

Final Grant Report

Minnesota Department of Health Contaminants of Emerging Concern Initiative Outreach and Education Grants



COON CREEK WATERSHED DISTRICT

Reaching Out about Contaminants of Emerging Concern in Urban Stormwater

12/31/2019

Project Summary

Recognizing stormwater as a nexus between public health and water quality, the Minnesota Department of Health (MDH) awarded the Coon Creek Watershed District (CCWD) a two-year grant in 2017 to increase awareness about Contaminants of Emerging Concern (CECs) in urban stormwater. This topic is especially relevant to CCWD as any contaminants that enter stormwater within the District can end up in the Mississippi River, just upstream of the drinking water intakes for Minneapolis and St. Paul.

In order to increase awareness of CECs in urban stormwater, the District developed and executed an education and outreach campaign that provided CCWD residents information, actions, and opportunities to reduce CECs in urban stormwater. The grant enabled CCWD to hire an Outreach Specialist who implemented this campaign and achieved the goals of this grant program by: 1) creating 12 customizable digital and print education materials addressing information gaps in less-toxic lawn care and proper pharmaceutical disposal, 2) disseminating these materials through attendance at 62 outreach events, 3) coordinating two volunteer events focused on CECs awareness and reduction, and 4) creating an online web portal to allow for easy public access to CECs information. In doing this work, our Outreach Specialist expanded important outreach partnerships and significantly increased awareness of the water quality, public health risks, and preventative actions associated with CECs in urban stormwater.

Problem Statement

The southern and western portions of the Coon Creek Watershed District (CCWD) are located within Priority Area A of the Minneapolis and St. Paul Drinking Water Source Management Area (DWSMA). As such, anything that gets into stormwater within those parts of the CCWD can reach the drinking water intakes for the cities of Minneapolis

and St. Paul within eight hours, making it important to prevent pollutants from entering stormwater. Contaminants of Emerging Concern (CECs) are defined by the Minnesota Department of Health as contaminants that are newly showing up in water either because they are new chemicals, they are old chemicals being used new ways, or new methods have been developed that allow detection of smaller amounts of chemicals in the environment than could previously be detected. These contaminants are of “emerging concern” because there is not complete information on all their health and environmental effects or the effects of their degradants.

There are many different categories of CECs; this project focused specifically on pharmaceuticals and pesticides. Pharmaceuticals refer to over-the-counter, prescribed, and illicit medications. Pharmaceuticals are showing up in Minnesota’s urban stormwater year-round (Kiesling R.L. 2017). Their main way into stormwater is from wastewater treatment plant discharge, although there may also be some coming from improperly disposed pet waste. Pesticides include fungicides, herbicides, and insecticides. These are also showing up in this urban stormwater but on a much more seasonal basis (Kiesling R.L. 2017). Pesticides primarily enter stormwater via improper application.

Urban use of pesticides accounts for one third of all pesticide use in the United States (Paul and Meyer 2001). The intensity of pesticide application on residential land is often higher than that of agriculture, sometimes by an order of magnitude (Gilliom et al. 2006). Notably, 2,4-D and glyphosate are some of the main pesticides showing up in urban stormwater and are also some of the most-purchased home and garden pesticides in Minnesota (Kiesling R.L. 2017) (Yang et al. 2013) (Pesticide and Division 2013).

In samples of urban stormwater, mixtures of pesticides showed up more than 60% of the time (Gilliom et al. 2006). Samples of urban lakes in Minnesota have also had multiple pesticides in them (VanRyswyk and Tollefson 2008). There are large information gaps about the interactions between different pesticides in the environment and the health and environmental effects these mixtures might have.

Pesticides and pesticide mixtures found in lakes and streams may be caused by polluted stormwater getting directly into these waterbodies from older infrastructure systems that do not include stormwater treatment mechanisms. In newer systems with stormwater treatment mechanisms, treated stormwater may still contain these contaminants because treatment mechanisms are designed to capture coarse suspended solids, not dissolved pollutants (LeFevre et al. 2014).

No individual pesticides, pharmaceuticals, or mixtures thereof are currently exceeding standards in urban Minnesotan lakes and streams. However, much research is still needed to better inform or set standards for these contaminants, both individually and as mixtures. Due to the unknown effects these contaminants may pose to aquatic and human health, CCWD is working to keep them out of our public surface waters and the Minneapolis/St. Paul drinking water supply. Since stormwater pollution is the result of

the accumulation of individual actions, we focused on reaching out and educating residents on the issue of CECs in stormwater and giving people direct actions to reduce CEC pollution.

Project Goals and Outcomes

The overarching project goal was to develop and implement a coordinated education and outreach campaign to provide CCWD residents with information, actions, and opportunities to reduce CECs in urban stormwater and protect drinking water. This section will discuss what outreach materials were created for this campaign, the events at which the materials were distributed, other ways residents were reached with this information, and which staff members at CCWD were responsible for this work. This section will also examine program outcomes and challenges.

Outreach Materials

We created 12 different print and web outreach materials for the campaign (see Appendix A for examples).

For pesticides, we created:

- Three print materials:
 - A brochure on safer lawn care
 - Two flyers on:
 - Hiring certified contractors
 - The connection between stormwater and pesticides
- Five infographics on:
 - Pesticides in stormwater
 - Alternatives to chemical pesticides
 - Using chemical pesticides wisely
 - Having a healthy lawn
 - Hiring certified contractors

For pharmaceuticals we created:

- Three print materials:
 - A flyer on all the disposal locations within the District that included the locations, hours, addresses, and accepted medication types
 - A location-customizable bookmark that listed the three closest disposal locations (see Appendix A for examples)
 - A flyer detailing why proper medication disposal is important

Most of these materials included information on the issue of CECs in urban stormwater and actions residents could take to reduce pollution they might cause with these CECs.

Outreach Events

To get the word out to residents our Outreach Specialist took our materials to a variety of outreach events. In the original grant agreement, we proposed taking CEC materials to at least 4 outreach events. In the end, the materials were distributed at 62 different events, 51 of which had CCWD staff physically present.

Some events attended by our Outreach Specialist included:

- 13 Farmers Markets
- 10 city sponsored open houses and neighborhood meetings
- 10 presentations to both adult and K-12 groups
- 7 city festivals

For some of these events, especially the city festivals, we leveraged our partnerships through the Anoka County Water Resources Outreach Collaborative (ACWROC) to jointly staff a booth with Anoka County Parks or the Anoka Conservation District. For some events that CCWD staff could not attend, we were able to send materials out to the event via our ACWROC partners. We also increased our partnerships by working with five local law enforcement agencies to send out our Safer Lawn Care brochures in the packets the agencies sent out for Night to Unite (Figure 1). 2,761 brochures were distributed through this partnership with law enforcement agencies.

Through these events, 3,788 print CEC materials were given out to residents over two years.

Newsletter Articles

We wrote and published two newsletter articles in five of our cities' newsletters. One on lawn care titled, "Pesticides and Our Water Don't Mix," was published in 2018 and 2019 in four different cities newsletters with one city publishing it twice in 2019. The fifth city newsletter published it once in 2019. The other article, on proper pharmaceutical disposal with an emphasis on spring cleaning, was published once in the city of Andover's newsletter. Combined, these newsletters have a circulation of 66,900 residents.

Library Display

Another way we reached residents with this information was through a display at Blaine's Northtown Library, located within Priority Area A for the Minneapolis and St. Paul DWSMA. We encountered library staff at the Blaine Farmers Market in 2018 and were invited to set up a display in the Northtown Library entryway display cases during the month of March 2019. The display included two panels about discussing the issue of CECs in water and how to keep them out of water (Figure 2). The library had 18,590 visitors for the month of March.

Volunteer Events

We leveraged the library display by organizing a storm drain stenciling event in the Northtown Library neighborhood as a way for residents to directly take action to prevent CECs from polluting their urban stormwater. Using the March display to recruit volunteers, we hosted the stenciling in the library neighborhood on April 27th. Before the volunteers went out to stencil, the Outreach Specialist gave a presentation on CECs. In total, 20 people listened to the presentation and 16 volunteered to do storm drain stenciling afterwards.

We also helped coordinate a trash clean up at the National Sports Center with youth volunteers from Grace Lutheran Church. In total, 52 volunteers came out to clean up the National Sports Center fields. Before they headed out, the Outreach Specialist gave a presentation about CECs and how trash is related to CECs primarily through microplastics.

Online

We used the internet in a variety of ways to do outreach for this grant. We developed a web portal on our website about CECs. This portal hosts all the outreach materials we created for the grant in order to make them easily available for download. The portal also includes a lawncare internet resource guide that compiles many of the resources we used while developing outreach materials for this grant. The web portal is available at www.cooncreekwd.org/cecs.

Social media was another part of our online outreach. Coon Creek Watershed District had no social media presence until hiring our Outreach Specialist. After CCWD developed a social media policy, the Outreach Specialist launched Facebook and Instagram pages for CCWD in April of 2019. These platforms were used to promote events such as the Northtown Library storm drain stenciling event and to put messages out on topics such as proper medication disposal.

Project Roles

The primary person responsible for creating the CECs materials and getting those materials out into the community is Britta Dornfeld, the Outreach Specialist for Coon Creek Watershed District. She created the print and online outreach materials, attended or coordinated most of the outreach events where these materials were passed out, coordinated the volunteer events, designed and implemented the Northtown Library display, started the partnerships with law enforcement agencies and the libraries, and continues to run the District social media. Dawn Doering, the Information and Education Coordinator for the District, supervised grant implementation, edited materials created for the grant, provided local contact names and introductions, and attended some events when Britta was unavailable. Dawn also applied for and received this grant. Katie Nyquist was the grant liaison between the Minnesota Department of Health and

CCWD for this grant. A list of those who worked on or helped with this grant is available in Appendix B.

Overall Outcomes

We originally proposed a goal of creating templates for at least two types of printed materials and a webpage about CECs. In order to distribute these materials, the grant set the goal of attending at least four outreach events and hosting at least one volunteer event focused on CECs.

We exceeded these goals and came in significantly under budget. Additionally, we consider the partnerships formed with local law agencies and libraries a success of this project as they would not have formed otherwise. We will continue these partnerships going forward and plan to do more with our new partners in the future.

This project also allowed the District to create new ways to reach residents. Traditionally, we had relied on our website, city newsletter articles, and printed materials passed out at ~10 yearly events to reach residents. Through this grant, we were able to hire an Outreach Specialist who attended a much wider variety of events than previously possible and focused on information about CECs. In 2019, our Outreach Specialist attended 34 outreach events, of which 32 focused on CECs. She also set up a display at Northtown Library as a new and innovative way to reach residents. This project also enabled the District to create a social media presence, allowing the District to reach new audiences with information on CECs and other important topics.

Challenges

One challenge with this project is that it is difficult to track and quantify impact. For example, a goal of the project was to distribute printed materials to >25,000 individuals. Counting newsletter circulation as part of printed materials, we distributed materials to over 70,000 residents. However, we do not know how many of the residents receiving the newsletters read them. Quantifying indirectly received information speaks to an opportunity for us to improve on tracking our impact, though social science impact is often difficult to track. With print materials it is difficult to tell impact other than the distribution of materials. Social media offers a new way for CCWD to measure citizen engagement with information, something we hope to pursue more in the future.

Another challenge was ensuring that we are reached all the diverse residents in our District. We did try to attend more non-traditional events such as farmers markets to reach new audiences. However, we don't fully know the demographics or primary languages of all District residents. We recognized that not all District residents' primary language is English so we investigated getting an additional grant to fund translations of some of our materials including our CECs materials. While we did not get this additional grant, looking into it made us realize that we need to do more regarding inclusivity in all our outreach. Another way we could have been more inclusive with this grant is to have

been more mindful about having volunteer events inclusive of all levels of ability to ensure that all residents feel they have a way to improve their local water resources.

Project Impact

One less traditional way we could assess project impact was through discussions we had at farmers markets. These venues often lent themselves to longer discussions as compared to other events we attended. Through these conversations, it became clear that many residents who stopped by the booth were not using synthetic pesticides on their lawns, and many who took the lawn care brochure wanted to encourage other people in their lives to reduce or eliminate pesticide use. Others we spoke to did use synthetic lawn chemicals but wanted to reduce their use. Many of these people cited children, grandchildren, or pets as motivators for pesticide use reduction. To capitalize on the pet angle, we ordered dog poop bag holders with the message “Want a pet-safe lawn? Reduce chemical use!” written on the side. These poop bag holders proved very popular, acting as conversation starters and drawing folks into our booth for further discussion. In fact, we had to make a second order of these.

Another result of these discussions was people’s interest in lawn conversion. We had multiple discussions on lawn conversion at farmers markets. We also partnered on two Resilient Lawn Workshops run by Metro Blooms and sponsored by Rice Creek Watershed District. The Outreach Specialist presented on CECs at both workshops.

We also discussed proper pharmaceutical disposal with residents. While the Safer Lawn Care brochures were more popular than the proper medication disposal bookmarks, residents who did take bookmarks were often very excited to learn proper disposal information. Residents sometimes knew where to take their prescription medication but appreciated our bookmarks listing which locations also took over-the-counter medications and how to properly dispose of sharps. The newsletter article we ran in the spring of 2019 attracted attention to the Anoka County Sheriff’s spring medication take-back event; 64 pounds of pharmaceuticals were collected at this event.

Due to the fast-paced nature of many of the outreach events, it was difficult to write down the number of in-depth conversations or record the topics of said conversations, causing a gap in our knowledge of our impact. Lawncare pesticide use tips were incorporated into a portable, interactive display we developed about stormwater pollution prevention. This display was primarily about an experimental biochar weir filter that the CCWD implemented at the Springbrook Nature Center, funded through a Metropolitan Council stormwater research grant. The display was custom built but could not accommodate a counter in it to track its use, let alone impact. This shows the difficulty of tracking impact and the need for better ways to track interactions.

The internet has allowed us to better track our impact. Our CECs web portal had 222 unique views since its inception on February 8, 2019. Additionally, volunteers for the Northtown Library storm drain stenciling said they found out about the event via Facebook. These volunteers have since been more involved with the District; they had not even known the District existed before the event. This shows that social media does make it easier to track interactions and impact, and we hope to further leverage this in the future.

This program has had an impact on the broader community of Minnesota watershed districts as it won the “2019 Program of the Year” award at the Minnesota Association of Watershed District Annual Meeting. The innovative financing and unusual partnership between the Minnesota Department of Health and CCWD are part of the reason this program won the award. We hope that this award will make other watershed districts interested in doing CECs outreach, potentially using our materials, and encourages them to partner with MDH in the future.

Working with MDH

Our MDH contact, Katie Nyquist, assisted us in confirming the choice of CECs on which this program focused. She also reviewed our website before it went live to offer perspective and edits. She was very easy to work with and helped us with any financial questions we had. We especially appreciated her understanding in extending our deadline after getting a late start so we could continue to work on the grant over the 2019 summer, our busiest time of year for outreach.

We would consider applying for the grant again to keep building momentum of CEC awareness in stormwater. We have suggested this grant opportunity to some of our partners but prioritizing their time and staffing for this topic is challenging for them. The only improvement to consider by MDH to this grant program is an introductory kickoff or mid-point meeting of all the grantees to share projects, questions, and strategies.

Conclusion

Through this grant project residents of Coon Creek Watershed District and beyond learned about the problems of improperly disposed pharmaceuticals and pesticides in stormwater and then were given actions they could take to prevent CEC pollution. By using this knowledge and participating in events relating to CECs, residents worked to improve the water quality in CCWD and reduce CECs in urban stormwater. Improved water quality benefits the health of people that live around and recreate on CCWD waterways. Additionally, since the majority of CCWD is within the Priority Area A for the Minneapolis and St Paul Drinking Water Supply Management Area, this helps protect the health of residents of Minnesota’s two largest cities.

Though this grant period is over, we plan to continue using materials developed for it, especially the Safer Lawn Care brochure and dog waste bag holders. The partnerships we have developed over the course of this grant will also continue. We are still promoting the Take-Back days that local law enforcement agencies host, and we are planning to do Night to Unite again. We also want to do more programming with local libraries.

There are many programs happening now that go well with our outreach messages around pesticides and we may end up doing more outreach in those venues. This includes partnering with anyone who gets a grant from the Lawns to Legumes state-wide grant program to discuss the multiple benefits associated with eliminating pesticide use, and how to reduce or eliminate chemical pesticide use while maintaining an aesthetically pleasing lawn. Lynne Hagen of the Anoka County Master Gardeners has said she's noticed an uptick in people interested in growing pollinator-friendly plants and our message to reduce pesticide use goes well with that. There are also stream corridor restoration projects the District may do in the future (dependent on grant funding) that could be a way to discuss pesticide use reduction with residents.

For pharmaceutical disposal, there are certain things that we did not accomplish during this grant period that could be future projects. One example is doing more outreach to a senior audience on proper medication disposal, targeting senior living facilities and senior activity centers. We also plan to work with veterinary offices to distribute proper pet medication disposal information.

While the grant has ended, we have room to grow in our outreach both on CEC topics and with new audiences. Having this grant has allowed us to reach new audiences, form new partnerships, and talk about new important water quality topics. We plan to continue engaging residents on these topics and appreciate that this grant enabled us to greatly expand our outreach.

Figures



Figure 1: A post on the CCWD Instagram discussing the 900 Safer Lawn Care brochures sent out through local law enforcement agencies for Night to Unite 2019.



Figure 2: The two panels of the Northtown Library Display discussing the issues of pesticides and pharmaceuticals in water and how they can be kept out of water.

Bibliography

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Appendix A: Outreach Materials

Safer Lawn Care brochure: Front and back side

General Lawn Tips

These general lawn tips will help you have a healthy lawn. Healthy lawns are more disease and pest-resistant, so you should need less chemical inputs to maintain them.

Mowing & Watering Tips



- Keep turf 3" tall.
- Mow with a sharp blade.
- Change mowing direction often.
- Never cut off more than a third of the turf height at a time.

Discharge clippings to lawn, and sweep any clippings that got onto hard surfaces back onto the lawn.
Water your lawn deeply (1") once a week if it hasn't rained.

Fertilizing & Aerating Tips

Use nature's fertilizer! Mulch leaf clippings & leaves into your lawn with your mower.

Before adding any extra fertilizer, test your soil at the U of MN to see if you need it.

If your soil test indicates you need fertilizer, apply around Labor Day and after aeration.

Stick a pencil in your lawn to see if you need aeration-you do if it doesn't slide in easily. Aerate with a core aerator.



Safer Lawn Care

Protect the health of your family & the environment
Reduce lawn chemical use



Coon Creek Watershed District
Serving You Since 1959

www.cooncreekwd.org 763.755.0975 info@cooncreekwd.org



Safer Lawn Care brochure: Inner contents

How to be Safer

Lawn chemicals have the potential to be dangerous to human & animal health. Those that are improperly applied can also run off lawns with rain or snowmelt and be carried into local waterbodies like lakes and streams.

Making the Best Choice

Always start with pest control methods that don't use chemicals. These methods are generally safer.

If you're going to use chemicals, try those recommended in this brochure and its references first. If they don't meet your needs, look for products that will. Pick the ones that will cause the least environmental damage.

Don't assume organic chemicals are the best choice; some can actually be quite dangerous. This brochure's references are good places to start your research!

Tips for Using Chemicals

Spot treat; avoid weed & feed.

Always read & follow the label.

Buy the smallest amount of chemical you need & use it up.

Don't apply if it's windy, over 85°F, or if it'll rain in the next 48 hrs.

Use contact herbicides/insecticides instead of systemic ones.
The exception to this is if you're fighting grubs.

Take old chemicals to Household Hazardous Waste Facilities.
Anoka County Household Hazardous Waste: 763-324-3400



Safer Weed Controls

Non-Chemical



Regular Hand Weeding

A safe, effective way to remove weeds. You keep weeds from growing deep roots if you do it often. Many weeds will return unless the roots & all parts of the plant are removed.

Solarization

This method kills patches of lawn & removes soil disease. Cut grass as low as possible (2" or lower), water the area, then cover with black or clear plastic for 6-8 weeks over the summer. This may also kill beneficial soil microbes.



Credit: "Solarizing Your Garden for the Summer" from the Junior Master Gardeners website

Chemical



Credit: "Corn gluten meal packaged as fertilizer" by Kjeannette, Flickr

Corn Gluten Meal

This pre-emergent herbicide should be applied in a dry period in spring when the soil is 55-60°F. It can be expensive & take a few years to work. Studies are mixed on its effectiveness; however, it's also a long-acting, slow-release fertilizer.

Brochure References

University of Minnesota Extension Lawn Care page,
<https://extension.umn.edu/lawns-and-landscapes/lawn-care>

"The Truth About Organic Gardening: Benefits, Drawbacks & the Bottom Line" and "The Truth About Garden Remedies: What Works, What Doesn't and Why" both books by Professor Jeffrey Gillman

Front photos credit: Top-Clean Water MN, Bottom-both from Pixabay

Proper Medication Disposal bookmark: Front side, customized for the city of Andover

Properly Dispose of Medication

Have unwanted, unused, or expired medication?

Bring it to a medication take back location to properly dispose of it. You'll protect the health of your community & local waters.

How It Works

Bring medication to disposal location in its original container with personal information removed/scribbled out. It needs to meet location requirements. You may go to any location on this bookmark.

If weekdays don't work for you, some police departments have weekend take-back events in the spring & fall. Ask your department if they host these events.

Andover Take Back

Anoka County Sheriff's Office
13301 Hanson Blvd NW

Hours: 8 am-4:30 pm, Mon-Fri

Phone: 763.324.5000

Accepts: Prescription Medication
Pet Medication
Liquid Medication

Doesn't Accept: Needles/Sharps
Over-the-Counter Medication



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Hire Certified Contractors flyer: Front side

Hire Certified Contractors!

The Certification
The Minnesota Pollution Control Agency offers certifications for contractors in summer turf care and smart salting

Certified Turf Contractors

-  Understand the turf grass life cycle
-  Learn the best times to apply pesticides & fertilizers

So they should

-  Apply the least amount of chemicals needed for yard maintenance

Icon created by Debra Fendley from the Heat Project

Find a certified contractor

 **MINNESOTA POLLUTION CONTROL AGENCY**

1. Go to the MN Pollution Control Agency's website (www.pca.state.mn.us) and search for "[summer maintenance certificate holders](#)"

 

2. Don't see your contractor? Ask if they're certified- if not, direct them to the [summer turf grass maintenance training page!](#) There's a training schedule listed part way down the page.

Infographic funded by:

-  **DEPARTMENT OF HEALTH**
-  **CLEAN WATER LAND & LEGACY**
- Coon Creek Watershed District**
www.cooncreekwd.org

Appendix B: Grant Roles

Please note: This list is not comprehensive and does not list every person or organization that worked on this grant

Name	Organization	Role in Grant	Contact Information (if applicable)
Britta Dornfeld	Coon Creek Watershed District	Primary designer and distributor of grant materials	bdornfeld@cooncreekwd.org 763-258-7305
Dawn Doering	Coon Creek Watershed District	Applied for & supervised grant and outreach work	ddoering@cooncreekwd.org 763-402-0000
Katie Nyquist	Minnesota Department of Health	MDH grant liaison	
Jaron Cook	Anoka Conservation District	Outreach collaborator for Farmers Markets	
Lynne Hagen	Anoka County Master Gardeners	Outreach material editor	
Jessica Abarca Nicole Greenwell Katie Haus	Anoka County Parks	Outreach collaborators for city festivals and neighborhood meetings	
Laura Landes	Anoka County Sheriff's Office	Night to Unite contact	
Emily Johnson	Anoka County Water Resources Outreach Coalition	Staffing coordinator for several outreach events attended by CCWD	
Rebecca Haug	Blaine Engineering Department	Provided contacts for farmers markets and other city of Blaine events	
Kim Kiley	Blaine Police Department	Night to Unite contact	
Trish Heitman-Ochs	Coon Rapids Police Department	Night to Unite contact	
Rebecca Holmlund	Coon Rapids Sustainability Commission	Outreach material editor	
Courtney Miller	Fridley Police Department	Night to Unite contact	
Kristi Larson	Grace Lutheran Church	Youth clean-up contact	
Stan Kaminski	Minnesota Department of Agriculture	Outreach material editor	
Trey Hughes	National Sports Center	Youth clean-up contact	
Nancy Narigon	Northtown Library	Display case organizer	
Sgt. Josh Antoine Officer Karen Fiske	Spring Lake Park Police Department	Night to Unite contacts	
Professor Vera Krishchik	University of Minnesota	Outreach material editor	