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## Vermont Legislative Research Service

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### Hazardous Household Waste

Household hazardous waste (HHW) consists of harmful household products used by consumers.<sup>1</sup> Within the United States HHW is defined by the Environmental Protection Agency as waste “that can catch fire, react, or explode under certain circumstances, or that are corrosive or toxic.”<sup>2</sup> The federal government does not regulate the collection of HHW; rather, under the 1976 Resource Conservation and Recovery Act (RCRA) Subsection C, HHW management is left under the jurisdiction of state and local governments.<sup>3</sup> The Pollution Prevention Act of 1990 put political pressure on states to recognize the relevance of HHW and established non-regulatory waste initiatives at the community level.<sup>4</sup>

With the frequency of hazardous household waste found in the municipal solid waste system, municipalities and state governments are introducing programs and initiatives to intercept and encourage the safe disposal of HHW.<sup>5</sup> Improper disposal of HHW down the drain or in conventional trash can leach toxic chemical into the environment, resulting in a range of health of issues within the effected population and natural ecosystem.<sup>6</sup>

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<sup>1</sup> Joshua N. Edokpayi et al., "Household Hazardous Waste Management in Sub-Saharan Africa," in *Household Hazardous Waste Management*, ed. Daniel Mmerek (London: InTech, 2017), 2, <http://dx.doi.org/10.5772/66292>.

<sup>2</sup> United States Environmental Protection Agency, *Hazardous Household Waste*, <https://www.epa.gov/hw/household-hazardous-waste-hhw> (last updated 2018).

<sup>3</sup> United States Environmental Protection Agency, *Hazardous Household Waste*, <https://www.epa.gov/hw/household-hazardous-waste-hhw> (last updated 2018).

<sup>4</sup> Ephraim Massawe et al., "Voluntary Approaches to Solid Waste Management in Small Towns: A Case Study of Community Involvement in Household Hazardous Waste Recycling," *Journal of Environmental Health* 76, no. 19 (2014): 27, [http://www.neha.org/sites/default/files/flipping\\_book/jun-2014-jeh/files/assets/basic-html/page26.html](http://www.neha.org/sites/default/files/flipping_book/jun-2014-jeh/files/assets/basic-html/page26.html).

<sup>5</sup> Travis P. Wagner, "Examining the Concept of Convenient Collection: An Application to Extended Producer Responsibility and Product Stewardship Frameworks," *Waste Management* 33, no. 3 (2013): 499-507, <https://www.sciencedirect.com/science/article/pii/S0956053X12002851>.

<sup>6</sup> United States Environmental Protection Agency, *Hazardous Household Waste*, <https://www.epa.gov/hw/household-hazardous-waste-hhw> (last updated 2018).

## Vermont's Current Household Waste Policies

HHW take-back and collection models, although widely used by many countries within the European Union (EU), have yet to be established comprehensively throughout Vermont.<sup>7</sup> Existing EU legislation has indirectly provided a framework for HHW management and disposal, with several European countries taking on aggressive and highly successful national and local collection schemes.<sup>8</sup> The increasing issues associated with HHW in the solid waste system has encouraged collection initiatives and incentive frameworks on a domestic level. Although many states have HHW programs, Maine and Pennsylvania have taken the lead by passing landmark legislation fostering collaboration between citizens, municipalities, and producers for the safe and efficient disposal of HHW.<sup>9</sup>

Some states have succeeded in implementing effective HHW collection initiatives, but Vermont lacks a strong, state-led program to organize efficient HHW collection and disposal. The collection of HHW is done at the local level, where waste collection is carried out by "solid waste management entities."<sup>10</sup> With little financial incentive, only 3.8% of citizens state-wide dispose of HHW at solid waste management entities or through HHW collection events.<sup>11</sup> In the past, Vermont has relied on a volunteer-based disposal system, which has reduced only a fraction of the total HHW within Vermont.<sup>12</sup>

## Extended Producer Responsibility

Methods of collection and disposal of HHW vary in their efficiency, equitability, and success. The two main policy schemes include; extended producer responsibility (EPR) and product stewardship (PS). Each of these frameworks demands varying levels of government intervention, producer accountability, and citizen engagement.<sup>13</sup>

During the past two decades an EPR policy approach has become increasingly popular in the United States as a means for state and local governments to shift recycling costs from

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<sup>7</sup> Vassilis J. Inglezakis and Konstantinos Moustakas, "Household Hazardous Waste Management: A Review." *Journal of Environmental Management* 150, no. 1 (2015): 311, <https://doi.org/10.1016/j.jenvman.2014.11.021>.

<sup>8</sup> Inglezakis and Moustakas, "Household Hazardous Waste Management," 311.

<sup>9</sup> ME. REV. STAT. tit. 38, §1665-B (2006); Pennsylvania Department of Environmental Protection, *Household Hazardous Waste Collection*, <http://www.dep.pa.gov/Business/Land/Waste/SolidWaste/HazardousWaste/Household/Pages/HHW-Collection-Programs.aspx> (last updated 2018).

<sup>10</sup> Vermont Department of Natural Resources, *Household Hazardous Waste*, <http://dec.vermont.gov/waste-management/solid/materials-mgmt/HHW> (last updated 2018).

<sup>11</sup> An Act Relating to Household Products Containing Hazardous Substances, H.R 560 (Vermont 2018).

<sup>12</sup> Vermont Department of Environmental Conservation, *2016 HHW Cost Survey Results*, <http://dec.vermont.gov/sites/dec/files/wmp/SolidWaste/Documents/HHW-CEG-Survey-Results-data-w-analysis-partial-2016.xlsx> (2016).

<sup>13</sup> Inglezakis and Moustakas, "Household Hazardous Waste Management," 311.

consumers to producers.<sup>14</sup> EPR is “intended to promote product improvements making manufacturers responsible for environmental impacts across various life-cycle stages of products.”<sup>15</sup> The concept of EPR was first introduced in the 1990s by Swedish graduate student Thomas Lindhqvist, as an idea for decreasing environmental impact and shifting monetary burdens of wastes onto the manufacturer.<sup>16</sup> The three central principles to the EPR theory are “to internalize the environmental cost of products into their retail price, to shift the economic burden of managing toxicity and other environmental harm associated with post-consumer waste away from local governments and taxpayers and on to producers, and to provide incentives to producers to incorporate environmental considerations in the design of their products.”<sup>17</sup> The EPR framework has been adopted in toxic manufacturing and products laws across the United States at both state and local levels.<sup>18</sup> These laws shift the environmental responsibility and financial burden from the consumer to the manufacturer. In turn, this can foster greater producer accountability for hazardous products that are used at home by incentivizing producers to create products that are more environmentally friendly or easier to recycle.<sup>19</sup>

An analysis of the benefits and shortcomings of current EPR legislation in the United States notes that the success of EPR legislation often varies from state to state.<sup>20</sup> Vermont and Maine were found to have effective EPR legislation in regards to the safe collection and disposal of mercury thermostats.<sup>21</sup> EPR legislation in both of these states requires producers to collect a specific amount of mercury as well as requiring them to provide “[bounties] to those who bring a mercury thermostat to a collection location.”<sup>22</sup> As a result of these EPR policies, Nash and Bosso conclude that the collection and disposal of mercury thermostats in both Vermont and Maine is significantly better than in other states.<sup>23</sup>

One noteworthy obstacle to the implementation of EPR policies is their reliance on the consumer to bring the hazardous material to a collection site. Nevertheless, “when paint producers enlisted retailers as collection sites as part of a new EPR system for paint in Oregon in 2010, they increased the number of permanent sites where consumers could drop off leftover paint from 15 to 98.”<sup>24</sup> This demonstrates that problems such as relying on consumers to deliver the hazardous waste can be combated with policies that mandate an increase in the

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<sup>14</sup> Jennifer Nash and Christopher Bosso, “Extended Producer Responsibility in the United States,” *Journal of Industrial Ecology* 17, no. 2 (2013): 2, <http://dx.doi.org/10.1111/j.1530-9290.2012.00572.x>.

<sup>15</sup> Ronald Driedger, “From Cradle to Grave,” *Journal of Industrial Ecology* 5, no. 2 (2002), <http://dx.doi.org/10.1162/10881980152830150>.

<sup>16</sup> Clifton Curtis et al., “Extended Producer Responsibility and Product Stewardship for Tobacco Product Waste,” *US National Library of Medicine National Institute of Health* 4, no. 3 (2014):157, <http://doi.org/10.4172/2252-5211.1000157>.

<sup>17</sup> Curtis et al., “Extended Producer Responsibility,” 157.

<sup>18</sup> Nash and Bosso, “Extended Producer Responsibility,” 6.

<sup>19</sup> Nash and Bosso, “Extended Producer Responsibility,” 6.

<sup>20</sup> Nash and Bosso, “Extended Producer Responsibility,” 26.

<sup>21</sup> Nash and Bosso, “Extended Producer Responsibility,” 3.

<sup>22</sup> Nash and Bosso, “Extended Producer Responsibility,” 16.

<sup>23</sup> Nash and Bosso, “Extended Producer Responsibility,” 16.

<sup>24</sup> Nash and Bosso, “Extended Producer Responsibility,” 13.

number of collection sites, or require producers to pay a 'bounty' to consumers who return their waste.

Some business sectors, such as the plastics industry, oppose EPR policies on the basis that such policies "...increase costs to business, government, and consumers, fail to reduce waste, and are less efficient than market driven recycling programs."<sup>25</sup> Opposition to EPR from businesses can also stem from the idea that the success of EPR policy ultimately relies on consumer behavior.<sup>26</sup>

Internationally, EPR policies have been implemented successfully, especially when these policies are combined with aspects of product stewardship (PS) legislation. Product stewardship legislation dictates that both producers and consumers share a responsibility for "minimizing the product's environmental impact throughout all stages of the products' life cycle."<sup>27</sup> Until 1998 in Sweden, the government taxed purchasers of new cars; this tax was then put toward a "car-scraping fund" which was used to pay for safe, environmentally-sound disposal of old cars.<sup>28</sup> In 1998, as part of an EU directive, the Swedish government implemented EPR policies that allowed the government to hold producers accountable for the dismantling and disposal of used cars. As a result, the tax paid by consumers when buying a new car was used to pay owners of used cars a premium for returning that car to a dismantling site while the actual cost of dismantling and disposal of used vehicles was placed on the producers.<sup>29</sup> EPR policies in Sweden when combined with certain aspects of product stewardship have proven to be effective at increasing the rate at which used cars are disposed of safely.<sup>30</sup> At the same time, these policies do not place significant costs on consumers for the disposal of their vehicles, while providing incentives for consumers to return their used cars to licensed disposal sites.

### **Product Stewardship**

Whereas EPR concentrates on waste management, product stewardship (PS) "promotes the sharing of responsibility among various stakeholders (the designers, producers, sellers, users) involved throughout the lifecycle of a product."<sup>31</sup> Characterized as a "diluted EPR framework," PS aims to distribute the responsibility of the product across all facets of the product lifecycle. This model requires a high level of engagement and competence from partners, as its success is largely vested in voluntarily participation.<sup>32</sup> For instance, in Sweden's case, the corporation's commitment is obligatory whereas the consumers are incentivized to cooperate on a voluntary

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<sup>25</sup> Nash and Bosso, "Extended Producer Responsibility," 8.

<sup>26</sup> Nash and Bosso, "Extended Producer Responsibility," 8.

<sup>27</sup> "Northwest Product Stewardship Council," Northwest Product Stewardship Council, accessed February 15, 2018, <http://productstewardship.net/>.

<sup>28</sup> K.H. Forslind, "Implementing Extended Producer Responsibility: the Case of Sweden's Car Scrapping Scheme," *Journal of Cleaner Production* 13, no. 6 (2005): 23, <https://doi.org/10.1016/j.jclepro.2003.12.017>.

<sup>29</sup> Forslind, "Implementing Extended Producer Responsibility," 26.

<sup>30</sup> Forslind, "Implementing Extended Producer Responsibility," 26.

<sup>31</sup> Wagner, "Examining the Concept of Convenient Collection," 499-507.

<sup>32</sup> Curtis et al., "Extended Producer Responsibility," 157.

basis. On the other hand, in the case of Pennsylvania's HHW collection programs, all stakeholders play voluntary roles.

Pennsylvania's system embodies the characteristics of PS, with the specific HHW programs varying from county to county. Allegheny County, the second largest county in Pennsylvania (it includes Pittsburgh and its suburbs), employs a non-profit organization, the Pennsylvania Resource Council (PRC), to handle HHW cleanup. The PRC is well established in Western Pennsylvania, hosting HHW disposal events since 2003 with the support of partners and volunteers.<sup>33</sup> Three times a year the PRC hosts a disposal day for Allegheny County and surrounding counties. Funding for these events is managed by the PRC, which invests in a waste removal contractor to dispose of the hazardous waste collected at the organized events. After the event, the PRC is fiscally reimbursed by the county.<sup>34</sup> Participants who are disposing of HHW are required to pay \$3 per gallon, which, according to the PRC Program Coordinator Michael Stepaniak, "covers approximately 20% of the program costs."<sup>35</sup> Mr. Stepaniak explains that the disposal costs alone for a large event usually range from \$30,000 - \$40,000 per event, with 1,000-1,200 cars showing up and "three fifty-three foot trailers being filled with HHW."<sup>36</sup>

Other counties in Pennsylvania (some regions of Allegheny County, Beaver County, Fayette County, Indiana County, Mercer County, Northampton County, Washington County, and Westmoreland County) utilize a company called "Waste Management at Your Door" (WM) to manage HHW disposal.<sup>37</sup> WM is different from the PRC in that it organizes one-day community collection events and a door-to-door service for residents who did not, or could not, make it to the collection events.<sup>38</sup> Both of these management methods embody PS, which encourages the sharing of recycling costs among producers, consumers, governments, and other stakeholders.

## Conclusion

Effective HHW legislation, regardless of the policy models used, ultimately relies on strong collaboration between municipalities, producers and consumers. EPR policies have proven to be most effective when consumers are directly incentivized to participate in the disposal of hazardous materials. On the contrary, the PS policy model emphasizes shared responsibility among producers, consumers, governments, and other stakeholders, throughout the lifecycle of the HHW product.<sup>39</sup> The dynamic nature of PS allows it to be implemented in a variety of

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<sup>33</sup> Pennsylvania Resource Council, *Household Chemical Collection Events*, <http://prc.org/programs/collection-events/household-chemicals> (updated 2018).

<sup>34</sup> Michael Stepaniak (Pennsylvania Resource Council Program Coordinator), in discussion with authors, February 8, 2018.

<sup>35</sup> Michael Stepaniak, in discussion with authors, February 8, 2018.

<sup>36</sup> Michael Stepaniak, in discussion with authors, February 8, 2018.

<sup>37</sup> Pennsylvania Department of Environmental Protection, *Household Hazardous Waste Collection*, <http://www.dep.pa.gov/Business/Land/Waste/SolidWaste/HazardousWaste/Household/Pages/HHW-Collection-Programs.aspx> (updated 2018).

<sup>38</sup> "Home Generated Special Material Management Programs," WM At Your Door, accessed February 9, 2018, <http://www.wmatyourdoor.com/government/household-materials.aspx>.

<sup>39</sup> Wagner, "Examining the Concept of Convenient Collection," 499-507.

ways, but its voluntary structure has the potential to lead to risks associated with cost sharing. EPR and PS policy models provide a comprehensive framework that incentivizes citizen action and producer responsibility in order to foster safe and responsible disposal of HHW.<sup>40</sup>

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This report was completed on March 1, 2018 by Brian Angel, Noah Boland, and Elie Jordi under the supervision of Professor Jack Gierzynski and Professor Robert Bartlett with the assistance of Research Assistant Catherine Curran-Groome in response to a request from Representative David Deen.

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<sup>40</sup> Inglezakis and Moustakas, "Household Hazardous Waste Management," 311.