

Pollutions Solutions Update

US EPA Great Lakes National Program Office
Pollution Prevention and Toxics Reduction
Grant Program Results
FY 2003

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Executive Summary

For FY 2003, a total of ten (10) grants totaling \$420,000 were awarded plus \$164,424 leveraged funds. The following measurable outcomes were achieved:

- Lbs of mercury collected: **356 lbs** including dental amalgam + 4 sphygmomanometers from dental clinics (totaling about 3/4 lb)
- Lbs of lead collected: 554 lbs plus 16 aprons collected from dental clinics,
- Gallons of silver fixer collected: 173 gallons plus 1 pound.
- Line traps collected from dental clinics: 184

Title: Taconite Mercury Emission Control Study

Grant Number: GL96513101

Organization: Minnesota Department of Natural Resources

Contact:

Michael Berndt

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Telephone: (651) 296-6157

Project Statistics:

Award: \$50,000

Leveraged funding: \$30,000

Project and budget period: 10/01/03-9/30/05

Lake Basin(s): All

Project Type: Research

Summary:

Stack emissions from taconite processing operations represent Minnesota's second largest and the Lake Superior basin's largest contributor of mercury to the atmosphere. The emissions occur when trace mercury (Hg(II)) in taconite ore is converted to elemental mercury (Hg(0)) upon heating to high temperatures in a process known as induration (hardening of taconite pellets). The wet scrubbers that most taconite plants employ to control stack emissions capture particulates and dissolvable gases but not Hg(0). This study will determine the effectiveness of converting Hg(0) to Hg(II) within the gas stream and capturing it with an existing wet scrubber to reduce emissions of mercury. Experiments will be conducted to determine primary pathways of this mercury and the most cost effective and efficient means to permanently eliminate this Hg(II) from the atmosphere will be determined. Results will be compared to results from other existing studies on mercury emission control from taconite plants and coal-fired utilities in an attempt to find the optimal means to reduce mercury from being emitted to the atmosphere from taconite processing.

Environmental Results/Outcomes:

The project final report details the mercury concentration in scrubber waters, and provides empirical experimental data needed to understand how the captured mercury partitions during subsequent reintroduction to mineral processing lines. Results indicate that mercury in scrubber waters adsorb predominantly to non-magnetic minerals during taconite processing. This indicates that introducing scrubber waters and solids back into the taconite processing lines before magnetic separation will result in routing of the majority of captured mercury to tailings basins. Several taconite processing plants could cut mercury in stack emissions by sending scrubber waters and/or solids to the concentrator rather than to the agglomerator. The cost of implementing such changes and the likely savings in mercury emissions is dependent on a number of plant-specific parameters requiring further study.

Title: Pollution Prevention Opportunities in Koppers Phthalic Anhydride Manufacturing Process
Grant Number: GL-96519301
Organization: Waste Management & Research Center

Contact

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Project Statistics:

Award Amount: \$50,000
Dollars Leveraged: \$not listed
Project Timetable: 10/ 2003- 9/2005
Lake Basin(s): Lake Michigan
Project Type: Research/Assessment

Summary:

The purpose of this project was to identify, evaluate and implement pollution prevention opportunities in the Koppers' Phthalic Anhydride Plant located at 3900 South Laramie Ave. in Stickney, Illinois. Between June 2004 and March 2005, engineers from Koppers and Illinois Waste Management & Research Center (WMRC) worked collaboratively to identify opportunities that simultaneously reduced operating costs, waste generation and emissions in the phthalic anhydride manufacturing process. Additional emphasis was placed on pollution prevention opportunities that reduced persistent bioaccumulative and toxic (PBT) compounds.

Environmental Results/Products:

During the project, eleven pollution prevention opportunities were identified, evaluated and prioritized. In March 2005, Koppers successfully implemented a high priority opportunity. They began reducing the compressed air feed to the phthalic anhydride reactors during low production periods. This compressed air project has resulted in a reduction of phthalic anhydride emissions of 1,445 lbs per year, a reduction in energy consumption of 4,200 kWhr per year and a total annual savings of \$263,000.

Title – Extending Comprehensive State-Based Mercury Reduction

Grant Number –GL-96521501-0

Organization – National Wildlife Federation

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Project Statistics:

Award: \$35,000

Leveraged funding: \$37,226

Project Timetable: 10/1/2003-9/30/2004

Lake Basin: all

Project Type: Research and Policy

Development

Summary:

NWF participated in the development of the Michigan Mercury Electric Utility Workgroup's utility mercury reduction. NWF worked with other conservation groups and promoted the goal of virtual elimination of mercury. NWF contributed text for the workgroup's report.

NWF briefed MDEQ on utility mercury pollution control options, cost, and feasibility.

NWF participated in the clean technology subgroup of Michigan's Economic Development and Growth through Energy Efficiency (EDGE2) initiative.

NWF engaged in discussions with other stakeholders such as labor organizations, American Indian groups, utility industry representatives, state staff and pollution control technology vendors to work towards mercury reduction. NWF worked with the state of Michigan to develop environmental purchasing policies that would address mercury and other PBTs.

NWF supported mercury phase-out and mercury-related outreach to communities and local officials in Ohio. NWF developed a "scorecard" and a related white paper that lists and compares states' programs regarding procurement, sales, distribution, recycling, collection, and disposal of mercury and mercury-containing products for the six western Great Lakes states.

NWF assessed costs of mercury control at coal-fired power plants in five states and created a report. NWF will use this information to evaluate proposals for mercury control in several states, including Indiana.

NWF participated in the GLBTS integration and substance workgroups and provided input to discussions of the Level 1 substance reassessment framework and other issues.

NWF participated in an advisory committee to MDEQ on analytical quantification levels.

Michael Murray provided input on the issue and will be involved in discussions of this issue at the state and national level.

NWF began work with Ohio EPA to increase awareness of the issue of mercury in auto switches.

NWF participated in the comment process on EPA R5's Draft Mercury Pollutant Minimization Program Guidance and on the United Nations Environment Programme's Mercury Programme.

Products:

Draft sections of the Michigan Mercury Electric Utility Workgroup's report.

Presentation to the MMEU workgroup on mercury control
Contributions to initial report and recommendations of EDGE2 clean tech subgroup
State-by-state scorecard and white paper on mercury-related programs
“Getting the Job Done: Affordable Mercury Control at Coal-Burning Power Plants” report
Published paper in *Environmental Research* that summarizes mercury emissions from various sectors and offers recommendations for improving emissions inventories (Stacie Holmes and Michael Murray)
Proposed presentation to Ohio Mercury Reduction Group on NWF resources related to Ohio inventory assessment, auto switches, and statewide procurement
Comments on EPA R5 Draft Mercury Pollutant Minimization Program Guidance.
Comments on UNEP Mercury Programme.

Partners:

MDEQ, Ecology Center

Title: Minimizing Dental Mercury Discharges in Metro Milwaukee

Grant Number: GL96523801

Organization: UW-Extension Solid & Hazardous Waste Education Center

Contact:

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UWM UW-Extension

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Project Statistics:

Award: \$40,000

Leveraged funding: \$13,275

Lake Basin: Michigan

Project Timetable: 10/1/2003-9/30/2004

Project Type: Education/Outreach

Summary:

UW-Extension SHWEC worked with partners to produce and distribute outreach materials for Milwaukee area dentists on dental amalgam waste management best management practices (BMPs) and amalgam separator selection and use. This project was aided by a regulation mandating a progressive schedule of adoption of BMPs and separator installation.

Staff sent questionnaires and visited local dental offices to gather information on BMP implementation and separator installation, and to provide information to the dentists on separators. They organized workshops to assist amalgam separator vendors in connecting with area dentists. Grantees also considered establishing a group contract for Milwaukee dentists with a separator vendor or waste handler, but later dropped this component of the project because of concerns with endorsing a particular corporation.

Grantees presented their experiences from this project to serve as a model for mercury reduction work in other municipalities.

Products:

SHWEC accomplished the following under this grant:

- Printed booklets including BMPs, MMSD separator installation requirements, case studies of local separator installations, and a decision flow chart to assist dentists in choosing an amalgam separator to fit their specific needs.
- Adapted WDA BMP guide to include information on amalgam separators.
- Developed database of Milwaukee area dentists' responses to a self-certification survey regarding implementation of BMPs and installation of amalgam separators.
- Facilitated workshops at dental conferences, meetings and conventions to connect amalgam separator vendors with dentists.
- Presented this project as a model for other municipalities at meetings of GLRPPR and the World Water and Environmental Resource Congress.

Partners:

Worked closely with Wisconsin DNR, Milwaukee Metropolitan Sewerage District, and Wisconsin Dental Association. Also conferred with Delta Institute, Erie County, and Naval Institute for Dental and Biomedical Research (NIDBR) on BMP guide and utilized GLRPPR as a communications venue to present products.

Title: Mobilizing/Coordinating Industry BNS Support

Grant Number: GL97521802

Organization: Council of Great Lakes Industries

Contact:

Dale K. Phenicie

CGLI GLBTS Project Director

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Project Statistics:

Award: **\$not listed**

Leveraged funding:

Lake Basin: all

Project Timetable: 10/1/2003-9/30/2004

Project Type: stakeholder network coordination

Summary:

CGLI recruited and coordinated industry participation in BTS activities, bringing new representatives to the BTS in the aluminum, base metals, ceramics production and mining sectors.

CGLI served as a communications link between U.S. EPA and industry stakeholders. In addition to including information on the BTS in its newsletter, CGLI added a GLBTS section to its website www.cgli.org to increase industry's awareness of BTS activities and reported to the BTS on industry's achievements towards and beyond the Challenge Goals.

In support of BTS activities, CGLI worked to update and confirm chemical release inventory data for substance workgroups and solicited substance release reduction commitments from industry stakeholders.

CGLI provided its recommendations on the evaluation of "new" chemicals as candidates for action under the BTS, recommendations on the review protocol for existing BTS substances, and recommendations for a set of objectives for continuing and current GLBTS programs.

Products:

- Information on BTS activities in the CGLI newsletter and CGLI website and in constituent organizations' newsletters and bulletins
- Presentations to industry and multistakeholder groups
- Continued public affairs/marketing strategy assistance on burn barrel outreach messages and materials and support for the Air Defenders educational resource kit.
- Reports to the substance workgroups on use data and emissions inventories, including information on HCB in pesticides, PCB transformer-owning companies, and coke-making facilities' dioxin emissions.
- Review and comments on BTS reports.

Partners:

Member organizations, including National Electrical Manufacturers Association, Rubber Manufacturers Association, and American Coke and Coal Chemicals Institute.

Title: Erie County Dental Waste Management Project

Grant Number: GL-96530801

Organization: County of Erie, Department of Environment & Planning

Contact:

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Project Statistics:

Award Amount: 30,000

Dollars Leveraged: 14,620

Project Timetable: 11/01/03 – 10/31/06

Lake Basin(s): Ontario

Project Type : Training, Program

Development, Education/Outreach

Summary:

The primary objective of the Dental Waste Management Program was to eliminate hazardous materials, such as mercury and lead-containing waste, from the non-hazardous and regulated medical waste streams. Secondary objectives were to:

- collaborate with the Naval Institute for Dental and Biomedical Research (NIDBR), Delta Institute and the University of Wisconsin Extension – Solid and Hazardous Waste Education Center to assist NIDBR with development of a dental waste management training video and outreach materials;
- develop instructional resources for outreach efforts and dental waste management workshops;
- provide no-cost disposal opportunities for dental service providers through Erie County's Conditionally Exempt Small Quantity Generator Hazardous Waste Program; and,
- conduct four workshops for dental service providers to provide information on dental waste management, the proper disposal of hazardous wastes, amalgam separators, amalgam recycling and New York State's regulatory requirements.

To accomplish the stated objectives, the project was divided into a number of tasks. A summary of these tasks and how they were accomplished follows.

Environmental Results/Products:

Four workshops were conducted for dental service providers practicing in the eight counties of Western New York. Erie County consulted with the New York State Department of Environmental Conservation in preparing the content of the outreach materials and determining the workshop agenda. Initially, the workshops were planned at the onset of the program. However, when New York State passed legislation addressing elemental mercury and dental amalgam waste, the workshops were postponed so that the information presented would be consistent with the State regulations. Three workshops were held in Erie County (north, south & east of Buffalo) and one was held in Niagara County. The workshops provided information on dental waste management, focusing on proper disposal of mercury-bearing wastes. Lead and silver wastes were included as well. Outreach materials included Best Management Practices for Dental Amalgam, the NIDBR video, amalgam/mercury recycling contractors, amalgam separator equipment vendors, NYS's regulatory text detailing its Standards for the Management of Elemental Mercury and Dental Amalgam Wastes at Dental Facilities, ADA's Dental Mercury Hygiene recommendations and information on the County's CESQG program. In addition, a

poster presentation was developed for future use at dental conferences, health fairs and similar outreach venues. The outreach materials are included in Attachment C.

Throughout the project period, CESQG collections for the disposal of dental wastes were scheduled. At the onset of the project, the precise quantity of waste to be collected was uncertain. Therefore, the collections continued as funds permitted. Grant resources allowed for five collections. The Eighth District Dental Society assisted with outreach to the dental community to inform them of the collections. The Society's newsletter and database, for direct mailing of an event flier and registration materials, was used to publicize each of the collections. The initial collections were limited to mercury-bearing wastes, lead foil and silver fixer. However, as the project progressed, dentists made inquiries for disposing other wastes such as lead aprons, x-ray heads (PCBs), lead boxes, silver and sphygmomanometers. The disposal options were adjusted accordingly.

Total quantities of waste collected are as follows:

Amalgam:	229 lbs.
Amalgam capsules:	45 lbs.
Mercury:	82 lbs.
Lead foil:	554 lbs.
Silver fixer:	173 gal.
Line Traps:	184
Lead Aprons:	16
X-ray heads:	4
Silver:	1 lbs.
Lead boxes:	1
Sphygmomanometer:	4

Title: Citizen Reconnaissance of Water Quality on the Detroit River

Grant Number: GL-96521301

Organization: Friends of the Detroit River

Contact:

PI: Robert Burns

Friends of the Detroit River

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Phone: 734.675.0141

Email: river@detroitriver.org

Project Statistics:

Award Amount: \$35,000

Dollars Leveraged: \$18,250

Project Timetable: 10/1/03 – 04/30/05

Lake Basin(s): Lake Erie

Project Type: Inventory

Summary: Citizen Reconnaissance of Water Quality on the Detroit River was is a pollution prevention effort for the Detroit River Area of Concern conducted by the Friends of the Detroit River (FDR), in partnership with Michigan Department of Environmental Quality (MDEQ), local citizen volunteers, environmental organizations and other stakeholders. In an attempt to mitigate unknown discharges emanating from point sources along the Detroit River the objective of this project was to: locate and map all outfalls along the Detroit River; determine the type, source, ownership and composition of each discharge; create a single source database of outfall information which would be available to the public; and, provide training and create training materials for the development of a “citizens volunteer group” to assist in monitoring outfalls along the River.

Environmental Results/Products:

During the course of the grant the grantee conducted an investigation to locate outfall discharges along the Detroit River. Through research of municipal, county, State and federal records, and visual investigation by boat and airplane, the grantee logged nearly 350 sanitary, industrial, and storm water outfalls. From historical documents of industrial discharges they located an additional several dozen abandoned outfalls. The grantee used this data to create observation logs containing GPS coordinates and photos of the outfalls, along with a narrative report describing outfall conditions in different sections of the River. This information is available on CD.

The grantee also developed three-part program to implement a “Citizen Volunteer Monitoring and Educational Program.” Part One was the development of a fact sheet called “Citizen’s Guide to Reporting Marine Pollution” to help citizens recognize spills and report them. Friends of Detroit River and the Detroit River Riverkeeper have distributed several hundred copies of the guide and it is available on the FDR web site at <http://www.detroitriver.org/>.

In partnership with the U.S. Coast Guard (USCG), Part Two of the program involved publicizing the USGS’s Marine Pollution Reporting Hotline number. Friends of the Detroit River printed several dozen signs advertising the spill number and, to date, have installed about half of them at public boat launches, marinas, and yacht clubs along the lower river and are currently working to install the remainder of the signs along the upper reaches as part of an ongoing program. They have also distributed several hundred "Report Marine Pollution" business cards containing the USCG spill number. In addition, the grantee had distributed nearly 13,000 "No Dumping, Drains to River" storm drain labels to twenty-one local communities.

The final step of the education program was to use the materials developed under the grant to educate the public to recognize and report spills, and to recruit volunteers to look for and report

pollution incidents. Conducting close to 40 presentations, the grantee targeted individuals and groups in the best position to observe and report incidents, namely local marinas and boat launch operators, bridge operators, yacht clubs, and hunting/fishing/environmental groups. The grantee has recruited nearly 100 volunteers for the Detroit River Watch program, and based on the increased number of calls and reports FDR and the USCG have received, FDR estimates there are dozens of active participants in the River Watch program since its inception.

Partners:

U.S. Coast Guard

Michigan DEQ

Detroit River Riverkeeper

Detroit River RAP

Stream Team

Title: Dental Amalgam Waste Best Management Practice Training Video

Grant Number: DW-17-94806001-0

Organization: Naval Institute for Dental and Biomedical Research

Contact:

Mark Stone

NIDBR

Building 1-H

310A B Street

Great Lakes, IL, 60088-5259

Phone: (847) 688-4560 extension 3443

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Project Statistics:

Award: \$not listed

Leveraged funding:

Lake Basin: all

Project Timetable: 10/01/2003-9/30/2004

Project Type: outreach & education

Summary:

Grantees produced an instructional video to educate dentists, dental students, and dental staff members on dental amalgam waste Best Management Practices (BMPs). The video was produced in CD-ROM, DVD, VHS tape formats, and also formatted for the internet. The project as originally structured was solely the effort of the Naval Institute for Dental and Biomedical Research (NIDBR, Great Lakes, IL). Midway through the project the American Dental Association (ADA, Chicago, IL) asked to become involved in the effort. As a result, the final project was a coproduction of both NIDBR and the ADA. The video was filmed at the Naval Dental Center, Great Lakes dental treatment facilities using NIDBR and Naval Dental Center, Great Lakes personnel. Since NIDBR is a federal agency and cannot apply for copyright protection, the copyright for the video was assigned to the ADA.

The ADA later applied for and received a separate GLNPO grant to distribute the video to all dentists practicing in the Great Lakes states. NIDBR distributed the video to all Navy dental treatment facilities (worldwide) and distributed it to dentists and staff members attending a variety of professional dental and dental research meetings. The video is available on the GLNPO funded dental mercury web site (<http://www.dentalmercury.com>) as well as on the ADA's web site (<http://www.ada.org>).

The ADA has partnered with Sultan Health Care, Inc., a dental products manufacturer, to make the video available to anyone who is interested. Because of the changing nature of local regulator efforts, planning has recently begun on the production of a revised version of the training video. The new video will reflect the changing nature of both the science and regulatory environment.

Products:

Produced and distributed a ten minute instructional video on BMPs for dental amalgam waste to reduce mercury loadings to wastewater treatment plants.

Partners:

American Dental Association

Video script reviewers from University of Wisconsin- Extension Solid and Hazardous Waste Education Center, U.S. EPA Region 5, the Delta Institute, Milwaukee Metropolitan Sewerage District, and an environmental consultant.

Title: Eliminating PBTs From Products and Waste

Grant Number: GL965243-01

Organization: Great Lakes United

Contact:

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BSC Cassety Hall

Buffalo, NY 14222

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Project Statistics:

Award Amount: \$25,000

Project Timetable: 10/01/2003-09/30/2004

Lake Basin(s): All

Project Type: Education/Outreach and Training

Project Description:

Great Lakes United proposed to reduce the release of persistent bio-accumulative substances like mercury to the environment through three interrelated approaches:

- 1) Continue to assemble the best options for industry and government decision makers to maximize mercury recovery from vehicles
- 2) Extend the multi stakeholder workgroup approach to address mercury from household appliances building on the knowledge of auto mercury recovery programs
- 3) Great Lakes United will continue to represent our coalition of environmental, conservation and labor groups in the Integration Group and other working committees of the US-CA Binational Toxics Strategy.

Summary:

Great Lakes United held two half-day web conferences with representatives from environmental groups, industry, and various levels of government. Conference proceedings include outcomes such as the determination of specific steps and strategies to recover mercury. Our website and quarterly newsletter provided coalition members and the public with information on extended producer responsibility (http://www.glu.org/english/test/clean_production/epr_concept.htm) and other best options to maximize mercury recovery. Our web-conferencing proceedings, outcomes, and materials all appear on our website

(http://www.glu.org/english/test/clean_production/epr/index4.html) as a resource for coalition members and the public. Results included increased implementation of mercury switch recovery programs, a developing infrastructure for manufacturer responsibility for PBTs in products. GLU also participated in the GL BTS Integration Work Group and Stakeholders' Forum meetings that took place September 2003, December 2003, February 2004, May 2004, and September 2004. GLU delivered presentations and updates to the Mercury workgroup and Integration group. Additionally, GLU disseminated information on the implementation of the Strategy through our quarterly newsletter, monthly "Toxics Watch", and website. Making technical information available in both English and French exists as a key service featured on our website and newsletters.

Environmental Results/Products:

The project resulted in more participation in the GLBTS and a better-informed Great Lakes constituency throughout the region's states and provinces of Ontario and Quebec. The project developed a unique network of stake-holders working on toxics use reduction, focusing

specifically on mercury recovery. As the Great Lakes is a unique international community, holding communications via web conference was helpful to engage many interested participants from across the Basin. As a result, GLU developed a more broad-based partnership to pursue future activities in the area of mercury reduction and reduction of other PBTs. It became apparent after the 2001 Toxics in Vehicles Report, the 2002-2003 “Get the Mercury Out” conference and the subsequent 2004 EPR web conference that a multi-sector approach is critical; that is, the recycling industry alone cannot succeed to reduce PBTs in the Great Lakes. Results included dissemination across Basin constituency on practical concerted efforts at the “front-end” of design and production as well as downstream cooperation and extended producer responsibility efforts for current products, an ongoing process that includes environmental grassroots groups and other non-business interests.

In 2003, Great Lakes United produced *The Green Book* a publication for government decision-makers and the public detailing the major steps and strategies for restoration of the Great Lakes. *The Green Book* included a comprehensive view of PBT elimination and reduction issues as well as a summary of action agendas for PBT elimination and reduction as a result of grant GL2003-303. *The Green Book* is available to download for free on our website www.glu.org. Full action agendas for toxics use reduction and clean production along with issue backgrounders appear on our website under the clean production section. Results included a widely accessible document to guide and harmonize PBT elimination efforts across the Basin while providing digestible information and resources for the general public. During the project, no major difficulties were encountered and project goals and expected outcomes were met within the constraints of timeline and budget. GLU plans to continue outreach and development of projects based on what we’ve learned from this PBT reduction project. The project scope and findings determine a critical need for ongoing efforts across stake-holder groups to develop effective strategies as well as inform and educate consumers and on the importance of eliminating PBTs through alternative purchasing and end users on the importance of recycling.

Title: University Of Illinois - Great Lakes Regional P2 Roundtable Coordination with EPA GLNPO

EPA Grant Number: GL 96514401

Organization: Board of Trustees University of Illinois

Contact:

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Champaign IL 61820
Phone 630-472-5019

Project Statistics:

Award Amount: \$20,000
Dollars Leveraged: \$1,053
Project Timetable: 10/1/03-12/31/04
Lake Basin(s): All Great Lakes
Project Type: Education/ outreach

Summary

The Great Lakes Regional Pollution Prevention Roundtable (GLRPPR) shares the common goal of pollution prevention with the Binational Toxics Strategy (BTS) and supports pollution prevention activities through information sharing, issue discussion and program development. GLRPPR focuses on the prevention of pollution from industrial sources by coordinating a network of pollution prevention assistance and environmental professionals.

Environmental Results/Products

Through this funding GLRPPR has been able to increase member's access to PBT-related documents, training, and information sharing opportunities. GLRPPR members have also had the benefit of participating in funding opportunities that support PBT elimination activities, collaborating with fellow GLRPPR members to implement PBT elimination projects and sharing the outcomes with other GLRPPR members through conferences and meetings. The project supports the goals of the Great Lakes Binational Toxics Strategy by marketing and distributing GLBTS publications and activities, identifying common sources of PBTs at industrial facilities and supplying members with complimentary P2 resources, developing a directory of fish consumption advisories and supplying state contacts related PBT elimination information, and distributing industrial boiler and PBT elimination developed by other P2 organizations.

Partners

Environmental professionals from throughout the Great Lakes region (Illinois, Indiana, Michigan, Minnesota, Wisconsin, New York, Ohio, Ontario, and Pennsylvania.) Currently GLRPPR hosts over 400 members including environmental professionals from both U.S. and Canadian entities including federal, state, regional and municipal governments, industry, non-governmental and tribal environmental organizations, trade associations and educators.

Title: Watershed-based STP Mercury Reduction Partnership

Grant Number: (GL2003-180/ GL2004-146)

Organization: Delta Institute

Contact:

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Delta Institute
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Project Statistics:

Award Amount: \$70,000
Dollars Leveraged: approx. \$50,000

Project Timetable:

Lake Basin: Erie
Project Type: Education, Training

Summary:

The Delta Institute worked with sewage treatment plants (STPs) in the Lake Erie Basin to implement a Watershed-based Mercury Reduction Program that created a regional partnership to reduce mercury in the Black River Watershed of the Lake Erie Basin. The Delta Institute conducted a series of workshops for STPs that provided tools to reduce mercury entering their sewage systems as well as assisting the STPs and other interested stakeholders (e.g. municipalities, health departments) to initiate a Watershed-based Mercury Reduction Partnership. The goal of the Partnership was to raise awareness about mercury and leverage local resources (e.g. hazardous waste collection efforts) to implement projects that will reduce mercury.

Environmental Results/Products:

The Delta Institute convened two mercury reclamation partnerships; developed a mercury pollution prevention roadmap for POTWs; and developed an interactive website.

Partners: U.S. EPA, Ohio Environmental Protection Agency, Black River RAP, and numerous municipalities within the Basin.

Title: Accelerating Phaseout of PCB Transformers: The Business Case

Grant Number: GL - 96546701-0 and GL - 96513201-1

Organization: Tellus Institute

Contact:

David McAnulty

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Boston, MA 02116-3411

PhoneTel: 617-266-5400

e-mail: dmac@tellus.org

Project Statistics:

Award: \$65,000

Project Timeline: 10/1/03 – 9/30/06

Project Type: Development

Lake Basin: All

Summary:

The goal of this project is to encourage firms to voluntarily decommission PCB transformers by helping them understand the true costs associated with Keeping PCB transformers vs. Replacing or Retrofilling such units. The project products are a user-friendly spreadsheet tool to allow the analysis of the costs and savings associated with keeping, replacing, or retrofilling PCB transformers, as well as a financial analysis case study for a mid-sized manufacturing firm. The case study is a hypothetical case but is based on real events and data provided by a US manufacturing firm and its subcontractors. The case outlines the costs of keeping, replacing, or retrofilling a PCB transformer on the manufacturing site, and includes scenarios for events that have potentially significant cost consequences for the firm, i.e., a potential dielectric fluid spill and a potential transformer fire.

Environmental Results/Products:

Software Tool

The spreadsheet tool was developed in Microsoft Excel version 2002 and is called P2F-PCB, because it is the latest in the P2F series of financial analysis software tools developed by Tellus Institute. The P2F acronym is short for Pollution Prevention Finance. P2F-PCB has the following features:

- ▶ Enables financial assessment of the KEEP, REPLACE, and RETROFILL scenarios for PCB transformers
- ▶ Points out the major cost drivers to software users (i.e., regulatory status, transformer type, dielectric fluid type and volume, PCB concentration, transformer accessibility, transformer location, current spill containment methods, current fire prevention practices, transformer age and reliability, and importance of the transformer to business operations)
- ▶ Includes lists of potentially relevant costs for each of the three scenarios – and give help text on these costs
- ▶ Allows the user to enter as little or as much cost data as desired before viewing the financial analysis results
- ▶ Allows the user to include equipment depreciation, income taxes, inflation, and discounting
- ▶ Calculated Net Present Value (NPV) and Discounted Payback

A great deal of attention was paid to making the tool as user-friendly as possible. User interface and Help features include:

- ▶ Software map and buttons for easy navigation
- ▶ As few worksheet pages as possible
- ▶ As little clicking on the mouse as possible
- ▶ Help text available via button for each worksheet
- ▶ Help text available via Excel “comments” for individual cells
- ▶ Introductory Help text available
 - About the Software
 - Software User Tips
 - Background Info (i.e., What are PCBs, PCBs in Transformers, PCB Health Impacts)
 - PCB Regulations

Case Study

The case study developed was a hypothetical, hybrid case, based on a combination of real events and data obtained from a US firm and its subcontractors. This firm is not a manufacturer, or distributor, of transformer equipment, or of PCB waste management services, but an owner and operator of PCB transformers with a wealth of experience and data on PCB transformer management. The data were provided by the firm itself plus several emergency response and waste management subcontractors that help the firm manage its operations.

The case study describes “Chimanco”, a mid-sized manufacturer with a number of electrical transformers on-site that contain PCBs. A recent failure and fire involving a PCB transformer provided an incentive for the firm to consider Replacement or Retrofill of the other PCB units. Future PCB-related liability was of concern because most of the PCB transformers were older units, and because the facility is located in a dense urban area with residences nearby. The first transformer chose for analysis was a 1000 KVA power transformer critical to operations, containing 400 gallons of dielectric fluid with a PCB concentration of 1000 parts per million (ppm).

Chimanco evaluated three scenarios: KEEP vs. REPLACE vs. RETROFILL the PCB transformer under analysis. The cost evaluated included:

- ▶ One-time Investment Costs (e.g., purchase of new equipment)
- ▶ Recurring Operating Costs (e.g., regulatory compliance costs)
- ▶ Non-recurring Operating Costs (e.g., a dielectric fluid spill or transformer fire)

Chimanco made basic assumptions on the potential severity of the fluid spill and the transformer fire based on past experience and on conversations with emergency response and waste management subcontractors. The events were designed to be moderate-level events that could nonetheless have significant cost consequences for the company. For each event, the following potential costs were considered:

- ▶ Regulatory & Other Notification
- ▶ Regulatory Penalty
- ▶ Cleanup & Waste Management

- ▶ Equipment Repair
- ▶ Interruption of Power/Operations
- ▶ Legal & Liability

The costs associated with the moderate-level spill (50 gallons) described in the case study were estimated as \$47,000 when PCB are involved, but only \$13,000 when no PCBs are involved. In this case, Retrofill of the PCB transformer would be financially justified, but Replacement would not. In contrast, management of the moderate-level transformer fire described in the case study would cost \$565,600 with PCBs involved vs. only \$153,800 without PCBs. This scenario would financially justify either Retrofill or Replacement of the PCB transformer.

Costs of both the spill and fire events could increase significantly if they included “worst case” assumptions such as PCBs reaching a waterway, actual environmental or human health impacts, or significant legal/liability costs.

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