National Pollution Prevention Roundtable
2013 MVP2 Award Recipients

Volunteers of the Year

Scott Butner, *formerly with the Pacific Northwest Pollution Prevention Resource Center*

Scott Butner has been involved in the P2 movement for more than 25 years and is one of the early leaders to help advance P2 in the United States. Scott Butner was a Senior Research Scientist in the Knowledge Discovery and Informatics Group at PNNL. Scott has participated in numerous pollution prevention projects. He developed P2Tech, which is a P2 list serve. He has served on the board of the NW Pollution Prevention Roundtable and contributed to many P2 conferences and P2Rx support. In recent years, Scott has also supported the Laboratory's Homeland Security mission, working on novel forms of knowledge representation to support efforts to better manage intelligence data.

Donna Walden, *Western Sustainability and Pollution Prevention Network*

Donna recently served as the Executive Director of the Sierra Green Building Association where she promoted sustainability, environmental design and building practices in the Sierras. She is the current program manager at the Western Sustainability and Pollution Prevention Network. Donna is committed to sustainability and the green movement. Her over 20 years of experience in global marketing and experience with non-profit organizations allows her to connect with volunteers and motivate them towards a common goal.

P2 Champion

Rick Bossingham, *Indiana Department of Environmental Management*

Rick has spent over 28 years in the environmental field; he holds position as the Vice-Chair of the National Pollution Prevention Roundtable and serves as the program advisor to Purdue University's Division of Ecological and Environmental Engineering. He spent 12 years at Wabash National Corporation, starting as Environmental Director and eventually as the Corporate Director of Environmental and Safety Affairs. Rick also directed the Pollution Prevention Technical Assistance program at Purdue University. He also has provided consulting for air permitting, environmental management systems, compliance auditing and pollution prevention and has served as a regulator at the state and local levels in Colorado.

Projects/Programs

Associated Air Center, *Climate Reduction/Elimination*

This project is for the reduction of chromate from all processes and operations on site to minimize waste, emissions, and exposure to employees.

- In 1994, AAC eliminated aircraft stripping, alodining, priming, and painting operations.
- In 2004, AAC eliminated phosphoric acid and alodine dipping for chromate conversion of aluminum parts in favor of an alkaline cleaner and adhesion promoter.
- In 2011, AAC reduced chromate primer usage to structural pieces and implemented water-based primer for non-structural substrates and utilized a solvent recycler to reduce waste.
- AAC reduced hazardous materials input by 203,000 pounds, saving $800,000, and hazardous materials waste by 208,000 pounds, saving $77,000.

Denyo, *Catching the Environmental Sustainability Fever*

Since 2005, Denyo has continually undertaken extensive data collection to measure all aspects of its production processes to find opportunities for improving environmental performance. Denyo has used the process data to put in place well-developed pollution prevention and energy efficiency programs that span the social, environmental, and economic aspects of sustainability. The company's award-winning efforts have resulted in improved recycling of scrap metal, cardboard, paper, plastics and wood, reduced water and natural gas consumption, improved wastewater treatment operations, better management of process chemicals, lowered air emissions, and significant cost savings.

- Reduced water use by over 237,000 gallons per month
- Reduced solid waste by 154,000 pounds
- Reduced air emissions by over 68 tons per year

IBM Vermont, *Greenhouse gas reductions from Through Silicon Via (TSV) semiconductor process*

The IBM Vermont site etch engineering team partnered with Semiconductor equipment vendor SPTS Technologies, Inc. (SPTS) to develop a Bosch Deep Silicon Reactive Ion Etch (RIE) process for the Through Silicon Via (TSV) semiconductor structure. Implementation of this process allowed significant reductions of greenhouse gas (GHG) usage of Sulfur Hexafluoride (SF6) and Octafluorocyclobutane (C4F8) as well as increased production capacity. The change was a newly developed High Flow Plenum (HFP). This improvement allowed for gas transport efficiency, and thus reduced the deposition time. Since the process time was reduced by nearly 30%, the amount of GHG used in the process was reduced as well.

- Annual gas savings of 88,000 liters of SF6 and 253,000 liters of C4F8
- Reduction of almost 12,000 Co2 metric tons per year and chemical cost savings of $241,000 per year
- 30% faster process equates to savings of additional tool purchases of approximately $3.1 million

Illinois Sustainable Technology Center, *Illinois Conservation of Resources and Energy*

The Illinois Conservation of Resources and Energy (ICORE) project strives to achieve measurable energy and water conservation improvements in central and southern Illinois communities and businesses. ISTC's Technical Assistance Program staff provides technical assistance to water and wastewater treatment facilities and local businesses to improve efficiency in: 1) water consumption; 2) wastewater generation; 3) energy consumption; and 4) carbon emissions. Since its inception in 2008, ISTC has provided assistance to 7 communities and 51 businesses. The ICORE program is unique in that it targets small, rural communities located in regions of the state which in some cases are economically challenged or have not had access to external assistance programs.

- Reduced water use by over 54 million gallons
- Reduced energy use by almost 50 million kWh
- Reduced air emissions by almost 100 million pounds

Liberty Bottleworks

- Built a 'zero waste' manufacturing facility in Washington State in 2010 using all domestically produced machinery.
- Produces reusable water bottles made of 100% recycled aluminum.
- The insides are powder coated without use of phthalates or BPA in a closed-loop process, part of the company's zero-waste philosophy.
- Water is retreated and reused on site. The infrared lamps that cure the powder are 800 percent more efficient than conventional curing ovens.
- Liberty's are the only American-made metal bottles in the marketplace, and the first housewares product that Whole Foods NW has been able to promote as "locally made.
- Potentially 80 million plastic bottles eliminated from landfills.

Kentucky Pollution Prevention Center, *Kentucky Energy Efficiency Program for Schools (KEEPS)*

Program helped Kentucky schools reduce energy consumption and lower operating costs by teaching schools how to better manage their energy consumption

Regional managers, coordinators, and engineers developed program materials, directed program initiatives and provided energy management training and technical assistance.
The 257 schools assessed by KEEPS:

- reduced energy consumption by 247,000 MMBtu/yr
- identified a GHG reduction potential of 127,600 MTCO2/yr
- estimated savings of $16,700/yr
- estimated total cost avoided of $7.5 million

Norchem, *Ultrapure Water Recycling System*

The Norchem Ultrapure Water Recycling System is a metal oxide membrane filtration system for the industrial laundry industry which filters water to the 0.01 micron level. The filtered water is recycled back into the washing process allowing a portion of the laundry chemicals to be recycled as well reducing the amount of raw materials required to make wash chemistry. Reduces natural gas usage by filtering hot wastewater and recycling it back to the process with no heat losses or heat exchangers required to heat fresh water. Methane is used a fuel to generate electricity, and the remaining contaminates are recycled into fertilizers and feed stocks eliminating the need for any solid or liquid sludge to be hauled to landfills.

- Reduced the effluent wastewater by 26,100,000 gallons per year, equivalent to 85 metric tons of carbon dioxide emissions.
- Recycled hot wastewater, the energy required to heat the water was reduced by 39,820 Therms per year, equivalent to 211 metric tons of carbon dioxide emissions.
- 93% reduction in BOD (Biological Oxygen Demand).
- 98% reduction in FOG (Fats oils and Greases).
- 99% reduction in TSS (Total Suspended Solids).

Owens Corning, *Sustainability and OC's Conversion to EcoTouch™ Fiberglass Insulation.*

Eco Touch™ insulation is a new fiberglass wool insulation product that is 99% natural and certified to have at minimum of 58% recycled content. The substitution of the natural, starch-based binder from a phenolic/formaldehyde binding process eliminated or significantly reduced the hazardous air pollutants (phenol, formaldehyde, methanol) along with ammonia emissions associated with the old resin formula. EcoTouch™ is the first fiberglass insulation to be certified by the US Department of Agriculture (USDA) as a bio-based product. EcoTouch™ insulation has achieved GREENGUARD Children & Schools Certification, is verified to be formaldehyde free- meeting stringent certification standards for indoor air quality, and carries the UL Environment Ecologo CCD016 preferable designation.

SABIC, *Waste Minimization via a New Extruder Purge Compound*

Extruders with a melt conveying screw are used for melt mixing and processing of thermoplastic resins, such as SABIC's Lexan® polycarbonate resin.

- Reduced use of raw materials by 600,000 lbs/yr.
- Reduced energy usage by 90,750 kWh/yr.
- Reduced greenhouse gas emissions by 63.9 tons/yr.
- Improved employee ergonomics and morale.
- Total savings are approximately $407,580 per year.

Toyota of West Virginia, *False Bottom Roll Off Kaizen*

- Designed a roll off box with a sloped false bottom to drain coolant off chips used in the process, to flow down through the filter and collect in the bottom of the roll off, eventually being recycled back into the central coolant system.
- Reduced 92,000 gallons of coolant and water waste each year, saving $92,000 each year.