



BUYERS BEE-WARE

**MUNICIPAL PURCHASERS' GUIDE
TO PROTECTING POLLINATORS**

JANUARY 2017





Acknowledgements

This report was written by Alicia Culver, Responsible Purchasing Network, and Tiffany Finck-Haynes, Friends of the Earth U.S.

We gratefully acknowledge Rella Abernathy, City of Boulder, Colorado; Brandy Alexis Espinola, Environmental Finance Center, University of Maryland; Chris Geiger, City and County of San Francisco; Mei Ling Hui, San Francisco Department of the Environment; Julie Weiss, City of Palo Alto; and Julia Wolfe, Operational Services Division, Commonwealth of Massachusetts for providing technical review of the draft report. Please note that their review does not necessarily indicate endorsement of the conclusions or recommendations presented.

Friends of the Earth

Friends of the Earth United States, founded by David Brower in 1969, is the U.S. voice of the world's largest federation of grassroots environmental groups, with a presence in 75 countries. The organization works to defend the environment and champion a healthier and just world. Throughout our 47-year history, we have provided crucial leadership in campaigns resulting in landmark environmental laws, precedent-setting legal victories, and groundbreaking reforms of domestic and international regulatory, corporate and financial institution policies. www.foe.org

RPN

Responsible Purchasing Network is an international network of procurement and sustainability professionals dedicated to developing and implementing sustainable procurement policies, programs and best practices. Formed in 2005, RPN is committed to leveraging the buying power of public agencies and institutions to create demand for safe and environmentally sustainable goods and services. www.responsiblepurchasing.org

Any errors or omissions in this report are the responsibility of Friends of the Earth U.S.

©Copyright January 2017 by Friends of the Earth & RPN.



Executive Summary

Honeybees and other pollinators, which are the backbone of our food system, are rapidly declining due to several factors. A growing body of scientific research has implicated the widespread use of pesticides, including neonicotinoids (also called “neonics”), as a fundamental contributor to pollinator declines. Neonics are insecticides that are persistent, systemic and potentially addictive to pollinators. They are largely applied to plants and seeds to prevent insects from eating them. These water-soluble pesticides are readily absorbed by plant roots and transported systemically in the plant’s vascular system to other parts of the plant, including roots, pollen, nectar, leaves, stems and fruit. This absorption pathway results in the exposure of beneficial, non-target insects such as bees and other pollinators to potentially lethal

doses of these pesticides. These insecticides are added to ornamental flower dust, insecticidal sprays, fertilizers and other landscaping products. They are also found in pre-treated seeds and plants — including some that are labeled pollinator friendly — as well as in some pressure-treated wood, deck sealants and other building supplies to minimize pest damage.

Despite mounting evidence of the significant hazard that neonics pose to pollinators, the U.S. Environmental Protection Agency has continued allowing most neonicotinoid pesticides to remain on the market. Fortunately, a growing number of government entities and institutions — notably, local governments and universities — are taking action to protect pollinators by adopting new policies and practices that restrict the use of neonics and increase the amount of pollinator-friendly habitat on their property.



This guide describes several important steps an organization can take to implement a comprehensive pollinator protection program, including:

- **Convening a cross-function team** to develop the key elements of your pollinator protection program;
- **Adopting a pollinator protection policy** that includes a commitment to avoiding the purchase of pesticides and plants that contain neonics and other systemic pesticides;
- **Developing a pollinator protection plan** for your organization that will detail new purchasing practices and operational procedures to protect pollinators on your grounds;
- **Creating a list of approved or prohibited pesticides** that restrict pesticides that negatively impact pollinator health;
- **Reviewing your commodity contracts, service agreements and de-centralized purchasing activities** to identify opportunities to restrict the purchase of products containing neonics or other pesticides that are harmful to pollinators;
- **Surveying local vendors** to identify those that offer pollinator-friendly chemicals and plants;
- **Developing specifications** to insert into your bid solicitation documents for pesticides, plants and building materials; as well as landscaping and pest management service agreements;
- **Widely promoting your bid solicitation** that focuses on pollinator protection and rewarding vendors that demonstrate experience helping their customers transition to using neonic-free pesticides and integrated pest management practices;
- **Monitoring your pollinator-friendly contracts** to ensure compliance with your specifications and address any problems that arise;
- **Creating pollinator-friendly habitat** by installing green/vegetative roofs, planting flowers along rights-of-way, letting weeds grow, and transitioning to an organic land management system;
- **Providing nesting sites for bees** and relocating — rather than destroying — hives; and
- **Buying certified organic agricultural products** such as produce, coffee and cotton textiles.



INTRODUCTION..... 6

- POLLINATORS ARE IMPORTANT AND IN TROUBLE..... 6
- NEONICOTINOID PESTICIDES ARE IMPLICATED IN BEE DECLINES..... 6
- WHY ARE NEONICS USED?..... 7
- THE U.S. HAS FAILED TO RESTRICT MOST NEONICOTINOID PESTICIDES FROM THE MARKETPLACE..... 8
- GOVERNMENT AGENCIES AND INSTITUTIONS LEADING THE CHARGE 8

HOW TO DEVELOP A POLLINATOR PROTECTION POLICY 10

- WHY SHOULD AN ORGANIZATION ADOPT A POLLINATOR PROTECTION POLICY? 10
- WHAT TYPES OF POLLINATOR PROTECTION POLICIES HAVE PUBLIC AGENCIES AND INSTITUTIONS ADOPTED? 10

DEVELOPING AND IMPLEMENTING A POLLINATOR FRIENDLY PURCHASING PLAN 12

ADDITIONAL WAYS TO PROTECT POLLINATORS..... 20

APPENDICES 22

- APPENDIX A: EXAMPLES OF NEONICOTINOID GARDEN PRODUCTS USED IN THE UNITED STATES.... 22
- APPENDIX B: SAMPLE POLLINATOR PROTECTION POLICY..... 23
- APPENDIX C: JURISDICTIONS THAT HAVE ADOPTED POLLINATOR PROTECTION POLICIES FOR CITY/COUNTY PROPERTY 25
- APPENDIX D: PRICE COMPARISON BETWEEN NEONICOTINOID PRODUCTS AND THEIR ALTERNATIVES BY PEST..... 27

ENDNOTES..... 29

Introduction

Pollinators are important and in trouble

Honeybees and other pollinators are the backbones of our food system. They are essential for one in three bites of food we eat and contribute nearly \$27 billion to the U.S. economy.¹ Unfortunately, evidence is mounting that both domesticated and wild pollinators are declining rapidly worldwide.^{2,3} For nearly the past decade, U.S. beekeepers have lost an average of 30%-40% of their hives - with some beekeepers losing all of their hives and many leaving the industry entirely.⁴

Neonicotinoid pesticides are implicated in bee declines

A growing body of scientific evidence has implicated neonicotinoids (also known as “neonics”) as a key factor in recent bee population declines.⁵ Neonicotinoids stand apart from other pesticides regarding their impacts on pollinators and the environment. Not only are neonics widely used, they are also the most



acutely toxic group of insecticides to honeybees and wild bees.⁶ Neonics move through the plant and into its nectar and pollen. They persist in the environment for months or even years. They have been shown to kill bees directly and make it harder for them to navigate back to their hive,⁷ reproduce and fight off pathogens and other predators.^{8,9} Several studies have found that bees can become addicted to neonics, which are chemically related to nicotine.¹⁰

Neonics are also harming other beneficial species that are essential to our ecosystems, including wild bees, birds, bats, butterflies, dragonflies, lacewings, ladybugs, earthworms, small mammals, amphibians, and aquatic insects — putting food production and the environment in jeopardy.^{11,12,13,14} The Task Force on Systemic Pesticides, a global body of 29 independent scientists, conducted the “Worldwide Integrated Assessment of the Impacts of Systemic Pesticides on Biodiversity and Ecosystems” by reviewing more than 1,100 peer-reviewed studies on systemic pesticides. The Task Force called for immediate regulatory action to restrict neonicotinoids¹⁵ and concluded:

Neonics impact all species that chew a plant, sip its sap, drink its nectar, eat its pollen or fruit, and these impacts cascade through an ecosystem weakening its stability.... Neonics persist — particularly in soil for months and in some cases years and environmental concentrations can build up. This effectively increases their toxicity...

Top Ten Registered Pesticides for Acute Toxicity to Honey Bees

Active Ingredient	Honey Bee Oral LD ₅₀ (µg/bee)*	Chemical Class
Imidacloprid	0.0037	Neonicotinoid
Clothianidin	0.0038	Neonicotinoid
Fipronil	0.0042	Pyrazole
Thiamethoxam	0.0050	Neonicotinoid
Abamectin	0.0090	Macrolide
Dinotefuran	0.0230	Neonicotinoid
lambda-Cyhalothrin	0.0270	Pyrethroid
Cyfluthrin	0.0500	Pyrethroid
Fenitrothion	0.0593	Organophosphorus
Resmethrin	0.0654	Pyrethroid

INCREASING
TOXICITY

* Pesticides are ranked by oral LD₅₀, which is the estimated dose that would kill 50 percent of the test population exposed by eating contaminated pollen or nectar. A smaller number means it takes less of the chemical to kill 50 percent of the test bees. Data source: References 42, 43, and 44.



The effects of exposure to neonics range from instant and lethal to chronic. Even long-term exposure at low (non-lethal) levels can be harmful. They are nerve poisons and the chronic damage caused can include: impaired sense of smell or memory, reduced fecundity, altered feeding behavior and reduced food intake... difficulty in flight and increased susceptibility to disease...In the case of acute effects alone, some neonics are at least 5,000 to 10,000 times more toxic to bees than DDT.

Where are neonics used?

Neonics are commonly found in lawn, garden and landscaping products used by government agencies and institutions. Because they typically are used to prevent insects from damaging flowers and leaves, they are often applied to flowering plants, shrubs and trees, which are highly attractive to bees and other pollinators. They are commonly found in ornamental flower dust and seed treatments and are also added to some granular and liquid soil treatments, applied to leaves (in foliar sprays) and injected into trees. Also, some soil and fertilizer products come with neonics mixed in.

Several organizations have developed lists of neonics to avoid. For example, the Xerces Society, which is “a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat,” maintains a list of “Examples of Neonicotinoid Garden Products Used in the United States.”¹⁶ Their list of neonicotinoid pesticides to avoid includes:

- Acetamiprid
- Clothianidin
- Dinotefuran
- Imidacloprid
- Thiamethoxam

Institutional purchasers sometimes, unknowingly, buy garden plants that have been treated with neonics. A Friends of the Earth’s 2014 study, *Gardeners Beware: Bee-Toxic Pesticides Found in “Bee-Friendly” Plants Sold at Garden Centers Across the U.S. and Canada*, found that more than half of “bee friendly” garden plants purchased at Home Depot, Lowe’s and Walmart in 18 cities across the United States and Canada contained neonics at levels that can contaminate gardens, kill bees, and harm a wide array of pollinators.¹⁷

In January 2016, the Healthy Building Network revealed that some building materials contain neonicotinoid pesticides which are added to prevent damage by termites and other insects. The group reported that, “Manufacturers incorporate imidacloprid into exterior products like polystyrene insulation, vinyl siding, adhesives, sealants and pressure-treated wood decking. Imidacloprid migrates from exterior building materials into water and soil. Bees also use sawdust to help build their hives. But EPA’s bee research on neonicotinoids such as imidacloprid has ignored the potential contribution of these materials. Instead, the agency has approved an ever-expanding list of building products in which neonics may be used.”¹⁸ Because neonics can show up in products that do not relate directly to landscaping, a comprehensive approach to eliminating them from an institution’s operations may be required.



The U.S. has failed to restrict most neonicotinoid pesticides from the marketplace

Despite its own assessment that the neonicotinoid imidacloprid, the most widely used insecticide in the world, threatens some pollinators,¹⁹ the Environmental Protection Agency (EPA) continues to allow this and other neonics to be sold. The EPA has delayed any substantive action until 2019.²⁰ It did announce a moratorium on new and expanded uses of outdoor neonicotinoid products in April 2015.^{21, 22} However, the moratorium does not cover previously approved uses of neonicotinoid

products, such as soil applications, sprays or seed treatments, or other types of insecticides that have a similar chemistry (such as flupyradifurone).

In June 2014, the White House established the *Pollinator Health Task Force* to assess the health of bees, butterflies and other pollinators and the impacts of pesticides, including neonicotinoids, on them.²³ In May 2015, the Task Force released its *National Pollinator Health Strategy*, that aimed to reverse pollinator declines largely by conducting additional research, expanding public education and increasing the amount of pollinator habitat.²⁴ This approach is relatively weak compared to that of the European Union, which has been more proactive. In 2013, the European Commission voted for a continent-wide suspension of several widely-used neonicotinoids to protect bees based on recommendations by the European Food Safety Administration.²⁵

Government agencies and institutions leading the charge

In response to delayed action by the EPA and Congress, federal agencies, states, local governments, universities and colleges across the United States have been active in adopting policies and practices to reduce neonicotinoid use:

- The U.S. Fish and Wildlife Service was the first federal agency to act. In 2013, it announced a planned phase out its use of neonicotinoids on all national wildlife refuge lands by 2016.²⁶ In 2014, the Council on Environmental Quality issued guidance for federal facilities encouraging them to acquire seeds and plants from nurseries that do not treat these items with systemic insecticides.²⁷
- The following states have passed policies restricting the use of neonicotinoids on their property: Maryland, Connecticut and Minnesota.
- More than 30 cities, including Portland and Eugene, OR; Sacramento, CA; Boulder, CO; St. Paul and Minneapolis, MN; Indianapolis, IN and Seattle, WA have adopted pollinator protection policies that commit their jurisdiction to eliminate the use of neonics or systemic insecticides, in general.



- Several universities and colleges, including Emory, Villanova and Southern Oregon universities; Antioch and Macalester colleges; and Vermont Law School have taken action by restricting their use of neonics, planting pollinator-friendly habitat on their property, and educating the public about the problem of declining bee populations.

For more details about these and other pollinator protection policies, please see Appendix C.

By integrating bee-friendly purchasing criteria into existing or new sustainable procurement, toxics reduction and integrated pest management (IPM) policies, government agencies and institutions are increasingly becoming an important part of the solution to the bee crisis. Many have taken the next step to avoid purchasing pesticides and plants that contain neonicotinoids or other systemic insecticides and ensure that neonicotinoids are replaced with alternatives that are safe for people, pollinators and the environment. Federal agencies, states,

local governments, universities and colleges are also providing safe havens for pollinators and demonstrating that it is possible to transition to bee-safe land management and growing practices.

These policies — as well as media attention and consumer pressure — have caused a market shift in the landscaping and gardening industries. In 2015, more than 65 wholesale nurseries, landscaping companies and garden retailers across the U.S. took steps to eliminate neonicotinoids from their garden plants and other landscaping products. This includes the two largest home improvement retailers in the world — Lowe's and Home Depot. Home Depot committed to phase out the sale of chemicals and plants that contain neonicotinoids by 2018.²⁸ Lowe's has agreed to do the same by 2019.²⁹ This shift is making it much easier for institutions to begin sourcing pollinator-friendly pesticides and plants.



How to Develop a Pollinator Protection Policy

This section discusses the benefits of adopting a policy to guide an organization's procurement actions so that they protect honeybees and other pollinators. It also describes the various types of pollinator protection policies that public agencies and institutions have adopted including resolutions, executive orders, and procurement policies. Finally, it includes sample language from jurisdictions and institutions that have adopted such a policy, highlighting relevant provisions.

Why should an organization adopt a pollinator protection policy?

One of the most important first steps a government entity or an institution can take to protect bees is to adopt a pollinator protection policy that prohibits the purchase of products that contain neonicotinoid pesticides. Adopting such a policy enables the entity to lead by example, alerting employees and vendors that protecting pollinators is a priority both in purchasing and operations management. It can also bring public attention to an entity's commitment to pollinator protection and support internal champions who may be undertaking

pollinator protection initiatives on their own. Also, the process of creating a policy will often catalyze the formation of a team that can work together to implement it and ensure its ongoing effectiveness.

What types of pollinator protection policies have public agencies and institutions adopted?

A growing number of local governments, states and universities, have adopted pollinator protection policies that prevent the use of neonics on their property.³⁰ The scope and stringency of these policies vary greatly. Because local governments do not have the legal authority to regulate pesticides, most policies are written as resolutions rather than laws or ordinances. While some policies are very narrow and simply commit to banning the use of neonics on the entity's property, others include a broader range of pollinator protection strategies. Boulder, Colorado, for example, adopted a resolution that focuses on minimizing the use of neonics on city property.³¹ Seattle, Washington's *Resolution 31548: A Resolution Concerning the Use of Neonicotinoid Pesticides by the City of Seattle* similarly bans the purchase and use of neonics on city-owned property. However, it also goes further by calling on the federal government to adopt a national moratorium on the use of these toxic pesticides. In addition, the resolution asks local stores to stop selling Seattle's resolution asks local stores to stop selling plants, seeds or any other products that contain neonics. Eugene, Oregon incorporated its ban on the use of neonicotinoids on all city property into a broader resolution that expanded the overall scope of its integrated pest management program.³²

Like Seattle's resolution, many policies take a holistic approach to pollinator protection by committing the jurisdiction or institution to undertake an array of actions to protect bees and other pollinators. Some of the most important provisions include the following:

- Prohibit the purchase and use of neonics and other similar systemic insecticides, including their use by pest management and landscaping service providers working on the jurisdiction's or institution's property;

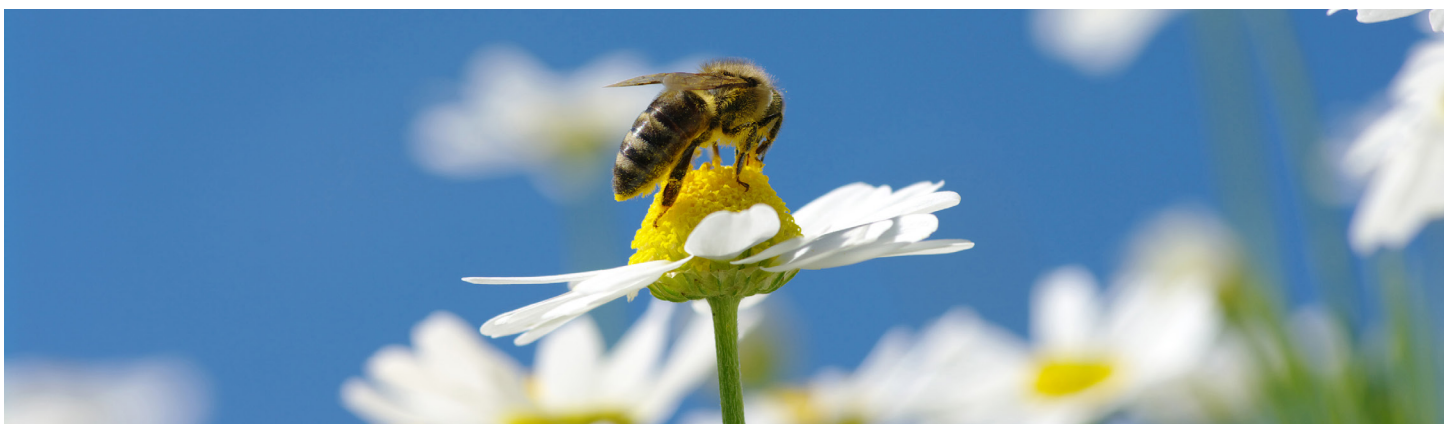
- Avoid the purchase and planting of flowering plants, seeds and other landscaping materials treated with neonics or other persistent insecticides that can adversely affect pollinators and make a concerted effort to purchase organic or pesticide-free plants, seeds and other landscaping materials;
- Commit to the use of IPM as a safer and more effective approach to preventing and addressing pest infestation and weed problems, including organic and other chemical-free landscaping and lawn maintenance methods;
- Commit to increasing the amount of flowering plants and other pollinator forage a jurisdiction or institution puts on large land areas under its control such as parks, playing fields, golf courses, rights-of-way, water management areas, etc.;
- Maintain resources (such as lists of pollinator-friendly pesticides and plants) that are designed to help the jurisdiction's or institution's staff and vendors implement its pollinator protection policy;
- Educate the broader community about the jurisdiction's or institution's pollinator protection policy and practices by publicizing them to the media, posting them online, using signage, hosting educational events, coordinating with local conservation groups and other means;
- Encourage property owners such as homeowner associations, institutions (such as universities, colleges and K-12 schools) and businesses in the community to adopt pollinator-friendly purchasing practices and operational procedures;
- Ask business owners such as nurseries and landscaping companies to stop selling or using plants, seeds and other products that contain neonics; and
- Urge policy-makers — particularly at the federal level — to take action to protect pollinators (for example, by supporting the *Saving America's Pollinators Act* and asking U.S. EPA to suspend the registration of neonics).

Pollinator protection policies vary in other ways:

- Some policies (such as executive orders or procurement policies) address the purchasing practices and procedures only of the government entity or institution itself, while others (such as laws) attempt to influence the practices of businesses and consumers throughout the community.
- Some policies contain stronger language than others. While some resolutions discourage the use of neonics on public property, others outright prohibit it. The City of Seattle, Washington's pollinator protection resolution clearly states the following: "The City of Seattle will not use a neonicotinoid pesticide for any purpose and will seek to use only pollinator-friendly methods of weed and pest control on any City-owned or operated land."³³

See examples of model pollinator protection policies in Appendix B at the end of this guide.

Organizations that adopt a pollinator protection policy can increase their impact by sending a copy of it to the governor, state department of agriculture and pesticide regulation, state and federal legislators, EPA, USDA, etc.





Developing and Implementing a Pollinator Friendly Purchasing Plan

This section highlights a variety of steps public agencies and institutions can take to eliminate pesticides, plants and other landscaping supplies that contain neonics from their operations and create healthy ecosystems that help pollinators to flourish.

Once a jurisdiction or institution has adopted a pollinator protection policy, the next logical step is to develop a Pollinator Friendly Purchasing Plan, which details new purchasing practices and other operational procedures to protect pollinators on its grounds. Many of the entities that have adopted restrictions on the use of neonicotinoid pesticides have also taken steps to increase the amount of suitable habitat they provide for bees while sourcing native, pollinator-friendly plants that have not been treated with neonicotinoids or other systemic insecticides. For example, in 2014, Emory University in Atlanta, Georgia took a pledge to protect pollinators as a centerpiece of its campus “sustainability vision to help restore the global ecosystem, foster healthy living and reduce the university’s impact on the local environment.” Also, the University developed a plan that includes:

- Purchasing plants for campus landscaping that have not been pre-treated with neonicotinoids, to the extent feasible. (Current nursery suppliers have indicated that they do not pre-treat with neonics.)
- Specifying in contracts with vendors and in campus construction standards that neonics

or plants pre-treated with neonicotinoids may not be used on Emory’s campus, to the extent feasible.

- Ensuring any substitutes for neonics used on campus are safe for pollinators.
- Planting and maintaining pollinator-friendly habitats on campus.³⁴
- Conducting campus outreach and education on the importance of pollinators.

Below is a set of actions your jurisdiction or institution can consider taking to eliminate, or significantly minimize, its use of pesticides and plants that contain neonics and create healthy ecosystems for honeybees and other pollinators.

1. Convene a cross-functional team to guide the development and implementation of a Pollinator Protection Plan, including new procurement practices and other operational procedures using the foundations of integrated pest management.

A Pollinator Protection Team is likely to include your organization’s integrated pest management coordinator (or someone from your environmental agency); a representative of your purchasing department; and pesticide and landscaping contract users such as the staff in charge of maintaining the turf on your recreational facilities (e.g., parks, athletic fields, golf courses, playgrounds, etc.), gardens and nurseries, watershed protection areas and other grounds. If your organization does not have an IPM Program Coordinator, you can consider hiring one or designating someone from your existing staff to fill that role.

In addition to developing a Pollinator Protection Purchasing Plan, the Team may be responsible for creating bid specifications for contracts that offer pesticides, plants and/or other landscaping materials. The Team may also create bid specifications for agreements for pest management, landscaping or grounds maintenance services. If your organization is ready to solicit bids, the Team may also be involved in developing the solicitation scope, design and timeline, as well as evaluating the incoming bids.

which cannot. You don't have to start from scratch when developing (or updating) your approved or restricted list of pesticides. Below are three resources that can help facility managers, IPM program coordinators and others identify safe alternatives to neonicotinoid pesticides:

- Pesticide Research Institute has created a Pest Smart database that provides a web and mobile app listing at least 290 bee-friendly alternatives to neonics. For more information about this resource, go to <http://www.pesticidresearch.com/site/pestmart/>.
- Maryland Pesticide Network's *Neonicotinoid-free Consumer Pesticide Products* lists several "least-toxic" insecticides for controlling ants, aphids, termites and other insect pests based on information from the PRI Test Smart Database.³⁵
- The Xerces Society for Invertebrate Conservation's factsheet on organic pesticides identifies which pesticides are least toxic to bees: <http://www.xerces.org/wp-content/uploads/2009/12/xerces-organic-approved-pesticides-factsheet.pdf>



Photo: Lori Vollmer, GardenFever!

2. Develop a list of approved or prohibited pesticides that restrict neonicotinoid insecticides.

Many of the local governments, states, universities and colleges that have taken action to protect pollinators have created a list of approved pesticides for use in their facilities and on their grounds. For example, the City of San Francisco maintains a *Reduced Risk Pesticide List* for government employees to use when addressing unwanted weeds, insects and other pests. Find this list at: <http://sfenvironment.org/article/city-staff/pest-management#list>. If your organization already has such a list, you can review and update it to ensure that bee-toxic pesticides are not allowed. Alternatively, you can create a list of pesticides that are NOT approved for use on your property, though an affirmative list can be a better guide for decision-makers.

Having an approved pesticides list is an easy way for your organization's staff and landscaping contractors to know which products can be used on your grounds and

3. Review your contracts to determine which ones offer pesticides, plants and other landscaping products or services.

One of the tasks your Pollinator Protection Team may need to undertake is to determine how the various departments within your organization purchase their pesticides and plants. Some of the common methods include:

- **Commodity contracts** for pesticides, plants or landscaping products or for a broad array of facility maintenance, repair and operations (MRO) supplies that may offer these products along with other building supplies;
- **Service agreements** for pest management, landscaping or grounds maintenance; and
- **Decentralized purchasing activities** such as small walk-in purchases made at local nurseries or retailers, or from on-line vendors using p-cards or purchase orders.

This information can be gathered by surveying the members of your team about the ways in which they currently purchase these products and services, by researching contracts that are posted online or by asking your purchasing department to send them to you.

4. Review your contracts' historical usage data.

Once you have identified the contracts that may offer products contaminated with neonics, you can try to collect and analyze each contract's historical usage data (e.g., for the past year or two). The analysis of the usage data will show how often these products were purchased by your institution. You may be able to retrieve this information from your electronic purchasing system, by reviewing individual purchase orders, or by asking your approved vendors to provide this information to you in the form of a detailed "spend report."

Reviewing your contract usage data can help you identify high-spend items (if product names or order numbers are provided), high-usage agencies or employees (who you can invite to participate on your Pollinator Protection Team) and high-volume vendors. To determine if the pesticides offered or sold on your contract contain neonics, you will need to compare a copy of each product's label listing its active ingredients to the list of neonics above.

Vendor participation can save staff time, as vendors dependent on your contract may decide that it makes business sense to bring their entire operation into compliance with your Pollinator Protection Purchasing Plan. Vendor-supplied data, for example, can be used to assess the extent to which they are complying with your policy, verify the amount of pollinator-friendly pesticides and plants that are purchased by individual departments and staff; and identify opportunities for improvement.

If your organization uses service agreements for landscaping, grounds maintenance or pest management, you will need to ask your contractors to supply you with a list

of insecticides they have been using. In the future, you can require your service providers to report this information to you on a regular basis.

5. Survey local vendors to determine the availability, price and performance of neonic-free chemicals and plants.

Purchasing agents (or others on your Pollinator Protection Team) can use telephone or email surveys to gather market information that can help them develop their bid solicitation documents by getting a better understanding of the types of neonic-free products and services that are available from vendors in your region. Some may even want to conduct a more formal market assessment by issuing a Request for Information (RFI).

They can also interview nurseries, garden supply or hardware stores, and other companies about the neonic-free pesticides, plants, seeds and other gardening supplies — as well as building materials — they can offer and about product labeling, efficacy and cost. Please see the list of retailers and nurseries that have adopted pollinator friendly policies on the Friends of the Earth website at: www.foe.org/beeaction/retailers.

If you are planning to contract with one or more local pest management or landscaping service providers, you may want to survey the firms in your area to assess their experience with IPM, including any IPM certifications they have, and whether they have a pollinator protection policy that restricts the use or sale of products containing neonics. You can inquire about the non-chemical pest management approaches and safer insecticides they use in their operations and determine what they can offer to support your Pollinator Protection Program.

You can also ask vendors to provide references from similar organizations that have used their IPM services and neonic-free products. You may even want to undertake pilot testing to confirm that their products and services will meet your environmental, health and performance requirements.

6. Ask other organizations (particularly if they are similar to yours) to determine whether they have already successfully implemented pollinator-friendly purchasing practices.

This type of research may help you identify bid specifications, vendor survey questions and approved (or prohibited) product lists that you can incorporate into your bid solicitation documents. Some of this information may be posted online, although it may be necessary to call the contract manager or sustainability contact for the jurisdiction or institution to get additional details — as well as lessons learned. Benchmarking in your region may also help you get references for local suppliers of goods and services that offer neonicotinoid-free products. Also, it could give you insights into some of the challenges you may be facing and how other organizations have overcome them.

Finally, you may find that you can procure pollinator friendly chemicals and plants — or IPM services — at discounted prices by utilizing an existing contract that has been created by another jurisdiction, rather than going through the sometimes labor-intensive and expensive process of negotiating a new contract on your own. For example, if you are a public agency, you could look for existing contracts other jurisdictions or institutions have with firms that have made a commitment to banning, phasing out or labeling such products.

7. Develop specifications and insert them into your bid solicitations for pesticides, plants, and building materials as well as landscaping and pest management service agreements.

Specifications are mandatory criteria that all vendors must meet and apply to the products and services they offer. One approach an organization can take is to include language in their bid solicitations for pesticides, plants and other landscaping supplies that prohibits neonics from being offered on their contracts. Below is some sample language:

Vendors may not offer any products or plants on this contract that contain neonicotinoid insecticides including, but not limited to, the

following “active ingredients,”³⁶ which are on the product label:

- Imidacloprid
- Acetamiprid
- Dinotefuran
- Clothianidin
- Thiamethoxam

Alternatively, if your organization has adopted an Approved Product List, you can require vendors to only offer pesticides on your list.

Similar language can be included in solicitations for service agreements with landscaping or pest management contractors that will be using insecticides or planting flowers, flowering trees, shrubs or bushes. The City and County of San Francisco, for example, includes the following language in its bid specifications for pest management contractors:

*Notwithstanding other sections in this contract, the Contractor will use pesticides (including insecticides, herbicides/weed-killers, fungicides, rodenticides) only as a method of last resort, and only after exploring all applicable non-chemical options. Only pesticide products listed on the **San Francisco Reduced-Risk Pesticide List** (SFEnvironment.org/IPM) may be used on City properties (SF Environment Code, Chapter 3), and must be used in a manner consistent with limitations described on the RRPL and the US EPA label.³⁷*

If you are not sure whether your mandatory requirements can be met, you can release your draft bid specifications during a pre-bid conference to get feedback on them from local vendors.

8. Include desirable criteria in your bid solicitation by using vendor survey questions.

Vendor surveys can help you identify companies that can go beyond your minimum criteria by offering experience in this area as well as additional pollinator-friendly products and services.

The answers to your survey questions will carry weight if the solicitation is designed

to assess “best value.” For example, if your bid solicitation for landscaping supplies or pest management services is structured as a Request for Proposals, you can offer “points” toward winning the award to firms that have experience helping organizations similar to yours to establish a pollinator protection program, how they source and label their neonic-free pesticides and plants, or help their customers utilize these safer products. You can also ask vendors whether their firm is a certified IPM provider under certifications such as [EcoWise](#) or [Green Shield](#).

Many jurisdictions use RFPs to identify companies that have experience utilizing IPM practices to reduce or eliminate pesticides. For example, the City of Portland, Oregon issued an RFP for Bareroot Native Plant Supplies, which asks bidders to document their IPM qualifications and provide information about the “sustainable practices that will be in use” if they are awarded a contract. They were also asked to describe how their company uses pesticides to treat soil, control weeds and address pest outbreaks. Such questions can help contract managers get a better idea of each bidder’s approach to these tasks.

Specific questions relating to the use of neonics or protecting pollinators could be included in a vendor survey. You can design your questions to have a yes/no answer for easy scoring. For example:

- Has your company adopted a Pollinator Protection Policy? If yes, please attach a copy.
- Does your company label all plants treated with neonicotinoid pesticides in order to warn consumers?
- Do you screen your products to ensure that they do not contain neonicotinoids and other pesticides that can be harmful to pollinators?
- Alternatively, you can make your questions open-ended and award points in an RFP bid evaluation process based on the quality of their responses. For example:

- How does your company determine whether plants, seeds or other landscaping materials have been treated with neonicotinoid pesticides?
- Please explain how your company has helped other jurisdictions or businesses to develop and implement a pollinator protection program.

9. Widely publicize your pollinator-friendly bid solicitation(s) to vendors in your area to foster competition.

Actively work to increase the number of companies to which you send the bid solicitation, including IPM providers and certified “green” businesses in your region. Increasing the number of companies will increase the likelihood that you will receive compliant and competitive bids. You may make identified potential bidders during your market assessment and benchmarking processes, including companies that have supplied pollinator-friendly products and services to neighboring jurisdictions or businesses in your community.

10. Conduct a bid evaluation process that supports your Pollinator Protection Program.

It is important to verify that your vendor is willing and able to restrict the sale of pesticides and plants that contain neonics — and that it offers safer pesticides as well as plants that are devoid of these chemicals. If you don’t have an approved list of pesticides, you can ask your vendor(s) to supply a list of pesticides they are planning to use.

Consider giving preference to vendors that offer additional benefits such as experience providing products that are pollinator friendly, especially if their products are verified by a third party such as USDA as “organic” or the Organic Materials Review Institute.

11. Roll out and promote your pesticide, landscaping and facility maintenance supply contracts as well as service agreements that offer neonic-free pesticides, plants and other products.

Public agencies, institutions and other organizations will often notify contract

users about the environmentally preferable products and services that are available on their contracts — particularly when new awards are made. Common outreach methods include targeted emails, newsletters, webinars, postings on their websites and social media. Some organizations invite (or require) recently approved vendors to make a presentation to their organization to publicize the new contract.

Vendors should be asked to describe to contract users how they can quickly identify pesticides, plants and other products that are free of neonics and other pesticides that are harmful to pollinators when placing an order online or making a purchase at the vendor’s retail locations.

12. Monitor the contract regularly to ensure that there is ongoing compliance with its requirements.

It is important for all approved vendors to understand that they will be expected to comply with all of the contract requirements, including reporting. For example, some jurisdictions, such as Boulder, CO, require all contractors to request permission to apply any pesticides before their application on city

property so that they can monitor compliance with their policy on an ongoing basis.

Contract monitoring is most successful when vendors are required to submit regular (e.g., quarterly) reports on the types and quantities of insecticides (or pesticides in general) that they sold to your contract users. Providing your vendors with a reporting template ensures that the information is complete and organized in a way that is quick for them to fill out and easy for you to analyze. Below is a sample template.

Service providers can be asked to track and report all of the pesticides they applied as well as the plants, seeds and other landscaping supplies treated with neonics they used on your property on a quarterly basis.

Your team leader or contract manager should communicate with vendors and contract users as soon as any noncompliance is discovered or reported, and explore ways to solve the problem such as replacing a noncompliant product with a compliant one on the contract. It should be clear to vendors that flagrant or ongoing noncompliance may be grounds for contract termination.

SAMPLE TEMPLATE

Vendor	Date	Pesticide Name/SKU	Active Ingredient	Approved Product? (Y/N)	Contract User Name/ Department





Case Study: Eugene, Oregon

Eugene, Oregon was the first US city to adopt a policy to eliminate the use of pesticides that harm bees and other pollinators.

In 2014, a group of passionate and dedicated beekeepers in Eugene became very concerned about the role pesticides played in the decline of their bees. They reached out to the group Beyond Toxics and other concerned city residents and established a coalition to work on the issue.

After several months of working with the city, on February 26, 2014, at the request of local beekeepers, Beyond Toxics and neighborhood leaders, Eugene's City Council unanimously passed Council [Resolution 5101](#), "Enhancing Current Integrated Pest Management in Parks," which eliminates the use of neonics on all city property. This resolution made Eugene the first city to eliminate these persistent pesticides.

Resolution 5101 also includes clear goals around protecting children's health and seeks to expand the current Pesticide-Free Parks program from 10 parks to all 40 parks. The resolution established precautionary policies that can, and should, motivate other local and state governments. It is a testament to Oregon's commitment to protecting the health of the natural environment.

While this policy sets an important precedent, Eugene was concerned that eliminating neonics could negatively impact

its iconic rose gardens. In addition to banning neonics, the city has also stopped using synthetic fungicides and other pesticides that are harmful to pollinators. To ensure rose gardens in the city will continue to thrive while complying with the resolution, city staff:

- Conserve and maintain insect's natural enemies;
- Cut off and destroy infected tips, including leaf material on the ground;
- Spray OMRI-approved dormant copper on plant leaves;
- Use organic mulch at least every other year;
- Rejuvenate the garden by planting disease-resistant varieties; and
- Sanitize pruning tools.

By utilizing these techniques, Eugene has been able to maintain healthy roses without applying neonics to control rose midges, thrips and aphids.

The City of Eugene has an online IPM manual, which includes a separate chapter on managing the rose garden without neonics. The manual can be found here: www.eugene-or.gov/DocumentCenter/Home/View/3330



Case Study: Boulder, Colorado

Boulder, Colorado passed a neonicotinoid ban in May of 2015 and celebrated by declaring September Pollinator Appreciation Month with a series of fun and educational events.

In early 2015, several city residents and Bee Safe Boulder approached Boulder's City Council to request that the city ban neonicotinoid insecticides. In May of 2015, the City passed Resolution No. 1159, which bans neonicotinoids on city properties. It includes a rigorous exemption process when the life or health of a valuable tree is threatened, and no other alternatives exist. Since that time, no neonicotinoid exemptions have been claimed.

After the enacted resolution, Boulder City Council members and city advisory boards requested that fun and educational events be held to celebrate Boulder's commitment to protecting pollinators and to acknowledge the crucial services that pollinators provide. With a crowd of children and adults in pollinator and flower costumes and with much excitement, the declaration was read at a City Council meeting on September 1, 2015.

Multiple partners, including city departments, businesses, University of Colorado, the Boulder Museum of Contemporary Art, the Boulder County Farmers' Market and many non-profit organizations and individuals

worked to promote pollinator health during Pollinator Appreciation Month with a series of events, including films, panel discussions and the Bee Boulder Family Festival.

"Pollinator Appreciation Month was so successful that it will continue as an annual event, with even more events being planned," according to Rella Abernathy, IPM Coordinator for the City of Boulder. Not only can special events be held with scientists, horticultural experts offering gardening advice, honeybee hives tours and walking tours through Bee Safe Neighborhoods, but businesses and schools can incorporate pollinator month into normal operations. A dedicated website, BeeBoulder.org, lists events and provides educational information.

Because Colorado is a state that preempts local governments from restricting pesticide use, education and outreach is an important way to reduce the use of bee-harming pesticides. Boulder Pollinator Protection Month has been successful at reaching thousands of people in the community.



Additional Ways to Protect Pollinators

This section highlights a variety of steps public agencies, institutions and other organizations can take to eliminate pesticides, plants and other landscaping supplies that contain neonics from their operations and create healthy ecosystems that help pollinators to flourish.

1. Develop pollinator-friendly habitat by:

- Increasing plant biodiversity;
- Planting pollinator-friendly and drought-tolerant native plants; and
- Expanding the size and number of forage-buffers designated and allocated for pollinators.

According to Beyond Pesticides' guide, *Managing Landscapes with Pollinators in Mind*, "Millions of miles of roads, utility lines, railroad corridors and other types of rights-of-way (ROWs) are treated with pesticides to control unwanted plants and insects. Some states have addressed the risk of using pesticides along ROWs by developing integrated pest management (IPM) programs, restricting when and where pesticides can be applied on ROWs and providing no-spray agreements. Planting native vegetation, using mechanical, biological and least-toxic vegetation control methods are effective in reducing and eliminating toxic pesticide applications."

The Xerces Society maintains lists of "recommended native plants that are highly

attractive to pollinators such as native bees, honeybees, butterflies, moths and hummingbirds, and are well-suited for small-scale plantings in gardens, on business properties and school campuses, in urban green spaces and in farm field borders."³⁸

Pollinator Conservation Resource Center: View regional information for habitat conservation and plant guides. To view plant guides, go to: <http://www.xerces.org/pollinator-conservation/plant-lists/>

- 2. Let weeds grow.** Reduce the amount of mowing and let clover and other flowering weeds grow because this will provide a nutritious habitat for bees and other pollinators. Avoid "weed and feed" products, which are designed to kill clover and other flowering weeds while they fertilize the grass.
- 3. Transition to an organic land management system.** Avoid using herbicides, insecticides, and other toxic pesticides whenever you can. Organic methods support 50% more pollinator species according to an Oxford University meta-study.³⁹
- 4. Provide community education to publicize the policy change.** Encourage local residents and businesses to take steps to protect pollinators, including changing their purchasing practices and planting pollinator-friendly habitat. Host events to educate the local community about why pollinators are important.



reduced stormwater runoff and increased habitat for birds, bees and other beneficial insects.⁴¹ Portland's Ecoroof program offers a suite of resources to help City departments as well as property developers and managers "replace conventional roofing with a living, breathing vegetated roof system". Resources include an Ecoroof Handbook, financial incentives, and a listing of ecoroof professionals. For more information about the *Portland Ecoroofs* program, go to <https://www.portlandoregon.gov/bes/44422>.

5. Create green (vegetative) roofs. According to the *Journal of Landscape and Urban Planning*, "Green roofs are potentially valuable sites for bee conservation in urban areas, particularly if planted with diverse native forbs to provide foraging resources, and designed to accommodate bees with different nesting habits."⁴⁰

The City of Portland, Oregon has a well-established Ecoroof program that promotes and provides incentives for the installation of vegetated rooftops. They found these rooftops offer a wide array of environmental and cost benefits such as energy savings, lower carbon emissions, improved air quality,

- 6. Provide nesting sites for bees,** which include wood or sand areas for burrowing. Consider installing beehives on the rooftop.
- 7. Relocate (rather than destroy) hives** if they pose a safety hazard. Contact a removal service or a local beekeeping organization to help with hive removal.
- 8. Buy certified organic agricultural products.** Because a significant amount of neonics are applied to crops (including citrus, cotton, grapes, tomatoes, rice, canola, corn and soybeans) the procurement of certified organic food and cotton products reduces the use of these and other pesticides.



Appendix A: Examples of neonicotinoid garden products in the United States

Neonicotinoid	Garden & ornamental uses	Garden product trademark names
Imidacloprid	Foliar spray for turf and ornamental flowers, trees, and shrubs; soil drench for garden fruits and vegetables, and ornamental flowers, trees, and shrubs; trunk injection for trees; granules for turf and ornamental flowers, shrubs, or trees.	<p>Bayer Advanced 3-in-1 Insect, Disease, & Mite Control</p> <p>Bayer Advanced 12 Month Tree & Shrub Insect Control</p> <p>Bayer Advanced 12 Month Tree & Shrub Protect & Feed</p> <p>Bayer Advanced Fruit, Citrus & Vegetable Insect Control</p> <p>Bayer Advanced All-in-One Rose & Flower Care concentrate</p> <p>DIY Tree Care Products Multi-Insect Killer</p> <p>Ferti-lome 2-N-1 Systemic</p> <p>Hi-Yield Systemic Insect Spray</p> <p>Knockout Ready-To-Use Grub Killer</p> <p>Monterey Once a Year Insect Control II</p> <p>Ortho Bug B Gon Year-Long Tree & Shrub Insect Control</p> <p>Ortho MAX Tree & Shrub Insect Control</p> <p>Surrender Brand GrubZ Out</p>
Clothianidin	Granules for turf, and ornamental flowers, shrubs, or trees.	<p>Bayer Advanced All-in-One Rose & Flower Care granules</p> <p>Green Light Grub Control with Arena</p>
Thiamethoxam	Foliar spray for turf and ornamental flowers, trees, and shrubs; granules for turf and ornamental flowers, trees, and shrubs.	<p>Amdro Quick Kill Lawn & Landscape Insect Killer</p> <p>Amdro Rose & Flower Care</p> <p>Maxide Dual Action Insect Killer</p>
Acetamiprid	Foliar spray for garden fruits and vegetables, and ornamental flowers, trees, and shrubs.	<p>Ortho Bug B Gon Garden Insect Killer</p> <p>Ortho Bug B Gon for Lawns</p> <p>Ortho Flower, Fruit and Vegetable Insect Killer</p> <p>Ortho Rose and Flower Insect Killer</p> <p>Ortho Rose Pride Insect Killer</p>
Dinotefuran	Granules for turf and ornamental flowers, shrubs or trees; soil drench for ornamental flowers, trees, and shrubs.	<p>Green Light Tree & Shrub Insect Control with Safari 2 G</p> <p>Safari</p> <p>Ortho Tree & Shrub Insect Control Plus Miracle Gro Plant Food</p>

Appendix B: Sample Pollinator Protection Policy

A RESOLUTION ENDORSING POLLINATOR PROTECTION POLICIES AND PRACTICES, PROMOTING A HEALTHY ENVIRONMENT

WHEREAS, threats to pollinators harm the entire food system: Pollination provided by honeybees and other essential pollinators account for one in every three bites of food; therefore pollinators are responsible for the pollination of key crops including fruits, nuts, berries, melons and many others. These crops contribute over \$20 billion worth of services to U.S. agriculture; and

WHEREAS, pollinators, including honeybees, bumblebees, native bees, butterflies and other insect pollinators are threatened by mass die-offs and diminishing populations that put primary sectors of agriculture and food security at risk due to habitat loss, pesticide use, pathogens and parasites; and

WHEREAS, scientific evidence shows pesticides, especially systemic insecticides, cannot be avoided by pollinators and pesticides have contributed to the decline of pollinators; and

WHEREAS, a significant and growing body of independent, peer-reviewed scientific studies demonstrates that neonicotinoids, one of the most widely used classes of insecticides, are systemic, persistent neurotoxins that spread throughout a treated plant including to the pollen that is gathered by pollinators; and

WHEREAS, neonicotinoids adversely impact beneficial soil invertebrates, avian and aquatic organisms, pollute water resources and soils; and contaminate the pollen and nectar that is gathered by pollinators; and

WHEREAS, studies have shown that neonicotinoids are endangering pollinators through acute poisonings as well as chronic sub-lethal exposures. This endangerment weakens their immune defenses, causing increased susceptibility to natural stressors such as parasites and pathogens. Studies have also shown other adverse effects associated with neonicotinoids, including delays in larval development, decreases in queen survival and negative effects on feeding, navigational and reproductive behaviors; and

WHEREAS, the use of neonicotinoids and other systemic pesticides on public parks, college and university campuses, school grounds, and residential and commercial properties poses unacceptable risks to bees, other pollinators and aquatic invertebrates, and;

WHEREAS, responding to scientific studies finding that neonicotinoids pose unacceptable hazards to pollinators, the European Union in 2013 instituted a two-year moratorium on some uses of neonicotinoids, while more than 30 U.S. cities (Portland and Eugene, OR; Spokane and Seattle, WA; Minneapolis, MN and Boulder, CO) have adopted resolutions and/or bans against municipal use of neonicotinoids. Furthermore, the U.S. Fish and Wildlife Service has banned the use of neonicotinoids on all 150 million acres of its National Wildlife Refuge System; and

WHEREAS, we find these actions to be in the public interest and demonstrate our commitment to a healthy community environment for people as well as pollinators.

NOW, THEREFORE, BE IT RESOLVED BY THE [jurisdiction or institution]:

Section 1. The [jurisdiction or institution], including its contractors, will not purchase or use any neonicotinoid pesticides for any purpose, including plants or plant seeds that have been pretreated with neonicotinoids and will seek to use only pollinator-friendly methods of weed and pest control on any City-owned or -operated land.

Section 2. The [jurisdiction or institution] shall undertake its best efforts to purchase insecticides and other types of pesticides that are safe for pollinators as well as landscaping materials, including neonicotinoid-free plants and seeds. In addition, it urges all businesses, homeowners and HOAs operating within [the jurisdiction] to avoid the purchase of plants, seed and other products that contain neonicotinoids. Businesses that sell pesticides, plants, landscaping materials and/or building supplies are strongly encouraged to clearly and accurately label and products that contain neonicotinoids.

Section 3. The [jurisdiction or institution] shall make its best efforts to purchase neonicotinoid-free products, including, when practical, choosing food and cotton products that have been certified as “organic” by the U.S. Department of Agriculture.

Section 4. The [jurisdiction or institute] supports a national moratorium on the sale and use of neonicotinoids and urges all public and private entities at the local, state and federal levels to suspend their use of neonicotinoids in seed treatments, soil applications and foliar treatments on bee-attractive plants in urban and agricultural settings.

Section 5. The [jurisdiction or institution] will support efforts to educate the broader community about the action it has taken and the importance of creating and maintaining pollinator-friendly habitat, and will will encourage residents and businesses to use similar pollinator-friendly practices.

Section 6. The [jurisdiction or institution] will transmit copies of the resolution to the State Department of Agriculture, Governor, State Representatives and Senators, U.S. Representatives and Senators, U.S. Environmental Protection Agency and U.S. Department of Agriculture.





Appendix C: Jurisdictions that have adopted pollinator-protection policies for city/county property

City	Policy
Andover, MN	City of Andover, MN Resolution (2015)
Austin, TX	Neonicotinoids (2015)
Boulder, CO	A Resolution Concerning the Use of Neonicotinoid Pesticides in the City of Boulder (2015)
Canon Beach, OR	A Resolution for the Purpose of Restricting the Use of Neonicotinoids on City Property (2014)
Duluth, MN	A Resolution Endorsing Bee Safe Policies and Procedures for the City of Duluth (2016)
Eden Prairie, MN	A Resolution Endorsing “Pollinator-Safe” Policies and Procedures (2016)
Eugene, OR	A Resolution Endorsing On-Going Implementation of the City of Eugene’s Parks and Open Space Division’s Integrated Pest Management (IPM) Policy and Procedures, Endorsing Expansion of the Pesticide-Free Parks Program, Requiring All City Departments to Adopt an IPM Policy and Procedures, and Banning Use of Neonicotinoids On All City Property (2014)

Great Barrington, MA	<u>A Resolution Declaration for the Town of Great Barrington to be a Pollinator-Friendly Community (2016)</u>
Howard County, MD	<u>Title: Neonicotinoids on Parkland (2016)</u>
Indianapolis, IN	<u>City-Council Special Resolution No. 25 (2016)</u>
Lafayette, CO	<u>Resolution Prohibiting the Use and Purchase of Neonicotinoid Pesticides by the City of Lafayette (2015)</u>
Lake Elmo, MN	<u>A Resolution Endorsing “Bee-Safe” Policies AND Procedures (2015)</u>
Maplewood, MN	<u>A Resolution Endorsing the Protection of Pollinators and Enhancement of Pollinator Habitat (2016)</u>
Mendota Heights, MN	<u>A Resolution Declaring the City of Mendota Heights to be a Pollinator-Friendly Community (2016)</u>
Milwaukie, OR	<u>A Resolution of the City Council of the City of Milwaukie, Oregon, to Eliminate the Use of Neonicotinoid Pesticides Which Are Toxic to Honey Bees and Other Pollinators (2016)</u>
Minneapolis, MN	<u>A Resolution Declaring Minneapolis a Pollinator-Friendly Community and Encouraging Residents and Businesses to Adopt Pollinator-Friendly Practices (2015)</u>
Ogunquit, ME	<u>Title II Ogunquit Municipal Code Health, Safety & Welfare (2015)</u>
Olympia, WA	<u>A Resolution of the City Council of the City of Olympia, Washington, Concerning the use of Neonicotinoid Pesticides by the City of Olympia (2014)</u>
Portland, OR	<u>Prohibition on Use and Purchase of Neonicotinoid Pesticides by City of Portland (2015)</u>
San Francisco, CA	<u>Reduced Risk Pesticide List (2016)</u>
Scandia, MN	<u>A Resolution to Participate in and Endorse Local Pollinator-Friendly Efforts (2016)</u>
Seattle, WA	<u>A Resolution Concerning the Use of Neonicotinoid Pesticides by the City of Seattle (2014)</u>
Shorewood, MN	<u>A Resolution Endorsing “Bee-Safe” Policies and Procedures (2014)</u>
Skagway, AK	<u>An Ordinance of the Municipality of Skagway, Alaska Amending Title 8 Health and Safety to Limit the Restricted Herbicides for the Purpose of Vegetative Maintenance, and Neonicotinoids...to Protect Skagway’s Quality of Life, and the Health of Its Citizens, Animals, Ecosystems and Watershed (2014)</u>
South St. Paul, MN	<u>A Resolution Supporting Pollinators and Pollinator Habitat (2015)</u>
Spokane, WA	<u>Spokane Municipal Code Ban on the Purchase and Use of Products or Products in Packaging by the City of Spokane That Contains Neonicotinoids (2014)</u>
St. Louis Park, MN	<u>A Resolution Endorsing “Bee-Safe” Policies and Procedures (2015)</u>
St. Paul, MN	<u>A Resolution Outlining the City of Saint Paul’s Commitment to Being Pollinator-Friendly (2016)</u>
Stillwater, MN	<u>A Resolution Endorsing “Pollinator-Safe” Policies and Practices, Promoting Health Environment for People and Pollinators (2015)</u>
Thurston County, WA	<u>A Resolution Amending Thurston County Pest and Vegetation Management Policy to Include Prohibiting Neonicotinoids (2014)</u>
Warren County, NC	<u>A Resolution Proclaiming The Month of September 2015 As “Natural Resources Appreciation Month: A Celebration of Pollinators Our Heroes” (2015)</u>

Appendix D: Price comparison between neonicotinoid products and their alternatives by pest

Pest	Neonicotinoid (Neonic) Product	Active Neonicotinoid Ingredient	Alternative	Active Ingredient	Neonic Price	Alternative Price	Savings
Ants	Bayer Advanced Complete Ant Killer Plus (32 oz)	Imidacloprid	Gourmet Ant Bait Gel (1.5 oz)	Disodium Octaborate Tetrahydrate	\$11.99	\$10.99	\$1.00
Adelgids	Bayer Advanced Tree and Shrub Protect & Feed (1 gallon)	Imidacloprid	Golden Pest Spray Oil (1 Gallon)	Soybean Oil	\$69.97	\$34.00	\$35.97
Beetles	Bayer Advanced Tree and Shrub Protect & Feed (1 gallon)	Imidacloprid	Golden Pest Spray Oil (1 Gallon)	Soybean Oil	\$69.97	\$34.00	\$35.97
Army-worms	Bayer Advanced 3-in-1 Multi-Insect Control Liquid (32 oz)	Imidacloprid	Dipel Pro Biological Insecticide Powder (1 pound)	<i>Bacillus thuringiensis</i>	\$17.97	\$16.96	\$1.01
Fleas	Bayer Advanced 3-in-1 Multi-Insect Control Liquid (32 oz)	Imidacloprid	EcoSmart Organic Insect Killer for Lawns and Landscapes (32 oz)	2-Phenethyl Propionate, Sodium Lauryl Sulfate, Eugenol, Thyme Oil, Sesame Oil	\$17.97	\$14.84	\$3.13
Grubs	Bayer Advanced Season Long Grub Control Granules (12 lbs)	Imidacloprid	15 Million Live Beneficial Nematodes	Heterorhabditis bacteriophora, Steinernema carpocapsae, Steinernema feltiae	\$19.97	\$15.99	\$3.98
Japanese Beetles	Bayer Advanced 3-in-1 Multi-Insect Control Liquid (32 oz)	Imidacloprid	Bag-A-Bug Japanese Beetle Traps	Eugenol, Geraniol, 2-Phenethyl Propionate	\$17.97	\$5.77	\$12.20

Mites	Bayer Advanced 3-in-1 Insect Disease and Mite Control (32 oz)	Imidacloprid	Safer Brand 3-in-1 Garden Spray (32 oz)	Potassium Salts of Fatty Acids, Sulfur	\$17.97	\$7.99	\$9.98
Mosquitoes	Bayer Advanced Complete Insect Killer for Soil and Turf (32 oz)	Imidacloprid	Cutter Ready-to-Spray Concentrate Natural Bug Control (32 oz)	Lemongrass, Potassium Sulfate	\$12.99	\$9.47	\$3.52
Roaches	Invict Gold Cockroach Gel Bait (4 Tubes)	Imidacloprid	EcoSmart Organic And Roach Killer (14 oz)	Peppermint Oil, Rosemary Oil	\$26.44	\$3.99	\$22.45
Scales	Bayer Advanced 12 month Tree and Shrub Protect & Feed (32 oz)	Imidacloprid	Safer Brand 3-in-1 Garden Spray (32 oz)	Potassium Salts of Fatty Acids, Sulfur	\$18.77	\$7.99	\$10.78
Termites	Bayer Advanced Termite Killer Granules (9 lbs)	Imidacloprid	BorActin Insecticide Powder (5 lbs)	Orthoboric Acid	\$44.97	\$27.95	\$17.02
Whiteflies	Bayer Advanced 12 month Tree and Shrub Protect & Feed (32 oz)	Imidacloprid	Sticky Aphid Whitefly Trap (5 Pack)	Stikem Special	\$18.77	\$4.97	\$13.80

Endnotes

- 1 Calderone NW (2012) Insect Pollinated Crops, Insect Pollinators and US Agriculture: Trend Analysis of Aggregate Data for the Period 1992–2009. *PLoS ONE* 7(5): e37235. doi:10.1371/journal.pone.0037235
- 2 CCD Steering Committee. (2012, June). *Colony Collapse Disorder Progress Report* (Rep.). <http://www.ars.usda.gov/is/br/ccd/ccdprogressreport2012.pdf>
- 3 Benjamin, A. (2012, March 29). Toxic Pollen and the Mad Bee Disease Disaster. *The Guardian*. Retrieved August 4, 2016, from <http://www.guardian.co.uk/environment/2012/mar/29/toxic-pollen-mad-bee-disease>
- 4 Colony Loss 2013-2014. (2014, May 15). Retrieved August 04, 2016, from <http://beeinformed.org/2014/05/colony-loss-2013-2014/>
- 5 Lexmond MB van, Bonmatin J-M, Goulson D, Noome DA. 2014. Worldwide integrated assessment on systemic pesticides. *Environ Sci Pollut Res* 1–4; doi:10.1007/s11356-014-3220-1.
- 6 Radford, R., Finck-Haynes, T., Brown, Ph.D., T., Kegley Ph.D., S., & Archer, L. (2015). Growing Bee-Friendly Garden Plants: Profiles in Innovation. Friends of the Earth. http://webiva-downton.s3.amazonaws.com/877/f6/6/5821/GrowingBeeFriendlyReport_web.pdf
- 7 Henry M, Beguin M, Requier F, Rollin O, Odoux J-F, Aupinel P, et al. 2012. A Common Pesticide Decreases Foraging Success and Survival in Honey Bees. *Science* 336: 348–350; doi:10.1126/science.1215039
- 8 Williamson, S. M., & Wright, G. A. (2013). Exposure to multiple cholinergic pesticides impairs olfactory learning and memory in honeybees. *Journal of Experimental Biology*, 216(10), 1799–1807. doi:10.1242/jeb.083931
- 9 Pettis, J. S., Lichtenberg, E. M., Andree, M., Stitzinger, J., Rose, R., & Vanengelsdorp, D. (2013, July 24). Crop Pollination Exposes Honeybees to Pesticides Which Alters Their Susceptibility to the Gut Pathogen *Nosema ceranae*. *PLoS ONE*, 8(7). doi:10.1371/journal.pone.0070182
- 10 Kessler, S. C., Tiedeken, E. J., Simcock, K. L., Derveau, S., Mitchell, J., Softley, S., . . . Wright, G. A. (2015, April 22). Bees prefer foods containing neonicotinoid pesticides. *Nature*, 521(7550), 74–76. doi:10.1038/nature14414
- 11 Hallmann, C. A., Foppen, R. P., Turnhout, C. A., Kroon, H. D., & Jongejans, E. (2014, July 09). Declines in insectivorous birds are associated with high neonicotinoid concentrations. *Nature*, 511(7509), 341–343. doi:10.1038/nature13531
- 12 Krischik, V. (n.d.). Non-Target Effects of Imidacloprid. Retrieved August 04, 2016, from <http://cues.cfans.umn.edu/old/non-target/index.html>
- 13 Goulson, D. (2013, June 13). REVIEW: An overview of the environmental risks posed by neonicotinoid insecticides. *J Appl Ecol Journal of Applied Ecology*, 50(4), 977–987. doi:10.1111/1365-2664.12111
- 14 Mason, R. (2014, March 20). Immune Suppression by Neonicotinoid Insecticides at the Root of Global Wildlife Declines. *Journal of Environmental Immunology and Toxicology J Environ Immunol Toxicol*, 1(1), 3. doi:10.7178/jeit.1
- 15 Gibbons D, Morrissey C, Mineau P. 2014. A review of the direct and indirect effects of neonicotinoids and fipronil on vertebrate wildlife. Springer Berlin Heidelberg. doi: 10.1007/s11356-014-3180-5
- 16 The Xerces Society » Neonicotinoids in Your Garden. (n.d.). Retrieved August 04, 2016, from <http://www.xerces.org/wings-magazine/neonicotinoids-in-your-garden/>
- 17 Brown Ph.D., T., Kegley Ph.D., S., Archer, L., Finck-Haynes, T., & Olivastri, B. (2014, June). *Gardeners Beware Bee-Toxic Pesticides Found in “Bee-Friendly” Plants sold at Garden Centers Across the U.S. and Canada* (Rep.). Retrieved http://www.foe.org/system/storage/877/3a/3/4738/GardenersBewareReport_2014.pdf
- 18 Vallette, J. (2016, January 21). Common Decking and Insulation Pesticide is a Honeybee Killer. Retrieved August 04, 2016, from <https://www.healthybuilding.net/news/2016/01/21/common-decking-and-insulation-pesticide-is-a-honeybee-killer>
- 19 United States Environmental Protection Agency. (2016, January 06). *Pesticides and Toxic Chemicals* [News release]. *United States Environmental Protection Agency*. Retrieved from <https://yosemite.epa.gov/opa/admpress.nsf/eef922a687433c85257359003f5340/63e7fb0e47b1aa3685257f320050a7e3!OpenDocument>
- 20 Carrington, D. (2013, March 22). US government sued over use of pesticides linked to bee harm. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2013/mar/22/us-government-sued-pesticides-bee-harm>
- 21 Wozniacka, G. (2012, March 21). Beekeepers ask EPA to ban pesticide toxic to bees. Retrieved August 05, 2016, from <http://www.nbcnews.com/id/46815289/t/beekeepers-ask-epa-ban-pesticide-toxic-bees/#.V6ShyPkrLIU>
- 22 Housenger, J. (2015, April 02). April 2015 Letter to Registrants Announcing New Process for Handling New Registrations of Neonicotinoids [Letter written April, 2015 to Registrants Announcing New Process for Handling New Registrations of Neonicotinoids]. In *EPA*. Retrieved from <https://www.epa.gov/sites/production/files/2015-04/documents/neonicotinoid-new-use.pdf>

- 23 The White House, Office of the Press Secretary. (2014, June 20). *Presidential Memorandum — Creating a Federal Strategy to Promote the Health of Honeybees and Other Pollinators* [Press release]. *The White House*. Retrieved from <https://www.whitehouse.gov/the-press-office/2014/06/20/presidential-memorandum-creating-federal-strategy-promote-health-honey-b>
- 24 Pollinator Health Task Force. (2015, May 19). *NATIONAL STRATEGY TO PROMOTE THE HEALTH OF HONEYBEES AND OTHER POLLINATORS* (Rep.). Retrieved [https://www.whitehouse.gov/sites/default/files/microsites/ostp/Pollinator Health Strategy 2015.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf)
- 25 Conclusion on the peer review of the pesticide risk assessment for bees for the active substance clothianidin. (2013, January 16). *EFSA Journal*, 11(1), 3066. doi:10.2903/j.efsa.2013.3066
- 26 Foorster, K. (n.d.). Guidelines regarding the interim use and phase out of neonicotinoid insecticides to grow agricultural crops for wildlife on NWRs in the Pacific Region [Letter written July 09, 2014 to Refuge Project Leaders, Region 1]. In *Center for Food and Safety*. Retrieved from http://www.centerforfoodsafety.org/files/guidelines-for-interim-use-and-phase-out-of-neonicotinoid-insecticides-in-refuge-farming-for-wildlife-programs-signed-kf-7914_67415.pdf
- 27 *Supporting the Health of Honeybees and Other Pollinators* (Rep.). (2014, October). Retrieved https://www.whitehouse.gov/sites/default/files/docs/supporting_the_health_of_honey_bees_and_other_pollinators.pdf
- 28 Dworkin, T. (2015, December 28). The Home Depot Is Phasing Out Bee-Killing Insecticides...Slowly. Retrieved August 05, 2016, from <http://www.care2.com/causes/the-home-depot-is-phasing-out-bee-killing-insecticides-slowly.html>
- 29 Lowe's To Stop Selling Neonicotinoid Pesticides That May Be Harmful To Bees. (2015, April 09). *The Huffington Post*. Retrieved from http://www.huffingtonpost.com/2015/04/09/lowes-pesticides-bees_n_7035208.html
- 30 Laws in 38 states explicitly prohibit local governments from passing laws regarding pesticides that are stricter than the state law. Five of the remaining states (Indiana, Louisiana, Michigan, New Jersey and Washington) leave municipalities the right to petition the state government to allow them to pass a stricter pesticide law. Seven states (Alaska, Hawaii, Maine, Maryland, Nevada, Utah and Vermont) do not restrict the laws of local governments.
- 31 City of Boulder, Colorado. "RESOLUTION NO. 1159 A RESOLUTION CONCERNING THE USE OF NEONICOTINOID PESTICIDES IN THE CITY OF BOULDER." N.p., 05 May 2015. Web.
- 32 Eugene OR, News. (2014, March 12). *Eugene takes a formal stand against harmful neonicotinoids* [Press release]. *Eugene OR*. Retrieved from <http://www.eugene-or.gov/CivicAlerts.aspx?AID=1205&ARC=2721>
- 33 City of Seattle Legislative Information Service. (2014, September 22). *Resolution Number: 31548* [Press release]. *Seattle Office of the City Clerk*. Retrieved from <http://clerk.seattle.gov/-scripts/nph-brs.exe?d=RESF&s1=31548.resn.&Sect6=HITOFF&l=20&p=1&u=-/public/resn1.htm&r=1&f=G>
- 34 Williams, K. (2014, September 04). Emory to ban bee-harming pesticides, protect pollinators. *Emory News*. Retrieved from http://news.emory.edu/stories/2014/09/er_bee_pledge_commitment/campus.html
- 35 *Neonicotinoid-Free Consumer Pesticide Products* (Rep.). (n.d.). Retrieved <http://www.mdpestnet.org/wp-content/uploads/2015/03/Neonics-alternatives-handout.pdf>
- 36 Xerces Society. (2013). [Http://www.xerces.org/wp-content/uploads/2013/06/NeonicsInYourGarden.pdf](http://www.xerces.org/wp-content/uploads/2013/06/NeonicsInYourGarden.pdf) [Brochure]. Author. Retrieved from <http://www.xerces.org/wp-content/uploads/2013/06/NeonicsInYourGarden.pdf>
- 37 *SF Integrated Pest Management (IPM) Program Compliance Checklist for City Properties and Reduced Risk Pesticide List* (Rep.). (2015, July 15). Retrieved http://sfenvironment.org/sites/default/files/fliers/files/sfe_th_reducedriskpesticidelist.pdf
- 38 The Xerces Society » Pollinator-Friendly Plant Lists. (n.d.). Retrieved August 05, 2016, from <http://www.xerces.org/pollinator-conservation/plant-lists/> <http://www.xerces.org/pollinator-resource-center/>
- 39 Researchers find organic farms support more species. (2014, February 03). Retrieved August 05, 2016, from <https://www.sciencedaily.com/releases/2014/02/140203191808.htm>
- 40 Tonietto, R., Fant, J., Ascher, J., Ellis, K., & Larkin, D. (2011, April 11). A comparison of bee communities of Chicago green roofs, parks and prairies. *Landscape and Urban Planning*, 103(1), 102-108. doi:10.1016/j.landurbplan.2011.07.004
- 41 *Cost Benefit Evaluation of Ecoroofs* (Rep.). (2008). Retrieved <http://www.portlandoregon.gov/bes/article/261053>
- 42 USDA IPM Centers. 2015. OPP Pesticide Ecotoxicity Database. Available: <http://ipmcenters.org/ecotox/> [Accessed 23 April 2015]
- 43 University of Hertfordshire. Pesticide Properties DataBase. Available: <http://sitem.herts.ac.uk/aeru/ppdb/en/> [Accessed 20 April 2015].
- 44 British Crop Protection Council. 2015. The Pesticide Manual. Available: http://www.bcpc.org/page_Pesticide-Manual_100.html [Accessed 23 April 2015]