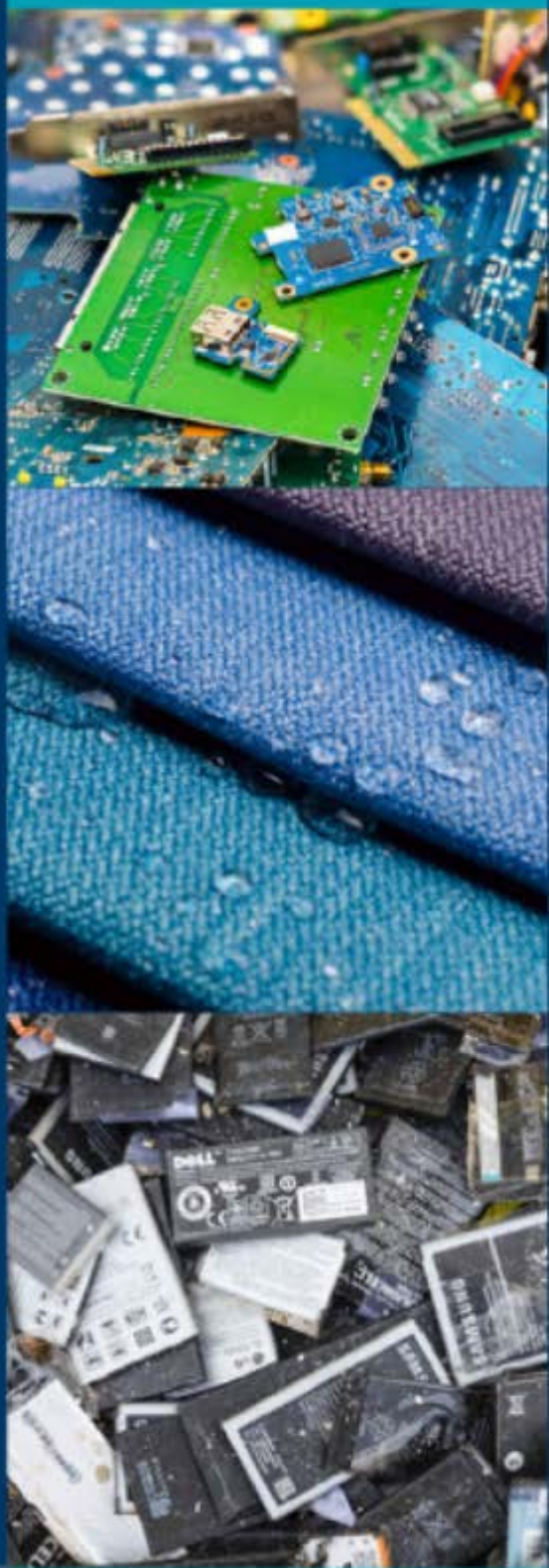
REPORT TO THE LEGISLATURE

FEBRUARY 2026

Toxics and pollution prevention evaluation

A detailed look at MPCA's efforts to eliminate or reduce the sources of pollutants and hazardous wastes at their use, generation, or release.



MINNESOTA POLLUTION CONTROL AGENCY

Toxics and pollution prevention evaluation

Report to the Legislature, February 2026

Legislative charge

Minn. Statutes § 115A.121 Toxics and Pollution Prevention Evaluation Report

The commissioner shall prepare and adopt a report on pollution prevention activities required in chapters 115A, 115D, and 325E. The report must include activities required under section 115A.1320. The commissioner must submit the report to the Senate and House of Representatives committees having jurisdiction over environment and natural resources by December 31, 2013, and every four years thereafter.

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Introduction

This year marks 35 years since the passage of the Toxic Pollution Prevention Act (TPPA) in Minnesota, which authorizes the publication of this report by the Minnesota Pollution Control Agency (MPCA) to evaluate the state's progress in toxics and pollution prevention and recommend additional steps towards achieving the stated policy goals of the TPPA:

"To protect the public health, welfare, and the environment, the legislature declares that it is the policy of the state to encourage toxic pollution prevention. The preferred means of preventing toxic pollution are techniques and processes that are implemented at the source and that minimize the transfer of toxic pollutants from one environmental medium to another."

Significant progress has been made since the last report, submitted to the Minnesota Legislature at the start of 2022.

- In 2023, the passage of Amara's Law set a clear course for phasing out nonessential uses of per- and polyfluoroalkyl substances (PFAS) in products by 2032.
- In 2023, new restrictions on lead and cadmium in consumer products such as toys and school supplies further advanced Minnesota's leadership in toxics reduction.
- Additionally, the Packaging Waste and Cost Reduction Act was passed in 2024, establishing an extended producer responsibility program for packaging and paper products with the strongest provisions related to toxics among the enacted state laws.

These policy wins are now being implemented by MPCA and its partners with rules being promulgated, product testing programs being established, and guidance to ensure compliance and consistency are being developed. As the agency works to meet the directives of these statutes, it is important to allow these new programs time to take root and demonstrate their effectiveness before considering significant changes.

Along with establishing these new programs, work continues on existing efforts.

- The sustainable materials management team grew their capacity for life cycle assessment (LCA) modeling, including developing a tool for food waste management.
- Green and safer chemistry remains a priority along with other efforts to reduce toxics in products and packaging.
- Product testing for lead, cadmium, and PFAS continues to be refined and advanced and new approaches for education and outreach are developed.
- Additionally, our work continues with our partners to assist manufacturers and industrial facilities in conserving energy and water and reducing the amount of pollution being generated in Minnesota.
- Minnesota's Sustainable Purchasing Program embeds safer chemistry, circularity, and climate criteria into state contracts to prevent PFAS, lead, and other toxics at the source.

Key recommendations

If implemented, the following key recommendations represent actions that can be taken in the short term to address immediate needs. These recommendations are made in consideration of both their technical and financial feasibility.

Address concerns and current gaps in PFAS management

Legislative action is needed to give agencies new authorities and additional resources to fill information gaps and narrow PFAS uses to prevent their release and reduce the related human health, environmental, and financial impacts.

- Minnesota should provide technical and financial assistance to businesses to reduce PFAS pollution. Existing frameworks (e.g., Minnesota Technical Assistance Program (MnTAP), Small Business Grant Program) can be expanded to implement PFAS reduction strategies.
- After Amara's Law reporting identifies PFAS-containing products, the State should assess opportunities through targeted contract audits to reduce nonessential PFAS in government purchasing.

Advance Electronics and Battery Stewardship

Minnesota's Electronics Recycling and Rechargeable Battery laws should be updated to include improving recovery of critical materials, reducing fire risks, minimizing human health and environmental impacts, enhancing system-wide safety, recognizing the role of reuse and repair, and ensuring that recycling costs for residents and collectors are covered.

Develop a solar panel recycling law

Reuse and recycling of solar panels should be supported through a comprehensive Minnesota Solar Panel Management law. This legislation should establish a program that ensures a sustainable approach for managing solar panels when they are removed from service. Currently, there are no statewide requirements or funding mechanisms for managing end-of-life solar photovoltaic (PV) modules for installations less than 50 megawatts. The legislation should include a landfill disposal ban and a reuse or recycling requirement, with program funding to be determined, and will not rely on fees assessed at the end of a product's useful life.

Sustainable materials management

Overview

The sustainable materials management (SMM) framework remains a helpful tool for assessing strategies to prevent toxics and pollution. Sustainable materials management is a systematic approach for programming and prioritization of materials use over their entire life cycles – from product design to raw material extraction, to production processes, to use (and reuse), and for best management practices when materials are ultimately discarded. Because SMM focuses heavily on the chemicals, resources, and materials used to manufacture products, this framework presents an opportunity to maximize reductions of toxics and pollution by addressing every stage of a material's life cycle.

Life cycle assessment

One tool that can help reduce toxics and pollution from materials and products is life cycle assessment (LCA). Designers and manufacturers can use LCA analysis methods to determine which phase(s) of their products' life cycles have the largest impact on the environment and what specifically is being impacted (e.g., water, air, human health, etc.). By understanding environmental impacts at each stage (e.g., raw material extraction, manufacturing, transportation, use, disposal), designers can work to reduce or eliminate toxics and pollution from a material's lifecycle. Using LCA in this way can sometimes be challenging because reducing one environmental impact can potentially increase another, so trade-offs, priorities, and desired outcomes must be considered carefully. Examples of SMM-based material considerations could include designing for repairability to increase product lifespans or increasing process efficiency to reduce quantities of toxic materials used in manufacturing, rather than only focusing on toxicity after the material arrives at a landfill or waste to energy facility.

Figure 1. Toxics waste and other pollutants can be emitted at every phase of a product's life.

Intersection of pollution prevention and solid waste

Minnesota is a leading state in both pollution prevention and managing solid waste. Two distinct statutes guide these activities, Minn. Stat. §§ 115D and 115A respectively.

The goal of the TPPA, Minn. Stat. § 115D, is twofold:

1. To protect the public health, welfare and environment by preventing toxics from being made or used and minimizing the transfer of toxic pollutants from one part of the environment to another.
2. To increase awareness of the need and benefits of pollution prevention and coordinate all elements of government, industry, and the public in carrying out pollution prevention activities.

By this statute, Minnesota defined prevention as the preferred approach for minimizing toxics and their harm. This prevention principle is also stated in Minnesota's solid waste statute. Minn. Stat. § 115A states that waste reduction is the preferred method for waste management (Minn. Stat. § 115A.02) and for reducing the toxicity of that waste, defining waste reduction (Minn. Stat. § 115A.03, subd. 36b) as "an activity that prevents generation of waste or the inclusion of toxic materials in waste" and includes:

1. Reducing material or the toxicity of material used in production or packaging.

2. Changing procurement, consumption, or waste generation habits to result in smaller quantities or lower toxicity of waste generated.

Although these activities are in the Waste Management statute, they are pollution prevention activities because they refer to steps taken before materials become waste. Like the TPPA, the Waste Management Act includes toxicity reduction through product design, production process, and purchasing choices. In this way Minnesota statute guides MPCA to address solid waste and pollution/toxics from an SMM lens.

In an SMM approach, people from each stage of a product's lifecycle can partner to reduce the material's environmental impact. The MPCA's Pollution Prevention Program has always worked with a wide variety of partners — from primary chemical formulators and academic researchers to brand owners, to retailers and consumers. The MPCA Solid Waste Program has picked up from there, to work with reuse businesses, recyclers, and disposal facilities for all types of wastes. Ideally both programs operate with partners across the complete life cycle of products, prioritizing upstream opportunities given the potential for the greatest environmental benefit. In this way, the SMM lens helps integrate pollution prevention and solid waste management by encouraging MPCA staff to consider materials' overall impacts from all perspectives and improve environmental outcomes accordingly.

One example that highlights the importance of considering both solid waste and pollution prevention perspectives is the use of flame retardants in plastic casings for electronic products. Flame retardants have been linked to a myriad of health effects impacting mental and physical development, reproductive development and potentially causing cancer. If the plastic from those casings is recycled, which would generally be preferred to disposal in our solid waste management hierarchy, then the flame retardants they contain can end up in other plastic products such as cookware or children's toys, leading to hazardous chemicals exposure. To avoid reincorporating flame retardants into products that increase the potential for human health and environmental risks, management by disposal may be the better choice.

The pollution prevention perspective would ask whether flame retardants are truly necessary to use in plastic casings. Alternatively, they could be confined to uses such as circuit boards, where transmission of electrical current makes fire protection a more obvious necessity, or more inherently fire-resistant materials could be chosen instead of plastic for electronics casings (e.g., stainless steel, aluminum, titanium) to reduce risks.

Limitations

Taking a systemic view of environmental problems can point out where environmental impacts are occurring, and LCA can inform which impacts are most significant. These tools, however, cannot tell us which impacts to prioritize. That is ultimately a question of judgement and values, not analysis. Additionally, while use of LCA and taking an SMM perspective yields information on environmental impacts and helps policy makers focus efforts on high leverage opportunities, neither SMM nor pollution prevention principles provide information on other important factors such as environmental justice or economic considerations. Though the focus of the MPCA is primarily on the environment and human health, the MPCA has and will continue to consider implications for all these factors when making decisions on policy, planning, and implementation. In addition, while toxicity impacts from chemicals in products is not a standard part of many LCA models at this time, it is an important factor to take into consideration in terms of chemical impacts to the environment and human health and is something the MPCA hopes to incorporate in our developing LCA work as the modeling evolves.

Updates & accomplishments

Food Waste Management LCA Tool

Products can be designed to be more sustainable from both a pollution prevention and a solid waste perspective; however, all items must eventually undergo an end-of-life management method. Typically, these methods include recycling, landfilling, and waste to energy, each of which have tradeoffs between their benefits and their environmental and human impacts. Pursuing a multifaceted understanding of these impacts can inform which management method is chosen for a material and can guide local policy and investment decision-making. With this understanding, between 2023-2025, the MPCA collaborated with a contractor (Resource Recycling Systems and Eastern Research Group) to develop a MN-specific Food Waste Management Life Cycle Analysis Tool, a tool that dynamically calculates the life cycle environmental impacts of food waste management pathways across 13 different impact categories.

Currently, Minnesota's primary methods for managing food waste are composting and landfilling. The MN-specific Food Waste Management Life Cycle Analysis tool allows for a comparison of baseline and user-customizable parameters between these two management methods across impact categories such as acidification, freshwater ecotoxicity, climate change, human health and more. With this tool, a user can determine which food waste management options minimize the impact of greenhouse gas (GHG) emissions, and many other pollutants which are harmful to both humans and ecosystems. The tool also allows for the same comparison to be done between other management methods, including waste to energy and anaerobic digestion (additional food waste management options that exist in Minnesota). This tool demonstrates MPCA's dedication to pursuing a holistic approach for determining ideal materials management options with a consideration of the various environmental pollution and human health impacts that occur during a material's end of life management options.

Expansion of LCA staff expertise at MPCA

The MPCA is a data-driven agency and LCA modeling allows us to use data to decide the best ways to manage materials, including prevention, reuse, recycling, composting, waste to energy, and landfilling. Prioritizing the adoption and expansion of life cycle thinking at the agency is critical to projecting and measuring the environmental impacts of materials, products, and Minnesotans' consumption.

One concept related to LCA is the Consumption Based Emissions Inventory (CBEI); this is a type of greenhouse gas analysis that factors in the life cycle emissions released by goods consumed in Minnesota, regardless of where in the world items are produced. In contrast, Minnesota's current GHG inventory data does not factor in these "out-of-boundary" life cycle emissions. The MPCA is exploring concepts like CBEI in addition to LCA to pursue a clearer understanding of the full GHG impacts of materials flowing through our economy.

The MPCA hired an Environmental Data Scientist focused on SMM priorities in 2025. This staff expansion will provide the agency with more data on the impacts of various reuse and prevention activities as compared to recycling, anaerobic digestion, or disposal. Additionally, the position will continue strengthening data capabilities within MPCA and materials management work, including annual reporting and efforts such as LCA and CBEI.

Proposed and secured one-time funding for materials management and solid waste grant projects

During the 2023 legislative session, the MPCA proposed and was awarded $21.9M in one-time grant funding for materials management and solid waste projects. The MPCA offered several grants focused on reducing the environmental impacts of materials and solid waste across the state between July 2023 and June 2025.

Updated Statewide Waste Characterization Study

In 2025, the MPCA began conducting a new waste characterization study, evaluating the types of materials generated and discarded in Minnesota and their relative prominence in Minnesota's waste stream. The MPCA last conducted a statewide waste characterization study in 2013; the updated study will compare past results. The final waste characterization report will be useful to assess our waste stream, evaluate programs, and identify opportunities for improvement. The report will position the MPCA and stakeholders to make informed and strategic decisions on which materials to prioritize for prevention and recycling programs. The updated characterization data will help us both assess how prominent a material is and, in combination with the U.S. Environmental Protection's Agency's (EPA's) Waste Reduction Model (WARM) or other LCA tools, what the environmental impacts of those materials are. This will position us to focus on the most impactful materials and the most impactful management methods. The data will inform where we prioritize staffing and funding resources, the programs we and partners offer, and outreach and education efforts that support prevention and/or recycling programs.

Opportunities

Sustainable materials management is about intentionally looking at materials and products from a systemic perspective instead of through the narrow lens of a single discipline's vantage point. By considering toxics and pollution prevention decisions through an SMM lens, the MPCA can work to reach the best possible overall outcomes for people and the environment by factoring in a variety of perspectives. With this in mind, recommendations for future work include:

1. Grow LCA staff expertise at MPCA to strengthen data capabilities and materials management work, including expanding LCA efforts and updating the CBEI to guide MPCA's SMM programming. These data initiatives complement Minnesota's traditional in-boundary GHG inventory in two key ways. First, they provide estimates of greenhouse gas emissions from a consumption lens, capturing the full lifecycle emissions of the production and transportation of goods. Second, they estimate emissions occurring outside of Minnesota due to the consumption of goods imported into the state.

Sustainable government purchasing

Overview

Procurement decisions represent one of the most direct and effective ways to prevent toxic pollution at its source, long before materials enter manufacturing or disposal systems. Sustainable government purchasing applies the principles of pollution prevention to real-world decision-making, ensuring that Minnesota's public dollars are spent on products and services that reduce toxics, conserve resources, and improve performance across their full life cycle.

Minnesota's Sustainable Purchasing Program (SPP), a joint initiative of the Minnesota Pollution Control Agency (MPCA), the Department of Administration's Office of State Procurement (OSP), and the Office of Enterprise Sustainability (OES), integrates environmental, social, and fiscal responsibility into new and renewing state contracts. The program ensures Minnesota's $3 billion in annual purchasing power delivers durable, low-toxicity, and cost-effective products that protect health and reduce waste.

The program helps agencies evaluate the total cost of ownership (TCO) of products including maintenance, replacement, and end-of-life costs. Products with lower toxicity, longer lifespans, and higher recyclability often reduce disposal expenses and liability risks. This approach embodies the TPPA's core principle of preventing pollution at the source while delivering long-term value for taxpayers.

Executive Order 19-27 directs state government to conserve energy and water and reduce waste. To meet these goals, Minnesota shifted from tracking spend on a limited set of contracts to evaluating the potential sustainability criteria of all solicitations. The new enterprise goal requires that at least 50 percent of eligible new and renewed contracts includes one or more sustainability elements by 2031. This approach aligns sustainability with fiscal stewardship, operational efficiency, and good governance, which are principles that resonate across political and agency priorities.

Program Evolution and Program Successes (Fiscal Year 2024–2025)

In Fiscal Year (FY) 2025, program staff identified 51 state goods and services contracts with sustainability potential and integrated sustainability criteria into 34, spanning products and services such as apparel, furniture, flooring, printing, deicers, conferences, and vehicle rentals.

Electronics: Updated statewide contracts now require Electronic Product Environmental Assessment Tool (EPEAT)-registered and ENERGY STAR®-certified devices. Participation in the Global Electronics Council standards process ensured new criteria addressing PFAS elimination, recyclability, and energy performance.

Furniture: The program worked with OSP to restrict the "hazardous handful" of chemicals (flame retardants, formaldehyde, fluorinated chemicals, antimicrobials, and PVC). These specifications reduce worker exposure and long-term disposal costs while improving indoor-air quality and product longevity.

Cleaning products: Contracts continue to require EPA Safer Choice®-certified formulations. The program is monitoring federal funding for Safer Choice and evaluating equivalent certifications (Green Seal, UL ECOLOGO®) to maintain continuity.

Vendor and buyer outreach: In partnership with the APEX Accelerator—an initiative offering Minnesota businesses targeted technical and marketing assistance to compete for public-sector contracts—the SPP delivered two vendor training sessions. These sessions helped suppliers understand sustainability criteria and compete effectively for state opportunities. Meanwhile, the restructured Responsible Public Purchasing Council now enables state and local procurement staff to share best practices and review upcoming solicitations together.

Transparency and recognition: The Office of Enterprise Sustainability publicly reports progress each year at sustainability.mn.gov. Joint MPCA-OSP-OES teams also sponsor annual Sustainability Awards honoring agencies that demonstrate leadership in efficient, low-toxicity purchasing.

Outlook

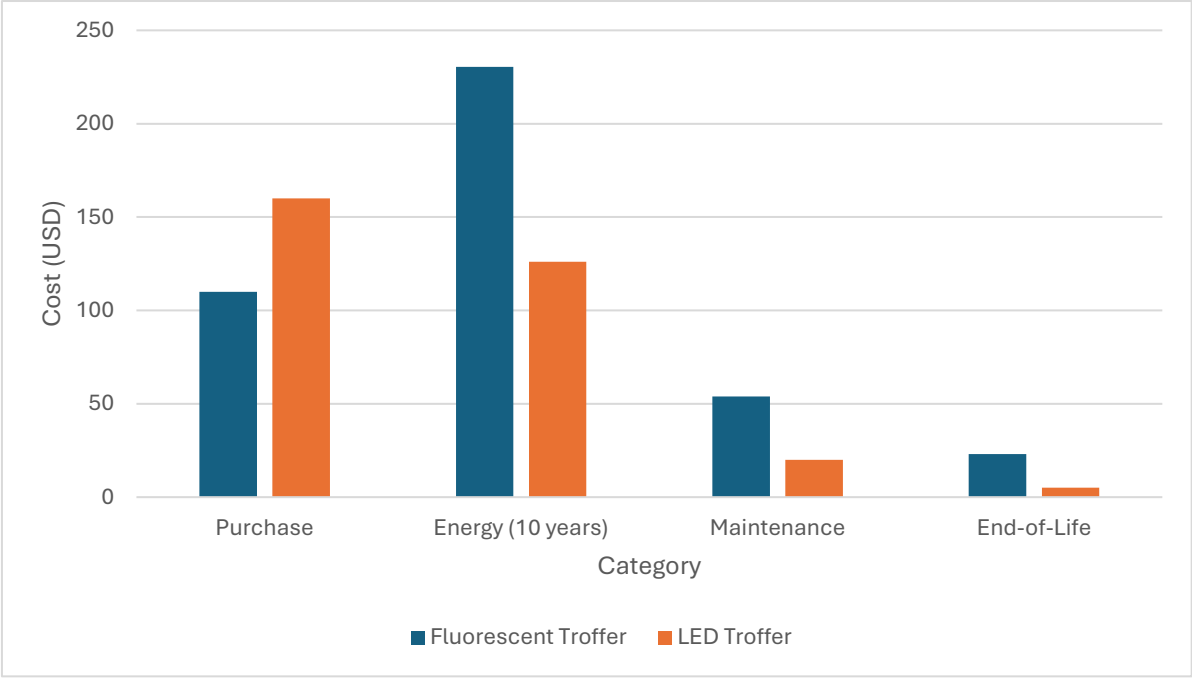
By embedding sustainability and total-cost-of-ownership principles into every stage of procurement, from solicitation through end-of-life, Minnesota is transforming public purchasing into a tool for efficiency, fiscal responsibility, and pollution prevention. Continued collaboration among MPCA, OSP, and OES will sustain progress toward the 2031 enterprise goal and ensure that sustainability criteria complement, not complicate, state purchasing processes.

This integration also complements MPCA's other toxics-prevention programs. Procurement standards that eliminate PFAS, high-global warming potential refrigerants, and hazardous additives in state-purchased goods align directly with Minnesota's green chemistry and toxics-in-products initiatives, while advancing the same objectives as the state's Sustainable Materials Management framework.

The result is a balanced model of smart governance: spending public dollars efficiently, preventing pollution before it occurs, and protecting Minnesotans' health and environment. Below are two examples:

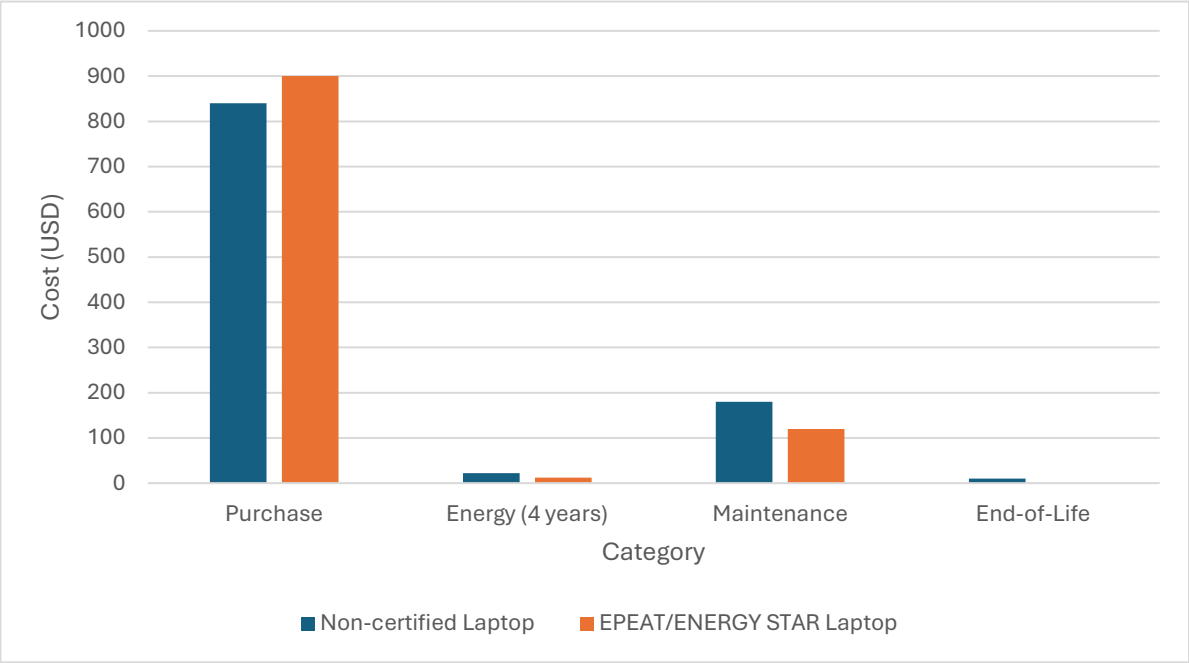
Light-emitting diode (LED) fixtures cost roughly 25 percent less to own and operate, avoiding relamping and hazardous-waste fees.

Chart 1. Total Cost of Ownership: LED vs Fluorescent Troffer over 10 years



Selecting EPEAT/ENERGY STAR-certified laptops saves about $800,000 each refresh cycle across 40,000 devices through reduced maintenance, energy use, and free take-back programs.

Chart 2. Total Cost of Ownership: Enterprise Laptop Purchases over 4-year cycle



Sustainable procurement complements traditional pollution prevention programs by tackling waste and toxics at the source, long before they enter manufacturing or disposal systems. Through practical, cost-effective purchasing choices, the state demonstrates how environmental stewardship, public health protection, and fiscal responsibility can work hand in hand.

Opportunities

While the sustainable purchasing continues to make progress, its ability to deliver long-term data-driven results is limited by current staffing levels. The temporary position supporting sustainable purchasing work is scheduled to end in June 2026, which would leave the program without dedicated capacity for statewide reporting, training, and vendor engagement. Sustained staff time is necessary to continue building the tools, guidance, and outreach efforts that help agencies and Minnesota businesses understand and apply sustainability criteria. Strengthening this capacity directly supports the recommendation to expand reporting and outreach and is essential to ensuring that sustainability requirements are consistently implemented.

The program also seeks to deepen its capacity for lifecycle analysis and sustainability modeling. As discussed in the Sustainable Materials Management section, Minnesota is investing in LCA tools and shared analytical expertise to better understand the full environmental impacts of materials and products. However, the program currently accesses only a limited share of this modeling support. Expanding program skills and access to these tools will enable staff to conduct Minnesota-specific assessments of greenhouse gas, toxicity, and waste reduction potential across purchasing categories. This analytical foundation is necessary to integrate lifecycle finding directly into solicitation design and evaluation, ensuring that purchasing decisions reflect true environmental and fiscal impacts.

Together, expanded staff and analytical capacity will enable to Sustainable Purchasing Program to fulfill the recommendations outlined in this report:

- Strengthen reporting, training, and outreach to support agencies, tribal governments, cooperative purchasing venture (CPV) members, and targeted group/economically disadvantaged/veteran-owned (TG/ED/VO) businesses

- Expand lifecycle analysis and sustainability modeling capacity to guide more transparent, data-driven, and measurable procurement decisions.

These investments will ensure Minnesota's purchasing system fully aligns with the state's toxics reduction, pollution prevention, and sustainable materials management goals.

Statewide trends for Toxic Release Inventory (TRI) reporting facilities

The MPCA evaluates data from facilities reporting to the EPA to determine trends in quantities of chemicals generated and released. Facilities that report to TRI are typically larger facilities involved in manufacturing, metal mining, electric power generation and hazardous waste treatment. In general, chemicals covered by the TRI Program are those that cause:

- Cancer or other chronic human health effects
- Significant adverse acute human health effects
- Significant adverse environmental effects

There are currently over 800 chemicals covered by the TRI Program. Facilities that manufacture, process or otherwise use them in amounts above established levels must submit annual TRI reports on each chemical. The 2018-2022 data from Minnesota's approximately 500 reporting facilities suggest that after peaking in 2018, both chemical releases and generation declined in both 2019 and then more significantly in 2020, but have since started trending back upwards, though so far not to 2019 levels.

Manufacturing sector: TRI chemicals generation

For the purposes of TRI reporting, toxic chemical generation is defined as the sum or aggregate of the quantities for each waste management method employed, which includes releases (direct release to air, water, or land); on-and-offsite recycling; treatment; and burning for energy recovery. In general, Minnesota's P2 efforts focus on working with manufacturers to reduce waste through improving the efficiency of production processes or finding ways to use less or non-toxic chemicals in those processes.

Chart 3: Statewide trends for TRI chemicals generated by manufacturers

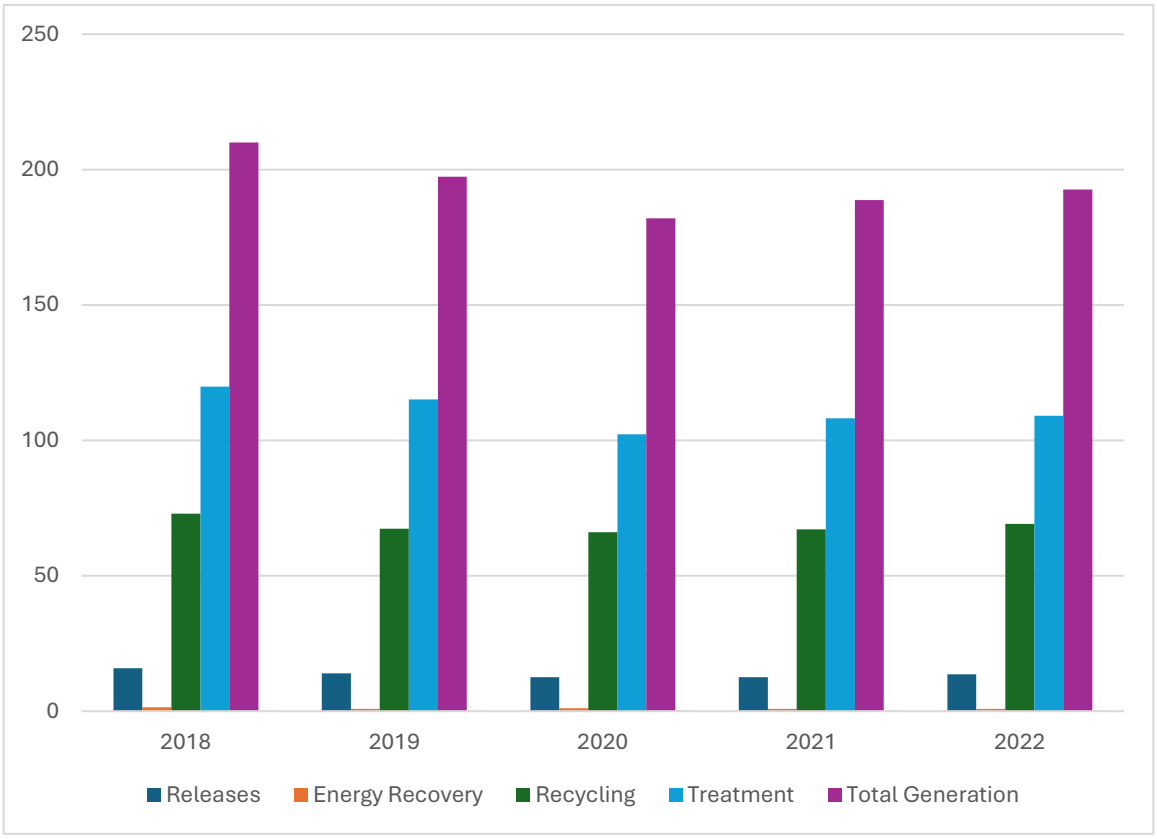


Table 1. Management method of TRI chemicals generated by manufactures (in millions of pounds)

year	2018	2019	2020	2021	2022
releases	15.9	14	12.6	12.6	13.6
energy recovery	1.4	0.9	1.1	0.8	0.9
recycling	72.9	67.4	66.1	67.1	69.1
treatment	119.8	115.1	102.2	108.2	109.1
total generation	210	197.4	182	188.7	192.7

(note: reported by manufacturers)

As Chart 3 shows, waste generated by manufacturers started to decline in 2019, showing a 6% decrease from 2018. However, after reaching a low of 182 million pounds in 2020, total generation has shown a steady rebound.

As discussed in the previous edition of this report, TRI waste generated by manufacturers is becoming increasingly concentrated among a small number of facilities. For 2022, 79 percent of the nearly 193 million pounds of waste reported to TRI by manufacturers comes from just ten of the 508 facilities that report to the TRI. Almost 27 percent comes from just one facility, Flint Hills Resources, with the remainder representing industry sectors such as: petroleum distribution, laminated plate and sheet manufacturing, pulp and paper mills, water purification equipment manufacturing, coated and laminated paper manufacturing, small arms manufacturing, poultry processing and biodiesel manufacturing.

All industrial sectors: TRI chemicals generation

The manufacturing sectors that report generating the most TRI wastes in Minnesota include petroleum refining, biodiesel manufacturing, laminated plate and sheet manufacturing, pulp and paper mills, small arms manufacturing and coated and laminated paper manufacturing. The chemicals for which the most waste was reported to be generated are methanol, lead compounds, ammonia, hydrogen sulfide and n, n-dimethylformamide.

Table 2. Total amount of TRI chemicals generated by all reporters (in millions of pounds)

year	2018	2019	2020	2021	2022
manufacturers	210	197.4	182.2	188.6	192.9
non-manufacturers	13.7	10.6	8.1	11.6	10.7
recyclers	46.7	50.1	48.5	51.6	53
waste treatment	22	18.7	14.2	14.2	3
total all reporters	292.4	276.8	253	266	259.6

As Table 2 shows, waste generation from non-manufacturers (primarily electric utilities) mostly declined from a high in 2018 to 2022. It is expected this group will continue to generate less waste as more of the coal-fired generating facilities are removed from service. Toxic Release Inventory chemical generation from waste treatment facilities declined significantly as 3M-Cottage Grove winds down their hazardous waste incinerator operations. Waste generation from recyclers leveled off from 2018-2022 after seeing a significant increase from 2015.

All industrial sectors: TRI chemical releases

Like the waste generation trends seen in Table 2, we can see in Table 3 that releases from non-manufacturers (primarily electric utilities) mostly declined as more coal-fired generating plants were taken out of service. Similarly, releases from waste treatment declined like we saw with waste generation.

Releases from manufacturers held steady, while releases from recyclers doubled, largely from additional chemicals being reported by Gopher Resource, but remain a small fraction of the overall state total.

Table 3. Total amount of TRI chemicals released by all reporters (in millions of pounds)

year	2018	2019	2020	2021	2022
manufacturers	15.9	14	12.8	12.6	13.6
non-manufacturers	9.5	8.1	6.2	7.3	6.7
recyclers	0.9	0.8	0.8	1.9	2
waste treatment	1	0.8	0.8	0.4	0.3
total all reporters	27.3	23.7	20.6	22.2	22.6

Pollution prevention accomplishments

As noted above, Minnesota's P2 efforts focus on working with manufactures to reduce waste. This is accomplished primarily through our partnership with the Minnesota Technical Assistance Program (MnTAP) at the University of Minnesota. Minnesota Technical Assistance Program helps Minnesota businesses and organizations develop and implement tailored solutions that prevent pollution at the source, maximize efficient use of resources – including water and energy – reduce costs, and improve public health and the environment.

Table 4. MnTAP impacts 2020-2024

Number of companies assisted		**1,431**
	Recommended	*306,476,000*
Water reduction (gal)	**Implemented**	**131,194,000**
	Recommended	*36,435,000*
Electric energy reduction (kWH)	**Implemented**	**34,074,000**
	Recommended	*1,409,000*
Gas energy reduction (therms)	**Implemented**	**854,000**
	Recommended	*134,765,000*
Waste reduction (pounds)	**Implemented**	**8,475,000**
	Recommended	*$13,392,000*
Cost savings	**Implemented**	**$6,158,000**

The MPCA has partnered with MnTAP on several projects in recent years that were funded by EPA pollution prevention grants. These projects were all developed with an emphasis on environmental justice to align with agency priorities to help ensure that every Minnesotan has the right to healthy air, sustainable lands, clean water and to reduce disparities in pollution burdens among Minnesota's communities.

Over 2023 and 2024, MnTAP worked with facilities in the food processing sector, completing 13 facility assessments, 11 of which are located in underserved communities and four of which were summer intern projects. To date, MnTAP has helped these companies identify opportunities for over 20 million gallons in water savings, 4,800 MTCO2eq in greenhouse gas reductions and reduced hazardous materials use by 99,000 pounds, all of which would combine for a cost savings of $1.38 million annually.

In 2023, MPCA and MnTAP began a project to help manufacturers find safer alternatives to PFAS. While implementation of PFAS alternatives is a slow process, the project to date has provided technical assistance to 20 facilities, ten of which are located in underserved communities. An additional grant was awarded to

MPCA and MnTAP in January 2025 for continued technical assistance work on PFAS alternatives for the metal finishing industry sector.

In January 2024, MPCA and MnTAP teamed up with the Center for Energy and Environment (CEE) to begin a project to provide technical assistance to facilities located in underserved communities that operate natural gas-fired boilers for heating. This project will reduce fine particle pollution (PM 2.5) and nitrogen oxides (NOx) through enhanced boiler tune-ups that increase efficiency. To date, six of 20 planned boiler tune-ups have been completed, and case studies are being developed along with other documentation that will be used in a toolkit that allows this project to be replicated in other communities.

Toxics in packaging

Overview

In 1992, the Minnesota Legislature passed the "Prohibitions on Selected Toxics in Packaging" law (Minn. Stat. § 115A.965, 1992 Session Laws Ch. 337, Sec. 50). The enacted law was based on Model Legislation drafted two years earlier by a working group created by the Coalition of Northeastern Governors (CONEG), with active cooperation of a wide range of stakeholders from environmental groups, industry, and governmental agencies. The law prohibits the intentional introduction of lead, cadmium, mercury, or hexavalent chromium into packaging, or the components of packaging offered for sale or distributed for promotional purposes. It also prohibits the incidental presence of these metals at concentrations exceeding 100 parts per million (ppm) total by weight for the four metals.

Minnesota is one of 19 states that have adopted toxics in packaging legislation based on the model. Because most packagers and package manufacturers selling into the U.S. market distribute to at least one of the 19 states, major domestic packaging manufacturers and distributors view the packaging laws as a national standard in the absence of federal legislation. This was one of the first laws enacted in Minnesota to pursue a "source reduction" strategy, which strives to keep unwanted materials (e.g., lead, cadmium, mercury, or hexavalent chromium) out of the recycling and waste streams entirely by eliminating the use of those unwanted materials in the first place. The law applies to manufacturers, distributors, and suppliers of packaging, and manufacturers of packaged products. The law requires these parties to maintain on file current certificates of compliance that show they are following the packaging laws.

Joint action

In 1992, several states with enacted laws formed the Toxics in Packaging Clearinghouse (TPCH) under the auspices of CONEG to provide coordinated and streamlined implementation of each state's toxics in packaging law. Administration of TPCH was transferred to the Council of State Governments, and then to the Northeast Recycling Coalition in 2005. In 2022, the member states decided to transfer administration of the Clearinghouse to NEWMOA, the Northeast Waste Management Officials Association. Many of the state members are members of NEWMOA. Northeast Waste Management Officials Association also administers the Interstate Chemicals Clearinghouse [IC2] and the two organizations have many state members in common and common interests in chemical environmental and health impacts, uses, regulation, and phaseout.

Maryland joined TPCH in May 2022 after the General Assembly enacted a PFAS phaseout law including food-contact packaging, so currently there are ten state members of the Clearinghouse and nine states that have toxics in packaging laws but are not members of the Clearinghouse.

Table 5. States with toxics in packaging legislation

TPCH Member States	Not TPCH Members
1. California	1. Florida
2. Connecticut	2. Georgia
3. Iowa	3. Illinois
4. Maryland	4. Maine
5. Minnesota	5. Missouri
6. New Hampshire	6. Pennsylvania
7. New Jersey	7. Vermont
8. New York	8. Virginia
9. Rhode Island	9. Wisconsin
10. Washington	

Model legislation

As described in the 2022 TPPER, between 2017 and 2021, TPCH members engaged in internal and external discussions and a public comment opportunity for the purpose of updating the model legislation to address new chemicals of concern in packaging. In 2021, TPCH released its model legislation update. The new model includes the family of PFAS chemicals and the family of ortho-phthalate chemicals. Both of these were added based on the models of legislation enacted in Washington and Maine in 2017 and 2019, respectively. The 2021 model also includes environmental and health criteria for identifying new chemicals to phase out of packaging and processes for adding them to state legislation by law or rule. The updated model can be viewed or downloaded from the TPCH website, https://toxicsinpackaging.org/

Updates and accomplishments

Since the 2022 TPPER, the MPCA has not initiated or engaged in any enforcement actions under the law. However, starting in mid-2023 the New Jersey Department of Environmental Protection (NJDEP) implemented a project to screen packaging components with X-ray fluorescence (XRF) technology. The screening project is focused on packaging in discount stores, including packaging for food and imported products. The NJDEP found a number of packages with elevated levels of lead and cadmium that were confirmed through laboratory testing. Compliance and enforcement discussions are ongoing between the DEP and the retailers and product manufacturers. Most of the products in question were immediately removed from store shelves and distribution centers and have not been found in other TPCH member states. This illustrates the ongoing need for the legislation and the need to continually monitor compliance across the country.

PFAS in food packaging laws and TPCH coordination with the Interstate Chemicals Clearinghouse and other states

Starting with Washington's law enacted in 2017, about a dozen states have enacted some type of law prohibiting PFAS family chemicals in food contact packaging or food packaging more generally. These laws have considerable variation. Each state's law has a different definition of food packaging - some are restricted to fiber packaging, some are restricted to food contact, some include service ware and similar items. Some laws allow use of the chemicals as processing and manufacturing aids while some do not. Some of them are part of a state's established toxics in packaging law and some are separate. Some are enacted by states that do not have a more general toxics in packaging law. In 2022, TPCH recognized that most of the states with PFAS in food packaging laws were members of TPCH, IC2, or both and began a joint effort with IC2 to coordinate implementation and foster discussion across the states on issues such as product testing and analytical methods for compliance. Toxics in Packaging Clearinghouse and IC2 now coordinate a workgroup that meets on a near-monthly basis.

Minnesota's PFAS in food packaging law was enacted in 2021 as §325F.075 separate from the state's toxics in packaging law in Chapter 115A. However, the MPCA is the primary enforcement authority for the law. The two Minnesota laws are not fully aligned with respect to their definitions of packaging. The definition of 'food packaging' in §325F.075 goes beyond the definition in the toxics in packaging law by including a broader list of packaging functions such as 'deliver' or 'serve' a food or beverage, and a list of 'unsealed receptacles' that serve a packaging function for a food or beverage. The law covers all packaging associated with food products from the primary packaging to tertiary and transport packaging. The goal is to ensure that no food industry packaging includes intentionally added PFAS so that all industry packaging can be managed by recycling, commercial composting, or through any solid waste management method without releasing or carrying PFAS forward into subsequent compost or products made with recycled content. The final law does not prohibit the use of PFAS chemicals as manufacturing and processing aids (PFAS not intentionally added to the packaging).

The toxics in packaging law, the PFAS in food packaging law, and the recently enacted Packaging Waste and Cost Reduction Act do not include the full range of related items used to prepare, serve, or consume a food or beverage product, such as lids, utensils, and straws. In contrast, in 2023, the Legislature amended the plastic bag labeling law in §325E.046 to include a full range of food and beverage products including packaging and service ware in a revamped law addressing labeling and sale of compostable and degradable items.

The 2024 Packaging Waste and Cost Reduction Act ['Packaging Act'] includes a number of provisions intended to ensure that all packaging and covered materials introduced are compliant with all applicable state and federal laws addressing toxic substances, as defined. The MPCA is responsible for informing the stewardship organization of applicable laws and best practices to reduce intentionally added toxic substances as identified in the needs assessment(s). The stewardship organization is responsible for providing producers with technical assistance for compliance and reporting to the stewardship organization, who will in turn report annually to the MPCA. Producers are responsible for compliance and reporting to the stewardship organization on their compliance activities as well as additional voluntary efforts to identify and reduce toxic substances.

As is evidenced by the above summary, each of these laws addressing packaging takes a different approach with respect to definitions, labeling, package properties or constituents, such as toxics or other process contaminants. This can be confusing for packaging producers and consumers and difficult for the MPCA to address compliance.

Updating the state's existing toxics in packaging legislation

In the 2025 Minnesota Legislature, bills HF1486 and SF1380 were introduced proposing to establish a new list of and requirements for an expanded number of 'prohibited packaging chemicals.' Further, the two bills would have given the Commissioner of Health the authority to designate additional prohibited packaging chemicals, as well as the authority to request information on packaging composition from manufacturers and producers.

The list of chemicals in the two bills is a comprehensive listing of packaging chemicals of concern that was developed largely by The Plastics Pact. The Plastics Pact has strong industry participation and involvement, so a list of chemicals developed with their input should have broad credibility.

The Toxics in Packaging model legislation update noted above includes criteria and process for adding chemicals by statute or rule and this could be combined with the concepts identified in the 2025 bills described above.

Overall, the state's toxics in packaging statute requires updating from the language adopted in the early 1990's that covers only four metals. Manufacturing techniques, polymer and material science, marketing demands for specialized properties, and the sheer range of packaging materials in the market, should all drive updated legislation that includes a comprehensive list of chemicals identified by a broad cross-section

of the industry and the NGOs with relevant expertise, plus environment and health criteria and processes to identify and incorporate new chemicals with minimal procedural barriers. There are over 16,000 chemicals used in packaging, particularly in plastic packaging. Many of which are chemicals and chemical families that are known causes of health problems.

Opportunities

The MPCA recommends that existing laws covering all types of packaging, packaging components, and "covered materials" or "covered products" should be aligned with respect to definitions and other considerations, such as recyclability or compostability, content thresholds, or package constituents such as toxics or other process contaminants.

The MPCA recommends that the existing statute Minn. Stat. 115A.965 "Prohibitions on selected toxics in packaging" be amended to include a list of toxic substances such as the list proposed in 2025 in HF1486 and SF1380 as described above. Further, the MPCA recommends that the existing statute be amended to incorporate the criteria and process in the 2021 TPCH Model Legislation Update for the MPCA to identify and add additional chemicals and chemical families through rulemaking or legislative initiatives.

Toxics in personal care products

Examining potentially harmful chemicals in synthetic braiding hair products

In February 2025, a consumer report published a study on synthetic braiding hair products (Jackson, 2025[1]). In this study, synthetic braiding hair products were tested to determine concentrations of harmful chemicals such as lead and volatile organic compounds (VOCs). Findings indicated that 9 out of 10 of the braiding hair products contained detectable levels of lead.

Lead is a harmful chemical listed on the Minnesota Department of Health's (MDH) Toxic Free Kids (TFK) program's Priority Chemicals list. Additionally, some of the VOCs identified in the consumer testing are also on the TFK program's Chemicals of High Concern list.

Given the potential harms associated with exposure to these chemicals, MDH and the MPCA determined a need to better understand the concentration of toxic substances in synthetic braiding hair products in Minnesota.

Through the Chemicals in Products Interagency Team (CPIT), the MDH TFK program, in partnership with MPCA, are sampling and testing the same synthetic braiding hair products used in the consumer report study to determine if potentially harmful chemicals such as lead are also being found within these products in Minnesota. If harmful chemical were found, the TFK program would seek to partner with key stakeholders to determine the best approach for sharing information about the potential harms of exposure to toxic chemicals in synthetic braiding hair products with affected communities. Based on feedback from key stakeholders, a health communications campaign could be designed and implemented in a culturally relevant and appropriate manner. Testing, outreach, and a communications campaign are still in the design phase and implementation will depend on funding and staffing availability.

[1] Jackson. (2025). Dangerous Chemicals Were Detected in 100% of the Braiding Hair We Tested. https://www.consumerreports.org/health/wigs-hair-extensions/dangerous-chemicals-detected-in-braiding-hair-cr-tested-a4850978424/

Lead in consumer products

Lead and cadmium prohibitions

Strengthen and expand statutes limiting lead and cadmium use

In 2023, the MPCA proposed expanding the list of products where lead and cadmium were prohibited, which the Minnesota Legislature passed as Minn Stat 325E.3892 The law bans consumer products from 15 product categories from sale in Minnesota if they have a lead content equal or greater than 90 ppm or a cadmium content equal or greater than 75 ppm. That list of categories includes:

- jewelry
- toys
- cosmetics and personal care products
- puzzles, board games, card games, and similar games
- play sets and play structures
- outdoor games
- school supplies
- pots and pans
- cups, bowls, and other food containers
- craft supplies and jewelry-making supplies
- chalk, crayons, paints, and other art supplies
- fidget spinners
- costumes, costume accessories, and children's and seasonal party supplies
- keys, key chains, and key rings
- clothing, footwear, headwear, and accessories

The Legislature during the 2025 session included some changes to the law. Notably adult/professional art supplies are now exempted from the law. Keys got a three-year extension and must meet 1500 ppm after July 1, 2028. Finally, pots and pans that have vitreous enamel that is not in food contact are exempt from the cadmium language.

Updates and accomplishments

Get The Lead Out

The Get the Lead Out program promotes the voluntary use of lead-free fishing tackle through education and outreach. The program is currently staffed by two full time coordinators and was supported by members serving in Minnesota GreenCorps, an AmeriCorps program, for four years. From September 2019 to June 2024, the program was funded through the Deepwater Horizon Natural Resource Damage Assessment (DWH NRDA) in a cooperative agreement with the U.S. Fish and Wildlife Service (FWS) and Minnesota Department of Natural Resources (DNR). The program is now funded by a $1,000,000 legislative appropriation in 2023, and a $254,000 Legislative-Citizen Commission on Minnesota Resources (LCCMR) grant in 2024.

From 2019 to present, the program has educated about the issue of lead tackle; promoted the use and sale of lead-free fishing tackle; and facilitated tackle exchanges. Through countless classroom and outdoor

education programs, the Get the Lead Out program has educated thousands of students statewide in grades K – 12. Additionally, the Get the Lead Out program has participated in hundreds of events, including sport shows, community events, drop-in fishing programs, school outreach programs, summer fishing camps, and lake association meetings.

Promoting the use of lead-free tackle is integral to the Get the Lead Out program. Since 2019 the program has distributed over 80,000 sample packs, which are small packs of 3-5 different types of lead-free tackle. These sample packs are shared with individuals, organizations, and partners. Since 2021 the program has also distributed over 2,000 small lead-free tackle boxes to youth (ages 6-15) at 150+ summer fishing camps.

Get the Lead Out administers a grant program for bait and tackle retailers, which offers them a substantial rebate to incentivize purchasing and stocking lead-free fishing tackle at their stores. The rebate program began in 2022 and is now in its second round. The program has allotted nearly $39,000 to 18 different stores throughout Minnesota, most being in Greater Minnesota, through this rebate. The program has not worked extensively with major tackle manufacturers, aside from purchasing bulk tackle. Major manufacturers have shown progress recently with new lead-free products, especially for open water fishing.

The program continues to encourage lead tackle disposal and exchanges through the support of statewide, voluntary program partners. The program provides sample packs, training, printed materials, and other supplies for program partners to organize lead collection and exchange events. Since 2021, the Get the Lead Out program has recruited over 150 volunteer partner organizations to collect and exchange lead tackle. Most partners are lake associations, environmental non-profits, and local units of government. Over 1,200 pounds of lead have been collected by program partners through this initiative.

In 2021, with support from Ramsey County Parks and the Vadnais Lakes Area Water Management Organization, the program installed a drop box for lead tackle at Sucker Channel, which is south of County Road 96 in Vadnais Heights. Sucker Channel is not only a popular location for anglers, but also for trumpeter swans, especially in the winter because the water in the Channel remains open. While most loons ingest lead fishing tackle after eating a fish with tackle attached to or inside it, trumpeter swans are herbivores and ingest lost lead fishing tackle when they are feeding on plants. Since 2018, 27 dead swans have been found at Sucker Channel, and the most recent dead swan was found in March 2025. The Minnesota DNR no longer tests dead swans from this site because the deaths from lead poisoning are such a well-known issue. Because lead is highly resistant to corrosion, tackle that is lost in any body of water will remain there unless physically removed. In October 2024, Ramsey County drew down the level of the Channel, and they collected over 1000 pieces of lead equaling 13 pounds. In August 2025, Ramsey County staff had another clean-up effort and collected 490 pieces equaling 5 pounds of lead. The program is hopeful that the efforts of Ramsey County combined with the drop box as a collection point and continued efforts to steer anglers towards lead-free tackle will save swans at this site.

The two current funding sources for the program, the legislative appropriation and LCCMR grant, end in June 2027 and June 2026, respectively. Funding will be necessary to sustain the Get the Lead Out program after June 2027.

‘‘Hunter’s Choice’ Copper Ammunition Outreach Project

In 2014, the MPCA partnered with the Raptor Center at the University of Minnesota, the DNR the Wildlife Society MN Chapter, and several other organizations to submit a funding proposal to the LCCMR for ‘Workshops and Outreach to Protect Raptors from Lead Poisoning’. This project educates hunters about the advantages of copper ammunition for food safety, firearms/ammunition accuracy, environmental stewardship of ammunition choices, and protection of raptors and other wildlife that are exposed and poisoned by feeding on gut piles and other lead exposure pathways. In 2021, the Legislature awarded funds to the project, and it was administered by The Raptor Center for three years through June 2024.

From the project’s Final Report:

Over 3,000 people received in-person education about the toxicology risks of spent lead ammunition and the impacts that their choices on hunting ammunition have on wildlife conservation. In addition, thousands more received – and will continue to receive – updated information through hunter education curriculum, partnership conferences/workshops and hunter-targeted websites.

Federal actions

In 1991, the U.S. FWS phased out the sale and use of lead shot in waterfowl hunting due to the serious wildlife and environmental impacts resulting from accumulation of lead ammunition in waterbodies and wetlands. The EPA has since received multiple citizen's petitions over the past three decades under the Toxic Substances Control Act (TSCA) for appropriate labeling for non-lead products and for a phase out of the manufacturing, sale, and use of lead ammunition and fishing tackle. Labeling would create transparency, however, there are no product or package labeling requirements for lead-containing or non-toxic tackle or ammunition to-date. While federal changes appeared to have been given serious consideration in the early 1990s when EPA granted the 1992 TSCA labeling petition for lead tackle and proposed a more stringent rule in March 1994 (59 FR 11121) to prohibit lead in these products, a final rule was never published. Most recently, in 2010-2011, in response to additional TSCA citizen petitions to address lead ammunition and tackle, the EPA stated that Congress never intended TSCA would apply to lead in tackle or ammunition as a toxic substance, despite the fact that EPA granted the 1992 TSCA citizens petition and in 1994 issued a proposed rule to phase out lead tackle manufacturing, import, and sale, as described above. The U.S. FWS' decision to phase out lead shot for waterfowl in 1991, and the EPA rule proposal in 1994 to phase out lead tackle manufacturing and use demonstrate that federal government has the necessary jurisdiction. Separate from TSCA, an example of the federal government taking action to protect public health by phasing out and tightly regulating lead-containing products is the federal infrastructure bill enacted in November 2021, which appropriates approximately $15 billion for replacement of lead service lines in public water systems.

Availability, safety, and superior performance of non-lead fishing tackle products

Non-lead fishing tackle products are widely available and include glass, ceramic, and non-toxic metals such as tin, stainless steel, tungsten, and bismuth. While these products may not be widely available in retail settings since there are no restrictions on lead, they are available online through many manufacturers and other sales outlets. The MPCA maintains an online database of non-lead tackle products for anglers to use. Tungsten is widely favored over lead for ice fishing and many of these ice fishing products can be used for open water angling. Prices for non-lead products may be slightly higher, and the average angler may spend a few dollars more for products that may be in use for several seasons. Compared to other angling expenses including licenses, other equipment and lures, fish finders, boats, motors, trailers, fuel, and travel expenses, the additional cost for safe nonlead tackle is extremely small.

Copper and brass are generally not used for fishing tackle due to the aquatic toxicity of copper and the common use of lead in brass products.

Availability, safety, and superior performance of non-lead ammunition products

Steel and copper are the primary non-lead ammunition products on the market today. Non-lead ammunition is now available in virtually every caliber and size at retail prices very similar to lead ammunition. The annual cost difference for ammunition that a hunter actually uses is generally just a few dollars. And like non-lead tackle costs, the difference is insignificant compared to the cost of firearms and other hunting expenses such as boats, motors, trailers, fuel, travel, etc. Hunters who make the switch to copper bullets generally find that they have superior performance and accuracy and never go back to lead.

Some manufacturers are introducing special lines of non-lead ammunition for law enforcement, shooting sports, and use at shooting ranges since these applications can result in high levels of avoidable lead exposure.

California requires the use of 'certified non-lead ammunition' ammunition pursuant to legislation enacted in 2013 [AB711] that came into full effect by 2019.The California Department of Fish and Wildlife maintains a webpage of non-lead ammunition product listings from about 65 manufacturers.

Opportunities

Educate Minnesotans about lead free tackle and ammunition, and work to expand availability
While state level education and outreach activities are important and productive for raising awareness and changing behavior, lead tackle and ammunition continue to be dominant products in the marketplace and lead continues to be released to the environment through the use of these products. Non-toxic alternative products with comparable or superior performance are much more available today than they were at the time of the last report, in part because the federal and state governments have taken action requiring manufacturers and retailers make them available. However, compared to lead options, non-toxic tackle and ammunition products need to be widely available at retail locations and perceived as affordable for anglers and hunters.

Work with partner agencies towards eliminating lead exposure and environmental release from ammunition and fishing tackle. The MPCA recommends that MPCA, DNR, and other agencies with a role in reducing lead exposure and environmental release through manufacturing and use of lead ammunition and tackle engage in discussions to identify a path to reducing and eliminating lead exposure and environmental release from manufacture and use of lead ammunition and tackle.

Mercury in consumer products: skin lightening creams

Overview

The Minnesota Pollution Control Agency in partnership with federal, states, and local authorities, continues coordinated efforts to identify and remove illegal skin lightening creams containing mercury from stores across the state. This initiative began when the MDH detected elevated mercury levels in a growing number of new mothers, likely due to use of these products.

Despite being banned, mercury-containing skin lightening creams are often manufactured abroad and are still entering the U.S. while being sold both online and in local retail settings. These products present significant health risks and contribute to mercury pollution in Minnesota's environment. Improper disposal in landfills leads to mercury emissions, which return to our ecosystems through atmospheric deposition, directly undermining the state's mercury Total Maximum Daily Load (TMDL) reduction goals.

Addressing this issue also requires understanding the societal drivers of product use. Skin lightening is often linked to racism and colorism in the forms of discrimination that elevate lighter skin tones over darker ones. These pressures, rooted in colonial and cultural histories, fuel ongoing demand despite known health risks.

The MPCA is committed to continued enforcement and public awareness efforts but recognizes that durable solutions require multi-sector collaboration. Support for community education, targeted outreach, and stronger regulation of online and international markets will be critical. Policymakers have a key role to play in advancing these strategies, protecting public health, and ensuring Minnesota meets its environmental goals.

Updates and accomplishments

Partnership with Department of Health

Since the last report in 2022, MPCA and MDH have conducted over 10 home visits and safely removed more than 50 different mercury containing products from Minnesota homes. Many of these items were being used regularly in households with young children and infants highlighting the urgency and impact of this work.

These visits are carried out in partnership with MDH, local public health staff, and if needed a translator. During each visit, MPCA staff assess the presence of mercury-containing products, test indoor air quality for mercury vapor, educate residents on health risks, and ensure proper removal and disposal of any hazardous items if needed. In many cases, families are unaware that the products they are using contain dangerous level of mercury.

This proactive, culturally responsive approach directly protects public health—especially for women and children in Black, Indigenous, and people of color (BIPOC) communities who are most often affected. By meeting residents where they are and providing trusted, in-home support, MPCA and MDH are not only reducing toxic exposures but also building community trust and awareness.

The home visit model is an effective and scalable tool for reducing mercury exposure statewide. With additional local and legislative support, this program can reach more at-risk households and help advance both environmental and health equity goals across Minnesota.

Outreach in BIPOC Communities

As part of a broader effort to address the risks associated with mercury in skin lightening products, the MPCA and the MDH have prioritized outreach in BIPOC communities disproportionately affected by these products.

Through targeted community events, culturally specific outreach materials, and collaboration with trusted local partners, MPCA and MDH have reached more than 2,000 individuals across the state. These efforts focus on raising awareness about the health dangers of mercury, promoting safe alternatives, and providing guidance on proper disposal methods.

This direct engagement is critical not only for protecting public health—particularly among women and children—but also for building trust and ensuring that prevention strategies are both effective and culturally responsive. Continued investment in this kind of outreach is essential to reducing demand for harmful products, supporting safe disposal, and closing health equity gaps across Minnesota.

Skin lightening product testing and database

The Minnesota Pollution Control Agency (MPCA) continued its efforts to identify and address mercury in skin lightening products. Over the past few years, the MPCA has purchased and tested a growing number of these products for mercury content. Any product found to contain mercury levels above one part per million (ppm) has been added to a public resource hosted on the MDH website.

This database serves to inform both vendors and consumers: vendors can identify products that should no longer be sold, and consumers can avoid purchasing items that may pose serious health risks. The MDH also develops public announcements—including product photos to increase awareness about the products listed.

While the webpage has not been updated since 2021, this is not indicative of an absence of mercury-containing products identified through recent testing. The delay in updating the public database is due to pending compliance and enforcement actions related to certain products and staffing changes. Updates will resume once these matters are resolved in accordance with regulatory and legal processes.

Opportunities

"Love Your Skin" for Business and sellers

Since 2019, MPCA and MDH have had a critical opportunity to expand their outreach and prevention efforts by launching a statewide **"Love Your Skin"** campaign aimed at culturally informing public awareness initiative designed to reduce the demand for mercury-containing skin lightening products.

Originally developed through a research partnership with Hamline University students, the "Love Your Skin" campaign promotes self-confidence, health, and cultural pride while educating consumers about the serious health and environmental risks of mercury-laden products. The campaign materials, already piloted and shared by MDH, include messages of empowerment alongside facts about mercury exposure and safe disposal practices.

While community outreach remains a core component, we urge a stronger focus on engaging businesses including retailers, salons, importers, and online vendors—as key partners in this effort. These businesses are uniquely positioned to:

- Help prevent the sale of illegal products
- Educate customers at the point of purchase
- Amplify campaign messaging through their networks

A statewide "Love Your Skin" campaign, paired with proactive business engagement, would be a powerful tool to reduce the availability and use of toxic products in Minnesota.

With strategic coordination, we can empower communities, protect public health, and prevent further mercury pollution—while enlisting businesses as allies in long-term, systemic change.

Call to Action: Local Government Role in Safe Disposal of Mercury-Containing Products

While some local governments have taken important steps by offering no cost collection of skin lightening products at household hazardous waste (HHW) and business hazardous waste sites, broader participation is urgently needed. These programs ensure safe, compliant disposal through the state's contracted mercury waste vendors and provide a strong model for best practices across Minnesota.

However, to effectively protect public health and prevent mercury from entering the environment, more local governments and HHW must expand their participation and capacity to accept mercury-containing skin lightening products to include those from businesses. Broadening these efforts statewide will significantly strengthen our collective ability to remove dangerous products from homes and businesses, particularly in communities most at risk.

The MPCA strongly encourages additional counties and municipalities to adopt similar collection. With local support, we can scale safe disposal access, close enforcement gaps, and better protect vulnerable populations across Minnesota.

Mercury in consumer products: fluorescent lighting

Minnesota Fluorescent Lighting Ban

The State of Minnesota has taken a step toward environmental protection and energy efficiency through the enactment of legislation to phase out mercury-containing fluorescent lamps. This initiative is part of Minnesota's broader clean lighting strategy to reduce mercury pollution, enhance public and occupational safety, and encourage the transition to modern LED lighting technologies.

The Clean Lighting Law, passed as Senate File 3345 and House File 3326, amends Minnesota Statute §116.92 to prohibit the sale and distribution of specified lighting products containing mercury. Oversight

and enforcement of the statute fall under the MPCA, which is responsible for guiding manufacturers, distributors, and retailers through the transition process and ensuring compliance with the new standards.

The phase-out will occur in two stages. Beginning January 1, 2025, the sale of screw- and bayonet-base compact fluorescent lamps (CFLs), mercury vapor lamps, and associated ballasts will be prohibited statewide. The second and more comprehensive stage takes effect on January 1, 2026, extending the ban to include pin-base CFLs and linear fluorescent lamps such as T5, T8, and T12 tubes, along with circular and U-bend configurations. Together, these measures target the most common types of fluorescent lighting still in use across Minnesota's residential, commercial, and institutional sectors.

Certain exemptions have been established to accommodate specialized uses where LED alternatives are not yet feasible. Lamps used for image capture, projection, printing, disinfection, tanning, industrial processes, and scientific or medical purposes are excluded from the ban. These exemptions are intended to maintain functionality in industries that rely on highly specific lighting applications.

Even as the sale of fluorescent lamps is phased out, existing mercury-containing lighting must continue to be managed responsibly. Such lamps cannot be discarded with general waste and must be recycled through Household Hazardous Waste Programs. Facilities that store lamps for recycling are expected to ensure secure packaging to prevent breakage and mercury exposure during handling and transport.

To support a smooth transition away from mercury-containing lamps, the MPCA will continue to distribute educational materials to manufacturers outlining the phase-out dates and affected lamp types. These materials will be shared through established communication channels to ensure manufacturers understand their responsibilities under the new law.

Rebates are available through the Center for Energy and Environment's (CEE) energy-efficiency programs and Xcel Energy's business rebate initiatives, both of which are integral to supporting the state's clean lighting objectives.

Minnesota's Clean Lighting Law represents a pivotal moment in the state's environmental policy, marking a deliberate shift away from mercury-based lighting toward safer, energy-efficient LED systems. This effort not only advances environmental stewardship but also demonstrates the state's commitment to sustainable progress and the health of its residents and ecosystems.

Green and safer product chemistry

Overview

The Green and Safer Product Chemistry Program began in the MPCA's Pollution Prevention Program in 2010, initially focusing on offering financial support to increase green chemistry and engineering capacity and participating in networks of Minnesota's green chemistry community of interest. Green chemistry and green engineering each involve a set of 12 principles of practice, which also apply to many other actors who bring safer products to market. Generally, the purpose of the principles is to guide design of chemicals, chemical and production processes, and commercial products in a way that avoids the creation of toxics and chemical waste and reduces demand on diminishing resources. The program is now moving to include the broader purpose of "sustainable chemistry" to improve the efficiency with which natural resources are used to meet human needs for chemical products and services, while reducing chemical burdens on the environment and humans. This includes both non-regulatory support for safer alternatives, and regulatory monitoring of product compliance.

In 2015, the MPCA, the MDH, and the Department of Commerce formed the CPIT to work more proactively to improve the chemical safety of products. This involves pooling resources to better coordinate:

- Monitoring of people's exposure to toxic chemicals, environmental monitoring, and monitoring of compliance with the State's currently 15 statutes restricting various product and chemical combinations.
- Educating companies in product supply chains about Minnesota requirements and opportunities to develop safer product chemistries.
- Educating residents about product chemistry issues and how to identify them, avoiding exposures, and picking products with safer chemistries to protect themselves and their families – particularly communities experiencing disproportionate health impacts due to income, race, and/or housing and working conditions.
- Coordination of implementation and enforcement of laws that have been passed.

Updates and accomplishments

Green & Sustainable Chemistry Prize

In 2021, the MPCA also initiated a three-year pilot to offer a Green & Sustainable Chemistry Prize of $10,000, rewarding one applicant in the Minnesota Cup technology competition and accelerator program at the University of Minnesota whose innovation best demonstrates green and sustainable chemistry attributes or effects. The program has been a success and MPCA has chosen to continue the partnership with Minnesota Cup.

The 2025 prize was awarded to Naware, a Minnesota startup based in Edina. Naware has developed a chemical free weed control product. It uses artificial intelligence to identify weeds, then targets the weeds with steam while mowing. It effectively kills the weeds within 20 minutes and allows for immediate seeding following treatment – unlike with chemical treatments.

The 2024 prize was awarded to Revitri, a Minnesota company located in Willernie. Revitri uses recycled glass to create foamed beads. The foamed beads are then used as additives to a variety of different products to improve strength while reducing weight. These beads have several uses:

- Additive in plastics for strength and lightweighting
- Additive for 3D printing and extrusion helps with insulative properties
- Beads in concrete add strength while reducing the weight

Revitri used innovative chemistry to coat the glass beads to help them bond with plastics and other mediums.

Per- and Polyfluoroalkyl Substance (PFAS)

Many PFAS are known to be health hazards to humans. Several specific PFAS have been linked to increased risks for cancer, liver disease, immune system disfunction, and other negative health impacts. PFAS can also negatively impact aquatic life and wildlife.

Amara's Law, passed in 2023, is intended to reduce or eliminate the use of PFAS in products where it is not essential. It has three phases: 1) 2025 prohibitions of intentionally added PFAS for 11 product categories, 2) a 2026 reporting requirement, and 3) a full ban of products with intentionally added PFAS except for currently unavoidable uses in 2032.

2025 Prohibitions
Starting on January 1, 2025, the first prohibitions of products containing intentionally added PFAS went into effect. The 11 product categories are:

- Carpets or rugs
- Cleaning products
- Cookware
- Cosmetics
- Dental Floss
- Fabric treatments
- Juvenile products
- Menstruation products
- Textile furnishings
- Ski wax
- Upholstered furniture

2026 Reporting requirement
Starting on July 1, 2026, manufacturers that sell products containing intentionally added PFAS into Minnesota will be required to submit reports to MPCA. Those reports will contain information about the products and components that contain PFAS and also provide detail about the function of the PFAS and the concentration of PFAS within the specific component.

2032 Prohibitions
Beginning in 2032, all products containing intentionally added PFAS are banned from sale in Minnesota except for those products that are determined to have a currently unavoidable use. The criteria and application requirements for currently unavoidable use requests and approvals will be clarified in rule.

Flame Retardant Chemicals Prohibition

Minnesota Statute § 325F.071 was passed in order to protect children from the harmful effects of flame retardants. This ban was placed on products that children are in frequent contact with, such as toys, clothing, and mattresses. The good intention of the law was severely undermined by providing a lengthy list of exemptions and exceptions.

*"Subd. 2a.**Exemptions.***

The following are exempt from the provisions of this section:

(1) the sale or offer for sale of any previously owned product containing a chemical restricted under this section;

(2) an electronic component of a children's product, mattress, upholstered residential furniture, or residential textile or any associated casing;

(3) a children's product, mattress, upholstered residential furniture, or residential textile for which there is a federal or national flammability standard;

(4) thread or fiber when used for stitching mattress components together; or

(5) components of an adult mattress other than foam. As used in this clause, "adult mattress" means a mattress other than toddler mattress, crib mattress, or other infant sleep product."

Subd. 2a (3) is particularly problematic as an exemption because there are federal flammability standards for children's sleepwear (16 C.F.R. part 1615 and 1616), infant garments (16 C.F.R. part 1615.1(c) and part 1610), and mattresses (16 C.F.R. part 1632 and 1633). The existence of federal flammability standards for infant garments, children's sleepwear, and mattresses removes a large number of children's products from the Minnesota law. The sleepwear and mattress exemption allows children to potentially be exposed to flame retardant chemicals for many hours on a daily basis. However, the flammability standards can often be met without the use of harmful chemicals. An example is that with sleepwear, pajamas may be tight fitting to meet federal flammability standards. In this instance, removal of the flame-retardant is both protective from flames and is protective from harmful chemicals.

In addition, Subd. 2a (2) exempts electronic components. Most toys have electronic components and thus, nearly all of the products that this law is intending to cover are exempted by the language in the exemptions section. Removing exemption (2) and (3) would restore the law to its intent and would be more protective of children and the environment.

*"Subd. 2b.**Exception.***

The prohibitions in subdivision 2 do not apply to a flame retardant that:

(1) is a polymeric material in accordance with the criteria in Code of Federal Regulations, title 40, section 723.250, or is chemically reacted to form a polymeric material with the materials it is intended to protect; or

(2) has a determination of safety under United States Code, title 15, section 2604, subsection (a), paragraph

(3), subparagraph (C), or under United States Code, title 15, section 2605, subsection (b), paragraph (4)."

The MPCA has concerns about creating exceptions to polymeric material, just on the basis of being a polymer. Safer States, a national alliance of environmental health organizations that works to protect people and the planet from toxic chemicals, recommends that polymeric flame retardants should not be exempted from safety testing, reporting requirements or regulatory restrictions. The reasons are we do not know about their safety and have concerns about the polymers that have been studied. In the absence of safety testing, it should be assumed that polymeric flame retardants are toxic like other flame retardants have been shown to be. The polymeric material exception should be removed from the law. They should have to determine safety along with all other flame retardant chemicals under US Code title 15.

Product Testing and Compliance

The MPCA has been focused on ensuring compliance with the new toxics in products laws that have been passed in recent years. Notably the lead and cadmium law (Minn. Stat. §325E.3892), PFAS in food packaging (Minn. Stat. §325F.075), and Amara's Law (Minn. Stat. §116.943).

Lead and Cadmium (Minn. Stat. §325E.3892)

In 2023, the Minnesota Legislature enacted Minn. Stat. §325E.3892 that restricts the use of lead and cadmium in 15 product categories.

The categories are:

- Jewelry
- Toys
- Cosmetics and personal care products
- Play sets and play structures

- Outdoor games
- School supplies except ink pens and mechanical pencils
- Pots and pans
- Cups, bowls, and other food containers
- Craft supplies and jewelry-making supplies
- Chalk, crayons, paints, and other art supplies except professional artist materials, including but not limited to oil-based paints, water-based paints, paints, pastels, pigments, ceramic glazes, markers, and encaustics
- Fidget spinners
- Costumes, costume accessories, and seasonal party supplies
- Keys, key chains, and key rings
- Clothing, footwear, headwear, and accessories

The MPCA has done three testing cycles for lead and cadmium since the law was passed. Products in violation are referred to compliance and enforcement for follow-up. Until possible enforcement actions are complete, the information is not public data under state law. The MPCA will make test results available to the public as quickly as possible upon the completion of possible enforcement actions.

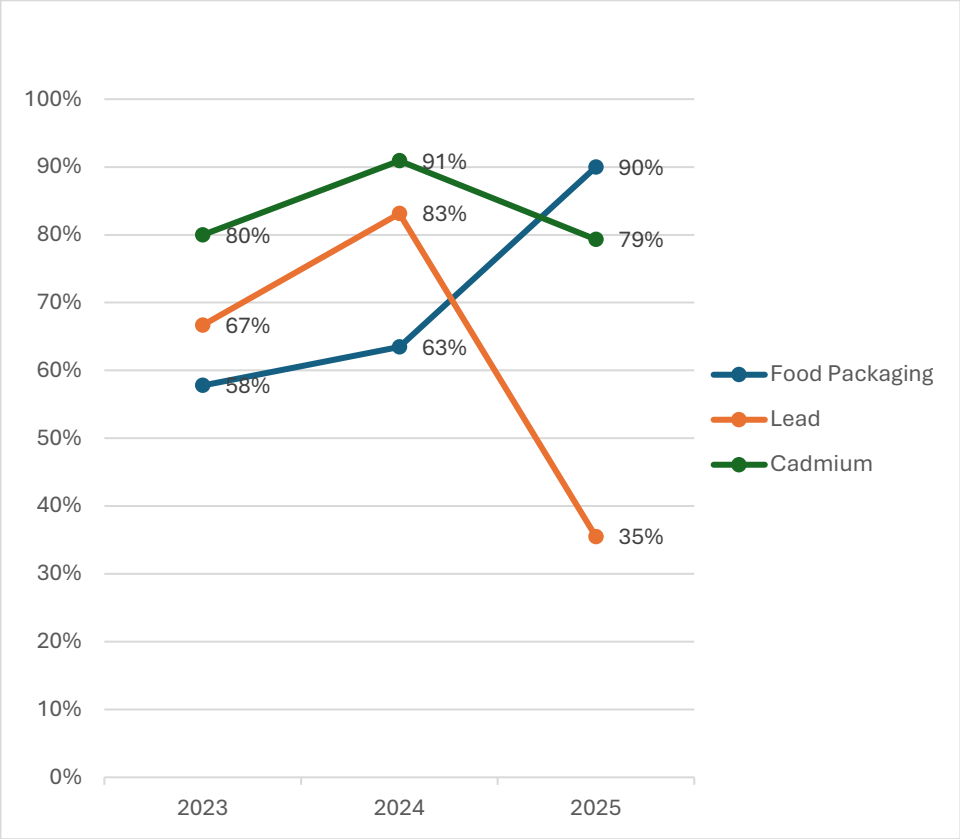
In 2023, 45 items were tested for lead, 30 of which were compliant. Thirty-five items were tested for cadmium. Of those, 28 were compliant with the law.

In 2024, 60 of 76 items were found to be compliant when tested for lead. Seventy of seventy six were compliant with cadmium.

In 2025, only 11 of 31 items were compliant when tested for lead. Twenty-three of 29 cadmium samples were compliant. However, in 2025, some provisions of the law changed to exempt certain products, including products that were previously tested and were not complaint with the law. The newly exempted products were professional artist paints, markers, and encaustics. Keys were granted additional time to come into compliance and have a different concentration to reach than the other products (15,000 ppm instead of 90 ppm). The MPCA was specifically targeting items in 2025 that were likely to contain lead and cadmium prior to the law change, which resulted in the trend from 2023 to 2025 appearing to show a reduction in compliance.

Every year, MPCA develops a testing plan that identifies what product categories will be the focus of this round, and what stores and online platforms will be visited. The testing plans are developed to ensure that the process of product and store selection is as random as possible. The MPCA will continue to monitor consumer products for lead and cadmium in products covered by the law and will initiate enforcement actions as needed.

Chart 4. Product Compliance Rates Over Time



PFAS in food packaging (Minn. Stat. § 325F.075)

In 2021, the Minnesota Legislature enacted a law banning intentionally added PFAS in food packaging starting on January 1, 2024 (Minn. Stat. § 325F.075). Food packaging that contains intentionally added PFAS can't be sold, offered for sale, distributed for sale or offered for use in Minnesota. The statute extends from food contact packaging to the intermediate package and the shipping container.

The MPCA has done three testing cycles for PFAS in food packaging since the law was passed.

In 2023, MPCA tested 90 items for PFAS as a baseline, 53 of which were compliant.

January 1, 2024, the PFAS in food packaging law went into effect.

In 2024, 59 of 93 items were found to be compliant when tested for PFAS.

In 2025, 54 of 60 items were compliant when tested for PFAS.

At first, MPCA has focused on informing the manufacturers of non-compliant products that their product cannot be sold in Minnesota and why. Good communication with manufacturers and sellers of these products into Minnesota is key to better compliance, but MPCA will be ready to enforce the provision as needed.

The trend we are seeing in our testing is demonstrating a clear improvement in the industry moving away from PFAS in food packaging. Minnesota is not the only state with a food packaging requirement, and it is clear that the industry groups have decided to make the change to move away from PFAS.

Some of the testing cycles for PFAS were challenging. The testing methods for evaluating PFAS in products are still being developed. The MPCA is working with labs as they are improving their testing capabilities.

The MPCA has been sending some samples of known concentration to labs along with the unknown samples to help the labs with their quality assurance. MPCA will continue to do this until lab methods for product testing become standardized.

Safer chemistry and product policy

Minnesota's approach for addressing chemicals of concern has generally been a response to individual chemicals as awareness emerges of the threats they can pose and with the expectation that government or the public needs to demonstrate harm before restrictions can be established. With the hundreds of chemicals that are regulated for human health and/or environmental concerns and the tens of thousands of chemicals that are used widely in commerce, as well as the hundreds of millions of pounds of toxic chemical waste that are generated annually by Minnesota TRI reporters, a more robust policy for toxicity reduction is needed to protect Minnesotans and our state's environment.

It should start with a list of commonly restricted substances for which manufacturers would be required to obtain independent verification that their products do not contain these chemicals. For chemicals where safer alternatives may not be available, manufacturers should be required to report on their use of these chemicals of concerns as well as develop a plan for managing their products containing these chemicals at end of life. For example, although flame retardants have been widely used in computer housings, they may not be necessary and only serve an essential function in other product components, such as plugs. If so, the manufacturer would be required to phase out the use in housings and establish a stewardship program for components where the flame retardants continue to be present. As part of this effort, MPCA will work with MDH and their chemicals of concern list to inform policy recommendations for future legislative sessions.

Opportunities

Remove the two exemptions from flame retardant prohibitions in Minn. Stat. § 325F.071

The intent of the Legislature in establishing flame retardant prohibitions (Minn. Stat. § 325F.071) is being undermined by established exemptions (Subd. 2a). In order for the law to be effective, the exemptions for products with flammability standards and electronics should be removed. The flammability standards can still be achieved without the use of flame retardants.

Maintain the Angel Tax Credit incentive

The Angel Tax Credit Program can help boost innovations based on green, safer, and sustainable chemistry. In June 2021, the Legislature and Governor renewed the tax credit at $10 million for 2021 and $5 million for 2022 for investors who support qualified startup companies developing new technology and products. In 2025, the Angel Tax Credit did not receive funding from the Legislature. The MPCA recommends consistent and continued funding of the Angel Tax Credits in order to provide a more certain funding source for new technologies and investors.

Develop an encompassing policy for restricted substances and require proactive testing to prove safe use of chemicals

Minnesota should develop a policy around toxicity reduction and chemicals of concern that need to be eliminated from use. It should include a list of common restricted substances developed for manufacturers to reference and require a third-party certification to provide independent verification that products are free of the chemicals of concern. Additionally, under this policy, the expectation would be that any new chemicals introduced in manufacturing must be tested before a product can be sold or distributed in or into the state. If safer alternatives are unavailable to replace those restricted substances on the list and the chemical is needed to perform an essential function, the manufacturer would be allowed to use the chemical as long as they develop an approved plan for managing the product at end-of-life.

Product stewardship: overall

Overview

Product stewardship encourages the responsible design, use, and end-of-life management of products by engaging manufacturers, retailers, and consumers in reducing toxicity, conserving energy and resources, reducing waste, and minimizing climate pollution. Extended producer responsibility (EPR), more specifically, is where manufacturers help pay for the costs of managing their products after their useful life — either by providing repair and refurbishment options, administering take-back programs, or by paying for collection and recycling programs. Minnesota has a long and established history of product stewardship, with its first policy passed in 1999. As a result of legislative initiatives, Minnesota has EPR programs for electronics, architectural paint, mercury-containing devices, rechargeable and lead-acid batteries, boat wrap, and packaging and paper products. Building on this foundation, Minnesota continues to lead national conversations on emerging stewardship needs for products such as solar panels, carpet, and mattresses. Recognizing that voluntary programs and disposal bans are insufficient, the state is committed to developing more effective, accountable solutions through continued policy development and stakeholder engagement.

Opportunities

Over the past few decades as new product stewardship programs have been developed and implemented, there has been a gradual change from solely focusing on safe end-of-life management as the means for reducing impacts to focusing more broadly on the environment and human health. The newer laws include requirements and incentives for more sustainable design and toxicity reduction. However, as was noted in the last iteration of this report, there is a clear opportunity to expand these efforts further. This includes covering new product types, such as textiles, that have a significant impact on the environment and toxicity. Product stewardship can also be used more as an instrument for broader chemical policies that reduce overall use and encourage safer chemicals in product design and manufacturing processes.

Pursue product stewardship for more sustainable textile design and management

California was the first state to enact an EPR law for textiles to address “fast fashion” in the United States. From an environmental lens, this is not only an issue of overproduction, resulting in the exploitation of natural resources and contributing significantly to climate emissions, but also a concern with toxicity. Synthetic materials, dyes, and pesticides all result in contamination and risks to workers, consumers, and the broader environment. Minnesota has a clear opportunity to pursue textile product stewardship to address this significant material concern.

Product stewardship: packaging and paper products

Overview

In 2024, the Minnesota Legislature passed the “Packaging Waste and Cost Reduction Act” (Minn. Stat § 115A.144 to 115A.1463). The enacted law establishes EPR for packaging, food packaging, and paper products in the state. The law has provisions around toxics to incentivize the reduction in use of chemicals of concern. It defines toxic substances as hazardous waste, a problem material, a chemical or chemical class regulated under existing laws for toxics in packaging, PFAS in products and packaging, and chemicals in children’s productionshttps://www.revisor.mn.gov/statutes/cite/115A.965, or a chemical of high concern identified under section 116.9402.

The Packaging Waste and Cost Reduction Act is designed to draw in the references to these other toxics in packaging requirements and bring awareness and accountability to those laws. The laws specifically identified in the statute are:

- Prohibitions on selected toxics in packaging (Minn. Stat. § 115A.965). See the "Toxics in packaging" section of this report.
- Products Containing PFAS reporting, testing, and prohibition requirements (Minn. Stat. § 116.943), which will apply to all products including those covered under the Packaging Waste and Cost Reduction Act as of January 1, 2032 (a person may not sell, offer for sale, or distribute for sale in this state any product that contains intentionally added PFAS, unless the commissioner has determined by rule that the use of PFAS in the product is a currently unavoidable use). See the "Greener and Safer Product Chemistry" section of this report.
- Food packaging; PFAS (Minn. Stat. § 325F.075), which applies to all the food packaging covered in the law. This will be in implementation and enforcement before the Packaging Waste and Cost Reduction Act is implemented. See the "Toxics in packaging" section and the "Greener and Safer Product Chemistry" sections of this report.
- Bisphenol-A (BPA) in Children's Products (Minn. Stat. § 325F.172 to 325F.175), which prohibits the use of (BPA) in children's products including toys, food containers, and outlines acceptable replacements.
- Formaldehyde in Children's Products (Minn. Stat. § 325F.156 to 325F.179), which prohibits the use of formaldehyde in children's products including toys, food containers, and outlines acceptable replacements.
- Identifying chemicals of high concern (Minn. Stat. § 116.9402), is a list maintained by the Minnesota Department of Health to outline a list of chemicals of high concern, this list is updated every three years and must consider any chemical(s) listed as a suspected carcinogen, reproductive or developmental toxicant, or as being persistent, bioaccumulative, and toxic, or very persistent and very bioaccumulative by a state, federal, or international agency. This list allows the department to create a continually improving process for producers to identify toxic substances that should not be used in packaging, food packaging, and paper products.

Duties within the law around toxic substances:

- Within the Commissioner's responsibilities, the MPCA must provide producer responsibility organizations (PROs) with information regarding Minnesota and federal laws that prohibit toxic substances in covered materials, toxic substances' potential environmental impacts and human health impacts, and best practices to reduce intentionally added toxic substances as identified in the needs assessment;
- Within the PRO responsibilities, the PRO must provide producers with information regarding state and federal laws that prohibit substances in covered materials and all laws prohibiting toxic substances in covered materials;
- In the needs assessment, a comprehensive analysis and report of topics relating to the implementation of the law, the MPCA must ensure the third party hired to complete the report includes an assessment of toxic substances intentionally added to covered materials, whether this limits one or more covered material types from being used as a marketable feedstock, and best practices producers can implement to reduce intentionally added toxic substances in covered materials that could be verified through suppliers certificates of compliance, testing, or other analytical and scientifically demonstrated methodology;

- In the stewardship plan, the PRO must describe how it will provide technical assistance to producers regarding toxic substances in covered materials; best practices identified in the needs assessment that producers can take to reduce intentionally added toxic substances in covered materials; and best practices for verifying reduction through suppliers certificates of compliance, testing, or other analytical and scientifically demonstrated methodology;
- Measurement of program results must also consider if producers are complying with the existing laws around toxics. For purposes of determining whether recycling performance targets are being met, except as modified by the commissioner, a stewardship plan must provide a methodology for measuring the amount of recycled material at the point at which material leaves a recycling facility and must account for compliance with all laws pertaining to toxic substances in covered materials.
- When developing statewide collection lists for recyclables, compostables, and covered materials requiring an alternative collection system, the commissioner must consider the presence and amount of toxic substances in packaging and paper products.
- The PRO must incentivize eliminating intentionally added toxic substances in covered materials through the fees charged to producers for the packaging and paper products sold into the state.
- The PRO must report annually starting on April 1, 2029, and include a discussion of technical assistance provided to producers regarding toxic substances in covered materials and actions taken by producers to reduce intentionally added toxic substances in covered materials beyond compliance with prohibitions already established in law.

Updates and accomplishments

Since the law was first enacted, the MPCA and partners have made notable progress on initial implementation.

- Producers appointed and the MPCA confirmed Circular Action Alliance (CAA) as the initial PRO for Minnesota. At the time this report was published, producers have been registering with CAA.
- The MPCA appointed an 18-person Advisory Board, responsible for reviewing all program documentation and providing recommendations to the agency and PRO.
- Service providers are registering with the MPCA as the first step before CAA will be able to begin reimbursing for the cost of services provided to entities covered under the law.
- The MPCA contracted for the work to conduct the preliminary assessment and first full needs assessment to gather critical information needed to inform the direction of the program and the stewardship plan.

Opportunities

Until the first full needs assessment is complete in December 2026, the focus of the program is to continue establishing the foundational elements needed for packaging EPR in Minnesota. As more data becomes available, specific opportunities will be identified by the MPCA, CAA, and the advisory board.

Research impacts and develop recommendations related to microplastics as a part of already required covered materials pollution and cleanup study

An area of concern for toxicity that isn't specifically identified in the law is microplastics. Microplastics, or plastic particles ranging from 1 nanometer to 5 millimeters, can be released from the creation, use, and management at the end-of-use of plastic materials, including common packaging, food packaging, and films. The extent of health and environmental impacts of microplastics isn't fully known as the study of these particles is still relatively new. However, given how pervasive plastic use is and the clear buildup of

microplastics in the environment and human bodies, there is a strong basis for concern. During program planning and implementation, microplastics should be a consideration. They are classified as a contaminant of emerging concern by the Minnesota Department of Health and opportunities to consider the role of plastic packaging in introducing microplastics should be addressed by producers. Under current law by 2032, the MPCA, in consultation with the commissioners of health and natural resources, must conduct a study to identify the contribution of covered products to litter and water pollution in Minnesota. Microplastics should be a focus of the study to better understand the human health and environmental impacts of this pollution and develop recommendations for covered materials.

Product stewardship: boat wrap

Overview

In early 2024, Minnesota became the first U.S. state to establish a product stewardship program for boat wrap (Minn. Stat. § 115A.1416), which is plastic used to protect a boat against moisture and damage. Under the law, the boat wrap product stewardship program must provide free collection, transportation, reuse, recycling, and disposal of boat wrap throughout the state. The first overarching statutory requirement for the boat wrap stewardship program is by June 1, 2030, when no less than 50 percent of the total weight of boat wrap sold in this state must be collected and recycled. Subsequently, by June 1, 2035, no less than 80 percent of the total weight of boat wrap sold in this state must be collected and recycled. There aren't specific targets for toxicity reduction in the law; however, the production, use, and disposal of plastics overall results in impacts to the environment and human health. Similar to efforts managing other plastic packaging, boat wrap product stewardship must consider and address concerns beyond solid waste at end-of-life and reduce other potential harms.

Updates and accomplishments

Since the law was first enacted, the MPCA and partners have made notable progress on initial implementation.

- Producers designated Commercial and Industrial Flexible Film Recycling Organization (CIFFRO) as the stewardship organization for this program and producers have become members of CIFFRO in order to offer boat wrap for sale in or into Minnesota.
- CIFFRO submitted the first Minnesota stewardship plan, which the MPCA approved in August of 2025. The plan was developed in consultation with stakeholders, including boat owners, owners of marinas and boat storage establishments, contractors, collectors, recyclers, Tribes, and local units of government. The plan is required to explain how discarded boat wrap will be safely and securely transported, tracked, and handled from collection through final recycling and disposal of residuals.

Opportunities

Similar to other plastic films, boat wrap has the ability to break down into microplastics if not collected and properly managed. By establishing a comprehensive collection and recycling program for the state of Minnesota, CIFFRO will channel discarded boat wrap to appropriate recycling markets, reducing the potential for uncontrolled breakdown of microplastics in the environment.

As the boat wrap product stewardship program does not have any specific benchmarks for addressing toxicity at this time, the program may draw on the findings from the needs assessment due at the end of 2026 and the study required by 2032 in the Packaging Waste and Cost Reduction Act to identify the contribution of covered products to litter and water pollution in Minnesota.

Currently, toxicity concerns around boat wrap are not well known. Further research around microplastics, PFAS, and other possible additives containing chemicals of concern is recommended to better understand the possible impacts.

Product stewardship: batteries, electronics and solar panels

Advancing Electronics and Battery Stewardship: Stakeholder Engagement and Waste Trends

Overview

Over the past several years, Minnesota has considered multiple legislative proposals aimed at strengthening the collection and responsible management of both embedded and standalone batteries, as well as electronic products. Currently, the state has two key product stewardship laws in place—one governing household electronics and another focused on rechargeable batteries.

Recognizing the need for modernization, the Minnesota Pollution Control Agency (MPCA) has worked closely with local governments, environmental organizations, and industry stakeholders to explore updates or replacements to these laws. The objectives include improving recovery of critical materials, reducing fire risks, minimizing human health and environmental impacts (e.g. toxicity), enhancing system-wide safety, recognizing the role of reuse and repair, and ensuring that recycling costs for collectors are covered.

In 2024, MPCA partnered with the Association of Minnesota Counties (AMC) and Recycling Electronics for Climate Action (RECA) on legislation to fund the collection and proper management of batteries and electronics. The draft expanded the list of covered products, created a Producer Responsibility Organization (PRO) with reimbursement processes, advanced consumer education, incorporated reuse and repair, required proper labeling, and eliminated end-of-life fees for consumers. The groups then broadened outreach to additional stakeholders to refine the language.

This bill was introduced in the 2025 legislative session. Although it generated discussion and feedback, it did not pass. In response, beginning in June 2025, MPCA launched a formal stakeholder process with representatives from sectors involved in battery and electronics manufacturing and their proper management, holding multiple in-person meetings to discuss key topics brought up during the discussion of the previous legislation. This process continued through November 2025, with the goal of introducing updated legislation in the 2026 legislative session.

Updates and Accomplishments

For electronic waste, manufacturers report annually to the MPCA on how they met their recycling obligation, whether by purchasing Minnesota household pounds recycled by registered recyclers within the program year, using credits, or paying a recycling fee. A manufacturer can earn recycling credits for each pound of covered electronic devices (CED), such as TVs, tablets, and computers, it recycles beyond its assigned obligation from outside of the 11-county metropolitan area, and each pound of CEDs collected from outside the 11-county metropolitan area is counted as 1.5 pounds towards the recycling obligation. For example, 10,000 pounds purchased outside of the 11-county metropolitan area would be worth 15,000 pounds towards a manufacturer's obligation.

Electronics collection

Registered collectors are public or private entities that receive CEDs from households and arrange for delivery to a registered collector or recycler. Collectors report annually on the total pounds of CEDs collected during the program year and where they were sent. While permanent collection sites account for 83 percent of the actual pounds collected, residents can also drop off devices at events or use pick-up or mail-back services. About 37 percent of the collection opportunities available in Greater Minnesota are offered by local governments.

Fiscal year 2024 (program year 17) saw 19.0 million pounds collected. Minnesota's per-capita collection rate of 3.20 pounds compares favorably with other leading states such as Oregon (3.20 pounds) and Wisconsin (3.14 pounds). Statewide, local governments collected 48.7 percent of CEDs in FY24 (program

year 17), offering a mix of permanent collection sites, special events for residents and curbside recycling. Since 2010, the MPCA has granted approximately $393,000 of electronic waste (e-waste) funds to 24 Greater MN counties and 7 MN tribal nations, resulting in CED collection of 772,000 pounds for recycling. The money also helped counties partner to obtain stronger contracts, lower recycling costs, consolidate weight and build infrastructure.

Electronics recycling

Registered recyclers are public or private entities that accept CEDs from registered collectors for the purpose of recycling. Some entities serve as both collectors and recyclers. Recyclers report annually on the total pounds received and recycled during the program year. The number of registered recyclers has gone down over the years, and reporting continues to indicate that a few firms handle most of the state's recycling, with the top five processing over 81 percent of the total weight recycled.

Video display devices (VDDs), which are televisions and monitors, continue to make up most e-waste collected at collection sites and recycled, but they have decreased from the historical 80 percent to 58 percent of CEDs by weight.

Table 6. Percent of VDD recycled in fiscal year 2024 (July 1, 2023 – June 30, 2024)

Total pounds of VDD recycled	10,745,657
Total pounds of CED recycled	18,632,501
VDD % of CED pounds recycled	58%

Since 2020, the pounds of recycled electronics continued to decline before rebounding in 2024, which saw a 15% increase in weight recycled relative to 2023. Overall, since 2020 (program year 13) there has been a 44.1 percent total drop in weight recycled per year, or an annual decrease of 13.4 percent. Reasons for this include the decreasing weight of new devices, cathode ray tube (CRT) devices continuing to decline in the waste stream and increases in end-of-life management fees.

Table 7. Minnesota Electronics Recycling Act program data by Program Year (PY) and Fiscal Year (FY)

	PY13/FY20	PY14/FY21	PY15/FY22	PY16/FY23	PY17/FY24
CED collected (pounds)	21.0 million	23.2 million	19.3 million	16.9 million	19.0 million
CED recycled (pounds)	20.1 million	22.4 million	19.2 million	16.0 million	18.6 million
VDD recycled (pounds)	14.5 million	15.4 million	12.3 million	10.5 million	10.7 million
Recycled per capita, statewide (pounds)	3.5	3.9	3.4	2.8	3.2
Conversion: program pounds*	24.2 million*	27.3 million*	22.6 million*	19.3 million*	22.0 million*
VDD sales (pounds)	27.2 million	26.2 million	24.5 million	23.1 million	24.5 million
Manufacturer recycling obligation (pounds)	21.7 million§	19.1 million§	16.4 million§	15.5 million§	14.2 million§
Purchased: program pounds (and actual pounds)	21.1 million* (17.6 million)	19.7 million* (17.2 million)	17.4 million* (15.2 million)	16.5 million* (14.0 million)	15.8 million* (13.9 million)
Net change in recycling credits available at program-year-end (new – used)	-0.7 million	0	0.8 million	0.9 million	1.5 million
Total recycling credits available at program-year-end	72.2 million	72.2 million	73.0 million	73.9 million	75.4 million

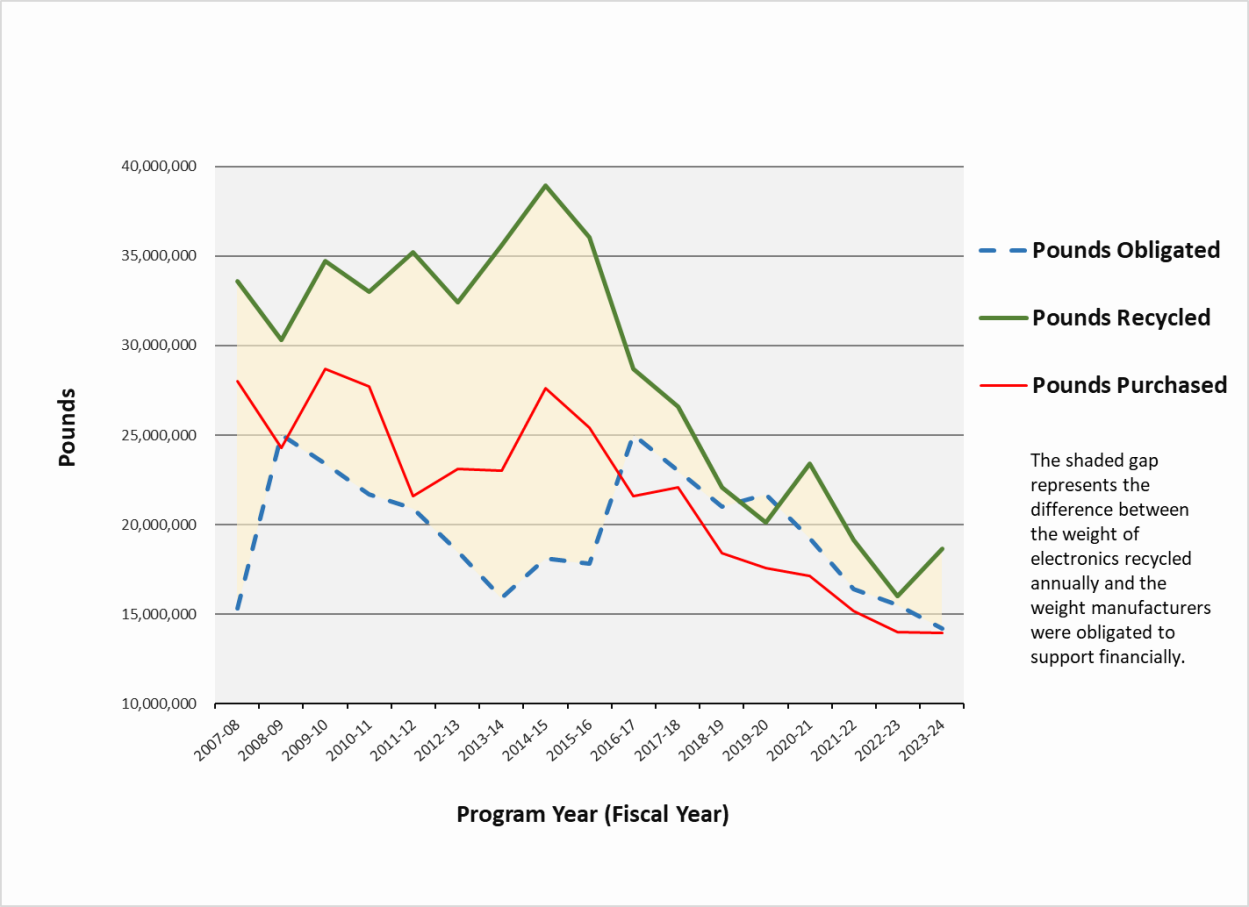
** Program pounds reflect a 1.5x multiplier applied to pounds collected outside of the 11-county Metropolitan Area*
§ A 2016 legislative change established a minimum recycling obligation for PY13 as the average weight of all video display devices collected for recycling during each of the three most recently completed program years, excluding the most recently concluded program year

Challenges for the Minnesota Electronics Recycling Act

In the past, manufacturers were required to recycle fewer pounds than were actually collected and recycled in the state. This created a gap of "unfunded" recycling that manufacturers were not covering. At the same time, some manufacturers recycled more than their obligation, which allowed them to build up excess credits. In recent years, electronic devices have become lighter while sales and the number of units recycled have increased. As a result, the total weight of material collected has declined, which has reduced the size of the gap, but the gap has not been fully eliminated.

Some counties charge solid waste tip fees or end-of-life fees to residents to help recover some of the cost of electronics collection and recycling, because the full costs are not being covered by manufacturers as intended. Therefore, the counties are currently in the process of creating new statute language that would ensure their collection, transportation and recycling costs are covered.

Chart 5. Pounds recycled vs manufacturer obligation



While the program has been successful in collecting and recycling millions of pounds, collectors are still raising concerns over the increased cost to manage the electronics, and recyclers have pointed out the decreased value in recovering materials, along with limited outlets for properly recycling CRTs and e-waste plastic. In response to the increasing costs not being covered by manufacturers, modifications were made to the Minnesota Electronics Recycling Act on July 1, 2016. The changes required manufacturers to cover the full cost of recycling and transportation for pounds purchased to meet their recycling obligation, and restricted recyclers from charging a collector for the transportation and recycling of CEDs used to meet a manufacturer's recycling obligation, unless otherwise mutually agreed upon. Since then, however, the collectors' cost to manage electronics has generally increased due largely to rising processing, recycling and transportation costs. Therefore, the MPCA proposed additional changes in 2018 to repeal the "unless otherwise mutually agreed upon" language, which, as written allows manufacturers to not cover the full cost of recycling and transportation. Without agreement among stakeholders, the language did not pass. Minnesota counties that manage e-waste have been studying other e-waste laws in the nation and are partnering with the MPCA to seek another solution to these problems.

E-waste Program compliance and enforcement

The MPCA continues to monitor compliance of manufacturers, collectors, and recyclers. Of the 197 collectors and 47 recyclers registered in fiscal year 2024 (program year 17), 88 percent of the collectors and 98 percent of the recyclers have submitted their required annual reports and registrations for the upcoming program year as of September 2025. With a greater understanding of reporting and quicker action by enforcement staff, the amount of time needed to register collectors and recyclers has decreased significantly. Since fiscal year 2022, the MPCA has issued a total 36 Alleged Violation Letters (AVLs) to manufacturers, collectors, and recyclers for late annual reporting.

The MPCA staff also continue to educate potential electronics collectors and recyclers about regulatory requirements and best management practices on a one-to-one basis. These efforts include onsite visits, in-person meetings, and informational emails and phone calls. Since July 2022, the MPCA has conducted at least 6 inspections of unregistered and registered facilities. The inspections ranged from technical assistance to compliance determinations. The inspections resulted in five official enforcement actions, which included compliance schedules, administrative order, penalties, and corrective actions. Due to staffing changes, however, routine onsite inspections have been limited, but complaint inspections remain a priority.

Rechargeable battery collection and recycling waste trends

Under the rechargeable batteries and products statute, a manufacturer of rechargeable batteries or products powered by rechargeable batteries is responsible for the costs of collecting and managing its waste. In every odd-numbered year, each manufacturer or representative organization provides information to the Senate and House of Representatives committees having jurisdiction over the environmental and natural resources and environment and natural resources finance that specifies at least the estimated amount of rechargeable batteries sold in the state by each manufacturer and the amount of batteries each collected during the previous two years.

Over the past four years (2021–2024), rechargeable battery collection in Minnesota has grown, reflecting increased public participation and improvements in collection infrastructure, including convenience. Manufacturers may report their own sales and collection data individually or through a representative organization. Call2Recycle serves as the representative for most manufacturers, submitting combined data on their behalf and coordinating many of the collection and recycling activities across the state. Collection volumes have risen each year, particularly for lithium-ion batteries, which now make up the majority of materials recovered through Call2Recycle and local collection programs. Compared to earlier years, collection has become more consistent across battery chemistries, while older types like nickel-cadmium and small sealed lead-acid continue to decline as they are phased out of use. Although sales and collection data are both tracked annually, it is difficult to make direct comparisons between the two because

batteries often remain in use for several years before being returned for recycling. Overall, recovery rates have improved but continue to lag behind sales growth, highlighting the need for continued outreach, convenient collection options, and long-term planning to ensure batteries are safely managed at end of life.

Digital Fair Repair

During the 2023 Legislative session, the Digital Fair Repair bill was passed into law. Currently recognized as one of the most comprehensive Right to Repair bills in the United States, this legislation requires electronics manufacturers to make available to individuals and independent repair shops documentation, parts, software, and tools necessary to repair their own equipment. Minnesota's Fair Repair Coalition has been working on this legislation for nearly a decade and the MPCA provided support for this bill through letters and participating in committee hearings. The regulations took effect July 1, 2024, and apply to all covered products sold after July 1, 2021. The Attorney General has the authority to investigate and enforce violations of the law. There have been no lawsuits during the first year of enactment.

Broader issues with electronics

Flame retardant plastics

E-waste plastic can contain flame retardants linked to a range of adverse health outcomes, including impacts on neurological and reproductive development and increased cancer risk, and recycled flame-retardant-containing plastics can be reincorporated into consumer products (for example, cookware or children's toys), creating pathways for unsafe exposure. International controls on plastic waste have strengthened since 2020: in particular, Parties to the Basel Convention adopted plastic-waste amendments that clarify which types of plastic waste are subject to the Prior Informed Consent (PIC) procedure, and those amendments entered into force on January 1, 2021. These changes have tightened controls on exports of "dirty" or hard-to-manage plastics to ensure they are handled in an environmentally sound manner. Work under the Basel Convention has continued, including development and revision of technical guidance on environmentally sound management (ESM) of plastic wastes and expanded scrutiny of hazardous chemicals contained in plastics and, relatedly, member countries adopted e-waste amendments that came into effect on January 1, 2025, extending similar controls to certain non-hazardous e-waste. At the national level, several countries have moved to prohibit or strictly limit imports of plastic waste (for example Thailand banned plastic waste imports effective January 1, 2025), reflecting increasing reluctance among receiving countries to accept contaminated or chemically hazardous plastic streams. Together, these developments mean exporters and recycling markets face stricter legal and operational controls, and they increase the urgency of preventing flame-retardant–containing plastics from entering consumer-product recycling streams without appropriate chemical management and ESM safeguards.

In real world practice, not all material derived from eligible electronic devices may or should be recycled. For this reason, repairing and reusing electronics is often the best option to reduce the environmental impacts of devices and reduce end-of-life management demands. However, once electronics have entered the waste stream through collection, it is important to consider the material toxicity of what is being managed. Recognizing this and in an attempt to prevent flame retardant plastics from being reincorporated into products that increase the potential for human health and environmental risks, the MPCA is allowing some flame retardant plastics to be managed via disposal. Material that is collected as part of the state's e-waste program may still be eligible to count toward a manufacturer's recycling obligation even if it is deemed "not recyclable" after processing if it meets the criteria developed by the MPCA. As of July 1, 2021, if a recycler can demonstrate to the MPCA that it has made a reasonable effort to separate flame retardant plastics (or other "sink" plastic from sink/float sorting systems or other sorting methods) from recyclable materials, the weight of these materials sent for disposal can be counted towards a manufacturer's obligation, as long as the total weight of any materials sent for disposal does not exceed 15 percent of the total CEDs recycled. If these criteria cannot be met, a request must be sent to the MPCA Commissioner who

must confirm the material will not be accepted anywhere before allowing its possible disposal (Minn. Stat. § 115A.95 Recyclable Materials).

Solar panel stakeholder process update

The MPCA began addressing solar panel end-of-life (EOL) management following its 2018 Toxics and Pollution Prevention Evaluation Report, which identified the need to prepare for increasing volumes of panels reaching retirement. Working with the Minnesota Solar Energy Industries Association (MnSEIA) and the Department of Commerce, the agency initiated a stakeholder process to explore policy options, releasing a white paper and holding a series of public meetings and webinars with industry, government, non-governmental organization, and researchers. Stakeholders emphasized the importance of reuse and recycling requirements, equitable cost-sharing, manufacturer responsibility, and consistent statewide policies. Research found reuse opportunities remain limited due to warranties and grid requirements, though reuse is more resource-efficient than recycling.

After two years of engagement, the MPCA presented four policy models and found broad preference for a statewide program incorporating manufacturer involvement for material and design choices, a disposal prohibition and reuse/recycling requirements, a visible fee per panel paid at time of installation that did not advantage or disadvantage any sector of the industry or solar owner, did not depend on decisions of individual solar owners, and that treated all panels and solar owners equitably. The agency concluded that a product stewardship model, where manufacturers form an organization to manage a statewide program with public oversight and funded by a per-panel stewardship assessment paid at time of installation, most closely matched the views of the stakeholders and drafted language for the 2022 legislative session. However, once this product stewardship proposal was introduced, it was not broadly supported by stakeholders.

In 2023, the MPCA shifted focus and proposed a solar module installation and recycling study and Policy Working Group (PWG) to evaluate options for a statewide collection, reuse, and recycling system. The study emphasized the need for convenient, accessible infrastructure capable of recovering 100 percent of discarded components while maximizing material value. The PWG reviewed the findings of the installation and recycling study and provided recommendations to the Commissioner of the MPCA, who in turn developed and submitted policy recommendations to the Legislature in February 2025.

The MPCA's February 2025 solar recommendations propose a statewide disposal ban on solar panels, to be implemented immediately. They also recommend statewide reuse or recycling requirements for all solar installations, with a phased approach for comprehensive recycling. Two pathways are outlined:

Approach A (Decommissioning requirements): Applies to systems above 1 megawatt (MW) direct current (DC) and co-located community solar gardens, funded by permittees, requiring reuse or recycling, lowering the current decommissioning plan threshold, and harmonizing standards across jurisdictions.

Approach B (Central Management Organization): Applies to smaller systems (1 MW DC and below), funded by one or a mix of stakeholders (permittees, producers, utilities, or ratepayers). The CMO would provide logistical and operational support to ensure compliance with recycling requirements and would be implemented within 12–24 months.

Both approaches reflect stakeholder working group recommendations.

The MPCA has since taken these February 2025 recommendations and is now working with stakeholders through two focused groups: one on decommissioning for Approach A and another on the development of a central management organization for Approach B. The agency's goal is to refine recommendations, with the possibility of advancing legislation in the future.

Opportunities

Improve funding for collectors under the Minnesota Electronics Recycling and Rechargeable Battery laws

Minnesota is working to modernize its laws on battery and electronics management to improve safety, capture critical materials, and ensure fair cost coverage for reuse, repair, and recycling. The Minnesota Pollution Control Agency (MPCA), in partnership with local governments, environmental groups, and industry, led a stakeholder process focused on these priority areas: product scope, producer responsibility structures, reimbursement and funding mechanisms, consumer education, reuse and repair, and labeling requirements.

Require flame retardant plastic screening

As previously noted, flame retardants are linked to a myriad of health effects. The Minnesota Legislature acknowledged these risks and restricted the entire class of organohalogen (primarily brominated and chlorinated) flame retardants in kid's products, furniture, wall and window fabrics, and mattresses to no more than 1,000 ppm, fully effective in 2022). This class of flame retardants and others have been commonly used in electronics plastics as well. The percentage of flame retardants in plastic is widely-variable, but virgin or first-use electronic equipment plastic can typically range from 0.1 percent by weight (1,000 ppm) to 30 percent (300,000 ppm)[2] and even higher.[3]

As a first step to applying the full costs of toxic chemical management to those who make them, the MPCA recommends manufacturers must within two years develop and fund capacity to screen and segregate, to the greatest extent possible, collected (past) products containing organohalogens in excess of 1,000 ppm concentration by weight, and implement that screening technology in the collection system in Minnesota. Some recyclers already have this equipment; however, the expectation going forward would be that all recyclers implement up-to-date screening technology as electronics composition evolves.

Ban organohalogens in newly manufactured electronic products

As a companion step to better screening for flame retardants in electronics plastic at end-of-life, the MPCA also recommends banning organohalogens restricted by the flame-retardant chemicals prohibition statute

[2] Department of Ecology, State of Washington, 2015. Flame Retardants: A Report to the Legislature. https://fortress.wa.gov/ecy/publications/documents/1404047.pdf

[3] U.S. Environmental Protection Agency, 2014. An Alternatives Assessment for the Flame Retardant Decabromodiphenyl Ether (DecaBDE), https://www.epa.gov/sites/production/files/2014-05/documents/decabde_final.pdf

in newly manufactured regulated electronic products, with appropriate exceptions, for example where companies can demonstrate an organohalogen is the only technical solution available to meet specific fire safety standards.

Develop a solar panel recycling law

Reuse and recycling of solar panels should be supported through a comprehensive Minnesota Solar Panel Management law. This legislation should establish a program that ensures a sustainable approach for managing solar panels when they are removed from service. Currently, there are no statewide requirements or funding mechanisms for managing end-of-life solar PV modules for installations less than 50 megawatts. The legislation should include a landfill disposal ban and a reuse or recycling requirement, with program funding to be determined, and not rely on end-of-life fees assessed at the point of participation.

Product stewardship: architectural paint

Overview

The Architectural Paint Product Stewardship law requires paint manufacturers, individually or through an organization, implement and finance a statewide product stewardship program that manages architectural paint by encouraging reuse and recycling, reducing paint waste generation, and providing for negotiation and execution of agreements to collect, transport, and process the architectural paint for reuse and end-of-life recycling. The program is funded by a stewardship assessment, or fee, paid by consumers on the sale of architectural paint.

PaintCare is a 501 (c)(3) non-profit organization whose Board of Directors consists of eleven representatives of architectural paint manufacturing companies. PaintCare employs three staff located in Minnesota that work full-time on the state's architectural paint product stewardship program.

The product stewardship approach to managing architectural paint in Minnesota has:

- Significantly expanded the number of recycling collection locations for paint and increased the amount of paint recycled
- Created an incentive for retailers to collect paint, particularly smaller entities
- Transitioned from government funded collection and recycling programs to one funded by consumers and manufacturers
- Allowed the paint industry, through the stewardship organization PaintCare, to operate the program and lead consumer education
- Supported local economic development of paint recyclers

Updates and accomplishments

Expanded collection locations for paint

Prior to the implementation of the Architectural Paint Product Stewardship Program there were fewer than 40 paint collection sites in Minnesota, nearly all of which were county or municipal HHW sites. Following the inception of the program, the number of collection sites rose rapidly, with 218 by the end of fiscal year 2015 and 246 by the end of fiscal year 2016. Currently there are approximately 269 permanent, year-round collection sites in Minnesota, including 208 retail locations, 54 HHW collection facilities, one transfer station, and one paint recycler. Other temporary options for paint collection over the past couple years include 16 seasonal HHW sites and 203 collection events held at HHW sites. Additionally, PaintCare

facilitated 90 direct large volume pick-ups in 2024, which marked a 100% increase in large volume pick-ups over the past five years.

Between permanent collection facilities, seasonal collection facilities, collection events, and partnerships with other counties, nearly all 87 Minnesota counties offer some form of paint collection. The increase in number of sites as well as their wide distribution has resulted in 95 percent of Minnesota residents living within 15 miles of a year-round collection site, while 98 percent of residents live within 15 miles of a site when supplemental sites and events are included.

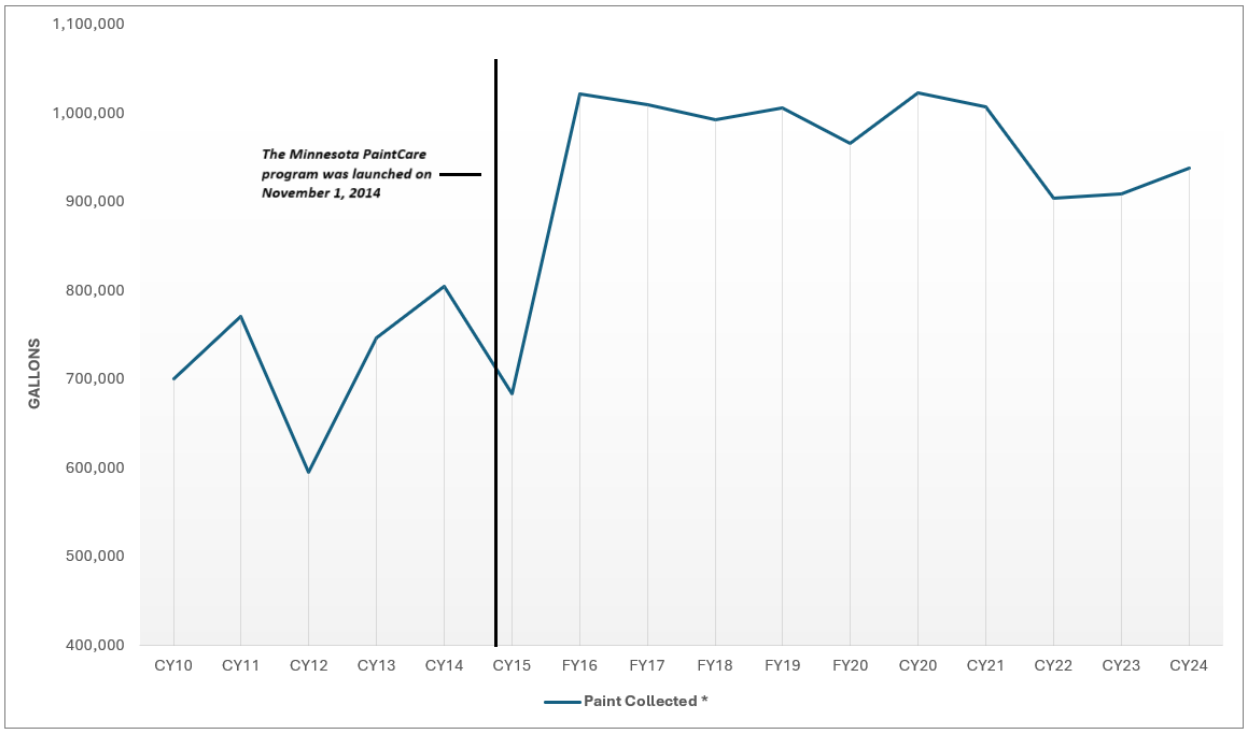
Incentives for retailers to collect paint

The number of retail sites offering paint collection through the Architectural Paint Product Stewardship Program has grown to 208 retail locations at the end of 2024. While a formal study examining the impact of retail collection sales has not been done, feedback from retailers remains strongly positive and consistently iterates that offering collection services creates an added incentive for potential customers to visit stores, helping drive return visits from larger volume customers such as painters and independent contractors.

Largely due to the widespread availability of collection sites, the total amount of paint collected and recycled since the launch of the program has also increased. An estimated 691,000 gallons of paint were collected in Minnesota in 2013, whereas the total crested one million gallons in 2017 and 2018. Collection volumes have remained consistent since, averaging around one million gallons per year. In 2024 statewide collection totaled 939,025 gallons.

For latex paint collected in 2024, approximately six percent was reused, 49 percent was recycled, and 37 percent was counted as beneficial use for landfill cover, marking a nearly 10% increase in recycling over the past five years. For oil-based paint, approximately four percent was reused, 73 percent was diverted to energy recovery, and 11 percent was disposed of via incineration. A total of 988,106 gallons have been reused and 3,167,853 gallons of paint have been recycled in Minnesota since the product stewardship approach was adopted statewide. As shown in Chart 3, architectural paint collection has greatly increased since the 2014 implementation of a statewide paint stewardship plan.

Chart 6. Minnesota county HHW architectural paint collection

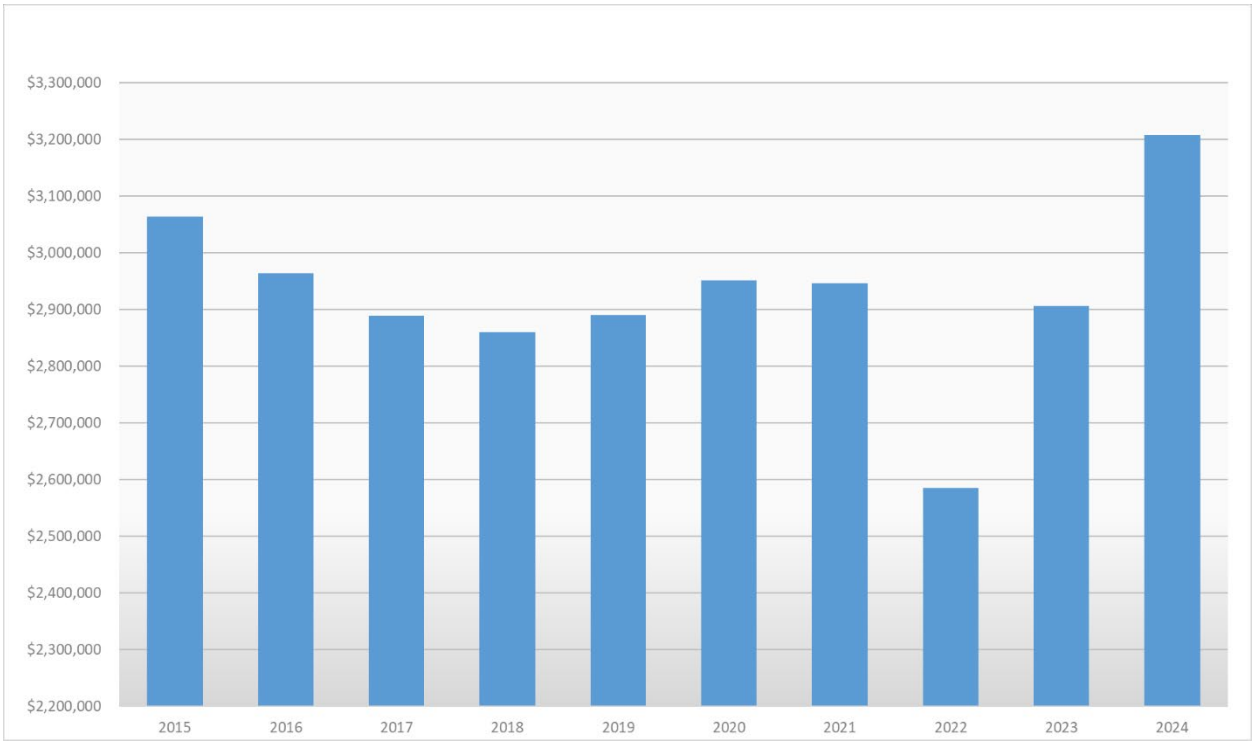


* Prior to the Architectural Paint Product Stewardship Law, county HHW paint collection data was reported by calendar year. After program implementation data was reported by fiscal year, until 2020 when PaintCare elected to transition its reporting cycles back to calendar year.

Program funding

The paint stewardship fee, paid by consumers when they purchase paint, enabled PaintCare to cover paint management costs for every HHW program and participating retail location in Minnesota. Since late 2014, Minnesota counties and regional groups participating in the program have been reimbursed more than $29 million for their paint management costs. Without the fee and partnership with PaintCare, these costs would have been covered by funding from governmental revenue streams.

Chart 7. Minnesota HHW program reimbursements for paint management



Paint stewardship fee

On November 14, 2016, PaintCare formally requested MPCA approval to increase the Minnesota paint stewardship fee due to their budget deficit in Minnesota as collection volumes were higher than projected while sales were lower. This resulted in higher than expected costs without the revenue to match it.

After a public comment period and acknowledgement of the original projection inaccuracy, the MPCA approved the fee increase for a period extending through June 30, 2019.

Table 8. Current stewardship fees

Container size	Fee
Half pint or smaller	$0.00
Larger than half pint and smaller than 1 gallon	$0.49
1 gallon up to 2 gallons	$0.99
Larger than 2 gallons up to 5 gallons	$1.99

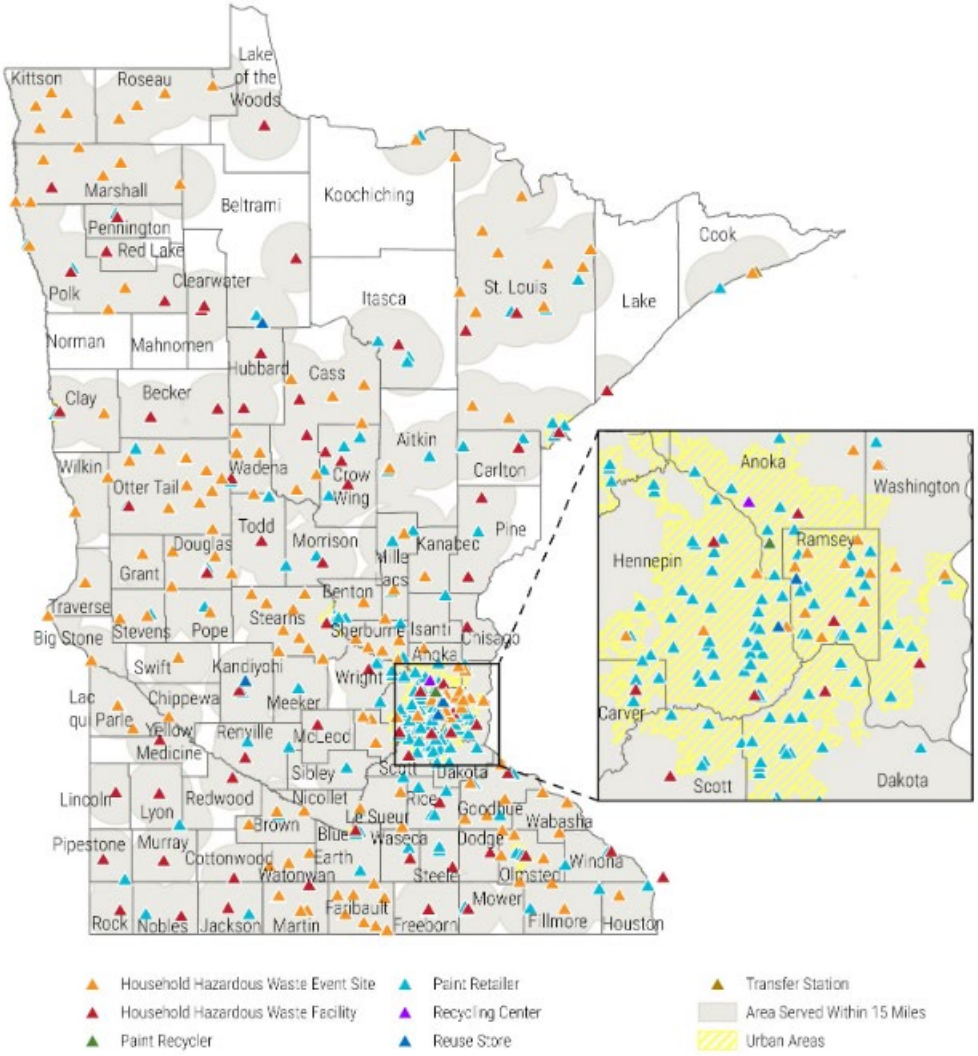
PaintCare completed financial reviews and requested fee continuances in 2019 and 2021. Upon review of financial data and program solvency both requests to maintain the fee levels were temporarily approved by the MPCA.

By the end of 2020, PaintCare's operating deficit was resolved and stood at 67 percent of annual expenses. Citing rising program costs and potential effect of COVID-19 related disruptions, PaintCare again requested a continuance of the fee levels through December 23, 2023, which was partially approved by MPCA. The approval also informally established a maximum cash reserve level of 75 percent of annual operating expenses and noted that, if exceeded, PaintCare must reevaluate the fee levels to ensure the financial needs of the program are being met without collecting more funds than are necessary to maintain the

financial health of the program. This 75% threshold was codified in 2023 with an amendment to the Architectural Paint Product Stewardship Law (Sec. 115A.1415).

At the end of 2024, PaintCare's financial reserve was 55% of annual operating, and it has communicated that it does not expect to submit a fee amendment request in the near future though does potentially see a request being submitted should aerosol paints be added to the list of materials covered by the program.

Figure 2. Minnesota year-round and supplemental paint collection sites Source: 2024 PaintCare Minnesota Annual Report



Source: 2024 PaintCare Minnesota Annual Report

Emerging issues

End markets – Over 50 percent of the latex paint collected in Minnesota has historically been used for landfill cover, though in 2024 it dropped to only 37%. Although landfill cover may be counted as a beneficial use of the material, reuse and recycling provide considerably more environmental benefits and should be maximized. Existing market conditions result in the latex paint being shipped to Oklahoma before being manufactured into a landfill cover material that is used in that state. The MPCA, PaintCare, and counties have discussed ways to maximize reuse and recycling and improve local end markets for the lower quality

latex paint that cannot be made into new paint. In 2022, PaintCare completed a pilot study on the environmental and economic feasibility of diverting some waste paint to waste-to-energy facilities in Minnesota. Results showed a nearly 44 percent decrease in greenhouse gas emissions for paint diverted for waste to energy processing as opposed to for use as landfill cover, though also noted a roughly 50 percent increase in total management cost for paint diverted to waste to energy.

While acknowledging potential limitations due to the number of recycling outlets and waste to energy facilities currently available, the MPCA and counties that collect waste paint expect these pilot projects to continue to examine several options that may reduce the life cycle impacts of managing waste paint and ideally prioritize efforts higher on the waste hierarchy.

Opportunities

Update the Architectural Paint Product Stewardship law or Program Plan to cover aerosol paints

Within Minnesota, the HHW Programs that do currently collect waste aerosols spend a considerable amount of time and money each year to manage them. Aerosols are the highest cost waste stream to manage in HHW programs next to electronics and the architectural paints currently covered by PaintCare. The MPCA has been engaged in informal discussions with PaintCare since 2013 to investigate the possibility of expanding the list of covered products to include aerosol paints.

Inclusion of aerosols in the program has been a formal policy recommendation of the MPCA since early 2022. That, paired with legislative developments that will require PaintCare to cover aerosol paints in the California program, led to PaintCare and MPCA beginning formal talks on aerosol inclusion in the Minnesota program in early 2024.

In those discussions, PaintCare and MPCA have started planning for adding aerosols to the program by amending the program plan as opposed to amending statute. PaintCare is currently in the process of completing internal studies, including but not limited to, the identification of aerosol-specific manufacturers, brands and retailers, financial impacts, feasibility of aerosol collection at retail locations, and storage and transport regulations. Once PaintCare is ready to present its results discussions will resume. The ultimate goal will be full program coverage of aerosol paints that would ensure financial coverage for collectors and promotion of best-management practices, while also ensuring overall financial solvency of the program. However, it’s important to note that if aerosol paints are not collected and properly managed under the PaintCare program, they would not be considered an “exempt material” under Minnesota’s Packaging Waste and Cost Reduction Act and would therefore be required to follow the requirements under that law.

Conclusion

The MPCA programs working on toxics, pollution prevention, and sustainable materials management continue to make measurable progress in reducing exposure to toxic chemicals and preventing pollution before it occurs. Our product stewardship programs for electronics and paint are helping to ensure those products are managed properly at end of life.

Equally important, the Sustainable Purchasing Program has transformed state procurement into one of Minnesota's most effective tools for source reduction, ensuring that toxic substances are avoided before products are even purchased. By embedding lifecycle thinking and safer-chemistry criteria into every stage of procurement, Minnesota demonstrates how public spending can advance environmental, economic, and equity goals simultaneously. Our grant programs are also helping companies develop new products and universities develop new curriculum based on green chemistry principles.

Legislation passed in 2023 and 2024 created new requirements to phase out PFAS in products, further prohibitions for lead and cadmium in products and more resources to address the problem of mercury in skin lightening products. Additionally, legislation was passed to establish extended producer responsibility programs for packaging and paper products, and boat wrap.

Despite this progress, challenges remain. While there are many individual businesses taking advantage of our technical assistance partnership with MnTAP each year or working on their own to make progress in pollution prevention, there continues to be a lack of significant progress statewide and the amount of toxic chemical wastes generated and released by Minnesota facilities has become increasingly concentrated among a few.

Minnesota's environment and residents are still unknowingly exposed to toxics through everyday products, underscoring the importance of continued vigilance, stronger product oversight, and ongoing public education. Residents have the reasonable expectation that the products they find on store shelves or order online are "safe," but we know that is not always the case, as shown by the work our toxics in products and toxics in packaging staff have done. Simply put, our manufacturing industry as a whole must make better choices during design and manufacturing about the chemicals and materials used in the products they create.

The progress highlighted in this report shows what is possible when prevention principles are embedded across all systems—from how products are designed and manufactured, to how they are purchased, used, and eventually managed at end of life. Nevertheless, the challenges described in this report are not something that can be addressed by MPCA alone. It will require cooperation and coordination among all elements of government, industry and the public. The recommendations made here are steps that can be taken within the next four years to continue the progress we have made while developing new strategies for making significant progress in pollution prevention.

Toxics and pollution prevention recommendations

Toxics and pollution prevention recommendations are included in individual report sections with additional context and summarized below. Each recommendation in this list is labeled with the following labels to indicate whether they are a legislative or agency action, and to identify their impact area(s). Recommendations may have more than one label.

- Recommendation for new authorities provided by the Legislature: LEGISLATIVE
- Recommendation for MPCA and/or partner action: MPCA
- Recommendation to allocate funding: FUNDING
- Recommendation aligns with MPCA strategic plan goals:
  ENVIRONMENTAL JUSTICE COMMUNITY ENGAGEMENT
- Recommendation aligns with various toxics reduction methods:
  RESTRICTION / BAN END-OF-LIFE MANAGEMENT

Sustainable materials management

1. **Grow LCA staff expertise for SMM work at MPCA**

   MPCA FUNDING

   Growing LCA staff expertise will strengthen data capabilities and materials management work, including expanding LCA efforts and updating the CBEI to guide the agency's SMM programming by providing estimates of greenhouse gas emissions from a consumption lens, capturing the full lifecycle emissions of the production and transportation of goods, as well as estimating emissions due to goods imported into the state.

Sustainable government purchasing

2. **Strengthen reporting and outreach through dedicated staff time**

   FUNDING COMMUNITY ENGAGEMENT

   The Sustainable Purchasing Program has grown significantly in impact through strong collaboration and strategic refinement of its scope. Dedicated and permanent staff time is now essential to sustain this progress and meet statewide demand for training, reporting, and vendor engagement. With stable funding, the program would:

   a. Expand training and outreach to TG/ED/VO vendors, municipalities, and enterprise agencies;
   b. Develop consistent tools and guidance to support sustainable purchasing implementation; and
   c. Improve statewide reporting on contract utilization and environmental outcomes.

   This investment ensures sustainable contracts are not only written but actively used—maximizing return on the state's investments in sustainability, equity, and pollution prevention.

3. **Expand program skills and capacity in lifecycle analysis (LCA) and sustainability modeling**

FUNDING

Building on Minnesota's existing in-house expertise, the Sustainable Purchasing Program seeks to deepen its ability to evaluate and compare environmental impacts across product categories. Sustained funding beyond June 2026 will preserve critical modeling capacity currently supported by temporary staffing. This work will enable:

a. Minnesota-specific analysis of greenhouse gas, toxicity, and waste impacts;
b. Integration of life-cycle data into solicitation design and evaluation; and
c. Stronger alignment of purchasing decisions with the state's climate and zero-waste strategies.

Expanding LCA and sustainability modeling capacity will ensure procurement decisions are data-driven, transparent, and demonstrably linked to Minnesota's environmental and public health goals.

Toxics in packaging

4. **Align definitions across statutes**

LEGISLATIVE RESTRICTION / BAN

The MPCA recommends that existing laws covering all types of packaging, packaging components, and "covered materials" or "covered products" should be aligned with respect to definitions and other considerations, such as recyclability or compostability, content thresholds, or package constituents such as toxics or other process contaminants.

5. **Update Minnesota's Toxics in Packaging law**

LEGISLATIVE RESTRICTION / BAN

The Minnesota Toxics in Packaging law should be revised to:

1. Include the expanded list of toxic substances in 2025 HF1486/SF1380 developed by the Plastics Pact; and,
2. Incorporate the changes in the updated TPCH Model Legislation, which includes the addition of the class of perfluoroalkyl and polyfluoroalkyl substances (PFAS) and the class of ortho-phthalates as regulated chemicals, as well as criteria and process for identifying and incorporating additional chemicals in the future. A full description of the Model Legislation is available at Packaging Legislation | Toxic Packaging Model Legislation (toxicsinpackaging.org)

Lead in consumer products: tackle and ammunition

6. **Educate Minnesotans about lead free tackle and ammunition, and work to expand availability**

MPCA COMMUNITY ENGAGEMENT

The MPCA will continue to work to educate Minnesotans about the availability, performance, and safety of lead-free alternatives for fishing tackle and ammunition. Additionally, the agency will work with manufacturers and retailers to expand availability and visibility of non-lead products.

7. **Work with partner agencies towards eliminating lead exposure and environmental release from ammunition and fishing tackle**

   MPCA

   The MPCA should engage in discussions with partner agencies with a role in reducing lead exposure and environmental release to identify a path to reducing and eliminating lead exposure and environmental release from the manufacture and use of lead ammunition and tackle.

Mercury in consumer products: skin lightening creams

8. **Launch a statewide "Love Your Skin" campaign**

   FUNDING | ENVIRONMENTAL JUSTICE | COMMUNITY ENGAGEMENT | MPCA

Since 2019, MPCA and MDH have had a critical opportunity to expand their outreach and prevention efforts by launching a statewide "Love Your Skin" campaign aimed at culturally informing public awareness initiative designed to reduce the demand for mercury-containing skin lightening products.

While community outreach remains a core component, we urge a stronger focus on engaging businesses including retailers, salons, importers, and online vendors—as key partners in this effort. These businesses are uniquely positioned to:

- Help prevent the sale of illegal products
- Educate customers at the point of purchase
- Amplify campaign messaging through their networks

A statewide "Love Your Skin" campaign, paired with proactive business engagement, would be a powerful tool to reduce the availability and use of toxic products in Minnesota.

9. **Local government role in safe disposal of mercury-containing products**

   MPCA | ENVIRONMENTAL JUSTICE | COMMUNITY ENGAGEMENT | END-OF-LIFE MANAGEMENT

   Broader participation is needed among local governments and household hazardous waste collection programs for skin lightening products to protect public health and prevent mercury from entering the environment. This will significantly strengthen our collective ability to remove dangerous products from homes and businesses, particularly in communities most at risk.

Green and safer product chemistry

10. **Flame retardants – remove exemptions**

    LEGISLATIVE | RESTRICTION / BAN

    The Legislature established flame retardant prohibitions for products that children are in frequent contact with, in order to protect them from the harmful effects of those flame retardants. The intent of the Legislature is being undermined by exemptions for products with flammability standards and for electronics since they remove a large number of children's products from the Minnesota law. These exemptions should be removed in order for the intent of the law to be realized.

11. **Maintain the Angel Tax Credit incentive**

LEGISLATIVE | FUNDING

The MPCA recommends consistent and continued funding of the Angel Tax Credits in order to provide a more certain funding source for new technologies and investors. The Angel Tax Credit Program can help boost innovations based on green, safer, and sustainable chemistry.

12. **Develop safer chemistry policy**

LEGISLATIVE | RESTRICTION / BAN | END-OF-LIFE MANAGEMENT

Minnesota should develop a policy around toxicity reduction and chemicals of concern that need to be eliminated from use. It should include a list of common restricted substances developed for manufacturers to reference and require a third-party certification to provide independent verification that products are free of the chemicals of concern. Additionally, under this policy, the expectation would be that any new chemicals introduced in manufacturing must be tested before a product can be sold or distributed in or into the state. If safer alternatives are unavailable to replace those restricted substances on the list and the chemical is needed to perform an essential function, the manufacturer would be allowed to use the chemical as long as they develop an approved plan for managing the product at end-of-life.

Product stewardship: overall

13. **Pursue product stewardship for more sustainable textile design and management**

LEGISLATIVE | ENVIRONMENTAL JUSTICE | END-OF-LIFE MANAGEMENT

"Fast fashion" is not only an issue of overproduction, resulting in the exploitation of natural resources and contributing significantly to climate emissions, but also a concern with toxicity. Synthetic materials, dyes, and pesticides all result in contamination and risks to workers, consumers, and the broader environment. Minnesota has a clear opportunity to pursue textile product stewardship to address this significant material concern.

Product stewardship: packaging and paper products

14. **Research impacts and develop recommendations related to microplastics as a part of already required covered materials pollution and cleanup study**

MPCA | RESTRICTION / BAN

The extent of health and environmental impacts of microplastics isn't fully known as the study of these particles is still relatively new. However, given how pervasive plastic use is and the clear buildup of microplastics in the environment and human bodies, there is a strong basis for concern. Under current law by 2032, the MPCA, in consultation with the commissioners of health and natural resources, must conduct a study to identify the contribution of covered products to litter and water pollution in Minnesota. Microplastics should be a focus of the study to better understand the human health and environmental impacts of this pollution and develop recommendations for covered materials.

Product stewardship: electronics and solar panels

15. **Improve funding for collectors under the Minnesota electronics recycling and rechargeable battery laws**

    LEGISLATIVE | END-OF-LIFE MANAGEMENT

    Minnesota's Electronics Recycling and Rechargeable Battery laws should be updated to include improving recovery of critical materials, reducing fire risks, minimizing human health and environmental impacts, enhancing system-wide safety, recognizing the role of reuse and repair, and ensuring that recycling costs for collectors are covered.

16. **Establish law requiring flame retardant plastic screening**

    LEGISLATIVE | END-OF-LIFE MANAGEMENT

    Minnesota should establish a new requirement for manufacturers to develop and fund capacity to screen and segregate collected products containing organohalogen flame retardants above 1,000 ppm by weight. Screening systems should be implemented within two years of enactment and integrated, where feasible, into existing collection and recycling systems.

17. **Ban organohalogens in newly manufactured regulated electronic products**

    LEGISLATIVE | RESTRICTION / BAN

    As a companion step to better screening for flame retardants in electronics plastics at end-of-life, organohalogens restricted by Minn. Stat. §325F.071 should be banned in newly manufactured regulated electronic products, with appropriate exceptions (e.g., when companies can demonstrate an organohalogen is the only technical solution available to meet specific fire safety standards).

18. **Develop a solar panel recycling law**

    LEGISLATIVE | END-OF-LIFE MANAGEMENT

    Reuse and recycling of solar panels should be supported through a comprehensive Minnesota Solar Panel Management law. This legislation should establish a program that ensures a sustainable approach for managing solar panels when they are removed from service. Currently, there are no statewide requirements or funding mechanisms for managing end-of-life solar PV modules for installations less than 50 megawatts. The legislation should include a landfill disposal ban and a reuse or recycling requirement, with program funding to be determined, and will not rely on end-of-life fees assessed at the point of participation.

Product stewardship: architectural paint

19. Update the Architectural Paint Product Stewardship law or Program Plan to cover aerosol paints

LEGISLATIVE | END-OF-LIFE MANAGEMENT

The list of covered products under the Architectural Paint Product Stewardship law should be updated to include aerosol paints. Aerosols are the highest cost waste stream to manage in HHW programs next to electronics and the architectural paints currently covered by PaintCare. Because aerosol cans need to be managed differently from cans of paint, more information is needed to understand costs, baseline volumes, and any additional infrastructure or policy needs.