

Preventing Toxic Pollution IPPAT July 22, 2010

Minnesota Technical Assistance Program



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

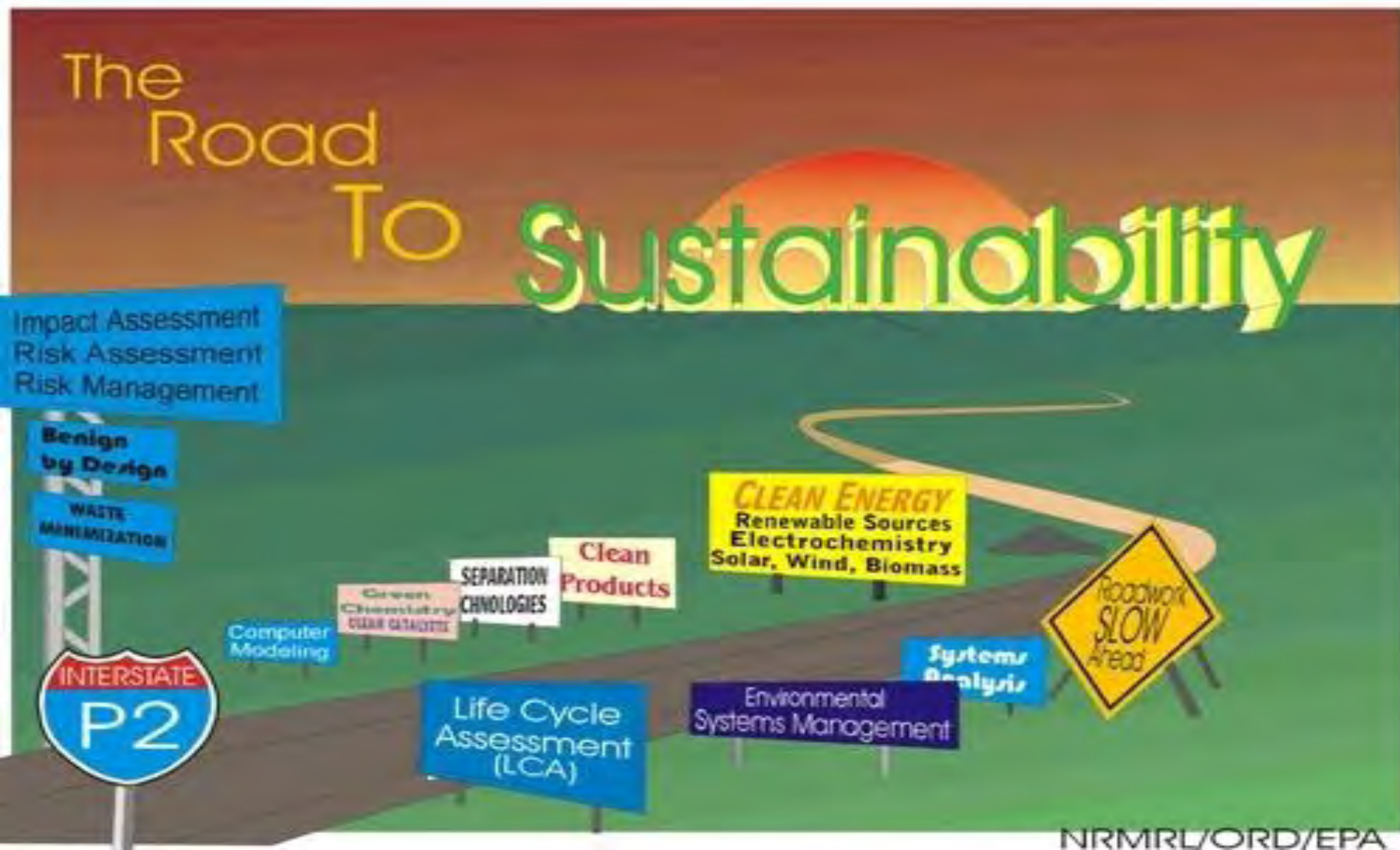
Topics Covered

- Evolution of pollution prevention
- MnTAP evolution
- IPPAT assistance
- IPPAT Toxic Products Sumcommittee

Evolution in Thinking

- TPPA passed in 1990
- 20 years later, P2 is still fundamental to TPPA/P2 planning
- High hazard to low hazard chemical
- New chemicals may do the job better
- Shift from “phaseout” to “phase-in”
- Elimination of chemicals during design
- Green chemistry - Green your company!

Evolution of Pollution Prevention



New Approaches

- Sector specific to chemical specific (green chemistry)
- Incremental to institutionalized (Walmart)

Regulations/Legislation

- Minnesota Waste Management Act
- Minnesota Toxic Pollution Prevention Act
- Green Chemistry

MnTAP Overview

- Funded by the state (MPCA) since 1984
- Located at the University of Minnesota
- 12 staff, with backgrounds in engineering and science
- Free and non-regulatory technical assistance

MnTAP Mission

- Help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, increase energy efficiency, reduce costs, and prevent pollution.
 - Businesses remain competitive
 - Improve employee and public health
 - Protect the environment

Industrial Process Assistance

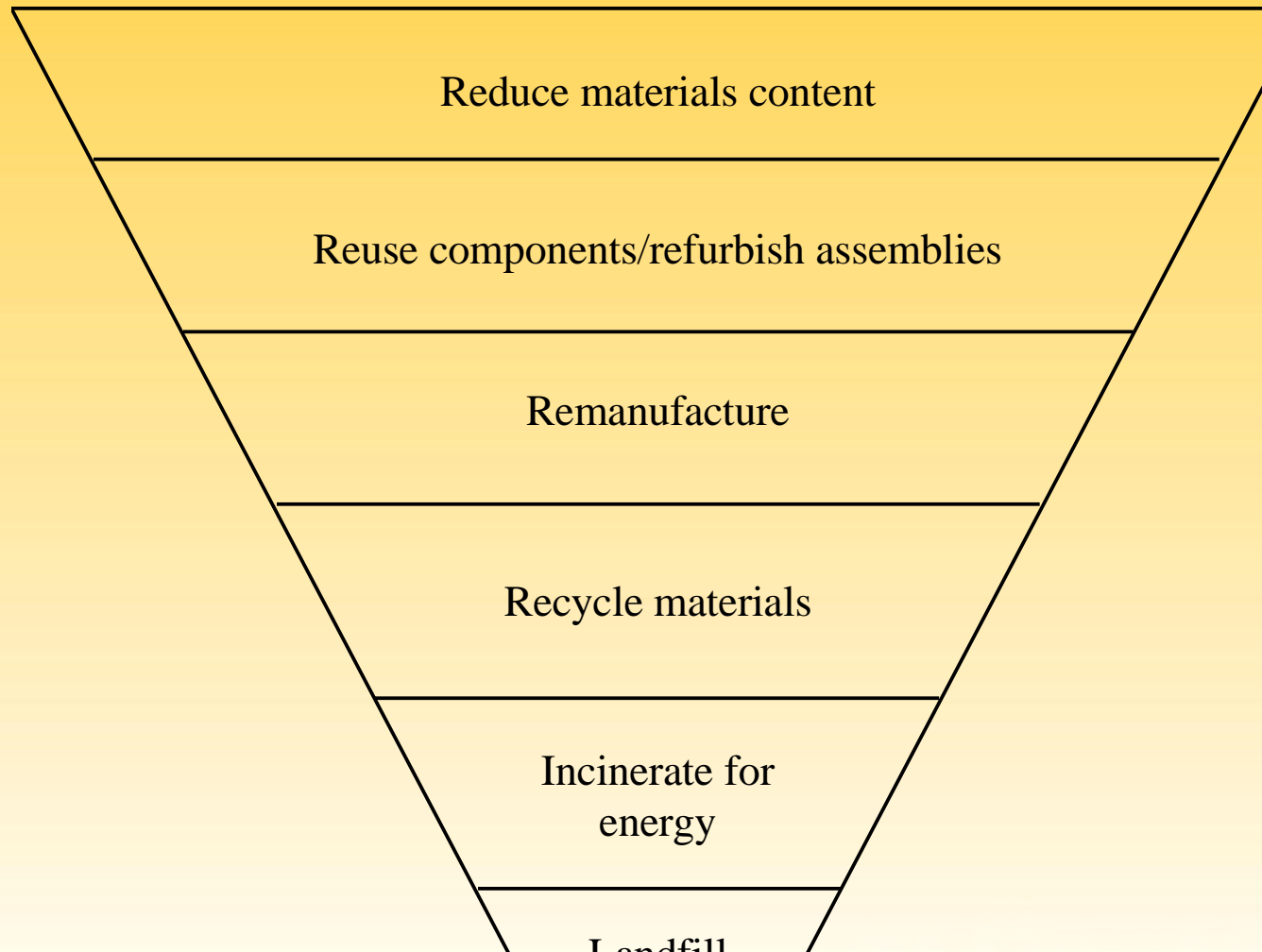
- Pollution prevention
- More efficient use of raw materials
- Water conservation strategies
- Energy efficiency opportunities
- Cost savings for businesses!!



Energy Efficiency Assistance

- Process energy focus
 - Compressed air
 - System audits
 - Steam systems
 - Steam trap assessments and boiler efficiency
 - Process heat
 - Process refrigeration
 - Motors, fans, pumps

What is Pollution Prevention?



MnTAP Industry Focus Areas

- Fiberglass
- Food processing
- Healthcare
- Medical device manufacturing
- Metal casting
- Metal fabrication
- Metal finishing
- Mining
- Powder coating
- POTWs
- Printing
- Pulp and paper
- Service industries

MnTAP Services

- Telephone assistance
- Site visits
- Intern program
- Materials exchange
- Internal team facilitation
- Demonstrations and pilots
- Web site resources
- Seminars and workshops

MnTAP Site Visits

- One-on-one meeting with MnTAP engineer / science-related professional
- Better understanding of your process
- Results in facility-specific solutions
- Continued follow-up by MnTAP

MnTAP Intern Program

- Focus on solutions for a P2/E2 project
- Students recruited, interviewed, and hired by MnTAP
- Extra engineer for the summer
- Final report and presentation can direct future implementation
- Requires cost-share (\$2,500) from companies
 - Savings often greatly exceed cost-share

2009 Intern Program Results

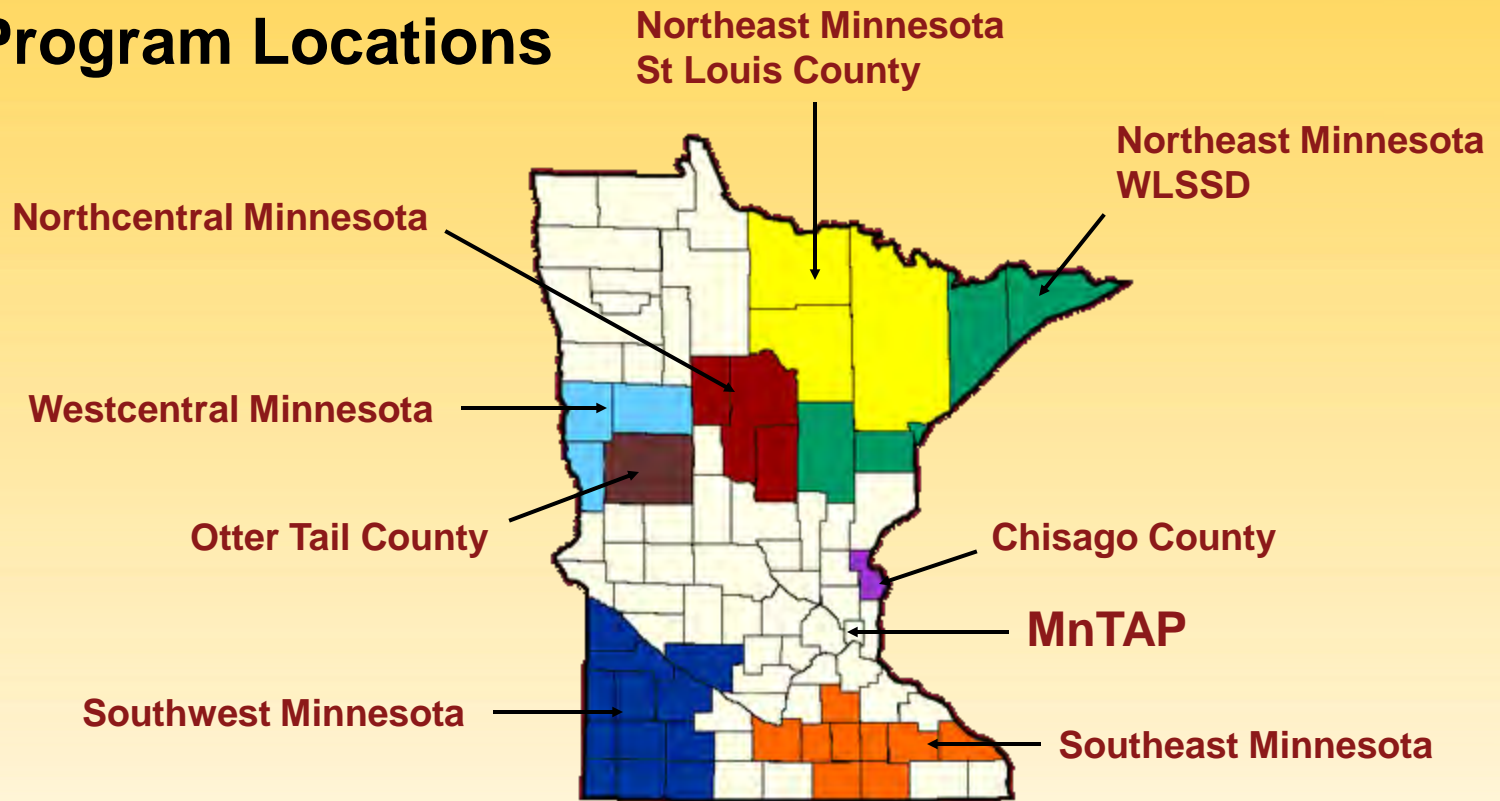
Waste Type	Implemented	Projected
Waste (lbs)	150	293,162
Air emissions (lbs)	6,363	52,363
Water (gal)	3.4 million	8.2 million
Energy (kWh)	48,130	1.2 million
Energy (therms)	3,000	79,000
Costs	\$27,177	\$681,822

Internal Team Facilitation

- Engages staff members
- Able to investigate numerous issues
 - Wastewater
 - Energy
 - Raw material use
- Technical assistance provided by MnTAP
- Can build support for P2 and E2 activities

Materials Exchange Alliance

Program Locations



mnexchange.org

Items Typically Listed

- 3-ring binders
- Bubble wrap
- Computers
- Drums/buckets
- Gaylord boxes
- Office furniture
- Packing peanuts
- Pallets
- Super sacks
- Wood scraps



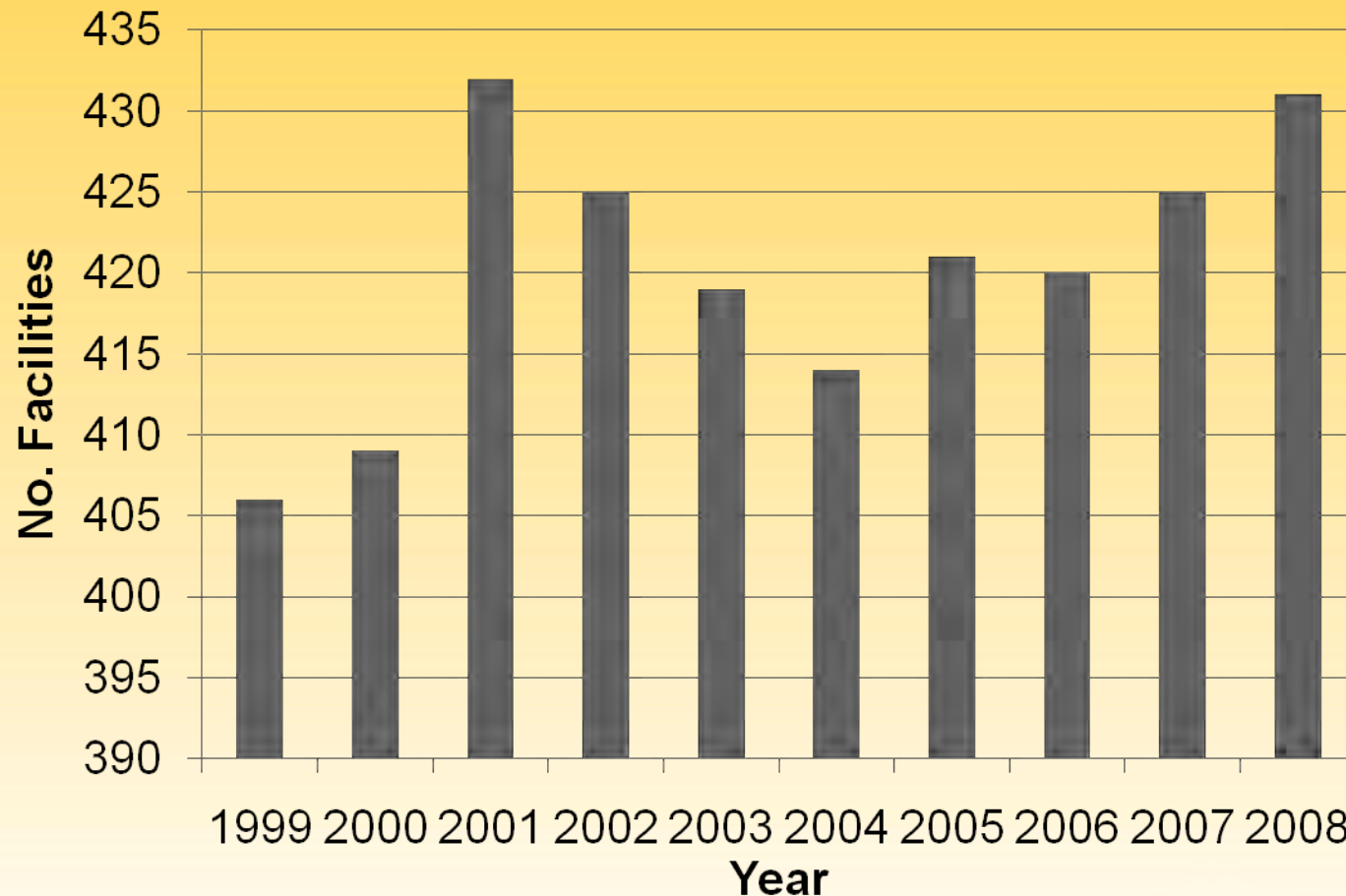
MnTAP's 2009 Impact

- 4.0 million lbs waste and emissions reduced
- 511,700 lb reused
- 17.6 million gal water conserved
- 1.7 million kWh and 99,000 therms energy conserved
- \$1.1 million saved

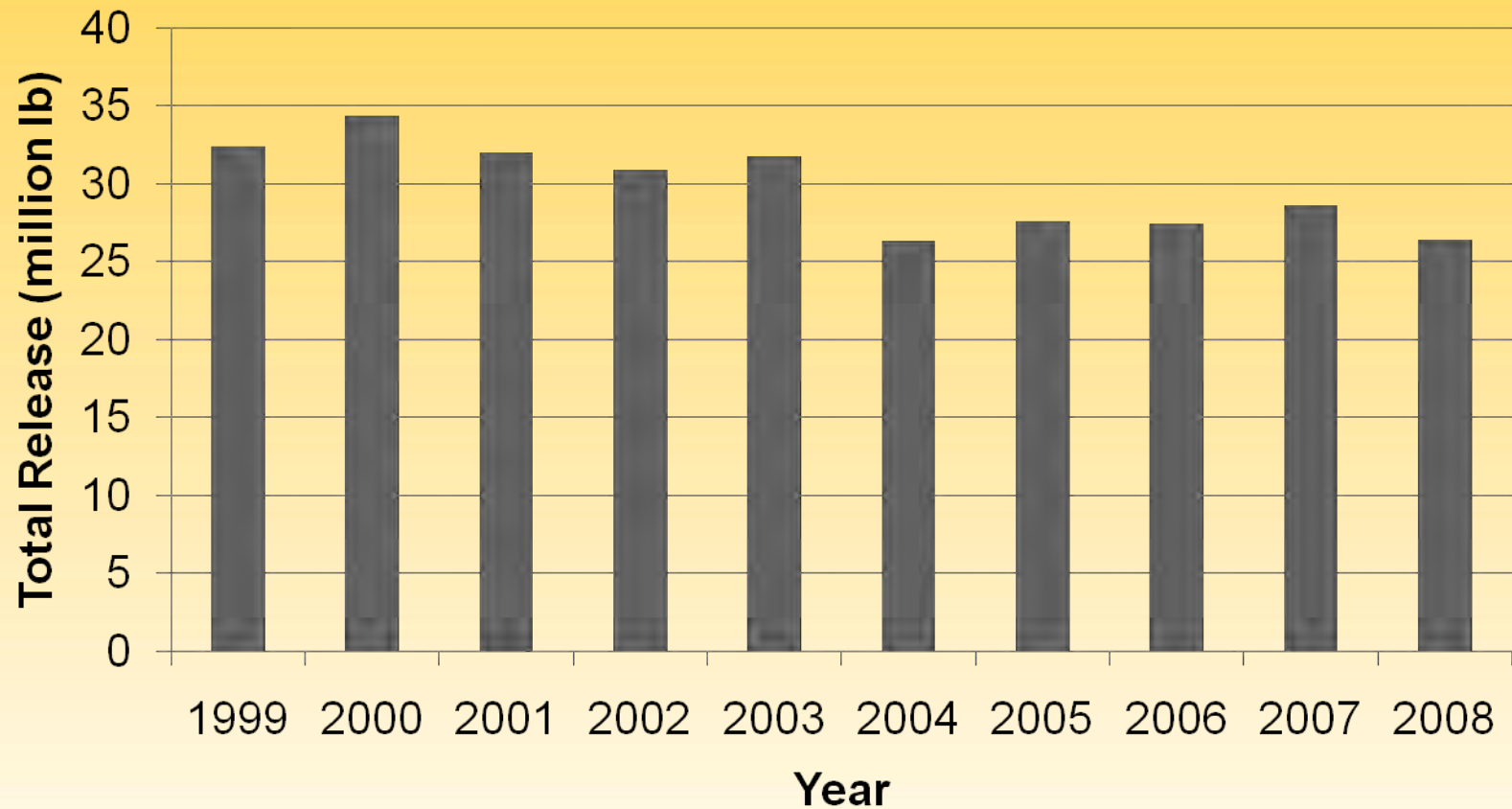
MnTAP's Overall Results

- Activities
 - Site visits: 3,200
 - Interns: 170 students
- Outcomes
 - Waste reduced: 383 million lb
 - Water conserved: 446 million gallons
 - Energy conserved: 34 million kWh; 1.2 million therms
 - Cost savings: \$29 million

Minnesota TRI Facilities



Minnesota TRI Releases



Benchmark Electronics, Winona

- Manufactures:
 - Electronic assembly services prototype and circuit boards
- Activity:
 - Used MPCA grant to convert to lead-free solder assembly in response to European standards
- Results:
 - Reduced 50 lbs lead per year
 - Reports less on TRI in subsequent years

Tennant Co., Golden Valley

- Manufactures:
 - Floor cleaning equipment
- Activity:
 - Switched from liquid painting to powder coating (used MnTAP intern to evaluate process improvements)
- Results:
 - Reduced 12 tons of hazardous air pollutants, including elimination of 20,000 pounds of xylene releases
 - No more TRI reporting or TPPA fees
 - Received MPCA Governor's Award in 2006

Streater, Albert Lea

- Switched from liquid to powder coating of metal parts
- Cut 2005 VOC emissions by 40% from 40 TPY to 23 TPY
- System cost = \$3.5 million; ahead of schedule on 6 year payback

Halcon, Stewartville

- Manufactures:
 - Wooden office furniture
- Activity:
 - Worked with supplier to change formula of wood coatings (used MnTAP intern to evaluate alternatives)
- Results:
 - Reduced releases of toluene and xylene from 1997 high of 50,000 lbs to non-reportable by 1999

MnTAP Assistance to Agencies

- Metropolitan Airports Commission
- Metropolitan Council Environmental Services
- MN Dept of Corrections, MinnCor
- MN Dept of Transportation
- MN Dept of Human Services
- MN Dept of Military Affairs

Opportunities for Toxicity Reduction

- Fleet maintenance
- Janitorial cleaning supplies
- Laboratories
- Furniture finishing

IPPAT Toxic Products Subcommittee

- Each state agency shall reduce the type and amount of toxic products used in fleet maintenance, laboratories, and building and grounds maintenance/operations by 10% over the next 5 years, using the preceding 5 years as baseline.

Veteran's Hospital



MN Dept of Military Affairs

- Maintenance shops
 - Absorbent use
 - Antifreeze
 - Batteries
 - Depainting
 - Parts cleaning
 - Spray painting
 - Used oil/fuel blending
- Other
 - Ammunition
 - Equipment washing
 - Food waste
 - Weapons cleaning

Toxicity Reduction

- Green ammo: lead based to tungsten
- Gun washer solvent reduction through BMPs
- Paint stripping: abrasive sand blasting to ultra high power water blasting
- Spray painting training
- Weapons cleaning: solvent cleaning (plus hand cleaning) to ultrasonic water based cleaning

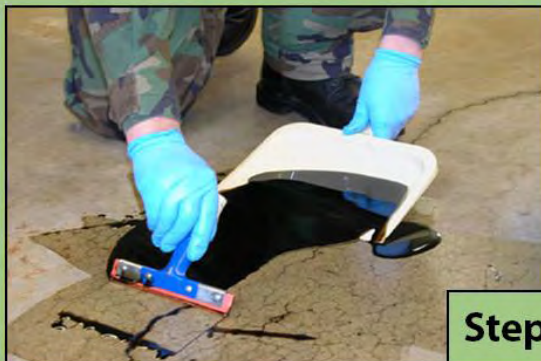


Oil Spill Cleanup



Use less floor dry
by picking up
POL as a liquid,
first.

Half-Mast



Step 1



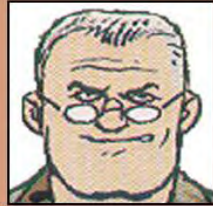
Step 2



Step 3



Absorbent Reuse



Reuse oil
absorbent
until it looks
like burnt
coffee grounds.

Half-Mast



Reusable



Saturated

Contact environmental staff for disposal or recycling



MN Dept of Corrections

- Stillwater
 - Metal fabrication
 - Wood shop/furniture painting (Minncor)
 - Steam trap audit
- Faribault
 - Management and compliance
 - Reduction of phosphorus

MN Dept of Human Services

- Pharmaceuticals
 - Proper disposal and compliance
 - Reduction via inventory control

Metropolitan Airport Commission

- Maintenance shop
 - Eliminated chlorinated cleaner
 - Battery enhancement technology
 - Liquid clean up prior to absorbent use
 - Paint management

Met Council Environmental Services

- MCES operates 7 wwtp for the 7 county metro area
- Activities related to the aeration system
 - Reduced DO levels from 2.0 to 1.5 mg/L
 - Installed real time monitoring of DO
 - Greater efficiency with blower operation
 - Diffuser cleaning
- Results:
 - Conserved 13.7 million kWh/yr
 - Saved \$775,000