Pesticide Use on Public Land

More than a billion pounds of **pesticides** are applied annually in the United States to places like gardens and farm lands to parks and lawns. Until the 20th century, plant extracts or mineral-based materials were used as pesticides, and preventative techniques were common to reduce pests. With the rise of synthetic pesticides in the 1930s and the boom of making chemicals during World War II, the use of these pesticides skyrocketed.

The EPA (Environmental Protection Agency) works hard to approve and regulate these chemicals as they come into the marketplace, but there are more than 16,000 pesticide products to monitor, so it is challenging to measure their impacts on all types of wildlife, and it is difficult to understand the cumulative effects of chemicals and pesticides on the human body. To the credit of pesticides, using them has had vast benefits including increasing crop yields, controlling vector-borne diseases, controlling **noxious weeds**, and making the turf on sports grounds viable. With these benefits and more, many communities across the United States are making decisions on what type of pest control will cause the least amount of harm to their local environments.

Some of the issues with pesticides:

- Pesticides can impact pollinators.
    - **Herbicides** can kill milkweed and nectar plants which are essential for monarch butterflies.
    - Neonicitinoids, an **insecticide** used as a seed treatment, is a neurotoxin for honey bees, impacting their navigation system and foraging abilities. Furthermore, the toxic effects on insects may be correlated to declines in some insect-eating bird populations.
- There are concerns about the world's most widely used herbicide called glyphosate (the main ingredient in the product Roundup), such as:
    - It appears to disrupt microbes in honey bees' digestive tract, which may make them vulnerable to infections and pathogens. This is especially concerning due to the rapid decline of honey bee colonies in the United States.
    - The World Health Organization's (WHO) cancer agency has evaluated glyphosate and found it to be "probably carcinogenic to humans."
    - The use of glyphosate on crops has rapidly increased in the past 25 years. Its use on crops has increased from 13.9 million pounds in 1992 to 287 million pounds in 2016.
- Workers producing synthetic ingredients, such as chemists and manufacturing workers, and those spraying pesticides, such as farm workers and local applicators, are at the highest risk of acute toxic exposure from these chemicals.
- Pesticides can contaminate surface water and groundwater systems when there is water runoff on treated areas.
- Organophosphate pesticides, commonly used in **vector** control, are neurotoxic to humans at certain exposure levels and have been linked to higher rates of childhood ADHD. Long term exposure can cause neurological symptoms like disorientation, depression, and loss of memory.
- The herbicide atrazine, which is banned in the EU, has been linked to cancer, infertility, and birth defects. It has been found in over 90% of the water supply in the U.S.
- During the application of pesticides, they can drift to other areas. Scientists have found that most of the sprayed pesticides (95-98%) do not hit their intended mark. Pesticide drift can be present for days and weeks and even months after application.
- Children are more easily harmed by pesticides than adults, because their bodies and brains are growing and cells are dividing at a more rapid rate than adults.

Tackling the issue:

- Cities across the United States, such as Seattle-Tacoma, are implementing **Integrated Pest Management (IPM)** plans to reduce the use of pesticides in their area.
- Cities are creating no-spray buffer zones around playgrounds in parks and at schools
- Some cities, such as Chicago, are banning glyphosate for use on public lands, while other cities like Vancouver are banning the use of glyphosate publicly and privately, except for controlling for certain noxious weeds.
- Forty-three states, including North Dakota and Minnesota, have preemption laws for pesticides, which limit the ability of city and county governments to ban or restrict these products. Canadian cities do not have these laws, and more than 170 have banned cosmetic lawn care pesticides. In 2013, Tacoma, Maryland's city council restricted the use of cosmetic lawn care pesticides, becoming the first to do so in the United States.
- Minnesota cities, like Stillwater and Shorewood, have adopted rules to restrict pesticide use to protect local pollinators.
- In 2019, the City Council of Portland, Maine passed a ban on both public and private use of synthetic pesticides, pairing it with a fine of $100-$500, which is the strongest pesticide reduction policy this country has seen yet. A key aspect of the new ordinance is the creation of an advisory committee to educate the community on non-chemical methods to maintain lawns and gardens.
- Minneapolis Parks Department has adopted an IPM strategy to manage its more than 6,800 acres.
- In 2005, Lawrence, KS piloted a program for a pesticide-free area in a local park, and in 2008 an IPM was created for the department.

Key Definitions

Pesticide: a substance that kills plants, animals, or other organisms to reduce the economic threshold of the pest

Herbicide: a plant-killing substance

Insecticide: an insect-killing substance

Integrated Pest Management (IPM): an ecosystem-based approach to managing pests, whether the pest is a weed, insect, fungus, or other unwanted organisms. This type of management focuses on prevention and monitoring instead of a reactive approach and uses many types of methods to suppress pests. Whenever possible, the least-toxic methods are engaged before the more toxic ones.

Noxious weeds: plants that can damage crops, injure livestock or poultry, or negatively affect irrigation, navigation, natural resources, public health, or the environment. Simply put, they are extremely pesky plants.

Vector: an organism that transmits a disease, usually it refers to a bloodsucking insect. Regarding pesticides, mosquitoes are the most common vector to control as they can transmit West Nile virus to humans

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