

Elements 2010

Special Waste and the Greening of Society

SWANA Technical Division Article - In the near future, changes to the way we manage electronics, pharmaceuticals, sharps, batteries, and fluorescent light bulbs will be fueled through a combination of new and expanded regulations, producer initiatives, and market development.



Photo: Donald Cecil
The infrastructure for recycling electronics has yet to be fully developed.

By Michelle Mulet Nicholls

The concept of “going green” or “being green” or “living green” has existed for a number of years, although its existence often seemed relegated outside the mainstream of society. With the recent emphasis on climate change, however, it seems almost every business (from coffee growers to large retailers) is marketing itself as a green company in some way. Discussions about *sustainability*, in its various iterations, are now commonplace in most industry segments. Consumers, too, are becoming more educated on what it means to be green and there are a number of grassroots efforts under way to encourage us all to tread more lightly on the planet.

The paradox of this shift, however, is our need for (or reliance on) products that are inherently toxic or, at the very least, not very green by nature. Many consumers don’t know or understand what goes into common products, while municipalities are placing a new emphasis on the reduction of toxins through product stewardship initiatives, requiring the redesign of products to make them easily recyclable, with fewer toxic components in their design or production, and creating an end-of-life management infrastructure that is self-sustaining while reducing the negative environmental and health impacts of these products.

Extended producer responsibility (EPR) initiatives have emerged as a pushback to the notion that local governments should be responsible for the management of products disposed of in our throwaway society, particularly those that contain hazardous components. The reasons for these initiatives, it seems, are threefold: (1) the ballooning of household hazardous waste (HHW) program costs with little funding to support the programs; (2) the ever-expanding list of items requiring special handling, usually added to HHW programs by default; and (3) the inclusion of manufacturers in the management of the products they produce by

requiring the manufacturer to take back their products for proper handling. While the focus of EPR initiatives has been hazardous substances, this may extend into traditional municipal solid waste, thereby commoditizing them and creating markets for the recovered items.

Electronics

In 2008, we saw the list of states regulating e-waste management grow even more. While there are still a variety of methods employed to regulate the proper handling, disposal, and overall management of these ubiquitous items, no one regulatory framework has emerged as “the” way to regulate e-waste, although manufacturer responsibility seems to be the popular choice at present.



Photo: Donald Cecil
Electronic waste is often handled by take-back and collection programs.

The more comfortable states become with their own regulatory framework, the more difficult it may be to wrest that power away, should a comprehensive federal regulation be implemented. In an effort to stem the tide of having to manage, potentially, 50 different regulatory structures, manufacturers continue to announce new or improved recycling programs. Panasonic, in October 2008, was the latest to join in a nationwide recycling program. To implement this program, Panasonic will work with other manufacturers to establish a network of collection centers and to work with select recyclers that follow a certain code of conduct.

In November 2008, *60 Minutes* ran an expose of e-waste recycling operations in China and showed that, despite a number of years of domestic and international e-waste laws, export bans, and public information about the issue, there is still a large problem with the “recycling” of e-waste in unhealthy and environmentally suspect ways overseas. Unfortunately, the infrastructure for recycling electronics domestically is not developed enough to manage the amount generated, and many recyclers claim this is forcing them to export material for recycling. There is a need for this infrastructure to be developed, and new legislation may make it easier to develop facilities

that can handle electronic waste. Especially of note is the ability to clean cathode-ray-tube (CRT) glass domestically. Currently, there are less than 20 CRT glass-making facilities worldwide, and governments are restricting imports, making it more important to develop domestic facilities. Additionally, there are only five facilities worldwide that are equipped to minimize dioxins in circuit boards.

The “greening” of electronics recycling will come from the development of products that do not contain hazardous materials. Apple recently announced the development of a green laptop computer. While the development of these products is fueled in part by requirements for the reduction of hazardous substances (RoHS) in the Europe and some US states, technological advances are spurring rapid development. There should be no change in performance of these new products from their toxin-laden cousins, and the hope is that electronics will no longer require special regulation and will become just another commodity in municipal programs.

The price of gold, silver, copper, plastics, and scrap metal may help to fuel innovation in recovery programs but may also inhibit these programs. If scrap prices are high, components of e-waste are commoditized in such a way that the cost to disassemble and recycle makes financial sense. If, however, scrap prices are low, it becomes more economical to simply dump these items and make no effort to recycle. In this latter case, incentives need to be in place to minimize the ability to shirk responsibility and simply take the path of least cost with little regard to the environmental impact of such action.

The transition from analog to digital broadcast signals may finally produce the tidal wave of obsolete CRT televisions many municipalities have been waiting for. This wave would include not only televisions currently in use but also those that are in storage for whatever reason. Despite the availability of converter boxes, the change may prompt consumers to make the switch to new televisions compatible with digital signals. However, with the current economy in such disarray, consumers may opt to purchase the converter box and keep their old televisions a little longer, further adding to the supposed massive stockpile of these items that will eventually have to be managed once the consumers are finally ready to part with them.

For the near future, electronics will continue to be handled with a combination of state laws, take-back and collection programs, and development of greener electronics. Consumers can help to drive innovation as well by demanding products that contain the least amounts of toxic components and by supporting efforts to green the electronic industry.

Pharmaceuticals

In an effort to keep expired or unwanted pharmaceuticals out of the hands of people who are not the prescription’s owner, the simplest way to manage these items was to flush them down the toilet. Years of this practice, however, have shown its negative effect on marine life, which has prompted the development of “no drugs down the drain” educational campaigns.



Photo: Donald Cecil
The infrastructure for alkaline and other batteries is still somewhat haphazard.

If these programs are successful, there may be an increase in pharmaceuticals in the trash. What, then, to do with these items? From a solid waste manager's perspective, the thought of having medicines in the trash can lead to thoughts of scavengers rummaging through the trash for a baggie of pills, not to mention the thought of yet another unfunded diversion program that will require resources that are already scarce.

Current laws prohibit the return of medicines to pharmacies and other medical facilities for handling as medical waste, whether or not the medicine is a Schedule II drug (prescriptions that are written on triplicate forms), citing the dangers of reintroducing these drugs into either the general or illicit marketplaces. There are some companies that do collect pharmaceuticals for destruction, but there is a cost for this service, and currently there is no self-sustaining funding source for this type of program. Jurisdictions will have to prioritize their shrinking HHW funds to manage this very small portion of the wastestream.

Until a realistic solution is developed, jurisdictions are informing their residents to render the pharmaceuticals unusable by combining them with cat box filler or coffee grounds before placing them in the trash. This option does little in the way of helping meet the objectives of jurisdictions that have

aggressive goals for waste reduction. Another strategy used by jurisdictions is to add pharmaceuticals to the list of items accepted at the local HHW facility, but that brings on additional liability if the facility knowingly accepts Schedule II drugs.

In the near future, a "meeting of the minds" must take place to discuss this issue. Pharmaceutical companies, the US Drug Enforcement Administration, municipalities, pharmacies, medical facilities, and others must work together to develop comprehensive recovery programs that minimize the impact of these items on the environment and the assumption that local governments will handle anything that is considered a waste product. Although pharmaceuticals constitute a small portion of the overall stream of municipal solid waste, the social, health, and environmental impacts of doing nothing may do more harm than good.

Sharps

California recently banned sharps from disposal. Since September 1, 2008, home-generated sharps cannot be placed in trash, recycling, or greenwaste containers. Sharps, under California law, include hypodermic needles, pen needles, intravenous needles, lancets, and other similar devices used to penetrate the skin.

For now, sharps in California must be taken to an HHW facility, a sharps consolidation point, or a medical waste generator facility, or they must be placed in approved mail-back containers. Infrastructure for this type of program is haphazard at best, with individual jurisdictions taking it upon themselves to secure medical facility or pharmacy locations. There is no requirement for the facility where the patient first received the sharps to then return the sharps for proper disposal. From the solid waste perspective (in the author's opinion), the reaction to this law from the medical community has been lukewarm at best. Convincing pharmacies and other medical facilities to take back and handle items they sold or provided has been a hard sell, and it has rested on the shoulders of local agencies to develop programs within their boundaries with no new funding sources provided.

With the push for EPR for other products, it seems the natural progression would be to increase the pressure on hospitals, pharmacies, and other healthcare facilities to help in this effort in the coming years through voluntary programs or new regulatory frameworks.

Batteries

Companies like the Rechargeable Battery Recycling Corp. have been instrumental in developing a network for the collection and proper management of rechargeable batteries. The next progression under this waste type is the inclusion of nonrechargeable batteries. The infrastructure for alkaline and other batteries is still somewhat haphazard, with no funding for recovery programs but with the expectation that HHW programs will collect. Expect to see EPR initiatives begin discussions with battery manufacturers to take back their products for proper management.

Fluorescent Lights

Some large retailers have begun consumer take-back programs for fluorescent light tubes and bulbs, and some states have passed landfill bans (with little or no recovery provisions). For now, look to these retail programs for the development of nationwide recovery networks. If, in the near future, it is shown that this waste type is still being disposed of in large quantities (based on some portion of sales), expect to see more efforts from EPR initiatives for manufacturers to develop collection networks or fund other take-back programs.

Conclusion

The future of special waste materials will require collaboration between many stakeholders in order to minimize the impact these items have on the environment. An honest commitment from manufacturers, distributors, local governments, consumers, recyclers, and others, each providing expertise from its unique perspective, will make it possible to develop products that are environmentally sound, that can be easily managed and recycled without special handling, that are self-funded, and that can be truly sustainable.