2014.

In 2014, we began finding ways to create revenue from our waste stream to fund Green Committee initiatives. During a site cleanout, we collected

metal scrap and sold it for metal recycling. This money was used to fund the 2014 Earth Day celebration and to purchase additional recycling cans for the Frederick Site.

We are also exploring ways to create revenue from densified Styrofoam, electronic waste, and high quality plastics recycling. All money will be used for site environmental sustainability initiatives.

We have Green Committee Members stationed at each recycling, food waste (compost), and landfill bin during Site events with food in order to teach employees how to sort properly. We also ensured that vendors only brought in materials that could be reused, recycled, or composted.

Here is the breakdown or material recycled listed on our Zero Waste audit from January 2014.

Program Element	*Tons Per Month*	*Percent of Total*
RECYCLING & COMPOSTING:		
*Batteries**	*0.00*	*0.01%*
E-Waste	*0.44*	*0.49%*
Food	*0.41*	*0.46%*
Freshpacks	*0.05*	*0.05%*
Gloves and Garments	*0.08*	*0.08%*
Greenwaste (trees, shrubs, leaves)	*0.83*	*0.92%*
Metal	*2.29*	*2.56%*
Non-hazardous Scrap Packaging	*2.24*	*2.51%*
Single Stream	*16.71*	*18.72%*
*Writing Instruments**	*0.00*	*0.00%*

** less than 0.01 TPM*

Our recycling activities include:

- *Ion Torrent Chip Recycling through our internal take back process started in January 2014.*
- *Styrofoam Recycling through DART started in January 2014.*
- *Food Waste Recycling (Composting) through Remotion started in October 2013.*
- *Glove and Garment Recycling (Kimberly Clark Gloves & Garments) with Terracycle—Started in January 2013.*
- *Gel Ice Pack Recycling through EMSI started November 2012.*
- *Waste Management Battery Recycling started October 2012.*
- *Printer Toner Take Back Recycling through Ikon Started September 2012.*
- *Pallet Recycling in the 2nd Distribution Building through PSI Started August 2012.*

- *Flavia Coffee and Tea Freshpack Recycling with Terracycle Started June 2012*
- *Packaging Material from Scrapped Products Recycling with EMSI Started May 2012.*
- *Employees are required to complete yearly training on how to recycle at the Frederick Site – Started January 2012.*
- *Writing Instrument Recycling (pens, sharpies, highlighters, dry erase markers) with TerraCycle – Started in 2011.*
    - *In two months, we collected about 350 plastic writing instruments to be sent off to be recycled.*
- *Electronic Waste Recycling (printers, monitors, computers, keyboards, mice) with Freedom Recycling – Started in 2010*
- *Printer Ink Cartridges Recycling – Started in 2009*
- *Wood Pallet Recycling with Waste Management – Started in 2009*
- *Construction Material Recycling (dry wall, wood, metal scrap) with Waste Management – Started in 2009*
- *Single Stream Recycling (paper, cardboard, aluminum, glass, plastic) with Waste Management – Started in 2009*

From January 2013 to April 2013, we have diverted 569,157 lbs of waste so far from the landfill by recycling, reusing, and avoiding the waste all together. In one year, we have increased our total site diversion rate of 58% to 89%.

In 2012, our major recycling programs included Single Stream Recycling (diverted 349,060 lbs), wood pallet recycling (diverted 70,162 lbs), and scrap metal recycling (diverted 22,420 lbs). Some of the unique recycling programs include: scrapped product packaging material and gel ice packs recycling, which will diverted 17,850 lbs from the landfill annually. The Flavia Coffee and Tea Pouch Recycling, which will divert 3228 lbs per year and the Ikon Toner Take Back Recycling, which will divert 1078 lbs per year.

As of March 2012, we recycled 76% of the waste that would normally go to the landfill from the Laboratory and Distribution buildings (2 of the 5 buildings) at the Frederick site. The Frederick Site has a wide range of recycling programs and we have created posters to inform employees on how to handle the various products.

☑ **Hazardous Waste/Toxic Use Reduction**

The Frederick Site reduced their hazardous waste by 6356 lbs in 2013 compared to the previous year. Much of this was from our focus on raw material right sizing, which includes only ordering what we will use. This

reduces the amount of products that are scrapped due to expiring. The Frederick Site meets monthly with other company locations to share projects and ideas on ways to reduce hazardous waste.

In 2014, Frederick is working on a chromagen raw material right sizing project to right size bulk kit sizes in order to reduce the amount of chromagen (a hazardous chemical) that is scrapped. This project will save us $15,000 and reduce our hazardous waste by 70 L annually.

As a whole, the company began creating Centers of Excellence in order to combine like manufacturing and increasing efficiencies, including reducing hazardous waste. At Frederick in 2012, the Oligonucleotide Manufacturing moved to the Oligonuleotide Center of Excellence and additional IS Manufacturing moved into the vacant area at Frederick. This has made it possible for the Frederick Site to remove the 6000 gallon hazardous waste tank for acetronitrile and reduce our hazardous waste by 16,000 gallons in 2012 compared to 2011.

To reduce our hazardous waste we have re-educated the scientists on what material actually needs to go into the hazardous waste. At a global level, discussion with planners on stock availability and life-cycle extensions of products have resulted in less scrap that is classified as hazardous waste and controlled non-hazardous waste.

In 2011, our non-regulated quality control department has eliminated use of radioactive material. From this project alone, we have reduced our hazardous waste by 16 liters and saved $9610 per year.

In 2010, engineers achieved significant waste reduction as they faced a global shortage of acetonitrile, a solvent used in oligonucleotide manufacturing, which normally represents 50–75 percent of the solvents consumed by DNA manufacturing. In a systematic analysis of the protocols used for the high-throughput DNA synthesis, every step that used acetonitrile was tested to see if a lower amount could be used without affecting product quality. The project resulted in a reduction of acetonitrile usage for most syntheses by over 20 percent, substantially reducing the hazardous waste generation for the site.

Energy

☑ **Energy Efficiency**

Starting in 2014, Facilities and the Frederick Environmental, Health, and Safety (EHS) team have been meeting biweekly to identify sustainability projects.

We are actively identifying areas that need light motion sensors. Security is doing a daily walk of all building to identify areas where lights and equipment are left on when not in use. These findings are reported to facilities even morning. Our biggest success year-to-date with this inspection has been with the Lab building. So far, we are on track to reduce the lab building's electricity consumption by 310,584 kWh by the end of 2014 without indexing or normalizing, which will save $41,350 annually.

In June 2013, a catalyst demand control ventilation was installed at Frederick and will save $11,000 annually in electricity costs.

From 2011 to 2012, we reduced our energy usage indexed to head count by 7%.

From 2010 to 2011, we have reduced our energy usage indexed to head count by 15% for electricity and 16% for natural gas.

From 2009 to 2010, we have reduced our energy usage indexed to head count by 14% for electricity and natural gas usage by 17%.

Some of our projects include:

- *In 2012, we upgraded equipment to more energy efficient equipment and lighting upgrades and installed a NRM system.*
- *In 2011, Upgraded lights to more efficient T8 24 watt lamps, added light sensors, and removed unnecessary lighting in areas. This is projected to reduce energy usage by 146,758 kWh, reduce CO2 emissions by 112 tons, and save $61,860 per year.*
- *Cleaned out 16 - 80 freezers that contained expired product or were empty and then turning them turned off in March 2010. This reduced the Frederick Site's CO2 emissions by 228 metrics tons and net electricity usage by 316,896 kWh annually.*
- *30 CRT monitors were upgraded to more efficient LCD monitors. This project reduced energy usage by 14,717 kWh, reduced CO2 emissions by 11.2 tons, and saved $1619 per year.*
- *We set the thermostats to 70 degrees in the winter and 76 in the summer.*
- *Lighting audits have been conducted by an outside agency at the Frederick Site.*
- *All new boilers installed are Energy Star rated.*

Transportation

☑ **Employee Commute**

In October 2013, we won the League of American Bicyclists' Bicycle Friendly Business BRONZE Award Bronze award due to our bike-friendly workplace that we have created for employees and visitors.

In July of 2013, we nominated an employee as our Bike Champion. This individual organizes bike related activities at the site. We also added transit routes and Google Transit finder to our site intranet page.

At the Earth Day celebration in 2012, 2013, and 2014 Frederick County TransIT attends to share the benefits of taking public transportation.

In addition, we encourage employees to participate in Bike to Work Day in May and reward the ones that choose to participate with a $25 "Caught Being Green" Award. In addition, employees are rewarded for logging the most miles biked per year with a $25 reward.

In 2010, the Frederick Green Committee designated hybrid parking spots near the entrance of each building to promote hybrid vehicles. In addition, many workers live within a few miles from the Frederick Site, so in 2009, bicycle racks were installed throughout the site.

☑ **Efficient Business Travel**

In 2013, the Travel Policy was rewritten to steer employees away from travel and to use tele-presence rooms instead.

We have increased utilization hours of the tele-presence rooms by 59% compared to 2011.

During the 2011 Earth Day, we had a demonstration with the Frederick Site on how to use the tele-presence.

To reduce business travel, in 2010 a teleconference room was setup at Frederick. Employees can be booked the tele-presence through Outlook.

☑ **Fleet Vehicles**

The Frederick Distribution Center has eliminated the nightly run of the Omni truck to Dulles Airport (43 miles one-way) after the Federal Express truck had left for the night in 2010. This has reduced the site's annual CO2 emissions by 19.17 tons, saved 1,950 gallons of fuel, and saved $130,000 annually.

The Frederick Purchasing Department consolidated the number of OfficeMax deliveries from every day to twice a week, in 2010, in order to reduce CO2 emissions. This project has reduced CO2 emissions by 16.9 tons and saved 1,719 gallons of fuel annually.

Water

☑ **Water Conservation**

Year to date in 2014, we are trending 16% down in water usage compared to the same timeframe in 2013. The Facilities and the Frederick Environmental, Health, and Safety team have been meeting biweekly to identifying sustainability projects. In additional, we are actively identifying leaks and having them repaired. Security is doing a daily walk of all building to identify potential leaks and report them to facilities to repair each morning.

From 2009 to 2010, we reduced our water usage by 48% indexed to head count.

Below are a few of the projects:

- *Laboratories began using Lab Armor™ beads by Invitrogen (a sub-company of Life Technologies) to reduce the amount of water used for water baths.*
- *Low flow sinks were installed during construction.*
- *We began using boiler Feedwater recovery in our hot water waste streams.*

☑ **Stormwater Management and Design**

The Frederick Site signed up for Adopt-a-Road for the public road around the site, which is just under a mile in length. During the clean-up days, we also pick up trash on all roads that go through the site. Starting in 2013, At least twice a year, we do a documented Site Environmental, Health, & Safety Walk with the Site Director outside to identify debris or other material that needs to be cleaned-up. The Site Environmental, Health, and Safety team does additional Storm Water documented audits to ensure that the drains are kept clear from debris. In 2014, we swamped out open top dumpsters to ensure that all outside landfill dumpsters, single stream recycling dumpsters, and food waste collection

bins have ridged lids to prevent rain from entering and debris from escaping. In addition, our landscaping company ensures we maintain a manicured landscape and routinely collect leaves and branches. All green waste that is collected is shredded and composted offsite.

Other

☑ *Frederick County Waste Reduction and Recycling Award – 2013*

The Frederick Site won this award in November 2013 due to our waste reduction and instituting numerous policies and programs to increase their landfill diversion rate.

http://frederickcountymd.gov/index.aspx?NID=3928

League of American Bicyclists' Bicycle Friendly Business BRONZE Award – 2013

In October 2013, the Frederick Site won the Bronze award due to our bike-friendly workplace that we have created for employees and visitors.
http://www.bikeleague.org/bfa/awards

The Civic 50 - Most Community Minded Company – 2013

This award recognizes corporations that are engage with the communities they serve and institutionalize these practices in their corporate culture. Specifically, The Civic 50 recognizes companies seeking to best use their time, talent, and resources to improve the quality of life in the communities where they do business. http://ncoc.net/TheCivic50

Dow Jones Sustainability World Index - 2009 - 2012

Life Technologies was again selected as a member of the Dow Jones Sustainability World Index in 2009, and was also named to the Dow Jones Sustainability North America Index (DJSI). Membership in the DJSI is reserved for the top 10 percent of the 2,500 largest companies in terms of sustainability, and Life Technologies was one of only two U.S.-based biotechnology companies to be listed on both the North America and World Indexes.

FTSE4Good

In May 2010, Life Technologies was named for the second time to the FTSE4Good Index Series, an equity index series that is designed to facilitate investment in companies that meet globally recognized citizenship standards.

Companies in the FTSE4Good Index Series have met stringent social, ethical, and environmental criteria.

Bloomberg-Maplecroft Climate Innovation Index Leaders

In late 2009, Life Technologies was named to the Bloomberg-Maplecroft Climate Innovation Index (CII) Leaders. As a member of the CII Leaders, we rank among the top 100 of the 819 largest U.S.-based companies in terms of climate-related innovation and carbon management programs.

Corporate Responsibility Magazine "100 Best Corporate Citizens" List - 2011

In 2011, Life Technologies was named to the 100 Best Corporate Citizens List by Corporate Responsibility magazine. Life Technologies was ranked 15th. The list is based on over 360 data points of publicly available information in seven categories: Environment, Climate Change, Human Rights, Philanthropy, Employee Relations, Financial Performance, and Governance.

CO2 Emission Reduction Projects

In 2010, The Frederick Distribution Center started ordering 10 less dry ice bins a day and replaced the dry ice with gel ice packs. This is a reduction of 1,957,500 lbs of dry ice each year and has reduced our CO2 emissions from dry ice by 14 percent. It is also a cost savings of $267,904 annually.

Profile Updated April 2014