



P2 Bulletin

the quarterly newsletter of the New York State Pollution Prevention Institute (NYSP21)

AUGUST 2009

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What's happening in P2

On behalf of the New York State Pollution Prevention Institute (NYSP21),

I would like to extend a very warm welcome to all of our readers. In beginning this journey as Director of the NYSP21, I am thrilled to be working with a brilliant team where each member of the staff brings an essential set of skills required to reduce the overall environmental footprint of New York State.

Our Institute is uniquely positioned to steer clients away from traditional end-of-pipe solutions and instead focus on the development and implementation of innovative pollution prevention techniques and technologies that address environmental concerns. NYSP21 provides solutions that are both cost-effective and environmentally preferable, so it's a win-win situation for both our clients and the state of New York. We also have an incredible group of partners that assist us in our mission and include the New York State Department of Environmental Conservation (NYSDEC), the State's Regional Technology Development Centers (RTDCs), our University partners, and numerous businesses, community organizations and NGOs.

Since its inception in 2008, NYSP21 has created a series of initiatives that provide direct assistance to companies, support local communities and provide education and outreach through workshops. To date, NYSP21 has assisted 13 companies throughout the state, resulting in annual reductions of over 62,000 lbs of non-hazardous waste, over 38,000 lbs of hazardous materials and 140,000 lbs of hazardous waste. In addition, these efforts have saved over 16,000,000 gallons of water and over 7,500 MBTU/year of energy.

"The problems that exist in the world today cannot be solved by the level of thinking that created them."

— Albert Einstein

NYSP21 has also funded 9 non-profit organizations in 8 counties in New York State, and conducted 9 workshops with over 100 participating organizations and 821 attendees throughout the state focusing on toxics-in-toys, green cleaning and Lean, Energy & Environment (LE2).

In this issue of our quarterly e-newsletter you will find highlights on a variety of topics including, results from our featured case study, an introduction to one of our partner RTDCs, information on a community grants recipient and a featured testbed at our Partner University, Clarkson.

I am extremely proud to help guide an Institute that is a leader in the development of the next generation of novel environmental solutions. I truly look forward to working with all of you in the future.

Warm Regards,
Anahita Williamson, Ph.D.



Dr. Anahita Williamson
Director, NYSP21

NYSP2I is a statewide research and technology transfer organization funded by the New York State Department of Environmental Conservation.



New York State Pollution Prevention Institute



RIT and its partner universities — Rensselaer Polytechnic Institute, Clarkson University, and the University at Buffalo — along with the state's ten Regional Technology Development Centers (RTDC) together comprise the NYSP2I. Headquartered at Rochester Institute of Technology (RIT), NYSP2I's mission is to provide a statewide, comprehensive and integrated program of research, technology development and diffusion, outreach, training and education aimed at making New York State more sustainable for workers, the public, the environment and the economy.

The goal of the New York State Pollution Prevention Institute (NYSP2I) is to provide full geographic coverage of P2 programs and services across the state. This will be achieved through a number of mechanisms including strategic partnerships with the RTDCs, other technical assistance providers in the public and private sectors, universities and non-profit organizations. As you continue to read our newsletter, you will find an example of such partnership with Hudson Valley Technology Development Center (HVTDC).



NYSP2I provides a new approach to pollution prevention that goes beyond compliance-driven activities. It aims to identify opportunities to make NYS companies more resource efficient and stronger economically by:

- ◆ applying sustainable technologies
- ◆ improving product environmental quality
- ◆ reducing waste and use of toxics
- ◆ reducing life-cycle impacts and costs
- ◆ creating and retaining jobs

NYSP2I, in partnership with the RTDCs and other universities, provides:

- ◆ technology research, development, and diffusion
- ◆ sharing of best P2 practices and tools
- ◆ curriculum development and training
- ◆ information and knowledge exchange
- ◆ direct technical assistance

NYSP2I offers a suite of education and training programs to RTDCs, government agencies, companies, and nonprofit organizations. Programs include classroom training sessions, technology demonstrations at RIT and other Partner University facilities as well as in private companies, conferences and workshops. Programs take place around the state and include a variety of P2 topics. We encourage you to visit our website at www.nysp2i.rit.edu for a list of upcoming workshops. Also, please visit page 6 to learn more about our Toxics in Toys & Children's Products workshop.



Crib with PVC bite guard across top rails and polyurethane mattress wrapped in vinyl cover (photo provided)

Results

NYSP2I staff identified alternative bite guard materials and mattresses that meet stringent performance criteria and have a reduced environmental footprint. The composition of the materials and mattresses were evaluated based on their environmental and human health effects. A selection of materials and mattresses was provided to the manufacturer to assist in their decision-making process.

When the manufacturer replaces the PVC bite guard and the mattress, it results in:

- ◆ Reduction of 5400 pounds of PVC each year by replacing the bite guard material;
- ◆ Reduction of 1500 pounds of PVC each year by replacing the mattress cover material.

Client

The client is an upstate manufacturer of furniture and spaces designed for children. Their products are found in childcare centers and schools throughout the world.

Problem

A combination of the Consumer Product Safety Improvement Act restrictions on phthalate content of children's products, increased awareness of the health and environmental issues with polyvinyl chloride (PVC), and dedication to the environment led the manufacturer to want to eliminate or greatly reduce the PVC content of its children's cribs. These cribs are used in daycare facilities across the country and must meet stringent flammability and cleaning requirements. The manufacturer was uncertain which alternative materials they could use.

Objectives

The manufacturer asked NYSP2I to identify alternative materials that can replace the current PVC based bite guard and mattresses that can replace the current polyurethane foam mattress covered in PVC. NYSP2I also evaluated materials against the Cradle to Cradle Certification criteria to assist the company in receiving certification for their products.

Work Performed

Robert Winrow, Field Service Director at the Hudson Valley Technology Development Center, Inc. (HVTDC), served as the NYSP2I point person for the manufacturer. The NYSP2I developed a set of metrics based on the Cradle to Cradle Design Protocol* and additional qualities to screen potential alternative materials for both the bite guard and mattress. Alternative materials were brainstormed and screened at the material level. Those alternatives that met the material level requirements were further screened based on the potential human health and environmental effects of the composition. Alternative materials and their qualities were provided to the manufacturer for consideration.

Implementation

The manufacturer is in the process of implementing an alternative bite guard and mattress identified by NYSP2I. The implementation moves the product one step closer to Cradle to Cradle Certification.

"Working with the NYSP2I helped us identify alternatives in line with Cradle to Cradle requirements. This certification will not only help reduce our environmental burden, but will also give us an edge over our competitors." Design Manager, furniture manufacturer.

* http://mbdc.com/c2c_home.htm

RTDC Profile

The Hudson Valley Technology Development Center, Inc. (HVTDC) is a federal and state funded business resource center launched in 1988. The center was created to help Hudson Valley businesses streamline their processes and procedures and enhance competitiveness. HVTDC is currently designated as a Manufacturing Extension Partnership (MEP) Center by the U.S. Department of Commerce and a Regional Technology Development Center (RTDC) by the NYS Foundation for Science, Technology and Innovation (NYSTAR).

In its over two decades of existence; HVTDC has assisted numerous businesses in a wide spectrum of industries, providing Operational Assessment, Lean Enterprise Systems, Business Plan Assistance, Project Management, Marketing Services, Valuation Services, Technology Assessment, Information Technology Planning, Strategic Planning and Interim Executive Services.



Through the years, HVTDC has participated in introductory and follow-on training sessions at RIT's Golisano Institute for Sustainability, which led to a broader partnership with the NYSP2I following its creation at RIT by New York State in 2007. In a discussion with a children's furniture manufacturer, the center identified a need for assistance

in helping them insure their baby cribs met or exceeded all critical material safety standards. In response, HVTDC introduced and coordinated a series of meetings putting a contract in place for NYSP2I to perform material usage analysis and make improvement recommendations as needed. The project report was recently submitted with very constructive and positive results.

*Bob Winrow
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Making the Film Industry Greener

The NYSP2I Community Grants Program provides financial and technical support to not-for-profit agencies that raise awareness and understanding of sustainability, implement pollution prevention practices and behaviors and ultimately improve the health, environmental quality, and economic vitality of New York State communities.

One of the recipients of the grant awards in 2008-09 was Film Biz Recycling (FBR), a New York City



Eva Radke
Founder, Film Biz Recycling
(photo provided)

based organization whose mission is to reduce, reuse and redirect waste from the film and television industry in the Big Apple. FBR has used the award to provide workshops to the film industry and develop “The

Practical Guide to a Greener Production,” an educational handbook for entertainment industry professionals.

FBR was founded by Eva Radke, a 15-year veteran of the film and commercial production business who has held multiple positions in the art department, including designer, scenic artist and set decorator. Through these positions, Radke saw firsthand

the waste generated and the lack of environmental responsibility in the film and TV industry. Most importantly, she also saw an opportunity.

FBR collects materials, which would otherwise end up in landfills, from the film industry and distributes them to charities, art organizations, schools, churches, and reuse centers. FBR also retains a portion of the collections and rents materials back to film and TV productions to defray costs. In the last year, building materials, dressing and wardrobe sets from over 80 productions have been collected by FBR, eliminating 74 tons of material from ending up in landfills.

As part of the grant, Radke developed “The Practical Guide to a Greener Production,” a compilation of tips and vendors of environmentally preferable products for entertainment industry



A sampling of items available at FBR (photo provided)



Film Biz Recycling’s guide produced through NYSP2I’s Community Grants Program (photo NYSP2I)

professionals. Vendors were included in the guide based on their recycling practices, use of eco-friendly products and energy conservation strategies. It also spotlights the eco-friendly services/products the vendors offer and types of green practices they intend to implement in the future.

Through the NYSP2I grant, FBR also held two workshops in New York City that promoted the Guide and overall sustainable practices in the film industry. As a result, the television series *Law and Order* has requested multiple copies for their department heads.

More information on Film Biz Recycling can be found at their website www.filmbizrecycling.com. To learn more about the Community Grants Program, visit: www.nysp2i.rit.edu/community_grants.html.

Partner University Profile

P2 Bulletin highlights a University Partner each issue

Clarkson University

Clarkson University is one of four Partner Universities that comprise the New York State Pollution Prevention Institute. The Partner University focus at the NYSP2I is in technology research and development (R&D) and diffusion as well as academic programs. As one of the state's leading universities, Clarkson has tremendous academic research and technology development resources. The following is a list of testbeds (a platform for experimentation of large development projects) that Clarkson specializes in: Green Processing via Process Intensification, Advanced Materials Synthesis for Pollution Reduction, Monitoring/Sensors, Environmental Systems, Green Supply Chain Management, and Biofuels Testing Facility.

Featured Testbed

Innovative research is underway in the area of process intensification, which takes advantage of the improved hydrodynamic conditions posed by laminar flow (as opposed to more conventional turbulent flow production methods) for chemical manufacturing. In the past, chemical transformations have been largely performed in conventional batch reactors with limited mixing and heat transfer capabilities. The concept of process intensification has been used to develop several multifunctional modules, including a narrow-channel reactor that is capable of carrying out reactions under isothermal (*i.e.* constant temperature) conditions while being exposed to microwave irradiation. The findings of this work were published in the *Journal of Green Chemistry*.

Clarkson University's Process Intensification and Clean Technology Group has also developed an energy efficient biodiesel production technology, which has the potential to achieve considerable reduction in CO₂ footprint associated with biofuels processing. This continuous process technology for biodiesel production utilizes the concept of process intensification.



laboratory scale Biodiesel Module (photo provided)

According to Dr. Roshan Jachuck, the process utilizes compact modules, which create micron-scale wavy liquid films to achieve very high heat and mass transfer rates. It is ideally suited for reaction, heating viscous liquids, solvent stripping and gas-liquid mass-transfer operations. It generates high "g" forces to create a hydrodynamic environment, which is suitable for generating high transport rates. The salient features include:



- ◆ Continuous process
- ◆ Reaction uses atmospheric pressure
- ◆ Low process temperature (55 Deg. C)
- ◆ Optimal use of a base catalyst
- ◆ Continuous removal of glycerol to achieve faster conversion (approximately 16 seconds required for conversion)
- ◆ Skid mounted facility suitable for 0.25 – 2 M Gal per annum
- ◆ Feed to fuel in 10 minutes (total process cycle)
- ◆ 30% more energy efficient than any other biodiesel process
- ◆ Unique design using in situ condensation technique to achieve faster conversion
- ◆ Footprint reduction by 40% over conventional plants
- ◆ Reduced inventory by 40% over conventional plants
- ◆ Eliminates water washing by using ion exchange resin for purification
- ◆ 99.8% conversion achieved in the reactor
- ◆ ASTM spec biodiesel
- ◆ Fully instrumented and automated skid
- ◆ Ideally suited for JIT and distributed production of biodiesel

For more information, visit
<http://web2.clarkson.edu/projects/pict/index.htm>

NYS Quick Facts

The New York State Department of Environmental Conservation estimates that New Yorkers annually generate about 28.8 million tons of **solid waste**. (www.dec.ny.gov/chemical/8827.html)

New York State's **recycling** program:

- ◆ Saved 6.7 million cubic yards of landfill space through paper recycling (as of 2004);
- ◆ Reduced greenhouse gas emissions by 5.2 million metric tons of carbon equivalents;
- ◆ Saved 231 trillion BTUs of energy; enough to power 2.2 million New York homes; and reduced the need for virgin materials. (<http://www.dec.ny.gov/chemical/294.html>)

New York State's **Climate**:

- ◆ Average temperatures in the state are 2 degrees Fahrenheit higher than they were as recently as 1970.
- ◆ New York's winter temperatures are almost 5 degrees higher than in 1970. (www.dec.ny.gov/energy/44992.html)

In 2005, the last year for which complete measurements are available, all the **greenhouse gases** released by human activities in New York State had the heat-retention capability of nearly 280 million tons of CO₂. Most of the greenhouse gas emissions came from burning fossil fuels for basic economic and social needs. (www.dec.ny.gov/energy/44992.html)

Upcoming Workshop

CREATING A SAFE ENVIRONMENT: TOXICS IN TOYS & CHILDREN'S PRODUCTS

September 26, 2009 • Canandaigua, NY

This workshop is aimed at helping child caregivers understand what hazardous chemicals have been found in children's articles and toys, the potential human health and environmental effects resulting from use of the product, and what you can do to avoid hazardous chemicals in children's products. The new CPSIA legislation is explained. Sources for testing and recall information are identified. Sample tested children's products will be used as examples. For more information, visit www.nysp2i.rit.edu. To register, call Erica Flores at (585) 475-2512.



The next time you visit NYSP2I in building 78 on the RIT campus, please note that we are moving upstairs to suite 2000.



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