

HANDBOOK ON REDUCING CHEMICAL FOOTPRINTS

Chapter 8. Prevention and Mitigation

Prevention means to stop something from happening, while mitigation focuses on offsetting the negative impacts of a threat. Prevention and mitigation are very important alternatives to *regulating* chemicals of concern, given the limits of current treatment methods (as discussed in Chapter 6) and the unlikely prospects for new regulations (the subject of Chapter 7). This chapter presents these options, looking at how chemicals of concern can be controlled, prevented, and reduced through voluntary efforts by individuals, businesses, and other groups. Community-based organizations are particularly well positioned to provide linkages among various community stakeholder groups to address issues on reducing CECs. How to foster long-term commitment to voluntary prevention and mitigation efforts is also discussed.

Controlling Chemicals of Concern through Prevention and Mitigation

Most laws enacted to address water quality focus on end-of-pipe approaches directed at the control, treatment, and disposal of pollution after it has already been created. The Clean Water Act and the Safe Drinking Water Act take as given the formation of pollutants from manufacturing processes, consumption choices and disposal practices. The problem to be solved: How to treat these pollutants?

Conventional Pollution Policy	} Reducing release of pollution <i>after</i> it has formed
Pollution Prevention Policy	} Reducing production of pollution <i>before</i> it has formed

Prevention and mitigation change the focus to avoiding and reducing pollution before it has been created. Prevention is not a new idea. In 1990, the US Congress enacted the Pollution Prevention Act (PPA) to draw industry, government and public attention to reducing pollution at the source, including through changes in production, operation and the use of raw materials.¹ This marked an important development by “declaring prevention to be the first option and preferred alternative for dealing with pollution... [and] reordering industry priorities by asking it to shift its attention and resources to prevention over abatement.”² However, PPA came with few budget resources and little authority, which has limited the effectiveness of federal government efforts to push a pollution prevention agenda.³

Prevention and mitigation strategies go hand-in-hand when addressing chemicals of concern and reducing our chemical footprints. Preventing the introduction of additional contaminants into the

¹ Pollution Prevention Act of 1990, Title 42, US Code §13101 et seq. www.epa.gov/p2/pubs/p2policy/act1990.htm.

² Burnet L., Miles. “The Pollution Prevention Act of 1990: A Policy Whose Time Has Come or Symbolic Legislation?” *Environmental Management* Vol. 22, No. 2 (1998, Springer-Verlag New York Inc.): 213-224. https://wiki.umn.edu/pub/ESPM3241W/S12PolicyBriefTeamEighteen/A_Policy_Whose_Time_Has_Come_or_Symbolic_Legislation.pdf.

³ Ibid.

environment is the single most effective way to reduce the threat of negative human health and ecological impacts from exposures to chemicals of concern. Key prevention and mitigation measures include:

- Reduce the use of chemical substances that cause harm
- Substitute harmful chemicals with non-toxic or less-toxic alternatives
- Use non-chemical alternatives (such as wearing long sleeves and long pants instead of applying insect repellent)
- Forego a particular product altogether where non-toxic alternatives do not exist
- Repair, restore, and protect the affected environment.

Participants in Prevention and Mitigation

While governments are expected to lead the way in adopting and applying formal regulations for environmental clean-up, voluntary and non-governmental organizations have taken the initiative in focusing on prevention and mitigation. Individual citizens, businesses, professional associations, citizen advocacy groups, and community-based organizations are all potentially interested in taking steps to reduce, substitute or eliminate the use of chemicals of concern. Motivated to act, these groups take part in efforts to repair and restore resiliency to local ecosystems that have been hurt by the release of damaging chemicals.

At the individual level, there are numerous options for responding. Motivated by the information presented in this report, many individuals have committed to changing their behaviors by avoiding or reducing the use of certain products, finding non-harmful chemical alternatives to address personal care and household needs, and increasing recycling and reuse practices. The benefits are both individual (lowered direct exposure to chemicals of concern) and collective (fewer contaminants entering the water system). Potential cost savings might result through using less, reusing, and recycling. The contributions of any one individual to such a large-scale issue may be small, yet individual action is often magnified through sharing and organizing with others, such as groups of friends, neighbors, classmates, members of religious communities or clubs and community groups.

At the industrial production level, pollution prevention and mitigation might involve modifying production processes to use fewer or different raw materials, reusing materials rather than putting them into the waste stream, acquiring and using recycled materials, applying more efficient methods that involve reduced energy and water consumption, and taking steps to practice natural resource conservation and protection.⁴ Voluntary measures such as these might restrict business practices, but they can yield benefits as well. Sometimes a switch to new formulas or raw materials can save money. Manufacturers and retail businesses might enact preventive measures that reduce the production of waste or that allow more efficient use of resources. They might gain credit for being “green”, potentially attracting new support from environmentally conscious

⁴ US EPA, Office of Chemical Safety & Pollution Prevention. “Pollution Prevention (P2).” updated December 3, 2014. www.epa.gov/p2/.

consumers. In some cases, companies announce product changes in response to popular media and consumer advocacy efforts.⁵

Experts and professionals are stakeholders in developing community prevention and mitigation options. Qualified specialists responsible for operating and overseeing water utilities, water analysts, public health officials, and those involved in environmental assessment are steeped in the issues and are often the first to notice new problems. Professional meetings and publications allow for the regular sharing of information and experience, and for the development and testing of practical options for dealing with emerging issues.⁶

Citizen advocacy groups are often committed to gathering and disseminating information with the goal of achieving change. Some advocacy groups focus on education of citizens, or on conducting research to further understanding of the issues. Others direct attention to the political process, attempting to influence who is elected and what policies will be advanced in the political system. Still others look for alternative means for achieving change, such as creating alternative products or working with existing businesses to identify new, less harmful options.⁷

Community-based organizations are often in the best position to forge an effective approach by bringing together concerned stakeholders affected by issues challenging the community. This includes individual citizens and the groups to which they belong, businesses large and small, professional experts, and members of citizen advocacy organizations. It also involves coordinating voluntary efforts with state and local government officials. Acting alone, any one of the above may encounter serious limits to the ability to achieve long-term prevention and mitigation changes. A community-based organization works with community members to identify and define problems needing resolution, develop and demonstrate prevention and mitigation alternatives, provide practical, usable information, and ensure that the actions and goals are supported in the best interests of the community.⁸

⁵ It is likely a combination of reasons that have motivated several companies to announce plans to remove triclosan from their products: Procter & Gamble announced in 2013 that it would remove triclosan from its products by the end of 2014; Johnson & Johnson has committed to removing it in 2015; and Avon announced that it planned to remove triclosan from its product line. See: Finley, Cynthia. "Washing Away Triclosan with Legislation and Regulation." National Association of Clean Water Agencies (NACWA). May 21, 2014. <http://blog.nacwa.org/washing-away-triclosan-with-legislation-and-regulation/>.

⁶ Professional organizations bring together experts in the private sector, academia, and government. Groups such as the American Public Health Association, the American Water Resources Association, the Water Research Foundation, and a variety of government agencies hold meetings and publish reports on recent findings related to contaminants of emerging concern. Much of the research is focused on developing further understanding of the science, but some of it suggests possibilities for mitigation and prevention.

⁷ Numerous advocacy groups have organized at the local, state, national and international levels to bring attention to issues such as contaminants of emerging concern and to push the adoption of alternatives, either through formal political means or through more informal attempts to influence public opinion and the marketplace. Examples include Beyond Pesticides, Environmental Working Group, and Natural Resources Defense Council.

⁸ IES is a community-based organization that seeks opportunities to bring together and work with a variety of Colorado community stakeholders to build long-term support for voluntary restrictions and preventive actions.

Fostering Commitment to Prevention and Mitigation

Governments have enforcement on their side. If individuals or businesses fail to comply with a policy mandate, they face legal consequences. However, people may resent being forced to comply and will not necessarily commit themselves to achieving the goals of public policy.

Engaging people through information and new options at the voluntary level can be a powerful alternative. Voluntary efforts might fail in the long run as well because people lose interest in or incentive to carry on in the face of multiple demands on time, energy, and resources. An important question needs to be considered: How can we foster deep and lasting behavioral changes to realize prevention and mitigation goals?

Fostering Sustainable Behavior

Individuals and groups are more likely to adopt lasting behavior changes after making a commitment, using prompts as reminders, and identifying norms to reinforce the value of the new behavior.

Education alone is insufficient for achieving lasting behavior change. This fact is one of the most important lessons presented by Doug McKenzie-Mohr in his work *Fostering Sustainable Behavior*.⁹ This handbook

introduces extensive information detailing the nature of chemicals and the effects of chemicals of concern on human health and the environment. This information is in competition with countless other types and sources of information. Moving information to action requires connecting knowledge with personal, relevant, and practical opportunities for change.

McKenzie-Mohr recognizes the presence of many barriers that inhibit individuals from adopting new environmentally responsible behaviors. He identifies specific **community-based social marketing** (CBSM) tools. CBSM is based on directly involving stakeholders at the community level and developing initiatives with them with the goal of eliminating structural barriers to an activity while at the same time maximizing the benefits of that activity¹⁰. CBSM has been characterized by many social scientists as the most effective mechanism for fostering sustainable behavior change. There are numerous practical and hands-on options for applying these behavior-changing tools in one's own life and community. Commitment, norms, and prompts are three such tools.

Raise your hand at a social gathering or meeting, and state your commitment.

Commitment is a process that enables individuals to bridge from good intentions to action. The process is very important. Passive agreement is non-committal. Without opportunity to communicate a position, individuals often lack any reason to follow up on new information or opportunities. Given the chance to agree to or verbalize a position, psychologists have found that individuals are motivated to demonstrate

⁹ McKenzie-Mohr, Doug. *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*, 3rd ed. (Gabriola Island, British Columbia, Canada: New Society Publishers, 2011); available on-line at www.cbsm.com/public/images/FosteringSustainableBehavior.pdf.

¹⁰ McKenzie-Mohr, Doug. *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*, 3rd ed. (Gabriola Island, British Columbia, Canada: New Society Publishers, 2011); available on-line at www.cbsm.com/public/images/FosteringSustainableBehavior.pdf.

consistency between their words and actions. McKenzie-Mohr suggests that commitments be written down, publicly stated where possible, and developed in a group where reinforcement can be sought.

Norms are expectations for behavior. They are rules, often unspoken, on how we should act and what kinds of decisions should be made in particular contexts. People look to the behavior of those around them to determine how to respond. We inherit norms but can also create new norms

Create new norms by modeling the behavior you want to see in others.

that allow us to identify and model good behavior to inspire others. New commitments can be reinforced by new norms that change the way people view a situation and the responses they consider appropriate. McKenzie-Mohr finds that new norms to foster sustainable behavior are most effectively presented when decisions are being made. For reducing chemical footprints, this might mean presenting the norm at

the time when product purchases are to occur. People respond to messages encouraging positive behaviors (“here is what you can do!”), more so than to negative messages (“don’t do that!”). Praising good behavior can cement the new norm in place. The goal is to make sustainable behavior the new social default.

Prompts serve as reminders. We commit to do many things but sometimes forget. Prompts provide visual or auditory reminders to act on a commitment already adopted. The Australian slogan “slip, slop and slap!” (a pithy reminder to “slip on a shirt, slop on the sunscreen, and slap on a hat”) has been effectively used to prompt responsible sun protection. Grocery store parking lot signs remind shoppers to bring their reusable bags. A prompt to assist consumers when shopping for products could be a simple list of product alternatives or chemical ingredients to avoid. Prompts help us remember while we establish new, more responsible habits. They should be noticeable, self-explanatory, and located in close proximity in time and space to the actions that could use some positive reinforcement.

Prompt yourself with reminders.

Underlying commitment, prompts and norms are other tools that motivate positive behavior change. Incentives and rewards can be used to enhance motivation. Personalizing information can make messages and reminders more meaningful to the individuals engaged in behavior change. Having a list of specific examples and options makes sustainable behavior do-able. Chapter 9 provides a list of concrete suggestions for individuals and groups to choose from on the path to reducing chemical footprints.

Summary

Prevention and mitigation are the most effective options for reducing the threat of unregulated harmful chemicals to human health and ecological systems. While existing regulatory programs focus on cleaning up chemicals that have already been created, prevention and mitigation options minimize chemical use or avoid toxic chemicals altogether. Voluntary efforts have engaged individuals, businesses and a wide variety of groups in society to adopt prevention measures. People who learn about these issues typically want to do what they can to prevent harm to human health and the environment, and ensure a safe and viable future for all. Education does not foster

behavioral change. Many barriers inhibit individuals from adopting environmentally responsible behaviors. Long-term commitment to the goal of reducing chemical footprints can be fostered through a variety of hands-on options for directly and personally engaging with the issues. Individuals and groups are more likely to adopt lasting behavior changes after making a commitment, using prompts as reminders, and using norms to reinforce the value of the new sustainable behavior.

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