

May 14, 2018

**COMMENTS OF THE RETAIL ASSOCIATIONS  
ON EPA’S PROPOSAL TO ADD AEROSOL CAN WASTES  
TO THE UNIVERSAL WASTE REGULATIONS**

***DOCKET ID No. EPA-HQ-OLEM-2017-0463***

**1. Introduction**

The Retail Industry Leaders Association (“RILA”), the Food Marketing Institute (“FMI”), and the National Association of Chain Drug Stores (“NACDS”), and their members (collectively, the “Retail Associations”) are pleased to submit these comments in response to the proposal of the U.S. Environmental Protection Agency (“EPA” or the “Agency”) to classify and regulate hazardous aerosol can wastes as universal wastes under the Resource Conservation and Recovery Act (“RCRA”). *See* 83 Fed. Reg. 11,654 (March 16, 2018).

Retailers sell a wide variety of aerosol products in our stores every day that are generally deemed safe for consumption or use by ordinary consumers, and meet all applicable safety regulations. Examples include deodorants, hair styling products, shaving creams, cheese, spot removers, etc. If a customer discards these products at home, he or she throws it out in the normal municipal waste disposal or recycling stream. However, when the same consumer product goes unsold by a store or is returned to a store by a customer, it may be classified as a “hazardous waste,” potentially subjecting the store to the same burdensome hazardous waste generator regulations as a steel mill or chemical plant.

Because of the regulatory complexity and uncertainty, retailers often have little choice but to handle all their unsold, returned, or used aerosols as fully regulated hazardous wastes, despite the fact that the products pose little or no risk to human health and the environment. As a result aerosol cans now account for up to 50 percent or more of the materials from the retail sector that are deemed to be hazardous wastes. This imposes tremendous costs on the industry and makes recycling difficult or impractical. In order to address these issues, a number of states have streamlined the requirements for aerosol wastes by classifying them as universal wastes.

The Retail Associations greatly appreciate this opportunity to submit comments on the proposed addition of hazardous aerosol can wastes to the federal universal waste regulations. This is also an important opportunity to further build our relationship and continue to work with the Agency on ways to protect our customers and the environment, while streamlining the burdensome regulatory compliance process for our businesses – two goals that are not mutually exclusive.

We would welcome the opportunity to provide additional input to EPA, and to answer any questions the Agency may have with respect to the points made in these comments.

Section 2 below provides a general summary of our comments. Section 3 provides background on the Retail Associations and their interest in this rulemaking. Section 4 expresses the Associations' strong support for the classification and regulation of hazardous aerosol can wastes as universal wastes, and provides further reasons for such action. Section 5 explains certain changes to the scope of the proposed rule that we think are essential to make the rule workable and to maximize its benefits. Section 6 urges EPA to clarify that as soon as the final rule is issued, hazardous aerosol can wastes may immediately be transported in *all* states without a hazardous waste manifest or a hazardous waste transporter. Section 7 explains why we believe the Agency's Regulatory Impact Analysis for the proposed rule dramatically underestimates the cost savings that could be achieved under the proposal (with the changes we are suggesting). Section 8 highlights the need for the Agency to issue guidance on certain fundamental issues related to aerosols, in addition to issuing the universal waste rule, and Section 9 provides a brief conclusion. Finally, we once again commend the Agency for this process and reiterate the commitment of the Retail Associations to continuing to work with EPA to develop common sense regulations that protect our customers and the environment while not overburdening businesses with red tape and compliance costs.

## **2. Summary of Comments**

The Retail Associations strongly support the classification and regulation of hazardous aerosol can wastes as universal wastes. As discussed in Section 3 below, the Retail Associations represent a broad cross section of the retail industry – the economic sector that EPA recognizes as having the largest percentage of entities affected by this rulemaking – and thus have a strong interest in the Agency's universal waste proposal. We have been urging EPA to take this type of action for several years, and are pleased that the Agency has initiated the current rulemaking. As discussed more fully in Section 4 below, we believe aerosol cans are particularly well suited for addition to the universal waste rule, since they satisfy all of the criteria specified in the regulations for classification as universal wastes. For example, they are generated ubiquitously, pose relatively low risks, are difficult to segregate into regulated and non-regulated streams, and would be handled in a more protective manner if the full RCRA hazardous waste regulations were not applied during generation, storage, transport, and collection. In addition, they have been successfully managed as universal wastes in several states for many years.

We are concerned, however, that the scope of the proposal has been unnecessarily and inappropriately narrowed in certain ways that would make the universal waste rule unworkable, especially in the retail sector (which EPA estimates represents approximate two-thirds of the affected generator universe). In particular, as discussed in Section 5 below, the proposed rule would require generators to make fine technical judgments about each individual aerosol can in order to determine whether it can be managed as a universal waste. Some of these technical judgments include:

- o Whether the can dispenses chemical products in the form of a foam or spray (eligible for management as a universal waste) or in the form of a gel or paste (potentially not eligible);
- o Whether the can expels only gas (potentially not eligible) or also expels a solid or liquid (eligible);
- o Whether any dried spray, splatters, or drips on the outside are evidence of leakage (potentially not eligible) or simply usage (eligible); and
- o Whether the can is both “empty” and “reactive” (in which case it might not be eligible), even though EPA has repeatedly said that it cannot clearly define when an aerosol can is empty or reactive.

We question whether any generator could confidently make these types of judgments. In any event, in the retail sector, drawing all these distinctions would be hopelessly impractical, given the extremely wide range of aerosol products being handled, the significant numbers of waste aerosol cans being generated, the limited experience of most retail employees with these types of issues, and the high turnover of retail personnel. Moreover, EPA has long maintained that one of the key advantages of the universal waste rule is that it obviates the need for distinguishing between look-alike products. For these reasons and others discussed in Section 5, we urge the Agency to expand the scope of its proposal by including non-aerated products and gas-only products, by removing or modifying the exclusion for aerosol cans with evidence of leaking or damage, and by clarifying the status of empty aerosol cans.

EPA should also clarify that as soon as the final rule is issued, hazardous aerosol can wastes may immediately be transported in *all* states without a hazardous waste manifest or a hazardous waste transporter – regardless of if/when the states adopt the universal waste rule. As discussed in Section 6, even though states generally have the authority to impose hazardous waste rules that are more stringent than the federal regulations, they are preempted from imposing more stringent rules with respect to transport of hazardous wastes, as a result of the explicit preemption provisions of the federal Hazardous Materials Transportation Act. Clarifying this point would go a long way toward accelerating and maximizing the benefits of the universal waste rule, especially for companies that generate hazardous aerosol can wastes in multiple states (*e.g.*, nationwide or regional retailers) and/or need or want to transport such wastes across state lines to an environmentally sound recycling or disposal facility. EPA should also, as it has with other universal waste rules, encourage states to adopt the final rule and issue guidance specifying that the Agency will not take enforcement actions involving aerosol can universal wastes that are managed in compliance with the universal waste rule, regardless of whether the state has adopted the rule or received authorization for the rule.

With these changes and clarifications, the cost savings that would result from the rule are likely far greater than EPA estimated in its Regulatory Impact Analysis – perhaps as great as \$80 million per year or more. As discussed in Section 7 below, the Agency’s primary methodology for estimating the cost savings was fundamentally flawed, in large part because it assumed that

retail stores (the largest category of affected generators) are similar to manufacturing facilities in that only a very small percentage are likely to have their “generator status” (*i.e.*, their status as Large, Small, or Very Small Quantity Generators) change as a result of the universal waste rule. In fact, however, the rule is likely to have a substantial effect on the generator status of retail facilities (*e.g.*, stores, distribution centers, and return centers), since they commonly generate relatively low volumes of hazardous wastes, and hazardous aerosol can wastes represent a substantial percentage of such wastes. Indeed, this is why the Retail Associations have been advocating so strongly over the last several years for a universal waste rule for aerosols.

Finally, to further improve the regulatory framework for aerosol cans, we also urge the Agency to move forward on its separate commitment to issue guidance on when aerosol cans are subject to hazardous waste regulation in the first instance. In particular, as discussed in Section 8 below, we ask EPA to clarify (a) that aerosol cans destined for recycling are not solid wastes, (b) that aerosol cans do not exhibit the characteristic of reactivity, (c) that aerosol cans qualify as empty once they are no longer capable of dispensing the chemical product in a reliable and steady way as required for the intended application, and (d) that generators may use statistical information to determine the quantity of aerosol cans that need to be counted in determining their hazardous waste generator status. EPA should try to issue such guidance before or together with the final universal waste rule, if that can be done without delaying the universal waste rule. However, the first priority should be to issue a final universal waste rule for hazardous aerosol can wastes, which can be followed up afterwards, if necessary, with the guidance. In any event, the Retail Associations would welcome the opportunity to work with the Agency to ensure that the guidance encourages environmental sound management of used aerosols without imposing undue burdens on the regulated community.

### **3. The Retail Associations and Their Interest in This Rulemaking**

The Retail Associations represent a broad cross section of the retail sector in the United States, including large and small companies, from chains with more than a thousand stores nationwide to regional companies with a handful of stores. The vast majority of the members of each of the Associations market aerosol products, have the potential to generate hazardous aerosol can wastes (as discussed further below), and therefore have a strong interest in the current rulemaking. Each of the individual Associations is described briefly below:

- o RILA is an organization of the world’s most successful and innovative retailer and supplier companies – the leaders of the retail industry. RILA members represent more than \$1.5 trillion in annual sales and operate more than 100,000 stores, manufacturing facilities, and distribution centers nationwide. Our member retailers and suppliers have facilities in all 50 states and the District of Columbia, as well as internationally, and employ millions of workers domestically and worldwide.
- o FMI proudly advocates on behalf of the food retail industry, which employs nearly 5 million workers and represents a combined annual sales volume of almost \$800 billion. FMI member companies operate nearly 33,000 retail food stores and 12,000 pharmacies. FMI membership includes the entire spectrum of food retail venues: single

owner grocery stores, large multi-store supermarket chains, pharmacies, online and mixed retail stores. Through programs in public affairs, food safety, research, education, health and wellness and industry relations, FMI offers resources and provides valuable benefits to almost 1,000 food retail and wholesale member companies and serves 85 international retail member companies. In addition, FMI has almost 500 associate member companies that provide products and services to the food retail industry.

- o NACDS represents traditional drug stores, supermarkets, and mass merchants with pharmacies. Chains operate 40,000 pharmacies, and NACDS' nearly 100 chain member companies include regional chains, with a minimum of four stores, and national companies. Chains employ nearly 3 million individuals, including 152,000 pharmacists. They fill over 3 billion prescriptions yearly, and help patients use medicines correctly and safely, while offering innovative services that improve patient health and healthcare affordability. NACDS members also include more than 900 supplier partners and over 70 international members representing 20 countries.

The Retail Associations and their members have a clear and strong interest in this rulemaking. Indeed, EPA, in the preamble to the proposal, stated that “[the] economic sector [ ] ... with the largest percentage of potentially affected entities [is] the retail trade industry ... representing 65% of the affected Large Quantity Generator universe.” *See* 83 Fed. Reg. at 11,655. Retailers, including members of the Associations, market an extremely wide range of aerosol products, including but not limited to the following:

- Adhesives
- Air fresheners
- Air horns
- Antifungal treatments
- Antistatic agents
- Artificial snow
- Bathroom cleaners
- Carpet cleaners
- Cooking oils
- Cheese
- Deodorants
- Disinfectants
- Engine degreasers
- Fabric fresheners
- Fabric protectors
- First aid products
- Floor cleaners
- Foam insulation
- Furniture polishes
- Hair styling products
- Lubricants
- Novelties
- Oven cleaners
- Paints
- Perfumes
- Pesticides
- Shaving creams
- Starter fluids
- Sealants
- Spot removers
- Starch
- Sunscreens
- Tanning products
- Varnishes
- Waterproofing treatments
- Whipped dessert toppings

Of course, the vast majority of aerosols handled by retailers are not wastes in their hands, but rather are sold to customers and ultimately disposed or recycled (after use) by the customers. Nevertheless, significant amounts are either returned by customers or are unsold due to various

reasons (e.g., damage, defect, recall, obsolescence, expiration, seasonal product changes, or removal from shelves due to failure to “sell through” at an acceptable rate). Most of these unsold/returned items are not wastes, because they are suitable for re-shelving, liquidation sale through a secondary market, donation to non-profit organizations, or shipment to a manufacturer or its agent for credit. In some instances, however, the unsold/returned aerosol products do become wastes, and depending upon their composition, may be classified as hazardous wastes. Members of the Retail Associations have reported that aerosols represent up to 50% (by weight) or even more of all the potentially hazardous unsold/returned products that they handle. Retailers may also generate smaller amounts of aerosol can wastes in other ways, such as through cleaning/maintenance of buildings, equipment, and vehicles, constructing product displays, preparing foods and beverages, providing various services to customers, and conducting routine office/administrative functions. In light of all these potential mechanisms for generating hazardous aerosol can wastes, the Retail Associations, their members, and the retail sector more broadly, have a strong interest in the current rulemaking.

#### **4. The Retail Associations Strongly Support the Classification and Regulation of Hazardous Aerosol Can Wastes as Universal Wastes**

The Retail Associations strongly support the addition of hazardous aerosol can wastes to the RCRA universal waste rule. Indeed, the Associations have been urging the Agency take this step for several years, such as in comments submitted together with another retail sector trade association (*i.e.*, the National Retail Federation) on EPA’s 2014 Notice of Data Availability (“NODA”) on the application of RCRA to retailers. *See* Comments of the Retail Associations in Response to EPA’s NODA on the Application of RCRA to the Retail Industry (May 30, 2014) (EPA Docket ID# EPA-HQ-RCRA-2012-0426-0038) (“Retail Associations NODA Comments”) (Attachment 1 to the current comments) at 26-31. At least one of the Associations, RILA, also encouraged EPA to adopt a universal waste rule for aerosol can wastes as part of the Agency’s regulatory reform efforts under Executive Order 13777. *See* Comments of the Retail Industry Leaders Association on EPA’s Request for Public Comment on “Evaluation of Existing Regulations” (May 15, 2017) (EPA Docket ID# EPA-HQ-2017-0190-32612) (“RILA Regulatory Reform Comments”) (Attachment 2) at 8-13.

EPA has presented a compelling case for classification of hazardous aerosol can wastes as universal wastes in the preamble to the current proposal. *See* 83 Fed. Reg. at 11,658-59. However, we provide below some additional support demonstrating that aerosol cans meet each of the criteria set forth in the RCRA regulations for additions to the list of universal wastes.<sup>1</sup> In short, aerosol cans are perfectly suited for management under the universal waste program since they are generated ubiquitously, pose relatively low risks, are difficult to segregate into regulated and non-regulated streams, and would be handled in a more protective manner if the full RCRA hazardous waste regulations were not applied during generation, collection, and transport. Moreover, a number of states (including environmental leaders such as California and Colorado)

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<sup>1</sup> *See* 40 C.F.R. § 273.81. It is worth noting that EPA has stressed that “it does not believe that each and every factor must be met in order for a waste to be appropriate for the universal waste system, and for regulation of the waste under part 273 to improve waste management and implementation.” *See* 60 Fed. Reg. 25,492, 25,513 (May 11, 1995) (stating further that “the Agency will make decisions based on the weight of the evidence”).

have long classified and regulated aerosol cans as universal wastes, and their programs for doing so appear to have been highly successful.

- o **CRITERION #1: *The waste or category of waste, as generated by a wide variety of generators, is listed in subpart D of part 261 of this chapter, or (if not listed) a proportion of the waste stream exhibits one or more characteristics of hazardous waste identified in subpart C of part 261 of this chapter. [40 C.F.R. § 273.81(a)]***

As EPA notes in the preamble to the proposal, aerosol cans may exhibit the RCRA characteristic of ignitability if they contain flammable propellants such as propane or butane. *See* 83 Fed. Reg. at 11,656. In addition, discarded aerosol cans may be hazardous if they contain commercial chemical products that either exhibit a hazardous characteristic or are listed as hazardous wastes. *Id.* While in many instances it may be difficult for a generator to determine if the aerosol can wastes it generates are hazardous or not, there can be no doubt that many waste aerosol cans are hazardous.

Of course, many – perhaps even most – aerosol cans are not hazardous. Nevertheless, hazardous aerosol can wastes can and should still be designated as universal wastes. Indeed, EPA has long recognized that one of the key benefits of the universal waste rule is that it “eliminates [the need for] identifying, documenting, and keeping separate regulated waste and unregulated waste.” *See* 60 Fed. Reg. at 25,513. The Agency noted that it “wishes to encourage persons to manage both regulated waste and unregulated waste in the same collection systems ... [a]s long as all commingled waste is managed in a system that meets the requirements of the universal waste regulations.” *Id.* EPA indicated that this approach was particularly attractive in situations where “an across the board hazardous waste determination [could not be made] for entire categories of waste” and/or where a waste “either becomes hazardous or is no longer hazardous due to changes in manufacturing practices [or product composition].” *Id.* Given the difficulty in determining which waste aerosols are hazardous and which are not, they seem to be an ideal candidate for designation as universal wastes.

- o **CRITERION #2: *The waste or category of waste is not exclusive to a specific industry or group of industries, is commonly generated by a wide variety of types of establishments (including, for example, households, retail and commercial businesses, office complexes, conditionally exempt small quantity generators, small businesses, government organizations, as well as large industrial facilities). [40 C.F.R. § 273.81(b)]***

As discussed above, the retail industry handles a significant amount of unsold/returned aerosol cans. However, a much larger quantity of waste aerosol cans are generated by the persons and entities that purchase and use aerosol products. Households are by far

collectively the largest generators of such wastes.<sup>2</sup> However, a wide variety of businesses generate aerosol wastes, as well, by using the products.

In the Regulatory Impact Analysis for the proposed rule, EPA identifies 18 industries with large and small quantity generators that generate hazardous aerosol can wastes. *See* 83 Fed. Reg. at 11,638. However, we believe that the range of generators of such wastes is much broader. For example, vehicle fleet owners and service centers commonly use aerosol lubricants, paints, sealants, and the like, and the same is true for virtually anyone who owns or services industrial equipment. Office buildings and cleaning services use a variety of aerosol cleaning products for both hard surfaces (*e.g.*, wood polish, bathroom cleaners, etc.) and fabric surfaces (*e.g.*, carpet cleaners and upholstery fresheners). Healthcare facilities use aerosol disinfectants. Exterminators and businesses with pest control problems use aerosol pesticides. Hair salons use aerosol hair sprays, styling gels, and the like. Laundries and dry cleaners use aerosol spot removers and fabric protectors. Restaurants use aerosol cooking sprays, and other food products. The list of businesses, large and small, that use products dispensed with aerosol cans and generate the cans as wastes is almost endless. Moreover, federal, state, and local government agencies are also major users and generators of aerosols, inasmuch as they operate large office buildings, infrastructure facilities, healthcare centers, schools, parks, and facilities where large numbers of individuals are housed (*e.g.*, military installations and prisons). Although most of these commercial/government users of products in aerosol cans are not required to handle the used cans as hazardous wastes (*e.g.*, because they qualify as Very Small Quantity Generators (“VSQGs”)), they collectively constitute a major portion of the used aerosol can stream.

Clearly, waste aerosol cans are generated ubiquitously in an extremely wide range of settings, both industrial and not. This fact makes them ideal candidates for the universal waste rule. EPA has long stressed that “[o]ne of the problems the universal waste rule is designed to address is that a relatively large portion of some waste types are exempt from the hazardous waste regulations (*i.e.*, are generated by households and CESQGs [*i.e.*, Conditionally Exempt Small Quantity Generators]) and are indistinguishable from the regulated portion of the waste. This ‘look alike’ problem makes implementation of the [standard RCRA] program for these wastes extremely difficult.” *See* 60 Fed. Reg. at 25,514. Aerosol cans appear to be precisely the type of material that EPA had in mind. A large proportion of aerosol cans are generated as wastes by exempt households and VSQGs, but regulated entities generate a substantial amount of aerosol wastes, as well, and such wastes are typically indistinguishable from the aerosols generated by exempt persons.

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<sup>2</sup> *See, e.g.*, European Aerosol Federation, “Annual Report 2017” (Attachment 3) at 17 (indicating that 55.5% of aerosol products produced in Europe are personal care products, and an additional 20.7% are household products).

- o **CRITERION #3: *The waste or category of waste is generated by a large number of generators (e.g., more than 1,000 nationally) and is frequently generated in relatively small quantities by each generator. [40 C.F.R. § 273.81(c)]***

Virtually all households in the U.S. can be expected to generate at least some waste aerosol cans. That alone accounts for approximately 100 million generators, making the wastes among the most common potentially hazardous wastes generated in the country. Although these generators would be excluded from regulation under the household waste exclusion, the numbers of business, government, and other institutional generators that are potentially regulated (unless they qualify as VSQGs) is similarly very large. The Retail Associations estimate that the number of retail establishments in the United States handling unsold/returned aerosols is likely well over 100,000 (based on Census data on the number of retailers in key sectors that can be expected to market (and thus handle unsold/returned) aerosol products).<sup>3</sup> We have not made an effort to quantify the number of generating establishments in other industries, but given the wide range of such industries (as noted above), it seems almost certain that the numbers of such generators would be in the millions.

The amounts generated by each generator likely vary substantially. Members of the Retail Associations report that individual stores often handle up to 1000 lbs/year of unsold/returned aerosol cans. Each household user of aerosols presumably generates a fairly limited number of waste aerosol cans each month or year. Business users of aerosol products may generate somewhat larger amounts, depending upon their size and the nature of their operations. However, it might reasonably be expected that if a facility requires a very large amount of a particular chemical product, it might be more likely to use a different means of application. For example, a facility that uses large quantities of spray paint would likely obtain a bulk liquid paint that could be aerosolized using compressed gas, rather than using individual aerosol cans. Accordingly, it appears that waste aerosol cans are generated by large numbers of generators, most commonly in relatively small quantities.

- o **CRITERION #4: *Systems to be used for collecting the waste or category of waste (including packaging, marking, and labeling practices) would ensure close stewardship of the waste. [40 C.F.R. § 273.81(d)]***

EPA has stated that “the goal of this factor is to facilitate addition of wastes to the universal waste system that are most likely to be collected, and to be collected in a manner that ensures good management of the waste.” *See* 60 Fed. Reg. at 25,514. The Retail Associations believe that aerosol cans are precisely the type of materials that EPA had in mind. As an initial matter, aerosol cans constitute a large stream that is readily

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<sup>3</sup> *See* U.S. Census Bureau, “Statistical Abstract of the United States: 2012,” Table 1048 (data as of 2008) (Attachment 4) (indicating that there are 114,100 gasoline stations, 63,400 supermarkets and grocery stores, 25,700 convenience stores, 56,100 automotive parts/accessories/tire stores, 42,000 pharmacies and drug stores, 23,000 home centers and hardware stores, 22,100 sporting goods stores, 19,800 lawn and garden stores, 14,000 cosmetics/beauty supplies/perfume stores, and 4,400 warehouse clubs and superstores).

identifiable and easy to segregate for special management. Indeed, many of the key elements needed for proper stewardship of this waste stream are already in place. According to a study organized by the Sustainable Packaging Coalition (“SPC”), approximately 70% of Americans have access to curbside or drop-off recycling facilities that accept aluminum or steel aerosol cans. *See* SPC, “2015-16 Centralized Study on Availability of Recycling for Aerosol Containers” (Attachment 5). In addition, several major waste services providers have developed and are marketing programs for collecting and recycling waste aerosol cans from consumer and/or business generators.

Notwithstanding these efforts, it appears that vast quantities of aerosol cans are simply being disposed of by consumers in the ordinary trash. Designating aerosol cans as universal wastes would significantly facilitate collection and recycling programs, and would encourage use of such programs.<sup>4</sup> The requirements of the universal waste rule would also ensure that these activities are performed in a manner that is protective of human health and the environment.

- o **CRITERION #5: *The risk posed by the waste or category of waste during accumulation and transport is relatively low compared to other hazardous wastes, and specific management standards proposed or referenced by the petitioner (e.g., waste management requirements appropriate to be added to 40 CFR 273.13, 273.33, and 273.52; and/or applicable Department of Transportation requirements) would be protective of human health and the environment during accumulation and transport.*** [40 C.F.R. § 273.81(e)]

Waste or unsold/returned aerosol cans present relatively low risks during accumulation and transport. As an initial matter, these aerosol cans are the same as the aerosol cans that are distributed and used regularly by households and businesses of virtually every type, except that they generally contain significantly less of the propellant and chemical product than the unused items. Moreover, as noted above, over half of all aerosol wastes appear to be generated by households, and are frequently disposed of in the ordinary trash.

It is particularly noteworthy that aerosol cans are not “naked” chemicals, as might be the case, for example, with bulk pesticides (some of which are already classified as universal wastes). *See* 40 C.F.R. § 273.3 (classifying certain pesticides as universal wastes). Rather, aerosols by their very nature are engineered devices – devices that by law must meet U.S. Department of Transport (“DOT”) requirements for design, filling, testing,

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<sup>4</sup> As just one example, in states that regulate household hazardous wastes as hazardous wastes once they are collected, the universal waste rule would enable collected household hazardous aerosol can wastes to be stored at the collection site and transported to an ultimate recycling/disposal facility in accordance with the universal waste requirements, rather than the full hazardous waste regulations. *See* Rhode Island Rules and Regulation for Hazardous Waste Management, Rule 5.1(b)(1) (“owners and/or operators of facilities that accept household hazardous waste ... shall comply with the requirements for Large Quantity Generators ... and upon receipt the household hazardous waste shall be subject to full regulation as hazardous waste”); Minnesota Admin. R. 7045.0310(3) (“An operator who establishes or operates all or part of a household hazardous waste management program must comply with the standards applicable to large quantity generators [with limited exceptions]”).

ability to withstand heat and shock, etc. *See generally* 49 C.F.R. § 173.306(a)(3). These requirements help minimize risks during both accumulation and transport. Moreover, during transport, the used aerosols, like unused aerosols, are subject to additional DOT controls. For example, the aerosols must be packed in strong outer packagings, which among other things, must meet general packaging requirements for protectiveness. *See* 49 C.F.R. § 173.306(a)(3)(iv) and 171.8 (defining “strong outer packaging”). In addition, the outer packagings must be specially marked. *See* 49 C.F.R. § 173.306(i). As EPA notes in the preamble to the proposal, *see* 83 Fed. Reg. at 11,658, local fire codes also provide comprehensive protections during storage of aerosols (*e.g.*, package markings, storage quantity limits, design of storage areas, fire alarm systems, fire protection systems such as sprinklers, etc.). *See, e.g.*, National Fire Protection Association (“NFPA”) Fire Code (2018), Chapter 61 (Aerosol Products) (Attachment 6). These DOT and fire code requirements should obviate the need for further regulation during accumulation and transport.

To the extent that any additional regulation might be warranted, the requirements of the universal waste rules should be sufficient. They require that the wastes be stored in a protective manner, that containers be labeled and marked to indicate their contents, that employees be trained, that any releases be addressed appropriately, and that the wastes be sent to a properly authorized facility in a timely fashion. In addition, if a facility generates or accumulates large quantities, they must notify EPA and track all shipments of the waste into and out of the facility. These safeguards have proven highly effective for other universal wastes, and the Retail Associations believe they would likewise be effective for aerosol cans (as demonstrated in California, Colorado, and other states, as discussed below in the context of Criterion #8).

- o **CRITERION #6: *Regulation of the waste or category of waste under 40 CFR part 273 will increase the likelihood that the waste will be diverted from non-hazardous waste management systems (e.g., the municipal waste stream, non-hazardous industrial or commercial waste stream, municipal sewer or stormwater systems) to recycling, treatment, or disposal in compliance with Subtitle C of RCRA. [40 C.F.R. § 273.81(f)]***

The determination of whether individual aerosol cans are wastes or non-wastes, and hazardous or non-hazardous, can be extremely difficult. *See generally* Retail Associations NODA Comments at 17-20. With so many generators in so many different industries, many of which do not generally handle hazardous wastes and thus are particularly unsuited to making a proper determination, it is almost inevitable that mistakes will be made. Indeed, some generators may not even be aware of the need to make a determination or the possible implications of a hazardous waste determination. This is especially true given that the waste aerosol cans are in many cases identical to, or at least similar to, the products that business employees use and discard at their households and therefore are excluded from RCRA regulation. Thus, it seems likely that large numbers of generators of potentially hazardous aerosol cans are routinely disposing of such products in the ordinary trash.

Regulating aerosol cans as universal wastes would significantly reduce this problem. As EPA noted in the final rule designating lamps as universal wastes, “the streamlined requirements of the universal waste program will give [unsophisticated] generators a more accessible starting point for good environmental management. If regulatory requirements are simpler, ... more hazardous waste[s] will be handled properly ... instead of going to solid waste landfills or to municipal waste combustors. Improved management will ... lead to a reduction in the total amount of hazardous waste emissions to the environment.” See 64 Fed. Reg. 36,466, 36,473 (July 6, 1999).

Moreover, regulating waste aerosol cans as universal wastes would encourage better management of such wastes by more sophisticated generators. For example, such generators would have less reason to try drawing fine distinctions between used aerosol cans that are wastes versus non-wastes, or hazardous versus non-hazardous. Many generators – perhaps most – would simply direct all their used aerosol cans through the universal waste system. EPA has previously acknowledged that this type of result can be an important reason for designating wastes as universal.<sup>5</sup> Moreover, a universal waste designation would facilitate consolidation of waste aerosol cans from multiple facilities and/or generators, which in turn would provide economies of scale that would likely make recycling options more viable.<sup>6</sup>

- o **CRITERION #7: *Regulation of the waste or category of waste under 40 CFR part 273 will improve implementation of and compliance with the hazardous waste regulatory program.* [40 C.F.R. § 273.81(g)]**

Designating aerosol cans as universal wastes would not only encourage environmentally preferred outcomes, as noted above, but would also improve implementation and compliance. Not only would generators generally be relieved of the requirement to assess whether individual cans are wastes or non-wastes, and hazardous or non-hazardous, but the same would be true for federal and state inspection and enforcement personnel. Thus, implementation would certainly be improved. Moreover, as EPA has noted, “[i]f regulatory requirements are simpler [as a result of a universal waste rule], the compliance rate will improve.” See 64 Fed. Reg. at 36,473; see also 70 Fed. Reg. at 45,511 (“adding [waste] to the universal waste rule will improve compliance with the hazardous waste regulations by making it more achievable”).

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<sup>5</sup> See 60 Fed. Reg. at 25,515 (“diversion of unregulated portions of a waste ... from non-hazardous management systems could be a reason to add a waste to the universal waste system. For example, in some cases it may be likely that facilitating the collection of commingled regulated and unregulated waste would encourage development of collection systems that could divert significant quantities of the waste, including unregulated waste, from non-hazardous waste management systems”).

<sup>6</sup> Cf. 70 Fed. Reg. 45,508, 45,511 (August 5, 2005) (a universal waste designation “will allow generators ... to send [their wastes] to a central consolidation point. ... Under the universal waste rule, a handler of universal waste can send the universal waste to another handler, where it can be consolidated into a larger shipment for transport to a [recycling] facility”).

o **CRITERION #8: *Such other factors as may be appropriate.* [40 C.F.R. § 273.81(h)]**

As EPA notes in the proposal, the fact that aerosol can wastes have successfully been managed as universal wastes under existing programs (*e.g.*, in California and Colorado) “weighs in favor of concluding that management of aerosol cans under the federal universal waste regulations is likely to be successful.” *See* 83 Fed. Reg. at 11,659. However, the Agency has understated the extent to which aerosols are already being managed as universal wastes.

At the present time, a total of six states allow aerosol can wastes in general to be handled as universal wastes.<sup>7</sup> Moreover, additional states allow particular categories of aerosol can wastes (*e.g.*, aerosol paint wastes or pharmaceutical aerosol wastes) to be managed as universal wastes.<sup>8</sup> Indeed, even the federal universal waste rule appears to cover aerosol pesticide wastes in some circumstances. *See* 40 C.F.R. § 273.3 (covering, for example, unused pesticide products that are collected and managed as part of a waste pesticide collection program). As far as we are aware, all of these programs have been successful in facilitating the proper management of the aerosol can wastes that they cover.

For all of the reasons discussed above and in the preamble for the proposed rule, aerosol cans are ideal candidates for inclusion in the universal waste rule. Such a change would be of substantial benefit to the retail industry, but would also benefit a host of other business, government, and other institutional generators of aerosol wastes, as well as federal and state environmental agencies. We therefore urge EPA to finalize the proposed rule (with the changes and clarifications discussed in detail below) as soon as possible.

**5. EPA Should Modify the Scope of the Universal Waste Rule for Hazardous Aerosol Can Wastes to Ensure the Rule Is Workable and Provides Maximum Benefits**

Although the Retail Associations are strongly supportive of adding hazardous aerosol can wastes to the universal waste rule, we are concerned that EPA’s proposal unnecessarily and inappropriately limits the scope of the rule by (a) narrowly defining the term “aerosol can,” (b) excluding aerosol cans with “evidence of leakage, spillage, or damage,” and (c) including an exclusion for “empty” aerosol cans that is expressed in a manner that may cause some to believe

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<sup>7</sup> *See* California Health & Safety Code § 25201.16; 6 Colorado Code Regs. 1007-3, Section 273.2(d); New Mexico Admin. Code 20.4.1.1001; Utah Admin. Code Rule 315-273-6(b); Ohio Admin. Code R. 3745-273-89(A); Minnesota Pollution Control Agency, “Waste aerosols and compressed gas cylinders” (Publication w-hw4-00) (December 2017) (Attachment 7) at 2 (“You may manage hazardous waste aerosols ... that are not empty equivalent to universal wastes in Minnesota”).

<sup>8</sup> *See* New Jersey Admin. Code 7:26A-1.3 (defining universal wastes to include oil-based finishes, and defining oil-based finishes to include “aerosol paint cans”); 25 Pennsylvania Admin. Code § 266b.4 (expanding the state universal waste rule to include oil-based finishes) and § 266b.3 (defining oil-based finishes to include “aerosol paint cans”); 30 Texas Admin. Code § 335.262 (classifying and regulating “paint and paint-related wastes” as universal wastes); Michigan R. 335.262 (classifying and regulating pharmaceutical wastes as universal wastes); Michigan Department of Environmental Quality, “Universal Waste Pharmaceuticals” (July 2012) (Attachment 8) (“Universal Waste Pharmaceuticals ... may be liquid, solid, paste, or *aerosol*” (emphasis added)).

that certain empty aerosol cans are ineligible for management as universal wastes. As discussed below, these limits have no rational basis. In addition, by requiring generators to make fine technical judgments about each individual aerosol can that they generate as wastes, these limits would render the universal waste rule unworkable, especially in the retail sector (which EPA estimates represents approximately two-thirds of the affected generator universe). This is one of the things that the universal waste rule was specifically designed to avoid. *See, e.g.*, 60 Fed. Reg. at 25,513 (stating that one of the key benefits of the universal waste rule is that it “eliminates [the need for] identifying, documenting, and keeping separate regulated waste and unregulated waste”). Accordingly, we urge EPA to eliminate these limitations in the final rule.

### 5.1 *Definition of Aerosol*

Under the proposed rule, an aerosol can would be defined as “an intact container in which gas under pressure is used to aerate and dispense any material through a valve in the form of a spray or foam.” *See* 52 Fed. Reg. at 11,664 (proposed to be codified at 40 C.F.R. §§ 260.10 and 273.9). As discussed below, the Retail Associations are concerned that this definition is unnecessarily and inappropriately narrow, and that it would complicate and potentially undermine implementation of the universal waste rule. Accordingly, we request that EPA expand the definition, for example by aligning it with the corresponding definition under international dangerous goods regulations. We also request that EPA delete the reference to “intact,” because it is unnecessary and likely to create confusion, especially in light of the separate proposed exclusion for aerosol cans that show evidence of leakage, spillage, or damage that could cause leakage (discussed further below).

The proposed definition would exclude two significant categories of products commonly viewed as aerosol products, each of which is discussed separately below:

- (1) ***Products that use compressed/liquefied gas to expel materials without aerating them or producing a spray or foam*** – Common examples of products in this category that might be found in a retail store would include cans of shaving gel, “spray” cheese, and novelty plastic string streamers. There is no apparent reason for excluding these types of products from the universal waste rule. Indeed, the DOT Hazardous Materials Regulations (“HMR”) classify these products as aerosols and regulate them in the same manner as products that aerate materials and produce sprays or foams.<sup>9</sup> Similarly, the NFPA defines an aerosol container in a way that is independent of whether the material being dispensed is aerated or produces a spray or foam.<sup>10</sup> Accordingly, we believe that the universal waste rule should similarly cover these products.

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<sup>9</sup> *See* 49 C.F.R. § 171.8 (defining an aerosol as “an article consisting of any non-refillable receptacle containing a gas compressed, liquefied or dissolved under pressure, the sole purpose of which is to expel a ... liquid, paste, or powder and fitted with a self-closing release device allowing the contents to be ejected by the gas”).

<sup>10</sup> *See* NFPA Code 30B, Sections 3.3.1 through 3.3.3 (defining an aerosol container as a metal can or plastic container that uses “liquefied or compressed gas [to] expel[ ] the contents ... when [a] valve is actuated”).

- (2) ***Products that contain and expel only gas*** – Common use examples of products in this category that might be found in a retail store would include compressed gas dusters and pneumatic horns. The proposed regulatory definition of aerosol would not necessarily exclude these products, since they are articles in which “gas under pressure is used to aerate and dispense any material [in this case the gas itself] through a valve in the form of a spray.” However, the preamble to the proposal seems to indicate that EPA intends to exclude gas-only products. *See* 83 Fed. Reg. at 11,660 (“compressed gas canisters ... would not be included”). The only rationale the Agency gives is that these products allegedly “present a greater risk than aerosol cans.” *Id.* However, as far as we can tell, there is no evidence of such increased risk. Indeed, international rules for the transport of dangerous goods explicitly classify gas-only products as aerosols and regulate them in the same way as aerosols that expel other materials.<sup>11</sup> Moreover, under the existing DOT regulations, gas-only products are regulated in much the same way as aerosols, and DOT is currently considering a petition to align the definition of aerosol under the HMR with the international definition in order to explicitly cover gas-only products.<sup>12</sup> Accordingly, we believe that these products pose essentially the same risks as products with gases that expel other materials, and that they should therefore also be covered by the universal waste rule.

Not only would the exclusion of these products be unnecessary and inappropriate, but it would also substantially complicate and undermine implementation of the rule. If these products are excluded, generators and other handlers might effectively be required to inspect each and every aerosol can to determine whether it is a non-aerating product or a gas-only product ineligible for management as universal waste. Failure to do so might require the generator/handler to handle all of its aerosol wastes as (non-universal) hazardous wastes, which would render the universal waste rule a nullity. However, performing the inspection would be extremely challenging and might even be a non-starter. This is especially true in the retail sector, given the exceptionally broad range of aerosol products carried by many stores, and the generally limited experience and high turnover of personnel in the sector.

In the preamble to the proposal, EPA also states that the proposed definition would have the advantage of “keep[ing] consistency with the existing state [universal waste] programs [covering aerosols].” However, two state universal waste programs already cover non-aerating products

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<sup>11</sup> *See, e.g.*, United Nations Recommendations on Transport of Dangerous Goods: Model Regulations (“UN Model Regulations”), Section 1.2.1 (Attachment 9) (“*Aerosol or aerosol dispenser* means an article consisting of a non-refillable receptacle ... containing a gas, compressed, liquefied, or dissolved under pressure, *with or without a liquid, paste or powder*, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state *or in a gaseous state*” (emphasis added)).

<sup>12</sup> *See* 49 C.F.R. 173.306 (rules for limited quantities of compressed gases, including those in aerosol and non-aerosol products); Petition of the Consumer Specialty Products Association, the Council on Safe Transportation of Hazardous Articles, Inc., the National Aerosol Association, and the American Coatings Association to DOT (September 28, 2017) (Attachment 10) (stressing the safety of “pure gas units used in consumer and industrial [applications]”).

and/or gas-only products.<sup>13</sup> Moreover, as noted above, regulations that apply across the nation and/or internationally generally include these products. Accordingly, the best way to maintain consistency with existing regulatory regimes would be to define aerosol cans in a way that includes non-aerating and gas-only products.

In light of the above, we urge EPA to change the proposed definition of aerosol can to enable non-aerated and gas-only products to be managed as universal wastes, for example by adopting the definition used in international dangerous goods regulations:

*Aerosol or aerosol dispenser* means an article consisting of a non-refillable receptacle ... made of metal, glass or plastics and containing a gas, compressed, liquefied, or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.

*See, e.g.*, UN Model Regulations, Section 1.2.1 (Attachment 9).

We also urge EPA to delete the requirement that aerosol products be “intact” to be considered aerosol cans. This requirement seems unnecessary since the proposal includes a separate provision (discussed further below) excluding aerosol cans that show evidence of leakage, spillage, or damage that could cause leakage from the universal waste rule. Moreover, inclusion of the word “intact” may cause significant confusion by raising questions as to whether the standard for an intact aerosol can is different from the standard for determining whether an aerosol can shows evidence of leakage, spillage, or damage that could cause leakage (although the preamble to the proposed rule indicates that the standards are meant to be the same, saying that “[t]hrough this exclusion [for leaking/damaged aerosol cans], EPA intends that hazardous waste aerosol cans *that are not intact* continue to be subject to the full hazardous waste standards,” *see* 83 Fed. Reg. at 11,660 (emphasis added)).

## **5.2 Exclusion for Leaking/Damaged Aerosols**

The proposed rule would exclude from the applicability of the universal waste program “[a]erosol cans that show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.” *See* 52 Fed. Reg. at 11,665 (proposed to be codified at 40 C.F.R. § 273.6(b)(4)). EPA claims that this exclusion is necessary because “the proposed [universal waste] management standards ... rel[y] in part on the fact that the aerosol cans to be managed ... are not leaking or otherwise damaged [in a way] where contents or propellants could be dispersed ... [or where there might be] an increased risk of fire.” *Id.* at 11,660. As discussed below, this exclusion is inconsistent with the current rules for other universal wastes, it

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<sup>13</sup> *See, e.g.*, Ohio Admin. Code 3745-273-09(A) (“‘Aerosol container’ means a non-opening, non-refillable container that holds a substance under pressure and that can release the substance as a spray, *gel*, or foam by means of a propellant gas” (emphasis added)); Minnesota Pollution Control Agency, “Universal Wastes” (February 2018) (Publication w-hw4-62) (Attachment 11) (stating that aerosols “may ... be managed as universal waste” and defining them as “pressurized containers used to dispense *liquid* or *gaseous* products” (emphasis added)).

is not necessary to protect human health and the environment, and it is so vague and potentially susceptible to overly broad interpretation that it could potentially undermine the entire rule.

As an initial matter, EPA's conclusion about the need for this exclusion is inconsistent with the current rules for other universal wastes. None of the existing federal universal waste rules for other products exclude leaking or damaged products. Instead, the rules simply require more protective packaging for leaking/damaged products:

- o For batteries, handlers "must contain any universal waste battery that show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions" in a container that is "closed, structurally sound, compatible with the contents of the battery, and ... lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions." *See* 40 C.F.R. §§ 273.13(a)(1) and 273.33(a)(1).
- o Universal waste pesticides must be contained in a container that is "closed, structurally sound, compatible with the pesticide, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions," or in a container that does not meet these standards (*e.g.*, a leaking container), "provided that the unacceptable container is overpacked in a container that does meet the requirements." *See* 40 C.F.R. §§ 273.13(b)(1)-(2) and 273.33(b)(1)-(2).
- o Handlers of universal waste mercury-containing equipment "must place in a container any [such] equipment with non-contained elemental mercury or that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions," and the container must be "closed, structurally sound, compatible with the contents of the device, must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions, and must be reasonably designed to prevent the escape of mercury into the environment by volatilization or any other means." *See* 40 C.F.R. §§ 273.13(c)(1) and 273.33(c)(1).
- o With respect to universal waste lamps, handlers "must place in a container any lamp that shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment," and such containers must be "closed, structurally sound, compatible with the contents of the lamps and must lack evidence of leakage, spillage or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions." *See* 40 C.F.R. §§ 273.13(d)(2) and 273.33(d)(2).

EPA has provided no meaningful rationale for departing from this approach for aerosol cans. Nor do we believe any such rationale exists. Just as with leaking/damaged batteries, pesticide containers (which may include some aerosol cans), mercury-containing equipment, and lamps, leaking/damaged aerosol cans can safely be managed as universal wastes if they are packaged in suitably protective containers (*e.g.*, containers that are closed, structurally sound, compatible with the contents of the aerosols, and lack evidence of leakage, spillage or damage that could

cause leakage under reasonably foreseeable conditions). The use of protective containers is already required for all aerosol cans under EPA's proposed rule.<sup>14</sup> Thus, there is no need to exclude leaking/damaged aerosol cans.<sup>15</sup>

Moreover, the criteria that EPA proposes for determining when aerosol cans would be excluded are so vague that they would create confusion in the regulated community and invite arbitrary enforcement by regulators, effectively undermining the benefits of the entire universal waste rule for aerosol cans. We recognize that the criteria are similar to the standards that currently trigger more protective packaging for other universal wastes (*i.e.*, whether the aerosol cans “show evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions”). However, the criteria are uniquely problematic for aerosol cans, in part because aerosol cans – unlike other universal waste items (with the exception of aerosol pesticides and perhaps some other types of pesticide containers) – are designed specifically to disperse chemical products. It is not uncommon for aerosol containers to have on the outside dried splatters or drips of the chemical products they dispersed during use (*e.g.*, due to failure to shake the cans properly prior to use, overspray in a confined area, backspray in a windy area, a defective nozzle, or sputtering as the aerosol can neared the end of its useful life). However, regulators or inspectors could potentially view such splatters or drips as “evidence of leakage, spillage, or damage” making the cans ineligible for management under the universal waste rule. In addition, in the absence of certainty about how the splatters/drips will be viewed by regulators or inspectors, some generators/handlers might conservatively assume that all aerosol cans bearing these marks should be handled as fully regulated (non-universal) hazardous wastes. Because many, if not most, used cans will have such splatters/drips, the universal waste rule for aerosol cans could effectively become unusable, thereby undermining all the potential benefits of the proposed rule.

Similar issues would arise in a variety of other situations. Aerosol cans that are fully intact may nevertheless show evidence of corrosion – especially if the chemical products they contained and dispersed are corrosive (*e.g.*, certain cleaning products) and/or if they are stored for extended periods in damp conditions. Aerosol cans may also have missing actuator buttons, for a variety of reasons that have nothing to do with their basic structural integrity, such as that the actuators may have fallen off (*e.g.*, if they were not attached correctly to begin with), they may have inadvertently been knocked off during handling or use, or they may have been intentionally removed (*e.g.*, under proposed §§ 273.13(e)(2)(iii) and 273.33(e)(2)(iii), which authorize

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<sup>14</sup> See 52 Fed. Reg. at 11,666 (proposed to be codified at 40 C.F.R. §§ 273.13(e)(1) and 273.33(e)(1)) (proposing to require handlers to accumulate universal waste aerosol cans “in a container that is structurally sound, compatible with the contents of the aerosol cans, and lacks evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions”).

<sup>15</sup> Further protections for leaking/damaged aerosols are also provided by other regulatory regimes, such as the DOT hazardous materials transport regulations and local fire codes (as discussed generally in Section 4 above in the context of Criterion #5). For example, the DOT rules require that aerosols that are damaged, defective, or leaking to the point where they do not meet applicable design standards must be transported in special aerosol salvage drums marked “AEROSOL SALVAGE” or “AEROSOL SALVAGE DRUM.” See 49 C.F.R. § 173.306(k)(2). Inasmuch as DOT has determined that such salvage drums are protective during transport (including storage incidental to transport), there is no reason to exclude these aerosol cans from the universal waste rule.

handlers to “[r]emov[e] actuators to reduce the risk of accidental release”). In addition, intact aerosols may be dented or scratched (more so than other universal wastes, like lamps which would generally break rather dent, or batteries that do not have a gas-filled cavity and are more solid/dense). Any one of these conditions could potentially be viewed as “leakage, spillage, or damage” under the proposed rule, which might prevent the aerosol cans from being managed as universal wastes. In this way, EPA’s proposed exclusion has the potential to become the exclusion that swallows the entire rule.

### 5.3 Exclusion for Empty Aerosols

The proposed rule would exclude from the applicability of the universal waste program “[a]erosol cans that meet the standard for empty containers.” *See* 52 Fed. Reg. at 11,665 (proposed to be codified at 40 C.F.R. § 273.6(b)(3)). EPA explains in the preamble that “[a]n aerosol can that meets the definition of empty container in 40 CFR 261.7 is not subject to hazardous waste regulation, and may be recycled as scrap metal.” *Id.* at 11,660. The Agency states that the exclusion applies to “aerosol cans that have been emptied of their contents (both propellant and product).” *Id.* The Retail Associations have several concerns with this part of the proposal.

First, even though EPA states in the preamble that empty aerosol cans are “not subject to hazardous waste regulation,” the Agency in the past has indicated that empty aerosols might exhibit the characteristic of reactivity and thus remain subject to hazardous waste regulation. *See* EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027) (Attachment 12) (“Irrespective of the lack of contained waste, the aerosol cans [may] be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity”). As discussed in Section 8 below, we do not believe that any aerosol cans – much less empty aerosol cans – qualify as reactive hazardous wastes. However, if any empty aerosols are deemed to be reactive, the exclusion of empty cans from the universal waste rule could potentially be interpreted to mean that such “reactive” empty cans would have to be managed as fully regulated (non-universal) hazardous wastes.<sup>16</sup> Such a result would make no sense, given that full or partially full aerosol

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<sup>16</sup> We note that there is some uncertainty with respect to this point, because of the confusing way that the exclusions in proposed 40 C.F.R. § 273.6(b) are structured. That provision states that the requirements of the universal waste rule do not apply to aerosol cans that (1) are not wastes, (2) are non-hazardous, (3) are empty, or (4) show evidence of leakage, spillage or damage. It is our understanding that for the first two categories (*i.e.*, aerosol cans that are not waste or are non-hazardous), EPA’s intent is that generators would not be *required* to handle the cans as universal wastes, but would *allowed* to do so (or to handle the cans completely outside the RCRA regulatory program). On the other hand, for the last category (*i.e.*, cans with evidence of leaking or damage), the Agency’s intent apparently is that generators would be *prohibited* from handling the cans as universal wastes (and would have to handle them as fully regulated hazardous wastes, assuming they are solid and hazardous wastes). Thus, the “exclusions” for these categories apparently are intended to mean very different things.

For aerosol cans that are empty and non-reactive (which, as noted above, we believe would include *all* empty cans), EPA presumably intends the exclusion to operate in the same manner as for the first two categories, *i.e.*, to mean that generators are not *required* to handle the cans as universal wastes, but are *allowed* to do so (or to handle the cans completely outside the RCRA regulatory program). However, to the extent EPA may believe that any empty aerosol cans are reactive (which, as noted above, we do not believe is the case), it seems unlikely that the Agency would intend the exclusion to work the same way (since that would allow “reactive” empty cans to be managed

cans exhibiting the reactivity characteristic (to the extent that any such cans might be deemed by EPA to be reactive) would be eligible for management under the universal waste rule. Moreover, if “reactive” empty aerosol cans cannot be managed as universal wastes, retailers and other generators would have to identify and segregate such cans so that the rest could be managed as universal wastes – an almost impossible task, especially given the lack of clarity about what constitutes an empty aerosol and/or a reactive aerosol, as well as the generally limited experience and high turnover of personnel in the retail sector.

We doubt that EPA intended such results from its proposed exclusion of empty aerosols. Perhaps the Agency intended its statement in the preamble that empty aerosols are “not subject to hazardous waste regulation” to clarify that empty containers are not subject to regulation as reactive hazardous wastes. If so, we support such a clarification, but ask EPA to make this point more explicit, so as to avoid any potential confusion. In this regard, it is worth noting that the 1987 EPA guidance referenced above did not actually *conclude* that empty aerosols could be reactive, but rather responded to a question that was posed to the Agency *assuming* that they could be reactive. *See* EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027) (Attachment 12) (“[W]ould aerosol cans free of hazardous waste, but still potentially reactive because of contained propellant be regulated as hazardous waste?”). Thus, a statement now that empty aerosol cans are not reactive would not actually reverse prior EPA guidance. And, as discussed in Section 8 below, it would be supported by the fact that even full or partially full aerosols are not properly viewed as reactive.

A second problem with EPA’s proposal on empty aerosol cans is that it provides no clear standard for when an aerosol can qualifies as empty such that it would be excluded from the universal waste rule. The proposed regulatory exclusion covers “[a]erosol cans that meet the standard for empty containers under part [sic] 261.7.” *See* 52 Fed. Reg. at 11,665 (proposed to be codified at 40 C.F.R. § 273.6(b)(3)); *see also id.* at 11,660 (addressing “aerosol can[s] that meet[ ] the definition of empty container in 40 CFR 261.7”). However, EPA has long side-stepped the issue of when aerosol cans qualify as empty under Section 261.7, leaving generators without any meaningful standard to apply.<sup>17</sup>

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completely outside the RCRA regulatory program). For these aerosol cans, EPA might intend the exclusion to operate in the same way as the exclusion for damaged/leaking aerosol cans, such that the “reactive” empty cans would have to be managed as fully regulated hazardous wastes, rather than as universal wastes. This is the potential interpretation discussed in the main text above. However, it is possible that EPA may intend the exclusion for “reactive” empty cans to operate in yet a third (unspecified) way.

<sup>17</sup> *See, e.g.*, Letter from Jeffrey D. Denit, Acting Director, Office of Solid Waste, EPA, to John DiFazio, Chemical Specialties Manufacturers Association (October 7, 1993) (RCRA Online #11780) (“Denit Letter #1) (Attachment 13) (“We have ... been asked to determine whether used aerosol cans would meet the definition of ‘empty’ under 40 CFR 261.7. ... [I]f the steel cans are being recycled, it is not necessary to determine whether they are ‘empty’ under the criteria listed in 40 CFR 261.7. ... However, in order to dispose of a can as non-hazardous waste (rather than recycle it), a generator would have to determine that the can is empty under 40 CFR 261.7”); Letter from Jeffrey D. Denit, Acting Director, Office of Solid Waste, EPA, to Gregory L. Crawford, Vice President, Recycling Operations, Steel Recycling Institute (October 7, 1993) (RCRA Online #11782) (“Denit Letter #2) (Attachment 14) (same).

Moreover, the preamble to the proposed rule further muddies an already muddy picture by introducing a new standard for “empty” aerosol cans and conflating it with a standard previously offered by the Agency for entirely different purposes. In particular, EPA states in the preamble that the proposed exclusion covers “aerosol cans that have been emptied of their contents (both propellant and product),” *see* 83 Fed. Reg. at 11,660, even though this standard is not in the proposed regulatory text, has no precedent we are aware of, and leaves unanswered what it means to be emptied of propellant and product. In addition, EPA states in the preamble that empty aerosol cans as defined under 40 C.F.R. § 261.7 “may be recycled as scrap metal,” even though past Agency guidance states that the standard for recycling aerosol cans as scrap metal is whether they “contain a significant amount of liquid,” not whether they meet the standard of empty in 40 C.F.R. § 261.7. *See, e.g.,* Denit Letter #1 (“if the [aerosol] cans are being recycled, it is not necessary to determine whether they are ‘empty’ under the criteria in 40 CFR 261.7. As long as an aerosol can being recycled does not contain significant liquids, the can is exempt as scrap metal”); Denit Letter #2 (same). Complicating matters even further, EPA has previously stated that *one way* to ensure an aerosol can does not contain a significant amount of liquid is by puncturing and draining it, *id.*, which has left the misimpression in the minds of some that this is the *only way* to achieve this standard. And, by blurring the distinction between the “no significant liquids” standard and the definition of empty container, EPA may be leaving the misimpression that the only way to render an aerosol can empty is by puncturing and draining it.

In light of the above, the Retail Associations urge EPA to clarify that empty aerosol cans are not reactive and thus do not have to be managed as either universal or hazardous wastes (although they may be managed as universal wastes on a voluntary basis), and further to clarify when aerosol cans qualify as empty (including, but not limited to the fact that emptying does not require puncturing and draining). We elaborate further on the guidance needed on these and related issues in Section 8 below.

**6. EPA Should Clarify That As Soon As It Finalizes the Proposed Rule, Aerosol Can Wastes May Be Transported in All States Without a Hazardous Waste Manifest or a Hazardous Waste Transporter**

In the preamble to the proposed rule, EPA indicates that the designation of hazardous aerosol can wastes as universal wastes under the federal regulations would not take effect in authorized states unless and until such states adopted the same designation under state law. *See* 83 Fed. Reg. at 11,662-63. Moreover, because such designation would generally make the state programs less stringent than they currently are (except in the case of the few states that already designate aerosol cans as universal wastes), the states “would not have to adopt the universal waste regulations for aerosol cans.” *Id.* at 11,663. These statements leave open the possibility that some states may never adopt the universal waste rule for aerosol cans, and/or that there may be an extended period of time during which there will be a patchwork of regulation for aerosol cans.<sup>18</sup>

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<sup>18</sup> To minimize this patchwork and fully realize the benefits of a universal waste rule for hazardous aerosol can wastes, we ask EPA to encourage states to quickly adopt the new rule, as the Agency has done for previous universal waste rules. *See, e.g.,* 60 Fed. Reg. 25,492, 25,536 (May 11, 1995) (final original universal waste rule) (“Even though States are not required to adopt today’s rule, EPA strongly encourages them to do so”); 64 Fed. Reg.

The proposed rule does not address how this patchwork will work. However, this issue is of vital importance, especially to retailers and other generators that may be generating hazardous aerosol can wastes in multiple states, to persons developing/operating national or regional collection and recycling/disposal programs for aerosol can wastes, and to generators and transporters moving aerosol cans across state lines to appropriate destination facilities. Of particular importance are the requirements (if any) that may apply to the transport of such wastes from, to, or through states that have not yet (or never will) classify aerosol cans as universal wastes.

As discussed below, EPA has previously addressed essentially the same issue in the context of other universal waste rules. However, when it has done so, it has ignored relevant law and the Agency's own guidance, and arrived at a conclusion that inappropriately and unnecessarily undermined implementation of the universal waste rule. The Retail Associations urge the Agency to rectify the situation by clarifying, once and for all, that once a waste is designated as a universal waste under federal law, the waste may be transported nationwide without a hazardous waste manifest or a hazardous waste transporter.

In prior universal waste rulemakings, EPA has stated that federally designated universal wastes remain subject to full hazardous waste regulation as long as they are in states that have not (yet) adopted the federal universal waste rule, with the result being that transport from, through, or to such a state must be performed by a hazardous waste transporter and must be accompanied by a hazardous waste manifest.<sup>19</sup> However, these statements overlooked the fact that federal rules for transportation of hazardous materials (including hazardous wastes) generally preempt state rules that are more stringent.

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36,466, 36,472 (July 6, 1999) (final universal waste rule for lamps) ("EPA hopes to encourage ... states to regulate spent lamps as universal waste and therefore promote greater consistency in regulatory approaches across state borders"); 70 Fed. Reg. 45,508, 45,516 (August 5, 2005) (final universal waste rule for mercury-containing equipment) ("[states] do not have to adopt the universal waste regulations ... although EPA encourages them to do so").

Moreover, we ask EPA, as it has done in the past for other universal wastes, to state its intention not to take enforcement actions involving hazardous aerosol can wastes managed in accordance with the universal waste rule, even if the relevant state has not yet adopted the rule or received authorization for the rule. *See, e.g.*, Memorandum from Steve Herman, Assistant Administrator, Office of Enforcement and Compliance Assurance, EPA, and Elliott P. Laws, Assistant Administrator, Office of Solid Waste and Emergency Response, EPA, to EPA Regional Administrators (April 10, 1996) (RCRA Online #11960) (Attachment 15) ("By finalizing 40 C.F.R. Part 273, EPA has taken the position that managing wastes in compliance with those standards is environmentally protective. Therefore, ... Regions should take enforcement actions involving universal wastes only where handlers of such wastes are not in full compliance with the Part 273 standards"); Memorandum from Mike Shapiro, Director, Office of Solid Waste, EPA, to Senior RCRA Policy Managers, EPA Regions I-X (February 13, 1997) (RCRA Online #14088) (Attachment 16) (same).

<sup>19</sup> *See, e.g.*, 60 Fed. Reg. 25,492, 25,537-38 (May 11, 1995) (final original universal waste rule); 64 Fed. Reg. 36,466, 36,482-83 (July 6, 1999) (final universal waste rule for lamps); 70 Fed. Reg. 45,508, 45,516-17 (August 5, 2005) (final universal waste rule for mercury-containing equipment).

EPA itself has previously noted the preemptive effect of federal rules for transport of hazardous wastes, stating for example that “[even though] preemption authorities are quite foreign to RCRA [they] are introduced into the transporter arena by the statutory directive in RCRA to maintain consistency with the DOT framework [for transportation of hazardous materials under the Hazardous Materials Transportation Act (“HMTA”)].”<sup>20</sup> Indeed, even state hazardous waste transport requirements that have been authorized by EPA pursuant to RCRA are not immune to pre-emption under the HMTA.<sup>21</sup>

In the present case, if hazardous aerosol can wastes are classified as universal wastes, any state rules requiring such items to be shipped as ordinary hazardous wastes would be preempted. Consider, for example, the requirement that hazardous wastes be transported with a manifest. Under EPA’s proposed rule, hazardous aerosol can wastes would not have to be shipped with a manifest for purposes of federal law. The HMTA explicitly provides that state shipping paper requirements (including manifest requirements) are preempted if they are not “substantively the same” as the corresponding federal requirements. *See* 49 U.S.C. § 5125(b)(1)(C). DOT has clarified that, under this standard, state requirements must “conform[ ] in every significant respect to the Federal requirement.” *See* 49 C.F.R. § 107.202(d). Thus, any state manifest requirements for aerosol cans would clearly be preempted.

As EPA itself stated in 1984, federal law “prohibit[s] States from requiring separate State manifests or other information to accompany waste shipments [if such documents or information are not required by federal law].”<sup>22</sup> DOT echoed these statements in its own 1984 notice, saying that “no carrier could be required to carry any State manifest form that differs from the EPA

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<sup>20</sup> *See* Letter from Michael Shapiro, Director, Office of Solid Waste, EPA, to Richard J. Barlow, Northeast Waste Management Officials Association (“NEWMOA”) (June 11, 1996) (RCRA Online #14135) (Attachment 17); *see also N.Y. Dep’t of Envtl. Conservation v. DOT*, 37 F.Supp.2d (N.D.N.Y. 1999) (“despite the RCRA’s recognition that states are permitted to establish requirements which are ‘more stringent’ than EPA regulations, ... when dealing with transporters of hazardous waste, this general state empowerment must be read in conjunction with the statutory mandate that EPA regulations be consistent with the HMTA”).

<sup>21</sup> *See, e.g.*, 60 Fed. Reg. 62,527, 62,534 (December 6, 1995) (“EPA-authorized State requirements governing hazardous waste transporters that are more stringent than EPA’s own regulations are preempted when those requirements fail to meet [HMTA preemption] standards.... There is no basis for the position ... that any State can avoid preemption of its hazardous waste transporter requirements simply by obtaining authorization under RCRA”); Letter from Michael Shapiro, Director, Office of Solid Waste, EPA, to Charles Dickhut, Chemical Waste Transportation Institute (August 17, 1994) (RCRA Online #13692) (Attachment 18) (“RCRA authorization decisions provide no basis for shielding state regulations touching upon hazardous materials transport from possible preemption challenges raised under the HMTA”).

<sup>22</sup> *See* 49 Fed. Reg. 10,490, 10,492 (March 20, 1984); *see also id.* (“States . . . may not require any additional information to accompany the waste shipment”; “no other form may be required by a State to accompany a waste shipment”; *id.* at 10,494 (“States are not precluded from setting up another system of forms . . . as long as the system does not interfere with the actual shipment of waste [and] transporters [are] not . . . required to carry these forms”; *id.* at 10,495 (“States may not require that any information other than the federally-required items accompany shipments of hazardous waste”).

form.”<sup>23</sup> Over the years, DOT has frequently reiterated this limitation on state information requirements for shipping materials in commerce.<sup>24</sup> Significantly, preemption applies not only to interstate shipments, but to intrastate shipments as well.<sup>25</sup>

Other state requirements for transport of hazardous aerosol can wastes would likewise be preempted. As in the case of state manifest requirements, state rules governing packaging, labeling, or release reporting during transportation are explicitly preempted if they differ in any respect from the federal rules. *See* 49 U.S.C. §§ 5125(b)(1)(B), (D). State rules for licensing or registration of transporters are also preempted if they operate as an “obstacle” to the goals of the federal hazardous materials law.<sup>26</sup> Of course, state rules related to handling of aerosol cans at stationary facilities will generally not be preempted, because they do not involve transportation.<sup>27</sup>

The Retail Associations recognize that EPA may be inclined to defer on the issue of preemption to the department that is responsible for implementing the federal hazardous materials transportation law (*i.e.*, DOT). However, EPA’s prior statements on interstate transport of universal wastes have sufficiently clouded the issue that it is now essential that the Agency set the record straight (in consultation with DOT, if necessary). EPA, in fact, has been willing to do so in the past.<sup>28</sup> The Agency should be eager to do so in the current case, because preemption will significantly advance the goal of facilitating nationwide recycling of aerosol cans. At a minimum, EPA should disavow the statements in prior universal waste rules, and clarify that they were not intended to represent determinations that state rules requiring hazardous waste manifests or hazardous waste transporters were not preempted.

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<sup>23</sup> *See* 49 Fed. Reg. 10,507, 10,508 (March 20, 1984); *see also id.* (“while [the uniform manifest rules] do not prohibit the transporter from voluntarily carrying [additional] information, they do preclude States from requiring the transporter to do so”).

<sup>24</sup> *See, e.g.*, 60 Fed. Reg. 62,527, 62,537-38 (December 6, 1995) (New York regulations requiring additional manifest information are preempted, because there are no corresponding federal requirements); 58 Fed. Reg. 11,176 (February 23, 1993) (Illinois regulations requiring a different format for providing information on the manifest are preempted).

<sup>25</sup> *See* 62 Fed. Reg. 1208 (January 8, 1997) (expanding the scope of the hazardous materials regulations to cover intrastate shipments, consistent with a 1990 amendment to the federal hazardous materials transportation law codified at 49 U.S.C. § 5103(b)(1)).

<sup>26</sup> *See* 49 U.S.C. § 5125(a)(2); *Colorado Public Utilities Commission v. Harmon*, 951 F.2d 1571 (10th Cir. 1991) (Colorado permit requirements for hazardous material transporters are preempted because they are an obstacle to the congressional goal of promoting safety through uniform standards).

<sup>27</sup> One possible exception relates to loading, unloading, and storage activities that are incidental to transportation. *See* 68 Fed. Reg. 61,906, 61,938 (October 30, 2003) (revising 49 C.F.R. § 171.1(c) to clarify that transportation includes loading, unloading, and storage incidental to transportation) and 61,923-24 (explaining that state and local requirements related to these activities may be preempted).

<sup>28</sup> *See, e.g.*, 49 Fed. Reg. at 10,495 (“States through which hazardous waste shipments pass are not allowed to place additional information requirements on the transporter as a condition of transportation.”); RCRA/CERCLA Hotline Report (May 1985) (RCRA Online #12399) (Attachment 19) (“States through which [a] waste shipment travels may not dictate manifest requirements.”).

Finally, the Retail Associations recognize that EPA may also be reluctant to address the preemption issue due to concerns about the potential reactions of state regulatory agencies. Although such agencies may generally be protective of their sovereign authority, we believe that, in the present case, they generally recognize the benefits of uniform national regulations for hazardous aerosol can wastes. Indeed, they may welcome preemption as important step forward in meeting recycling goals for such wastes. Moreover, EPA would not be establishing new law by addressing the preemption issue. Rather, it would simply be recognizing that, under existing law, the effect of the new federal universal waste rule for hazardous aerosol can wastes would be to preempt more stringent state rules for transportation of such wastes.

## **7. EPA's Regulatory Impact Analysis Dramatically Underestimates the Potential Cost Savings That Would Be Achieved Under the Universal Waste Rule**

In the Regulatory Impact Analysis ("RIA") for the proposed rule, EPA's "primary" analysis estimates that the costs savings associated with the proposal would be only \$3.0 to \$3.5 million per year. *See* RIA at 24. The Agency also includes an "alternative" analysis in an appendix, which results in an estimate of \$56.7 to \$63.3 million per year, but discounts this analysis by saying that "the analysis presented in this appendix ... may overestimate cost savings." *Id.* at 48-49. As discussed below, EPA's primary analysis dramatically underestimates the likely cost savings, in part because it fails to take into account the unique characteristics of affected facilities in the retail sector, which the Agency itself acknowledges represent about two-thirds of the universe of affected hazardous waste generators. *See* 83 Fed. Reg. at 11,655. Indeed, even EPA's alternative analysis likely understates the cost savings significantly.

Throughout the RIA, EPA notes that the "cost savings [under the proposal] are largely attributable to facilities changing generator status as a result of no longer having to count aerosol cans towards their HW [hazardous waste] generator status." *See* RIA at ES-4, 24, and 47. The Retail Associations agree, but take issue with the Agency's estimates of the number of facilities expected to change generator status, especially under the primary analysis. According to that analysis, only about 500 facilities nationwide across all industries would change generator status under the proposal, representing less than 0.8% of the aerosol-generating Large Quantity Generator ("LQG") universe and 3.7% of the aerosol-generating Small Quantity Generator ("SQG") universe. *Id.* at ES-4 and 19. However, these figures seem extremely low. Some individual retail companies are likely to have more than 500 facilities change generator status as a result of a universal waste rule for aerosol cans, and the number across the entire retail sector would clearly be many times that figure (not even counting the number of facilities in other industries). Indeed, it is for this reason that the Retail Associations and the retail sector as a whole have been urging the Agency so strongly over the last several years to classify and regulate aerosol cans as universal wastes.

Based on our review of the RIA, we believe there are three main sources of EPA's error, each of which is discussed briefly below:

- o ***Use of SQG Data Skewed Heavily to the Manufacturing Sector.*** EPA apparently estimated the percentage of SQGs that would become VSQGs under the proposal by reviewing the admittedly very limited data on SQGs in its 2015 Biennial Report (“BR”) database, and determining for each SQG facility in that database how the exclusion of aerosol cans from counting toward the SQG threshold might affect the status of the facility. *See* RIA at 18 (explaining the methodology) and 8 (explaining that the BR database is a “significant underrepresentation” of the SQG universe, because “only LQGs are required to make BR submissions”). However, the BR data on SQGs are heavily skewed toward the manufacturing sector. Only 8% of the aerosol-generating SQGs in the BR database are from the retail sector, even though EPA itself acknowledges that the sector represents fully 65% of the aerosol-generating universe.<sup>29</sup> In contrast, almost half of the aerosol-generating SQGs in the BR database are in the manufacturing sector. *See* RIA at 7.

In light of the above, EPA’s estimate of the percentage of SQGs that would become VSQGs under the proposal is based primarily on manufacturing facilities, even though retail stores represent by far a greater number of affected facilities and have characteristics that make it far more likely that they will change generator status. Members of the Retail Associations have reported that aerosol cans frequently account for 50% (by weight) or even more of all the potentially hazardous unsold/returned products handled by retailers. *See* Retail Associations NODA Comments at 16. We suspect that few, if any, manufacturing facilities would have such a high proportion of aerosol can wastes. Moreover, given the fundamental differences in the operations of retail stores and manufacturing facilities, we suspect that retail stores in the SQG category are much more likely to generate waste quantities only slightly above the SQG threshold and/or to exceed that threshold only on an episodic basis. Taken together, these characteristics make it much more likely that SQG retail stores would become VSQGs under a universal waste rule for aerosols.<sup>30</sup>

By basing its estimate of the effects primarily on facilities in the manufacturing sector (and in other sectors that likewise are substantially different from the retail sector that represents the bulk of affected generators), EPA has dramatically understated the percentage of SQGs that would become VSQGs under the proposal. The effects of this error on the bottom-line estimate of cost savings are very substantial. EPA’s alternative analysis estimates that approximately 80% of aerosol-generating SQGs will become VSQGs under the proposal. *See* RIA at 48. That figure seems much closer to reality, and

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<sup>29</sup> *See* RIA at 7 (indicating that the BR database has only 59 aerosol-generating SQG retail facilities out of a total 710 aerosol-generating SQG facilities across all industries, which corresponds to 8%); 83 Fed. Reg. at 11,655 (“[the] top economic sector[ ] ... with the largest percentage of potentially affected entities [is] the retail trade industry ... representing 65% of the affected ... universe”).

<sup>30</sup> *See, e.g.,* Retail Associations NODA Comments at 24, n.26 (“Several members of the Retail Associations ... estimate that *well over half* of their stores would be reclassified as CESQGs if all aerosols were exempted from ‘counting’ for purposes of determining generator status [as would be the case under the universal waste rule]” (emphasis added)).

by EPA's estimates would increase the annual cost savings from the \$3.0-\$3.5 million range to the \$56.7-\$63.3 million range.

- o ***Failure to Account for Expected Change in the Status of Large Numbers of Retail LQG Facilities under the Upcoming Rule on Low-Concentration Nicotine Products.*** As noted above, EPA's primary analysis projects that only a handful of the estimated 6520 aerosol-generating LQG facilities in the country will change generator status as a result of the proposed rule. See RIA at ES-4 and 19. In fact, however, it is likely that large numbers of these facilities will change status under the universal waste rule for aerosols. The reason is that the vast majority of these LQGs (4,225, according to EPA's primary estimate) are retail stores, see *id.* at 7, and we believe that most of these facilities are LQGs only because they generate more than 1 kg of low-concentration nicotine products (e.g., nicotine gum, lozenges, patches, prescription liquids, and e-cigarettes), which are currently classified as acutely hazardous wastes under RCRA.<sup>31</sup> EPA has proposed to reclassify these products as non-acutely hazardous wastes or to exclude them from RCRA regulation, either one of which would likely cause many of these facilities to be reclassified as SQGs. See 80 Fed. Reg. at 58,071-73. Like other SQG retail facilities, these newly-SQG retail facilities would be highly likely to change to VSQG facilities under the universal waste rule for aerosols.

If these newly-SQG retail facilities are included in the analysis, the effects on the bottom-line estimate of cost savings would be substantial. EPA has estimated that the annual cost savings per facility of changing from an SQG to a VSQG would be \$3600 to \$3800 (assuming that virtually all of these facilities will be Small Quantity Handlers of Universal Wastes ("SQHUWs")). See RIA at 25. Thus, if there are 3,000 newly-SQG retail facilities that would become VSQGs as a result of the universal waste rule for aerosols,<sup>32</sup> the total annual cost savings for these facilities alone would be \$10.8 to \$11.4 million – a few times EPA's primary estimate of the annual cost savings for the entire country. Assuming EPA finalizes its rule on low-concentration nicotine products before it finalizes the proposed universal waste rule for aerosols, it should revise its RIA to account for these substantial additional savings.

- o ***Underestimate of Baseline Numbers of LQG and SQG Facilities Generating Aerosol Wastes.*** EPA's primary analysis in the RIA estimates that there are currently 6,520 LQGs and 13,019 SQGs that generate aerosol can wastes, while the Agency's alternative

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<sup>31</sup> See 40 C.F.R. § 261.33(e) (EPA Hazardous Waste No. P075) (acute hazardous waste listing for nicotine); 80 Fed. Reg. 58,014, 58,017 (September 25, 2015) ("unused nicotine patches, gums and lozenges are finished dosage forms of nicotine and therefore are regulated as P075 when discarded"); Retail Associations NODA Comments at 9 (stating that "Members of the Retail Associations report that low-[concentration] nicotine products are the sole reason why the vast majority of stores handling such products are classified as LQGs" and estimating the numbers of such facilities in the several thousands).

<sup>32</sup> This figure corresponds to approximately 70% of the 4,225 aerosol-generating retail industry LQGs identified by EPA in its primary analysis. We note that even if the actual percentage of retail LQGs that would be affected in this way is lower than 70%, the 3,000 facility figure may be reasonable, given that EPA's baseline figure of 4,225 retail LQGs generating hazardous aerosol can wastes is probably far too low (as discussed further below).

analysis estimates the figures at 7,239 and 14,454, respectively. *See* RIA at 19 and 48. The Retail Associations believe that these baseline numbers are likely all too low. With respect to LQGs, the 2013 BR data showed a total of 20,771 LQGs. *See* EPA, “Regulatory Impact Assessment of the Potential Costs, Benefits, and Other Impacts of the Final Hazardous Waste Generator Improvements Rule” (September 2016) (“Generator Rule RIA”) (Attachment 20), Exhibit 2-6. It seems likely that virtually all of these LQGs generate at least some aerosol can wastes, if nothing else from cleaning offices and bathrooms. Yet, the current RIA estimates suggest that only about one-third of these LQGs generate any aerosol can wastes. Focusing just on the retail sector, the 2013 BR data showed 5,563 LQGs in the industry, virtually all in retail categories, such as health and personal care stores, that can almost invariably be expected to sell aerosol products (and thus to generate significant quantities of aerosol wastes). *Id.* Yet, the current RIA estimates that only 4,225 retail LQGs generate aerosol wastes.

The apparent underestimates are magnified in the RIA, since EPA bases its estimates of aerosol-generating SQGs on its estimates of aerosol-generating LQGs. In particular, EPA arrived at its SQG estimates by multiplying the LQG estimates by a factor of two (2.0). *See* RIA at 8-9. However, there are several reasons to question this methodology. First, as noted above, the underlying estimates of the number of aerosol-generating LQGs seem low. Second, in the RIA for the 2016 hazardous waste generator rule, EPA estimated that the ratio of SQGs to LQGs was significantly higher, namely between 2.4 and 3.1. *See* Generator Rule RIA, Exhibit ES-2. Although these ratios were not focused specifically on aerosol-generating generators, there is no apparent reason why the ratios would be significantly different for such generators, as opposed to generators of hazardous wastes as a whole. Third, EPA based its factor of 2.0 on data from just 3 states, and for one of those states, the Agency acknowledged that it had to use indirect (and probably incomplete) means to identify the relevant facilities. *See* RIA at 8. Fourth, EPA in the 2014 NODA estimated that the number of SQGs in the retail sector alone was 16,774 (virtually all of which would be expected to generate significant quantities of aerosol wastes), which is substantially greater than the number of SQGs that EPA is now estimating for all industries (*i.e.*, 13,019 under the primary analysis, and 14,454 under the alternative analysis). *See* RIA at ES-4 and 19 (estimate from the primary analysis) and 48 (estimate from the alternative analysis); 79 Fed. Reg. 8,926, 8,932 (February 14, 2014) (NODA estimate).

These deviations raise serious questions about EPA’s methodology, and suggest that the baseline estimates of the affected universe of generators – and therefore the ultimate estimate of the costs savings – are substantially too low. As noted above, even a relatively modest increase in the number of generators whose status would change under the universal waste rule could increase the expected cost savings by millions of dollars each year.

For all of the reasons discussed above, the Retail Associations believe that EPA has dramatically underestimated the likely cost savings that would result from a universal waste rule for aerosol

cans. Adding up all the estimates discussed above, we believe that the total cost savings will likely be at least \$80 million per year, and potentially significantly higher.

**8. EPA Should Follow Through on Its Commitment to Issue Guidance on the Extent to Which Aerosol Cans Are Subject to RCRA Regulation in the First Instance**

Although the Retail Associations believe that EPA’s proposal to classify and regulate hazardous aerosol can wastes as universal wastes is a major step forward in improving the regulatory framework for such materials, we also believe it is imperative for the Agency issue guidance on when aerosol cans qualify as solid and hazardous wastes, and are subject to RCRA regulation, in the first instance. Since at least as far back as 2014, the Retail Associations have stressed that an effective strategy for aerosol cans requires not only a universal waste rule for hazardous aerosol can wastes, but also new guidance on these fundamental issues. *See, e.g.*, Retail Associations NODA Comments at 20-25. At least one of the Associations, RILA, underscored the importance of guidance (as well as a universal waste rule) in its 2017 comments on EPA’s regulatory reform efforts under Executive Order 13777. *See* RILA Regulatory Reform Comments at 8-12. In its 2016 Retail Strategy, EPA acknowledged the need for additional guidance, committing, for example, to develop a “guide on how to recycle aerosol cans under the existing Subtitle C recycling exclusions.” *See* EPA, “Strategy for Addressing the Retail Sector under RCRA’s Regulatory Framework” (September 12, 2016) (Attachment 27) at 6. We urge EPA to follow through on this commitment, and would welcome the opportunity to assist the Agency in this effort. EPA should try to issue such guidance before or together with the final universal waste rule, if that can be done without delaying the universal waste rule. However, the first priority should be to issue a final universal waste rule for hazardous aerosol can wastes, which can be followed up afterwards, if necessary, with the guidance.

We believe that guidance is needed on four main issues, each of which is discussed briefly below:

- o ***Applicability of the Definition of Solid Waste to Aerosol Cans Destined for Reclamation.*** EPA should clarify that aerosol cans (whether full, partially full, or empty) are not solid wastes when they are destined for reclamation (*e.g.*, recovery of metals in the housing of the dispenser, useful propellants such as hydrocarbons suitable for use as fuel, and/or the chemical products originally intended to be dispensed). The Agency has long stated that aerosol cans, as well as the propellants and chemical products inside, are “commercial chemical products.”<sup>33</sup> As commercial chemical products, the aerosol cans

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<sup>33</sup> *See, e.g.*, Memorandum from Sylvia K. Lowrance, Director, Office of Solid Waste, EPA, to Karl E. Bremer, Chief, RCRA Permitting Branch, EPA Region 5 (December 30, 1992) (RCRA Online #11717) (“Lowrance Memorandum”) (Attachment 21) (“the remaining propellants in the cans [are] unused ... [and] would be classified as commercial chemical products”); *id.* (“if the aerosol cans are ... partially full ... they would be considered off-specification [commercial chemical products]”); Letter from Sylvia K. Lowrance, Director, Office of Solid Waste, EPA, to Kurt E. Whitman, Project Coordinator, SWInc. (September 30, 1988) (RCRA Online #13225) (Attachment 22) (“[aerosol] cans are hazardous [under the commercial chemical product listings] if ... they contain a commercial chemical product on the 40 CFR 261.33(e) or (f) lists”); Denit Letter #2 (Attachment 14) (“liquids or contained gases removed from aerosol cans may be ... listed in Subpart D of 40 CFR Part 261,” where the only potentially relevant listings would be the commercial chemical product listings); Denit Letter #1 (Attachment 13) (same).

are classified as non-wastes under the RCRA regulations if they are destined for reclamation.<sup>34</sup> Importantly, EPA has explicitly stated that a material may be legitimately reclaimed even if only non-hazardous components are being recovered.<sup>35</sup> Thus, even if the aerosol cans are being reclaimed only to recover non-hazardous components such as the metal housings, the cans are properly classified as commercial chemical products destined for reclamation, and thus not solid or hazardous wastes.<sup>36</sup>

- o ***Potential Reactivity of Aerosol Cans.*** EPA has long suggested that waste aerosol cans, whether full or empty, have the potential to qualify as reactive hazardous wastes on the basis that they are “capable of detonation or explosive reaction if [they are] subjected to a strong initiating source or if heated under confinement.”<sup>37</sup> However, as the Retail Associations have demonstrated, aerosol cans do not, in fact, exhibit the reactivity characteristic. *See generally* Retail Associations NODA Comments at 20-23.

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<sup>34</sup> See 40 C.F.R. § 261.2(c)(3) (listed commercial chemical products are not solid wastes when destined for reclamation); 50 Fed. Reg. 14,216, 14,219 (April 11, 1985) (specifying that the rules for listed commercial chemical products also apply to characteristic commercial chemical products); *see also* 40 C.F.R. § 261.1(c)(4) (defining reclamation to include “process[ing] to recover a usable product”).

<sup>35</sup> See, e.g., 73 Fed. Reg. 64,668, 64,745 (October 30, 2008) (stating that “[i]t has been the Agency’s longstanding policy that ... not every constituent or component in a hazardous secondary material would have to contribute ... to the recycling process,” and indeed “the non-hazardous component of hazardous secondary materials [can] provide the useful contribution”; also citing as examples the use/recovery of non-hazardous glass from lead-containing cathode ray tubes, and the use/recovery of non-hazardous zinc from certain hazardous secondary materials); 78 Fed. Reg. 46,448, 46,462 (July 31, 2013) (stating that “EPA’s long-standing policy regarding legitimate recycling does not require that 100% of the hazardous secondary material be reclaimed in order to be legitimately recycled,” and concluding that solvent-contaminated wipes destined to be laundered to recover/regenerate the fabric cloth are being legitimately reclaimed, even though the hazardous solvents are being discarded).

<sup>36</sup> At a minimum, EPA should clarify that aerosol cans containing non-hazardous chemical products and ignitable propellants that are commonly used as fuels (e.g., propane and butane) are not hazardous wastes if they are destined for reclamation to recover the propellants for use as fuels or for use in making fuels. As the Retail Associations explained in detail in comments on the 2014 NODA, none of the components of these products are subject to RCRA regulation. *See* Retail Associations NODA Comments at 23-25. The chemical product intended to be dispensed in this situation is non-hazardous, and thus clearly not a RCRA hazardous waste. The metal housing likewise is non-hazardous (and would be excluded or exempt from regulation if it were also reclaimed). Moreover, EPA has clearly stated that the only remaining component – the propellant – would not be a solid waste. *See* Lowrance Memorandum (Attachment 21) (“Since [butane and propane propellants] are fuels and being burned for energy recovery, they would not fall within the definition of a solid waste and would consequently not be considered hazardous wastes”); 40 C.F.R. § 261.2(c)(2)(ii) (commercial chemicals products destined to be used as fuels or to make fuels “are not solid wastes if they are themselves fuels”). Inasmuch as none of the components would be solid or hazardous wastes, the aerosol cans would also not be subject to RCRA regulation.

<sup>37</sup> *See* EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027) (Attachment 12) (“Irrespective of the lack of contained waste, ... aerosol cans [c]ould be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity”); 40 C.F.R. § 261.23(a)(6) (supposedly relevant part of the definition of reactivity).

In general, DOT requirements for the design, manufacture, and testing of aerosol cans ensure that the products will not burst – much less explode or detonate – when heated to the types of temperatures contemplated by the RCRA reactivity characteristic (*e.g.*, 140°F or 160°F), or when subjected to the types of initiating sources contemplated by the characteristic (*e.g.*, jostling, bumping, tipping, and dropping).<sup>38</sup> Moreover, EPA has long stated that the reactivity characteristic is intended to capture only a “fairly narrow category of wastes” that are “clearly” hazardous, even “to the generator’s own operations.”<sup>39</sup> Aerosol cans do not exhibit any of these indicia of reactivity, given that they are ubiquitously generated and EPA itself has expressed uncertainty about when aerosols might be reactive.<sup>40</sup> Thus, we urge EPA to issue guidance clarifying that aerosol cans do not exhibit the RCRA characteristic of reactivity.

- o ***Point at Which Aerosol Cans Are “Empty.”*** As EPA noted in the preamble to the proposed rule, “[a]n aerosol can that meets the definition of empty container in 40 CFR 261.7 is not subject to hazardous waste regulation.” *See* 83 Fed. Reg. at 11,660. However, it is unclear under the referenced definition when aerosol cans qualify as empty. For this reason, we urge EPA to provide guidance on this issue. In general, we believe such guidance must provide a practical means for generators to determine when aerosol cans are empty, recognizing that aerosols are used and/or generated as wastes in an extraordinarily wide range of circumstances by persons of widely ranging degrees of knowledge and experience with hazardous wastes, and that aerosol cans are closed and opaque units that prevent direct observation of the contents and limit direct access to the contents.

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<sup>38</sup> *See, e.g.*, 49 C.F.R. § 173.306(a)(3)(ii) (requiring metal aerosol cans to be “capable of withstanding without bursting a pressure of *one and one-half times* the equilibrium pressure of the contents at 130°F” (emphasis added)); § 173.24(b)(1) (requiring all packagings, including aerosol cans, to be “designed, constructed, maintained, filled, [their] contents so limited, and closed, so that under conditions normally incident to transportation ... there will be no identifiable ... release of hazardous materials to the environment”); Memorandum from John J. Skinner, Director, Office of Solid Waste, EPA, to David Wagoner, Director, Air & Waste Management Division, EPA Region VIII (November 30, 1984) (RCRA Online #12339) (Attachment 23) (concluding that small caliber ammunition up to 0.50 caliber are not reactive, based on tests showing that they do not detonate or explode at 160°F or when subjected to “drop tests ... to simulate handling errors”).

<sup>39</sup> *See* EPA, “Background Document: Reactivity Characteristic” (May 1980) (Attachment 24) at 10 (“the problems posed by reactive wastes appear to be confined to a fairly narrow category of wastes”); 51 Fed. Reg. 21,648, 21,649 (June 13, 1986) (“characteristics define broad classes of wastes that are *clearly* hazardous” (emphasis added)); 45 Fed. Reg. 33,084, 33,110 (May 19, 1980) (“[m]ost generators of reactive wastes are aware that their wastes possess this property ... because such wastes are dangerous to the generators’ own operations”).

<sup>40</sup> *See, e.g.*, Letter from Elizabeth A. Cotsworth, Acting Director, Office of Solid Waste, EPA, to T.L. Nebrich, Jr., Technical Director, Waste Technology Service, Inc. (May 19, 1997) (RCRA Online #14235) (Attachment 25) (“Over the past several years we have received numerous questions concerning the regulatory status of used aerosol cans under the ... hazardous waste regulations. We are not at this time able to make a categorical determination as to whether various types of cans that may have contained a wide range of products exhibit the characteristic of reactivity”).

Under the regulations, aerosols can and should be deemed empty once they are no longer capable of dispensing the chemical product in a reliable and steady way as required for the intended application (*e.g.*, once the can starts sputtering or otherwise delivering an uneven spray). At that point, “[a]ll wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container [*i.e.*, an aerosol can],” *see* 40 C.F.R. § 261.7(b)(1)(i), since it would not be common to keep using an aerosol can once it is no longer dispensing the product properly. In addition, at that point, the aerosol can would almost certainly contain no more than 1 inch of chemical product inside, as specified in 40 C.F.R. § 261.7(b)(1)(ii), since the chamber with the chemical product is rarely (if ever) more than 8 inches tall and manufacturers seem unlikely to design a product that leaves more than 1/8th of the chemical product stranded inside after use. Further, at this point, some significant portion of the propellant is likely to have been discharged, and in this sense the pressure would have “approach[ed] atmospheric,” as specified in 40 C.F.R. § 261.7(b)(2). Thus, there is a solid basis for issuing practical guidance that an aerosol can qualifies as empty once it stops dispensing the chemical product in a proper way.<sup>41</sup>

- o ***Use of Statistics to Determine the Quantity of Aerosol Cans to be Counted Toward a Generator’s Status.*** Under the proposed rule, VSQGs would not have to manage their hazardous aerosol can wastes in accordance with the universal waste rule (although they could do so at their option). We believe that a generator should be able to use statistical information (*e.g.*, from similar facilities) to determine the percentage of aerosol cans that need to be counted toward the VSQG limit, without making a determination for each individual can as to whether it is a hazardous waste, empty, etc. EPA has previously allowed this type of approach for another situation in which individual wastes of a particular type may be either hazardous or nonhazardous,<sup>42</sup> and we urge the Agency to confirm that a similar approach may be used for aerosol cans.

## 9. **Conclusion**

For the reasons discussed above, the Retail Associations strongly support the classification and regulation of hazardous aerosol can wastes as universal wastes under RCRA. Indeed, we believe aerosol cans are particularly well suited for addition to the universal waste rule, since they satisfy all

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<sup>41</sup> We also urge EPA to issue similar guidance on the issue of when aerosol cans no longer contain “significant liquids,” which (as discussed in Section 5.3 above) is the standard that EPA has established for when aerosol cans (whether “empty” or not) may be recycled as scrap metal.

<sup>42</sup> *See* Letter from Michael Shapiro, Director, Office of Solid Waste, EPA, to Lynn L. Bergeson (July 13, 1995) (RCRA Online #14003) (Attachment 26) (“we believe that it would be appropriate for a generator to rely on ‘knowledge’ of the waste ... based on studies done to characterize the frequency of ‘hazardous’ spent antifreeze generated (relative to the generation of ‘nonhazardous’ spent antifreeze), in order to characterize the total volume of hazardous waste generated. [For example, if] data ... indicate that up to 40% of the spent antifreeze flushed from radiators may be hazardous ... it would be appropriate for a spent antifreeze generator to characterize the total consolidated volume of spent antifreeze generated as being 40% hazardous and 60% nonhazardous. ... [T]his approach would be appropriate for determining the volume of hazardous waste generated for the purposes of being eligible for special regulatory provisions for small quantity generators”).

of the criteria specified in the regulations for classification as universal wastes. However, we urge EPA to expand the scope of its proposal by including non-aerated and gas-only products, by removing or modifying the exclusion for aerosol cans with evidence of leaking or damage, and by clarifying the status of empty aerosol cans. Such changes are needed to make the rule workable (especially for retailers, which EPA estimates represent approximate two-thirds of the affected generator universe) and to maximize the benefits of the rule. The Agency should also clarify that as soon as the final rule is issued, hazardous aerosol can wastes may immediately be transported in *all* states without a hazardous waste manifest or a hazardous waste transporter.

With these changes and clarifications, the cost savings that would result from the rule are likely far greater than EPA estimated in its RIA – perhaps as great as \$80 million per year or more. Although this would be a major step forward in improving the regulatory framework for aerosol cans, we also believe it is important for the Agency issue guidance clarifying (a) that aerosol cans destined for recycling are not solid wastes, (b) that aerosol cans do not exhibit the characteristic of reactivity, (c) that aerosol cans qualify as empty once they are no longer capable of dispensing the chemical product in a reliable and steady way as required for the intended application, and (d) that generators may use statistical information to determine the quantity of aerosol cans that need to be counted in determining their hazardous waste generator status. EPA should try to issue such guidance before or together with the final universal waste rule, if that can be done without delaying the universal waste rule. However, the first priority should be to issue a final universal waste rule for hazardous aerosol can wastes, which can be followed up afterwards, if necessary, with the guidance.

Once again, we appreciate this opportunity to provide our comments on this proposed rulemaking. We would welcome the opportunity to provide additional input and/or to answer any questions the Agency may have with respect to the points made above.

Sincerely,

A handwritten signature in blue ink, appearing to read "Austen Jensen". The signature is fluid and cursive, with a large initial "A" and a long, sweeping underline.

Austen Jensen  
Vice President, Government Affairs  
Retail Industry Leaders Association

Handwritten signature of Stephanie Barnes in cursive script.

Stephanie K. Barnes  
Chief Regulatory Officer & Legal Counsel  
Food Marketing Institute

Handwritten signature of Christopher R. Smith in cursive script.

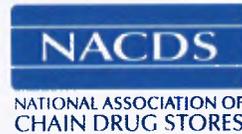
Christopher R. Smith, JD, LL.M.  
Director of Federal Public Policy  
National Association of Chain Drug Stores

**ATTACHMENTS TO  
COMMENTS OF THE RETAIL ASSOCIATIONS  
ON EPA'S PROPOSAL TO ADD AEROSOL CAN WASTES  
TO THE UNIVERSAL WASTE REGULATIONS**

***DOCKET ID No. EPA-HQ-OLEM-2017-0463***

May 14, 2018

**ATTACHMENT 1**



May 30, 2014

**COMMENTS OF THE RETAIL ASSOCIATIONS IN RESPONSE TO EPA'S NODA  
ON THE APPLICATION OF RCRA TO THE RETAIL INDUSTRY**

**Executive Summary**

The Retail Industry Leaders Association (“RILA”), the Food Marketing Institute (“FMI”), the National Association of Chain Drug Stores (“NACDS”), and the National Retail Federation (“NRF”), and their members (collectively, the “Retail Associations”) are pleased to submit these comments in response to EPA’s Notice of Data Availability and request for comment, entitled “Hazardous Waste Management and the Retail Sector: Providing and Seeking Information on Practices to Enhance Effectiveness to the Resource Conservation and Recovery Act Program,” 79 Fed. Reg. 8926 (Feb. 14, 2014) (“NODA”). In particular, the Retail Associations appreciate the opportunity to share with EPA their ideas for clarifying and streamlining EPA’s Resource Conservation and Recovery Act (“RCRA”) regulations as they apply to the retail sector.

**Background and context:** Retail stores are in every community and offer a wide range of products that American consumers use in their daily lives. Retailers and suppliers move these products safely through vast distribution networks around the country before they arrive on store shelves. Nearly all of these products are sold to consumers, and are either consumed or used by consumers and/or disposed of without additional regulations. Only a small percentage remains unsold because, for example, suppliers launch new marketing programs or change formulations, the products have exceeded their “best by” date, or they have been recalled by the supplier. Similarly, a small percentage of products are returned to a store by a consumer for any number of reasons. Some of these unsold/returned products may be considered “hazardous waste” subject to the RCRA regulations.

Subjecting unsold/returned products to full RCRA regulation runs counter to RCRA’s mandate of resource conservation and EPA’s objectives for sustainable materials management, while offering virtually no additional environmental benefit and depleting scarce hazardous waste disposal resources. We believe it is possible to make regulatory and non-regulatory changes to the RCRA program to facilitate protection of the environment and human health in the retail sector while also encouraging reuse, recycling and the management of materials in a more sustainable fashion.

**Proposed Solutions:** In particular, the Retail Associations propose that EPA provide targeted solutions for two particular product types – nicotine products and aerosol cans – and create an alternative, equally protective program for all unsold/returned products in the retail sector.

**Solutions for specific product types (Section II below):** Unsold/returned nicotine products and aerosol cans are particular concerns for the retail sector because the Retail Associations’ members expend significant resources managing them as acutely hazardous wastes or hazardous wastes, respectively.

A variety of nicotine containing products, mainly including smoking cessation products like patches, gums, and lozenges (products with public health benefits), and also electronic cigarettes, are currently pushing many retail stores into large quantity generator status. Since those products may be classified as acutely hazardous wastes, handling more than 1 kg of such products at any given time means that retail stores are “large quantity generators” of hazardous waste,<sup>1</sup> subjecting retailers to numerous in-store requirements and burdening regulatory agencies with disproportionate oversight responsibilities for many retailers who would not be large quantity generators but for nicotine products. We discuss in detail below why the basis for regulating nicotine products meant for human use or consumption as acutely hazardous wastes is dubious, and we believe low-concentration nicotine products can be reclassified as non-acutely hazardous waste, with no reduction in protection of human health or the environment.

Aerosol cans are convenient mechanisms for consumers to receive and use a wide array of products that range from pharmaceuticals to air fresheners, and cheese product to sunscreen. These cans make up a significant volume of unsold/returned products, and their sheer variety makes waste characterization and subsequent decisions regarding recycling or disposal unnecessarily complex and confusing. As a result, some retailers conservatively assume that all unsold/returned aerosols are hazardous wastes and dispose of them accordingly, foreclosing potential opportunities for beneficial recycling, recovery, and reuse of potentially valuable materials. The Retail Associations propose that EPA issue guidance on two separate issues that could quickly provide meaningful relief for key categories of aerosol products: (1) guidance that aerosol cans are not reactive hazardous wastes and (2) guidance that aerosol cans with common fuel propellants and containing non-hazardous chemical products are not hazardous wastes when the propellants are recovered for use as a fuel. We also propose that EPA initiate a rulemaking to classify and regulate aerosol cans as universal wastes, which would ultimately provide a reasonable and environmentally protective framework for all aerosol products.

**Solution for all retail products (Section III below):** Finally, the Retail Associations propose that EPA create an alternative program for unsold/returned products in the retail sector that considers the realities of retail operations. RCRA’s manufacturing-oriented framework does not work when applied to the retail sector, where the hazardous waste

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<sup>1</sup> “Large Quantity Generator” status is the highest generator status under RCRA and historically has included only entities like large scale chemical companies, steel mills, shipyards, and tire manufacturing companies.

generation pattern is vastly different. Although there may be regulatory or non-regulatory solutions for individual waste streams (e.g., nicotine products, aerosols), the Retail Associations urge EPA to consider a comprehensive regulatory solution in the form of a conditional exclusion from the RCRA definition of solid waste for wastes generated or collected by retail stores and managed in a reverse distribution system under certain conditions tailored to ensure the protection of human health and the environment. The Retail Associations envision that a conditional exclusion would provide a streamlined set of regulations for retailers that will enhance compliance, encourage reuse/recycling and better management of unsold/returned products in reverse distribution, ensure environmental protection, and create opportunities for increased sustainability.

## **I. THE RETAIL ASSOCIATIONS**

The Retail Associations represent a broad cross section of the retail sector in the United States, including large and small companies, from chains with more than a thousand stores nationwide to regional companies with a handful of stores. The Retail Associations surveyed their broad membership to determine the breadth of compliance needs, current hazardous waste handling methods, and challenges, as well as the associated costs. That information is included throughout these comments where relevant.

RILA is an organization of the world's most successful and innovative retailer and supplier companies – the leaders of the retail industry. RILA members represent more than \$1.5 trillion in annual sales and operate more than 100,000 stores, manufacturing facilities, and distribution centers nationwide. Our member retailers and suppliers have facilities in all 50 states and the District of Columbia, as well as internationally, and employ millions of workers domestically and worldwide.

FMI proudly advocates on behalf of the food retail industry. FMI's U.S. members operate nearly 40,000 retail food stores and 25,000 pharmacies, representing a combined annual sales volume of almost \$770 billion. Through programs in public affairs, food safety, research, education and industry relations, FMI offers resources and provides valuable benefits to more than 1,225 food retail and wholesale member companies in the United States and around the world. FMI membership covers the spectrum of diverse venues where food is sold, including single owner grocery stores, large multi-store supermarket chains and mixed retail stores.

NACDS represents traditional drug stores and supermarkets and mass merchants with pharmacies. NACDS members operate more than 40,000 pharmacies, and NACDS' 125 chain member companies include regional chains, with a minimum of four stores, and national companies. Chains employ more than 3.8 million individuals, including 175,000 pharmacists. They fill over 2.7 billion prescriptions yearly, and help patients use medicines correctly and safely, while offering innovative services that improve patient health and healthcare affordability.

NRF is the world's largest retail trade association, representing discount and department stores, home goods and specialty stores, Main Street merchants, grocers, wholesalers, chain restaurants and Internet retailers from the United States and more than 45 countries. Retail is the nation's largest private sector employer, supporting one in four U.S. jobs – 42 million working Americans. Contributing \$2.5 trillion to annual GDP, retail is a daily barometer for the nation's economy. NRF's "This is Retail" campaign highlights the industry's opportunities for life-long careers, how retailers strengthen communities, and the critical role that retail plays in driving innovation.

## **II. EPA SHOULD CONSIDER TARGETED SOLUTIONS FOR NICOTINE AND AEROSOLS**

### **A. EPA Should Reclassify Low-Concentration Nicotine Products As Non-Acutely Hazardous**

The Retail Associations urge EPA to undertake a targeted (and expedited) rulemaking focused on reclassifying unsold nicotine-containing products, such as nicotine replacement therapy ("NRT") products and e-cigarettes, as non-acutely hazardous. NRT products (*e.g.*, gums, lozenges, patches, inhalers, and nasal sprays containing low concentrations of nicotine or related compounds) have been proven to be highly effective treatments in helping smokers stop using tobacco products. *See, e.g.*, U.S. Public Health Service, "Clinical Practice Guideline: Treating Tobacco Use and Dependence" (2008 Update) (identifying each of these products as "an effective smoking cessation treatment that patients should be encouraged to use"), *available online at* <http://bphc.hrsa.gov/buckets/treatingtobacco.pdf>. In addition, e-cigarettes offer an alternative to tobacco products. However, the current RCRA regulations inappropriately classify such products as acutely hazardous wastes, subject to a large quantity generator ("LQG") threshold of just 1 kilogram/month, and this is the sole reason why thousands of retail stores across the nation are subject to full regulation under RCRA.

We believe there is a compelling case that the low-concentration nicotine products currently on the market should be reclassified as non-acutely hazardous. Certainly, it cannot be reasonably argued that nicotine gums and lozenges that millions ingest multiple times daily -- with the encouragement of federal, state, and local health authorities, and the medical community more generally -- are acutely hazardous. There is ample precedent for such a reclassification, and in this case it would provide tens of millions of dollars in annual regulatory relief to retail stores that, but for the misclassification of nicotine products, would either be conditionally exempt from RCRA regulation or subject to the substantially reduced requirements for small quantity generators ("SQGs").

We understand that EPA is aware of the nicotine issue, but decided not to address it in the NODA, because the Agency intends to address the issue in a separate proposal on pharmaceutical wastes. Although we appreciate EPA's efforts and, at this point, do not know what the Agency plans to say in the upcoming proposal regarding nicotine, we are concerned that addressing the issue through the pharmaceutical rulemaking may unduly

delay a solution (*e.g.*, if that rulemaking is slowed down by issues unrelated to nicotine) and ultimately may not lead to an appropriate resolution (*e.g.*, if it continues to regulate nicotine-containing products as acutely hazardous when they are not, and thereby imposes the new regulatory regime on retailers that otherwise would be conditionally exempt from regulation).

A full discussion of this issue is beyond the scope of the current comments. However, we provide below some preliminary data in support of a reclassification. If EPA is open to pursuing such a rulemaking, we would be pleased to elaborate at a later date.

**1. *The human toxicity data that the original acutely hazardous classification was based on has been demonstrated to be erroneous.***

EPA originally listed nicotine (and salts) as acutely hazardous wastes based in large part on a then-common estimate that the median lethal dose (LD<sub>50</sub>) to humans through oral administration is only 1 mg per kg of body weight.<sup>2</sup> However, this estimate has since been discredited. The 1 mg/kg estimate was based on extrapolations from “highly dubious self-experiments performed in the middle of the nineteenth century” and is inconsistent with more recent “literature reports on nonfatal nicotine intoxications.”<sup>3</sup> A more careful estimate indicates that “the lower limit causing fatal outcomes is 0.5-1 g of ingested nicotine, corresponding to an oral LD<sub>50</sub> of 6.5-13 mg/kg.”<sup>4</sup>

The roughly order-of-magnitude change in estimated human toxicity could be critical in assessing the appropriateness of classifying nicotine products as acutely hazardous or non-acutely hazardous under RCRA, and thus warrants a reevaluation of the current classification. *Cf.* 75 Fed. Reg. 78,918 (December 17, 2010) (removing saccharin from the lists of RCRA hazardous wastes based on revised human health data).

**2. *The high-concentration nicotine products that formed the basis for the original acutely hazardous waste listing no longer exist, and completely different products with much lower concentrations have since come onto the market.***

At the time that nicotine and salts were listed as an acutely hazardous waste under RCRA in 1980, the only nicotine products apparently being marketed were pesticides with extremely high concentrations of the chemical, such as Black Leaf 40 which contained

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<sup>4</sup> *Id.*; see also D. Matsushima, et al., “Absorption and Adverse Effects Following Topical and Oral Administration of Three Transdermal Nicotine Products to Dogs,” *Journal of Pharmaceutical Sciences* (1995) (“Studies of ingestion of tobacco or nicotine polacrilex gum by children – in which doses up to 6 mg/kg nicotine did not result in death – raise ... questions about the usefulness of [the 1 mg/kg] estimated lethal oral dose of nicotine in humans”); S. Schneider, et al., “Internet suicide guidelines: Report of a life threatening poisoning using tobacco extract,” *Journal of Emergency Medicine* (2010) (“The fatal dose of nicotine for adults [has been] estimated to be [1 mg/kg] but doubts about the validity of these data have been expressed as survival without complication after repeated ingestion of significantly higher amounts of nicotine has been observed”).

40% nicotine sulfate. NRT products were not approved for use in the U.S. until several years later.<sup>5</sup> Similarly, e-cigarettes did not appear in the market until the mid-2000s.

Clearly, the focus of the original listing was pesticide products with high concentrations of nicotine, rather than the NRT and e-cigarette products that appeared later. However, nicotine use as a pesticide started to decline rapidly in the years following the listing. *See generally* EPA, Reregistration Eligibility Decision for Nicotine (March 2008) at 8. The last EPA registrations for use of nicotine as a pesticide on food crops were cancelled in 1994, *id.*, and as of January 1, 2014, there are no longer any nicotine pesticides registered for use in the U.S. *See* 74 Fed. Reg. 26,695 (June 3, 2009) (EPA order cancelling “the last nicotine pesticide product registered for use in the United States ... effective January 1, 2014”).

In light of these developments, essentially the only wastes currently covered by the nicotine listing are NRT and e-cigarette wastes that were not and could not have been contemplated by EPA at the time of the listing. Although we do not have data on the precise concentrations of nicotine in these products, it is clear that the concentrations are far lower than the concentrations present in the pesticide products that formed the basis for the listing decision. For example, nicotine gum and lozenges typically contain either 2 or 4 mg of nicotine per piece; assuming a piece weighs a few grams, this corresponds to approximately 0.1% nicotine. Nicotine patches typically deliver between 7 and 21 mg of nicotine; assuming they contain 21 mg of nicotine and weigh only 1 g (approximately the weight of a paperclip), this would correspond to about 2% nicotine. (Actual concentrations might be a little higher, to the extent that the patches contain more nicotine than they actually deliver.) The concentrations of nicotine in the liquids used in e-cigarettes vary, but reportedly are typically less than 3%.<sup>6</sup>

In sum, the low-concentration nicotine products currently on the market bear little resemblance to the high-concentration nicotine products that were the focus of the original nicotine listing, and which are no longer on the market. Given the dramatic change in product mix, a reevaluation of the 1980 acutely hazardous classification is clearly warranted.

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<sup>5</sup> *See, e.g.*, 78 Fed. Reg. 19,718 (April 2, 2013) (“The nicotine gum and patch products were originally approved [by the Food and Drug Administration] between 1984 and 1992. Both the gum and the patch were initially available by prescription only; these products were switched from prescription to OTC status between 1996 and 2002. The nicotine lozenge and mini-lozenge were approved directly for OTC use in 2002 and 2009, respectively.”).

<sup>6</sup> *See, e.g.*, M. Trehy, et al., Food and Drug Administration, Division of Pharmaceutical Analysis, “Analysis of Electronic Cigarette Cartridges, Refill Solutions, and Smoke for Nicotine and Nicotine Related Impurities,” *Journal of Liquid Chromatography & Related Technologies* (2011) (reporting concentrations up to 25.6 mg/mL, which corresponds to 2.56%).

3. *The current low-concentration nicotine products do not meet the regulatory criteria for acutely hazardous wastes.*

Under the RCRA regulations, a waste may be listed as acutely hazardous if “[i]t has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, [it exceeds certain criteria for acute toxicity in laboratory animals].” See 40 C.F.R. § 261.11(a)(2). Although the reference to “low doses” is rather ambiguous, EPA explained in the 1981 background document for the original commercial chemical product listings that the phrase was intended only to cover “extremely powerful poisons.” See CCP Background Document at 22. In particular, chemicals would be listed as acutely hazardous if “ingestion of less than a teaspoonful ... would be fatal to an adult.” *Id.*

It seems clear that the low-concentration nicotine products currently on the market would not meet this criterion. Individual pieces of nicotine gum or nicotine lozenges are approximately one teaspoon in size, and they obviously are not “fatal to an adult.” Millions of people ingest these products daily, with the encouragement of the medical community. Indeed, according to the website of the National Institutes of Health, people may chew up to 24 pieces of gum per day, or ingest up to 20 lozenges per day.<sup>7</sup> There can be no doubt that these products are not acutely hazardous as defined under the RCRA regulations.

Nicotine patches likewise do not appear to qualify as acutely hazardous. As an initial matter, it is difficult to imagine a scenario in which a person might ingest a nicotine patch. We are aware of one study in which adult volunteers chewed on unused nicotine patches, and while some adverse effects were noted, none were lethal. See F. Harchelroad, et al., “Oral absorption of nicotine from transdermal therapeutic systems,” *Veterinary and Human Toxicology* (1992). Another study reported on incidents in which young children had “bitten, chewed, or swallowed part of a patch.” See A. Woolf, “Childhood Poisoning Involving Transdermal Nicotine Patches,” *Pediatrics* (1997) (“Woolf Study”). Of 18 cases, 13 involved no symptoms; the remaining 5 children had symptoms ranging from fussiness/fatigue to a burning tongue or vomiting, but “[a]ll recovered fully.” *Id.* Thus, the patches do not appear to meet the RCRA criteria for acutely hazardous by oral administration.

Although EPA originally listed nicotine as acutely hazardous based on dermal toxicity, as well as oral toxicity, see CCP Background Document, Appendix A, it seems clear that nicotine patches are not acutely hazardous by dermal contact, inasmuch as their very purpose is to be applied to the skin. Moreover, the Woolf Study (cited above) reported on 18 incidents in which young children were dermally exposed to nicotine patches. In half the cases, the children showed no symptoms, while in the other half, the children exhibited symptoms ranging from fussiness, pallor, or skin irritation to nausea or dizziness. Once again, “[a]ll recovered fully.” In a separate study, the same researcher reported on “[n]ine

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<sup>7</sup> See NIH, MedlinePlus at <http://www.nlm.nih.gov/medlineplus/druginfo/meds/a684056.html> (“Do not chew more than 24 pieces [of nicotine gum] a day”) and <http://www.nlm.nih.gov/medlineplus/druginfo/meds/a606019.html> (“Do not use ... more than 20 [nicotine] lozenges per day”).

cases of dermal exposure to 2-20 transdermal nicotine patches ... result[ing] from either intentional misuse or suicide attempts [most of which were accompanied by] exposure to other drugs.” See A. Woolf, et al., “Self-poisoning among adults using multiple transdermal nicotine patches,” *Journal of Toxicology – Clinical Toxicology* (1996). Although “[a]ll suffered medical complications” and most required hospitalization, “all recovered.” *Id.* While these studies do indicate that nicotine patches may pose a risk, such risks do not rise to the level of warranting an acutely hazardous waste listing.

Finally, with respect to the liquids used in e-cigarettes, based on our preliminary research, we are not aware of any direct toxicological studies on the materials. However, using the estimated human LD<sub>50</sub> (oral) for nicotine of 6.5 to 13 mg per kg of body weight (as discussed above), as well as the fact that the liquids used in e-cigarettes generally contain less than 3% nicotine (as also discussed above), the LD<sub>50</sub> of the liquids can be estimated to be between 217 and 433 mg/kg. These values are well above the regulatory threshold for acutely hazardous wastes. See, e.g., 40 C.F.R. § 261.11(a)(2) (stating that wastes may be classified as acutely hazardous if they have an oral LD<sub>50</sub> in rats of less than 50 mg/kg); CCP Background Document at 22 (indicating that wastes may be classified as acutely hazardous if they have an oral LD<sub>50</sub> in humans of less than 100 mg/kg).

We want to stress that we are not arguing here that the low-concentration nicotine products currently on the market do not pose any potential hazards to human health (or the environment). Rather, our point is that these products do not meet the regulatory requirements for classification as acutely hazardous wastes under RCRA. For these reasons, we are proposing that the low-concentration products should be reclassified from acutely hazardous to non-acutely hazardous (and that the high-concentration products, if any, should remain classified as acutely hazardous).

**4. *The current low-concentration nicotine products are similar in nicotine concentration to tobacco products that are not regulated as hazardous wastes, much less acutely hazardous wastes.***

Tobacco products are not subject to regulation under RCRA as hazardous wastes – much less as acutely hazardous wastes – due to the fact that they are not expected to exhibit any characteristics of hazardous waste and are not listed as hazardous wastes. Although such products obviously contain nicotine, they are not covered by the “P075” listing for nicotine commercial chemical products, because they are not “[a] commercially pure grade of the chemical, [a] technical grade[ ] of the chemical ... [or a] formulation in which the chemical is the sole active ingredient.” See 40 C.F.R. § 261.33(d), Comment (defining the phrase “commercial chemical product”).

Significantly, the low-concentration nicotine products currently on the market – which are regulated not only as hazardous wastes, but as acutely hazardous wastes – contain approximately the same concentration of nicotine as unregulated tobacco products. As noted above, the low-concentration nicotine products generally contain less than 3% nicotine. By comparison, ordinary filtered cigarettes contain an average of 1.63% nicotine, with some brands containing up to about 2%. See, e.g., J. Malson, et al., “Comparison of

the nicotine content of tobacco used in bidis and conventional cigarettes,” *Tobacco Control* (2001). Smokeless tobacco products may contain as much as 3.4% nicotine. See K. Tilahalski, et al., “Assessing the Nicotine Content of Smokeless Tobacco Products,” *Journal of the American Dental Association* (1994).

The Retail Associations question whether it makes sense to regulate low-concentration nicotine products, such as over-the-counter NRT therapies, as acutely hazardous wastes, when tobacco products with comparable levels of nicotine are completely unregulated under RCRA.

**5. *There is ample precedent for reclassifying low-concentration commercial chemical products such as nicotine from acutely hazardous to non-acutely hazardous.***

EPA has previously recognized that acutely hazardous waste listings based on the toxicity of concentrated forms of a chemical may not be appropriate for commercial products containing much lower concentrations of the same chemical. Indeed, it is for this reason that the Agency “split” the original acutely hazardous waste listings for both warfarin and zinc phosphide – both of which applied regardless of concentration – into two listings each: an acutely hazardous listing which applies only to high-concentration products (greater than 0.3% for warfarin, or 10% for zinc phosphide), and a non-acutely hazardous waste listing which applies to low-concentration products. See 49 Fed. Reg. 19,922 (May 10, 1984). EPA explained that “[t]his change has been made because these lower concentration formulations of warfarin and zinc phosphide do not meet the criteria for classification as acutely hazardous waste.” *Id.* The Retail Associations believe that similar action is now warranted for nicotine-containing products.

**6. *Reclassification would provide substantial regulatory relief to the retail industry.***

Reclassification of low-concentration nicotine products as non-acutely hazardous wastes would provide well over \$40 million per year in regulatory relief to the retail industry, as discussed below. These costs -- and the related burdens on state regulators and local first responders, as discussed in the next section -- cannot be justified, given the very small quantities of these products that are unsold, the low risks of the products, and the fact that these products do not meet the criteria for acutely hazardous wastes, as discussed above.

Members of the Retail Associations report that low-nicotine products are the sole reason why the vast majority of stores handling such products are classified as LQGs, rather than SQGs or conditionally exempt small quantity generators (“CESQGs”). Although we have not at this point been able to develop a solid estimate of the number of stores so affected, a conservative -- perhaps very conservative -- estimate would be 12,000 stores nationwide. We have arrived at this figure using two separate methods, both of which are largely in agreement with each other (and, we understand, EPA’s own estimates).

Our first method was to look at data from the U.S. Census Bureau, which specifies the numbers of establishments in various retail sectors. *See* U.S. Census Bureau, Statistical Abstract of the United States: 2012, Table 1048 (Retail Trade in 2007 and 2008). The 2008 figures for the sectors that seem most likely to carry nicotine products include the following: (a) supermarkets and grocery stores (63,400), (b) convenience stores (25,700), (c) pharmacies and drug stores (42,000), and (d) warehouse clubs and superstores (4,400). The total of these figures is 135,500 stores. Although some of these stores may not actually carry nicotine products, some may not generate significant quantities (>1 kg) of waste nicotine products, and some may qualify as LQGs for other reasons, we believe – based on survey responses from the Retail Associations’ members -- it is not unreasonable to expect that 10% of these stores are being pushed into the LQG category due to unsold nicotine-containing products. This would correspond to about 13,000 stores.

Our other methodology was to look at the data in EPA’s most recent National Biennial RCRA Hazardous Waste Report (for 2011). At the time of that report, it was not widely recognized that EPA had announced late the prior year that NRT products, including patches, were viewed as acutely hazardous wastes under RCRA.<sup>8</sup> As a result, it appears that only one nationwide retailer reported taking that announcement into account. That one retailer submitted biennial reports for approximately 1,200 stores. If we assume a number of other nationwide retailers (plus some regional or local retailers) have followed suit in the most recent biennial reporting period, it seems likely that ten times this number of stores – approximately 12,000 -- will now qualify as LQGs. Indeed, other information from members of the Retail Associations suggests that this figure is likely very conservative.

In order to estimate the costs to each store, we have focused on just a few regulatory requirements that apply only to LQGs, or that impose more costs on LQGs than SQGs or CESQGs:

- a. ***Biennial reporting.*** LQGs, but not SQGs or CESQGs, are required to submit a biennial report. *See* 40 C.F.R. § 262.41 (biennial reporting requirement); § 262.44 (specifying that SQGs are not subject to biennial reporting); and § 261.5 (conditionally exempting CESQGs from RCRA regulation). The members of the Retail Associations indicate that the reporting process costs them about \$350 to \$640 per store, which includes the biennial reports, state annual reports, obtaining generator ID numbers, and related consultant fees. This range is consistent with EPA’s own estimates that the costs per generator of preparing and submitting a biennial report (including the Site Identification Form and Form GM only) are approximately \$374/year.<sup>9</sup>

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<sup>8</sup> *See* Letter from Robert W. Dellinger, Director, Materials Recycling and Waste Management Division, EPA, to Charlotte A. Smith, Director, PharmEcology Services, WM Healthcare Solutions, Inc. (August 23, 2010) (RCRA Online #14817).

<sup>9</sup> *See* EPA, “Supporting Statement for EPA Information Collection Request Number 0976.16, 2013 Hazardous Waste Report, Notification of Regulated Waste Activity, and Part A Hazardous Waste Permit Application and Modification” (September 19, 2012) at 73.

- b. **Contingency planning.** LQGs, but not SQGs or CESQGs, are required to prepare and maintain a contingency plan. *See* 40 C.F.R. § 262.34(a)(4) (generally requiring generators to comply with 40 C.F.R. Part 265, Subpart D, including the contingency planning requirement); § 262.34(d) (subjecting SQGs to reduced requirements); and § 261.5 (conditionally exempting CESQGs from RCRA regulation). Based on a survey of the Retail Associations' members, the costs of such contingency planning can be estimated to be between \$400 and \$1,000 per year per store. Again, this range is consistent with EPA's own estimates, which indicate that the costs per generator of preparing and maintaining a contingency plan are approximately \$411/year.<sup>10</sup>
- c. **Training.** LQGs are required to comply with detailed RCRA requirements for personnel training, while SQGs are subject to minimal requirements to ensure their employees' familiarity with relevant waste handling and emergency procedures, and CESQGs are not subject to any training requirements. *See* 40 C.F.R. § 262.34(a)(4) (generally requiring generators to comply with the training requirements in § 265.16); § 262.34(d)(5)(iii) (subjecting SQGs to significantly reduced requirements); and § 261.5 (conditionally exempting CESQGs from RCRA regulation). Retail members of the Retail Associations estimate that full RCRA training costs them between \$2,000 and \$3,500 per store per year. Large retailers commonly have tens of thousands of store employees; and they indicate that they tend to train about 3% to 10% of their workforce in hazardous waste handling, which is 2 to 3 employees per store or more. However, some companies train up to 100% of their store employees.
- d. **Additional manifesting.** LQGs are generally required to manifest their wastes off-site every 90 days, or 4 times per year, while SQGs need only manifest their wastes off-site 2 times per year (or less, if the wastes must be shipped more than 200 miles) and CESQGs are not subject to manifesting at all. *See* 40 C.F.R. § 262.34(a) (limiting on-site accumulation of hazardous wastes by LQGs to 90 days); § 262.34(e) (allowing SQGs to accumulate hazardous wastes on-site for up to 180 days, or 270 days if the wastes must be shipped more than 200 miles); and § 261.5 (conditionally exempting CESQGs from RCRA regulation). Thus, stores that are classified as LQGs due to unsold nicotine products will generally have to complete at least two manifest forms each year that they otherwise would not have to complete.<sup>11</sup> EPA has estimated the costs for an LQG to complete each manifest (and comply with associated requirements) to be approximately \$137.<sup>12</sup> For two manifests, the costs would be twice that, or \$274/year.

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<sup>10</sup> *See* EPA, Supporting Statement for EPA Information Collection Request Number 0820.10, Hazardous Waste Generators (January 2008) at 74.

Adding up the estimates above, these requirements can be expected to cost each affected store between \$3,024 and \$5,414 per year. If we estimate the costs per store at \$3,000 (on the conservative side), and these annual costs are imposed on 12,000 stores as a result of the misclassification of nicotine (again, on the conservative side), the nationwide cost would be approximately \$36 million per year.

This figure is almost certainly a significant underestimate, given that we have not included a variety of other costs imposed by changing the classification of store facilities from CESQG to LQG (e.g., the costs of transport to and disposal at a permitted hazardous waste facility), or from SQG to LQG (e.g., more frequent hazardous waste transport and disposal). These other costs could be substantial.<sup>13</sup> Thus, it appears likely that correcting the misclassification of nicotine would provide regulatory relief well in excess of \$40 million per year.

***7. Regulating low-concentration nicotine products the same way as other pharmaceutical products would not provide a comparable level of regulatory relief.***

We understand that EPA is intending to address nicotine-containing products in the upcoming proposal on pharmaceutical wastes. Although we wholeheartedly endorse the development of a streamlined regulatory approach for pharmaceuticals, we are concerned that the proposal may not provide an appropriate level of regulatory relief for nicotine products. For example, if the pharmaceutical proposal merely specifies that NRT products and e-cigarettes may be handled under the new rules applicable to pharmaceutical wastes – without specifically correcting the misclassification of such low-concentration nicotine wastes – thousands of retail stores that properly should qualify as CESQGs will continue to be improperly regulated as LQGs. Although the new regulatory regime for pharmaceutical wastes may reduce the applicable requirements for these stores, the stores will continue to be subject to a significant degree of regulation that they would not be subject to if they were properly classified as CESQGs. For this reason, we believe it is critical that EPA address nicotine more directly, by reclassifying low-concentration products as non-acutely hazardous.

***8. Reclassification would significantly facilitate RCRA implementation by EPA and the states, and would promote the cause of environmental protection.***

As discussed above, we conservatively estimate that the number of retail stores that are currently being inappropriately regulated as LQGs as a result of the misclassification of low-concentration nicotine products is in the range of about 12,000. Although

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<sup>13</sup> We do not at this time have an estimate of the other additional costs. However, one member of the Retail Associations has estimated that the total costs per store (including the items enumerated above and others) may be as high as \$14,000 per year. We also note that almost 30 years ago, EPA estimated that the costs of transportation alone (not including disposal), for a CESQG reclassified as an SQG, would be close to \$1,000 per year. Cf. 51 Fed. Reg. 10,146, 10,172 (March 24, 1986) (“average incremental costs that would be imposed on [generators reclassified from CESQGs to SQGs] for the transportation of their hazardous waste [not including disposal] are estimated to be ... \$838 per year (for generators that ship 600 kg of waste a short distance twice yearly)”).

approximately 1/10th of these stores previously submitted biennial reports as regulated hazardous waste generators, approximately 10,800 did not. Thus, in the upcoming biennial report (for 2013), the ranks of hazardous waste generators can be expected to swell from the 16,447 reported for 2011 to approximately 27,250 – a 66% increase. Stated another way, retail stores inappropriately captured in the RCRA regulatory program due to misclassification of nicotine can be expected to represent approximately 44% of all regulated hazardous waste generators in the country ( $12,000/27,250 = 0.44$ ).

These figures present a challenge not only to the retail industry, as discussed above, but also to the federal and state regulators responsible for implementing RCRA. A sudden 66% increase in the size of the regulated community will severely strain existing compliance assurance, inspection, and enforcement resources – particularly in this era of tight budgets. Moreover, if 44% of the generator facilities in the system are facilities that do not really belong, the resources of the implementing agencies are likely to be diluted and misdirected toward overseeing facilities that do not pose a significant risk. Rather than promoting the cause of environmental protection, continued misclassification of low-concentration nicotine wastes would actually have precisely the opposite effect.

A similar issue arises with first responders at the local level. Under the RCRA regulations, LQGs are required to submit their contingency plans to “all police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.” See 40 C.F.R. § 265.53 (incorporated into the rules for LQGs at § 262.34(a)(4)). Moreover, these same organizations are required to be sent all revisions to the contingency plans, *id.*, including each time the list of emergency coordinators changes. See 40 C.F.R. § 265.54(d). Given the large number of potentially affected retail stores, and the frequent turnover in retail personnel (potentially including emergency coordinators at the stores), first responders are likely to be overwhelmed and confused by the influx of contingency plans. Indeed, some members of the Retail Associations have reported receiving numerous inquiries from these organizations asking why they are being sent these documents. Given the low risks of nicotine gum and other low-nicotine products, submitting contingency reports to first responders seems to be of little or no value, and in fact may distract them from their vital duties in protecting local communities.

For all of the reasons outlined above, we urge EPA to reclassify low-concentration nicotine products as non-acutely hazardous wastes. We would welcome the opportunity to offer a specific proposal for doing so and to provide additional supporting information, as necessary.

## **B. EPA Should Take Steps to Rationalize the RCRA Regulatory Framework for Aerosol Cans**

**Background and context:** Aerosol cans are a common and convenient means of providing a wide range of products to consumers (see list below). Products sold in aerosol cans are carried by virtually all retailers, from pharmacies to supermarkets, and general merchandise to convenience and department stores. Given the broad array and substantial

volume of these products, even the small percentage that is returned to the store by consumers or remains unsold presents a major challenge for a broad cross-section of the retail industry, including many members of the Retail Associations.

As discussed more fully below and in the examples provided, the challenge lies primarily in the application of the complex and confusing industrial waste regulations to the vast diversity of products sold in retail stores that are packaged in aerosol cans, which can result in a different status and therefore different regulatory requirements for different types of aerosol products, for the same product manufactured by different companies, and even for different units of the same product, depending on their condition. A proper determination under the current regulations depends upon detailed information (*e.g.*, about the cans, their contents, and how they will be managed) that frequently is outside the knowledge of retailers and/or their store-level employees.

As a result, some retailers over-classify all their unsold/returned aerosol cans as hazardous wastes, thereby triggering unnecessary costs for management of such materials and other wastes (*e.g.*, if the inappropriately classified “hazardous” aerosol cans push the stores into a higher-regulated generator status), placing unnecessary strains on limited hazardous waste treatment and disposal capacity in the U.S., and in many instances not recycling the cans or their contents – the option that would more sustainably manage those materials. Other retailers may simply assume that all their unsold/returned aerosol cans are non-hazardous, thereby leading to inappropriate handling. Moreover, even for those aerosol cans that are properly characterized, we question whether the RCRA regulatory requirements, which were designed in order to handle industrial wastes, are appropriate for unsold or returned aerosol cans carried in retail stores.

**Proposed solutions:** The Retail Associations urge EPA to address these issues by providing guidance on two separate issues that could immediately provide meaningful relief for key categories of aerosol products. First, we ask EPA to issue guidance clarifying that aerosol cans do not exhibit the characteristic of reactivity, and thus are not hazardous under RCRA unless their contents are either listed commercial chemical products or characteristically hazardous. Second, EPA should issue guidance clarifying that aerosol cans containing non-hazardous chemical products and propellants that are commonly used as fuels (*e.g.*, propane and butane) are not hazardous wastes if they are destined for recycling in which the propellants are recovered for fuel use.

In the longer term, the Retail Associations also urge EPA to initiate a rulemaking to designate and regulate aerosol cans as universal wastes. The universal waste rules would provide a simplified, but protective, framework for handling aerosol cans. In addition, this approach would encourage retailers and others to recycle all their aerosol cans – whether they would be considered hazardous wastes or not – and thereby obviate the need for drawing fine distinctions between different aerosol can types, while simultaneously increasing the quantity of aerosol cans and their contents that are recycled for beneficial use.

### **1. *Background on Aerosol Cans Marketed by Retailers***

Aerosol cans are used to dispense an extremely wide range of products sold through retail channels. A non-exhaustive list is provided below for illustrative purposes:

- Adhesives
- Air fresheners
- Antifungal treatments
- Antistatic agents
- Artificial snow
- Bathroom cleaners
- Carpet cleaners
- Cooking oils
- Cheese
- Deodorants
- Disinfectants
- Engine degreasers
- Fabric fresheners
- Fabric protectors
- First aid products
- Floor cleaners
- Foam insulation
- Furniture polishes
- Hair styling products
- Lubricants
- Novelties
- Oven cleaners
- Paints
- Perfumes
- Pesticides
- Pharmaceutical inhalers
- Shaving creams
- Starter fluids
- Sealants
- Spot removers
- Starch
- Sunscreens
- Tanning products
- Varnishes
- Waterproofing treatments
- Whipped dessert toppings

Of course, the vast majority of the aerosol cans handled by retailers are sold to customers and ultimately disposed or recycled by the customers. Nevertheless, significant amounts

are not sold (for a variety of reasons, such as damage, product discontinuation, product expiration, etc.) or are returned by customers to the stores. For example, one large member of the Retail Associations – a nationwide general merchandiser -- has reported that it handles approximately 4.3 million pounds of unsold/returned aerosol cans per year. *See* “Walmart proposal for the non-hazardous management of consumer product aerosol cans under the Resource Conservation and Recovery Act,” *available online at* [http://www.rila.org/sustainability/Documents/Compliance%20Documents/WMT\\_Proposal\\_Aerosols.pdf](http://www.rila.org/sustainability/Documents/Compliance%20Documents/WMT_Proposal_Aerosols.pdf). (“In 2010, Walmart managed approximately 4.3 million pounds of consumer product aerosol cans as hazardous waste”). We think it is reasonable to assume that the industry as a whole (including other national, regional, and local general merchandisers, as well as specialty retailers at all levels) generates at least 10 times as much, or about 43 million lbs./year.<sup>14</sup> Moreover, members of the Retail Associations have reported that aerosols represent up to 50% (by weight) or even more of all the potentially hazardous unsold/returned products that they handle. Although this percentage will vary among retailers and across retail channels, unsold/returned aerosol cans are clearly a major issue.

The number of retail establishments in the United States handling unsold/returned aerosols is also high, most likely well over 100,000. Census data provide the following numbers of retailers in key sectors that can be expected to market (and handle unsold/returned) aerosol products: gasoline stations (114,100), supermarkets and grocery stores (63,400), convenience stores (25,700), automotive parts/accessories/tire stores (56,100), pharmacies and drug stores (42,000), home centers and hardware stores (23,000), sporting goods stores (22,100), lawn and garden stores (19,800), cosmetics/beauty supplies/perfume stores (14,000), and warehouse clubs and superstores (4,400). *See* U.S. Census Bureau, “Statistical Abstract of the United States: 2012,” Table 1048 (data as of 2008).

It is also worth noting that the problems associated with properly characterizing and managing aerosol cans (as discussed below) are not limited to the retail industry, but rather are shared with the users of the products. The total number of aerosol cans produced in the U.S. has been estimated to be 3.768 billion per year. *See* Consumer Specialty Products Association (“CSPA”) News Release (May 16, 2014), “North American Aerosol Product Filling Up Again in 2013 CSPA Industry Survey Reveals,” *available online at* <http://www.cspa.org/news-media-center/news-releases/2014/05/north-american-aerosol-product-filling-up-again-in-2013-cspa-industry-survey-reveals/> (“2014 CSPA News Release”) (see chart accompanying the press release). The amount ultimately discarded by end users is likely to be roughly the same as the amount manufactured (although there may be some differences, due to imports, exports, stockpiling, and other factors). If we assume

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<sup>14</sup> Although this amount of unsold/returned aerosol products handled by retailers is significant, and of critical importance to the retail industry, it is important to place this figure in perspective. It corresponds to approximately 22,000 tons per year. By comparison, EPA has estimated that the total amount of all hazardous wastes generated in the U.S. during 2011 was 34,000,000 tons. *See* EPA, National Biennial RCRA Hazardous Waste Report (2011) at 1-1.

that the typical aerosol can discarded by consumers weighs only 1/3 of a pound,<sup>15</sup> this would mean that approximately 1,000,000,000 pounds (or 500,000 tons) of waste aerosol cans are generated in the U.S. by all types of consumers each year. To put this figure in perspective, it is approximately the same as the total amount of all (federal) hazardous wastes generated in the nation's most populous state, California. See EPA, National Biennial RCRA Hazardous Waste Report (2011) at 1-1 (indicating that 534,000 tons of hazardous wastes were generated in California in 2011). Although increasing amounts of the cans discarded by consumers are being recycled, the vast majority is still being disposed in landfills – and this presents an extraordinary opportunity in sustainable materials management. Moreover, the amounts of aerosol cans being discarded by customers clearly dwarf the amount of aerosol cans that are managed by retail stores as unsold/returned products.

## ***2. Problems Created by the Current RCRA Regulations for Unsold/Returned Aerosol Cans***

The current RCRA regulations present considerable challenges for retailers handling unsold or returned aerosol cans. The first issue is the difficulty of determining if/when such products are hazardous wastes. Based on our understanding of the existing rules and guidance, the status of the materials could potentially depend upon multiple factors, including but not necessarily limited to the following:

- Whether the chemical product contained in and dispensed by the aerosol can is a listed commercial chemical product.<sup>16</sup>
- Whether the chemical product contained in and dispensed by the aerosol can exhibits a characteristic of hazardous waste. See Lowrance Aerosol Letter (cans are hazardous if they contain characteristically hazardous commercial chemical products).
- Whether the propellant is ignitable. *Id.*
- Whether the propellant is a chemical that is commonly used as a fuel.<sup>17</sup>

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<sup>15</sup> Although the weight of aerosol cans discarded by consumers can obviously vary significantly, the 1/3 lb. figure seems reasonable in light of two factors: (1) many new/unused aerosol cans have net (content) weights of 1 lb. or even more, and (2) the cans themselves can be estimated to weigh ¼ lb. See, e.g., Oregon Department of Transportation, Maintenance Yard Environmental Management System Policy and Procedures Manual (2005), Section 4.1 (Aerosol Cans), available online at [www.oregon.gov/ODOT/HWY/OOM/EMSdoc/Q4A.pdf](http://www.oregon.gov/ODOT/HWY/OOM/EMSdoc/Q4A.pdf) (stating that “[a]n aerosol can weighs about 4 ounces (or ¼ pound) plus the weight of the contents,” and noting that “a half-empty 17 ounce can [weighs about] 12½ ounces or ¾ pound”).

<sup>16</sup> See Letter from Sylvia K. Lowrance, Director, Office of Solid Waste, EPA, to Kurt E. Whitman, Project Coordinator, SW Inc. (September 1988) (RCRA Online #13225) (“Lowrance Aerosol Letter”) (cans are hazardous if they contain listed commercial chemical products).

- Whether the aerosol can exhibits the characteristic of reactivity, based on the potential for it to explode or detonate when heated under confinement or subjected to a strong initiating force.<sup>18</sup>
- Whether the aerosol can was returned by a household.<sup>19</sup>
- Whether the aerosol can was returned by a conditionally exempt small quantity generator (“CESQG”). *See* 40 C.F.R. § 261.5.
- Whether the aerosol can meets the RCRA definition of “empty.” *See* Denit Aerosol Letter (“in order to dispose of a can as non-hazardous ... a generator would have to determine that the can is empty (or that the product it contained was not hazardous)”).
- Whether the aerosol can has been punctured and drained of fluids, or is otherwise devoid of significant liquids.<sup>20</sup>
- Whether the aerosol can will be returned to service or will be evaluated for potential return to service. *See* 40 C.F.R. § 261.2(e)(1)(ii) (materials are not solid wastes if “[u]sed or reused as effective substitutes for commercial products”).
- Whether the aerosol can is dented, corroded, or missing the actuator button (to the extent that these factors may affect the potential for the product to be used/reused). *Id.*
- Whether the aerosol can will be sent to the manufacturer or a contractor of the manufacturer for potential credit. *Id.*; *cf.* 73 Fed. Reg. 73,520, 73,525 (December

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<sup>17</sup> *See* Memorandum from Sylvia K. Lowrance, Director, Office of Solid Waste, EPA, to Karl E. Bremer, Chief, RCRA Permitting Branch, EPA Region 5 (December 30, 1992) (RCRA Online #11717) (“EPA Propellant Memorandum”) (“Since propane and butane [propellants] are materials that are normally both used as fuels, when unused, they can be burned as fuels without being considered solid wastes”).

<sup>18</sup> *See* EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027) (“Irrespective of the lack of contained waste, ... aerosol cans [c]ould be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity”); 40 C.F.R. § 261.23(a)(6).

<sup>19</sup> *See* Letter from Jeffrey D. Denit, Acting Director, Office of Solid Waste, EPA, to Gregory L. Crawford, Vice President, Recycling Operations, Steel Recycling Institute (October 7, 1993) (RCRA Online #11782) (“Denit Aerosol Letter”) (“household waste (including aerosol cans) is excluded from the definition of hazardous waste”).

<sup>20</sup> *See* Letter from Elizabeth A. Cotsworth, Acting Director, Office of Solid Waste, EPA, to T.L. Nebrich, Jr., Technical Director, Waste Technology Service, Inc. (May 19, 1997) (RCRA Online #14235) (“Cotsworth Aerosol Letter”) (“a steel aerosol can that does not contain a significant amount of liquid (*e.g.*, a can that has been punctured and drained) would meet the definition of scrap metal ... and, if it is to be recycled, would be exempt from regulation”).

2, 2008) (“Because unused or expired pharmaceuticals ... being returned ... for possible manufacturer credit ... still have potential value [they] are thus not considered wastes”).

- Whether the aerosol can will be recycled and, if so, how (*e.g.*, whether the propellant will be burned for energy recovery, whether the metal will be recovered, and how the chemical products will be managed). *See* Lowrance Aerosol Letter, Denit Aerosol Letter, Cotsworth Aerosol, and EPA Propellant Memorandum.

It would be difficult, and in some cases may be impossible, for a retail store to obtain all of the information needed about each individual aerosol can being handled in order to assess the various factors listed above. Moreover, even if it were practicable to obtain such information, the regulatory implications would not always be clear. As just one example among many: what is the appropriate status of a slightly dented, button-less aerosol can containing a non-hazardous chemical product and an ignitable propellant that is a common fuel if the can is sent to a manufacturer for credit and then will be evaluated for either donation or recycling that entails burning of the propellant as fuel? Is it a non-waste, a non-hazardous waste, an ignitable hazardous waste, or potentially a reactive hazardous waste? It is questionable whether a RCRA expert, much less the employees in a grocery or corner convenience store, could confidently make these types of characterizations.

The reactivity issue poses a particular challenge. EPA has long suggested that waste aerosol cans, whether full or empty, have the potential to qualify as reactive hazardous wastes on the basis that they are “capable of detonation or explosive reaction if [they are] subjected to a strong initiating source or if heated under confinement.” *See* 40 C.F.R. § 261.23(a)(6) (relevant part of the definition of reactivity); EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027) (“Irrespective of the lack of contained waste, ... aerosol cans [c]ould be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity”). However, the Agency has repeatedly denied requests for guidance on which aerosol cans might be reactive.<sup>21</sup> Moreover, EPA has not provided any guidance on how companies, including retailers, might determine for themselves which aerosol cans (if any) exhibit the characteristic of reactivity.<sup>22</sup> Nevertheless, the Agency has stressed that “[i]t remains the responsibility of the generator ... to make [the reactivity] determination.” *See* Cotsworth Aerosol Letter. By raising the specter that aerosol cans might be reactive, declining to provide guidance on when they are, and saying that generators are responsible for making a proper determination, EPA has left the regulated community in an extremely tenuous position.

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<sup>21</sup> *See, e.g.*, Cotsworth Aerosol Letter (“*Over the past several years we have received numerous questions concerning the regulatory status of used aerosol cans under the ... hazardous waste regulations. We are not at this time able to make a categorical determination as to whether various types of cans that may have contained a wide range of products exhibit the characteristic of reactivity*” (emphasis added)).

<sup>22</sup> *See* Letter from David Bussard, Director, Hazardous Waste Identification Division, EPA, to Paul G. Wallach (August 14, 1997) (RCRA Online #14176) (“[f]or the characteristic[ ] of ... reactivity, there is no test method specified as to the operational definition of the characteristic”).

In light of the complexity and confusion surrounding the proper characterization of unsold/returned aerosol cans, some retailers (and other generators) conservatively assume that all such items are hazardous wastes (e.g., due to reactivity). However, this results in unnecessary costs for management of such materials, without any meaningful environmental benefit (especially given that aerosol cans are probably not reactive, as discussed further below). Moreover, it could also result in unnecessary costs for other wastes, if, for example, misclassification of the aerosol cans causes some retailers to misclassify themselves as SQGs or even LQGs, rather than CESQGs. Other retailers (and other generators) may take the opposite approach, assuming that none of their aerosol cans are hazardous wastes. However, this could result in improper management of some aerosol cans, such as those that are not empty and contain chemical products that are listed or characteristic hazardous wastes. Finally, even if all aerosol cans are properly characterized within EPA's current complex rubric, we question whether the full RCRA regulations, which were designed for industrial wastes, are appropriate for handling the consumer aerosol products marketed by retailers -- much less the small percentage of these products that must be handled by retail stores as unsold/returned products -- especially since such rules discourage beneficial recycling, recovery, and reuse of potentially valuable materials.

The Retail Associations believe there is a better way. We discuss below our proposal for issuing guidance on two separate issues that could quickly provide meaningful relief for key categories of aerosol products, as well as for initiating a rulemaking to classify and regulate aerosol cans as universal wastes, which would ultimately provide a reasonable and environmentally protective framework for all aerosol products.

### ***3. Proposed Solutions***

#### ***a. EPA Should Issue Guidance Clarifying That Aerosol Cans Do Not Exhibit the Characteristic of Reactivity***

The Retail Associations urge EPA to issue guidance clarifying that aerosol cans are not reactive hazardous wastes. There is a strong basis for reaching such a conclusion. As noted above, EPA's only suggestion that aerosol cans might be reactive is under the portion of the reactivity definition addressing wastes that are "capable of detonation or explosive reaction if [they are] subjected to a strong initiating source or if heated under confinement." See 40 C.F.R. § 261.23(a)(6). We first focus on the "heated under confinement" prong of this definition, followed by the "strong initiating source" prong. We then address more general reasons supporting the conclusion that aerosols should not be deemed reactive.

#### ***(1) Aerosol Cans Do Not Explode or Detonate When "Heated Under Confinement" As Contemplated By the RCRA Reactivity Characteristic.***

EPA has never explained the method that a generator should use to determine whether a material in general (or an aerosol can, in particular) is capable of exploding or detonating "if heated under confinement." During the original rulemaking establishing the reactivity characteristic, commenters expressed concern that "many inert, non-reactive materials,

including tap water, can be triggered to detonate or explode under confinement when subjected to ... extreme heat and pressure.” See EPA, “Background Document, Reactivity Characteristic” (May 1980) (“Reactivity Background Document”) at 24. The Agency responded by stating that it “is only concerned with substances capable of exploding under reasonable confinement conditions – *i.e.*, those confinement conditions likely to be encountered in disposal environments.” *Id.* (emphasis in the original). More specifically, EPA indicated that the types of disposal environments to be considered included disposal in a sanitary landfill and storage in a drum. *Id.* at 19-20. In the contemporaneous EPA background document on the ignitability characteristic, the Agency said that “the logical choice [for defining that characteristic] would be to use that temperature to which wastes are capable of being subjected during routine management.” See EPA, “Background Document, Ignitability Characteristic” (May 1980) at 10. “After careful study, the Agency ... discovered that liquid wastes are exposed to temperatures of up to 140° [F] in the routine handling of such wastes.” *Id.* at 10-11. For the same reason, it appears that, under the reactivity characteristic, a waste should be deemed reactive only if it is capable of exploding or detonating at temperatures at or below 140°F.<sup>23</sup>

In the case of aerosols, the U.S. Department of Transportation (“DOT”) regulations ensure that the products will not explode or detonate at 140°F. All aerosol cans must meet the DOT requirements in order to be transported in commerce. The rules require that “the metal container must be capable of withstanding without bursting a pressure of one and one-half times the equilibrium pressure of the contents at 130°F.” See 49 C.F.R. § 173.306(a)(3)(ii). Although 130°F is slightly below 140°F, the safety factor of 1.5 can be expected to protect against bursting at 140°F.<sup>24</sup> Moreover, it is worth noting that the

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<sup>23</sup> Cf. Memorandum from John J. Skinner, Director, Office of Solid Waste, EPA, to David Wagoner, Director, Air & Waste Management Division, EPA Region VIII (November 30, 1984) (RCRA Online #12339) (“EPA Ammunition Memorandum”) (concluding that small caliber ammunition up to 0.50 caliber are not reactive, based on tests showing that they do not detonate or explode at 160°F).

<sup>24</sup> This can be demonstrated using the Ideal Gas Law, which provides that  $PV=nRT$ , where P is the pressure of a gas, V is the volume, n is the number of moles, R is the universal gas constant, and T is the temperature (in terms of absolute temperature, such as on the Kelvin scale (°K)). See generally EPA Emission Inventory Improvement Program, Volume II, Chapter 16, “Methods for Estimating Air Emissions from Chemical Manufacturing Facilities” (August 2007) at 16.6-1, available online at <http://www.epa.gov/ttnchie1/eiip/techreport/volume02/>. This equation can also be expressed as  $P/T = nR/V$ . In an aerosol that is no longer being used, all of the items on the right-hand side of this equation are constant (*i.e.*, the volume (V) and the number of moles of gas (n) in the can do not change, and the same is by definition true of the universal gas constant (R)). Thus, the ratio of pressure to temperature (P/T) must remain constant. Stated another way, if the temperature in the can is increased by a certain percentage, the pressure in the can must increase by the same percentage (so that the ratio does not change).

Using this relationship, we can determine how much the pressure within a can would increase if the temperature were increased from (i) the temperature required under the DOT regulations (*i.e.*, 130°F or 327.6°K) to (ii) the temperature required under the RCRA reactivity characteristic (*i.e.*, 140°F or 333.2°K). This would represent a temperature increase of 1.7% (*i.e.*,  $(333.2-327.6)/327.6 = 0.017$ ), and thus would cause the pressure to increase by 1.7%. The aerosol can should be able to withstand this pressure, because, as noted above, the DOT regulations require aerosol cans to withstand 1.5 times the pressure at 130°F (*i.e.*, a 50% increase in pressure). See 49 C.F.R. § 173.306(a)(3)(ii). Indeed, even if an aerosol can were heated to the higher temperature mentioned in the EPA Ammunition Memorandum (*i.e.*, 160°F or 344.3°K), the temperature, and thus the pressure, would increase by only 5.1% (*i.e.*,  $(344.3-327.6)/327.6 = 0.051$ ). This is

“bursting” endpoint specified by DOT is not necessarily the same as the endpoint under the RCRA reactivity characteristic (*i.e.*, explosion or detonation), which would presumably occur only at the same or higher temperatures. In addition, the DOT rules specify that “[n]o leakage or permanent deformation of a container may occur [at 131°F].” *See* 49 C.F.R. § 173.306(a)(3)(v). Accordingly, the DOT regulations, to which all aerosol cans are subject, ensure that aerosol cans will not explode or detonate “when heated under confinement,” within the meaning of the RCRA regulation on the reactivity characteristic.

**(2) *Aerosol Cans Do Not Explode or Detonate When “Subjected to a Strong Initiating Source” As Contemplated by the RCRA Reactivity Characteristic.***

The second prong of the relevant part of the RCRA reactivity definition is designed to ensure that wastes do not explode or detonate when “subjected to a strong initiating source.” Although EPA has not elaborated on this language, it appears to address the stability of waste under conditions of pressure or shock. *See, e.g.*, Reactivity Background Document at 24 (discussing wastes being “subjected to ... pressure”). Indeed, EPA has previously determined that certain types of waste ammunition are not reactive based solely on their ability to withstand the shock induced by “drop tests ... to simulate handling errors” (as well as elevated temperatures, under the “heated under confinement” prong, as discussed above). *See* EPA Ammunition Memorandum.

In the case of aerosols, the DOT rules again ensure that the materials will not explode or detonate when subjected to “handling errors” such as dropping. One of the fundamental DOT requirements for packagings is that they be “designed, constructed, maintained, filled, [their] contents so limited, and closed, so that under conditions normally incident to transportation ... there will be no identifiable ... release of hazardous materials to the environment.” *See* 49 C.F.R. § 173.24(b)(1). Of course, among the “conditions normally incident to transportation” are jostling, bumping, tipping, and dropping. Similar conditions also occur during normal use, and common sense indicates that aerosol cans do not explode or detonate under such conditions. Thus, it seems clear that aerosol cans will not explode or detonate when “subjected to a strong initiating source,” as that phrase is used under the RCRA reactivity characteristic.

**(3) *Aerosol Cans Are Not the Type of Waste Intended to be Covered by the RCRA Reactivity Characteristic.***

When EPA originally promulgated the RCRA reactivity characteristic in 1980, it stressed that “the problems posed by reactive wastes appear to be confined to a fairly narrow category of wastes.” *See* Reactivity Background Document at 10. The Agency noted that “[m]ost generators of reactive wastes are aware that their wastes possess this property and require special handling. This is because such wastes are dangerous to the generators’ own operations.” *See* 45 Fed. Reg. at 33,110. EPA said that it was adopting a “common sense

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well within the 50% safety factor provided by the DOT regulations, and thus the can would not be expected to burst, much less to explode or detonate, at the higher temperatures (*i.e.*, 140°F or 160°F).

approach” in which “the Agency was leaving the determination of reactivity hazard up to the reasonable judgment of the generator based upon the generator’s past experience with the waste.”<sup>25</sup> Moreover, “[i]t will ... only be in a rare instance that a generator would be unsure of the reactivity class of the waste.” See Reactivity Background Document at 11; see also 51 Fed. Reg. 21,648, 21,649 (June 13, 1986) (“characteristics define broad classes of wastes that are *clearly* hazardous” (emphasis added)).

Aerosol cans clearly do not exhibit any indicia of reactive wastes. As discussed above, billions of aerosol cans are discarded each year – hardly the “narrow category of wastes” envisioned by EPA as being covered by the reactivity characteristic. Moreover, the hundreds of millions of households and businesses that use aerosol cans do not generally perceive the products (or the wastes) as particularly “dangerous to [their] operations.” The “common sense” cited by EPA would not lead a generator to conclude that aerosol cans are reactive hazardous wastes. Indeed, even though EPA indicated that reactivity would be obvious (such that it would be a “rare instance” where there was uncertainty about the status of a waste), the Agency has repeatedly said (as discussed above) that it could not itself make a determination as to if/when aerosol cans might be reactive. It is also worth noting that EPA in 1980 cited numerous “damage incidents” to support the final RCRA characteristic of reactivity, but not a single one of these incidents involved aerosol cans, despite their ubiquitous nature. See Reactivity Background Document, Appendix I.

In light of the above, aerosol cans clearly are not the type of material intended to be covered by the RCRA reactivity characteristic. Moreover, as discussed above, they do not appear to meet the regulatory definition of reactive hazardous wastes, because the DOT regulations ensure that aerosol cans will not explode or detonate when “heated under confinement” or when “subject to a strong initiating source,” within the meaning of those phrases under the RCRA definition of reactivity. The Retail Associations therefore ask EPA to clarify that waste aerosol cans are not reactive hazardous wastes, and are hazardous (if at all) based only on other factors, such as whether they contain listed commercial chemical products.

**b. *EPA Should Also Issue Guidance that Aerosol Cans Containing Non-Hazardous Chemical Products and Propellants that Are Common Fuels Are Not Hazardous Wastes If Recycled to Recover the Propellant for Fuel Use***

The Retail Associations also urge EPA to issue guidance clarifying that aerosol cans containing non-hazardous chemical products and propellants that are commonly used as fuels (*e.g.*, propane and butane) are not hazardous wastes if they are destined for recycling in order to recover the propellants for use as fuels or for use in making fuels. Such guidance would be consistent with existing Agency rules and guidance, and it would encourage the sustainable management of the cans and their contents through recycling. Moreover, because aerosol cans are a substantial part of the potentially hazardous waste stream for retailers, and cans of this type represent a significant amount of the total for many retail establishments, guidance from EPA along these lines would enable some

retailers to reclassify stores as CESQGs,<sup>26</sup> thereby minimizing unnecessary and inappropriate regulatory burdens that are only caused by the improper classification of these aerosol cans.

EPA has previously stated that aerosol cans that are either unused or used but not empty are containers of two distinct commercial chemical products: the chemical product intended to be delivered and the propellant required for delivery.<sup>27</sup> For the subset of aerosol cans that we have identified, the chemical product intended to be dispensed is non-hazardous, and thus clearly not a RCRA hazardous waste. Moreover, EPA has clearly stated that the other component -- the propellant -- would not be a solid or hazardous waste, even if it is ignitable, if it is destined to be burned for energy recovery.<sup>28</sup> Since the aerosol can is simply a container for two materials, neither of which are RCRA hazardous wastes, it also is not a RCRA hazardous waste.<sup>29</sup>

The same conclusion applies whether the aerosol can is a compressed gas aerosol can (in which the propellant remains in a gaseous state above the liquid product) or a liquefied gas aerosol can (in which the propellant is in a liquefied state and is commingled with the liquid product). *See generally* T. Harris, "How Aerosol Cans Work," available online at <http://science.howstuffworks.com/innovation/everyday-innovations/aerosol-can.htm>. With respect to compressed gas aerosols, it is worth noting that EPA has long maintained that, under the ignitability characteristic, each phase of a two-phase material should be evaluated separately.<sup>30</sup> Thus, in the present case (where ignitability is the only

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<sup>26</sup> Several members of the Retail Associations (all of which sell aerosol products, but do not sell nicotine products) estimate that well over half of their stores would be reclassified as CESQGs if *all* aerosols were exempted from "counting" for purposes of determining generator status. Moreover, as indicated below, one member reported that half of their aerosols are of the type addressed here (*i.e.*, those with non-hazardous chemical products and propellants that are common fuels). Accordingly, it appears that a significant percentage of these stores could be reclassified as CESQGs under the guidance we are requesting. The effect would likely be magnified if low-concentration nicotine products are reclassified as non-acutely hazardous (as discussed above), since for many stores the only wastes that prevent them from being classified as CESQGs are nicotine products and aerosols.

<sup>28</sup> *See* EPA Propellant Memorandum ("Since [butane and propane propellants] are fuels and being burned for energy recovery, they would not fall within the definition of a solid waste and would consequently not be considered hazardous wastes"); 40 C.F.R. § 261.2(c)(2)(ii) (commercial chemicals products destined to be used as fuels or to make fuels "are not solid wastes if they are themselves fuels").

<sup>29</sup> *Cf.* 45 Fed. Reg. 78,524, 78,527 (November 25, 1980) (clarifying that, for commercial chemical products, "it is the hazardous material residue in a container, rather than the container itself, that is controlled under the regulations if and when the residue is discarded or intended to be discarded").

<sup>30</sup> *See, e.g.*, Letter from Michael Shapiro, Director, Office of Solid Waste, EPA, to T.L. Nebrich, Jr., Technical Director, Waste Technology Services, Inc. (August 24, 1995) (RCRA Online #13759) (stating that to assess the potential ignitability of a waste containing liquids and solids, "[y]ou should separate the solid/liquid phases of your samples and test each phase separately"); 60 Fed. Reg. 3089, 3092 (January 13, 1995) (explaining how a waste should be tested to determine if liquids are present, in which case the liquids should be tested alone for ignitability).

characteristic of concern), the gas propellant and the liquid chemical product should be evaluated separately, as discussed above.

With respect to liquefied gas aerosol cans, where the liquefied propellant and the liquid chemical product are commingled, EPA has previously addressed a somewhat analogous situation. In particular, the Agency considered the regulatory status of mixtures of common liquid fuels and water, and determined that they are not hazardous wastes -- if the fuel component is recovered and burned for energy recovery -- because they are "mixture[s] which contain[ ] a commercial chemical product [that is] normally a fuel [and will be used as such]." *See, e.g.*, Letter from Marcia E. Williams, Director, Office of Solid Waste, EPA, to Joan Keenan (March 19, 1986) (RCRA Online #11138) (discussing mixtures of gasoline and water). Similarly here, the contents of the aerosol cans are mixtures containing a commercial chemical product that is normally a fuel (*i.e.*, the propellant) and that will be recovered from the mixture (which also contains a non-hazardous commercial chemical product) and then used as a fuel. Significantly, moreover, the test methods for determining the ignitability of a liquid must be performed at atmospheric pressure (*i.e.*, 760 mm Hg), and the propellant, at that pressure, would be a gas separate from the liquid chemical product.<sup>31</sup> Once again, this supports a separate analysis of the propellant and the chemical product, and as discussed above, under such an analysis, the cans would not be classified as hazardous wastes.

Clarifying the regulatory status of these aerosol cans in guidance would significantly encourage generators to send these cans to a facility where the propellants can be recovered and used beneficially as fuels (and where the scrap metal can be recycled and the non-hazardous liquid chemical products can otherwise be properly managed). The generators would then not have to store and ship these aerosol cans as hazardous wastes. In addition, for those facilities where these aerosol cans represent a large percentage of the potentially hazardous wastes they handle, the facilities may be able to qualify as CESQGs, reducing regulatory burdens for their other hazardous wastes.

The environmental benefits could be substantial. Members of the Retail Associations have reported that aerosol cans account for up to 50% or even more of the potentially hazardous unsold/returned products they handle, and one member has indicated that fully half of their unsold/returned aerosol cans contain non-hazardous chemical products and propellants that are common fuels. Thus, the requested guidance from EPA might well facilitate environmentally sound recycling for 25% of the total potentially hazardous unsold/returned products for many retailers. Although some retailers may not have the resources or expertise to identify, segregate, and separately manage these particular types of aerosol cans, the guidance would incentivize retailers (and others) to take these steps, or to hire a contractor to do so for them. In this way, EPA could easily and quickly produce a highly favorable outcome for the retail industry and simultaneously promote more sustainable materials management.

c. ***EPA Should Classify and Regulate Aerosol Cans as Universal Wastes***

The Retail Associations believe that the most effective long-term solution for addressing the aerosol can issue, both for the retail industry and others (*e.g.*, manufacturers and users of aerosol cans), would be to classify and regulate such products as universal wastes. The universal waste program was designed specifically for these types of materials, which are generated ubiquitously, pose relatively low risks, are difficult to segregate into regulated and non-regulated streams, and would be better managed if the full RCRA hazardous waste regulations were not applied during generation, collection, and transport. Two states that are leaders on environmental issues – California and Colorado – have long classified and regulated aerosol cans as universal wastes, and their programs for doing so appear to have been highly successful. *See* Cal. Health & Safety Code § 25201.16; 6 Colo. Code Regs. 1007-3, Section 273.2(d). We urge EPA to follow their lead.

We briefly discuss below why we believe aerosol cans meet the criteria set forth in the RCRA regulations for addition to the list of universal wastes. *See* 40 C.F.R. § 273.81. Although a full discussion of the relevant criteria is beyond the scope of these comments, we believe the discussion here is sufficient to demonstrate the appropriateness of a universal waste designation for aerosol cans. We would welcome the opportunity to provide further support, as necessary.

**(1) CRITERION #1: *The waste or category of waste, as generated by a wide variety of generators, is listed in subpart D of part 261 of this chapter, or (if not listed) a proportion of the waste stream exhibits one or more characteristics of hazardous waste identified in subpart C of part 261 of this chapter. [40 C.F.R. § 273.81(a)]***

EPA has long stated that aerosol cans are hazardous if “(1) they contain a commercial chemical product [that is] on the 40 CFR 261.33(e) or (f) lists or [that] exhibit[s] one or more of the hazardous waste characteristics, and are not empty ... and/or (2) they exhibit any of the characteristics of hazardous waste.” *See* Lowrance Aerosol Letter. As discussed in detail above, the Retail Associations do not believe that aerosol cans are reactive hazardous wastes (under the second part of the quotation above). However, EPA has been more ambiguous on this point. And, in any event, there can be no doubt that some aerosol cans contain commercial chemical products that are either listed or characteristically hazardous, such that the cans themselves (if not empty) may be classified as RCRA hazardous.

While it is likely that many – perhaps even most – aerosol cans are not hazardous, aerosol cans may still be designated universal wastes. Indeed, EPA has long recognized that one of the key benefits of the universal waste rule is that it “eliminates [the need for] identifying, documenting, and keeping separate regulated waste and unregulated waste.” *See* 60 Fed. Reg. 25,492, 25,513 (May 11, 1995). The Agency noted that it “wishes to encourage persons to manage both regulated waste and unregulated waste in the same collection systems ... [a]s long as all commingled waste is managed in a system that meets the

requirements of the universal waste regulations.” *Id.* EPA indicated that this approach was particularly attractive in situations where “an across the board hazardous waste determination [could not be made] for entire categories of waste” and/or where a waste “either becomes hazardous or is no longer hazardous due to changes in manufacturing practices [or product composition].” *Id.* Given the difficulty in determining which wastes aerosols are hazardous and which are not, they seem to be an ideal candidate for designation as universal wastes.

**(2) CRITERION #2: *The waste or category of waste is not exclusive to a specific industry or group of industries, [and] is commonly generated by a wide variety of types of establishments (including, for example, households, retail and commercial businesses, office complexes, conditionally exempt small quantity generators, small businesses, government organizations, as well as large industrial facilities).* [40 C.F.R. § 273.81(b)]**

As discussed above, the retail industry and its component sectors handle a significant quantity of unsold/returned aerosol cans. However, a much larger quantity of waste aerosol cans are generated by the persons and entities that purchase and use aerosol products. Households are by far collectively the largest generators of such wastes. *See, e.g.,* 2014 CSPA New Release (cited above) (chart) (indicating that 27.3% of aerosol products produced in the U.S. are households products, and an additional 24.9% are personal care products).

However, a wide variety of businesses generate aerosol wastes, as well, by using up the products. For example, vehicle fleet owners and service centers commonly use aerosol lubricants, paints, sealants, and the like, and the same is true for virtually anyone who owns or services industrial equipment. Office buildings, hotels, and cleaning services use a variety of aerosol cleaning products for both hard surfaces (*e.g.*, wood polish, bathroom cleaners, etc.) and fabric surfaces (*e.g.*, carpet cleaners and upholstery fresheners). Healthcare facilities use aerosol inhalers and disinfectants. Exterminators and businesses with pest control problems use aerosol pesticides. Hair salons use aerosol hair sprays, styling gels, and the like. Laundries and dry cleaners use aerosol spot removers and fabric protectors. Restaurants use aerosol cooking sprays, and other food products. The list of businesses, large and small, that use products dispensed with aerosol cans and generate the cans as wastes is almost endless.

Moreover, federal, state, and local government agencies are also major users and generators of aerosols, inasmuch as they operate large office buildings, infrastructure facilities, healthcare centers, schools, parks, and facilities where large numbers of individuals are housed (*e.g.*, military installations and prisons). Although most of these government and commercial users of products in aerosol cans are not required to handle the used cans as hazardous wastes (*e.g.*, because they qualify as CESQGs), they collectively constitute a major portion of the used aerosol can stream.

Clearly, waste aerosol cans are generated ubiquitously in an extremely wide range of settings, both industrial and not. This fact makes them ideal candidates for the universal waste rule. EPA has long stressed that “[o]ne of the problems the universal waste rule is designed to address is that a relatively large portion of some waste types are exempt from the hazardous waste regulations (*i.e.*, are generated by households and CESQGs) and are indistinguishable from the regulated portion of the waste. This ‘look alike’ problem makes implementation of the [standard RCRA] program for these wastes extremely difficult.” *See* 60 Fed. Reg. at 25,514. Aerosol cans appear to be precisely the type of material that EPA had in mind. A large proportion of aerosol cans are generated as wastes by exempt households and CESQGs, but regulated entities generate a substantial amount of aerosol wastes, as well, and such wastes are typically indistinguishable from the aerosols generated by exempt persons.

**(3) CRITERION #3: *The waste or category of waste is generated by a large number of generators (e.g., more than 1,000 nationally) and is frequently generated in relatively small quantities by each generator.***  
[40 C.F.R. § 273.81(c)]

Virtually all households in the U.S. can be expected to generate at least some waste aerosol cans. That alone accounts for approximately 100 million generators, making the wastes among the most common potentially hazardous wastes generated in the country. Although these generators would be excluded from regulation under the household waste exclusion, the numbers of business, government, and other institutional generators that are potentially regulated (unless they qualify as CESQGs) is similarly very large. As noted above, the number of retail establishments handling unsold/returned aerosol cans is likely well in excess of 100,000. We have not made an effort to quantify the number of generating establishments in other industries, but given the wide range of such industries (as noted above), it seems almost certain that the numbers of such generators would be in the millions.

The amounts generated by each generator likely vary substantially. Members of the Retail Associations report that individual stores may handle between 25 lbs./year and 840 lbs./year of unsold/returned aerosol cans. The amount may vary based on a number of factors including product mix and store size. Each household user of aerosols presumably generates a fairly limited number of waste aerosol cans each month or year. Business users of aerosol products may generate somewhat larger amounts, depending upon their size and the nature of their operations. However, it might reasonably be expected that if a facility requires a very large amount of a particular chemical product, it would use a different means of application. For example, a facility that uses large quantities of spray paint would likely obtain a bulk liquid paint that could be aerosolized using compressed gas, rather than using individual aerosol cans. Accordingly, it appears that waste aerosol cans are generated by large numbers of generators, most commonly in relatively small quantities.

**(4) CRITERION #4: *Systems to be used for collecting the waste or category of waste (including packaging, marking, and labeling practices) would ensure close stewardship of the waste. [40 C.F.R. § 273.81(d)]***

EPA has stated that “the goal of this factor is to facilitate addition of wastes to the universal waste system that are most likely to be collected, and to be collected in a manner that ensures good management of the waste.” See 60 Fed. Reg. at 25,514. The Retail Associations believe that aerosol cans are precisely the type of materials that EPA had in mind. As an initial matter, aerosol cans constitute a large stream that is readily identifiable and easy to segregate for special management. Indeed, many of the key elements needed for proper stewardship of this waste stream are already in place. According to the CSPA, approximately 5,300 communities across the nation include aerosol cans in their recycling programs. See, e.g., <http://www.cspa.org/news-media-center/news-releases/2013/11/recycle-aerosols-on-america-recycles-day/>. Moreover, 65% of Americans have access to local aerosol recycling programs. See 2014 CSPA News Release (cited above) (chart). In addition, several major waste services providers have developed and are marketing programs for collecting and recycling waste aerosol cans from consumer and/or business generators.

Notwithstanding these efforts, it appears that vast quantities of aerosol cans are simply being disposed of by consumers in the ordinary trash. Designating aerosol cans as universal wastes would significantly facilitate collection and recycling programs, and would encourage their use. The requirements of the universal waste rule would also ensure that these activities are performed in a manner that is protective of human health and the environment.

**(5) CRITERION #5: *The risk posed by the waste or category of waste during accumulation and transport is relatively low compared to other hazardous wastes, and specific management standards proposed or referenced by the petitioner (e.g., waste management requirements appropriate to be added to 40 CFR 273.13, 273.33, and 273.52; and/or applicable Department of Transportation requirements) would be protective of human health and the environment during accumulation and transport. [40 C.F.R. § 273.81(e)]***

Waste or unsold/returned aerosol cans present relatively low risks during accumulation and transport. As an initial matter, these aerosol cans are the same as the aerosol cans that are distributed and used regularly by households and businesses of virtually every type, except that they generally contain significantly less of the propellant and chemical product than the unused items. Moreover, as noted above, roughly half of all aerosol wastes appear to be generated by households, and are frequently disposed of in the ordinary trash.

It is particularly noteworthy that aerosol cans are not “naked” chemicals, as might be the case, for example, with bulk pesticides (some of which are already classified as universal

wastes). See 40 C.F.R. § 273.3 (classifying certain pesticides as universal wastes). Rather, aerosols by their very nature are engineered containers – containers that by law (as discussed in detail above) must meet DOT requirements for design, filling, testing, ability to withstand heat and shock, etc. See generally 49 C.F.R. § 173.306(a)(3). These requirements help minimize risks during both accumulation and transport. Moreover, during transport, the used aerosols, like unused aerosols, are subject to additional DOT controls. For example, the aerosols must be packed in strong outer packagings, which among other things, must meet general packaging requirements for protectiveness. See 49 C.F.R. § 173.306(a)(3)(iv) and 171.8 (defining “strong outer packaging”). In addition, the outer packagings must be specially marked. See 49 C.F.R. § 173.306(i). These requirements should obviate the need for further regulation during transport, and substantially reduce the need for further regulation during accumulation, as well.

To the extent that additional regulation is warranted, the requirements of the universal waste rules should be sufficient. They require that the wastes be stored in a protective manner, that containers be labeled and marked to indicate their contents, that employees be trained, that any releases be addressed appropriately, and that the wastes be sent to a properly authorized facility in a timely fashion. In addition, if a facility generates or accumulates large quantities, they must notify EPA and track all shipments of the waste into and out of the facility. These safeguards have proven highly effective for other universal wastes, and the Retail Associations believe they would likewise be effective for aerosol cans (as demonstrated in California and Colorado).

**(6) CRITERION #6: *Regulation of the waste or category of waste under 40 CFR part 273 will increase the likelihood that the waste will be diverted from non-hazardous waste management systems (e.g., the municipal waste stream, non-hazardous industrial or commercial waste stream, municipal sewer or stormwater systems) to recycling, treatment, or disposal in compliance with Subtitle C of RCRA. [40 C.F.R. § 273.81(f)]***

As discussed above, the determination of whether individual aerosol cans are wastes or non-wastes, and hazardous or non-hazardous, can be extremely difficult. With so many generators in so many different industries, many of which do not generally handle hazardous wastes and thus are particularly unsuited to making a proper determination, it is almost inevitable that mistakes will be made. Indeed, some generators may not even be aware of the need to make a determination or the possible implications of a hazardous waste determination. This is especially true given that the waste aerosol cans are in many cases identical to, or at least similar to, the products that business employees use and discard at their households and therefore are excluded from RCRA regulation. Thus, it seems likely that large numbers of generators of potentially hazardous aerosol cans are routinely disposing of such products in the ordinary trash.

Regulating aerosol cans as universal wastes would significantly reduce this problem. As EPA noted in the final rule designating lamps as universal wastes, “the streamlined requirements of the universal waste program will give [unsophisticated] generators a more

accessible starting point for good environmental management. If regulatory requirements are simpler ... more hazardous waste[s] will be handled properly ... instead of going to solid waste landfills or to municipal waste combustors. Improved management will ... lead to a reduction in the total amount of hazardous waste emissions to the environment.” See 64 Fed. Reg. 36,466, 36,473 (July 6, 1999).

Moreover, regulating waste aerosol cans as universal waste would encourage better management of such wastes by more sophisticated generators. For example, such generators would have less reason to try drawing fine distinctions between used aerosol cans that are wastes versus non-wastes, or hazardous versus non-hazardous. Many generators – perhaps most – would simply direct all their used aerosol cans through the universal waste system. EPA has previously acknowledged that this type of result can be an important reason for designating wastes as universal.<sup>32</sup> Moreover, a universal waste designation would facilitate consolidation of waste aerosol cans from multiple facilities and/or generators, which in turn would provide economies of scale that would likely make recycling options more viable.<sup>33</sup>

**(7) CRITERION #7: *Regulation of the waste or category of waste under 40 CFR part 273 will improve implementation of and compliance with the hazardous waste regulatory program.* [40 C.F.R. § 273.81(g)]**

Designating aerosol cans as universal wastes would not only encourage environmentally preferred outcomes, as noted above, but would also improve implementation and compliance. Not only would generators generally be relieved of the requirement to assess whether individual cans are wastes or non-wastes, and hazardous or non-hazardous, but the same would be true for federal and state inspection and enforcement personnel. Thus, implementation would certainly be improved. Moreover, as EPA has noted, “[i]f regulatory requirements are simpler [as a result of a universal waste rule], the compliance rate will improve.”<sup>34</sup>

As discussed more fully above, aerosol cans are ideal candidates for inclusion in the universal waste rule. Such a change would be of substantial benefit to the retail industry, but would also benefit a host of other business, government, and other institutional generators of aerosol wastes, as well as federal and state environmental agencies. We therefore urge EPA to initiate a rulemaking for designating aerosol cans as universal wastes as soon as practicable.

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<sup>33</sup> Cf. 70 Fed. Reg. 45,508, 45,511 (August 5, 2005) (a universal waste designation “will allow generators ... to send [their wastes] to a central consolidation point. ... Under the universal waste rule, a handler of universal waste can send the universal waste to another handler, where it can be consolidated into a larger shipment for transport to a [recycling] facility”).

<sup>34</sup> See 64 Fed. Reg. at 36,473; see also 70 Fed. Reg. at 45,511 (“adding [waste] to the universal waste rule will improve compliance with the hazardous waste regulations by making it more achievable”).

**III. EPA SHOULD CONDITIONALLY EXCLUDE UNSOLD/RETURNED PRODUCTS WHEN HANDLED IN AN ALTERNATIVE PROGRAM FOR THE RETAIL SECTOR THAT IS EQUALLY PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AND INCENTIVIZES SUSTAINABLE MATERIALS MANAGEMENT.**

**Background and context:** Although the proposed solutions for nicotine products and aerosols would make a significant impact on the sector, the Retail Associations also propose a comprehensive solution for unsold/returned products to facilitate safe handling in reverse distribution and to optimize opportunities for reuse or recycling. As discussed above, retailers handle vast numbers of products in forward distribution every day, and consumers use, consume or dispose of these products without additional regulation. For the relatively small percentage of consumer products that are unsold or returned, the Retail Associations believe a rule change is necessary to facilitate safe handling of unsold/returned products, while promoting resource conservation and sustainable materials management.

As discussed in detail in Section A. below, we believe such an alternative approach is necessary because RCRA's manufacturing-oriented framework does not work for the retail sector, where the patterns of hazardous waste generation differ dramatically from an industrial setting. The costs imposed on the retail sector are disproportionate to the risks associated with unsold/returned products handled in reverse distribution. And significantly, the current RCRA regulations actually discourage retailers from managing unsold/returned products sustainably through appropriate reuse or recycling.

**Proposed solution:** An alternative, equally protective, program could take the form of a conditional exclusion from the RCRA definition of solid waste for wastes generated or collected by retail stores and managed in a reverse distribution system under a streamlined set of conditions to ensure the protection of human health and the environment, enhance compliance, encourage reuse/recycling and better management of unsold/returned products in reverse distribution, and create opportunities for increased sustainability. A full discussion of specific conditions for the exclusion is beyond the scope of these comments. But if EPA is open to pursuing such a rulemaking, we would be pleased work with the Agency to develop appropriate conditions that protect human health and the environment while encouraging responsible and sustainable management of unsold/returned products in reverse distribution.

As discussed more fully in Section B below, a meaningful alternative program would include the following key elements:

- ***“Point of Generation” for Waste Determination:*** Unsold/returned products would not be considered wastes until the point where proper judgments could be made about a product's disposition, which may be at a collection center where products can be consolidated and opportunities can be identified for reuse, resale, or recycling. Whether or not reuse or recycling opportunities are available depends on a number of factors, including the quantity of products available and the location of

the products. Facilitating transportation and consolidation of unsold/returned products from individual stores to collection points by delaying the “point of generation” determination would allow decisions to be made about the best disposition of the products across all stores, considering all relevant economic and environmental factors. This way, fewer useful products or recyclable materials would end up in hazardous waste landfills or other disposal facilities. EPA should allow decisions about whether a product is a waste to be made after consolidation at reverse distribution centers, allowing economies of scale to develop and creating new opportunities for reuse, resale, and recycling.

- **“Hazard Characterization.”** Hazard characterization of unsold/returned products would occur at the point where proper judgments could be made about a product’s contents and hazard characteristics. A person with technical expertise can most effectively undertake the analysis necessary to ensure that unsold/returned products are managed properly. Typical retail employees are not equipped with the technical skills or knowledge of product manufacturing processes or formulations to allow them to make complicated regulatory characterizations.<sup>35</sup> Inaccurate characterizations result in some hazardous wastes being managed as non-hazardous, potentially creating risks for human health and the environment, while some non-hazardous wastes may be managed as hazardous, using up valuable hazardous waste management resources and squandering useful products or materials. Characterizing wastes at the most suitable location, which may be a collection center, would increase the likelihood an accurate characterization is made and thereby increase the likelihood that hazardous wastes are managed appropriately and scarce hazardous waste management resources are conserved.
- **Transportation:** Unsold/returned products could be transported in reverse distribution under conditions designed to ensure they are handled in a protective manner commensurate with their product-like status, just as they are handled in forward distribution, including applicable Department of Transportation (“DOT”) requirements for hazardous materials transportation, as well as some basic standards for labeling, packaging, and tracking. Under such conditions, a hazardous waste transporter and hazardous waste manifest would be unnecessary.
- **Store Status Determination:** Products managed under the alternative program would not count towards a store’s generator status, thereby eliminating the disproportionate burdens on retailers and administrative agencies that follow from achieving “large quantity generator” status, even if episodically.

Below, we describe the current disparity between the existing RCRA regulations and realities of retail operations and the resulting compliance challenges, disproportionate costs, and disincentives for sustainable materials management through recycling. We then

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<sup>35</sup> We discussed in detail above the complicated analysis required for characterizing unsold/returned aerosol products only. Retailers face these complex determinations for a wide range of unsold/returned consumer products.

explain how a conditional exclusion for unsold/returned products would rectify this disparity, reduce costs, encourage recycling, and enhance compliance and sustainability.

**A. Current RCRA Regulations Are Inappropriate for Unsold/Returned Products.**

**1. *RCRA's manufacturing-oriented framework does not work for the retail sector, where the hazardous waste generation pattern is different.***

RCRA requirements for generators of hazardous waste are designed for the industrial or manufacturing context where a relatively small number of waste streams are consistently generated at a few points during the production process that likely occurs in a regular fashion and at regular intervals. Industrial and manufacturing facilities usually require highly trained technical staff to oversee operations, with visibility into and technical understanding of the characteristics of the waste streams generated. The generation pattern for the retail sector is in stark contrast.

- a. ***Number and variety of wastes.*** Retailers manage products by stock keeping unit ("SKU"). With tens of thousands of SKUs per store and hundreds of thousands across a national chain, keeping track of which SKUs would be hazardous wastes when discarded is a herculean task, complicated by frequent changes to product formulations or introductions of new products, marketed by thousands of different suppliers. The members of the Retail Associations estimate that they have hundreds to tens of thousands of different products that would be handled as hazardous waste if unsold/returned. In some cases, up to 60% of all products handled at those stores may be considered hazardous waste depending on their composition and condition.
- b. ***Knowledge of waste characteristics.*** Retailers buy, distribute, and sell products. They do not have specialized knowledge of those products' ingredients or properties that would enable them to make accurate hazardous waste determinations. Moreover, characterizations of products are not necessarily straightforward. How to properly characterize a talking teddy bear with electronic components or a multi-pack product (e.g., first aid kit) is a complex endeavor for a RCRA expert, much less a typical retail employee. Even highly trained individuals could come to reasonably different conclusions about how a particular product should be characterized. Moreover, the store level staff that typically handles unsold or returned consumer products typically experiences high turnover. Accordingly, not only do they not possess the education to make detailed regulatory determinations, they may have few opportunities to gain comprehensive knowledge of a store's complete product line. For these reasons, it is also difficult to achieve consistency in characterizations across stores.

Retailers indicate that they use a variety of methods to determine whether products are hazardous waste if unsold/returned. Those include reviewing the product's Safety Data Sheets, where available; information technologies that capture product characteristics submitted from suppliers; in-store handheld terminals (scan guns); third-party analysis; analysis of product characteristics, such as flash point; standard operating procedures like decision trees; product labels; online searches; and other techniques. Beyond the one-time installation costs, the cost of implementing these systems varies significantly, but may be as high \$1,500 per store per year. We would expect these costs to be even higher for smaller retailers that cannot spread regulatory costs across large numbers of stores and do not have the in-house expertise to develop these systems or the commercial influence to encourage suppliers to develop such systems on the retailer's behalf.

- c. ***Many different waste generation scenarios involving many different employees.*** There are many different scenarios that could result in “generating hazardous wastes” within the meaning of the current regulations at retail stores, including a customer service representative accepting returns of used or unused products or a stock clerk removing discontinued or recalled products from store shelves. Whether or not a product is a waste may depend on a number of factors not within the control of store personnel, including potential outlets for recycling, resale, or donation where those opportunities may become available only after consolidation of products from multiple stores.
  
- d. ***Number of generators.*** Retailers are widely located throughout the United States. Census data show over 1,000,000 retail facilities in the United States. *See* NODA at 8932. EPA estimates that more than 41,000 retail locations generate hazardous waste, while over 18,000 retail locations would be subject to the RCRA generator requirements. *See id.* We believe the actual number of stores subject to regulation may be much larger, especially considering the number of stores potentially handling nicotine smoking cessation or other non-tobacco nicotine-containing products or generating larger amounts of hazardous waste episodically. The high number of retail facilities potentially generating hazardous wastes, scattered throughout the country, represents a far different pattern of waste generation than in the industrial sector. For example, EPA's RCRAInfo database shows about 139,105 small quantity generators (which includes some reporting retail locations in addition to industrial generators) and about 31,163 large quantity generators (which includes at least one retailer's locations in addition to industrial generators).<sup>36</sup> If only a tenth of retailers generated hazardous waste in quantities above the threshold for regulation (*i.e.*, about 100,000) that would represent more than half of all RCRA-regulated generators.

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<sup>36</sup> *See* EPA, RCRAInfo Database, <http://www.epa.gov/enviro/facts/rcrainfo/search.html> (searching for large quantity and small quantity generators).

The current RCRA framework simply does not work for the vast retail sector where each store may “generate” a wide range of wastes at multiple points within a store, store personnel do not have access to the technical information needed to make accurate decisions about how the wastes should be characterized, and high employee turnover limits the effectiveness of extensive training.

***2. The burdens imposed by RCRA on the retail sector are disproportionate to the risks presented by wastes from unsold/returned products.***

The vast majority of the wastes handled by the retail sector are identical to the wastes that are excluded from RCRA regulation as “household hazardous wastes,” in 40 CFR § 261.4(b)(1). Put another way, a consumer is permitted as a matter of law to dispose of a product purchased in a retail store, but the same product must be handled as a hazardous waste by the store. Of the products entering stores through forward distribution, only a small amount are managed by retailers in reverse distribution, and one retailer estimates 0.1% of products in reverse distribution are disposed of as hazardous waste. Thus, the amount discarded by retailers is just a small fraction of what is discarded as household hazardous wastes, so it does not make sense to subject unsold/returned products to full RCRA regulation when a much larger quantity of the same type of wastes is unregulated.

When unsold/returned products are managed as hazardous wastes in the store, many retail stores would qualify as LQGs – the same regulatory status as steel mills and tire manufacturers – in any given month because they handle relatively small quantities of nicotine products and/or an unpredictable flow of other potentially hazardous wastes. Unlike industrial facilities, retailers, by their very nature, are episodic generators of hazardous waste. Generation and accumulation rates vary depending on customer returns, overstocks, seasonality, accidental product damage, and recalls. This inherent variability means that retail facilities can episodically fluctuate from conditionally exempt to SQG to LQG, thereby creating confusion for retailers regarding reporting, training, and other program requirements. Episodic generation resulting in LQG status unnecessarily and unreasonably burdens retail stores by requiring biennial (or more frequent) reports, creating and updating contingency plans, training a high turnover workforce, and implementing LQG emergency response procedures. Because the LQG requirements require significant investment of resources and some states require generators to maintain LQG status in subsequent months, many retailers choose to manage their stores as LQGs year-round to avoid major disruptions to operations.

As mentioned in the section on nicotine products above, the members of the Retail Associations estimate that the cost of managing a store as an LQG rather than a CESQG can range from \$1,000 up to \$14,000 per store per year depending on a variety of factors, with training ranking as one of the highest costs. Because there are potentially limitless points in a retail store that could fit a strict regulatory definition of where “waste” is “generated” for RCRA purposes (*e.g.*, customer service desks, each store shelf), a wide range of store personnel could be considered to be involved in “waste management activities” simply because they removed a product from a shelf or accepted an unwanted product back from a consumer. Under today’s regulations, all of these store associates

could be subject to additional and potentially extensive training for handling the same products that store employees handle every day for distribution or sale. While store associates may receive training, high turnover in the retail sector means the cost of training is not necessarily proportionate to increased protection of human health or the environment. We expect that these costs would be even higher for smaller retailers that do not have in-house regulatory specialists and do not have the market power to obtain assistance from their suppliers.

For both LQGs and SQGs, when unsold/returned products are managed as hazardous wastes in the store, they must be sent off-site using a hazardous waste manifest and transported by a licensed hazardous waste transporter. The high costs of transportation are compounded when wastes must be transported across long distances to the limited number of permitted TSDFs that accept hazardous wastes commercially. Because unsold/returned products are in substantially the same form, quantity, and packaging as products handled safely by retailers in forward distribution, by store personnel, and by consumers, reverse distribution simply does not warrant the extraordinary measures imposed by the current RCRA regulations.

Many retailers take a conservative approach and handle most unsold/returned products that could be hazardous as hazardous wastes from the store. But this means that potentially useful or recyclable products are unnecessarily transported as hazardous waste across long distances at high cost and use up limited capacity in hazardous waste landfills and incinerators. According to one industry source, there are only 21 commercial hazardous waste landfills across the US, located in 17 states, and 22 commercial hazardous waste incinerators located in 18 states.<sup>37</sup> Nationwide, EPA estimates there are approximately 18,667 retail locations that are characterized as “large quantity generators” (“LQGs”) or small quantity generators (“SQGs”), who would be required to send hazardous wastes to permitted treatment, storage or disposal facilities (“TSDFs”), *see* NODA at 8932. Even assuming this number is accurate (we think it is too low), this represents a large number of retailers sending useful products across long distances for hazardous waste management. Incineration is not always practicable due to the distance from a retail store, particular waste streams accepted by the incinerator, or an incinerator’s capacity. Moreover, hazardous wastes from retail stores may be landfilled (after treatment, if applicable), using up the limited capacity available to dispose of hazardous wastes. This seems particularly wasteful given that a portion of these products could be legitimately reused or recycled if transportation requirements were eased and consolidation were possible. A streamlined set of regulations that encourages reuse and recycling and facilitates making accurate hazard characterizations will save valuable hazardous waste management resources.

Not only does LQG status mean high costs to the retail store, the administrative costs to EPA and state agencies in managing biennial reports and conducting other LQG oversight are out of sync with the relative risks presented by reverse logistics of unsold/returned

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<sup>37</sup> See Environmental Health & Safety Online, <http://www.ehso.com/cssepa/tsdflandfills.php>; <http://www.ehso.com/cssepa/tsdfincin.php>. See also Biennial Report at 3-9 (noting 30 landfills and 62 incinerators receiving wastes from off-site in 2011, without specifying whether they are commercial facilities).

products. Again, because they are in substantially the same form, quantity, and packaging as products handled safely in forward distribution, regulating stores as LQG's is an unnecessary drain on administrative resources.

**3. *Applying the existing RCRA regime to the retail sector squanders opportunities to recycle unsold/returned products and improve sustainable materials management across the sector.***

The current RCRA regime discourages recycling of unsold/returned products by incentivizing handling used/returned products as wastes—rather than materials that still have value. Because waste determinations and characterizations are inordinately complicated for store personnel, and the risks of getting it wrong are extremely high, many companies err on the side of managing unsold or returned products as waste and sending them from the store for disposal (e.g., aerosol cans, personal care products that could be recycled). Outlets for reuse/recycling and resale (e.g., liquidation) may not be available to individual stores due to the relatively small number of products or the types of products available for disposition at any given time. Accordingly, many potentially useful or recyclable products are sent off-site from stores for management as hazardous wastes, when in fact many of these products could be used or recycled if they could be transported to other locations and/or were available in larger quantities after consolidation.

Recycling opportunities are also lost when stores decide to forego offering collection events to customers. Uncertainty over how customer returns must be managed under the RCRA regulations deters stores from offering collection events to customers. Such events would benefit the environment by removing potentially hazardous wastes from the municipal waste streams, creating economies of scale enabling recycling, and educating consumers on safe handling of potentially hazardous wastes. However, facing the costs that would befall stores generating potentially large quantities of hazardous wastes at periodic collection events, coupled with the inherent risks of making waste determinations and characterizations for collected products (e.g., if the customer were to be considered the generator), many stores forego these opportunities.

**B. Proposed Solution for Unsold/Returned Products**

As discussed above, the Retail Associations encourage EPA to consider an alternative, equally protective program for unsold/returned products in the retail sector. In the NODA, EPA identifies several key challenges facing the retail sector, including waste characterization, episodic generation, training, and management of particular product types, such as aerosols. While there may be regulatory or non-regulatory solutions for individual waste streams (e.g., nicotine products, aerosols), the Retail Associations believe the best long-term solution is to provide a streamlined set of requirements for the retail sector that are equally protective of human health and the environment, incentivize product reuse and recycling, and greatly reduce the burden on stores. In particular, the Retail Associations would support a conditional exclusion from the definition of solid waste for unsold/returned products as they are handled in retail stores, transported to a reverse distribution center (including third party collection centers), and managed within the

reverse distribution centers up until the point where the ultimate disposition of the products is determined and the hazard characterization is made by qualified personnel.

It may be necessary to impose certain conditions to ensure that the products being excluded are handled in a product-like manner that is protective of human health and the environment. While the precise conditions would have to be determined, in-store requirements might include DOT hazardous materials transportation requirements for shipping, some minimal labeling, tracking, basic instruction, and spill response. Excluded products would be transported by ordinary commercial transportation and without a hazardous waste manifest, just as they are in forward distribution. Commercially reasonable tracking would replace the manifest, and use of commercial transporters (including hazardous materials transporters, as necessary) would greatly reduce the cost of transportation. For the excluded products that are sent for disposal or the types of recycling that would render the products “discarded” under existing rules, a hazard characterization would be made by skilled personnel with the technical abilities to accurately make such a characterization, and, if hazardous, the wastes would be managed as hazardous wastes from that point forward. The Retail Associations look forward to working with EPA to develop an appropriate set of conditions to ensure an equivalent level of protection for human health and the environment.

The Retail Associations anticipate numerous and far-reaching benefits to such a streamlined set of requirements, including:

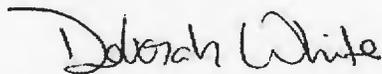
- (1) Compliance with hazardous waste requirements across the retail sector would be facilitated because the requirements would be designed to work with the normal operations of retail stores and reverse distribution systems, facilitating implementation in the retail environment.
- (2) The streamlined regulations would be equally protective of human health and the environment because products would continue to be subject to the DOT rules for hazardous materials transportation, where applicable, and the appropriate RCRA conditions ensuring they are otherwise managed in a product-like manner.
- (3) The burden on stores would be greatly reduced, decreasing the likelihood stores would be regulated as LQGs, saving retailers the cost of complying with LQG requirements, and reducing associated administrative burdens on regulatory agencies.
- (4) Instead of store personnel determining whether an unsold or returned consumer product is a “waste” within the regulatory definition based on limited options for reuse/recycling or liquidation, waste determinations could occur at the point where products are consolidated and opportunities for reuse/recycling and liquidation can be maximized. Retailers could take advantage of economies of scale for consolidating unsold/returned products, evaluating them, and identifying opportunities that would not otherwise be available.

- (5) Instead of store personnel trying to characterize whether a particular unsold/returned consumer product is “hazardous,” these decisions could be made more accurately by technical personnel in the reverse distribution system. This would reduce the chances of improper hazardous waste characterizations, and, consequently, the possibility that hazardous wastes would be improperly managed.
- (6) Stores could offer collection events for customers, so that recyclable materials could be consolidated and managed efficiently and in a manner that is safe for the environment and human health.
- (7) Recalled products could be quickly removed from stores and efficiently transported to manufacturers or through other reverse distribution systems and consolidated, allowing manufacturers and retailers to work together to manage them in a manner that is most efficient, while also protective of human health and the environment.
- (8) By facilitating reuse/recycling of unsold/returned products, RCRA would no longer be an impediment to retailers achieving zero-waste or other sustainability goals.

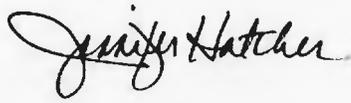
Accordingly, a conditional exclusion providing a streamlined set of conditions for unsold/returned products in stores and reverse distribution systems would facilitate compliance, encourage reuse/recycling and better management of unsold/returned products in reverse distribution, ensure environmental protection, and create opportunities for increased sustainable materials management. The Retail Associations encourage EPA to consider such a conditional exclusion, and we stand ready to work with the Agency to develop an alternative program that is equally protective of human health and the environment.

\* \* \*

The Retail Associations appreciate the opportunity to provide our comments on this important matter and look forward to working with EPA to effectuate meaningful changes to the RCRA regulations to rationalize the regulatory structure and enhance sustainable materials management. Please do not hesitate to contact us for further information.



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**ATTACHMENT 2**

**COMMENTS OF THE RETAIL INDUSTRY LEADERS ASSOCIATION  
ON EPA'S REQUEST FOR PUBLIC COMMENT ON  
"EVALUATION OF EXISTING REGULATIONS"**

*DOCKET NUMBER EPA-HQ-OA-2017-0190*

May 15, 2017

The Retail Industry Leaders Association ("RILA") welcomes the new Administration's review and evaluation of existing U.S. Environmental Protection Agency ("EPA" or the "Agency") regulations. Under the current regime, an individual retail store can be subject to the same Resource Conservation and Recovery Act ("RCRA") rules and requirements that apply to large traditional manufacturing facilities, such as steel mills, simply because the individual store is holding two or three boxes of unsold nicotine gum or because a small number of returned products in aerosol cans need to be sent back to the store's distribution center.

As a result of the Agency's current extraordinary interpretation of the regulations, fully 28% of so-called RCRA "hazardous waste generators" are actually individual stores that are holding nothing more than ordinary household products that were unsold (due, e.g., to expiration, product discontinuation, seasonal inventory changes, damage, etc) or that were returned by a customer (due, e.g., to defect, the customer changed her mind, or the product simply failed to live up to expectations). And yet (and not surprisingly), the so-called "hazardous waste" produced by these stores (ordinary consumer products) accounts for less than 0.1% by weight of the hazardous waste generated by the country, compared to the 61% that is generated by the chemical industry.

Nonetheless, a retail store that is unlucky enough to find itself classified as a "large quantity generator" must fulfill all of the costly regulatory obligations imposed on traditional large scale manufacturing facilities. These include such pointless exercises (in the case of a local grocery store) as preparing emergency response plans and notifying the store's local emergency responders (such as the fire station down the street) of the store's "large quantity generator" status and its response plan. In addition, all "large quantity generators" – be they chemical plants or local pharmacies -- are subject to periodic government inspections, which means that valuable inspection resources that could be used to evaluate manufacturing facilities that do have the potential to impact the environment are spent walking stores.

Common sense should be a sufficient basis to see that this area is ripe for reconsideration and fits squarely within the parameters of Executive Order 13777. Nonetheless, the following comments and accompanying material explain in detail the legal and policy infirmities of the current regulatory regime and provide a simple roadmap for changing it quickly. We, of course, would be happy to walk through these issues or answer any questions that the Administration may have regarding this situation.

## **I. INTRODUCTION AND SUMMARY**

The Retail Industry Leaders Association (“RILA” or the “Association”) is pleased to submit these comments in response to the request of the U.S. Environmental Protection Agency (“EPA” or the “Agency”) for public comments on regulations that may warrant repeal, replacement, or modification, pursuant to Executive Order 13777. See 82 Fed. Reg. 17,793 (April 13, 2017). These comments elaborate on the testimony that RILA previously submitted for the May 9, 2017 public hearing of EPA’s Office of Land and Emergency Management (“OLEM”), a copy of which is included as part of these comments as Attachment A.

RILA is an organization of the world’s most successful and innovative retailer and supplier companies – the leaders of the retail industry. RILA members represent more than \$1.5 trillion in annual sales and operate more than 100,000 stores, manufacturing facilities, and distribution centers nationwide. The Association’s member retailers and suppliers have facilities in all 50 states and the District of Columbia, as well as internationally, and employ millions of workers domestically and worldwide.

RILA appreciates the opportunity to provide input to EPA on regulations that may warrant reform. As discussed in more detail in Section II below, the hazardous waste regulations under the Resource Conservation and Recovery Act (“RCRA”), which were designed with traditional “heavy” industries in mind, are increasingly being applied to the retail sector, resulting in extremely high compliance costs with little or no benefit to human health or the environment. EPA, to its credit, has recognized the disconnect, and has started to work with the retail sector to address some of the problems. However, progress has been slow. We believe the current regulatory reform initiative provides an important opportunity to accelerate and strengthen these efforts.

As discussed in more detail in Section III below, RILA believes that three particular RCRA regulations meet virtually all of the criteria set forth in Executive Order 13777 for regulatory reform, such that they are especially well-suited for repeal, replacement, or modification:

- o **Listing of Nicotine as an Acutely Hazardous Waste.** The listing of nicotine products as acutely hazardous wastes should be modified so as to exempt specific categories of low-concentration nicotine products that are currently on the market (e.g., nicotine gum, lozenges, patches, prescription liquids, and e-cigarettes), as well as any future products containing less than a specified concentration of nicotine (e.g., 3%), or so as to reclassify all such products as non-acutely hazardous wastes.
- o **Classification and Regulation of Aerosol Wastes.** EPA’s current regulatory framework for aerosol cans should be modified by (a) issuing guidance clarifying that aerosol cans do not exhibit the RCRA hazardous waste characteristic of reactivity; (b) issuing guidance that aerosol cans being sent for recycling are off-spec commercial chemical products being reclaimed and are not hazardous wastes or alternatively at least issuing guidance that aerosol cans containing non-hazardous chemical products and propellants that are ignitable, but common fuels, are not hazardous wastes if they are recycled to recover the propellant for use as a fuel; and (c) classifying aerosol cans as universal wastes, first informally by policy, and ultimately through rulemaking.
- o **Application of the New Hazardous Waste Generator Rule to the Retail Sector.** The more stringent portions of the recently issued hazardous waste generator rule, as they apply to the retail sector, should be delayed from taking effect, or administratively stayed or suspended, until EPA can analyze fully what changes may be necessary to make the rule – and the RCRA regulations more generally – more appropriate for retailers.

Each one of these items is discussed in more detail in Section III below. However, in order to provide some useful perspective, we first give some brief background on application of the RCRA hazardous waste regulations to the retail sector.

## II. BRIEF BACKGROUND ON RCRA AND THE RETAIL SECTOR

### A. EPA's Application of RCRA Rules to Stores

The RCRA regulations were originally developed by EPA with traditional "heavy" industries in mind (*e.g.*, chemical manufacturing, petroleum refining, and steel making). In recent years, however, the same regulations have increasingly been applied to retail stores. Indeed, according to EPA statistics (which we believe significantly understate the problem), over 28% of regulated "large quantity generators" are actually individual stores, compared to the mere 12% of facilities that are represented by the chemical industry. See EPA, "Regulatory Impact Assessment of the Potential Costs, Benefits, and Other Impacts of the Final Hazardous Waste Generator Improvements Rule" (September 2016) ("Generator Rule RIA"), Exhibit 2-6 ("LQG Hazardous Waste Quantities and Number of Waste Streams Generated by Industry (2013)").

Not surprisingly, the large number of retail stores classified as hazardous waste generating facilities does not translate into significant environmental risks. The so-called "hazardous wastes" that the Agency deems to be "generated" by these facilities represent well below 0.1% (by weight) of the hazardous wastes generated in the country, compared to 61% for the hazardous wastes generated by the chemical industry. *Id.* That is because the so-called "hazardous wastes" are nothing more than the very same products that stores sell every day to their customers, and that those consumers use and dispose of in the normal municipal waste stream every day – and in far greater quantities (since retailers obviously sell far more products than they discard, and customers ultimately use and discard virtually all of what they buy).

Retailers obviously do not manufacture these products or "generate" them in the ordinary meaning of the word; but the Agency may deem a store to "generate" these products as "wastes" if the products are unsold (*e.g.*, due to expiration, obsolescence, product discontinuation, seasonal inventory changes, damage, defect, or recall) or returned by customers (*e.g.*, due to damage, defect, quality concerns, or simple failure to live up to expectations).

It makes no sense to apply the RCRA hazardous waste regulations to these products, when they represent less than 0.1% of the nation's hazardous waste stream and when far greater quantities of the exact same products are legally being disposed of by households (and small businesses) as non-hazardous wastes. This is especially true because the hazardous waste rules, designed as they were for traditional heavy industries, do not fit the retail sector, and thus pose serious challenges to retailers. For example, any given retail store may carry tens of thousands of different types of products. Each one of these has the potential to be returned by a consumer or recalled by a manufacturer at any time. EPA considers each of these types of products a waste or a separate "waste stream." While traditional industrial facilities may large quantities of each of its waste streams, they typically generate far fewer by type.

Moreover, retailers generally have far less knowledge of each individual product's composition and properties (since the store is only engaged in distributing products, rather than producing them). Retail companies also have far more "facilities" (or stores) than companies in other industries. Retail workers may have limited skills, may stay with the company for only a short period of time, and have understandable difficulty determining when items that look the same as the products that are stocked on shelves – and that they themselves may buy and use at home – may become subject to regulation as "hazardous wastes." The RCRA regulations do not account for any of these characteristics of the retail sector, and are inappropriate for that sector as a result.

## **B. Recent Attempts To Address the Situation**

EPA in recent years has recognized the disconnect between RCRA and the retail sector, and has started to take steps to correct it. However, progress has been slow and the most recent regulatory change in the waning days of the previous Administration makes the situation even worse.

In 2014, the Agency issued a Notice of Data Availability (“NODA”) seeking comments on the problems raised by application of the RCRA regulations to retailers. *See* 79 Fed. Reg. 8926 (February 14, 2014). RILA, together with other retail trade associations, submitted extensive comments on the NODA, which are incorporated into these comments as Attachment B (“NODA Comments”). In 2015, the Agency published two proposed rules – intended, at least in part, to address some retail issues – one focused on modifying the rules for all hazardous waste generators, and the other focused on the requirements for pharmaceuticals that are hazardous wastes. *See* 80 Fed. Reg. 57,918 (September 25, 2015) (proposed hazardous waste generator rule); 80 Fed. Reg. 58,014 (September 25, 2015) (proposed hazardous waste pharmaceutical rule). Once again, RILA, together with other retail trade associations, submitted extensive comments on these rulemakings, which are incorporated into these comments as Attachments C (“Generator Rule Comments”) and D (“Pharmaceutical Comments”).

About a year later, in September 2016, EPA issued a “Strategy for Addressing the Retail Sector under RCRA’s Regulatory Framework” (hereinafter referred to as the “Retail Strategy”) which outlined measures that the Agency was taking, or intended to take, to address the retail sector issues. RILA was heartened by these developments and was cautiously optimistic about EPA’s efforts. However, we were greatly disappointed when, two months later, the Agency issued its final hazardous waste generator rule. *See* 81 Fed. Reg. 85,732 (November 28, 2016). As discussed in more detail further below, EPA appears to have ignored many of our comments. As a result, we see the rule as a big step in the wrong direction.

To get back on track and finally fix the mismatch between RCRA and the retail sector, we are proposing three different rules for repeal, replacement, or modification. Two of these proposals (the ones relating to low-concentration nicotine products and aerosol cans) are generally in line with items in EPA’s Retail Strategy. The third calls for delay, stay, or suspension of the recent hazardous waste generator rule, as it applies to the retail sector, until that rule can properly be reevaluated taking into account the special circumstances of retailers. RILA hopes that these regulatory reform efforts can be undertaken quickly with the same spirit of cooperation that led to the NODA and the Retail Strategy, with the goals of protecting the environment and the general public – our customers – while providing retail businesses relief from unnecessary or inappropriate red tape and compliance costs.

## **III. SPECIFIC PROPOSALS OF RULES FOR REPEAL, REPLACEMENT, OR MODIFICATION**

### **A. Listing of Nicotine as an Acutely Hazardous Waste**

#### **1. Brief Background on the Nicotine Listing**

Under the RCRA regulations at 40 C.F.R. § 261.33(e), nicotine and salts (hereinafter referred to simply as “nicotine” for ease of discussion) are listed as acutely hazardous wastes (EPA Hazardous Waste No. P075) when discarded in the form of “commercial chemical products.” For these purposes, a commercial chemical product is defined to include pure forms of the listed chemicals, technical grades of the listed chemicals, and all formulations in which a listed chemical is the sole active ingredient. *See* 40 C.F.R. § 261.33(d), Comment.

EPA has taken the position that the nicotine listing applies to a variety of products containing only low concentrations of nicotine, such as nicotine replacement therapy (“NRT”) products designed to help people stop smoking tobacco (e.g., nicotine gum, lozenges, patches, and prescription inhalers and nasal sprays), and e-cigarette products (e.g., e-liquids containing nicotine, cartridges containing such liquids, and e-cigarettes containing such liquids or cartridges). See, e.g., Letter from Robert W. Dellinger, Director, Material Recycling and Waste Management Division, EPA, to Charlotte A. Smith, Director, PharmEcology Services, WM Healthcare Solutions, Inc. (August 23, 2010) (RCRA Online #14817) (discussing nicotine patches, gums, and lozenges); Letter from Barnes Johnson, Director, Office of Resource Conservation and Recovery, EPA, to Daniel K. DeWitt, Warner, Norcross & Judd LLP (May 8, 2015) (RCRA Online #14850) (discussing e-liquids, e-cigarettes, and cartridges); *but see also* Letter from Barnes Johnson, Director, Office of Resource Conservation and Recovery, EPA, to Scott DeMuth, Vice President, Business Development, g2revolution, LLC (May 8, 2015) (RCRA Online #14851) (indicating that these products might not be solid or hazardous wastes if they are legitimately recycled to recover useful nicotine).

RILA does not agree that all of these products are properly covered by the nicotine listing. However, based on EPA’s interpretation, a retail store that has to return or discard as little as 1 kilogram (2.2 pounds) of low-concentration nicotine products may be classified as a large quantity generator of hazardous wastes, subject to extremely onerous regulatory requirements. The result is that many retailers (e.g., large numbers of grocery stores, pharmacies, and convenience stores) are unnecessarily and inappropriately regulated in the same manner as chemical plants, petroleum refineries, and other heavy industrial facilities.

**2. The Nicotine Listing Meets Almost All of the Criteria under Executive Order 13777 for Rules Warranting Repeal, Replacement, or Modification**

The nicotine listing is particularly well-suited to EPA’s current regulatory reform effort, because it meets virtually all of the criteria set forth in Executive Order 13777 for rules that warrant repeal, replacement, or modification. As discussed in more detail below, the listing was based primarily on an estimate of the toxicity of nicotine that had no technical foundation and was clearly erroneous. It is outdated since it was designed to regulate high-concentration nicotine pesticides that no longer exist, and it imposes tens of millions of dollars of compliance costs on the retail sector every year without any significant environmental benefits. The listing forces retailers to eliminate jobs and/or to limit job creation, and it diverts limited government resources away from much higher priority issues, in conflict with regulatory reform goals.

- o **Criterion #1: The nicotine listing was based on data that do not meet basic standards of reliability and transparency, as required under the Information Quality Act.**

EPA originally listed nicotine as an acutely hazardous waste based primarily on what it referred to as an “estimate” that the median lethal dose (LD50) to humans through oral administration is only 1 mg per kg of body weight (corresponding roughly to a fatal dose of 50-60 mg). See EPA Office of Solid Waste, Background Document entitled “Section 261.33 – Hazardous Waste from Discarding of Commercial Chemicals Products and the Containers and Spill Residues Thereof” (January 1981) (“CCP Background Document”), Appendix A, *cited in* Pharmaceutical Comments at 9. However, the U.S. Surgeon General recently stated that he could not find any support whatsoever for this figure. See Office of the Surgeon General, “The Health Consequences of Smoking – 50 Years of Progress” (2014) at 112 (“a systematic literature search was performed ...; however, no study was located as a source for an estimate of the dose that is fatal to humans, and the figure of 50–60 mg is poorly documented”), *cited in* Pharmaceutical Comments at 9.

In light of the Surgeon General’s conclusion, the “data” that EPA principally relied upon for the nicotine listing

did not just fail to meet basic standards for reliability and transparency, as required by the Information Quality Act. The data simply did not exist.

Moreover, EPA's estimate of the toxicity of nicotine is inconsistent with over a dozen published studies showing that nicotine does not meet EPA's oral toxicity criteria for acutely hazardous wastes. *See generally* Pharmaceutical Comments at 11-13. Under the regulations, when there are inadequate human toxicity data, the determination of whether a waste is an acute oral toxin must be based on whether the wastes "have an oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram." *See* 40 C.F.R. § 261.11(a)(2). In the present case, there can be no doubt that low-concentration nicotine products do not qualify as acutely hazardous under this standard, since even *pure* nicotine does not, as discussed below.

The Committee for Risk Assessment ("RAC") of the European Chemicals Agency ("ECHA") recently issued a report summarizing available toxicity information on nicotine. *See* ECHA, "RAC Opinion Proposing Harmonized Classification and Labeling at EU Level of Nicotine" (adopted September 10, 2015), *cited in* Pharmaceutical Comments at 11-13. After reviewing numerous studies, RAC concluded that "the oral LD50 of nicotine in rats ranges from 52.5 to 70 mg/kg, while the LD50 for nicotine sulphate in rats ranges from 56.7 to 83 mg/kg." *Id.* at 5. ECHA did not identify, and we have not found, even a single study that reported an oral LD50 (rat) value of less than 50 mg/kg. Given the overwhelming data that the LD50 for nicotine is higher than this value, it is clear that *pure* nicotine does not meet the oral toxicity criteria for an acutely hazardous waste (*i.e.*, "oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram"). *See* 40 C.F.R. § 261.11(a)(2). The same would obviously be true for low-concentration nicotine products.

Because EPA based the nicotine listing primarily on a human toxicity "estimate" that was without any support, and that is inconsistent with every known study addressing the RCRA regulatory standard for acute oral toxicity, the listing should be repealed, replaced, or modified.

o **Criterion #2: The nicotine listing is outdated and unnecessary.**

EPA issued the nicotine listing in 1980 to address the only nicotine products that were then on the market – powerful pesticides, such as Black Leaf 40, which contained up to 40% nicotine. *See* NODA Comments at 5-6. However, in subsequent years, nicotine use as a pesticide started to decline rapidly. *See generally* EPA, Reregistration Eligibility Decision for Nicotine (March 2008) at 8. The last EPA registrations for use of nicotine as a pesticide on food crops were cancelled in 1994. *Id.* As of 2014, nicotine pesticides have been completely banned from use in the U.S. *See* 74 Fed. Reg. 26,695 (June 3, 2009) (EPA order cancelling "the last nicotine pesticide product registered for use in the United States ... effective January 1, 2014").

Clearly, the nicotine listing was designed to address a problem that no longer exists. The products now covered by the listing are low-concentration nicotine products that were not – and could not have been – a target of the listing in 1980, since they simply did not exist back then. *See, e.g.*, 78 Fed. Reg. 19,718 (April 2, 2013) ("The nicotine gum and patch products were originally approved [by the Food and Drug Administration] between 1984 and 1992. Both the gum and the patch were initially available by prescription only; these products were switched from prescription to OTC status between 1996 and 2002. The nicotine lozenge and mini-lozenge were approved directly for OTC use in 2002 and 2009, respectively.").

The new products clearly do not pose the same risks as the old nicotine pesticides. As an initial matter, the new products contain far lower concentrations of nicotine, generally in the range of 0.1% to 3.0%. *See* NODA Comments at 6. There can be no doubt that nicotine gum and lozenges are not acutely hazardous, given that

they have, for decades, been consumed multiple times daily by millions of people, with the encouragement of public health authorities and the medical community. See NODA Comments at 7; Pharmaceutical Comments at 10; see also U.S. Public Health Service, “Clinical Practice Guideline: Treating Tobacco Use and Dependence” (2008 Update) (characterizing nicotine gums and lozenges as “an effective smoking cessation treatment that patients should be encouraged to use”). Nicotine patches are obviously not intended to be chewed or swallowed, but studies have shown that even when they are, the effects are not lethal. See NODA Comments at 7; Pharmaceutical Comments at 10-11; see also F. Harchelroad, et al., “Oral absorption of nicotine from transdermal therapeutic systems,” *Veterinary and Human Toxicology* (1992); A. Woolf, “Childhood Poisoning Involving Transdermal Nicotine Patches,” *Pediatrics* (1997). And, with respect to prescription nicotine liquids and e-cigarette products, even *pure* nicotine does not meet EPA’s criteria for oral acute toxicity, as discussed above. So, the same must be true for these low-concentration nicotine products.

Inasmuch as the products that the listing was originally designed to address no longer exist, and the products now being affected by the listing do not pose the same risks, the listing is outdated, unnecessary, and ripe for repeal, replacement, or modification.

o **Criterion #3: The nicotine listing has costs that greatly outweigh any possible benefits.**

Because the listing classifies low-concentration nicotine products as acutely hazardous wastes, any facility generating more than 1 kilogram (or 2.2 pounds) of such wastes within a calendar month is classified as a Large Quantity Generator (“LQG”) of hazardous waste. See 40 C.F.R. § 262.13, Table 1. RILA has estimated (using three separate methodologies, all leading to essentially the same conclusion) that 12,000 retail facilities are classified as LQGs based *solely* on the fact that they sometimes have more than this amount of nicotine gum, lozenges, patches, and the like. See NODA Comments at 9-10; Pharmaceutical Comments at 13-14. As a result, these facilities (*e.g.*, grocery stores, pharmacies, and convenience stores) are subject to the same onerous regulatory requirements as chemical plants and petroleum refineries.

We previously estimated that the cost per facility of being (mis)classified as an LQG in this manner was between \$3,024 and \$5,515 per year. See NODA Comments at 10-12. However, since the time that we made that estimate in 2014, the costs of being an LQG have increased significantly as a result of the 2016 rule that overhauled the requirements for hazardous waste generators (*e.g.*, by imposing new requirements for recordkeeping, periodic re-notification of regulatory authorities, marking/labeling of containers, contingency plans, arrangements with local first responders, and closure of waste accumulation areas). See 81 Fed. Reg. 85,732 (November 28, 2016).

Even if we conservatively assume a cost per facility of only \$4,000 per year – roughly the midpoint of the original range, before the added costs of the 2016 rule – the total costs for the 12,000 retail facilities that are classified as LQGs, due to the listing of nicotine as an acutely hazardous waste, would be \$48 million per year. Actual costs are likely much higher.

There can be no doubt that these extremely high costs outweigh the benefits of the listing since, as discussed above, there are simply no benefits. There is simply no basis for classifying low-concentration nicotine products as acutely hazardous wastes. Because the nicotine listing imposes tens of millions of dollars in costs each year for no discernible benefit, it should be repealed or replaced as soon as possible.

o **Criterion #4: The nicotine listing eliminates jobs and inhibits job creation.**

As discussed above, the nicotine listing imposes extremely large and wholly unwarranted costs on the retail sector. These additional regulatory costs – especially at a time when the industry is facing other major challenges – put pressure on retailers to reduce other costs, including the costs of labor. They also divert resources that might otherwise be devoted to developing innovative business practices or expanding business, thereby limiting opportunities for hiring new workers. Inasmuch as the nicotine listing eliminates jobs and/or inhibits job creation, it should be repealed, replaced, or modified.

o **Criterion #5: The nicotine listing interferes with regulatory reform initiatives.**

One of the main goals of all regulatory reform initiatives is to improve government efficiency by focusing limited resources on core problems. However, the nicotine listing forces EPA and states to divert compliance assurance, inspection, and enforcement resources away from the heavy industries that generate the vast majority of hazardous wastes, to the retail sector. It does this by pushing so many retail stores into the Large Quantity Generator category that retailers now represent over 28% of all LQGs (even though they account for less than 0.1% of all hazardous wastes generated). See EPA, Generator Rule RIA, Exhibit 2-6. Moreover, because LQGs are required to submit contingency plans (and all revisions to such plans) to first responders, see 40 C.F.R. § 262.262(a), fire departments and others are being overwhelmed by paperwork from retailers that is of little value and distracts them from their vital functions. See NODA Comments at 11-12. Because the nicotine listing diverts limited government resources away from much higher priorities, the listing should be repealed, replaced, or modified.

3. **Proposed Reform of the Nicotine Listing**

Any one of the factors discussed above would warrant repeal, replacement, or modification of the nicotine listing. Taken together, these factors make a compelling case for regulatory reform. EPA has previously requested comments on this issue and stated that it could directly issue a final rule. See 80 Fed. Reg. at 58,073 (“no regulatory language is currently being proposed with respect to amending the P075 listing to exempt the low-concentration nicotine containing products. However, ... EPA could finalize one of the approaches discussed previously without a separate proposed rulemaking in the future”).

We urge the Agency to do so as soon as possible by exempting from the nicotine listing all low-concentration nicotine products, including specific categories of products that are currently on the market and any other products containing less than a specified concentration of nicotine (*e.g.*, 3%). See *generally* Pharmaceutical Comments at 14-18. Attached as Exhibit 1 is draft regulatory language to accomplish this change.

B. **Classification and Regulation of Aerosol Wastes**

1. **Brief Background on Aerosol Waste Regulation**

The RCRA hazardous waste regulations do not explicitly address aerosol cans. However, EPA has issued countless letters and memoranda interpreting and applying the RCRA regulations in the context of aerosol cans. See *generally* NODA Comments at 17-20. According to these Agency documents, the status of aerosol cans as wastes or non-wastes, and as hazardous or non-hazardous, depends upon a bewildering array of factors (*e.g.*, the identity of the propellant; the identity of the chemical product to be dispensed by the can; whether the can was used, and if so, by whom; whether the can meets the RCRA definition of “empty”; whether the can has been punctured and drained of fluids; whether the can is dented, corroded, or missing the actuator button; whether the can might be sold on a secondary market or donated for use; whether the can might be sent to a manufacturer for potential credit; and if/how

the can might be recycled). *Id.* Even with all of the documents EPA has issued on this subject, the status of aerosol cans in many instances remains unclear. *Id.*

The situation has been made even more difficult by the fact that EPA has stated that waste aerosol cans – whether full or empty – have the potential to qualify as reactive hazardous wastes, without providing any meaningful guidance to generators of when this might be the case. See 40 C.F.R. § 261.23(a) (RCRA definition of reactivity); EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027) (“Irrespective of the lack of contained waste, ... aerosol cans [c]ould be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity”). The Agency has repeatedly denied requests for guidance on which aerosol cans might be reactive. See, e.g., Letter from Elizabeth A. Cotsworth, Acting Director, Office of Solid Waste, EPA, to T.L. Nebrich, Jr., Technical Director, Waste Technology Service, Inc. (May 19, 1997) (RCRA Online #14235) (“Cotsworth Aerosol Letter”) (“Over the past several years we have received numerous questions concerning the regulatory status of used aerosol cans under the ... hazardous waste regulations. We are not at this time able to make a categorical determination as to whether various types of cans that may have contained a wide range of products exhibit the characteristic of reactivity” (emphasis added)). Moreover, EPA has not provided any guidance on how companies, including retailers, might determine for themselves which aerosol cans (if any) exhibit the characteristic of reactivity. See Letter from David Bussard, Director, Hazardous Waste Identification Division, EPA, to Paul G. Wallach (August 14, 1997) (RCRA Online #14176) (“[f]or the characteristic[ ] of ... reactivity, there is no test method specified as to the operational definition of the characteristic”). Nevertheless, the Agency has stressed that “[i]t remains the responsibility of the generator ... to make [the reactivity] determination.” See Cotsworth Aerosol Letter. By raising the specter that aerosol cans might be reactive, declining to provide guidance on when they are, and saying that generators are responsible for making a proper determination, EPA has left the regulated community, including retailers, in an extremely tenuous position.

**2. The Current Regulatory Framework for Aerosol Cans Meets Almost All of the Criteria under Executive Order 13777 for Rules Warranting Repeal, Replacement, or Modification**

The current RCRA regulatory framework for aerosol cans, like the nicotine listing discussed above, is well-suited to EPA’s current regulatory reform effort, because it meets virtually all of the criteria set forth in Executive Order 13777 for rules that warrant repeal, replacement, or modification. The fact that the regulations do not explicitly address aerosol cans does not in any way diminish this conclusion. Executive Order 13777 states that it extends to all existing regulations “as defined in section 4 of Executive Order 13771,” and that referenced provision defines regulation to include “an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy.” The EPA letters and memoranda discussed above are clearly statements of “particular applicability” that are “designed to implement [or] interpret ... law or policy.”

As discussed in more detail below, the current regulatory framework for aerosol cans is based in part on a bald assertion by EPA – which is without any technical support and appears to be erroneous – that aerosol cans may be reactive wastes. The framework is ineffective, since it is so complex and confusing that the regulated community inevitably either over-manages or under-manages the products. It imposes tens of millions of dollars of compliance costs on the retail sector every year without any significant environmental benefits, and, in doing so, forces retailers to eliminate jobs and/or to limit job creation. It also unnecessarily complicates – and thereby undermines – compliance by the regulated community, and implementation by federal and state inspection and enforcement personnel, in conflict with key regulatory reform goals.

- o **Criterion #1: The regulatory framework for aerosol cans was based, in part, on data that do not meet basic standards of reliability and transparency, as required under the Information Quality Act.**

As noted above, one key element of the current regulatory framework for aerosol cans is the long-standing EPA statement that such cans, whether full or empty, “[c]ould be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity.” See EPA, RCRA Hotline Report (September 1987) (RCRA Online #13027). To our knowledge, however, the Agency has never provided any data demonstrating that aerosol cans may qualify as reactive hazardous wastes, much less any data meeting the standards of reliability and transparency mandated under the Information Quality Act. The regulated community should not be subjected to onerous regulations based on mere speculation and innuendo, as EPA has done here.

Moreover, as RILA has previously demonstrated to EPA, the U.S. Department of Transportation (“DOT”) hazardous materials regulations ensure that aerosol products do not meet the definition of a reactive hazardous waste under RCRA. See *generally* NODA Comments at 20-23. All aerosol cans must meet the DOT requirements in order to be transported in commerce. Under the DOT rules, aerosol cans must be capable of withstanding the same types of conditions that wastes are required to withstand in order not to be classified as RCRA reactive wastes. See, e.g., 49 C.F.R. § 173.306(a)(3)(ii) (“the metal container must be capable of withstanding without bursting a pressure of one and one-half times the equilibrium pressure of the contents at 130°F”); § 173.306(a)(3)(v) (“[n]o leakage or permanent deformation of a [aerosol] container may occur [at 131°F]”); § 173.24(b)(1) (all packagings, including aerosol cans, must be “designed, constructed, maintained, filled, [their] contents so limited, and closed, so that under conditions normally incident to transportation ... there will be no identifiable ... release of hazardous materials to the environment”).

There can be no doubt that aerosol cans are not the type of wastes intended to be covered by the RCRA reactivity characteristic. When EPA originally promulgated the RCRA reactivity characteristic in 1980, it stressed that “the problems posed by reactive wastes appear to be confined to a fairly narrow category of wastes.” See EPA, “Background Document, Reactivity Characteristic” (May 1980) (“Reactivity Background Document”) at 10. However, aerosol cans are anything but a narrow category of wastes. On the contrary, they are among the most ubiquitous of all wastes. Literally billions of aerosol cans are discarded each year by hundreds of millions of households and businesses. See NODA Comments at 15-17, 23. It is also worth noting that EPA in 1980 cited numerous “damage incidents” to support establishment of the RCRA characteristic of reactivity, but not a single one of these incidents involved aerosol cans, despite their ubiquitous nature. See Reactivity Background Document, Appendix I.

In short, EPA’s bald statement about the potential reactivity of aerosol cans was not based on any reliable data, and it was clearly erroneous. Thus, the Agency should “repeal” that statement by issuing superseding guidance and/or a new rule clarifying that waste aerosol cans are not reactive hazardous wastes.

o **Criterion #2: The regulatory framework for aerosol cans is ineffective.**

The current regulatory framework for aerosol cans is so complex and confusing that it is ineffective. As discussed above, the status of aerosol cans as wastes or non-wastes, and as hazardous or non-hazardous, depends on a host of different factors. It would be difficult, and in some cases may be impossible, for a retail store (or other handler of aerosol cans) to obtain all of the information needed about each individual aerosol can being handled in order to assess all the factors identified by EPA. Moreover, even if it were practicable to obtain such information, the regulatory implications would not always be clear.

In light of the complexity and confusion surrounding the proper characterization of unsold/returned/used aerosol cans, some retailers (and other generators) conservatively assume that all such items are hazardous wastes (e.g., due to reactivity). However, this results in unnecessary costs for management of such materials,

without any meaningful environmental benefit (especially given that aerosol cans are probably not reactive, as discussed above). Moreover, it could also result in unnecessary costs for other wastes, if, for example, misclassification of the aerosol cans causes some retailers to misclassify themselves as Small Quantity Generators (“SQGs”) or even LQGs, rather than as Very Small Quantity Generators (“VSQGs”). Other retailers (and other generators) may take the opposite approach, assuming that none of their aerosol cans are hazardous wastes. However, this could result in improper management of some aerosol cans, such as those that are not empty and contain chemical products that are listed or characteristic hazardous wastes.

In short, the current regulatory framework is so complex and confusing that it leads to unintended and undesirable behaviors by many persons handling unsold, returned, or used aerosol cans. For this reason, the current framework should be repealed, replaced, or modified.

- o **Criterion #3: The regulatory framework for aerosol cans has costs that greatly outweigh any possible benefits.**

The regulatory framework for waste aerosol cans imposes extremely high costs on the retail sector. Aerosol cans represent the single biggest waste stream generated by retailers. Indeed, the cans frequently account for 50% (by weight) or even more of all the potentially hazardous unsold/returned products handled by retailers. See NODA Comments at 16. Thus, aerosol cans are the main reason that many retail facilities are classified as regulated LQGs or SQGs of hazardous wastes. The number of such facilities can conservatively be estimated to be about 20,000, based on the fact that EPA has estimated that there are a total 70,000 to 85,000 LQGs and SQGs in the country, and approximately 28% of LQGs are retailers. See EPA, Generator Rule RIA, Exhibit ES-2 (number of LQGs and SQGs) and Exhibit 2-6 (breakdown of LQGs by industry); see also 79 Fed. Reg. at 8932 (EPA estimate that there are 16,774 retail SQGs); Generator Rule Comments at 17 (estimating the total number of retail LQGs and SQGs together at between 21,933 and 51,074). As discussed above in the context of the nicotine listing, the cost per store of being classified as an LQG can be estimated to be between \$3,024 and \$5,515 per year – not counting the additional costs imposed by the 2016 hazardous waste generator final rule. See NODA Comments at 10-12. While the costs associated with being a SQG are likely to be somewhat lower, the difference is probably not substantial, especially in the wake of the hazardous waste generator rule. Even if we very conservatively estimate that the average cost for LQGs and SQGs together is only \$2,000 per year, the total for all 20,000 facilities would be \$40 million per year. The actual costs are likely much higher.

There can be little doubt that these very high costs greatly exceed any potential environmental benefits. As discussed above, none of the aerosols are reactive hazardous wastes, despite EPA’s suggestions that they might be. Although some of the aerosol cans may be hazardous for other reasons, the aerosols discarded by retailers are precisely the same items that are being discarded by retail customers (*i.e.*, households and small businesses) in far greater quantities in their ordinary trash. Indeed, we conservatively estimate that customers discard approximately 25 times as many aerosol cans as retail establishments do, and the difference is likely far greater. See NODA Comments at 16-17 (estimating that retailers discard 22,000 tons of aerosol cans each year, compared to 500,000 tons discarded by consumers each year). It makes little sense to impose costs of over \$40 million dollars per year on retailers to ensure that a tiny percentage of all aerosols are kept out of municipal landfills, when over 95% of the same aerosols will continue to go to the same landfills.

- o **Criterion #4: The regulatory framework for aerosol cans eliminates jobs and inhibits job creation.**

As in the case of the nicotine listing, the very high costs imposed by EPA’s regulatory framework for aerosol cans – especially at a time when the industry is facing other major challenges – put pressure on retailers to reduce

other costs, including the costs of labor. They also divert resources that might otherwise be devoted to developing innovative business practices or expanding business, thereby limiting opportunities for hiring new workers. Inasmuch as the aerosol framework eliminates jobs and/or inhibits job creation, it should be repealed, replaced, or modified.

o **Criterion #5: The regulatory framework for aerosol cans interferes with regulatory reform initiatives.**

One of the key goals of regulatory reform is to improve implementation of and compliance with existing regulations. However, the complexity and confusion of the current regulatory framework for aerosol cans work at cross-purposes with this goal. EPA itself has acknowledged that needless complexity and confusion in regulations leads to less compliance. *See, e.g.*, 64 Fed. Reg. 36,466, 36,473 (July 6, 1999) (“If regulatory requirements are simpler ... the compliance rate will improve”). They also make it more difficult for federal and state inspection and enforcement personnel to do their jobs. In order to address these problems, EPA should repeal, replace, or modify the existing regulatory framework for aerosol cans.

3. **Proposed Reform of the Regulatory Framework for Aerosol Cans**

Any one of the factors discussed above would warrant repeal, replacement, or modification of the current regulatory framework for aerosol cans. Taken together, these factors make a compelling case for regulatory reform. RILA has previously proposed three main regulatory reform steps for aerosol cans, *see* NODA Comments at 20-31, and we reiterate those proposals here:

- (1) EPA should issue guidance clarifying that aerosol cans do not exhibit the RCRA hazardous waste characteristic of reactivity. The basis for such guidance is discussed above in the context of Criterion #1. *See also* NODA Comments at 20-23.
- (2) EPA should issue guidance that aerosol cans being sent for recycling are off-spec commercial chemical products being reclaimed and are not hazardous wastes. Alternatively, EPA should at least issue guidance that aerosol cans containing non-hazardous chemical products and propellants that are ignitable, but common fuels, are not hazardous wastes if they are recycled to recover the propellant for use as a fuel. *See* NODA Comments at 23-25. We believe such guidance would be consistent with EPA’s long-standing guidance on aerosols, but the Agency has never explicitly addressed this issue. Such a clarification would be extremely helpful to many retailers and would greatly facilitate environmentally sound recycling of the products. *Id.*
- (3) EPA should classify aerosol cans as universal wastes, if possible first by policy, and ultimately through rulemaking. RILA has previously demonstrated to EPA that aerosol cans meet the criteria set forth in the RCRA regulations for addition to the list of universal wastes. *See* NODA Comments at 26-31; 40 C.F.R. § 273.81 (criteria). For example, aerosol wastes are generated ubiquitously by virtually all households, businesses, and government entities; they pose relatively low risks compared to other hazardous wastes (to the extent they are hazardous at all); regulation of aerosol wastes as universal wastes would facilitate diversion of the wastes from the municipal waste stream into environmentally sound recycling systems; and regulation as universal wastes would improve implementation of and compliance with the hazardous waste regulatory program by effectively relieving generators (and government inspectors and enforcement personnel) of the need to assess the regulatory status of each can as waste or non-waste,

and hazardous or non-hazardous.

Two states that are often viewed as leaders on environmental issues – California and Colorado – have long classified and regulated aerosol cans as universal wastes, and their programs for doing so appear to have been highly successful. See Cal. Health & Safety Code § 25201.16; 6 Colo. Code Regs. 1007-3, Section 273.2(d). Other states (e.g., Minnesota, New Mexico, and Utah) have recently followed their lead. See Minnesota Pollution Control Agency, “Waste Aerosols and Compressed Gas Cylinders” (November 2016) (“You may now manage hazardous waste aerosols ... that are not empty equivalent to universal wastes in Minnesota”); N.M. Admin. Code 20.4.1.1001(A)(3) and (D); Utah Admin. Code Rule 315-273-6(b). Moreover, some additional states (e.g., Pennsylvania and New Jersey) regulate certain aerosols under their universal waste rules for paints or related wastes. See Pa. Admin. Code § 266b.4 (applying the state universal waste rule to “oil-based finishes”) and § 266b.3(ii) (defining oil-based finishes to include “aerosol paint cans”); N.J. Admin. Code 7:26A-1.3 (defining universal waste to include oil-based finishes, and defining such finishes to include “aerosol paint cans”). Indeed, some aerosols may be covered by EPA’s own universal waste rule for pesticides. See 40 C.F.R. § 273.3. We urge EPA to bring this unnecessary piecemeal regulation to an end by finally classifying and regulating all hazardous waste aerosols as universal hazardous wastes.

EPA has indicated in its 2016 Retail Strategy that it plans to issue new guidance on the status of aerosol cans under RCRA, and to propose the classification and regulation of waste aerosol cans as universal wastes. Although RILA does not know the details of what EPA has in mind, we are generally encouraged by this aspect of the Agency’s Retail Strategy. We encourage EPA to move forward on both fronts as quickly as possible.

### C. Application of the New Hazardous Waste Generator Rule to the Retail Sector

#### 1. Brief Background on the New Hazardous Waste Generator Rule As It Applies to the Retail Sector

In the closing days of the Obama Administration, EPA issued a new rule that substantially overhauled the RCRA requirements for generators of hazardous wastes (which, for the reasons discussed above, could now include many ordinary retail stores who simply have the misfortune to have unsold products in aerosol cans or a surplus of nicotine cessation products). See 81 Fed. Reg. 85,732 (November 28, 2016). The new rule significantly ratcheted up virtually all of the long-standing requirements for generators, such as those relating to making and documenting hazardous waste determinations, classifying generators of acutely hazardous wastes, notifying EPA of generator hazardous waste activities, marking containers, operating satellite accumulation areas, closing central accumulation areas, making arrangements with local emergency responders, and the contents of contingency plans. It also purported to reduce requirements in three areas, namely with respect “episodic” generators of hazardous waste, consolidation of wastes from VSQGs, and the 50-foot buffer zone requirement for storage of ignitable or reactive wastes at LQG facilities.

RILA, together with a number of other retail trade associations, submitted extensive comments on the proposed hazardous waste generator rule. See Generator Rule Comments. The comments stressed that the proposed rule had largely ignored the retail sector, even though the sector accounts for by far the largest number of affected facilities. They also explained in detail how virtually every element of the proposal was inappropriate for the retail sector, even if it might be appropriate for more “traditional” hazardous waste generators (e.g., in the chemical, petroleum, or steel industries).

Unfortunately, RILA’s comments largely fell on deaf ears. EPA did acknowledge that “the retail ... sector[ ]

operate[s] differently from traditional industrial hazardous waste generators.” See, e.g., 81 Fed. Reg. at 85,751. However, the Agency did not incorporate any special provisions for retailers. Instead, EPA went ahead and imposed all the new requirements on retailers in the same way as it did for industrial generators, even though it held out the hope that it would continue to consider whether modified rules for retailers might be developed at some indefinite future date. See *id.* (“a few years ago, the EPA began a review of how RCRA hazardous waste regulations apply to the retail sector in order to better understand retailers’ challenges in complying with RCRA regulation. These efforts are on-going.”); *id.* at 85,778 (“EPA continues to explore the various approaches to the retail sector as they ... tend to operate very differently than typical hazardous waste generators and face unique issues with the RCRA regulations.”).

**2. The New Hazardous Waste Generator Rule, As It Applies to the Retail Sector, Meets Almost All of the Criteria under Executive Order 13777 for Rules Warranting Repeal, Replacement, or Modification**

EPA’s approach of “shoot first, and (maybe) ask questions later” cannot be justified. As discussed below, it is based on data that clearly understate the challenges that RCRA in general, and the new generator rule in particular, pose for the retail sector. It imposes substantial costs on the retail sector that vastly outweigh any possible environmental benefit, forcing retailers to eliminate jobs and/or to limit new job creation. It also it diverts limited government resources away from much higher priority issues, in conflict with regulatory reform goals.

o **Criterion #1: EPA’s application of the hazardous waste generator rule to the retail sector is inappropriate.**

As discussed above, EPA effectively acknowledged that at least some provisions of the new hazardous waste generator rule were inappropriate for retailers, but proceeded to apply them to the retail sector anyway. The Agency’s error was magnified by the fact that the retail sector constitutes a large percentage of the universe of hazardous waste generators simply because of the issues identified above; indeed, today more retail stores than any other type of facility are covered by the rule. Although EPA has indicated that it will consider changing the rules for the retail sector at some point in the future, in the meantime, retailers will have to comply with all aspects of the rule, regardless of whether they make sense for retailers or not. Such rigid application of the new rule clearly warrants modification.

o **Criterion #2: EPA’s application of the hazardous waste generator rule to the retail sector was based on data that do not meet basic standards of reliability and transparency, as required under the Information Quality Act.**

RILA went to great lengths in its comments on the proposed rule to correct EPA’s misperceptions about the generation of hazardous wastes by the retail sector, because a better understanding of such generation would make clear that the Agency’s proposal was not appropriate for retailers. See, e.g., Generator Rule Comments at 9-11 and 16-20. However, the Agency finalized the rule and applied it to the retail sector, without taking this information into account.

One prime example relates to the number of so-called “hazardous wastes” that the Agency deems to be “generated” per retail facility. RILA noted that retailers commonly stock tens of thousands of individual products (known as Stock Keeping Units or “SKUs”), essentially any of which may become a “waste” because it is unsold or returned. See Generator Rule Comments at 18-19. And each one of these products could be considered a separate “waste stream” in EPA’s view.

EPA’s economic analysis for the final rule failed to account for this obvious reality. The Agency said that LQGs

(stores) in the retail sector generate only between 1 and 10 waste streams per facility, depending upon the type of store (*e.g.*, health and personal care stores, general merchandise stores, or building materials and garden equipment stores). *See* Generator Rule RIA, Exhibit 2-6. Even if EPA meant these numbers to apply only to *hazardous wastes*, they are absurd on their face. For example, the Agency elsewhere has noted that large numbers of pharmaceuticals, which are sold in and regularly disposed of by drug stores, are classified as RCRA hazardous wastes. *See, e.g.*, 80 Fed. Reg. at 58,017 (stating, among other things, that “[a] number of pharmaceuticals are prepared in alcohol, which may cause the waste to be hazardous due to ignitability (D001), even if the active pharmaceutical ingredient itself is not considered hazardous waste”). Moreover, to the extent that aerosols are considered hazardous wastes by the Agency, as discussed above, there are countless aerosol products that are sold in grocery, drug, and other stores, and regularly discarded by such stores. *See generally* NODA Comments at 15 (listing dozens of broad categories of aerosol products).

Clearly, many, if not most, retail stores could have many more than 1 to 10 so-called “hazardous waste streams” in the course of a year. EPA even recognized as much when it stated in its response to comments on the final hazardous waste generator rule that “we are aware of sectors such as [the] retail sector where a large number of [hazardous] waste streams are generated. But these large numbers are counterbalanced by other sectors where only 1 to 5 [hazardous] waste streams are generated per generator.” *See* EPA, “Hazardous Waste Generator Improvements Final Rule Response to Comments Document” (October 4, 2016) at 191. However, the actual numbers that EPA relied upon for the retail sector were in the 1 to 5 range (or slightly higher). *See* Generator Rule RIA, Exhibit 2-6. And EPA was simply wrong in suggesting that “counterbalancing” the lighter burden on some industries could justify an across-the-board rule imposing significant burdens on another sector, like retail, that is manifestly so different from the “average” – especially when the retail sector represents the largest type of facilities affected by the rule.

In sum, EPA based its decision to apply the new hazardous waste generator rule to the retail sector on data about the retail sector that clearly bore no relation to reality. Accordingly, that decision should be repealed, replaced, or modified.

- o **Criterion #3: EPA’s application of the hazardous waste generator rule to the retail sector has costs that greatly outweigh any possible benefits.**

The new hazardous waste generator rule imposes very high costs on the retail sector. To get a sense of the costs, we focus here on the costs of just one of the new requirements under the rule, namely the new requirements for marking and labeling of hazardous waste containers.

EPA estimated that the annualized costs of these requirements across all hazardous waste generators would be between \$2.64 million and \$5.34 million. *See* Generator Rule RIA, Exhibit ES-5. However, this estimate was based on the assumption that each generator produces only a very small number of different types of wastes that do not vary significantly over time (and, apparently, that each container holds just one waste). *Id.* at 3-9 to 3-11. These assumptions may be appropriate for industrial hazardous waste generators, but not for retail stores.

As noted above, retailers carry tens of thousands of different products and each one of these product types would be considered a different discrete waste type, thus potentially resulting in a large number of different “waste streams” despite the fact that none would have a very large quantity at all. Moreover, these products could change significantly from year to year, and often within a year. *See* Generator Rule Comments at 19 (estimating that 10-25% of all SKUs handled by a store change each year on average). And, a single drum

container that is used to aggregate these products in the back of the store might have as many as 300 distinct items, or even more. *Id.* at 54. Under these circumstances, it will be difficult for retailers to be certain of how the various state agencies are going to interpret the new marking/labeling requirements. *Id.* at 54-55.

To the extent that compliance is achievable, it will clearly cost far more – likely orders of magnitude more – than EPA’s estimate of less than \$100 per year per generator (or store, in this case). See Generator Rule RIA, Exhibit 3-5. With tens of thousands of affected stores, the total costs to the retail sector will almost certainly be in the tens of millions of dollars each year. Of course, the costs of other requirements imposed by the new hazardous waste generator rule would be on top of this amount.

These costs far outweigh any potential environmental benefit. As noted above, the wastes discarded by retailers are precisely the same wastes that their customers – households and small businesses – discard every day in the ordinary trash, and in far greater quantities (in the aggregate) than retailers do (even in the aggregate). It makes little sense to impose tens of millions of dollars in costs on retailers to help reduce the amount of consumer products going to municipal landfills by an almost negligible amount.

- o **Criterion #4: EPA’s application of the hazardous waste generator rule to the retail sector eliminates jobs and inhibits job creation.**

The very high costs imposed by EPA’s application of the new hazardous waste generator rule on the retail sector – especially at a time when the sector is facing other major challenges – puts pressure on retailers to reduce other costs, including the costs of labor. It also diverts resources that might otherwise be devoted to developing innovative business practices or expanding business, thereby limiting opportunities for hiring new workers. Inasmuch as the application of the generator rule to retailers eliminates jobs and/or inhibits job creation, it should be repealed, replaced, or modified.

- o **Criterion #5: EPA’s application of the hazardous waste generator rule to the retail sector interferes with regulatory reform initiatives.**

One of the main goals of all regulatory reform initiatives is to improve government efficiency by focusing limited resources on core problems. However, EPA’s application of the new hazardous waste generator rule to the retail sector forces EPA and states to divert compliance assurance, inspection, and enforcement resources away from the heavy industries that generate the vast majority of hazardous wastes, to the retail sector, which generates negligible quantities of such wastes. For this reason, the rule, as it applies to the retail sector, should be repealed, replaced, or modified.

### **3. Proposed Reform for the New Hazardous Waste Generator Rule As It Applies to the Retail Sector**

Any one of the factors discussed above would warrant repeal, replacement, or modification of the hazardous waste generator rule, as it applies to the retail sector. Taken together, these factors make a compelling case for regulatory reform. In light of the fact that the rule is scheduled to take effect in “non-authorized” states (*i.e.*, Alaska, Iowa, and Puerto Rico) on May 30, and will start to be adopted and implemented by “authorized” states (*i.e.*, all the others) shortly after that, time is of the essence. We recognize that these issues cannot be fully addressed overnight. Accordingly, we believe the effective date of the final rule as it applies to the retail sector (other than those portions of the new rule that are less stringent than the pre-existing regulations) should be delayed pending further analysis, or EPA should administratively stay or suspend the applicability of the rule to the retail sector pending such analysis.

#### IV. CONCLUSION

For the reasons discussed above, RILA proposes three separate rules for repeal, replacement, or modification:

- (1) The listing of nicotine products as acutely hazardous wastes should be modified so as to exempt specific categories of low-concentration nicotine products that are currently on the market (*e.g.*, nicotine gum, lozenges, patches, prescription liquids, and e-cigarettes), as well as any future products containing less than a specified concentration of nicotine (*e.g.*, 3%), or so as to reclassify all such products as non-acutely hazardous wastes.
- (2) EPA's current regulatory framework for aerosol cans should be modified by (a) issuing guidance clarifying that aerosol cans do not exhibit the RCRA hazardous waste characteristic of reactivity; (b) issuing guidance that aerosol cans being sent for recycling are off-spec commercial chemical products being reclaimed and are not hazardous wastes or alternatively at least issuing guidance that aerosol cans containing non-hazardous chemical products and propellants that are ignitable, but common fuels, are not hazardous wastes if they are recycled to recover the propellant for use as a fuel; and (c) classifying aerosol cans as universal wastes, if possible first informally by policy, and ultimately through rulemaking.
- (3) The more stringent portions of the recently issued hazardous waste generator rule, as they apply to the retail sector, should be delayed from taking effect, or administratively stayed or suspended, until EPA can analyze fully what changes may be necessary to make the rule – and the RCRA regulations more generally – more appropriate for retailers.

RILA very much appreciates this opportunity to provide input to EPA's regulatory reform efforts pursuant to Executive Order 13777. We are committed to continuing to work with the Agency to develop common sense regulations that protect the environment and the public – our customers – while not overburdening retail businesses with unnecessary or inappropriate red tape and compliance costs.

## EXHIBIT 1

### PROPOSED CHANGES TO THE RCRA REGULATIONS FOR LOW-CONCENTRATION NICOTINE PRODUCTS

#### Exempt Low-Concentration Nicotine Products from the Current Nicotine Listing

- o Amend the following entry in 40 C.F.R. § 261.33(e), Table, as indicated:

Hazardous Waste No.	Chemical Abstracts No. (for parent compound only)	Substance
P075	54-11-5	Nicotine, & salts, <b>unless excluded as specified in § 261.36</b>

- o Add the following new provision in 40 C.F.R. Part 261, Subpart D:

#### **§ 261.36 Exclusion for Low-Concentration Nicotine Products**

(a) **Wastes containing nicotine or nicotine salts do not meet the listing description of EPA Hazardous Waste No. P075 if they meet the requirements of either paragraph (b) or (c) of this section. These wastes may, however, meet another hazardous waste listing description or may exhibit one or more of the hazardous waste characteristics.**

(b) **Wastes containing nicotine or nicotine salts do not meet the listing description of EPA Hazardous Waste No. P075 if they consist of any of the following commercial chemical products (including off-specification variants of such products, container or liner residues from storage of such products, or residues from spills of such products):**

- (1) **Nicotine gum;**
- (2) **Nicotine lozenges;**
- (3) **Nicotine patches;**
- (4) **Nicotine liquids for use in prescription inhalers or nasal sprays;**
- (5) **Nicotine liquids for use in electronic cigarettes (“e-liquids”);**
- (6) **Cartridges containing e-liquids for use in electronic cigarettes; or**
- (7) **Electronic cigarettes containing e-liquids or cartridges containing e-liquids.**

(c) **Wastes containing nicotine or nicotine salts do not meet the listing description of EPA Hazardous Waste No. P075 if they contain less than or equal to 3% nicotine or nicotine salts at the point of waste generation.**

**ATTACHMENT 3**



# Annual Report 2017

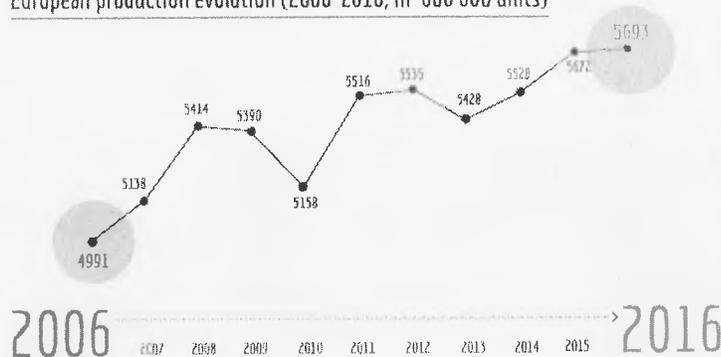
# Facts & Figures

Each year, more than 5.5 billion over 15 billion units globally produced, are made in Europe region. The data annually collected among FEA members, focus on giving a detailed summary on European aerosol products production by country, segment and type.

## EUROPEAN PRODUCTION

According to reported fillings for European aerosol products, overall unit production reached 5.6 billion in 2016, reflecting a stable situation from 2014 & 2015's production numbers.

European production evolution (2006-2016, in '000 000 units)



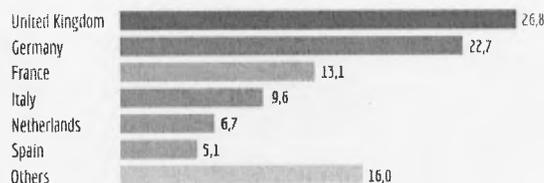
European production (2016, in '000 000 units)



## AEROSOL MARKET SHARE

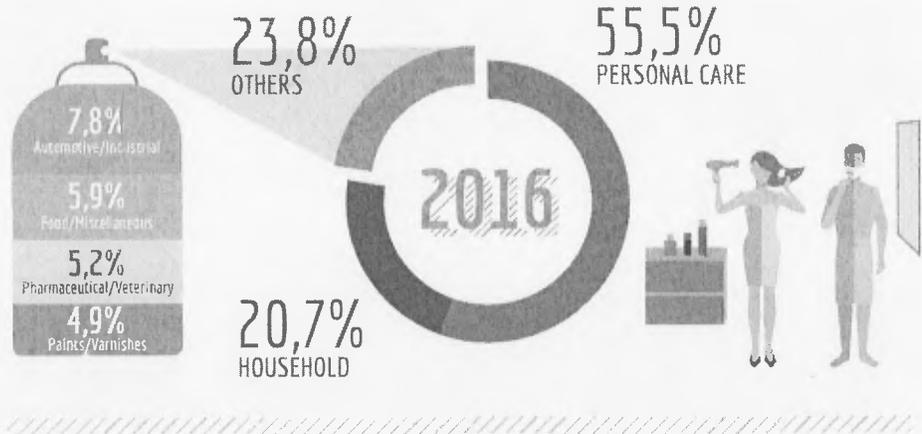
United Kingdom, Germany and France provide more than 60% of the annual aerosol production in Europe in all segments. Together with Italy, Netherlands and Spain, almost 4.7 billion units of aerosol are produced in 2016.

Aerosol market share (% , 2016)



## AEROSOL PRODUCTION BY SEGMENT

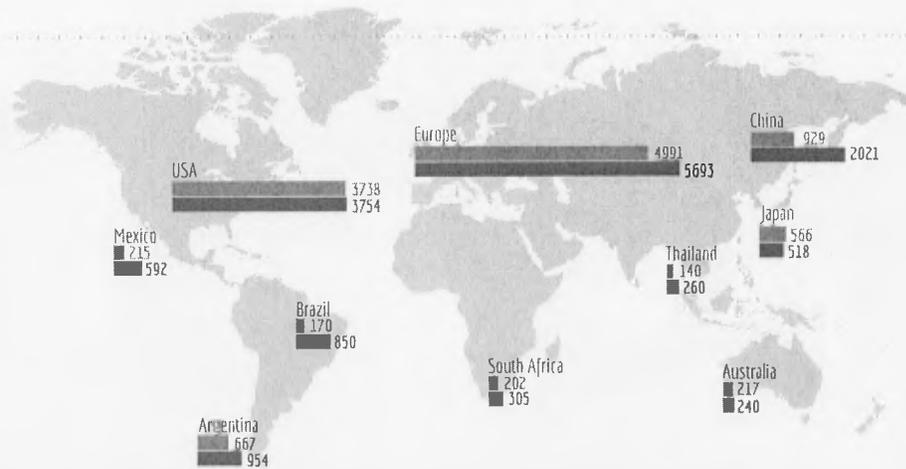
Aerosol containers are primarily made of steel and aluminium whereas glass and plastic containers remain marginal. Cosmetics and household products represent approximately 80% of the European production.



## WORLDWIDE PRODUCTION

Evolution by country  
(in '000 000 units)

● 2006 ● 2016



The FEA Statistics 2016 can be downloaded free of charge on FEA website : [www.aerosol.org](http://www.aerosol.org)

**ATTACHMENT 4**

**Table 1048. Retail Trade—Establishments, Employees, and Payroll:  
2007 and 2008**

[1,123.6 represents 1,123,600. Covers establishments with payroll. Excludes most government employees, railroad employees, and self-employed persons. For statement on methodology, see Appendix III]

Kind of business	2002 NAICS code <sup>1</sup>	Establishments (1,000)		Employees <sup>2</sup> (1,000)		Payroll (bil. dol.)	
		2007	2008	2007	2008	2007	2008
<b>Retail trade, total</b>	<b>44-45</b>	<b>1,123.6</b>	<b>1,100.9</b>	<b>15,760</b>	<b>15,615</b>	<b>375.2</b>	<b>369.3</b>
Motor vehicle and parts dealers	441	127.3	122.4	1,938	1,884	74.7	69.1
Automobile dealers	4411	51.2	49.5	1,274	1,254	55.4	51.1
New car dealers	44111	24.4	24.2	1,138	1,125	50.9	47.2
Used car dealers	44112	26.9	25.3	136	129	4.5	4.0
Other motor vehicle dealers	4412	17.0	16.7	169	165	6.1	5.6
Recreational vehicle dealers	44121	3.0	3.0	43	40	1.7	1.4
Motorcycle and boat and other motor vehicle dealers	44122	14.0	13.8	126	124	4.4	4.2
Motorcycle dealers	441221	6.0	6.0	69	70	2.4	2.3
Automotive parts, accessories, and tire stores	4413	59.1	56.1	496	466	13.2	12.3
Automotive parts, accessories and tire stores	44131	39.6	37.6	329	303	7.8	7.2
Tire dealers	44132	19.5	18.5	166	163	5.5	5.1
Furniture and home furnishing stores	442	65.5	61.7	597	533	15.6	13.9
Furniture stores	4421	29.2	27.3	272	253	8.3	7.4
Home furnishings stores	4422	36.2	34.4	325	281	7.3	6.5
Floor covering stores	44221	14.6	13.9	95	84	3.5	3.0
Other home furnishings stores	44229	21.6	20.5	230	196	3.8	3.5
Window treatment stores	442291	3.1	2.5	16	8	0.4	0.2
Electronics and appliance stores	443	18.6	18.1	214	188	3.5	3.3
Appliance, TV, and all other electronics stores	44311	52.5	49.2	501	465	12.5	11.2
Household appliance stores	443111	38.3	37.1	387	364	9.4	8.5
Radio, television, and other electronics stores	443112	9.0	8.9	69	69	2.1	2.1
Computer and software stores	44312	29.3	28.2	318	295	7.3	6.4
Bldg. material & garden equip. & supp. dealers	444	12.1	10.2	100	88	2.6	2.3
Building material & supplies dealers <sup>3</sup>	4441	67.9	69.4	1,202	1,171	34.9	34.1
Home centers	44411	7.2	7.0	(NA)	(NA)	(D)	(D)
Hardware stores	44413	14.2	16.0	140	143	3.0	3.3
Lawn & garden equip. & supplies stores <sup>3</sup>	4442	20.4	19.8	172	164	4.6	4.3
Nursery and garden centers	44422	16.1	15.6	145	137	3.8	3.6
Food & beverage stores	445	151.0	143.7	2,882	2,862	56.3	56.7
Grocery stores	4451	92.3	89.1	2,565	2,571	50.6	51.5
Supermarkets & grocery (except convenience) stores	44511	64.1	63.4	2,425	2,450	48.4	49.5
Convenience stores	44512	28.2	25.7	140	121	2.2	1.9
Specialty food stores	4452	28.3	23.9	175	145	3.0	2.4
Beer, wine, & liquor stores <sup>4</sup>	4453	30.4	30.7	143	146	2.7	2.8
Health & personal care stores <sup>3</sup>	446	89.4	88.4	1,069	1,025	32.0	31.3
Pharmacies & drug stores	44611	42.3	42.0	798	756	24.9	24.7
Cosmetics, beauty supplies, & perfume stores	44612	14.2	14.0	91	95	1.7	1.6
Optical goods stores	44613	12.9	13.2	71	74	1.9	2.0
Gasoline stations	447	115.5	114.1	889	897	14.9	15.3
Gasoline stations with convenience stores	44711	95.4	95.1	725	725	11.5	11.8
Other gasoline stations	44719	20.1	19.1	164	171	3.4	3.5
Clothing & clothing accessories stores	448	155.4	155.6	1,648	1,648	27.5	26.7
Clothing stores <sup>3</sup>	4481	99.3	99.5	1,279	1,287	19.7	19.2
Men's clothing stores	44811	8.6	8.1	66	58	1.5	1.4
Women's clothing stores	44812	35.6	36.0	342	343	5.3	5.2
Children's & infants' clothing stores	44813	7.0	7.3	94	91	1.0	1.1
Family clothing stores	44814	27.3	28.4	635	662	9.4	9.3
Shoe stores	4482	27.2	28.2	206	208	3.3	3.3
Jewelry, luggage, & leather goods stores	4483	28.8	27.9	163	153	4.5	4.2
Jewelry stores	44831	27.5	26.7	154	146	4.2	4.0
Sporting goods, hobby, book, & music stores	451	60.1	55.8	640	618	10.2	10.0
Sporting goods/hobby/musical instrument stores <sup>3</sup>	4511	43.5	40.9	456	432	7.5	7.4
Sporting goods stores	45111	23.8	22.1	236	228	4.3	4.2
Hobby, toy, and game stores	45112	9.5	9.2	136	124	1.9	1.8
Book, periodical, & music stores <sup>3</sup>	4512	16.6	14.9	184	186	2.6	2.6
Book stores	451211	10.6	9.7	145	152	1.9	2.0
Prerecorded tape, CD, & record stores	45122	4.5	3.7	31	27	0.6	0.4
General merchandise stores	452	47.5	45.7	2,897	2,977	56.7	59.2
Department stores	4521	10.1	8.8	1,620	1,292	30.4	24.0
Other general merchandise stores	4529	37.3	36.9	1,278	1,685	26.3	35.2
Warehouse clubs & superstores	45291	3.3	4.4	961	1,374	21.9	30.7
All other general merchandise stores	45299	34.1	32.5	316	311	4.4	4.4
Miscellaneous store retailers <sup>3</sup>	453	123.4	117.2	814	779	15.6	14.7
Florists	4531	19.8	18.5	94	90	1.4	1.3
Office supplies, stationery, and gift stores	4532	40.7	38.8	315	305	5.4	5.0
Office supplies and stationery stores	45321	9.8	9.4	122	114	2.8	2.4
Gift, novelty, and souvenir stores	45322	30.9	29.4	193	191	2.7	2.6
Used merchandise stores	4533	17.7	17.7	134	135	2.3	2.3
Other miscellaneous store retailers <sup>3</sup>	4539	45.2	42.2	271	250	6.4	6.0
Nonstore retailers <sup>3</sup>	454	47.7	57.9	512	592	19.9	22.9
Electronic shopping & mail-order houses	4541	16.7	21.9	268	332	11.5	14.2
Direct selling establishments	4543	25.9	31.1	194	212	7.0	7.4
Fuel dealers	45431	10.5	10.0	91	84	3.5	3.2

D Figure withheld to avoid disclosure. NA Not available. <sup>1</sup> Based on North American Industry Classification System 2002; 2008 data based on NAICS 2007. See text, Section 15. <sup>2</sup> See footnote 2, Table 1044. <sup>3</sup> Includes other kinds of business, not shown separately. <sup>4</sup> Includes government employees.

Source: U.S. Census Bureau, "County Business Patterns," July 2010, <<http://www.census.gov/econ/cbp/index.html>>.

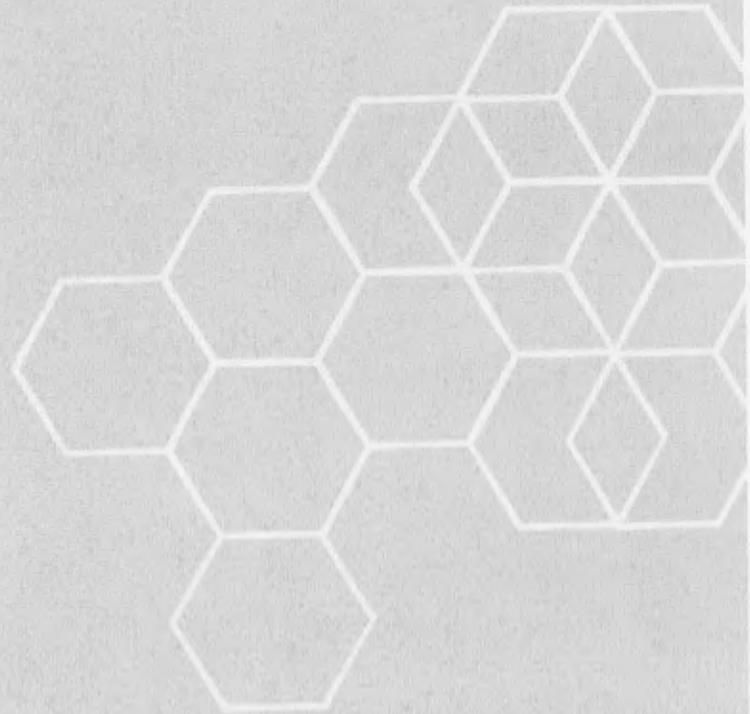
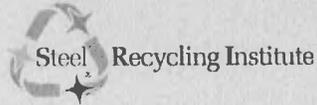
**ATTACHMENT 5**

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# 2015-16 CENTRALIZED STUDY ON AVAILABILITY OF RECYCLING FOR AEROSOL CONTAINERS

PREPARED BY:



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## 2015-16 CENTRALIZED STUDY ON AVAILABILITY OF RECYCLING

# BACKGROUND AND PURPOSE

This study aims to provide an accurate measurement of the availability of recycling programs in the US for aluminum and steel aerosol containers. Through the collaboration of multiple packaging stakeholders, this study shares a common methodology with measurements of recycling program availability for numerous other materials. It aims to capture the nuances of how recycling services for these materials are provided to residents in the U.S., as well as identifying opportunities for increased material recycling.

This study identifies the prevalence of recycling programs that accept aerosol containers and also characterizes the type of instructions provided to residents on recycling these items. This can be used to substantiate availability of recycling claims by brands and marketers.

The data presented is not intended to represent, in and of itself, any claims regarding the recyclability of items covered in this study. Note that the liability for making a recyclability claim rests on the entity making the claim, as described by the Federal Trade Commission:

Marketers must ensure that all reasonable interpretations of their claims are truthful, not misleading, and supported by a reasonable basis before they make the claims. See FTC Policy Statement Regarding Advertising Substantiation, 104 FTC 839 (1984). In the context of environmental marketing claims, a reasonable basis often requires competent and reliable scientific evidence. Such evidence consists of tests, analyses, research, or studies that have been conducted and evaluated in an objective manner by qualified persons and are generally accepted in the profession to yield accurate and reliable results. Such evidence should be sufficient in quality and quantity based on standards generally accepted in the relevant scientific fields, when considered in light of the entire body of relevant and reliable scientific evidence, to substantiate that each of the marketing claims is true.

— Section 260.2, Guides for the Use of Environmental Marketing Claims (“Green Guides”), Federal Trade Commission, October 11, 2012.

# ACKNOWLEDGEMENTS

Resource Recycling Systems (RRS) and Moore Recycling Associates would like to acknowledge the project sponsors for funding this study. In alphabetical order, they are:

- Can Manufacturers Institute (CMI)
- Consumer Specialty Products Association (CSPA)
- Steel Recycling Institute, a business unit of the American Iron and Steel Institute (SRI)
- The Aluminum Association (TAA)

We would also like to thank the Sustainable Packaging Coalition for convening the group of funding stakeholders, and the study advisors Adam Gendell (SPC), Kent Foerster (U.S. EPA), Keefe Harrison (Recycling Partnership), and Scott Mouw (NCDEQ) for their valuable input during the planning process and review period.

# DEFINITIONS

- **Availability of recycling** for this study is defined by a resident having one or more of the following services, measured separately in this study, at their place of residence:
  - Curbside recycling provided automatically to their home by public or private service providers, or
  - Curbside recycling provided on an opt-in or subscription basis to their home by public or private service providers
  - A publicly or privately operated drop-off recycling location within the municipality where the resident resides. Residents living outside the community where the drop-off is located are considered to have drop-off recycling available if their own municipality, county, or other local government directs them to that drop-off location as the appropriate recycling outlet.

Note that the study measures **availability** of recycling, not recycling rates or recycling participation.

- **Curbside** collection of recycling means that recycling is collected from homes after residents set out materials on the side of the street. In this study it is also used to refer to programs for apartment complexes where collection containers for recycling are located anywhere in the complex.
- **Drop-off** recycling refers to a program where residents bring recyclables to a collection point away from their residence.
- **Bins** are open-top containers typically 14 to 18 gallons in capacity, used to hold recyclables for curbside collection.
- **Carts** are large wheeled containers with lids, ranging in capacity from 30 to 100 gallons. Carts used for recycling collection are most frequently 64 or 96 gallons in capacity.
- **Automatic** - In an automatic program, residents receive recycling services, including bins or carts in programs that use them, by default as part of standard waste collection services. These services may be provided by municipal employees or by a contractor.
- **Opt-in** - An opt-in program, for the purposes of this study, is one provided by a community or its contractor, in which residents must sign up and in some cases pay an additional fee to participate in recycling.
- **Subscription** - In a subscription-based program, residents hire curbside recycling services on an individual basis from their choice of private service provider. These services may be bundled with the cost of regular trash collection, or priced separately.
- **Single Stream** refers to a system in which all recyclables are commingled in one container for collection and sorted after collection at a Material Recovery Facility (MRF).
- **Dual Stream** refers to a system in which recyclables are sorted into two groups ("streams"), typically containers and fiber, for separate collection. Each stream may be further sorted at a MRF.

- **Source-Separated** refers to a system in which recyclables are sorted into three or more streams prior to collection.
- **Mixed Waste** refers to a system in which all recyclables and household trash are commingled into one container for collection. Recyclables are sorted from trash after collection at a specialized mixed waste material recovery facility.
- **Single Family** housing typically refers to a detached dwelling in which one household resides. However, in recycling programs, “single family services” are often offered to residents in buildings with up to 2-8 residential units. See the methodology section below for further discussion of this study’s approach.
- **Multi Family** refers to buildings with more than one residential unit. For recycling program purposes, the definition of multi-family may vary from one community to another. This is discussed in the methodology section below.
- **Uptake Rates** refer to the percentage of the population offered an opt-in or subscription recycling service who chooses to receive that service, by signing up, subscribing, or paying the required fees, depending on the program requirements.

# METHODOLOGY

## OVERVIEW

The team of researchers conducting this study reviewed details on recycling program availability for a group of over 2,000 communities representing over 50 percent of the population of each U.S. state and the U.S. as a whole. The largest communities in each state were identified and included in the sample so that at least 50% of each state's population was represented. This large community sample included approximately 1,600 communities in the U.S. The remaining population was represented by a random sample of approximately 500 smaller communities. Researchers independently reviewed public-facing recycling program information and materials and evaluated them for details on the program and items accepted. Both curbside and general drop-off recycling programs were evaluated, but the study did not cover some material-specific drop-off programs, such as bottle deposit programs or manufacturer-provided take-back locations. Each program was coded to indicate whether it was available to single-family residents, residents of multi-family housing, or both. Based on the results of the research, the research team calculated the number of residents in each community that had a recycling program available that accepted a particular material or item. The Project Team calculated the rate of availability of recycling for each commodity included in the study from the large comprehensive sample and the small random sample. The results from the small random sample were extrapolated to apply to the remaining half of the population for each state.

For more details on the study methodology, please see the main study report, *Sustainable Packaging Coalition: 2015-16 Centralized Study on Availability of Recycling*.

## “AVAILABILITY OF RECYCLING” DETERMINATION FOR MATERIALS

The methodology included development of a standardized framework for evaluating how a recycling program describes its acceptance of specific materials. Identified materials were coded based on how explicitly that item is included or excluded from the program's descriptive guidelines. This metric, summarized below, was used to account for some of the variation in how recyclables are described by public programs and to reduce the variation in individual interpretation by researchers as a factor in the study. The scoring system provided a basis for the assumptions and rules that are used to determine whether recycling is available for a particular category. Note that the language shown in the framework is not all-inclusive but represents examples of descriptive terms used to classify materials.

Table 1: Acceptance Rating Framework and Examples of Application to Packaging Types

RATING	RATING SCALE DETAIL EXPLANATION	ALUMINUM AEROSOL CONTAINERS	STEEL AEROSOL CONTAINERS
		Examples (Categorize based on language similar to examples show )	
<b>1: Explicitly Accepted (Considered Availability)</b>	A "1" is a specific mention of the item, or a photo of a common example.	Aerosol cans, aluminum aerosol cans, specific examples (e.g. whipped cream cans, empty spray paint cans), (empty) spray cans	Aerosol cans, steel aerosol cans, specific examples (e.g. shaving cream cans), (empty) spray cans

RATING	RATING SCALE DETAIL EXPLANATION	ALUMINUM AEROSOL CONTAINERS	STEEL AEROSOL CONTAINERS
		Examples (Categorize based on language similar to examples shown)	
<b>2: Implicitly Accepted (Considered Availability)</b>	A "2" means that the program accepts a broader category of material that residents would presume the material belongs to.	Aluminum cans; aluminum; metal	Tin or steel cans; metal
<b>3: Neither Accepted nor Prohibited</b>	A "3" is either highly general instructions that rely on resident prior knowledge, or a specific material not being mentioned in any category. Phone follow-up was conducted to attempt to move items out of the "3" category as appropriate.	Not mentioned; All recyclables; non-specific lists	Not mentioned; All recyclables; non-specific lists
<b>4: Implicitly Prohibited</b>	A "4" does not call the item out as prohibited, but goes into sufficient detail (e.g. with photos and text) of all the items that are part of the program, that a reasonable consumer could assume that anything not listed is not allowable. An item that is part of a larger category that is prohibited.	Detailed list of metal items excluding aerosol cans, e.g.: Metal: beverage cans, soup cans, small scrap metal, hangers.	Detailed list of metal items excluding aerosol cans, e.g.: Metal: beverage cans, soup cans, small scrap metal, hangers.
<b>5: Explicitly Prohibited</b>	A "5" means that the material is specifically called out as prohibited in either text or pictures.	No aerosol cans	No aerosol cans

These individual ratings were then translated to a determination of "availability of recycling". While some materials can be assumed to be included in recycling programs if broad or implicit statements of acceptance are made, others are not assumed to be included unless the program explicitly lists them. This report includes two of the over 40 material categories evaluated using this methodology. The table below explains how and why these determinations were made for the two materials in this report. The cut-off points for determining availability of recycling for each material were reviewed and approved by the study stakeholders.

Table 2: Determination of Availability of Recycling for Items based on Framework

RATING	CAN BE INCLUDED AS AVAILABILITY OF RECYCLING FOR MATERIAL?	DETERMINATION FOR MATERIALS IN THIS REPORT
<b>Explicitly Accepted</b>	Yes	Included for all materials.
<b>Implicitly Accepted or Broader Category Accepted</b>	<p>Yes, if similar in shape and structure to other accepted items of the same material type such that a reasonable consumer would consider them to fall within the category; if broad categories are typically used to describe the inclusion of this item; or if item has been found to be widely accepted in previous studies, and is not known to be problematic in the MRF.</p> <p>No, if unlikely to be considered included in the language.</p>	<p>Included for:</p> <ul style="list-style-type: none"> <li>• Aluminum Aerosol Containers</li> <li>• Steel Aerosol Containers</li> </ul> <p>Broad categories are commonly used as descriptions in programs accepting these items, including cans; metal containers; metal cans; all metal cans; all aluminum cans; and all steel cans. These categories are considered to represent acceptance for aerosol containers (of the metal type specified, if applicable) provided the program does not prohibit aerosol containers.</p>
<b>Neither Accepted nor Prohibited</b>	No	No
<b>Implicitly Prohibited</b>	No	No
<b>Explicitly Prohibited</b>	No	No

# FINDINGS

## AVAILABILITY OF RECYCLING FOR AEROSOL CONTAINERS

Over 60% of the US population was found to have recycling programs available for both steel and aluminum aerosol containers. This figure includes programs available via curbside and drop-off, and optional programs that may or may not charge a fee for participation. Note that the study measured **availability**, not recycling rates. Availability of recycling for a given material measures the percent of the population with opportunities to recycle the material.

Table 3: Availability of Recycling Programs by Material

AVAILABILITY OF RECYCLING PROGRAMS FOR EACH MATERIAL	ESTIMATED POPULATION, IN THOUSANDS, WITH PROGRAMS AVAILABLE	ESTIMATED POPULATION, IN THOUSANDS, WITH NO PROGRAMS AVAILABLE	PERCENT OF TOTAL US POPULATION WITH PROGRAMS AVAILABLE
Aluminum aerosol containers	222,363	86,382	72%
Steel aerosol containers	214,250	94,496	69%

## DETAIL OF RECYCLING PROGRAM TYPES AVAILABLE BY MATERIAL

Curbside recycling programs accepting aluminum aerosol containers were found to be available to 52% of the US population, while only drop-off programs were available to another 20%. For steel aerosol containers, curbside programs were available to 51% of the population, and only drop-off programs were available to another 19%. Residents with both a curbside and a drop-off program available to them are included in the curbside total. Among curbside programs for aerosol containers, most are automatically provided to residents, with a smaller fraction delivered on an opt-in or subscription basis. (Note that percentages may not add due to rounding.)

Table 4: Recycling Program Types Available by Material

	ALL PROGRAMS	CURBSIDE RECYCLING PROGRAMS				DROP OFF PROGRAMS ONLY
		ALL CURBSIDE	AUTOMATIC/ UNIVERSAL	OPT-IN PROGRAMS	SUBSCRIPTION PROGRAMS	
	(Population, in thousands, with programs available/Percent of US population)					
Aluminum aerosol containers	222,363 72%	159,592 52%	132,176 43%	13,391 4%	14,026 5%	62,771 20%
Steel aerosol containers	214,250 69%	156,945 51%	131,598 43%	13,255 4%	12,091 4%	57,305 19%

Opt-in and subscription curbside recycling programs present barriers to program participation compared to automatically provided curbside recycling services. The study found that 37% of residents provided an opt-in program and 30% of residents offered a subscription program opt to receive these services, on average across all programs. This means that of the over 25 million residents with these optional programs available for both aluminum and steel aerosol containers, under 10 million opt to receive these services.

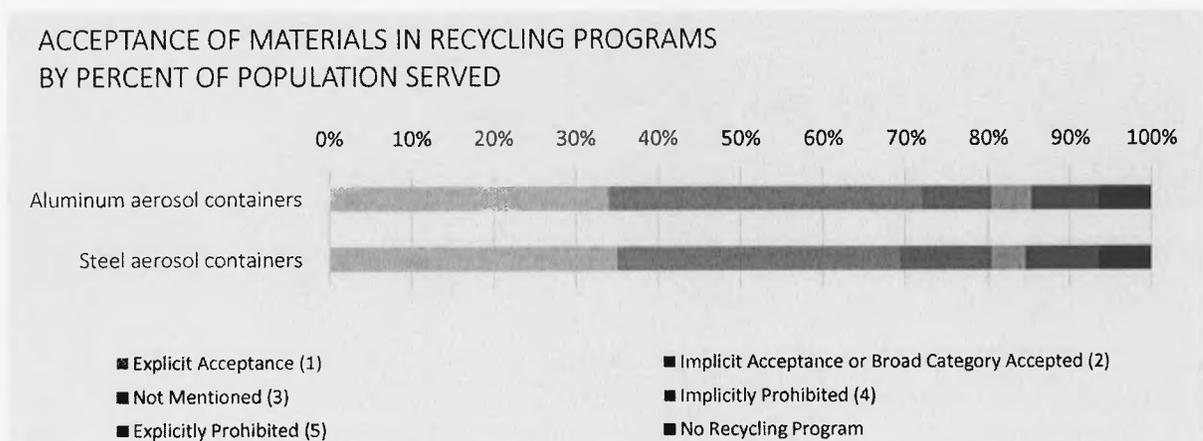
Table 5: Uptake Estimates for Optional Services

UPTAKE ESTIMATES FOR OPTIONAL SERVICES	ESTIMATED POPULATION, IN THOUSANDS, WITH OPTIONAL PROGRAMS AVAILABLE			ESTIMATED POPULATION, IN THOUSANDS, OPTING TO RECEIVE SERVICES			ESTIMATED PERCENT OPTING TO RECEIVE SERVICES <sup>1</sup>		
	TOTAL	OPT-IN	SUBSCRIPTION	TOTAL	OPT-IN	SUBSCRIPTION	TOTAL	OPT-IN	SUBSCRIPTION
Residents with Optional Curbside Recycling Services Available for Aluminum Aerosol Containers	27,417	13,391	14,026	9,220	5,012	4,208	34%	37%	30%
Residents with Optional Curbside Recycling Services Available for Steel Aerosol Containers	25,347	13,255	12,091	8,589	4,961	3,627	34%	37%	30%

## ACCEPTANCE OF AEROSOL CONTAINERS IN RECYCLING PROGRAM GUIDELINES

The following chart shows the acceptance of aerosol containers in recycling programs according to how the program guidelines describe these items. Over 30% of the population is served by programs that explicitly accept these items, while a roughly equal fraction of the population is served by programs that implicitly accept them as part of a broader category. Just under 10% of the population is served by programs explicitly listing these items as prohibited.

Figure 1: Acceptance of Materials in Recycling Program Guidelines



<sup>1</sup> Percent opting to receive services is a national average across all programs.

## STATISTICAL VALIDITY

The study combined a census approach for approximately half the US population with a stratified random sample approach for the other half. For the combined total population, the following procedure was used to calculate a margin of error for the study's findings. The standard error of proportion was calculated for the random sample using the equation  $Std. error of prop. = \sqrt{\frac{p(1-p)}{n}}$  where  $p$  is the sample proportion and  $n$  is the sample size. Next, a z-score was calculated to correspond to a 95% confidence interval (CI), meaning that there is a 95% probability that repeated random samples would result in findings within the margin of error identified. The margin of error for the small random sample is equal to:  $z\text{-score} * \text{standard error of proportion}$ . This margin of error was applied to the population group extrapolated from the random sample, thus identifying an upper and lower bound of the population in this group with availability of recycling programs. Finally, the ratio of this band of uncertainty compared to the total population was calculated to determine a margin of error for the entire U.S. population for each of the study variables below.

Table 6: Margin of Error

VARIABLE	MARGIN OF ERROR CI-95%
Population with Programs Available for Aluminum Aerosol Containers	2%
Population with Programs Available for Steel Aerosol Containers	2%

## ACCEPTANCE OF AEROSOL CONTAINERS IN THE US

The following maps show where community programs that accept aerosol containers are located in the U.S. based on the direct survey results in 2015 and 2016. The maps also show the locations of communities not accepting aerosol containers or not offering a program to recycle these items. The survey represents just over 50% of the U.S. population and thus the maps do not show recycling availability for all communities in the U.S.

### LEGEND – ACCEPTANCE MAPS

- Program accepting specified material
  - Program not accepting material
- Symbols are scaled to represent community population*

Figure 2: Acceptance of Aluminum Aerosol Containers

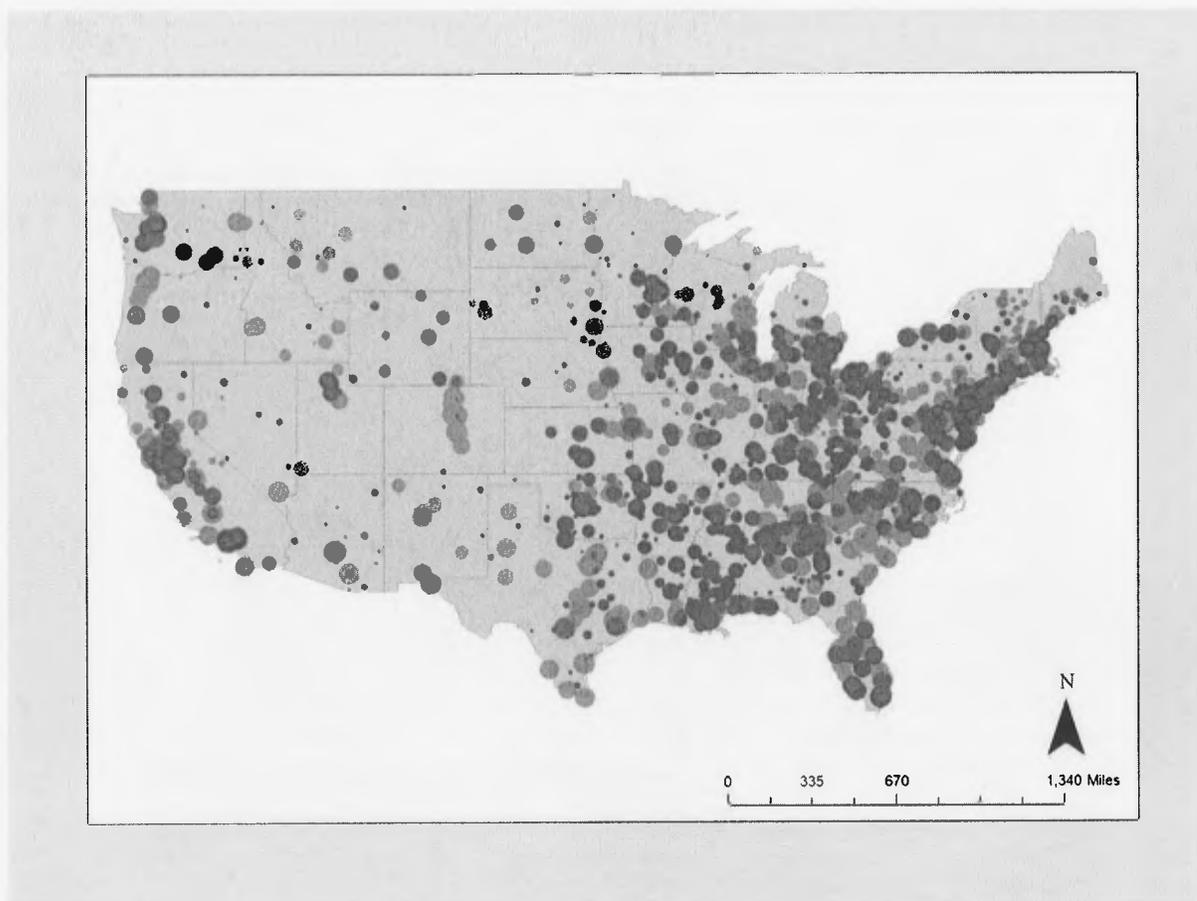
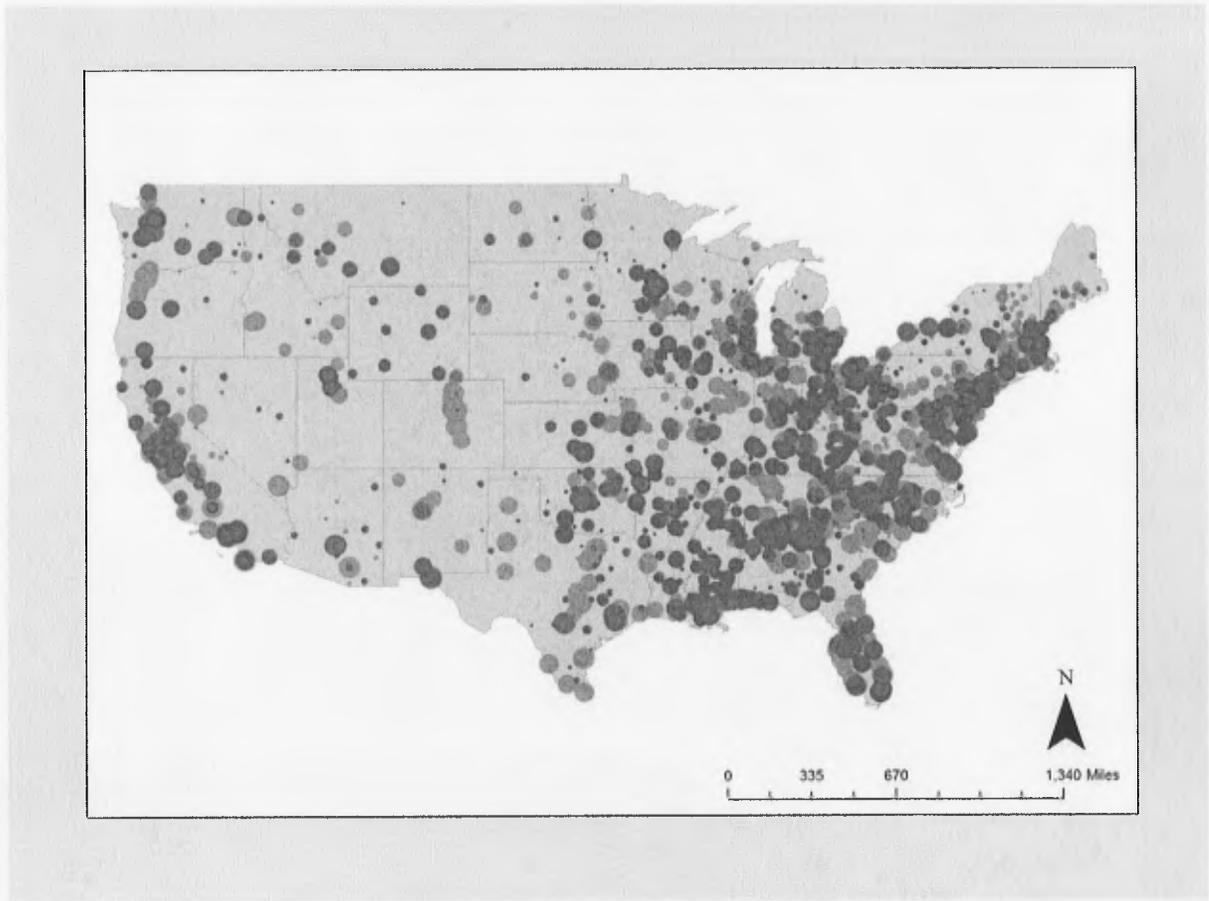


Figure 3: Acceptance of Steel Aerosol Containers



**ATTACHMENT 6**

# NFPA® 1

## Fire Code

### 2018

# 1



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## NFPA® 1

### Fire Code

#### 2018 Edition

This edition of NFPA 1, *Fire Code*, was prepared by the Technical Committee on Fire Code and acted on by NFPA at its June Association Technical Meeting held June 4–7, 2017, in Boston, MA. It was issued by the Standards Council on August 17, 2017, with an effective date of September 6, 2017, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See “Codes & Standards” at [www.nfpa.org](http://www.nfpa.org) for more information.

This edition of NFPA 1 was approved as an American National Standard on September 6, 2017.

#### Origin and Development of NFPA 1

This *Code* was originally developed as a result of the requests of many members of the National Fire Protection Association for a document covering all aspects of fire protection and prevention that used the other developed NFPA codes and standards. NFPA staff initiated this work in 1971 upon a directive from the NFPA Board of Directors. The original code was written around a format that served as a guide for the development of a local fire prevention code. Prerogatives of local officials were excluded from the main text of the document but included within appendices as guidance for exercising desired prerogatives.

In the late 1980s, the Fire Marshals Association of North America (now the International Fire Marshals Association [IFMA]) undertook the task of developing a code that was more self-contained, adding administrative sections and extracting heavily from other NFPA codes and standards. The draft was submitted to the Fire Prevention Code Committee. The Committee examined changes in the built environment as it is affected by fire and incorporated significant portions of the *Life Safety Code*®. A special task group on hazardous materials examined technological changes in the handling, storage, and use of flammable and combustible materials. Chapters extracting hazardous material requirements placed a greater emphasis on protection of life and property from chemical products made and used in the environment. A major rewrite resulted in the 1992 edition of the *Fire Prevention Code*.

The 1997 edition updated the text extracted from other NFPA codes and standards and added compliance with additional NFPA codes and standards as part of the requirements of NFPA 1.

The 2000 edition of NFPA 1 was a complete revision that updated the text extracted from other NFPA codes and standards. Additional direct references from NFPA codes and standards that are essential to a code official’s use of the document were added. The Committee also added a new section on performance-based design as a valuable tool for code officials and design professionals. NFPA 1 was restructured to be more functional with respect to administration, code enforcement, and regulatory adoption processes.

The 2003 edition of NFPA 1, *Uniform Fire Code*™, was a complete revision. It incorporated provisions from the Western Fire Chiefs, *Uniform Fire Code*™, under a partnership between NFPA and Western Fire Chiefs, while it updated and expanded the provisions extracted from other key NFPA codes and standards. To emphasize the partnership, the document was renamed NFPA 1, *Uniform Fire Code*™. The *Uniform Fire Code* is a trademark of the Western Fire Chiefs Association. NFPA 1, *Uniform Fire Code*™, was restructured into parts to be more compatible with the regulatory adoption procedures, including administration and code enforcement, occupancies, processes, equipment, and hazardous materials provisions. The Committee included a newly expanded chapter on performance-based design as an enhanced tool for code officials and design professionals. Additional extracts and references from NFPA codes and standards that are essential to a code official’s use of the document were added, bringing the number of referenced NFPA codes and standards to over 125. Additional chapters on hazardous materials were included that incorporate the provisions covered in the *Uniform Fire Code*™.

The 2006 edition of NFPA 1, *Uniform Fire Code*<sup>TM</sup>, was a complete revision of the Code that incorporated the provisions from NFPA 230, *Standard for the Fire Protection of Storage*. The Technical Committee on Uniform Fire Code had been given responsibility for NFPA 230 by the NFPA Standards Council, so they incorporated the requirements into NFPA 1 rather than maintain a separate standard.

The 2006 edition of NFPA 1 also included new chapters on classification of occupancy, motion picture studios, outdoor tire storage, and general storage, along with other extracted provisions updated and expanded the from other key NFPA codes and standards that were essential to a code official's use of the document. The number of NFPA codes and standards referenced in this edition was 117.

With the 2009 edition of NFPA 1, the title of the document was changed from *Uniform Fire Code* to *Fire Code*. The revision updated all the extracted provisions from the 117 codes and standards that were included as mandatory reference publications in the 2006 edition. The revisions also included an expansion of Section 12.5 on interior finish to contain extracted provisions from NFPA 101; an expansion of Section 12.6 on furnishings, contents, decorations, and treated fabrics to contain extracted provisions from NFPA 101; a new Section 18.4, which moved fire flow requirements for buildings from Annex H; a new Section 32.5 for regulating locations for motion picture and television production studios, soundstages, and approved production facilities with extracted provisions from NFPA 140; and new Sections 40.3 through 40.7 on combustible dust explosion protection and fire prevention with extracted provisions from NFPA 654. Additional information on hazardous materials classifications was added to Annex B. This revision also added three annexes to the 2009 edition, including Annex O, In-Building Public Safety Radio Enhancement Systems; Annex P, Fire Department Service Delivery Concurrency Evaluation; and Annex Q, Fire Fighter Safety Building Marking System. The number of NFPA codes and standards referenced in this edition was 119.

Six annexes published in the 2006 edition were deleted from the 2009 edition, including Annex E, Model Citation Program; Annex F, Model Fees and Charges Program; Annex H, Fire Flow Requirements for Buildings; Annex J, Protection of Outdoor Storage; Annex M, Recommendations for Fighting Rubber Tire Fires in Sprinklered Buildings; and Annex N, AHJ Minimum Qualifications and Job Descriptions for Code Enforcement Personnel.

The 2012 edition of NFPA 1 included revisions to requirements for the fire code board of appeals (Section 1.10); certificates of fitness (Section 1.13); application limits of referenced standards (Section 2.1); emergency plan provisions (Section 10.9); prohibited storage of grills on balconies (10.11.6.2); new requirements for standardized elevator keys (11.3.6); new requirements for determination of fire department communication capabilities in buildings and two-way radio communication enhancement systems and deleted former Annex O (Section 11.10); medical gas and vacuum systems (Section 11.11); photovoltaic systems (Section 11.12); quality assurance of fire barrier penetrations and joints (12.3.2); and automatic sprinkler system requirement for new buildings three or more stories in height above grade (13.3.2.4). The 2012 edition also relocated former Annex P to the new Chapter 15, Fire Department Service Delivery Concurrency Evaluation; expanded Chapter 17, Wildland Urban Interface; added a new Chapter 36, Telecommunication Facilities and Information Technology Equipment; added a new Chapter 37, Fixed Guideway Transit and Passenger Rail Systems; added requirements for carbon monoxide detection in residential occupancies; relocated former Annex G to the new Chapter 54, Ozone Gas-Generating Equipment; extensively revised Chapter 60, Hazardous Materials, to extract from NFPA 400, *Hazardous Materials Code*, updated Chapter 66, Flammable and Combustible Liquids, per the current edition of NFPA 30, *Flammable and Combustible Liquids Code*, revised Chapter 67, Flammable Solids, to reference NFPA 400; revised Chapter 68, Highly Toxic and Toxic Solids and Liquids, to reference NFPA 400; completely revised Chapter 70, Oxidizer Solids and Liquids; revised Chapter 71, Pyrophoric Solids and Liquids, to reference NFPA 400; revised Chapter 72, Unstable (Reactive) Solids and Liquids, to reference NFPA 400; added a new Chapter 74, Ammonium Nitrate; added a new Chapter 75, Organic Peroxide Solids and Liquids; deleted Annex K, Explanation of Rack Storage Test Data and Procedures; deleted Annex L, Protection of Baled Cotton: History of Guidelines; and updated all extracts through the Annual 2011 revision cycle.

Key revisions for the 2015 edition of NFPA 1 included the prohibition of the use of sky lanterns (10.10.9.3); expanded application of photovoltaic system requirements to existing installations (Section 11.12); AHJ authorization to permit the removal of nonrequired, existing occupant-use hose (13.2.2.6); mandatory automatic sprinkler requirement for all new hotels without exception (13.3.2.15); enhanced attic protection for residential board and care occupancies with residential sprinkler systems (13.3.2.21.2.7); expanded occupancy-based fire alarm system provisions to correlate with NFPA 101 (Section 13.7); new occupant load factor for concentrated business use (14.8.1.2); completely revised fire hydrant location and distribution requirements and deleted former Annex E (Section 18.5); revisions to NFPA 654 extracts for dust explosion prevention (Chapter 40); new hot work permit limits from NFPA 51B (41.3.4.4); expanded existing commercial cooking equipment extinguishing system requirements from NFPA 96 (50.4.4.3.2); expanded ammonia refrigeration system maintenance and testing requirements (Section 53.3); updated hazardous materials maximum allowable quantities from NFPA 400 (60.4.2); new provisions for alcohol-based hand rub dispensers from NFPA 101 (60.5.2); revisions to aerosol product classifications from NFPA 30B (61.1.3); new requirements for cleaning and purging gas piping systems from NFPA 55 (63.3.1.19); new provisions for cooking oil storage tank systems in commercial kitchens from NFPA 30 (66.19.7); and updates of all extracts through the Annual 2014 revision cycle.

The 2018 edition of NFPA 1 includes revisions to requirements for the application of referenced publications (1.4.1.1 and 2.1.1); newly added references for the professional qualifications for fire inspectors, plan examiners, and fire marshals (1.7.2);

new minimum fire prevention inspection frequencies for existing occupancies (10.2.7); updates to premises identification (10.11.1); new and updated marking and access criteria for photovoltaic systems (Section 11.12); new provisions for rubberized asphalt melters (Section 16.7); listing requirements for electric gates used on fire department access roads (18.2.4.2.6); new provisions on the outside storage of biomass feedstock (31.3.10); new requirements for the outdoor storage of wood and wood composite pallets or listed pallets equivalent to wood (34.10.3); added a new chapter on marijuana growing, processing, or extraction facilities (Chapter 38); revision of Chapter 40 to replace extracts from NFPA 654 with extracted provisions from NFPA 652 (Chapter 40); complete reorganization of aircraft fuel servicing provisions in accordance with NFPA 407 (Section 42.10); new section on mobile and temporary cooking operations (Section 50.7); extensive revisions of Chapter 52 on energy storage systems (Chapter 52); new Chapter 55 on cleaning and purging of flammable gas piping systems with reference to NFPA 56 (Chapter 55); new provisions for insulated liquid carbon dioxide systems extracted from NFPA 55 (Section 63.9); new Annex on fire fighter breathing-air replenishment systems (Annex E); and updates of all extracts through the Annual 2017 revision cycle.

NFPA 1 reflects the technical knowledge of the committees who are responsible for the codes and standards that are referenced in and from which text is extracted and incorporated into the technical provisions of NFPA 1. This *Code* is intended to provide state, county, and local jurisdictions with an effective fire code.

**Δ 60.6 Emergency Action Planning, Fire Risk Control and Chemical Hazard Requirements for Industrial Processes.** Emergency planning, fire risk control, and chemical hazard requirements associated with industrial processes where the quantities of materials in use require compliance with Protection Level 1, Protection Level 2, Protection Level 3, or Protection Level 4 based on materials exceeding the maximum allowable quantities (MAQ) in the following categories shall comply with the requirements of Chapter 7 of NFPA 400:

- (1) Unpackaged organic peroxide formulations that are capable of explosive decomposition in their unpackaged state
- (2) Oxidizer Class 3 and Class 4: solids and liquids
- (3) Pyrophoric solids, liquids, and gases
- (4) Unstable reactive Class 3 and Class 4: solids, liquids, and gases
- (5) Highly toxic solids, liquids, and gases
- (6) Water-reactive liquids, Class 3

**Δ 60.7 Performance Alternative.** In lieu of complying with Chapter 60 in its entirety, occupancies containing high hazard Level 1 to high hazard Level 5 contents shall be permitted to comply with Chapter 10 of NFPA 400.

## Chapter 61 Aerosol Products

### 61.1 General Provisions.

#### 61.1.1 Application.

**Δ 61.1.1.1\*** The manufacture, storage, use, handling, and display of aerosol products shall comply with the requirements of Chapter 61; NFPA 30B and Sections 60.1 through 60.4 of this Code.

**61.1.1.2** Where the provisions of Chapter 61 or NFPA 30B conflict with the provisions of Chapter 60, the provisions of Chapter 61 and NFPA 30B shall apply.

**61.1.1.3\*** Chapter 61 shall not apply to the storage and display of containers whose contents are comprised entirely of LP-Gas products. [30B:1.1.2]

**61.1.1.4** Chapter 61 shall not apply to post-consumer processing of aerosol containers. [30B:1.1.3]

**61.1.1.5\*** Chapter 61 shall not apply to containers that do not meet the definition of *Aerosol Container* (see 3.3.2 of NFPA 30B). [30B:1.1.4]

**61.1.1.5.1** Containers that contain a product that meets the definitions in 3.3.1 and 3.3.3 of NFPA 30B, but are larger than the limits specified in 3.3.2 of NFPA 30B, shall not be classified as aerosol products, and Chapter 61 shall not apply to the manufacture, storage, and display of such products. [30B:1.1.4.1]

**61.1.2 Permits.** Permits, where required, shall comply with Section 1.12.

**61.1.3\* Classification of Aerosol Products in Metal Containers of Not More Than 33.8 fl oz (1000 ml) and in Plastic or Glass Containers of Not More Than 4 fl oz (118 ml).** See Annex E of NFPA 30B. [30B:1.7]

**61.1.3.1** Aerosol products shall be classified by means of the calculation of their chemical or theoretical heats of combustion and shall be designated Level 1, Level 2, or Level 3 in

accordance with 61.1.3.2 through 61.1.3.4 and Table 61.1.3.1. [30B:1.7.1]

**61.1.3.1.1** In lieu of classification by means of the chemical heats of combustion, aerosol products shall be permitted to be classified by means of data obtained from properly conducted full-scale fire tests that utilize a 12-pallet test array. [30B:1.7.1.1]

*Exception: This shall not apply to aerosol cooking spray products. (See 61.1.3.5.)* [30B:1.7.1.1]

**61.1.3.1.2** The fire tests shall be conducted at an approved testing laboratory. (See Annex C of NFPA 30B for information on the 12-pallet test array.) [30B:1.7.1.2]

**61.1.3.2 Level 1 Aerosol Products.** Level 1 aerosol products shall be defined as those products with a total chemical heat of combustion that is less than or equal to 20 kJ/g (8600 Btu/lb). [30B:1.7.2]

**61.1.3.3 Level 2 Aerosol Products.** Level 2 aerosol products shall be defined as those products with a total chemical heat of combustion that is greater than 20 kJ/g (8600 Btu/lb), but less than or equal to 30 kJ/g (13,000 Btu/lb). [30B:1.7.3]

**61.1.3.4 Level 3 Aerosol Products.** Level 3 aerosol products shall be defined as those products with a total chemical heat of combustion that is greater than 30 kJ/g (13,000 Btu/lb). [30B:1.7.4]

**61.1.3.5 Aerosol Cooking Spray Products.** Aerosol cooking spray products shall be defined as those aerosol products designed to deliver a vegetable oil or a solid or nonflammable liquid to reduce sticking on cooking and baking surfaces or to be applied to food or both. These products have a chemical heat of combustion that is greater than 20 kJ/g (8600 Btu/lb) and contain not more than 18 percent by weight of flammable propellant. [30B:1.7.5]

**61.1.3.5.1** If the aerosol cooking spray product has a chemical heat of combustion that does not exceed 20 kJ/g (8600 Btu/lb), it shall be considered a Level 1 aerosol product. [30B:1.7.5.1]

**61.1.3.5.2** If the aerosol cooking spray product contains more than 18 percent by weight of flammable propellant, it shall be classified in accordance with its chemical heat of combustion, as set forth in Table 61.1.3.1. [30B:1.7.5.2]

**Table 61.1.3.1 Aerosol Product Classification**

If the chemical heat of combustion is		Aerosol Classification Level
>	≤	
0	20 kJ/g (8,600 Btu/lb)	1
20 kJ/g (8,600 Btu/lb)	30 kJ/g (13,000 Btu/lb)	2
30 kJ/g (13,000 Btu/lb)	—	3

[30B:Table 1.7.1]

#### 61.1.4 Classification of Aerosol Products in Plastic Containers Greater Than 4 fl oz (118 ml) and Less Than 33.8 oz (1000 ml).

**61.1.4.1 Plastic Aerosol 1 Products.** Plastic aerosol 1 products shall be defined as those that meet one of the following criteria:

- (1) The base product has no fire point when tested in accordance with ASTM D92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester*, and the propellant is nonflammable.
- (2) The base product does not exhibit sustained combustion when tested in accordance with 49 CFR 173, Appendix H, "Method of Testing for Sustained Combustibility, or the *UN Recommendations on the Transport of Dangerous Goods*, and the propellant is nonflammable.
- (3)\* The base product contains not more than 20% by volume (15.8% by weight) of ethanol or propanol or mixtures thereof in an aqueous mix and the propellant is nonflammable.
- (4)\* The base product contains not more than 4% by weight of an emulsified liquefied flammable gas propellant within an aqueous base, said propellant to remain emulsified for the life of the product. Where such propellant is not permanently emulsified then the propellant shall be nonflammable.

[30B:1.8.1]

**61.1.4.2 Plastic Aerosol X Products.** Plastic aerosol X products shall be defined as those that do not meet any of the criteria provided in 61.1.4.1. [30B:1.8.2]

#### 61.1.5 Marking of Packages of Aerosol Products.

**61.1.5.1** Manufacturers of aerosol products shall ensure that all cartons or packages of aerosol products are identified on at least one exterior side with the classification of the aerosol products contained therein, in accordance with 61.1.3 and 61.1.4. [30B:1.9.1]

Δ 61.1.5.2 Cartons or packages containing aerosol products in metal containers or glass and plastic containers 4 fl oz (118 ml) or less shall be clearly marked as follows:

Level \_\_\_\_\_ Aerosols

[30B:1.9.2]

N 61.1.5.3 Cartons or packages containing aerosol cooking spray products in metal containers shall be clearly marked as follows:

Aerosol Cooking Spray

[30B:1.9.3]

Δ 61.1.5.4 Cartons or packages containing aerosol products in plastic containers greater than 4 fl oz (118 ml) shall be clearly marked on the exterior of the carton as follows:

Plastic Aerosol 1 (or X)

[30B:1.9.4]

#### 61.2 Basic Requirements.

**61.2.1 Site Requirements.** Distances between buildings used for the manufacture or storage of aerosol products and adjacent buildings or property lines that are or can be built upon shall be based on sound engineering principles. [30B:4.1]

#### 61.2.2 Building Construction.

**61.2.2.1** Openings in fire walls or fire barriers shall be kept to a minimum. [30B:4.2.1]

**61.2.2.1.1** All openings (i.e., personnel doorways, ductwork, conveyor line, etc.) shall be protected with automatic-closing or self-closing fire doors or dampers. [30B:4.2.1.1]

Δ 61.2.2.1.2 Fire doors shall be installed in accordance with NFPA 80. [30B:4.2.1.2]

Δ 61.2.2.1.3 Fire dampers shall be installed in accordance with manufacturer's instructions and NFPA 90A. [30B:4.2.1.3]

#### 61.2.2.2 Means of Egress.

**61.2.2.2.1** Means of egress shall comply with applicable provisions of NFPA 101. [30B:4.2.2.1]

**61.2.2.2.2** The design and construction of conveyor lines and other physical obstacles, such as in the flammable propellant charging and pump rooms, shall not allow entrapment of personnel and shall provide for direct access to exits. [30B:4.2.2.2]

#### 61.2.3 Electrical Installations.

**61.2.3.1** All electrical equipment and wiring, including heating equipment, shall be installed in accordance with NFPA 70. [30B:4.3.1]

**61.2.3.1.1** Electrical equipment and wiring in areas where flammable liquids or flammable gases are handled shall meet the additional requirements of Articles 500 and 501 of NFPA 70. [30B:4.3.1.1]

**61.2.3.2** Aerosol product storage and display areas shall be considered unclassified for purposes of electrical installation. [30B:4.3.2]

**61.2.4 Heating Equipment.** Heating equipment shall be installed in accordance with the applicable requirements of the following:

- (1) NFPA 31, *Standard for the Installation of Oil-Burning Equipment*
- (2) NFPA 54, *National Fuel Gas Code*
- (3) NFPA 58, *Liquefied Petroleum Gas Code*
- (4) NFPA 85, *Boiler and Combustion Systems Hazards Code* [30B:4.4]

Δ 61.2.5 **Flammable Liquids and Gases.** Areas in which flammable liquids and flammable gases are handled or stored shall meet the applicable requirements of the following:

- (1) Chapter 66 and NFPA 30
- (2) Chapter 69 and NFPA 58 [30B:4.5]

#### 61.2.6 Fire Protection.

Δ 61.2.6.1 **Automatic Sprinkler Systems.** Installations of automatic sprinklers, where required by this Code and NFPA 30B, shall be installed in accordance with Section 13.3 and NFPA 13 and the provisions of NFPA 30B. [30B:4.6.1]

Δ 61.2.6.1.1 Where the provisions of Chapter 61 and NFPA 13 differ, the provisions of Chapter 61 shall prevail. [30B:4.6.1.1]

**Δ 61.2.6.1.2** Where Chapter 61 does not address specific automatic sprinkler protection criteria, the provisions of NFPA 13 shall prevail. [30B:4.6.1.2]

**N 61.2.6.1.3** Production areas that contain base product fillers, button tippers, valve crimpers, test baths, and aerosol product packaging equipment shall be protected by a wet-pipe automatic sprinkler system installed in accordance with NFPA 13. The sprinkler system shall be designed to protect the highest level of storage or production hazard that is present. [30B:5.8.2]

**N 61.2.6.1.3.1** Level 2 and Level 3 aerosol products shall be permitted to be stored in production areas, such as staging areas (e.g., awaiting transfer to a warehouse), provided all of the following are met:

- (1) They are stacked no more than 5 ft (1.5 m) high.
- (2) There is no warehouse storage of aerosol products within 25 ft (7.6 m) of the production line.

[30B:5.8.2.1]

**N 61.2.6.1.3.1.1** All other storage shall be protected in accordance with Table 6.4.2.7(a) through Table 6.4.2.7(l), of NFPA 30B, as applicable. [30B:5.8.2.1.1]

**N 61.2.6.1.3.2** Aerosol products in plastic containers of capacity larger than 4 fl oz (118 ml) shall be permitted to be stored in production areas, such as staging areas (e.g., awaiting transfer to a warehouse), up to a maximum quantity of 1000 lb (454 kg), provided all of the following are met:

- (1) The aerosol products are not treated as Class III commodities in accordance with Section 6.5 of NFPA 30B.
- (2) They are stacked no more than 5 ft (1.5 m) high.
- (3) There is no warehouse storage of aerosol products within 25 ft (7.6 m) of the production line.

[30B:5.8.2.2]

**61.2.6.2 Standpipe and Hose System.** Installations of standpipe and hose systems, where required by this Code and NFPA 30B, shall be designed and installed in accordance with Section 13.2 and NFPA 14 and with the provisions of NFPA 30B. Only combination or spray hose nozzles shall be used. [30B:4.6.2]

**61.2.6.3 Portable Fire Extinguishers.** Fire extinguishers shall be provided in accordance with Section 13.6. [30B:4.6.3]

#### 61.2.6.4 Water Supplies.

**61.2.6.4.1** In addition to the water supply requirements for automatic sprinkler systems, a minimum requirement for hose stream supply for combined inside and outside hose streams shall be provided in accordance with one of the following:

- (1) 500 gpm (1900 L/min) for buildings protected with spray and/or control mode specific application (CMSA) sprinkler protection
- (2) 250 gpm (950 L/min) for buildings protected with ESFR sprinkler protection
- (3) 1000 gpm (3800 L/min) for buildings without automatic sprinkler protection [30B:4.6.4.1]

**61.2.6.4.1.1** The water supply shall be sufficient to provide the required hose stream demand for a minimum duration of 2 hours, unless otherwise specified in 61.3.4.2. [30B:4.6.4.1.1]

**Δ 61.2.6.4.1.2** The water supply system shall be designed and installed in accordance with Section 13.5 and NFPA 24. [30B:4.6.4.1.2]

**61.2.6.4.1.3** The water supply requirements shall be permitted as modified by the provisions of NFPA 30B. [30B:4.6.4.1.3]

**Δ 61.2.6.4.2** Installations of fire pumps and tanks that are needed to supply the required fire protection water shall be installed in accordance with Section 13.4 and NFPA 20 and NFPA 22. [30B:4.6.4.2]

**61.2.7 Fire Alarms.** Fire alarm systems shall be installed, tested, and maintained in accordance with applicable requirements of Section 13.7 and NFPA 72. [30B:4.7]

#### 61.2.8 Sources of Ignition.

**61.2.8.1** In areas where flammable gases or flammable vapors might be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. [30B:4.8.1]

**61.2.8.2** Sources of ignition shall include, but are not limited to, the following:

- (1) Open flames
- (2) Lightning
- (3) Hot surfaces
- (4) Radiant heat
- (5) Smoking
- (6) Cutting and welding
- (7) Spontaneous ignition
- (8) Frictional heat or sparks
- (9) Static electricity
- (10) Electrical arcs and sparks
- (11) Stray currents
- (12) Ovens, furnaces, and other heating equipment
- (13) Automotive vehicles
- (14) Material-handling equipment [30B:4.8.2]

#### 61.3 Storage in Warehouses and Storage Areas.

##### 61.3.1 Basic Requirements.

**61.3.1.1** The protection criteria in Section 61.3 shall apply to the following:

- (1) Level 1 aerosol products in metal containers not more than 33.8 fl oz (1000 ml) capacity, in accordance with 61.3.2
- (2) Aerosol cooking spray products in metal containers not more than 33.8 fl oz (1000 ml) capacity, in accordance with 61.3.3
- (3) Level 2 and Level 3 aerosol products in metal containers not more than 33.8 fl oz (1000 ml) capacity, in accordance with Section 6.4 of NFPA 30B
- (4) Aerosol products in glass and plastic containers not more than 4 fl oz (118 ml) capacity, in accordance with Section 6.4
- (5) Aerosol products in plastic containers greater than 4 fl oz (118 ml) capacity and not more than 33.8 fl oz (1000 ml) capacity, in accordance with Section 6.5 of NFPA 30B

[30B:6.1.1]

**61.3.1.2** All outer packaging of aerosol products, including cartons, trays, shrouds, or other packaging, shall be identified on at least one side with the classification of the aerosol products in accordance with Section 1.9 of NFPA 30B and with one of the following, whichever is appropriate:

- (a) Level \_\_\_\_ Aerosols
  - (b) Aerosol Cooking Spray
  - (c) Plastic Aerosol 1 (or X)
- [30B:6.1.2]

**61.3.1.3\*** Fire-retardant cartons shall not be considered an acceptable alternative to the protection requirements of Chapter 6 of NFPA 30B. [30B:6.1.3]

**61.3.2\* Storage of Level 1 Aerosol Products.**

**61.3.2.1** Level 1 aerosol products shall be considered equivalent to Class III commodities, as defined in NFPA 13. [30B:6.2.1]

**61.3.2.2** In cases where the storage of Level 1 aerosol products is required to be protected, such storage shall be protected in accordance with the requirements for Class III commodities set forth in NFPA 13. [30B:6.2.2]

**61.3.3 Storage of Aerosol Cooking Spray Products.**

**61.3.3.1 General.**

**61.3.3.1.1** Aerosol cooking spray products shall be permitted to be stored in a general-purpose warehouse. [30B:6.3.1.1]

**61.3.3.1.2** Aerosol cooking spray products shall be permitted to be stored mixed with other higher hazard aerosols as long as the provided isolation, storage height restrictions, and protection are based on the highest hazard aerosol product present. [30B:6.3.1.2]

**61.3.3.2 Fire Protection.**

**61.3.3.2.1** Encapsulated storage of cartoned aerosol cooking spray products shall be protected as uncartoned storage. [30B:6.3.2.1]

**61.3.3.2.2** Stretch-wrapping of cartons of aerosol cooking spray products shall be protected as cartoned storage. [30B:6.3.2.2]

**61.3.3.2.3** Wet-pipe automatic sprinkler protection shall be provided in accordance with Table 61.3.3.2.3(a) or Table 61.3.3.2.3(b) for cartoned aerosol cooking spray products stored in open frame racks without solid shelves or stored as palletized or solid pile storage. [30B:6.3.2.3]

**61.3.3.2.4** Rack storage shall be arranged so that a minimum aisle width of 8 ft (2.4 m) is maintained between rows of racks and between racks and adjacent solid pile or palletized storage. [30B:6.3.2.4]

**61.3.3.2.5** Solid pile and palletized storage shall be arranged so that no storage is more than 25 ft (7.6 m) from an aisle. Aisles shall be not less than 4 ft (1.2 m) wide. [30B:6.3.2.5]

**61.3.3.2.6** Aerosol cooking spray product that is stored uncartoned shall be protected in accordance with Section 6.4 of NFPA 30B using the criteria for a Level 2 or Level 3 aerosol product, based on the product's chemical heat of combustion. [30B:6.3.2.6]

**61.3.3.2.7** Protection criteria that are developed based on full-scale fire tests performed at an approved facility shall be considered an acceptable alternative to the protection criteria set forth in Table 61.3.3.2.3(a) or Table 61.3.3.2.3(b). [30B:6.3.2.7]

**61.3.3.2.8** Storage in occupancies other than warehouses or mercantile occupancies, such as in assembly, business, educational, industrial, and institutional occupancies, shall be permitted up to a maximum of 1000 lb (454 kg) net weight. [30B:6.3.2.8]

**61.3.3.2.9** Solid pile, palletized, or rack storage of aerosol cooking spray product shall be permitted in a general-purpose warehouse that is either unsprinklered or not protected in accordance with this Code, up to a maximum of 2500 lb (1135 kg). [30B:6.3.2.9]

▲ Table 61.3.3.2.3(a) Rack, Palletized and Solid Pile Storage of Cartoned Aerosol Cooking Spray Products (Metric Units)

Ceiling Sprinkler Protection Criteria						
Maximum Ceiling Height (m)	Maximum Storage Height (m)	Sprinkler Type / Nominal Orifice (L/min/bar <sup>0.5</sup> )	Response / Nominal Temperature Rating	Design (# sprinklers @ discharge pressure)	Hose Stream Demand (L/min)	Water Supply Duration (hr)
9.1	7.6	ESFR-pendent K = 200	FR / Ordinary	12 @ 5.2 bar	950	1

[30B:Table 6.3.2.3(a)]

▲ Table 61.3.3.2.3(b) Rack, Palletized and Solid Pile Storage of Cartoned Aerosol Cooking Spray Products (English Units)

Ceiling Sprinkler Protection Criteria						
Maximum Ceiling Height (ft)	Maximum Storage Height (ft)	Sprinkler Type / Nominal Orifice (gpm/psi <sup>0.5</sup> )	Response / Nominal Temperature Rating	Design (# sprinklers @ discharge pressure)	Hose Stream Demand (gpm)	Water Supply Duration (hr)
30	25	ESFR-pendent K = 14.0	FR / Ordinary	12 @ 75 psi	250	1

[30B:Table 6.3.2.3(b)]

### 61.3.4 Storage of Level 2 and Level 3 Aerosol Products.

**61.3.4.1** The storage of Level 2 and Level 3 aerosol products shall be in accordance with 61.3.4. [30B:6.4.1]

**61.3.4.1.1** Level 2 aerosol products in containers whose net weight is less than 1 oz (28 g) shall be considered to be equivalent to cartoned unexpanded Group A plastics, as defined in NFPA 13. [30B:6.4.1.1]

**61.3.4.1.1.1** In cases where the storage of Level 2 aerosol products in containers whose net weight is less than 1 oz (28 g) is required to be protected, such storage shall be in accordance with the requirements set forth in NFPA 13 for cartoned unexpanded Group A plastics. [30B:6.4.1.1.1]

#### 61.3.4.2 Fire Protection — Basic Requirements.

**61.3.4.2.1** Storage of Level 2 and Level 3 aerosol products shall not be permitted in basement areas of warehouses. [30B:6.4.2.1]

**61.3.4.2.1.1** Storage of Level 2 and Level 3 aerosol products shall be permitted as provided for in 6.3.3 of NFPA 30B. [30B:6.4.2.1.1]

**61.3.4.2.2\*** Encapsulated storage of cartoned Level 2 and Level 3 aerosol products shall be protected as uncartoned. [30B:6.4.2.2]

**61.3.4.2.2.1** Stretch-wrapping of cartons of aerosol products shall be permitted. [30B:6.4.2.2.1]

**61.3.4.2.2.2** Encapsulated storage of uncartoned Level 2 and Level 3 aerosol products on slip sheets or in trays shall be permitted. [30B:6.4.2.2.2]

**61.3.4.2.3** Level 2 and Level 3 aerosol products whose containers are designed to vent at gauge pressures of less than 210 psi (1450 kPa) shall not be stored. [30B:6.4.2.3]

**61.3.4.2.4** Noncombustible draft curtains shall extend down a minimum of 2 ft (0.61 m) from the ceiling and shall be installed at the interface between ordinary and high-temperature sprinklers. [30B:6.4.2.4]

**61.3.4.2.5** Storage of mixed commodities within or adjacent to aerosol product storage areas shall meet all applicable requirements of Chapter 6 of NFPA 30B. [30B:6.4.2.5]

**61.3.4.2.6** Storage of idle or empty pallets shall meet all applicable requirements of NFPA 13. [30B:6.4.2.6]

**61.3.4.2.7** Where required by Chapter 6 of NFPA 30B, wet-pipe automatic sprinkler protection shall be provided in accordance with Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B and Figure 6.4.2.7(a) through Figure 6.4.2.7(e) of NFPA 30B as designated in the corresponding table(s). Protection shall be based on the highest level of aerosol product present. No protection criteria have been established for the protection of palletized and solid piled storage of uncartoned Level 3 aerosol products. The tables are as follows:

- (1) Table 6.4.2.7(a) of NFPA 30B Palletized and Solid Pile Storage of Cartoned Level 2 and Level 3 Aerosol Products (Metric Units)
- (2) Table 6.4.2.7(b) of NFPA 30B Palletized and Solid Pile Storage of Cartoned Level 2 and Level 3 Aerosol Products (English Units)

- (3) Table 6.4.2.7(c) of NFPA 30B Palletized and Solid Pile Storage of Uncartoned Level 2 Aerosol Products (Metric Units)
  - (4) Table 6.4.2.7(d) of NFPA 30B Palletized and Solid Pile Storage of Uncartoned Level 2 Aerosol Products (English Units)
  - (5) Table 6.4.2.7(e) of NFPA 30B Rack Storage of Cartoned Level 2 Aerosol Products (Metric Units)
  - (6) Table 6.4.2.7(f) of NFPA 30B Rack Storage of Cartoned Level 2 Aerosol Products (English Units)
  - (7) Table 6.4.2.7(g) of NFPA 30B Rack Storage of Cartoned Level 3 Aerosol Products (Metric Units)
  - (8) Table 6.4.2.7(h) of NFPA 30B Rack Storage of Cartoned Level 3 Aerosol Products (English Units)
  - (9) Table 6.4.2.7(i) of NFPA 30B Rack Storage of Uncartoned Level 2 Aerosol Products (Metric Units)
  - (10) Table 6.4.2.7(j) of NFPA 30B Rack Storage of Uncartoned Level 2 Aerosol Products (English Units)
  - (11) Table 6.4.2.7(k) of NFPA 30B Rack Storage of Uncartoned Level 3 Aerosol Products (Metric Units)
  - (12) Table 6.4.2.7(l) of NFPA 30B Rack Storage of Uncartoned Level 3 Aerosol Products (English Units)
- [30B:6.4.2.7]

**61.3.4.2.7.1** The protection criteria in Tables 6.4.2.7(a) through 6.4.2.7(l) of NFPA 30B shall only be used with ceilings having a pitch of 2 in 12 or less. [30B:6.4.2.7.1]

**61.3.4.2.7.2** Fire protection requirements for more demanding commodity and clearance situations shall be permitted to be used for less demanding situations. [30B:6.4.2.7.2]

**61.3.4.2.7.3** The ordinary-temperature design criteria correspond to ordinary-temperature rated sprinklers and shall be used for sprinklers with ordinary- and intermediate-temperature classification. [30B:6.4.2.7.3]

**61.3.4.2.7.4** The high-temperature design criteria correspond to high-temperature rated sprinklers and shall be used for sprinklers having a high-temperature rating. [30B:6.4.2.7.4]

**61.3.4.2.8** Protection criteria that are developed based on full-scale fire tests performed at an approved test facility shall be considered an acceptable alternative to the protection criteria set forth in Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B. Such alternative protection criteria shall be subject to the approval of the AHJ. [30B:6.4.2.8]

**Δ 61.3.4.2.9** Installation of in-rack sprinklers shall be in accordance with NFPA 13 as modified by Table 6.4.2.7(e) through Table 6.4.2.7(l) of NFPA 30B. [30B:6.4.2.9]

**61.3.4.2.9.1** The in-rack sprinkler water demand shall be based on the simultaneous operation of the most hydraulically remote sprinklers as follows:

- (1) Sprinkler design parameters shall be in accordance with Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B, whichever is applicable.
- (2) In-rack design flows indicated in Table 6.4.2.7(e) through Table 6.4.2.7(l) of NFPA 30B shall be provided, but in no case shall the end-sprinkler discharge be less than 10 psi (0.69 bar).
- (3) Eight (8) sprinklers where only one level of in-rack sprinklers is provided.
- (4) Twelve (12) sprinklers [six (6) sprinklers on two levels] where only two levels of in-rack sprinklers are provided.

- (5) Eighteen (18) sprinklers [six (6) sprinklers on the top three levels] where more than two levels of in-rack sprinklers are provided.

[30B:6.4.2.9.1]

**61.3.4.2.9.2** Where in-rack sprinklers are not shielded by horizontal barriers, water shields shall be provided above the sprinklers or listed intermediate level/rack sprinklers shall be used. [30B:6.4.2.9.2]

**61.3.4.2.9.3** When in-rack sprinklers are necessary to protect a higher hazard commodity that occupies only a portion of the length of a rack, the following shall apply:

- (1) In-rack sprinklers shall be extended a minimum of 2.4 m (8 ft) or one bay, whichever is greater, in each direction along the rack on either side of the higher hazard.
- (2) The in-rack sprinklers protecting the higher hazard shall not be required to be extended across the aisle.

[30B:6.4.2.9.3]

**61.3.4.2.9.4** Where a storage rack, due to its length, requires less than the number of in-rack sprinklers specified, only those in-rack sprinklers in a single rack need to be included in the calculation. [30B:6.4.2.9.4]

**61.3.4.2.9.5\*** In-rack sprinklers shall be located at an intersection of the transverse and longitudinal flues while not exceeding the maximum spacing rules. [30B:6.4.2.9.5]

**61.3.4.2.9.5.1** Where no transverse flues exist, in-rack sprinklers shall not exceed the maximum spacing rules. [30B:6.4.2.9.5.1]

**61.3.4.2.9.6** A minimum 150 mm (6 in.) vertical clearance shall be maintained between the sprinkler deflectors and the top of the tier of storage. [30B:6.4.2.9.6]

**61.3.4.2.9.7** Horizontal barriers used in conjunction with in-rack sprinklers to impede vertical fire development shall be constructed of minimum 22 ga sheet metal, 10 mm (3/8 in.) plywood, or similar material and shall extend the full length and depth of the rack. [30B:6.4.2.9.7]

**61.3.4.2.9.7.1** Barriers shall be fitted within 50 mm (2 in.) horizontally around rack uprights. [30B:6.4.2.9.7.1]

**61.3.4.2.10** Installations of hose connections shall meet the requirements of NFPA 13. [30B:6.4.2.10]

**61.3.4.2.10.1** Subject to the approval of the AHJ, hose stations shall not be required to be installed in storage areas. [30B:6.4.2.10.1]

**61.3.4.2.11** Storage height and building heights shall comply with Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B. [30B:6.4.2.11]

**61.3.4.2.12** Solid shelving shall comply with 61.3.4.2.12.1 through 61.3.4.2.12.3. [30B:6.4.2.12]

**61.3.4.2.12.1** Solid shelving that is installed in racks that contain Level 2 and Level 3 aerosol products shall be protected in accordance with Table 6.4.2.7(e) through Table 6.4.2.7(l) of NFPA 30B, whichever is applicable. [30B:6.4.2.12.1]

**61.3.4.2.12.2** In addition to the in-rack sprinklers shown in Figure 6.4.2.7(a) through Figure 6.4.2.7(e) of NFPA 30B, whichever is applicable, a face sprinkler shall be provided directly below the solid shelf or the elevation of the solid shelf

if the face sprinkler is located in a transverse flue. [30B:6.4.2.12.2]

**61.3.4.2.12.3** The face sprinklers below the shelving required by 61.3.4.2.12.2 shall be not greater than 8 ft (2.4 m) apart as far as the solid shelving level extends. [30B:6.4.2.12.3]

**61.3.4.2.13** Where spray sprinklers are utilized for ceiling protection, sprinkler spacing shall not exceed 100 ft<sup>2</sup> (9.3 m<sup>2</sup>) unless otherwise permitted by 61.3.4.2.14. [30B:6.4.2.13]

**61.3.4.2.14** Ordinary or intermediate temperature rated K = 25.2 extended-coverage spray sprinklers shall be permitted to be used for all density spray sprinkler design criteria in Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B when installed in accordance with their listing. [30B:6.4.2.14]

**61.3.4.2.15** The ceiling heights in Table 6.4.2.7(e) through Table 6.4.2.7(l) of NFPA 30B shall be permitted to be increased by a maximum of 10 percent if an equivalent percent increase in ceiling sprinkler design density is provided. This shall only apply to spray sprinkler protection criteria. [30B:6.4.2.15]

**61.3.4.2.16** Protection systems that are designed and developed based on full-scale fire tests performed at an approved test facility or on other engineered protection schemes shall be considered an acceptable alternative to the protection criteria set forth in Section 6.3 of NFPA 30B. Such alternative protection systems shall be approved by the AHJ. [30B:6.4.2.16]

**61.3.4.2.17** Rack storage shall be arranged so that a minimum aisle width of 8 ft (2.4 m) is maintained between rows of racks and between racks and adjacent solid pile or palletized storage. [30B:6.4.2.17]

**61.3.4.2.18** Where protection is provided by ESFR sprinklers, aisle width shall be not less than 4 ft (1.2 m). [30B:6.4.2.18]

**61.3.4.2.19** Solid pile and palletized storage shall be arranged so that no storage is more than 25 ft (7.6 m) from an aisle. Aisles shall be not less than 4 ft (1.2 m) wide. [30B:6.4.2.19]

#### **N 61.3.4.3 Aerosol Products in Plastic Containers Greater Than 4 fl oz (118 ml) and Not More Than 33.8 fl oz (1000 ml).**

##### **N 61.3.4.3.1 Fire Protection — Plastic Aerosol 1 Products.**

**N 61.3.4.3.1.1** Plastic aerosol 1 products shall be permitted to be stored in a general-purpose warehouse without isolation. [30B:6.5.1.1]

**N 61.3.4.3.1.2\*** Plastic aerosol 1 products shall be considered equivalent to Class III commodities, as defined in NFPA 13. [30B:6.5.1.2.]

**N 61.3.4.3.1.3** In cases where the storage of plastic aerosol 1 products is required to be protected, they shall be protected in accordance with the requirements of NFPA 13. [30B:6.5.1.3]

##### **N 61.3.4.3.2 Fire Protection — Plastic Aerosol X Products.**

**N 61.3.4.3.2.1** Storage of plastic aerosol X products in occupancies other than warehouses or mercantile occupancies, such as in assembly, business, educational, industrial, and institutional occupancies, shall be permitted up to a maximum of 100 lb (45 kg) net weight. [30B:6.5.2.1]

**N 61.3.4.3.2.2** Solid pile, palletized, or rack storage of plastic aerosol X products shall be permitted in a general-purpose warehouse or an aerosol warehouse regardless of protection level up to a maximum of 250 lb (115 kg). [30B:6.5.2.2]

**61.4 Mercantile Occupancies.**

**61.4.1 Plastic Aerosol X Products.** Plastic aerosol X products shall be permitted to be stored in mercantile occupancies up to a maximum quantity of 100 lb (45 kg) net weight. [30B:7.1]

**61.4.2 Sales Display Areas — Aerosol Product Storage Not Exceeding 8 ft (2.4 m) High.**

**61.4.2.1** Level 1 aerosol products and plastic aerosol 1 products in sales display areas shall not be limited. [30B:7.2.1]

**61.4.2.2** Aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products shall be removed from combustible cartons, or the cartons shall be display-cut, when located in sales display areas. [30B:7.2.2]

**61.4.2.2.1** Cartoned display of aerosol cooking spray products shall be permitted provided the area is protected in accordance with Table 6.3.2.3(a) or Table 6.3.2.3(b) of NFPA 30B, or the area is protected in accordance with Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B, or the maximum quantity of cartoned display complies with 61.4.2.3.1. [30B:7.2.2.1]

**61.4.2.2.2** Cartoned display of Level 2 aerosol products and Level 3 aerosol products shall be permitted, provided the area is either protected in accordance with Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B or the maximum quantity of cartoned display complies with 61.4.2.3.1. [30B:7.2.2.1]

**61.4.2.3** Aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products in sales display areas shall not exceed the maximum quantities given in 61.4.2.3.1 and 61.4.2.3.2 according to the protection provided. [30B:7.2.3]

**61.4.2.3.1** In sales display areas that are nonsprinklered or whose sprinkler system does not meet the requirements of 61.4.2.3.2, the total aggregate quantity of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products shall not exceed 2 lb/ft<sup>2</sup> (9.8 kg/m<sup>2</sup>) of total sales display area, up to the quantities specified in Table 61.4.2.3.1. [30B:7.2.3.1]

**61.4.2.3.1.1** No single 10 ft × 10 ft (3 m × 3 m) section of sales display area shall contain an aggregate quantity of more than 1000 lb (454 kg) net weight aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products. [30B:7.2.3.1.1]

**61.4.2.3.2** In sales display areas that are sprinklered in accordance with NFPA 13, for at least Ordinary Hazard (Group 2) occupancies, the total aggregate quantity aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products shall not exceed 2 lb/ft<sup>2</sup> (9.8 kg/m<sup>2</sup>) of total sales display area. [30B:7.2.3.2]

**Table 61.4.2.3.1 Maximum Quantity per Floor of Aerosol Cooking Spray Products, Level 2 Aerosol Products, and Level 3 Aerosol Products, and Aerosol Products in Plastic Containers**

Floor	Max. Net Weight per Floor	
	lb	kg
Basement	Not Permitted	
Ground	2500	1135
Upper	500	227

[30B:Table 7.2.3.1]

**61.4.2.3.2.1** No single 10 ft × 10 ft (3 m × 3 m) section of sales display area shall contain an aggregate quantity of more than 1000 lb (454 kg) net weight of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products. [30B:7.1.3.2.1]

**61.4.2.4** Aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products shall be securely stacked to not more than 6 ft (1.8 m) high from base to top of the storage array unless on fixed shelving. [30B:7.2.4]

**61.4.2.4.1** Shelving shall be of stable construction and storage shall not exceed 8 ft (2.4 m) in height. [30B:7.2.4.1]

**61.4.3 Sales Display Areas — Aerosol Products Storage Exceeding 8 ft (2.4 m) High.**

**61.4.3.1** Storage and display of Level 1 aerosol products and plastic aerosol 1 products in sales display areas shall not be limited. [30B:7.3.1]

**61.4.3.2** Uncartoned or display-cut (case-cut) aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products that are stored for display no more than 6 ft (1.8 m) above the floor shall be permitted where protection is installed in accordance with 61.4.3.3, based on the highest level of aerosol product in the array and the packaging method of the storage above 6 ft (1.8 m). [30B:7.3.2]

**61.4.3.3 Protection.**

**61.4.3.3.1** The storage and display of aerosol cooking spray products in metal containers only shall be protected in accordance with Table 6.3.2.3(a) or Table 6.3.2.3(b) of NFPA 30B, or shall be protected in accordance with Table 6.4.2.7(a) through Table 6.4.2.7(l) of NFPA 30B. The storage and display of Level 2 and Level 3 aerosol products in metal containers only shall be protected in accordance with Table 6.3.2.7(a) through Table 6.3.2.7(l) of NFPA 30B, whichever is applicable. [30B:7.3.3.1]

**61.4.3.3.1.1** Where in-rack sprinklers are required by Table 6.4.2.7(e) through Table 6.4.2.7(l) of NFPA 30B and where the aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products are stored for display below the 6 ft (1.8 m) level, the first tier of in-rack sprinklers shall be installed above the display, but not more than 6 ft (1.8 m) above the floor level. [30B:7.2.3.1.1]

**61.4.3.3.2** Noncombustible draft curtains shall extend down a minimum of 2 ft (0.61 m) from the ceiling and shall be installed at the interface between ordinary and high-temperature sprinklers. [30B:7.3.3.2]

**61.4.3.4** Storage and display of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products shall not exceed 10,000 lb (4,540 kg) net weight within any 25,000 ft<sup>2</sup> (2,323 m<sup>2</sup>) of sales display area. [30B:7.2.4]

**61.4.3.4.1** Aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol product display areas shall be separated from each other by a minimum of 25 ft (7.6 m). [30B:7.2.4.1]

**61.4.3.5** The area of the design for the required ceiling sprinkler system shall extend 20 ft (6 m) beyond the area devoted to storage of aerosol cooking spray products or Level 2 aerosol product and Level 3 products. [30B:7.3.5]

**61.4.3.6** Storage and display of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products

shall be separated from the storage of flammable and combustible liquids by a minimum distance of 25 ft (7.6 m) or by a segregating wall or noncombustible barrier. [30B:7.3.6]

**61.4.3.6.1** Where aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products are stored within 25 ft (7.6 m) of flammable and combustible liquids, beneath the noncombustible barrier shall be liquidtight at the floor to prevent spilled liquids from flowing beneath the aerosol products. [30B:7.3.6.1]

**61.4.3.7** The sales display area shall meet the requirements for mercantile occupancies in NFPA 101. [30B:7.3.7]

#### **61.4.4 Back Stock Storage Areas.**

**61.4.4.1** Where back stock areas are separated from sales display areas by construction having a minimum 1-hour fire resistance rating, storage of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products shall meet the requirements of Chapter 6 of NFPA 30B. [30B:7.4.1]

**61.4.4.2** Where back stock areas are not separated from sales display areas by construction having a minimum 1-hour fire resistance rating, the quantity of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products in back stock areas shall be included in the total allowable quantities specified in 61.4.2.3 or 61.4.3.4. [30B:7.4.2]

**61.4.4.2.1** Protection shall be provided in accordance with 61.4.3.3. [30B:7.3.2.1]

**61.4.4.3** An additional quantity of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products, up to a maximum of 500 lb (227 kg) net weight, shall be permitted in back stock areas where the additional quantities are stored in flammable liquid storage cabinets that meet the requirements of Section 9.5 of NFPA 30. [30B:7.4.3]

**61.4.4.4** Storage of aerosol cooking spray products, Level 2 aerosol products, and Level 3 aerosol products in separate, inside flammable liquids storage rooms shall meet the requirements of 6.3.7 of NFPA 30B. [30B:7.4.4]

#### **61.5 Operations and Maintenance.**

**61.5.1 Means of Egress.** Means of egress and exits shall be maintained in accordance with NFPA 101. [30B:8.1]

#### **61.5.2 Powered Industrial Trucks.**

**61.5.2.1** The use and selection of powered industrial trucks shall comply with Section 10.17. [30B:8.2.1]

**61.5.2.2** Only trained and authorized operators shall be allowed to operate powered industrial trucks. [30B:8.2.2]

**61.5.2.3** Operator training shall be equivalent to that specified by ANSI/ASME B56.1, *Safety Standard for Low-Lift and High-Lift Trucks*. [30B:8.2.3]

#### **61.5.2.4 Loads.**

**61.5.2.4.1** If the type of load handled presents a hazard of backward falls, the powered industrial truck shall be equipped with a vertical load backrest extension. [30B:8.2.4.1]

**61.5.2.4.2** For loads that are elevated above the mast of the truck, the backrest extension shall reach at least halfway into the uppermost pallet load. [30B:8.2.4.2]

#### **61.5.3 Control of Ignition Sources.**

##### **61.5.3.1 Sources of Ignition.**

**61.5.3.1.1** In areas where flammable gases or flammable vapors might be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. Sources of ignition include, but are not limited to, the following:

- (1) Open flames
- (2) Lightning
- (3) Hot surfaces
- (4) Radiant heat
- (5) Smoking
- (6) Cutting and welding
- (7) Spontaneous ignition
- (8) Frictional heat or sparks
- (9) Static electricity
- (10) Electrical arcs and sparks
- (11) Stray currents
- (12) Ovens, furnaces, and other heating equipment
- (13) Automotive vehicles
- (14) Material-handling equipment [30B:8.3.1.1]

**61.5.3.2** Smoking shall be strictly prohibited, except in designated smoking areas. [30B:8.3.2]

**61.5.3.3\*** Welding, cutting, and similar spark-producing operations shall not be permitted in areas that contain aerosol products, until a written permit authorizing the work has been issued. [30B:8.3.3]

**61.5.3.3.1** The permit shall be issued by a person in authority following an inspection of the area to assure that proper precautions have been taken and will be followed until completion of the work. [30B:8.3.3.1]

**61.5.4 Aisles.** Storage in aisles shall be prohibited so as to permit access for fire fighting, salvage, and removal of stored commodities. [30B:8.4]

#### **61.5.5 Waste Disposal.**

**61.5.5.1** Filled or partly filled aerosol containers shall be separated from all other rubbish and trash. [30B:8.5.1]

**61.5.5.1.1** Filled or partly filled aerosol containers shall be placed in noncombustible waste containers. [30B:8.5.1.1]

**61.5.5.2** Filled or partly filled aerosol containers shall not be disposed of in compactors, balers, or incinerators that crush the container or heat its contents. [30B:8.5.2]

**61.5.5.2.1** Equipment and facilities that are specifically designed for the disposal of aerosol containers shall be permitted to dispose of filled or partly filled aerosol containers. [30B:8.5.2.1]

#### **61.5.6 Inspection and Maintenance.**

**61.5.6.1** A written and documented preventive maintenance program shall be developed for equipment, machinery, and processes that are critical to fire-safe operation of the facility. [30B:8.6.1]

**61.5.6.2** Critical detection systems and their components, emergency trips and interlocks, alarms, and safety shutdown systems shall be inspected on a regularly scheduled basis, and any deficiencies shall be immediately corrected. [30B:8.6.2]

**61.5.6.2.1** Items in this inspection schedule shall include, but are not limited to, the following:

- (1) Gas detection systems
- (2) Deflagration suppression systems
- (3) Deflagration vent systems
- (4) Ventilation and local exhaust systems
- (5) Propellant charging room door interlocks
- (6) Process safety devices
- (7) Fire alarm systems [30B:8.6.2.1]

**61.5.6.3 Maintenance.** [68:11.10]

**61.5.6.3.1** Vent closure maintenance shall be performed after every act of nature or process upset condition to ensure that the closure has not been physically damaged and there are no obstructions, including but not limited to snow, ice, water, mud, or process material, that could lessen or impair the efficiency of the vent closure. [68:11.10.1]

**△ 61.5.6.3.2** An inspection shall be performed in accordance with 11.4.4 of NFPA 68 after every process maintenance turnaround. [68:11.10.2]

**61.5.6.3.3** If process material has a tendency to adhere to the vent closure, the vent closure shall be cleaned periodically to maintain vent efficiency. [68:11.10.3]

**61.5.6.3.4** Process interlocks, if provided, shall be verified. [68:11.10.4]

**61.5.6.3.5** Known potential ignition sources shall be inspected and maintained. [68:11.10.5]

**61.5.6.3.6** Records shall be kept of any maintenance and repairs performed. [68:11.10.6]

**61.5.7\* Static Electricity.** All process equipment and piping involved in the transfer of flammable liquids or gases shall be connected to a static-dissipating earth ground system to prevent accumulations of static charge. [30B:8.7]

## Chapter 62 Reserved

## Chapter 63 Compressed Gases and Cryogenic Fluids

### 63.1 General Provisions.

#### 63.1.1 Application.

**63.1.1.1\*** The installation, storage, use, and handling of compressed gases and cryogenic fluids in portable and stationary containers, cylinders, equipment, and tanks in all occupancies shall comply with the requirements of Chapter 63; NFPA 55, and Sections 60.1 through 60.4 of this Code.

**63.1.1.2** Where the provisions of Chapter 63 or NFPA 55 conflict with the provisions of Chapter 60, the provisions of Chapter 63 and NFPA 55 shall apply.

**63.1.1.3** The requirements in this chapter shall apply to users, producers, distributors, and others who are involved with the storage, use, or handling of compressed gases or cryogenic fluids. [55:1.3]

**△ 63.1.1.4 Specific Applications.** Chapter 63 shall not apply to the following:

- (1)\* Off-site transportation of materials covered by Chapter 63.
- (2) Storage, use, and handling of radioactive gases in accordance with NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*.
- (3)\* Use and handling of medical compressed gases at health care facilities in accordance with NFPA 99, *Health Care Facilities Code*.
- (4) Systems consisting of cylinders of oxygen and cylinders of fuel gas used for welding and cutting in accordance with NFPA 51, *Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes*.
- (5)\* Flammable gases used as a vehicle fuel when stored on a vehicle.
- (6)\* Storage, use, and handling of liquefied and nonliquefied compressed gases in laboratory work areas in accordance with NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*.
- (7) Storage, use, and handling of liquefied petroleum gases in accordance with NFPA 58, *Liquefied Petroleum Gas Code*.
- (8) Storage, use, and handling of compressed gases within closed-cycle refrigeration systems complying with the mechanical code.
- (9) Liquefied natural gas (LNG) storage at utility plants under NFPA 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)*.
- (10) Compressed natural gas (CNG) and liquefied natural gas (LNG), utilized as a vehicle fuel in accordance with NFPA 52, *Vehicular Gaseous Fuel Systems Code*.
- (11)\* Compressed hydrogen gas (GH<sub>2</sub>), or liquefied hydrogen gas (LH<sub>2</sub>) generated, installed, stored, piped, used, or handled in accordance with NFPA 2, *Hydrogen Technologies Code*, when there are no specific or applicable requirements in NFPA 55.
- (12) Nonflammable mixtures of ethylene oxide with other chemicals.
- (13) Ethylene oxide in chambers 10 scf (0.283 Nm<sup>3</sup>) or less in volume or for containers holding 7.05 oz (200 g) of ethylene oxide or less.

[55:1.1.2]

**63.1.2 Permits.** Permits, where required, shall comply with Section 1.12.

**63.1.2.1** The permit applicant shall apply for approval to close storage, use, or handling facilities at least 30 days prior to the termination of the storage, use, or handling of compressed or liquefied gases.

**63.1.2.2** Such application shall include any change or alteration of the facility closure plan filed pursuant to 60.1.4.4.

**63.1.2.3** This 30-day period shall be permitted to be waived by the AHJ if special circumstances require such waiver.

**63.1.2.3.1** Permits shall not be required for routine maintenance.

**63.1.2.3.2** For repair work performed on an emergency basis, application for permit shall be made within 2 working days of commencement of work.

#### 63.1.3 General Definitions.

**63.1.3.1 Absolute Pressure.** See 3.3.1.

**63.1.3.2 ASTM.** See 3.3.17.

**ATTACHMENT 7**

# Waste aerosols and compressed gas cylinders

## Guidance for generators and collection sites

### What are waste aerosols?

Aerosols are chemical products, such as paint, solvent, or cleaner, released as a spray or stream from a pressurized container. A waste aerosol is an aerosol container that will no longer be used for its intended purpose. Defective aerosols that are not used but instead returned new to the manufacturer or distributor are not considered wastes in Minnesota. The Minnesota Pollution Control Agency (MPCA) regulates accumulation and disposal of waste aerosols and compressed gas cylinders.

Many waste aerosols and compressed gas cylinders contain unused chemical product and excess propellant even if they seem 'empty'. Examples may include aerosols that will no longer spray evenly or fuel cylinders that will not support a usable flame. Waste aerosols and gas cylinders may be hazardous because the:

- Liquid product is hazardous
- Gas propellant or product is hazardous, usually for ignitability

Assume all waste aerosols and compressed gas cylinders are hazardous until you have evaluated and documented that they are non-hazardous or meet the strict definition of an empty container.

### How do I evaluate waste aerosols as non-hazardous?

For guidance on evaluating your waste aerosols, see MPCA fact sheet #w-hw1-01, Evaluate Waste, at <https://www.pca.state.mn.us/sites/default/files/w-hw1-01.pdf>.

Using less toxic chemical aerosol products, aerosols with non-ignitable propellants, or refillable containers can significantly reduce the amount of hazardous waste aerosols and gas cylinders you generate. Contact the Minnesota Technical Assistance Program (MnTAP) for assistance. See [More information](#) on page 3.

### How do I show waste aerosols and gas cylinders are empty containers?

Some waste aerosols and gas cylinders may meet the strict definition of an empty container. To be classified as empty, they must meet these three criteria:

1. Contain no compressed ignitable gas propellant or product (i.e. will not release pressure through an open, working valve or the propellant is not ignitable).
2. All liquid product that can be dispensed through the valve has been (i.e. will not spray product through an open, working valve).
3. Less than 3% of the product capacity of the container remains.

Waste aerosols and gas cylinders that meet these standards are sometimes referred to as "RCRA-empty" (RCRA stands for the *Resource Conservation and Recovery Act* – the federal hazardous waste law). Empty containers are exempt from hazardous waste and universal waste requirements. However, many solid waste haulers choose not to accept them. Check with your solid waste hauler.

Because documenting that an aerosol container or gas cylinder meets this standard can be impractical, the MPCA will allow you to assume that an aerosol container is empty when **both** the following conditions are met:

- No liquid is felt or heard when the container is shaken by hand.
- No gas or liquid is released when the spray/discharge valve is activated and the container rotated through all directions, as long as the valve is not observably or known to be clogged.

## How do I store and dispose hazardous waste aerosols and gas cylinders?

You may manage hazardous waste aerosols and gas cylinders that are not empty equivalent to universal wastes in Minnesota.

Accumulate hazardous waste aerosols and gas cylinders in closed containers labeled with one of these phrases:

- Universal waste aerosols/gas cylinders (whichever is appropriate)
- Waste aerosols/gas cylinders
- Used aerosols/gas cylinders

Accumulate hazardous waste aerosols/gas cylinders for no more than one year from the date you generated them or received them at your site. Mark the aerosols/gas cylinders or their containers with the generated or received date or keep records to verify how long you have accumulated them.

You may ship hazardous waste aerosols/gas cylinders without a hazardous waste manifest to any site that has agreed to accept and properly manage them. Hazardous waste aerosols/gas cylinders may not be placed into normal solid waste. Though shipment or disposal receipts are not required, the MPCA strongly recommends you obtain these, as you are responsible for proper management of your waste. Most hazardous waste disposal facilities will reclaim the scrap metal from hazardous waste aerosols/gas cylinders after their contents are properly treated.

For more information about universal waste requirements, see MPCA fact sheet #w-hw4-62, Universal Wastes, at <https://www.pca.state.mn.us/sites/default/files/w-hw4-62.pdf>.

## Can I puncture or vent waste aerosols or gas cylinders?

You may puncture any waste aerosols or gas cylinders as long as you:

- Collect and properly manage all liquid residuals. Manage residuals as hazardous wastes unless you evaluate them as non-hazardous. For guidance on evaluating your liquid residuals, see MPCA fact sheet #w-hw1-01, Evaluate Waste, at <https://www.pca.state.mn.us/sites/default/files/w-hw1-01.pdf>.
- Meet any applicable Minnesota State Fire Code requirements. For questions on fire code requirements, contact your local fire chief or the State Fire Marshal's Office. See [More information](#) on page 3.
- Meet all applicable employee occupational safety and health protection requirements. For questions on employee protection requirements, contact Minnesota Occupation Safety & Health (MNOSHA). See [More information](#) on page 3.

The MPCA is rescinding the previously announced January 1, 2018, sunset of the allowance to puncture hazardous waste aerosols and compressed gas cylinders.

The deliberate release of hazardous waste propellant or compressed gas to the atmosphere by puncturing is prohibited by the Minnesota Rules, but for many years the MPCA has chosen not to enforce this prohibition and to allow puncturing. While the MPCA is continuing the allowance to continue puncturing, there are now more management opportunities for unpunctured aerosols and cylinders. To help attain air quality goals protecting the health of all Minnesotans, the MPCA strongly encourages all businesses to consider non-puncturing aerosol and cylinder management options.

Charcoal and activated carbon filters attached to many commercial puncturing devices do not effectively capture hazardous waste propellants or gases for proper disposal or on their own protect your employees or the environment.

## What about pharmaceutical aerosols?

Healthcare providers may manage business-generated waste pharmaceutical aerosols, such as asthma inhalers and anesthetic sprays, under the allowances discussed in this fact sheet, or instead under the pharmaceutical reverse distribution allowances discussed in MPCA fact sheet #w-hw3-36b, Reverse Distribution of Pharmaceuticals, at <https://www.pca.state.mn.us/sites/default/files/w-hw3-36b.pdf>.

Long term care facilities and pharmacies collecting pharmaceuticals from households may instead manage collected pharmaceutical aerosols under household pharmaceutical collection allowances discussed in MPCA fact sheet #w-hhw2-07, Collecting Pharmaceuticals from Households and Long Term Care Facilities, at <https://www.pca.state.mn.us/sites/default/files/w-hhw2-07.pdf>.

## More information

Guidance and requirements in this fact sheet were compiled from Minn. R. ch. 7045, and incorporate regulatory interpretation decisions made by the MPCA on April 4, 2014, June 10, 2015, and December 7, 2017. Visit the Office of the Revisor of Statutes at <https://www.revisor.mn.gov/pubs> to review Minnesota Rules.

Contact your Metropolitan County or the MPCA with your questions. The MPCA's Small Business Environmental Assistance Program can also provide free, confidential regulatory compliance assistance.

### Metro County Hazardous Waste Offices

Anoka .....	763-324-4260
.....	<a href="https://www.anokacounty.us/">https://www.anokacounty.us/</a>
Carver .....	952-361-1800
.....	<a href="http://www.co.carver.mn.us/">http://www.co.carver.mn.us/</a>
Dakota .....	952-891-7557
.....	<a href="https://www.co.dakota.mn.us/">https://www.co.dakota.mn.us/</a>
Hennepin .....	612-348-3777
.....	<a href="http://www.hennepin.us/">http://www.hennepin.us/</a>
Ramsey .....	651-266-1199
.....	<a href="https://www.ramseycounty.us/">https://www.ramseycounty.us/</a>
Scott .....	952-496-8177
.....	<a href="http://www.scottcountymn.gov/">http://www.scottcountymn.gov/</a>
Washington .....	651-430-6655
.....	<a href="https://www.co.washington.mn.us/">https://www.co.washington.mn.us/</a>

### Minnesota State Fire Marshal

Statewide .....	651-201-7200
.....	<a href="https://dps.mn.gov/divisions/sfm/">https://dps.mn.gov/divisions/sfm/</a>

### Minnesota Occupational Safety & Health

Toll free .....	1-877-470-6742
Metro .....	651-284-5050
.....	<a href="http://www.dli.mn.gov/mnosha.asp">http://www.dli.mn.gov/mnosha.asp</a>

### Minnesota Pollution Control Agency

Toll free (all offices) .....	1-800-657-3864
All offices .....	651-296-6300
.....	<a href="https://www.pca.state.mn.us/">https://www.pca.state.mn.us/</a>

### Minnesota Duty Officer

Toll free .....	1-800-422-0798
Metro .....	651-649-5451

### Small Business Environmental Assistance Program

Toll free .....	1-800-657-3938
Metro .....	651-282-6143
.....	<a href="https://www.pca.state.mn.us/sbeap/">https://www.pca.state.mn.us/sbeap/</a>

### Minnesota Technical Assistance Program

Toll free .....	1-800-247-0015
Metro .....	612-624-1300
.....	<a href="http://www.mntap.umn.edu">http://www.mntap.umn.edu</a>

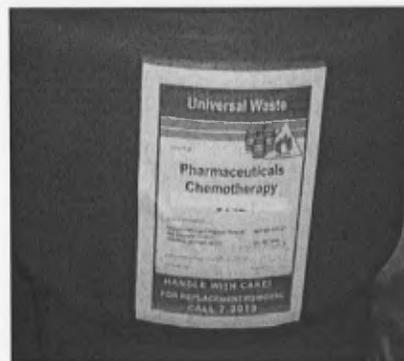
**ATTACHMENT 8**



## Universal Waste Pharmaceutical MHA Health Care Pharmaceutical Waste Management Guide Sheet

### What is Universal Waste Pharmaceutical (Universal Pharm)?

Universal Waste Pharmaceuticals or Universal Pharm includes pharmaceuticals that cannot be used or administered because of expiration, contamination, or any other reason. Universal Pharm may be liquid, solid, paste, or aerosol, and includes drugs identified as U-listed, P-listed hazardous waste, and characteristic hazardous waste. Universal Pharm includes NIOSH hazardous drugs and drugs that are not currently regulated but considered hazardous. Universal Pharm includes full or partially used pharmaceutical containers. Universal Pharm does not include infectious, biohazardous, regulated medical waste, pharmaceutical spill cleanup waste, or personal protective equipment contaminated with pharmaceuticals. Universal Pharm does not include unused and intact pharmaceuticals in their original packaging directed for resale and reuse for its original intended purpose. Check with your disposal vendor to determine whether Mixed Medical/Dual Waste includes closed system drug transfer devices used in hazardous pharmaceutical compounding, sharps used in hazardous pharmaceutical compounding, and fluids and/or devices removed from intracavity hazardous pharmaceutical installations



**Note:** Universal Pharm can include non-hazardous solid and liquid pharmaceuticals. When non-hazardous pharmaceuticals are mixed with Universal Pharm waste, the entire mixture must be managed as a Universal Pharm.

### What is Included in Universal Pharm?

RCRA/Part 111 hazardous waste pharmaceuticals
NIOSH hazardous drugs
Investigative chemotherapy agents
Non- Empty hazardous pharmaceutical containers, including vials, ampules, IVs, bottles, and tubing without sharps
Closed system drug transfer devices and sharps used in pharmacy compounding of hazardous pharmaceuticals <b>with approval</b> as noninfectious by disposal vendor
Fluids and/or devices removed from intracavity hazardous pharmaceutical installations <b>with approval</b> as noninfectious by disposal vendor

### What is Excluded from Universal Pharm?

Closed system drug transfer devices and sharps used in pharmacy compounding of hazardous pharmaceuticals <b>without approval</b> as noninfectious by disposal vendor
Fluids and/or devices removed from intracavity hazardous pharmaceutical installations <b>without approval</b> as noninfectious by disposal vendor
Materials used in hazardous pharmaceutical spill cleanup including PPE (gowns, gloves, shoe covers, absorbent pads, absorbent materials)
Contaminated items used in hazardous pharmaceutical compounding



Contaminated PPE used in hazardous pharmaceutical compounding and administration
Closed system drug transfer devices and sharps used in administration of a hazardous or non-hazardous pharmaceutical to a patient

**Note:** For excluded Universal Pharm items without vendor approval as non-infectious, see the Mixed Medical/Dual Waste Guide Sheet

### Container and Labeling

- Compatible with the waste
- Separate incompatible materials
- Labeled "Universal Waste Pharmaceutical"
- Kept closed except to add or remove waste
- Meet the DOT packaging regulations
- Date container when waste is first added to container

### Satellite and Storage Area

- Be secured from weather, fire, physical damage, and vandals
- Separate incompatible materials
- Inspected weekly (BMP)
- Provide secondary containment (BMP)

### Transportation

- Occur within one year of accumulation
- Be in compliance with the DOT requirements
- Accompanied by a Uniform Manifest

### Disposal

- Disposal must ultimately include treatment and/or destruction at a hazardous waste TSDF
- Universal Pharm may also be transported to another universal waste handler within the State of Michigan prior to ultimate disposal
- Universal Pharm must ultimately be transported to a licensed hazardous waste TSDF in Michigan, an out-of-state equivalent facility, or a facility otherwise authorized to accept the hazardous waste pharmaceuticals
- Incineration is the BMP for all pharmaceuticals
- Incineration at a licensed hazardous waste TSDF is required for P-listed and U-listed RCRA pharmaceuticals and any pharmaceuticals mixed with P-listed or U-listed RCRA pharmaceuticals per the RCRA Land Disposal Restriction requirements
- Universal Pharm, when managed in Michigan, must be managed in compliance with the liquid industrial waste requirements

**Note:** The weight of Universal Pharm is not included in the monthly hazardous waste generator status determination. Presently only Michigan and Florida have adopted pharmaceuticals as a universal waste type. Therefore, upon crossing the Michigan state line, Universal Pharm becomes



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subject to the other state's laws. When manifesting Universal Pharm, note in box 14 of the Uniform Manifest that the waste was managed as Universal Waste Pharmaceutical in Michigan.

**ATTACHMENT 9**

**Recommendations on the**

# **TRANSPORT OF DANGEROUS GOODS**

**Model Regulations**

**Volume I**

*Twentieth revised edition*



**UNITED NATIONS**  
**New York and Geneva, 2017**

## CHAPTER 1.2

### DEFINITIONS AND UNITS OF MEASUREMENT

#### 1.2.1 Definitions

**NOTE:** *This Chapter provides definitions of general applicability that are used throughout these Regulations. Additional definitions of a highly specific nature (e.g., terms relating to construction of intermediate bulk containers or portable tanks) are presented in the relevant chapters.*

For the purposes of these Regulations:

*Aerosol or aerosol dispenser* means an article consisting of a non-refillable receptacle meeting the requirements of 6.2.4, made of metal, glass or plastics and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state;

#### *Aircraft*

*Cargo aircraft* means any aircraft, other than a passenger aircraft, which is carrying goods or property;

*Passenger aircraft* means an aircraft that carries any person other than a crew member, a carrier's employee in an official capacity, an authorized representative of an appropriate national authority, or a person accompanying a consignment or other cargo;

*Alternative arrangement* means an approval granted by the competent authority for a portable tank or MEGC that has been designed, constructed or tested to technical requirements or testing methods other than those specified in these regulations (see, for instance, 6.7.5.11.1);

*Animal material* means animal carcasses, animal body parts, foodstuffs or feedstuffs derived from animals;

#### *Approval*

*Multilateral approval*, for the transport of radioactive material, means approval by the relevant competent authority of the country of origin of the design or shipment, as applicable, and also, where the consignment is to be transported through or into any other country, approval by the competent authority of that country;

*Unilateral approval*, for the transport of radioactive material, means an approval of a design which is required to be given by the competent authority of the country of origin of the design only;

*ASTM* means the American Society for Testing and Materials (ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959, United States of America);

*Bag* means a flexible packaging made of paper, plastics film, textiles, woven material or other suitable materials;

**ATTACHMENT 10**



September 28, 2017

P-1707

Mr. William Schoonover  
Assoc. Admin. for HM Safety  
US DOT PHMSA  
1200 New Jersey Ave, SE East Bldg., Second Flr (PH)  
Washington, DC 20590

Dear Mr. Schoonover:

**RE: Petition to Harmonize the Aerosol Definition**

Pursuant to Title 49 CFR, Part 107, §107.121, the Consumer Specialty Products Association (CSPA), Council on Safe Transportation of Hazardous Articles, Inc. (COSTHA), National Aerosol Association (NAA) and American Coatings Association (ACA) hereby petition the Pipeline and Hazardous Materials Safety Administration (PHMSA) to harmonize the US Hazardous Materials Regulations (HMR) with applicable international regulations with regards to the classification, testing, and transport of aerosols.

Specifically, CSPA, COSTHA, NAA and ACA request that PHMSA modify the definition of an aerosol to include certain non-refillable gas containers with or without a liquid, paste, or powder.

**Aerosol Definition**

The HMR provides a definition of an aerosol in [§171.8](#):

*Aerosol* means any non-refillable receptacle containing a gas compressed, liquefied or dissolved under pressure, the sole purpose of which is to expel a nonpoisonous (other than a Division 6.1 Packing Group III material) liquid, paste, or powder and fitted with a self-closing release device allowing the contents to be ejected by the gas.

This definition is inconsistent with the definition of an aerosol found in the UN Model Regulations (UNMR), the International Maritime Dangerous Goods (IMDG) Code, the International Civil Aviation Organization Technical Instructions on the Safe Transport of Dangerous Goods by Air (ICAO TI), and the Regulations governing European Road Transport (ADR). The UNMR and the European ADR have included the provision “with or without a liquid, paste or powder” in their definition of an aerosol since at least 1997. To date, there is no data on record of incidents as a result of this broader definition. Forty-nine countries are contracting parties to the ADR and dozens more use the international regulations in the International Civil Aviation Organization and the International Maritime Dangerous Goods Code using the broader definition of an aerosol.

From the [UNMR](#):

*Aerosol or aerosol dispenser* means a non-refillable receptacle meeting the requirements of 6.2.4 (embedded at end), made of metal, glass or plastics and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.

Disharmony between these definitions leads to costly business operations based upon reclassification, marking and permit requirements. The definition used in the US differs even from our largest export trading partners, Canada and Mexico. The ongoing additional expense to the US economy is avoidable if the definition used in other international codes and regulations can be adopted by PHMSA. These commercial expenses include but are not limited to management efforts of Special Permits, container marking, special storage/distribution and tracking. The additional expenses are, of necessity, included in consumer pricing.

Data collected in 2016 indicated a total of 4.6 billion aerosols manufactured in North America<sup>1</sup> with a majority being manufactured and marketed in the US. These aerosol products represent ~\$18 billion US dollar sales with a growth projection of \$25 billion US dollar sales by 2025<sup>2</sup>. Of those 4.6 billion aerosols, many are pure gas units used in consumer and industrial use. The disharmony causes confusion, inconsistency and rework across the industry which in turn causes financial hardship to US suppliers, manufactures and marketers. The disharmony leaves US manufactures and marketers at a disadvantage concerning the \$52 billion US dollar sales<sup>3</sup> available in the global marketplace. Regulatory disharmony is seen as a primary restraint to the aerosol industry. A further look at the cost of regulatory disharmony can be found in Attachment A.

Earlier discussions of this harmonization generated questions regarding safety of pure gas-containing systems. Safely containing pure propellant systems within specified aerosol containers (§178.33, §178.33a and §178.33b) is standard practice across the aerosol industry. Industry has set specifications with PHMSA to assure burst strength of containers utilized for all aerosol products. Table 1 shows the relationship of pure propellant vapor pressure and the corresponding container that would be utilized in the marketing of a said propellant. The information found in Table 1 comes from Attachment E. The pressure curves for these individual propellants can be found from two different sources in Attachments F and G. The information in Attachments E, F, and G show that the pressure from these propellants will not exceed the container burst strength, outside of Propane which would require a 2Q container. Attachments B, C and D provide vapor pressure data and curves for mixtures of these propellants, which shows that the mixture of these propellants will not result in pressures greater than the container burst strengths. All of these attachments are from publicly available sources.

**Table 1: Vapor pressure of pure propellant aerosols at 130°F and the burst strength of aerosol containers**

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<sup>1</sup> Grand View Research, Inc. Market Estimate and Trend Analysis, Aerosol Market. 2017. Page 18.

<sup>2</sup> Grand View Research, Inc. Market Estimate and Trend Analysis, Aerosol Market. 2017. Page 19.

<sup>3</sup> Grand View Research, Inc. Market Estimate and Trend Analysis, Aerosol Market. 2017. Page 19.

Propellant Name	Vapor Pressure (psig) @ 130°F	Container burst strength @ 130°F		
		2S	2P	2Q
n-Butane	66.1	240	240	270
Isobutane	59.0	240	240	270
Propane	259.1	240*	240*	270
Isopropane	19.2	240	240	270
n-Pentane	11.7	240	240	270
Dimethyl Ether	174.0	240	240	270
HFC-152a	177.0	240	240	270
HFC-134a	200.0	240	240	270
HFO-1234ze	147.0	240	240	270

\*Due to the pressure from the propellant exceeding the burst strength of the container, the aerosol industry would not use a 2S or 2P container for a Propane only aerosol.

Specifically, US specified aerosol containers 2P, 2Q and 2S are tested for pressure retention at the supplier. Metal aerosol containers specified as 2P and 2Q are rated for product pressure generation < 160 pounds per square inch gauge (psig) and < 180 psig respectively at 130°F. These aerosol containers are tested at a frequency of 1 randomly selected from each 25,000 units in a production run. Specified aerosol containers in plastic, 2S (rated for products pressure generation < 160 psig at 130°F) are tested at a frequency of 1 randomly selected from each 5,000 units produced. The manufacturer for a finished aerosol product will select the appropriately rated container based upon the product pressure (measured at 130°F). The voluntary standard and test methods for determining the product pressure can be found in the CSPA Aerosol Guide. Manufacturers will follow these methods regardless if the product is only one propellant, a mixture of propellants or a combination of a liquid and propellant(s).

In the US, PHMSA and the aerosol industry have a strong safety record for gas-only aerosols. For example, special permits (DOT-SP 10232, DOT-SP 14188, and DOT-SP 14286 to name a few) authorize small pressurized containers of various gases, which meet the definition of a consumer commodity, to be reclassified as limited quantity or ORM-D and shipped with very broad exceptions. Shipment of products under these permits and classifications have shown excellent safety in distribution and market. The consensus position of CSPA, COSTHA, ACA and NAA is that there is no significant impact on safety concerning aerosol containers made of metal, plastic or glass containing a gas, compressed, liquefied or dissolved, with or without liquid, paste or powder.

CSPA, COSTHA, ACA and NAA request that PHMSA consider the advantages in harmonizing the Aerosol Definition.

Respectfully submitted for above industries,



Nicholas Georges  
 Director, Scientific Affairs  
 Consumer Specialty Products Association

- Attachment A - Cost of lack of harmonization in the definition of aerosols for US industry
- Attachment B – ATB8 Dymel 152a and Isobutane Mixture Technical Instructions
- Attachment C - ATB9 Dymel 152a and nButant Mixtures
- Attachment D - Propellant Properties Table for Safety Manual
- Attachment E - Properties Chart from Propellant Manual
- Attachment F - Vapor Pressure Chart DCPC

## **Attachment A**

The UN Model Regulations and the European ADR have included the provision “with or without a liquid, paste or powder,” in their definition of aerosol since at least 1997. To date there is no record of incidents due to this broader definition. Forty- nine countries are contracting parties to the ADR and dozens more use the international regulations in the International Civil Aviation Organization and the International Maritime Dangerous Goods Code using the broader definition of an aerosol.

### ***Costs Associated***

*Training:* Training employees to ship fully regulated versus limited quantity shipments is more extensive. PHMSA reports in its August 6, 2014 HM-224F Rulemaking that the cost for training hazmat employees once is between \$300 and \$400 each. While COSTHA estimates the cost is greater than that reported we note that training employees on the requirements for shipping fully regulated products is at least twice that for a limited quantity shipments.

*Packaging:* The larger cost for UN Specification packaging is often the testing of the package. Packaging manufacturers report that each UN specification package must be tested and retested. If you do not own your own lab, the DOT 3rd Party labs costs between \$2,000 - \$3,000 every 2 years for each system you have certified. Thus, if one were to ship the same size aerosol as 1 can per package, 12 cans per package and 24 cans per package, the cost for the package testing would be \$6,000 - \$9,000 every two years.

### ***HazMat Surcharges***

Two small parcel carriers post a range from \$32 - \$142 per package for dangerous goods/hazardous materials shipments. The lower figure is for ground shipments within the US.

One major air carrier posts a fee of \$90 per UN number.

The cost added makes it prohibitive for US manufacturers to compete in this market.

### ***Loss of Business Opportunity***

In addition to the direct costs noted above there are US companies who do not manufacture in this segment of the aerosol industry because they cannot be competitive with the companies in Europe, Asia and even within North America who are using the international definition for aerosols.



**Dymel**

aerosol propellents

## **Dymel 152a/I: Physical Properties of Dymel 152a and Isobutane Mixtures**

**Fluorochemicals Laboratory\*  
E. I. duPont de Nemours and Company**

### **Content**

For the full range of Dymel 152a/I compositions, this bulletin presents the saturated-vapor pressures and liquid densities from 70°F to 130°F (21.1°C to 54.4°C) and the flammability data for the vapor mixtures in air.

The saturated-vapor pressure data for Dymel 152a/I are shown in Exhibits 1 through 5. The graphs are based on literature data for the pure components (Ref. 1) and on the experimental data given in Exhibit 5. Exhibits 1 and 2, which show the saturated-vapor pressures for the Dymel 152a/I blends at 70°F and 130°F, reveal that Dymel 152a and isobutane form an azeotropic mixture containing 70 weight percent Dymel 152a at 70°F and 77 weight percent Dymel 152a at 130°F.

Exhibits 6 and 7 show the liquid densities, which were calculated from pure component data (Ref. 1).

The flammability of Dymel 152a/I vapor mixtures in air is shown in Exhibit 8 and 9. These data are based on literature values for the pure components (Ref. 2 and 3) and experimental values for a 50/50 mole percent (53.25/46.75 wt %) Dymel 152a/I mixture.

### **References**

1. ASHRAE, *Handbook of Fundamentals*, 1972.
2. Bulletin 503, Bureau of Mines, "Limits of Flammability of Gases and Vapors".
3. *Handbook of Aerosol Technology*, P.A. Sanders, Van Nostrand Reinhold Company, 1979.

\*Formerly the Freon® Products Laboratory

**Exhibit 1**  
**Saturated Vapor Pressure of Dymel 152/1 at 70°F—Experimental Data**

Key:  
○ This study  
• Ref. 1  
□ Ref. 1

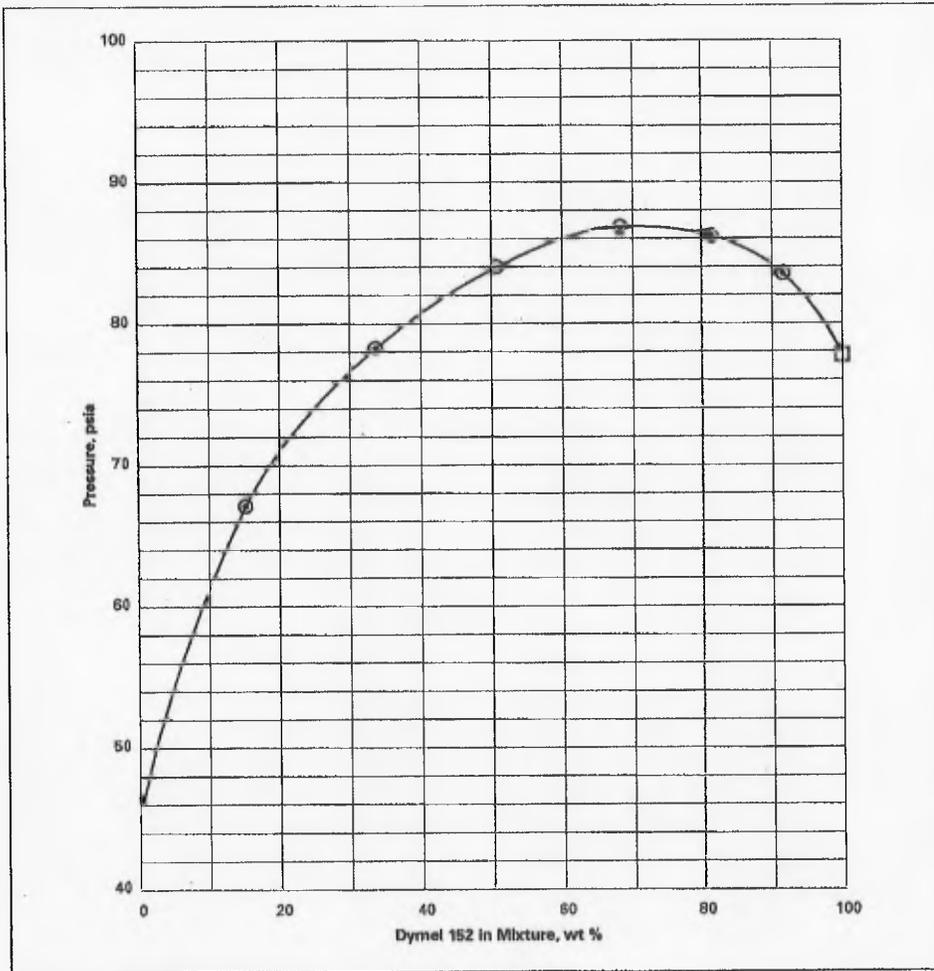
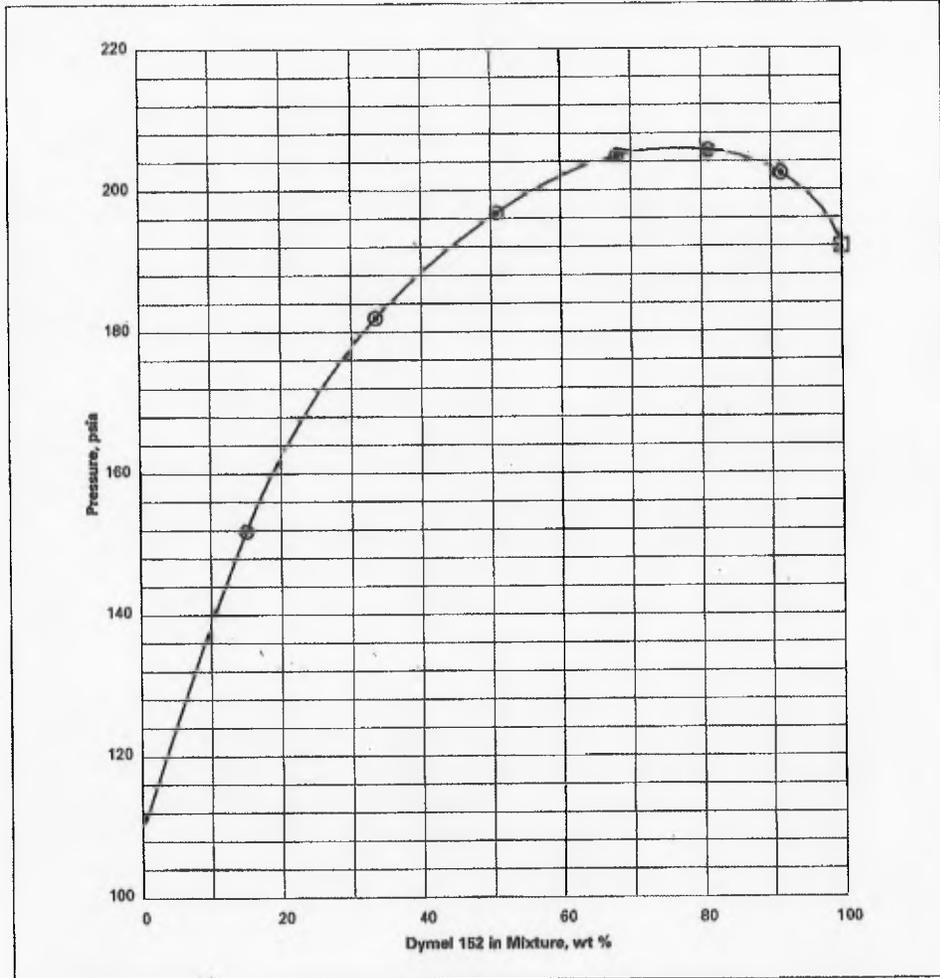


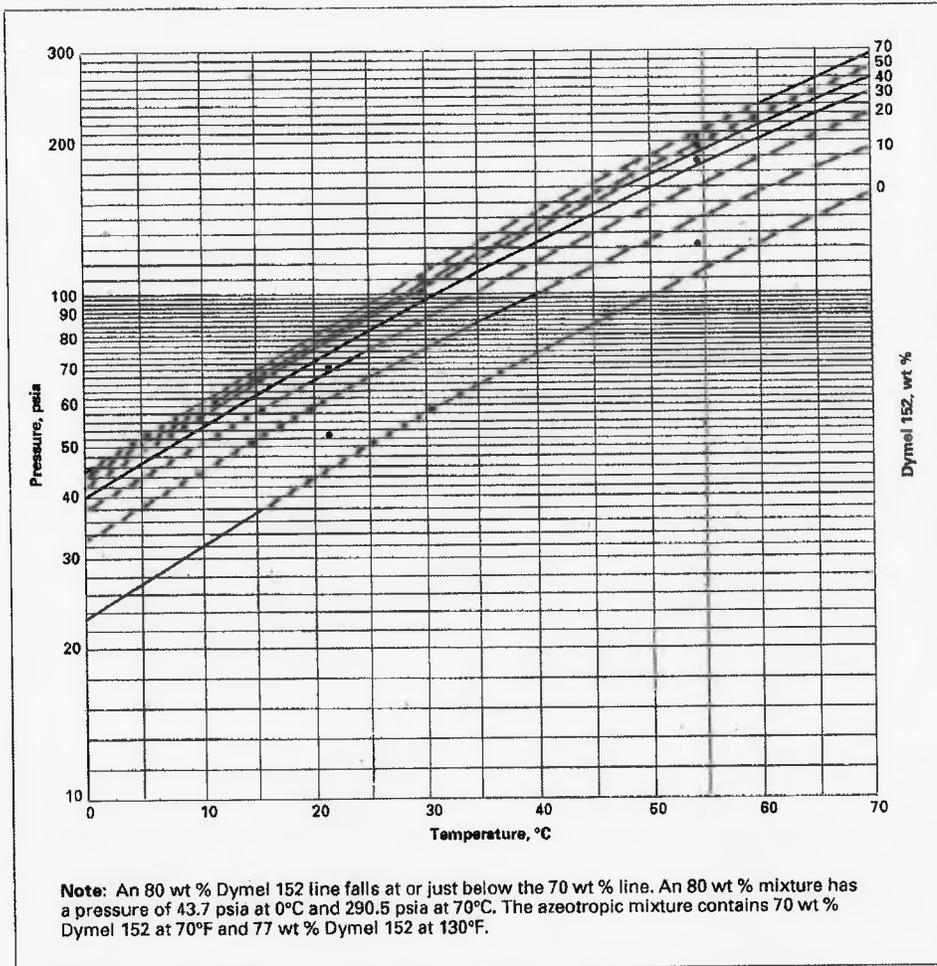
Exhibit 2  
Saturated Vapor Pressure of Dymel 152/I at 130°F—Experimental Data

Key:  
○ This study  
• Ref. 1  
◻ Ref. 1



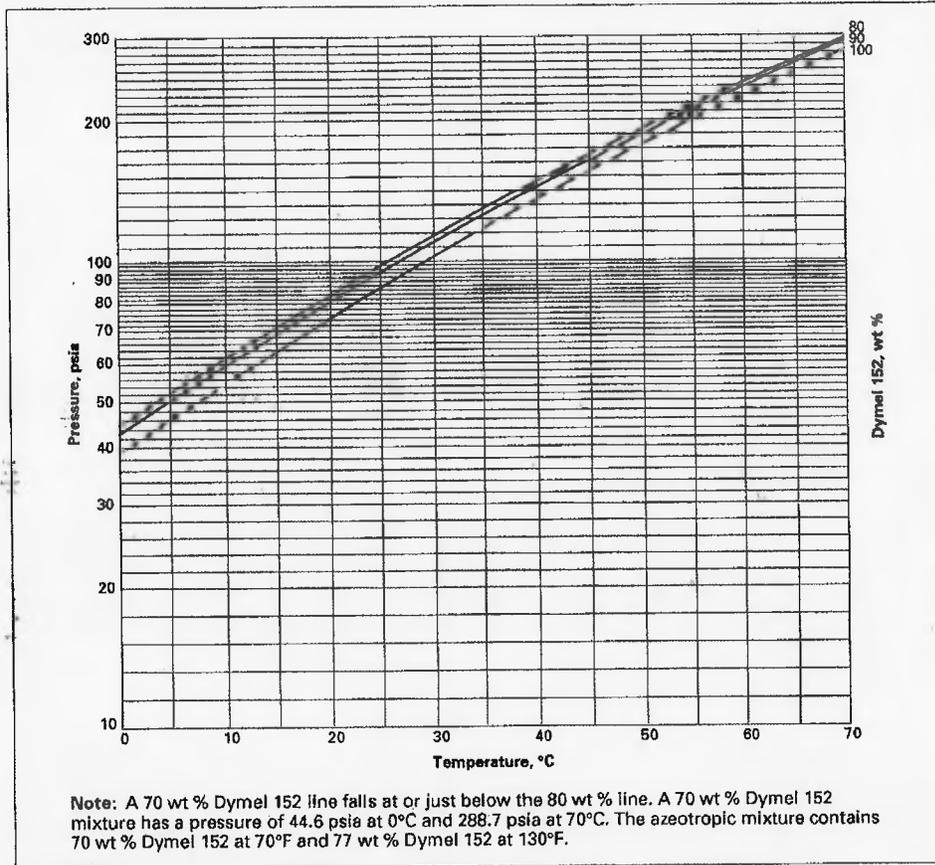
**Exhibit 3**  
**Saturated Vapor Pressures of Dymel 152/I Mixtures**

**Note:** Data based on pure component data plus shown experimental points (•)



**Exhibit 4**  
**Saturated Vapor Pressures of Dymel 152/I Mixtures**

**Note:** Data based on pure component data plus shown experimental points (-)



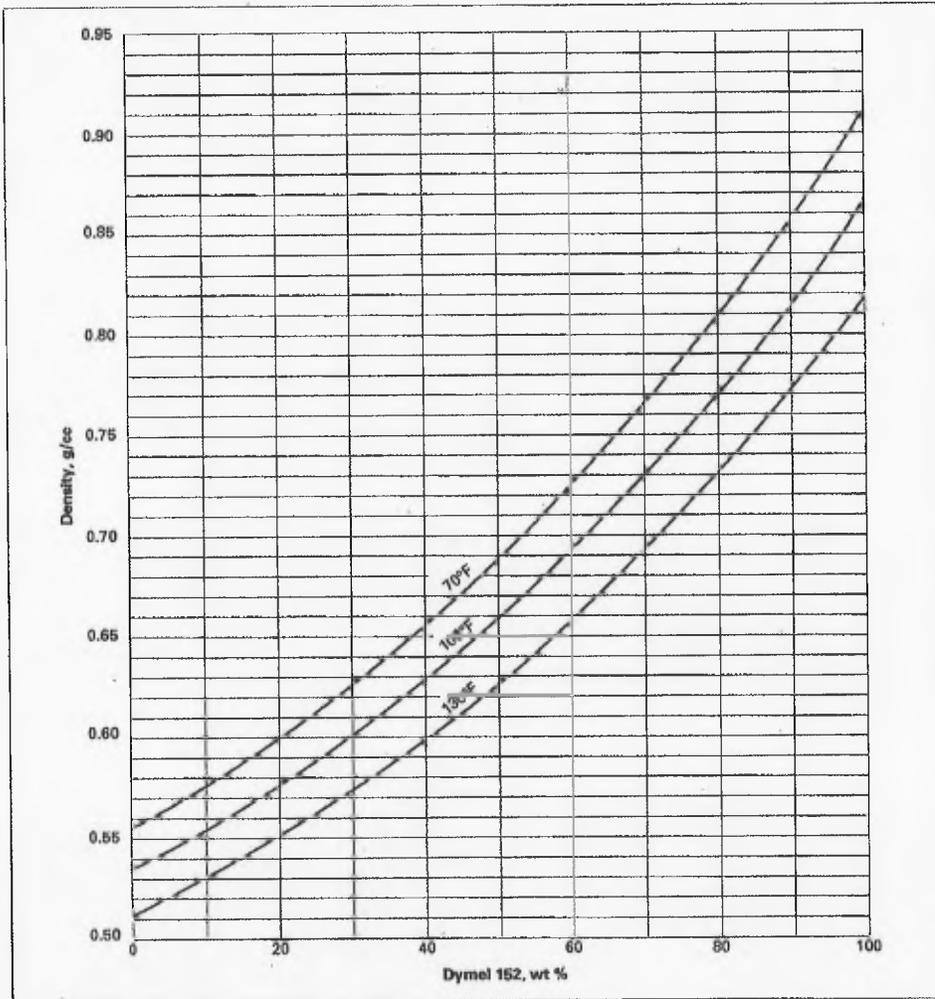
**Exhibit 5**  
**Saturated Vapor Pressures of Dymel 152/I Mixtures—Experimental Data**

Dymel 152 In Mixture, wt %	Pressure, psia at	
	70°F (21.1°C)	130°F (54.4°C)
0.0*	45.1	109.7
15.0	66.7	152.2
33.0	77.7	181.4
50.0	83.1	195.1
67.0	85.9	203.7
80.0	85.1	204.5
90.0	83.0	201.3
100.0*	77.2	191.5

\* Ref. 1

**Exhibit 6**  
**Liquid Densities of Dymel 152/I Mixtures**

Note: Data calculated from pure component densities.



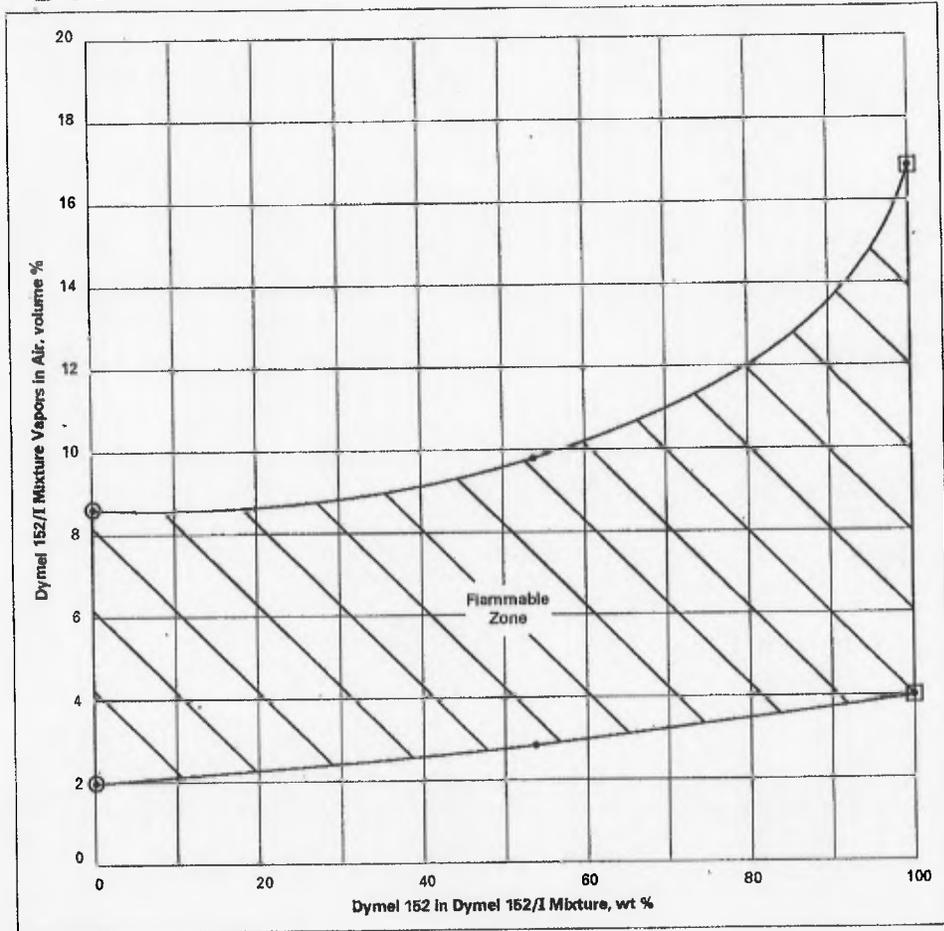
**Exhibit 7**  
**Calculated Liquid Densities of Dymel 152/I Mixtures**

Dymel 152 In Mixture, wt %	Densities, g/cc at		
	70°F	100°F	130°F
0 <sup>a</sup>	0.5559	0.5347	0.5117
20	0.6027	0.5790	0.5529
40	0.6582	0.6312	0.6014
60	0.7248	0.6938	0.6592
80	0.8065	0.7702	0.7293
100 <sup>a</sup>	0.9090	0.8655	0.8161

<sup>a</sup>Ref. 1

**Exhibit 8**  
**Flammability Limits of Dymel 152/I Mixtures**

**Data Sources:**  
 • This study  
 ○ Ref. 3  
 □ Ref. 2



**Exhibit 9**  
**Flammability Limits of Dymel 152/I Vapor Mixtures in Air**

Concentration of Dymel 152 in Dymel 152/I Mixture		Flammability Limits in Air, vol %	
Weight, %	Mole, %	Lower	Upper
0.0 <sup>a</sup>	0.0	1.8	8.4
53.25	50.0	2.7 ± 0.1	11.5 ± 0.1
100.0 <sup>b</sup>	100.0	3.9	16.9

<sup>a</sup>Ref. 2  
<sup>b</sup>Ref. 3

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The information contained herein is based on technical data and tests that we believe to be reliable and is intended for use by persons having technical skill, at their own discretion and risk. Because conditions of use are outside of DuPont's control, we can assume no liability for results obtained or damages incurred through the application of the data presented.

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Only by DuPont



**Dymel**<sup>®</sup>  
aerosol propellents

## **Dymel 152a/B: Physical Properties of Dymel 152a and n-Butane Mixtures**

**Fluorochemicals Laboratory\*  
E. I. duPont de Nemours and Company**

### **Content**

For the full range of Dymel 152a/B compositions, this bulletin presents the saturated-vapor pressures and liquid densities from 70°F to 130°F (21.1°C to 54.4°C) and the flammability data for the vapor mixtures in air.

The saturated-vapor pressure data for Dymel 152a/B are shown in Exhibits 1 through 5. The graphs are based on literature data for the pure components (Ref. 1) and on the experimental data given in Exhibit 5. Exhibits 1 and 2, which show the saturated-vapor pressures for the Dymel 152a/B blends at 70°F and 130°F, reveal that Dymel 152a and butane form an azeotropic mixture containing 82 weight percent Dymel 152a at 70°F and 88 weight percent Dymel 152a at 130°F.

Exhibits 6 and 7 show the liquid densities, which were calculated from pure component data (Ref. 1).

The flammability of Dymel 152a/B vapor mixtures in air is shown in Exhibit 8 and 9. These data are based on literature values for the pure components (Ref. 2 and 3) and experimental values for a 50/50 mole percent (53.25/46.75 wt %) Dymel 152a/B mixture.

### **References**

1. ASHRAE, *Handbook of Fundamentals*, 1972.
2. Bulletin 503, Bureau of Mines, "Limits of Flammability of Gases and Vapors."
3. *Handbook of Aerosol Technology*, P.A. Sanders, Van Nostrand Reinhold Company, 1979.

\*Formerly the Freon<sup>®</sup> Products Laboratory

Exhibit 1  
Saturated Vapor Pressure of Dymel 152/B at 70°F—Experimental Data

Key:  
○ This study  
• Ref. 1  
□ Ref. 1

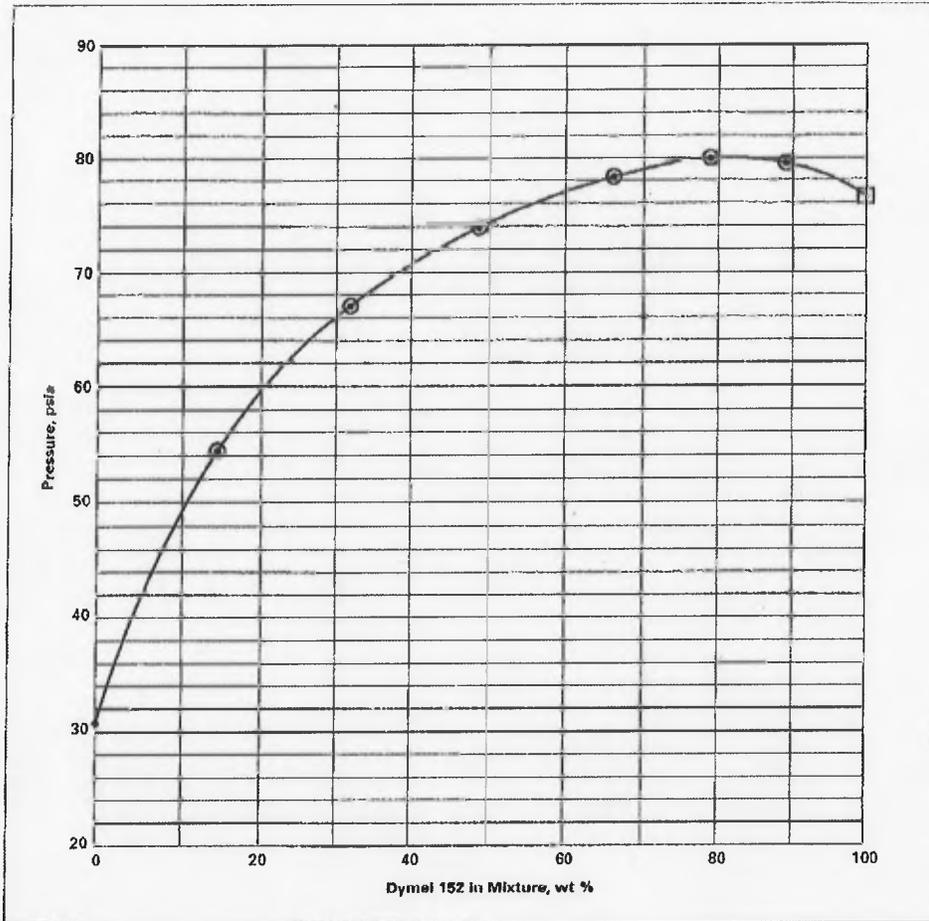
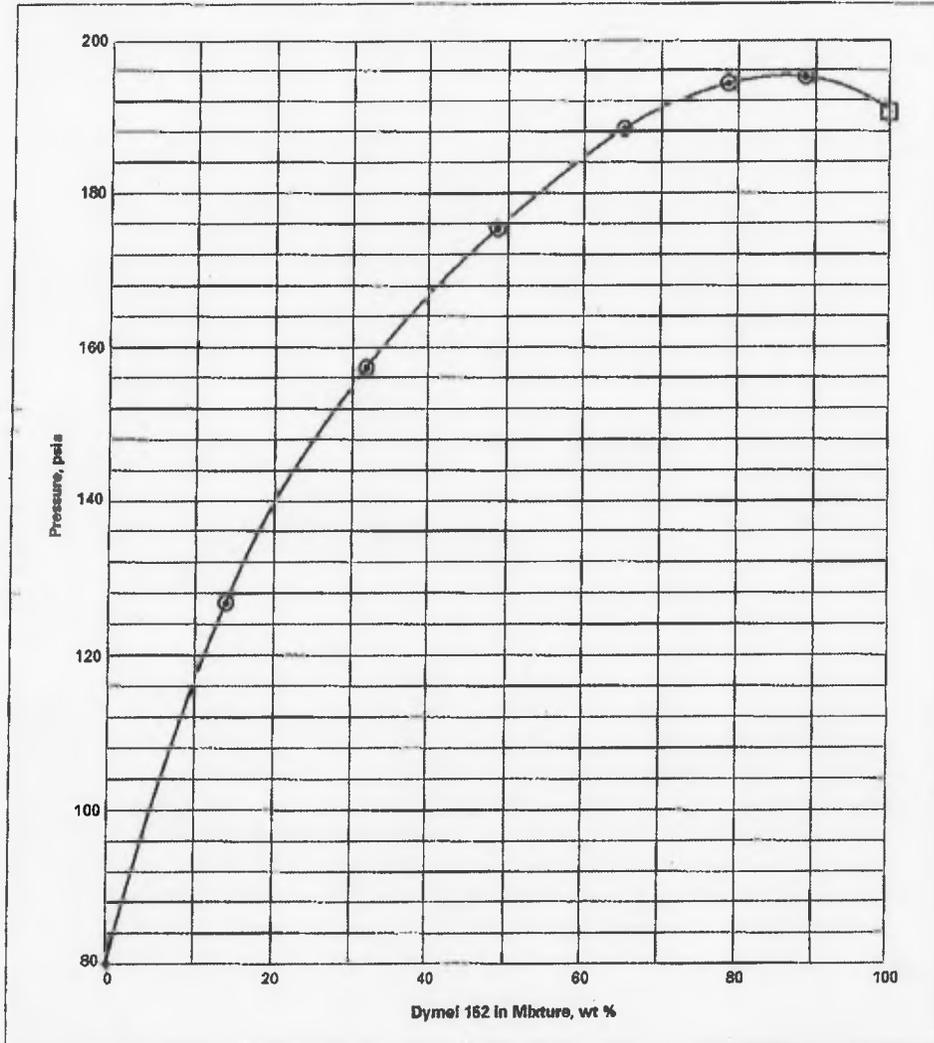


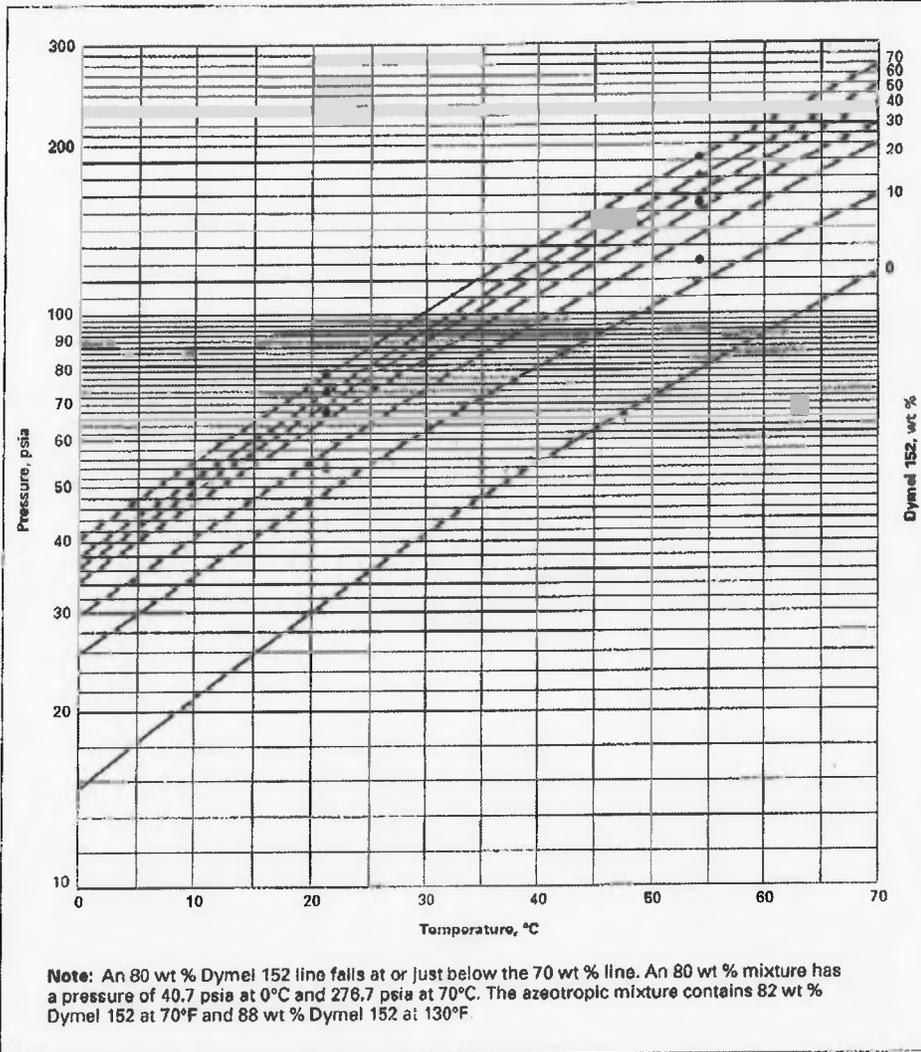
Exhibit 2  
Saturated Vapor Pressure of Dymel 152/B at 130°F—Experimental Data

Key:  
○ This study  
• Ref. 1  
□ Ref. 1



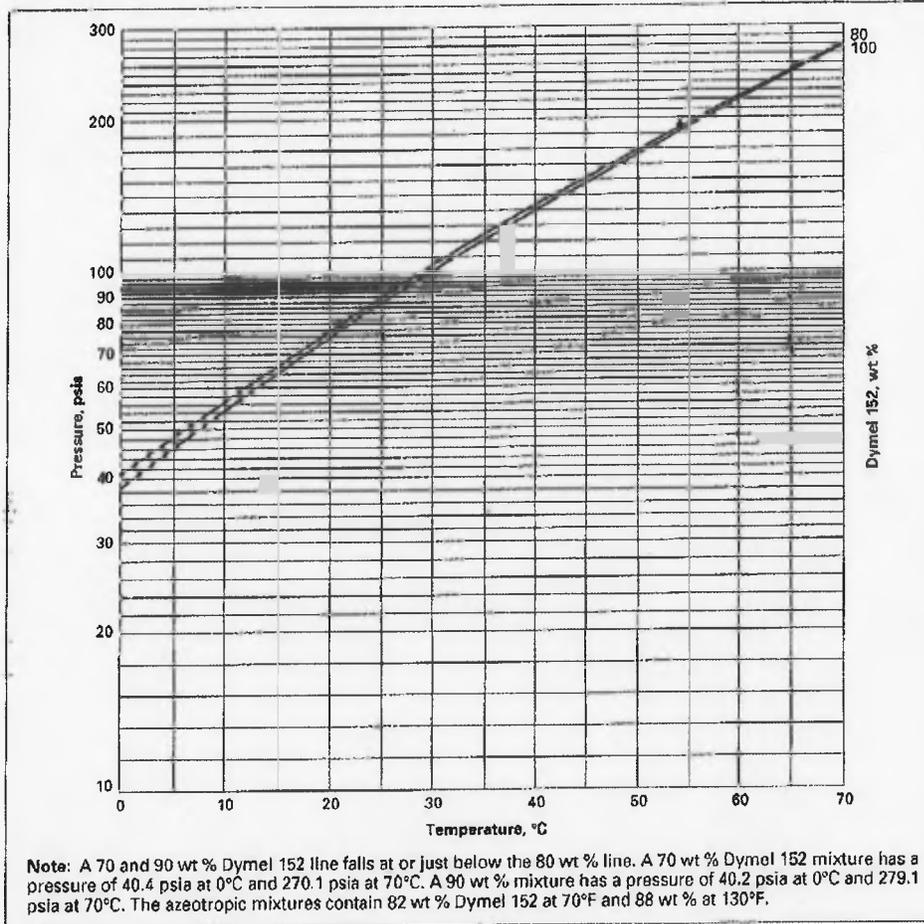
**Exhibit 3  
Saturated Vapor Pressures of Dymel 152/B Mixtures**

**Note:** Data based on pure component data plus shown experimental points (•)



**Exhibit 4**  
**Saturated Vapor Pressures of Dymel 152/B Mixtures**

**Note:** Data based on pure component data plus shown experimental points (\*)



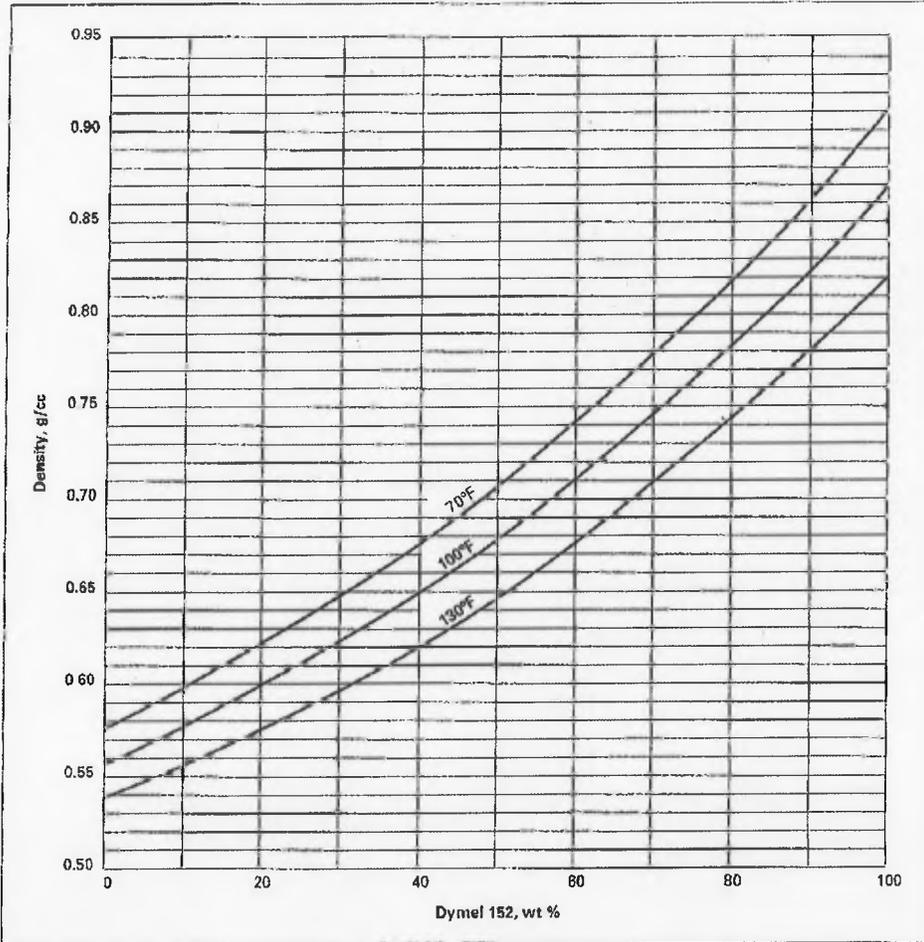
**Exhibit 5**  
**Saturated Vapor Pressures of Dymel 152/B Mixtures—Experimental Data**

Dymel 152 in Mixture, wt %	Pressure, psia at	
	70°F (21.1°C)	130°F (54.4°C)
0.0*	31.2	80.8
15.0	54.4	126.7
33.0	67.3	156.7
50.0	73.7	175.5
67.0	78.3	187.8
80.0	79.9	194.0
90.0	79.5	194.9
100.0 <sup>a</sup>	77.2	191.5

\*Ref. 1

**Exhibit 6**  
**Liquid Densities of Dymel 152/B Mixtures**

Note: Data calculated from pure component densities.



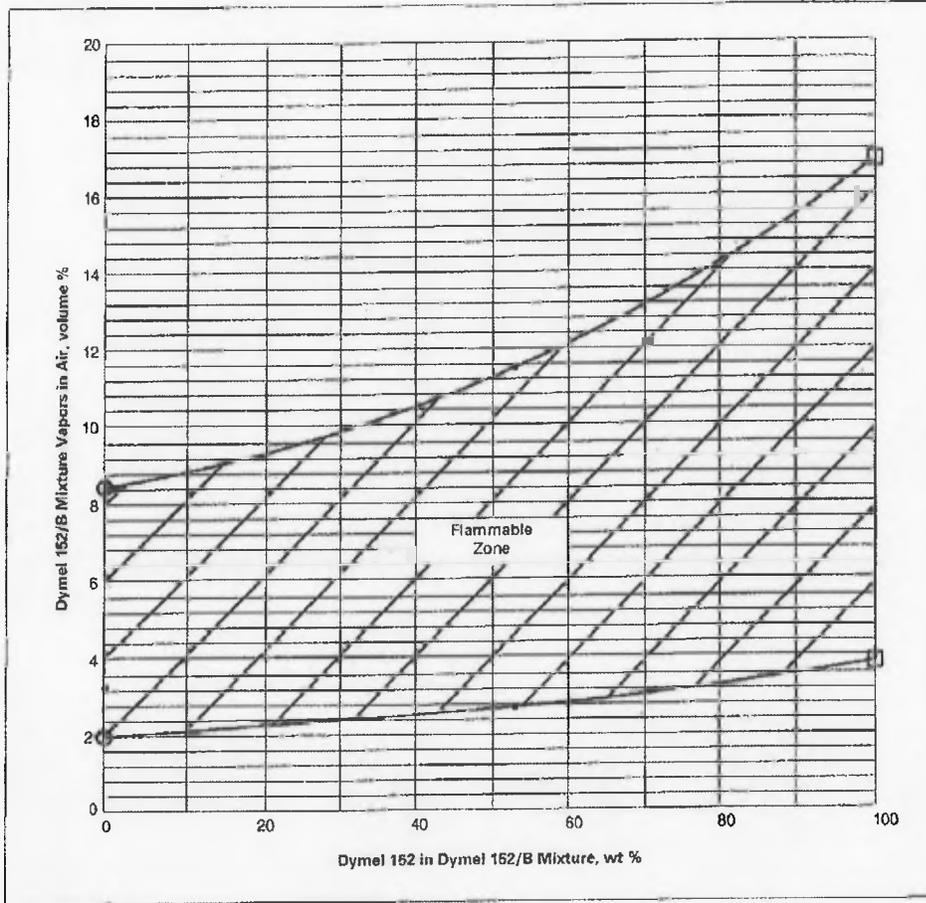
**Exhibit 7**  
**Calculated Liquid Densities of Dymel 152/B Mixtures**

Dymel 152 in Mixture, wt %	Densities, g/cc at		
	70°F	100°F	130°F
0*	0.5775	0.5580	0.5370
20	0.6229	0.6007	0.5764
40	0.6761	0.6504	0.6221
60	0.7393	0.7092	0.6756
80	0.8154	0.7796	0.7393
100*	0.9090	0.8655	0.8161

\* Ref. 1

**Exhibit 8**  
**Flammability Limits of Dymel 152/B Mixtures**

**Data Sources:**  
 • This study  
 ○ Ref. 3  
 □ Ref. 2



**Exhibit 9**  
**Experimental Flammability Data for Gaseous Mixtures of Dymel 152/B and Air**

Concentration of Dymel 152 in Dymel 152/B Mixture		Flammability Limits in Air, vol %	
Weight, %	Mole, %	Lower	Upper
0.0 <sup>a</sup>	0.0	1.9	8.5
53.25	50.0	2.7 ± 0.1	9.7 ± 0.1
100.0 <sup>b</sup>	100.0	3.9	16.9

<sup>a</sup> Ref. 2  
<sup>b</sup> Ref. 3

---

The information contained herein is based on technical data and tests that we believe to be reliable and is intended for use by persons having technical skill, at their own discretion and risk. Because conditions of use are outside of DuPont's control, we can assume no liability for results obtained or damages incurred through the application of the data presented.



**Dymel**<sup>®</sup>  
Only by DuPont

(Rev. 7/82) 246023A Printed in U.S.A.  
Reorder No. E-64712-1

# Attachment D

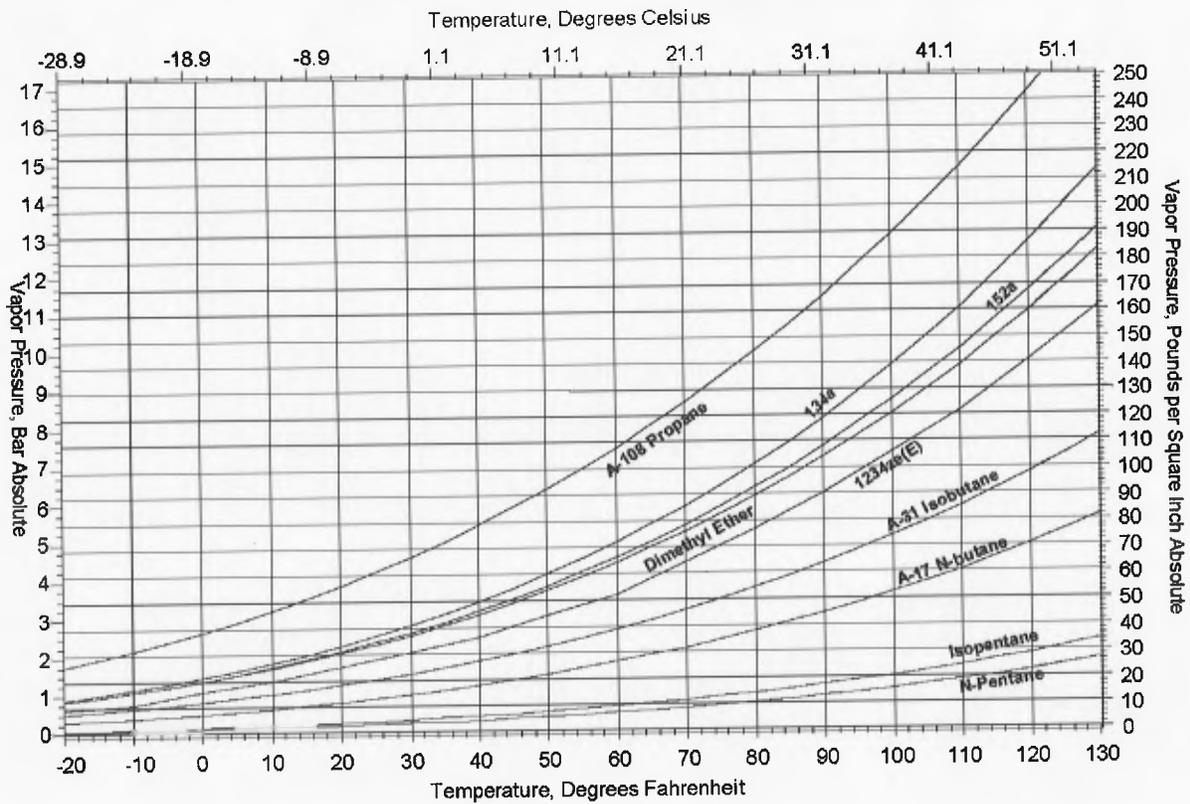
Physical Properties of Aerosol Propellants

	n-Butane	isoButane	Propane	isoPentane	n-Pentane	DME	152a	134a	1234ze(E)
Formula	C <sub>4</sub> H <sub>10</sub>	C <sub>4</sub> H <sub>10</sub>	C <sub>3</sub> H <sub>8</sub>	C <sub>5</sub> H <sub>12</sub>	C <sub>5</sub> H <sub>12</sub>	CH <sub>3</sub> O-CH <sub>3</sub>	CH <sub>2</sub> , CHF <sub>2</sub>	CF <sub>2</sub> -CFH <sub>2</sub>	CHCF <sub>3</sub>
Molecular Weight	58.123	58.123	44.096	72.15	72.15	46.069	66.051	102.03	114.0
Vapor Pressure @ 70 °F psig @ 21.1 °C bar	16.9 1.2	31.1 2.1	109.3 7.5	-3.1 -0.2	-6.2 0.04	61.3 4.3	63.9 4.4	71.0 4.9	64.0 4.4
Vapor Pressure @ 100 °F psig @ 37.8 °C bar	37.5 2.6	59.0 4.1	172.0 11.9	5.8 0.4	0.8 0.06	106.0 7.3	111.1 7.7	124.2 8.6	99.9 6.2
Vapor Pressure @ 130 °F psig @ 54.4 °C bar	66.1 4.6	95.2 6.6	299.1 17.9	19.2 1.3	11.7 0.8	174.0 12.0	177.0 12.2	200.0 13.8	147 10.1
Boiling Point @ 1 ATM, °F @ 1ATM, °C	31.1 0.5	10.9 -11.7	-43.7 -42.1	82 27.8	97 36.1	-12.7 -24.8	-13 -25.0	15.5 26.5	2.2 -19.0
Auto Ignition Temperature °F °C	761 405	1010 543	842 450	788 420	588 309	662 350	849 454	1418 770	694 368
Specific Gravity of Gas @ 60 °F (15.6 °C)	2.006	2.006	1.522	2.491	2.491	1.590	2.280	3.523	3.958
Density of Liquid lbs./gal. @ 60 °F Grams/cc @ 21.1 °C	4.864 0.57	4.699 0.56	4.234 0.50	5.200 0.62	5.255 0.63	5.579 0.66	7.696 0.91	10.384 1.21	9.96 1.17
Volume of Vapor Gallon @ 60 °F ft <sup>3</sup> m <sup>3</sup> /liter @ 16.6 °C	31.75 0.23	30.59 0.22	36.35 0.27	27.4 0.20	27.68 0.20	46.12 0.35	44.20 0.33	38.64 0.29	33.02 0.25
Expansion Ratio @ 1 ATM, & 60 °F (15.6 °C) (Liquid to Gas)	237.8	229.3	272.7	265.0	297.0	345.0	330.6	289.0	247
Flash Point °F °C	101 74	117 83	156 104	60 -51	40 -40	42 -41	58 -50	N/A	N/A
Specific Heat of Gas, Cp @ 60 °F, BTU/lb °F @ 15.6 °C, cal/g °C	0.395	0.397	0.389	0.384	0.388	0.412	0.240	0.282	0.224
Specific Heat of Liquid, Cp @ 60 °F, BTU/lb °F @ 15.6 °C, cal/g °C	0.570	0.570	0.620	0.538	0.544	0.566	0.378	0.331	0.323
Heat of Vaporization, BTU/lb @ BP KJ/g @ BP	165.8 385.7	157.2 365.7	183.0 425.7	147.1 342.2	153.6 357.3	201.0 467.5	140.9 327.7	93.4 217.3	84 195
Theoretical (Net) Heat of Comb. of Liquid, 70 °F BTU/lb KJ/g	19,657 45.7	19,589 45.6	19,918 46.3	19,304 44.9	19,495 45.3	12,397 28.8	4,937 11.5	2,880 6.7	4,359 10.1
Chemical Heat of Combustion* KJ/g	43.3	42.8	44.0	41.9	42.5	26.5	6.3	0*	0*
Viscosity of Liquid, centipoises @ 100 °F (37.8 °C)	0.140	0.131	0.084	0.191	0.196	0.115	0.141	0.166	0.171
Coefficient of Liquid Expansion @ 60 °F (15.6 °C)	0.0011	0.0012	0.0016	0.0009	0.0009	0.0012	0.0014	0.0016	0.0017
Solubility in water, % by weight, @ 70 °F (21.1 °C)	0.008	0.008	0.007	Neg.	Neg.	35.0	1.7	0.95	0.037
Solubility of water, % by weight, @ 70 °F (21.1 °C)	0.007	0.008	0.016	0.01	0.009	6.9	0.17	0.095	0.022
Surface Tension, dynes/cm @ 70 °F (21.1 °C)	11.9	9.8	7.0	14.5	15.5	11.4	10.0	7.9	8.95
Kauri-Butanol Value	20	18	15	N/A	N/A	60	11	9.2	12.5
Flammability Limits, gas in air, percent by volume	1.9 - 8.5	1.8 - 8.4	2.2 - 9.5	1.4 - 7.6	1.5 - 7.8	3.3 - 18.0	3.9 - 16.9	See Introduction	See Introduction

\*Chemical Heat of Combustion as defined in NFPA 30B Table H.1 footnotes c & d

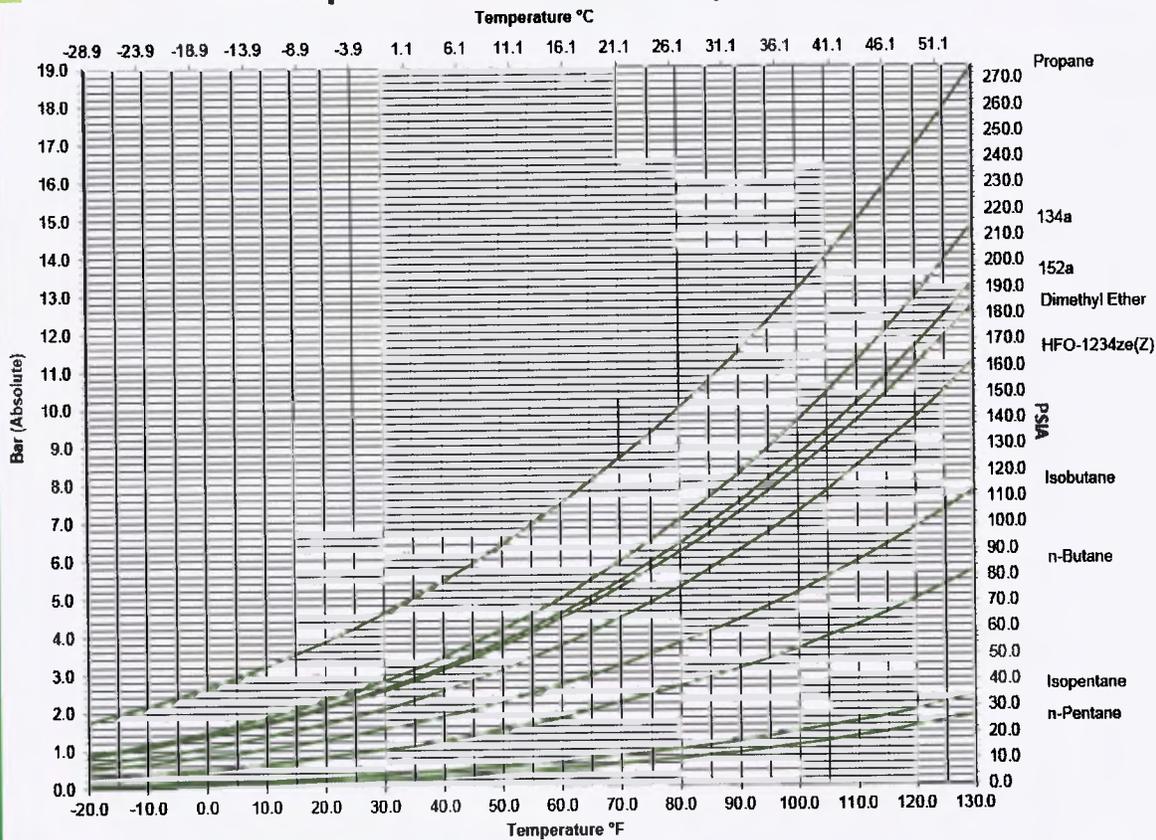
Attachment E

### Vapor Pressures of Aerosol Propellants



Attachment F

### Vapor Pressure of Aerosol Propellants



**ATTACHMENT 11**

# Universal Wastes

## What are universal wastes?

Universal wastes are a subset of hazardous wastes that may be accumulated and transported in Minnesota under reduced requirements. These wastes are referred to as *universal wastes* because, at some point, almost every business and government agency generates them. Universal wastes in Minnesota are regulated by the Minnesota Pollution Control Agency (MPCA) and the metropolitan counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington (Metro Counties).

Universal wastes nationwide include:

- [Batteries](#) page 3
- [Lamps](#) page 3
- [Mercury-containing equipment](#) page 3
- [Pesticides](#) page 4

In Minnesota, three additional types of waste may also be managed as universal waste:

- [Dental amalgam being recycled](#) page 5
- [Pretreated dental wastewater](#) page 5
- [Aerosols and compressed gas cylinders](#) page 5

If you do not manage these wastes as universal waste, manage them as fully regulated hazardous waste.

## What wastes are not universal wastes?

Waste streams commonly confused with universal waste include non-hazardous batteries, electronic waste, architectural paint, and lighting ballasts and small capacitors containing polychlorinated biphenyls (PCBs). Each of these has its own management requirements:

- **Non-hazardous batteries:** Batteries that are not hazardous at the time of disposal are not universal waste. Non-hazardous batteries include alkaline, carbon zinc, chloride zinc (commonly labeled *heavy duty*), nickel metal hydride (NiMH), zinc air, lithium batteries that are nine volts or less, and higher voltage lithium batteries that have been discharged to less than one volt. Although non-hazardous, you are still encouraged to recycle them if collection is available.
- **Electronic waste:** Wastes containing circuit boards or cathode ray tubes (CRTs) may be managed in Minnesota under the reduced requirements discussed in MPCA fact sheet #w-hw4-15, *Managing Electronic Wastes*, available at <https://www.pca.state.mn.us/sites/default/files/w-hw4-15.pdf>.
- **Architectural paint:** Latex and oil-based architectural paint and related coatings generated by Very Small Quantity Generators (VSQGs) may be transported to paint collection sites as discussed in MPCA fact sheet #w-hw4-37a, *Architectural Paint*, available at <https://www.pca.state.mn.us/sites/default/files/w-hw4-37a.pdf>.
- **PCB-containing ballasts and small capacitors:** Lighting ballasts and small capacitors that may contain polychlorinated biphenyls (PCBs) must be managed under the requirements discussed in MPCA fact sheet #w-hw4-48f, *Managing PCBs in Ballasts and Small Capacitors*, available at <https://www.pca.state.mn.us/sites/default/files/w-hw4-48f.pdf>.

## Managing universal wastes

A business or government agency that generates, transports, or stores universal waste is a *universal waste handler*. Sites that recycle, treat, or dispose of universal waste are *destination facilities*. Destination facilities must comply with the standard hazardous waste requirements for recycling, treatment, or disposal facilities.

Universal waste handlers are classified as *Small Quantity Handlers* or *Large Quantity Handlers*, depending on the amount of universal waste accumulated at any one time. Table 1 shows the universal waste handler categories and requirements for each.

**Table 1: Universal waste handler categories and requirements**

Small Quantity Handlers (SQH)	Large Quantity Handlers (LQH)
Accumulate less than 5000 kilograms (approximately 11,000 pounds) total universal waste at one site at any one time	Accumulate 5000 kg (approximately 11,000 pounds) or more total universal waste at one site at any one time

### And are required to

<b>Hazardous Waste Identification number (HWID)</b>	Not required	Obtain a HWID from the MPCA. See MPCA fact sheet #w-hw1-03; Obtain a Hazardous Waste Identification Number, at <a href="https://www.pca.state.mn.us/sites/default/files/w-hw1-03.pdf">https://www.pca.state.mn.us/sites/default/files/w-hw1-03.pdf</a> .
<b>Employee training</b>	Provide universal waste handling and emergency procedure information. Training records are not required.	Ensure employees are thoroughly familiar with universal waste handling and emergency procedures. Training records are not required.
<b>Broken or leaking universal waste</b>	Place leaking or broken universal waste that may release hazardous constituents into a compatible closed container. Ensure the container can fully contain the hazardous constituents (i.e., is airtight for broken lamps and liquid-tight for broken batteries). Universal waste broken accidentally may still be managed as universal waste in Minnesota. Deliberate universal waste breakage is <i>prohibited treatment</i> .  Debris contaminated by leaking universal waste, spill clean-up materials, and recovered or removed constituents, such as free liquid mercury, are <i>newly generated wastes</i> , not universal waste, and must be evaluated or assumed to be hazardous.	
<b>Labeling</b>	Label each universal waste or container with one of these phrases: <ul style="list-style-type: none"> <li>• Universal Waste - [type of universal waste], such as 'Universal Waste Batteries'</li> <li>• Waste [type of universal waste], such as 'Waste Thermometers'</li> <li>• Used [type of universal waste], such as 'Used Lamps'</li> </ul>	
<b>Accumulation time</b>	Accumulate universal waste for no more than one year from the date you generated or received the universal waste at your site. Mark the universal waste with the generated or received date or keep records to verify how long you have accumulated it.	
<b>Off-site shipments</b>	Ship only to a site that has agreed to accept the universal waste.  If the universal waste is a hazardous material under the U.S. Department of Transportation (DOT) Hazardous Materials Regulations (HMR), ensure you meet all HMR shipping requirements. See MPCA fact sheet #w-hw2-53, Requirements for Transporting Waste to a VSQG Collection Program, at <a href="https://www.pca.state.mn.us/sites/default/files/w-hw2-53.pdf">https://www.pca.state.mn.us/sites/default/files/w-hw2-53.pdf</a> .	
<b>Shipping records</b>	Keeping shipping records is recommended, but not required.	Keep records of each universal waste shipment received or sent for at least three years from the shipment date.  Ensure records include at least the: <ul style="list-style-type: none"> <li>• Shipper and recipient of the shipment</li> <li>• Type and quantity of the universal waste</li> <li>• Date the shipment was sent or received</li> </ul>
<b>Prohibitions</b>	Do not dispose, dilute, or treat universal waste except for those activities specifically allowed for each different universal waste discussed below. Do not crush, shred, or burn any universal waste.	
<b>Liability</b>	Remember that universal waste remains hazardous waste; you are ultimately responsible for its proper recycling or disposal to hazardous waste standards.	
<b>Hazardous waste generator size</b>	Do not count universal waste towards your hazardous waste generator size. The MPCA does not require reporting of universal waste. If located in a Metropolitan county, check with your county for reporting requirements.	

## Batteries

*Universal waste batteries* include any hazardous waste electrochemical storage device that consists of an anode, cathode, and electrolyte. Universal waste batteries include, but are not limited to lead acid, nickel cadmium, lithium greater than nine volts (9V), silver-containing, and mercury-containing types.

You may drain electrolyte from your universal waste batteries, however the drained electrolyte is a newly generated waste and not a universal waste. Manage the drained electrolyte as a hazardous waste unless you evaluate it as non-hazardous. For more information on evaluating wastes, see MPCA fact sheet #w-hw1-01, Evaluate Waste, at: <https://www.pca.state.mn.us/sites/default/files/w-hw1-01.pdf>.

You may also discharge universal waste batteries if you can do so safely using either the method recommended by the battery manufacturer or a complete discharge device (CDD). Do not simply short-circuit batteries to discharge them; it may cause a fire or battery explosion. Lithium batteries discharged to less than one volt may be managed as non-hazardous waste in Minnesota, but may remain subject to HMR transport requirements.

You may accumulate different types of universal waste batteries together as long as you ensure they will not short-circuit or cause a fire during accumulation. When you ship universal waste batteries off site, ensure you comply with applicable HMR requirements to prevent short circuits during transport. You may need to enclose each battery in a non-conducting bag or wrap, insulate terminals, or pack batteries to prevent them from touching each other or conductive materials.

## Lamps

*Universal waste lamps* include any hazardous waste bulb or tube portion of an electrical lighting device. Universal waste lamps include, but are not limited to fluorescent, high intensity discharge (HID), mercury vapor, low and high pressure sodium (LPS and HPS), metal halide, and neon (includes lamps containing other noble gases such as argon, krypton, or xenon).

### 'Green tip' fluorescent lamps

Certain models of fluorescent lamps are designed to pass the hazardous waste test for mercury, and are commonly labeled as 'low mercury' or by having green-colored metal end caps, known as 'green tips'. These lamps do still contain mercury, and in Minnesota must still be recycled. 'Green tip' fluorescent lamps from businesses may not be disposed as solid waste.

### LEDs

Although the bulb portions of most light-emitting diodes (LEDs) are not hazardous and thus not universal waste lamps, the attached circuit boards are regulated electronic wastes in Minnesota. See MPCA fact sheet #w-hw4-15, Managing Electronic Wastes, at <https://www.pca.state.mn.us/sites/default/files/w-hw4-15.pdf>.

### On-site crushing or cracking

In Minnesota, you may not crush the hazardous portion of universal waste lamps on your site unless you can demonstrate that no hazardous constituents (such as mercury) will be released to the environment from the entire crushing process, including filter changes. The MPCA is not aware of any commercially available lamp crushing equipment that can currently meet this standard.

The MPCA discourages cracking the shell of a universal waste lamp to attempt to remove the hazardous portion of the lamp. The hazardous portion of many universal waste lamps is contained in an inner sealed arc tube or capsule. Heat and chemical reactions in the arc tube may cause the glass to become brittle. This creates a high risk for damage and mercury release if you attempt to extract the tube from the lamp.

### Accumulation

If you accumulate more than 1000 universal waste lamps that you did not generate yourself, you must establish financial assurance with the MPCA. Complete and submit MPCA form #w-hw7-20, Lamp Accumulation Financial Assurance Form, at <https://www.pca.state.mn.us/sites/default/files/w-hw7-20.doc>.

## Mercury-containing equipment

*Universal waste mercury-containing equipment* is any discarded device that contains liquid mercury integral to its function. Universal waste mercury-containing equipment includes but is not limited to thermometers, thermostats, barometers, pressure gauges, switches, relays, and pump seals. Lamps that contain gaseous or powdered mercury are universal waste lamps, not mercury-containing equipment. Batteries that contain powdered or amalgamated mercury are universal waste batteries, not mercury-containing equipment.

You may remove sealed mercury ampoules and open housings holding mercury from universal waste mercury-containing equipment only if you do all of the following:

- Perform the removal over a tray, pan, or other containment device large enough to catch and contain any mercury that could spill from the equipment.
- Provide appropriate mercury spill clean-up materials and equipment.
- Ensure the mercury is contained in the original sealed ampoules or you seal any original open housings airtight immediately after removal.
- Perform air monitoring to ensure you do not exceed Minnesota Occupational Safety and Health (MNOSHA) exposure levels. For questions, contact MNOSHA. See [More information](#) on page 6.
- Do not pour, extract, or remove liquid mercury from any mercury-containing equipment.

Manage spilled mercury, clean-up materials and debris, and any free liquid mercury or mercury in containers such as flasks or vials, as newly generated D009 hazardous waste. These wastes are not universal waste.

Note: Sales and donations of mercury and mercury-containing equipment in Minnesota are strictly regulated. If you plan to donate or sell liquid mercury or mercury-containing equipment instead of disposing of it, see MPCA fact sheet #w-hw4-26, *Selling Mercury Items*, at <https://www.pca.state.mn.us/sites/default/files/w-hw4-26.pdf>.

## Pesticides

### Wastes included

Pesticides in Minnesota include fungicides, herbicides, insecticides, nematocides, and rodenticides.

*Universal waste pesticides* are hazardous waste pesticides that:

- Will be collected at a Minnesota Department of Agriculture (MDA)-authorized waste pesticide program. See [Using an MDA-authorized program](#) on page 5
- Will be collected at a waste pesticide program authorized in an adjoining state
- Have been recalled and will be collected by the manufacturer.

Universal waste pesticides do not include pesticides used for their intended purpose in accordance with their label instructions and MDA standards. Universal waste pesticides also do not include medical sterilant products.

### Labeling

In addition to the standard [universal waste labeling](#) on page 2, ensure your universal waste pesticide containers also either:

- Retain their original manufacturer label
- Display complete DOT labeling and marking applicable under the HMR
- Bear an alternate label specified by the authorized waste pesticide collection program that has agreed to accept the universal waste pesticide

## Using an MDA-authorized program

To use an MDA-authorized program, you must be a pesticide *end user* as defined by the MDA. End users include farmers and others who use or intend to use pesticides themselves, and do not include dealers, manufacturers, formulator, or packagers.

Contact the MDA if you are unsure if you are an end user or eligible to use an MDA-authorized program. See [More information](#) on page 6.

- If you accumulate less than 300 pounds (about 35 gallons) of waste pesticide on your site at any one time, you may assume those waste pesticides are universal waste unless the MDA rejects them.
- If you accumulate 300 pounds or more of waste pesticide on your site at any one time, must manage them under the full hazardous waste requirements, until you have:
  1. Notified the MDA of the type and volume of your waste pesticides.
  2. The MDA has agreed to accept your waste pesticides. After the MDA has agreed to accept your waste pesticides, you may manage them as universal waste.

## Dental amalgam being recycled

*Dental amalgam being recycled* is mercury-containing amalgam generated by dental care providers from which mercury will be reclaimed. Dental amalgam includes but is not limited to amalgam capsules, extracted teeth, filter-trap waste and amalgam-separator sludge.

Document that your dental amalgam wastes are recycled and not disposed. Dental amalgam wastes that will not be recycled are fully regulated hazardous wastes.

Extracted teeth containing dental amalgam are not infectious wastes in Minnesota; however, your amalgam-recycling vendor may require that you disinfect the teeth before accepting them for recycling.

## Pretreated dental wastewater

*Pretreated dental wastewater* is mercury-containing dental wastewater that has been pretreated using an amalgam separator approved by the MPCA. See the MPCA's Managing dental waste webpage, at <https://www.pca.state.mn.us/quick-links/managing-dental-waste> for information about amalgam separators.

Transport pretreated dental wastewater as a universal waste to a publicly owned treatment works (POTW) or a Very Small Quantity Generator Collection Program that has agreed to accept the waste. Do not discharge pretreated dental wastewater to a septic system or any other subsurface treatment system (SSTS).

For a list of VSQG Collection Programs, see MPCA fact sheet #w-hw2-51, Very Small Quantity Generator Collection Programs, at <https://www.pca.state.mn.us/sites/default/files/w-hw2-51.pdf>.

## Aerosols and compressed gas cylinders

*Aerosols* are pressurized containers used to dispense liquid or gaseous products. Waste aerosols and compressed gas cylinders are containers with hazardous waste liquids, propellants, or gases that will no longer be used for their intended purpose and have not been shown to be empty for hazardous waste purposes.

Universal waste aerosols must be accumulated to prevent accidental activation of the dispensing valves. Leaking universal waste aerosols must be accumulated in compatible, liquid-tight, labeled containers.

You may puncture universal waste aerosols and compressed gas cylinders at your site if you meet certain conditions, including collecting and managing all liquids, safeguarding employee safety and health, and complying with the Minnesota State Fire Code. However, some aerosols and compressed gas cylinders may present unusual safety risks when punctured and be inadvisable for on-site management.

See MPCA fact sheet #w-hw4-00, Waste Aerosols and Compressed Gas Cylinders, at <https://www.pca.state.mn.us/sites/default/files/w-hw4-00.pdf>.

## More Information

Guidance and requirements in this fact sheet were compiled from the Code of Federal Regulations, Part 40, Section 273; Minnesota Statutes, Chapters §18B and §115A; Minnesota Rules, Chapters 1509, 7001, and 7045; and incorporate regulatory interpretation decisions made by the MPCA on September 9, 2008; October 27, 2008; December 31, 2008; and April 27, 2011; and June 10, 2015. Visit the U.S. Government Printing Office at <http://www.gpo.gov/fdsys/> to review the Code of Federal Regulations directly. Visit the Office of the Revisor of Statutes at <https://www.revisor.mn.gov/pubs> to review the Minnesota Statutes and Rules.

Contact your Metropolitan County or the MPCA with your questions. The MPCA's Small Business Environmental Assistance Program can also provide free, confidential regulatory compliance assistance. Notify the Minnesota Duty Officer immediately following any universal waste or hazardous waste incident.

### Metro County Hazardous Waste Offices

Anoka .....	763-422-4260
.....	<a href="https://www.anokacounty.us/">https://www.anokacounty.us/</a>
Carver .....	952-361-1800
.....	<a href="http://www.co.carver.mn.us/">http://www.co.carver.mn.us/</a>
Dakota .....	952-891-7557
.....	<a href="https://www.co.dakota.mn.us/">https://www.co.dakota.mn.us/</a>
Hennepin .....	612-348-3777
.....	<a href="http://www.hennepin.us/">http://www.hennepin.us/</a>
Ramsey .....	651-266-1199
.....	<a href="https://www.ramseycounty.us/">https://www.ramseycounty.us/</a>
Scott .....	952-496-8177
.....	<a href="http://www.scottcountymn.gov/">http://www.scottcountymn.gov/</a>
Washington .....	651-430-6655
.....	<a href="https://www.co.washington.mn.us/">https://www.co.washington.mn.us/</a>

### Minnesota Occupational Safety & Health

Toll free .....	1-877-470-6742
Metro .....	651-284-5050
.....	<a href="http://www.dli.mn.gov/mnosha.asp">http://www.dli.mn.gov/mnosha.asp</a>

### Minnesota Pollution Control Agency

Toll free (all offices) .....	1-800-657-3864
All offices .....	651-296-6300
.....	<a href="https://www.pca.state.mn.us/">https://www.pca.state.mn.us/</a>

### Minnesota Duty Officer

Toll free .....	1-800-422-0798
Metro .....	651-649-5451

### Small Business Environmental Assistance Program

Toll free .....	1-800-657-3938
Metro .....	651-282-6143
.....	<a href="https://www.pca.state.mn.us/sbeap/">https://www.pca.state.mn.us/sbeap/</a>

### Minnesota Technical Assistance Program

Toll free .....	1-800-247-0015
Metro .....	612-624-1300
.....	<a href="http://www.mntap.umn.edu">http://www.mntap.umn.edu</a>

### Minnesota Department of Agriculture

Toll free .....	1-800-967-2474
Metro .....	612-201-6000
.....	<a href="http://www.mda.state.mn.us/">http://www.mda.state.mn.us/</a>

**ATTACHMENT 12**

9441.1987(77)

RCRA/SUPERFUND HOTLINE MONTHLY SUMMARY

SEPTEMBER 87

3. Waste Identification

A company generates aerosol paint and solvent cans from painting and cleaning operations. The cans are empty as per common industry practices used to empty such devices to less than 3% by weight of the total capacity of the container (40 CFR 261.7(b)(1)(1) & (111)). The cans may still contain propellant, making the cans reactive if put in contact with a strong initiating force (i.e., intense pressure or heat). Since for all practicable purposes the cans are free of contents that might have been hazardous wastes, would this be regulation of the aerosol cans themselves? RIL #43 specifically excluded the regulation of the cans, and solely addressed only the potentially hazardous contents. Therefore, would aerosol cans free of hazardous waste, but still potentially reactive because of contained propellant be regulated as hazardous waste?

Irrespective of the lack of contained waste, the aerosol cans would be a RCRA hazardous waste because they demonstrate the hazardous characteristic of reactivity (40 CFR 261.23(a)(6)).

Source: Mike Petruska (202) 475-6676

Research: Andy O'Hare

**ATTACHMENT 13**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OCTOBER 7, 1993

Mr. John DiFazio  
Chemical Specialties Manufacturers Association  
1913 Eye Street, N.W.  
Washington, D.C. 20006

Dear Mr. DiFazio:

Over the past several years we have received numerous questions from you and others concerning the regulatory status of used aerosol cans under the Resource Conservation and Recovery Act (RCRA) hazardous waste regulations. I understand that confusion about these issues may be hindering your cooperative efforts with the Steel Recycling Institute (SRI) to increase steel aerosol can recycling in this country. As environmentally protective recycling is an important part of the Agency's waste management goals, I hope that this letter will help to answer some of these questions.

RESIDENTIAL AEROSOL CANS

First, I would like to emphasize that under the federal RCRA regulations, household waste (including aerosol cans) is excluded from the definition of hazardous waste (40 CFR 261.4 (b) (1)). Thus, any aerosol cans generated by households are not regulated as hazardous waste. Because this exclusion attaches at the point of generation (i.e., the household) and continues to apply throughout the waste management cycle, household aerosol cans collected in municipal recycling programs and subsequently managed in recycling programs continue to be excluded from the hazardous waste management regulations.

The data submitted by SRI<sup>1</sup> appear to confirm that the majority of used residential aerosol cans contain very little residual product or propellant. Along with your experience working with many of the 600 or more communities currently recycling these cans, the data suggest that aerosol cans can be effectively recycled.

The Agency does recommend that communities running residential steel recycling programs educate their participants to recycle only empty steel aerosol cans. Participants could also be educated to: 1) purchase only the amount of consumer products that they need to minimize the quantities of unused products, 2) give unused products to someone else who can use them, 3) take unused or partially full containers to a household hazardous waste collection program if available, or 4) dispose of the partially full containers as directed on the label.

COMMERCIAL/INDUSTRIAL AEROSOL CANS

I understand that you and SRI are also interested in facilitating the recycling of aerosol cans generated by commercial or industrial generators. The remainder of this letter discusses only these non-household waste items.

We have been asked whether aerosol cans exhibit the characteristic of reactivity. At this time, the Agency is not able to determine whether various types of cans that may have contained a wide range of products are reactive. However, a steel aerosol can that does not contain a significant amount of liquid would clearly meet the definition of scrap metal (40 CFR 261.1 (c)(6)), and thus would be exempt from RCRA regulation under 40 CFR 261.6(a)(3)(iv) if it were to be recycled. Therefore, a determination of reactivity or any other characteristic would not be relevant. Aerosol cans that have been punctured so that most of any liquid remaining in the can may flow from the can (e.g., at either end of the can), and drained (e.g., with punctured end down), would not contain significant liquids.

It should be noted that since the process of emptying the aerosol cans is part of a recycling process (i.e., scrap steel recycling), this activity would be exempt from RCRA regulation under 40 CFR 261.6(c) (except as specified in 40 CFR 261.6(d)). The Agency recommends that these activities be conducted in a safe and environmentally protective manner and that care be taken to properly manage any contents removed from the container (both liquids and gases). Any liquids or contained gases removed from aerosol cans may be subject to regulation as hazardous wastes if they are listed in Subpart D of 40 CFR Part 261 or if they exhibit any characteristics of hazardous waste as described in Subpart C of 40 CFR Part 261.

We have also been asked to determine whether used aerosol cans would meet the definition of "empty" under 40 CFR 261.7. Again, if the steel cans are being recycled, it is not necessary to determine whether they are "empty" under the criteria listed in 40 CFR 261.7. As long as an aerosol can being recycled does not contain significant liquids, the can is exempt as scrap metal. However, in order to dispose of a can as non-hazardous waste (rather than recycle it), a generator would have to determine that the can is empty under 40 CFR 261.7 (or that the product it contained was not hazardous), and that the can itself is not hazardous. If a can is to be disposed of, and either contains or is hazardous waste, it must be managed under all applicable regulations.

Please be aware that this letter addresses only the federal hazardous waste regulations. Authorized State agencies implement the RCRA program in their states (although some parts of the program may be implemented by the U.S. EPA Regions), and that state regulations may be more stringent than the federal regulations. Anyone managing aerosol cans should contact the appropriate state environmental agency or U.S. EPA Regional Office to determine how the regulations of that particular state will apply to their activities.

I hope this information is useful in your efforts to increase steel recycling. Thank you for the assistance that you and the Chemical Specialties Manufacturers Association have provided my staff in researching these issues. If you have any further questions, please call Charlotte Mooney of my staff at (202) 260-8551.

Sincerely,

Jeffery D. Denit  
Acting Director,  
Office of Solid Waste

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<sup>i</sup> Texas Steel Aerosol Can Recycling Program, Final Report; Steel Can Recycling Institute (now Steel Recycling Institute); December 7, 1992.

**ATTACHMENT 14**

9442.1993(02)

United States Environmental Protection Agency  
Washington, D.C. 20460  
Office of Solid Waste and Emergency Response

October 7, 1993

Mr. Gregory L. Crawford  
Vice President, Recycling Operations  
Steel Recycling Institute  
Foster Plaza X  
680 Anderson Drive  
Pittsburgh, Pennsylvania 15220

Dear Mr. Crawford:

Over the past several years we have received numerous questions concerning the regulatory status of used aerosol cans under the Resource Conservation and Recovery Act (RCRA) hazardous waste regulations. I understand that confusion about these issues may be hindering your efforts to increase steel aerosol can recycling in this country. As environmentally protective recycling is an important part of the Agency's waste management goals, I hope that this letter will help to answer some of these questions.

#### RESIDENTIAL AEROSOL CANS

First, I would like to emphasize that under the federal RCRA regulations, household waste (including aerosol cans) is excluded from the definition of hazardous waste (40 CFR 261.4(b)(1)). Thus, any aerosol cans generated by households are not regulated as hazardous waste. Because this exclusion attaches at the point of generation (i.e., the household) and combines to apply throughout the waste management cycle, household aerosol cans collected in municipal recycling programs and subsequently managed in recycling programs continue to be excluded from the hazardous waste management regulations.

The data you submitted (see footnote 1) appear to confirm that the majority of used residential aerosol cans contain very little residual product or propellant. Along with your experience working with many of the 600 or more communities currently recycling these

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cans, the data suggest that aerosol cans can be effectively recycled. The Agency does recommend that communities running residential steel recycling programs educate their participants to recycle only empty steel aerosol cans. Participants could also be educated to: 1) purchase only the amount of consumer products that they need to minimize the quantities of unused products, 2) give unused products to someone else who can use them, 3) take unused or partially full containers to a household hazardous waste collection program if available, or 4) dispose of the partially full containers as directed on the label.

### COMMERCIAL/INDUSTRIAL AEROSOL CANS

I understand that you are also interested in facilitating the recycling of aerosol cans generated by commercial or industrial generators. The remainder of this letter discusses only these non-household waste items.

We have been asked whether aerosol cans exhibit the characteristic of reactivity. At this time, the Agency is not able to determine whether various types of cans that may have contained a wide range of products are reactive. However, a steel aerosol can that does not contain a significant amount of liquid would clearly meet the definition of scrap metal (40 CFR 261.1(c)(6)), and thus would be exempt from RCRA regulation under 40 CFR 261.6(a)(3)(iv) if it were to be recycled. Therefore, a determination of reactivity or any other characteristic would not be relevant. Aerosol cans that have been punctured so that most of any liquid remaining in the can may flow from the can (e.g., at either end of the can), and drained (e.g., with punctures end down), would not contain significant liquids.

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40 CFR Part 261.

We have also been asked to determine whether used aerosol cans would meet the definition of "empty" under 40 CFR 261.7. Again, if the steel cans are being recycled, it is not necessary to determine whether they are "empty" under the criteria listed in 40 CFR 261.7. As long as an aerosol can being recycled does not contain significant liquids, the can is exempt as scrap metal. However, in order to dispose of a can as non-hazardous waste (rather than recycle it), a generator would have to determine that the can is empty under 40 CFR 261.7 (or that the product it contained was not hazardous), and that the can itself is not hazardous. If a can is to be disposed of, and either contains or is hazardous waste, it must be managed under all applicable regulations.

Please be aware that this letter addresses only the federal hazardous waste regulations. Authorized State agencies implement the RCRA program in their states (although some parts of the program may be implemented by the U.S. EPA Regions), and that state regulations may be more stringent than the federal regulations. Anyone managing aerosol cans should contact the appropriate state environmental agency or U.S. EPA Regional Office to determine how the regulations of that particular state will apply to their activities.

I hope this information is useful in your efforts to increase steel recycling. Thank you for the assistance that you and the Steel Recycling Institute have provided my staff in researching these issues. If you have any further questions, please call Charlotte Mooney of my staff at (202) 260-8551.

Sincerely,  
Jeffrey D. Denit  
Acting Director  
Office of Solid Waste

cc: Waste Management Division Directors,  
U.S. EPA Regions I - X

1 Texas Steel Aerosol Can Recycling Program, Final Report;  
Steel Can Recycling Institute (now Steel Recycling  
Institute), December 7, 1992.

RO 11782

**ATTACHMENT 15**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C 20460

April 10, 1996

SUBJECT: Universal Waste Rule - Implementation

FROM: Steve Herman, Assistant Administrator  
Office of Enforcement and Compliance Assurance

Elliott P. Laws, Assistant Administrator  
Office of Solid Waste and Emergency Response

TO: Regional Administrators

On May 11, EPA promulgated a final rule which promotes the environmentally sound collection of several hazardous waste categories for recycling or proper disposal under the Resource Conservation and Recovery Act (RCRA). This rule, known as the Universal Waste Rule (40 CFR Part 273), creates a framework for streamlined regulatory requirements for hazardous waste batteries, certain pesticides and mercury-containing thermostats (universal wastes). The Universal Waste rule is designed to achieve the following three goals: 1) encouraging resource conservation while ensuring adequate protection of human health and the environment, 2) improving implementation of the current Subtitle C hazardous waste regulatory program, and 3) removing these universal wastes from the municipal waste stream by providing incentives for individuals and organizations to collect currently unregulated wastes and then ensuring that treatment of those wastes meets the hazardous waste management standards. To achieve these goals, environmentally sound collection systems must be developed for universal wastes. As such, another goal is to foster the development of an appropriate collection infrastructure in all of the States as quickly as possible.

The Agency encourages the timely development of the types collection systems allowed by this new regulation. EPA recognizes that both States and private industry may delay the implementation of universal waste collection programs until States adopt and become authorized for this rule. To facilitate the speedy implementation of the Universal Waste rule, EPA is encouraging States to quickly adopt the rule. Because most States are already authorized for the base RCRA program, authorization for the Universal Waste rule should be swift and uncomplicated. Therefore, Regions should make authorization of States for this rule a high priority in Regional State Authorization Programs and should process States' authorization applications as quickly as possible.

By finalizing 40 C.F.R. Part 273, EPA has taken the position that managing wastes in

FaxBack # 11960

compliance with those standards is environmentally protective. Therefore, where States are implementing the Part 273 standards but have not yet received authorization, Regions should take enforcement actions involving universal wastes only where handlers of such wastes are not in full compliance with the Part 273 standards. Regions should continue to address universal waste management practices that may present an imminent and substantial endangerment to human health and the environment under the authority provided in section 7003 of RCRA.

If you or your staff have any technical questions or concerns regarding the Universal Waste Rule or the policies contained in this memorandum, please contact Kristina Meson at (202) 260-5736 or Bryan Groce at (202) 260-9550 of the Office of Solid Waste.

**ATTACHMENT 16**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

FEB 13 1997

MEMORANDUM

SUBJECT : Universal Waste Questions and Answers Document

FROM: Mike Shapiro  
Office of Solid Waste

TO: Senior RCRA Policy Managers  
Regions I-X

Since the promulgation of the May 11, 1995 Universal Waste rule (60 FR 25492), several States have begun to adopt the Federal program. As a result, many questions have been raised with respect to State implementation and enforcement for hazardous wastes covered under the Universal Waste Federal program. Further, States have asked the Environmental Protection Agency (EPA) Regional Offices for guidance on adding other types of hazardous waste to their State universal waste programs. To assist those States during the implementation process and to provide you with the Agency's position on these issues, the Office of Solid Waste has prepared a Questions and Answers (Q&A) document. The Q&A document also addresses other issues related to universal waste management (e.g., universal waste generation and transportation issues). I have attached the document for your information and encourage you to share it with the appropriate State Officials.

If you have any questions regarding State authorization, please contact Wayne Roepe at (703) 308-8630. If you have other questions regarding universal waste management, please contact Bryan Groce of my staff at (703) 308-8750.

Attachment

cc: RCRA Branch Chiefs, Regions I-X  
State Authorization Section Chiefs, Regions I-X  
RCRA Community Relations Coordinators, Regions I-X  
RCRA Enforcement Branch Chiefs, Regions I-X

Faxback# 14088

## QUESTIONS AND ANSWERS - - UNIVERSAL WASTES (UW)

1. Can a state include additional wastes in its UW program at the same time that it establishes the program and then submit both the program and the additional UW to EPA for authorization review at the same time? For example, can a state adopt a UW rule that regulates fluorescent bulbs and antifreeze as UW?

Yes, a state can designate additional waste streams as UW at the same time that it creates its own UW rule. However, it must find that the wastes meet its criteria for inclusion in the UW program, and its criteria must be analogous to the federal criteria set out in 273.81. See preamble to final UW rule at 60 FR 25512, 25537. The state need not submit the new wastes to EPA for authorization. EPA will review and authorize the state's UW program (including the criteria for adding wastes to the program) and the 3 waste streams included in the federal program. EPA will not conduct any authorization review on any additional, state-only UW.

EPA, however, requests that states send copies of tentative decisions to include new wastes (and proposed management standards for such wastes) to the appropriate EPA Regional Office to give EPA an opportunity to comment. See the response to question 5 for more detail on this process.

2. Can a state itself petition the Agency to add wastes to the federal UW rules - or does the petition have to come from a private party?

A state itself can petition.

3. a. How will the petition process work at the state level? Will it require public participation and rulemaking to add a UW to an authorized state program?

EPA is requiring states to adopt petition procedures equivalent to the federal petition procedures. This requires states to provide notice and an opportunity for public comment on any tentative decision to grant or deny a petition to include new universal wastes. See the preamble at 60 FR 25537. EPA also assumes that the state will need to follow its normal rulemaking procedures to create any new management standards needed for the new UW.

b. How will EPA adopt a UW - using the Federal Register and public comment process?

Yes. As required by 40 CFR 260.20 (c), if EPA receives a UW petition, it will publish a notice of tentative decision and announce a comment period in the Federal Register. After considering all comments, EPA will publish notice of its final decision in the Federal Register. The same process applies to both decisions to grant and to decisions to deny petitions.

4. a. Can a state add wastes that are state-only hazardous wastes?

Yes. State hazardous waste programs can be more stringent and broader in scope than federal programs. Consequently, states may regulate as "state-only" hazardous wastes materials that

are only solid wastes under the federal program. States may streamline their regulation of these "state-only" hazardous wastes by including them in their UW programs.

b. Can a state add wastes that are non-hazardous?

Yes. A state could add non-hazardous solid wastes to its UW program by designating such wastes as state-only hazardous wastes and then designating them as UW wastes. Such wastes would be subject to the state's ordinary hazardous waste requirements for treatment and disposal. EPA assumes that states would want this result, because they probably would designate nonhazardous wastes as universal wastes to divert them from the nonhazardous waste disposal facilities that currently handle them. If, however, a state determined that some aspects of its hazardous waste management regime should not apply to these state-only hazardous wastes, it could create exemptions. (Exemptions would be permissible since the wastes would not be regulated as hazardous wastes under the federal program.)

One exception applies. A state may not designate as a UW any waste that is hazardous under the federal program due to a rule promulgated under HSWA authority for which the state is not authorized. (For example, a state that was not authorized for the Toxicity Characteristic could not designate a waste that exhibited the TC as a universal waste. See the preamble to the final rule at 25537.)

5. After a state has adopted and is authorized for the UWR -does the state have ultimate decision-making authority to add wastes or does EPA still have involvement? And what is EPA's role during the petition process, post authorization?

States authorized for the UW rule will not be required to submit program revisions for any addition of wastes to their UW program. EPA requests that states send a copy of their tentative findings and any draft regulations for managing the new, state-only universal wastes to the appropriate EPA Regional Office. This will provide EPA with an opportunity to comment on the state's proposed action. EPA encourages states to coordinate EPA's review and comment with the opportunity to comment that the state must provide for the public. If EPA finds that a state has added wastes that do not qualify, or that the management standards are not sufficiently protective, and that, as a result, the state's program is less stringent than the federal program, EPA has authority to withdraw authorization of the state's hazardous waste program as provided in Part 271.

EPA will not conduct any authorization review of the new state-only UW and new management standards. EPA takes the position that, when it authorizes a state to add wastes to the UW category, it authorizes in advance the state's new, state-only universal wastes and the management standards for such wastes. All changes to state regulations needed to implement a UW program for the new UW automatically become part of the authorized state program once they take effect under state law.

6a. When will the EPA rule on fluorescent lights be final (designation as a Federal UW vs. management as solid waste)?

EPA has not yet decided when it will promulgate a final rule regarding regulation of fluorescent lamps as discussed in the July 1994 proposal.

b. What happens if a state adds fluorescent lamps to its UWR and then EPA decides to come out with a conditional exemption for fluorescent lamps?

If the conditional exemption is less stringent than the state UW rule, the state would have the option of adopting the exemption, but would not be required to do so.

7.a. Where do LDR recordkeeping requirements fit in --- only at the final destination facility?

Yes.

b. Is the destination facility responsible (liable) for identifying the treatment standards/technologies and filling out certification forms?

Yes. The destination facility is the first entity that handles a UW that is responsible for compliance with any of the LDR requirements, including recordkeeping. For UW handlers that are not subject to the LDR rules, the prohibitions on dilution under the UW program provide the same protection as the dilution prohibition under the LDR program. (See. e.g., 40 CFR 273.11.)

8.a. Are all batteries included in the Federal UWR, or just those considered hazardous?

EPA's federal UW program does not apply to all batteries. The exceptions are listed in 40 CFR 273.2(b). Generally, the battery must first be a waste. (Note that unused batteries are not always wastes -- someone must first make a decision to discard them (i.e., treat, recycle, or dispose of the unused batteries)). Next, the battery must be classified as a hazardous waste under either a hazardous waste listing or a characteristic test and must not be generated by a household. One category of batteries which are both wastes and hazardous wastes is nevertheless exempt from the UW regulations in Part 273: spent lead-acid batteries managed under 40 CFR Part 266. Finally, the recently enacted "Mercury-Containing and Rechargeable Battery Management Act" changes states' options for regulating some batteries which are hazardous waste under RCRA. Specifically, the law prohibits states from imposing requirements that are not identical to those found in the May 11, 1995 Universal Waste rule for the following types of hazardous waste batteries: used rechargeable batteries, lead-acid batteries not covered by 40 CFR part 266 subpart G, rechargeable alkaline products, certain mercury-containing batteries banned from domestic sale, and used consumer products containing rechargeable batteries that are not easily removable. The law does allow states to implement and enforce collection, storage, and transport requirements identical to those included in the Universal Waste rule.

b. Do lead acid batteries fall under the UWR or do they stay under the lead-acid battery exemption?

Under the federal program, lead acid batteries are managed under Part 266, subpart G rather than the UW program. EPA chose to retain the Part 266 standards for these batteries to avoid disrupting the existing recycling program for such batteries because they provide for

protection of human health and the environment and because they have been highly successful (with recycling rates in excess of 90 percent). States, however, retain the authority to regulate lead-acid batteries more stringently. Hence, they may choose to regulate lead acid batteries under their UW programs.

9. A handler who transports UW is considered a UW transporter. Is this for any quantity of UW (i.e., in the used oil regulations a used oil generator can transport up to 55 gallons of their own used oil without being considered a used oil transporter)?

Yes, all handlers who transport any quantity of UW must meet the UW transporter requirements. There is no de minimis exemption like the one in the used oil program.

10. Would a program consisting of a state-sponsored network of handler locations at private businesses be considered a "waste pesticide collection program"?

Yes. Part 273 does not require states to operate the waste pesticide collection programs described in 40 CFR 273.3(a)(2) in order for the pesticides managed under such programs to be eligible for the UW program.

11. As the UWR is implemented, do the traditional liability issues change? For example, who is liable for any mismanagement of a UW at a handler location, in transit, and at the destination facility? Are any and all handlers liable for mismanagement at a destination facility or at subsequent handlers? Or, just the "final handler" that chooses the destination facility? Do we lose cradle-to-grave responsibility with UWR?

Under the full Subtitle C program, only the waste handler that violates a hazardous waste regulation is "liable" (i.e., subject to enforcement) for that violation. Generators of hazardous waste are not responsible for mismanagement by subsequent waste handlers. The UW rule does not change this allocation of responsibility.

Generators are responsible for subsequent mismanagement under CERCLA, however. The UW rule does not change CERCLA liability. Since UW are still hazardous wastes, persons who generate UW remain liable under CERCLA for remediation of any releases of UW.

12. When UW is shipped to a destination facility, does it have to be relabeled as HW at that facility, or will UW labeling be sufficient?

Universal wastes remain hazardous wastes. Destination facilities must comply with all currently applicable requirements for hazardous waste management facilities. However, none of these regulations require facility owners or operators to relabel the containers holding universal wastes.

13a. Handlers can keep UW on site up to one year after the date it is received or generated. A year after a handler has received a UW, can the UW go to another handler, or must it go to destination facility?

Universal waste can only be sent off-site to another universal waste handler, destination facility, or foreign destination. Theoretically, each receiving facility could accumulate the waste for an entire year before sending it off to another handler, however, the regulatory impact analysis EPA prepared for the UW rulemaking indicates that there is no economic incentive for retaining UW for such long periods.

b. Within that year, can the UW go to several handlers?

Yes, but states can adopt a more stringent rule that would prevent this. Also, although theoretically wastes could go from one collection facility to another forever, the regulatory impact analysis EPA prepared for the UW rulemaking indicates that there is no economic incentive for retaining UW for such long periods.

14. Pesticides that are included in FIFRA recalls can be managed under the UWR. Does this apply to pesticides that have been included in past FIFRA recalls or just recalls instituted after the UWR is adopted?

The timing of the recall is not significant. The UW rule is not limited to pesticides that are recalled after the UW rule takes effect.

15. Pesticides that are managed by farmers in accordance with 40 CFR 262.70 are not subject to the UW rules. Can farmers continue to dispose of pesticides recalled under FIFRA under 262.70?

Yes, if a recall under FIFRA allows a farmer to dispose of a pesticide on his own property, he may do so by complying with 262.70.

16. How are mixtures of UW and HW regulated -- as a HW if the HW is listed or the mixture exhibits a characteristic? If the HW is not listed, and the mixture of UW and HW does not exhibit a characteristic, does LDR apply to the mixture?

The UW rules apply only to wastes meeting the criteria for being classified as UW. They do not apply to mixtures of UW wastes and ordinary, "non-universal" hazardous wastes. Such mixtures are subject to the regular hazardous waste regulations.

However, the status of mixtures of characteristic UW and characteristic hazardous wastes needs clarification. If the mixture no longer exhibits a characteristic, it would no longer be classified as a hazardous waste, but would remain subject to the land disposal restrictions. Formerly characteristic wastes are not excused from compliance with LDR treatment standards merely because they cease to exhibit a characteristic.

In addition, two exceptions apply. First, mixtures of UW and conditionally exempt small quantity generator (CESQG) hazardous wastes are subject to UW rules. This is because CESQG hazardous wastes are exempt from regular Subtitle C regulation. See the UW preamble at 25510. By the same logic, mixtures of UW wastes and hazardous wastes exempted under the household hazardous waste provision are subject to the UW provisions rather than the regular hazardous waste provisions.

The normal hazardous waste mixture rules would apply to mixtures of UW and nonhazardous solid wastes. If the UW waste were a listed waste, the mixture would be regulated as HW (although initial handlers would be subject only to the UW rules). If the UW were a characteristic waste, and the mixture ceased to exhibit the characteristic, the mixture would be nonhazardous but LDR treatment requirements would continue to apply.

17. A large quantity universal waste handler (LQHUU) is required to notify EPA of its universal waste management, unless it had already so notified and received an EPA ID number. However, won't the LQHUU have to modify the initial notification to explain this additional activity?

No. If a handler has previously notified EPA of his hazardous waste management activities, he is not required to renotify. First time notifiers can submit a one-time notification described in 40 CFR 273.32(b), or alternatively, the 8700-12 notification form. If the 8700-12 notification form is used, the LQHUU must write "LQHUU" or "Universal Waste" on the portion of the form where activity is checked.

18. Does the UWR prohibit a generator from handling a UW in accordance with full RCRA C requirements, if desired?

The UWR requires a generator to handle their UW under 273. However, if the generator handles UW under full RCRA C then it would likely be complying with 273.

19. If a generator originates a shipment of hazardous waste that is considered a UW in the receiving state, how does the generator get a signed manifest?

The initiating facility (i.e., the generator) would complete a manifest and give copies to the hazardous waste transporter as required under 40 CFR 262.23(a). The initiating facility must ensure that the manifest is forwarded to and signed by the UW receiving facility (i.e., the designated TSD facility) and then sent back to the initiating facility.

20. a. Because a manifest is now not required, how will handlers know how and when their UW finally arrives at an appropriate destination facility?

Depending on whether the UW are shipped to another UW handler or a UW destination facility, the initiating facility (i.e., the generator) may not know if their UW arrives at an appropriate destination facility. For example, if the universal waste is shipped to another universal waste handler (i.e., an interim facility) before it is shipped to a designated facility, the originating facility would only have knowledge of the initial receiving facility. (See response to question 11). However, if the originating facility (i.e., the generator) sent the universal waste to a destination facility, Part 273 requires the originating facility to receive prior consent by a receiving facility (i.e., the destination facility) before the waste can be sent off-site.

b. Does EPA intend for the original handler to "designate" all the handlers and final destination facility?

No. The original handler (i.e., the initiating facility) is only responsible for designating the next UW handler (though the original handler is free to elect to designate the final destination facility)

21. What happens when UWR is adopted by a state but is not yet authorized by EPA? What is EPA obligated to enforce?

EPA may only enforce the authorized state program. The authorized program would continue to impose regular hazardous waste management standards on UW handlers until EPA approved the state's UW rule. Note, however, that once the rule is approved, designations of new, state-only UW and management standards for such wastes become part of the authorized program without action by EPA. See the response to question 5 above.

The Agency has also issued a memorandum (See the April 10, 1996 Memorandum addressed to the Regional Administrators from Steven A. Herman, Assistant Administrator of the Office of Enforcement and Compliance and Elliot P. Laws, Assistant Administrator of the Office of Solid Waste and Emergency Response) which asks the EPA Regional offices to exercise enforcement discretion (vis a vis unmanifested universal wastes) in States that are authorized for the RCRA base program and that are implementing the Part 273 standards but have not yet received final EPA authorization to do so. The memorandum further provides that the Regions should take enforcement actions involving universal waste only where handlers of such wastes are not in full compliance with the Part 273 standards. In other words, the Agency will not take federal action against handlers who manage hazardous waste batteries, hazardous waste pesticides, and mercury-containing thermostats pursuant to Part 273 standards in States that are currently in the process of adopting the universal waste rule. States, of course, may still pursue enforcement action against these handlers. The Agency hopes that the April 10, 1996 letter will facilitate implementation of the universal waste rule by states nationwide.

22. How are recycling facilities that receive UW regulated?

Recycling facilities are excluded from the definition of UW "handlers". See 40 CFR 273.6. They are subject to normal hazardous waste management requirements. Under those requirements, storage prior to recycling is regulated and requires a permit. See 40 CFR 261.6(c) (1). Many types of recycling processes are largely exempt from regulation (see 40 CFR 261.6(d)); others (such as burning to recover energy or materials) are regulated and require permits.

**ATTACHMENT 17**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
SOLID WASTE AND  
RESPONSE

EMERGENCY

Richard J. Barlow, Chair  
Northeast Waste Management Officials' Association (NEWMOA)  
129 Portland Street, Suite 601  
Boston, MA 02114-2014

Dear Mr. Barlow:

I am pleased to respond to your May 23, 1996 letter, in which you support the State of New York Department of Environmental Conservation rulemaking petition regarding 40 CFR Part 263 relative to the transportation of hazardous waste. I also understand that you have serious concerns about the recent preemption determination by the U.S. Department of Transportation (DOT) which was published on December 6, 1995. (See 60 FR 62527). Specifically, you desire more regulatory oversight than is currently provided by the Resource Conservation and Recovery Act (RCRA) regulations for hazardous waste activities at transfer facilities.

As you know, the recent DOT preemption decision cited in your letter arose from a challenge lodged by the transporter industry against certain New York State regulations pertaining to activities at hazardous waste transfer facilities. Briefly, the State had enacted regulations which, among other things, prohibited certain load mixing activities at transfer facilities, and imposed secondary containment requirements in areas of these facilities reserved for off-vehicle storage. There is no federal counterpart to these state regulations in EPA's Part 263 regulations, and DOT's regulations do not impose similar restrictions. In the decision published in the Federal Register of December 6, 1995, DOT held that each of the challenged State regulations was preempted, because each was inconsistent with the uniform scheme of federal regulation which Congress intended for the control of interstate transportation of hazardous materials.

We are well aware of the long-standing interest of the States in the issues surrounding the regulation of hazardous waste transfer facilities. I also understand that unless and until there are revisions to the federal regulations governing transfer facilities, States which act alone to fill the perceived gaps in the federal RCRA transporter regulations (40 CFR Part 263) are likely to face similar challenges under the strong preemption authorities included by Congress in the 1990 amendments to the Hazardous Materials Transportation act (HMTA).

RO 14135

While I understand the resource issues that States are facing when they are forced to defend the validity of their laws before DOT or the courts, I note that this predicament arises primarily from the manner in which the Congress has allocated responsibility among the federal agencies and the States in the transportation area. The Congress has spoken in fairly unequivocal terms in RCRA 3003(b) that RCRA requirements addressing transporters must be consistent with the HMTA and regulations issued thereunder. The HMTA in turn provides DOT with considerable authority to preempt inconsistent State laws, particularly in certain of the so-called "covered areas" of hazardous materials regulation affected by New York's contested requirements, or, in those instances where inconsistent State laws would pose an obstacle to accomplishing or cat-tying out the HMTA's scheme of regulation. See 49 U.S.C. '5125. These types of strong preemption authorities are quite foreign to RCRA, but they are introduced into the transporter area by the statutory directive in RCRA to maintain consistency with the DOT framework.

On March 1, 1996, the Office of Solid Waste (OSW) stated to Commissioner Zagata of New York that OSW could not at this time commit our scarce federal rulemaking resources to the transfer facility problem without diverting resources from what I believe to be greater priorities for the RCRA program as a whole. This is still true today. However, at such time as our resources and priorities permit, we will revisit the merits of committing resources to resolving the transfer facility concerns. I do, however, appreciate NEWMOA's interest in supporting such a rulemaking.

I would like to be able to respond more positively to your letter at this time, but I know that our state partners understand that in these times, we must allocate our resources and energies judiciously. Thank you for bringing these concerns and suggestions to my attention. We appreciate the efforts of NEWMOA and its state members for their strong support for improving the RCRA program

Sincerely,

Michael Shapiro, Director  
Office of Solid Waste

**ATTACHMENT 18**

9461.1994(02)

STORAGE OF HAZARDOUS WASTE AT TRANSFER FACILITIES AND THE  
AUTHORIZATION OF STATES REGULATING THIS STORAGE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460  
Office of Solid Waste and Emergency Response

August 17, 1994

Charles Dickhut  
Chemical Waste Transportation Institute  
4301 Connecticut Avenue, N.W.  
Suite 300  
Washington, D.C. 20008

Dear Mr. Dickhut,

Thank you for your letter of June 3, 1994, in which you request that EPA clarify and reaffirm its interpretations and policies regarding the storage of hazardous waste at transfer facilities, the authorization of states for provisions regulating this storage, and the preemption of such provisions by the Department of Transportation (DOT) under the Hazardous Materials Transportation Act (HMTA).

In your letter you request that EPA reaffirm specific previous interpretations of the 10-day storage limitation for transfer facilities. RCRA regulations at 40 CFR 263.12 state that "a transporter who stores manifested shipments of hazardous waste in containers meeting the requirements of 262.30 at a transfer facility for a period of ten days or less is not subject to regulation under Parts 270, 264, 265, and 268 of this chapter with respect to the storage of those wastes." These regulations do not restrict the use of multiple transfer facilities for one shipment nor do they place further restrictions on the number of days available at each facility (i.e., they do not limit the total number of days spent at all transfer facilities to 10). Of course, each transfer facility must meet the definition found at 260.10.

A key element of the 260.10 definition is the "normal course of transportation." Storage of manifested shipments of hazardous waste at a transfer facility must be within the normal course of

RO 13692

transportation. As the Agency has stated in the past, EPA can envision situations in which hazardous waste may be stored at one transfer facility for 10 days, and then be stored at a second transfer facility for an additional 10 days, and remain within the normal course of transportation (see the attached June 7, 1990 letter from Sylvia Lawrence to Robert Duprey and the June 22, 1994, letter from Michael Petruska to Kevin Igli).

Your letter also asked for clarification of the phrase "normal course of transportation." The 10-day storage limitation at transfer facilities was based on information provided by the transportation industry, which indicated that shipments of hazardous waste normally take no longer than 15 days, including both the actual transportation and the temporary holding of the shipment (see 45 FR 86966, December 31, 1980). Individual circumstances, however, may prevent shipments from being completed within this time period. EPA believes that what constitutes "the normal course of transportation" depends on the particular facts of each case. Therefore, EPA does not believe it is appropriate to set a generic time limit beyond which a shipment would automatically be outside the normal course of transportation.

You next inquire whether the authorization of a provision affecting the storage of hazardous wastes at transfer facilities under 3006 of RCRA would make that provision no longer subject to preemption under the HMTA because it was "otherwise authorized by Federal law." (See 49 App. U.S.C. 1811(a).) EPA formulated its current position on RCRA state authorization and preemption under the HMTA during the 1992 authorization of California for the base RCRA program. EPA does not believe that it is appropriate to use the RCRA Subtitle C authorization process to make specific determinations of possible preemption under the HMTA. Pursuant to the HMTA, the DOT has established procedures both for making preemption determinations and providing waivers from preemption. A possible issue of preemption under HMTA would not affect the program's eligibility for RCRA authorization where the preemption concern is unrelated to RCRA authorities. (See 57 FR 32726, July 23, 1992, and the attached October 29, 1992, letter from Devereaux Barnes to Cynthia Hilton). Thus, EPA still believes that the RCRA authorization decisions provide no basis for shielding state regulations touching upon hazardous materials transport from possible preemption challenges raised under the HMTA.

Finally, you ask whether EPA has the authority to review a

state's interpretation of an authorized provision. You cite the Arkansas Department of Pollution Control and Ecology's (DPC&E) interpretation of the 10-day transfer facility storage limitation as a cause for concern. According to your letter, the DPC&E enforces a 10-day storage limitation that applies to the total storage time at all transfer facilities, not the storage time at each one. Although EPA has a different interpretation than what you have described for the DPC&E, the state of Arkansas is authorized for the transporter requirements, and thus has primary authority for implementing them. EPA's response to a state's interpretation of an authorized provision would depend on how it was implemented in a particular situation, and factors such as any relevant state court decisions or an enforcement action. EPA is currently not aware of any instance where this differing interpretation has been implemented. Further, EPA believes that the question of whether Arkansas' interpretation deviates from national HMTA transportation standards should be addressed under the HMTA preemption process, rather than through RCRA state authorization.

I hope that this clarification is of assistance to you. Further guidance regarding the issues you have raised may be available in the future, as a result of EPA discussions with DOT. If you have further questions regarding the authorization of states for the regulation of hazardous waste transporters and transfer facilities, please contact Wayne Roepe of my staff at 703-308-8630. If you have further questions regarding the EPA regulations regarding the transportation of hazardous waste, please contact Ann Codrington of my staff at 202-260-4777.

Sincerely,

Michael Shapiro, Director  
Office of Solid Waste

**ATTACHMENT 19**

9541.1985(07)

RCRA/SUPERFUND HOTLINE MONTHLY SUMMARY

MAY 85

Manifest Use and State Authorization

3. A spent solvent, which is hazardous by characteristic only (e.g. ignitable D001), is transported from the generator in Montana, to a reclamation facility in Texas. Both Montana and Texas are states with final authorization for the RCRA program. The transporter will also go through Wyoming which is a non-authorized state (i.e., it is under the Federal RCRA program).

Pursuant to 40 CFR §261.6(a), characteristic hazardous wastes which are reclaimed are not subject to RCRA regulations. According to §261.2(c) as amended by the January 4, 1985, Federal Register (50 FR 614), however, all spent solvents, characteristic or listed, will be defined as "spent materials" and will be regulated as "solid wastes" prior to reclamation. Thus, per §261.6(b), in the January 4, 1985, rule, generators and transporters of recyclable hazardous materials (e.g., spent solvents) are subject to Parts 262 and 263 (generator and transporter standards, respectively). The complicating factor is that this new definition of solid waste and respective recycling regulations may go into effect at different times through the country depending on whether a state is authorized or not.

The January 4, 1985, rule will be effective in non-authorized states on July 5, 1985. States with final authorization, such as Montana and Texas, may have up to January 4, 1987, to adopt this rule. Therefore, a characteristic ignitable spent solvent will be a regulated hazardous waste prior to reclamation in non-authorized states on July 5, 1985. In the transport situation described above, is the transporter required to carry the Uniform Hazardous Waste Manifest in Wyoming, since the spent solvent is a "hazardous waste" in Wyoming on July 5, 1985?

If the spent solvent is transported from Montana to Texas (EPA-authorized states) after July 5, 1985, the transporter need not carry the Uniform Hazardous Waste Manifest, even though the spent solvent is transported through Wyoming, which regulates the solvent as a RCRA waste. States through which the waste shipment travels may not dictate manifest requirements per 49 FR 1049

(March 20, 1984). When either the generator state (Montana) or the designated state (Texas) determines that the waste is hazardous, that waste will be subject to the Uniform Manifest requirements.

Source: Denise Hawkins (202) 382-2231

**ATTACHMENT 20**

**Regulatory Impact Assessment of the Potential Costs,  
Benefits, and Other Impacts of the Final Hazardous Waste  
Generator Improvements Rule**

Prepared for

U.S. Environmental Protection Agency (EPA)  
Office of Resource Conservation and Recovery (ORCR)  
1200 Pennsylvania Avenue NW (Mailstop 5305P)  
Washington DC, 20460 USA

September 2016

### 2.3 HAZARDOUS WASTE GENERATION OF POTENTIALLY AFFECTED FACILITIES

This section characterizes the hazardous waste generation of facilities in the regulated universe. The overall tonnages of hazardous waste and the number of waste streams are relevant to estimating the cost of managing this waste in compliance with the provisions of the final rule. The methodology for estimating the quantities of hazardous waste generation varies by generator status. Where possible, this RIA relies on generation data from EPA's 2013 BR database. The BR database is used to develop annual aggregate and per facility generation estimates for LQG facilities. For other facility types, however, the data available from the BR database are insufficient to develop nationwide hazardous waste generation estimates. Consequently, this RIA derives generation estimates for SQGs and VSQGs by combining the limited data available in the BR database with facility-level generation data obtained from individual states.

#### 2.3.1 LQG HAZARDOUS WASTE GENERATION

EPA's 2013 BR database is the primary data source for estimating hazardous waste generation for LQG facilities. In 2013, LQGs generated approximately 35.2 million tons of hazardous waste in aggregate. Combining this value with the LQG facility count presented above suggests that LQGs, on average, generate approximately 1,692 tons of hazardous waste per facility per year.<sup>14</sup> The BR data also suggest that LQGs reported an average of 13 different waste streams per facility, with a few large facilities reporting several thousand waste streams. The 50 largest LQGs generated 29.2 million tons of hazardous waste, or 83 percent of the total amount reported in the 2013 BR.

Exhibit 2-5 reports the overall and average per facility hazardous waste quantities generated on an annual basis as well as the average number of waste streams per facility for LQGs by state. As shown in the exhibit, the Gulf States of Texas, Louisiana, and Mississippi account for approximately 63 percent of all hazardous waste generated by LQGs in the United States. In contrast, New York and California, which have the largest number of LQG facilities, collectively account for just 5 percent of all hazardous waste generated by LQGs.

Exhibit 2-6 provides information on the distribution of LQGs by industry. Facilities in the BR database may be characterized by one or several North American Industry Classification System (NAICS) codes. To avoid double-counting, this RIA uses the first (or primary) NAICS code listed in the BR database for a facility. As shown in the exhibit, the five largest industries (in terms of hazardous waste generation) account for approximately 95 percent of all hazardous waste generated by LQGs, while comprising less than 20 percent of all LQGs. These industries include: chemical manufacturing (NAICS 325); petroleum and coal products manufacturing (NAICS 324); waste management and remediation services (NAICS 562); primary metal manufacturing (NAICS 331); and mining (NAICS 212). In terms of the number of generators, the largest industries—accounting for approximately 50 percent of the LQG universe—include: health and personal care stores (NAICS 446); chemical manufacturing (NAICS 325); utilities (NAICS 221); fabricated metal product manufacturing (NAICS 332); and general merchandise stores (NAICS 452).

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<sup>14</sup> This average (mean) value includes a small number of facilities that generate more than one million tons of hazardous waste per year. Thus, whereas the mean generation value per LQG is 1,692 tons per year, the median (50<sup>th</sup> percentile) is only 7.6 tons per year. Because the cost and benefit calculations in Chapters 3 and 4, respectively, do not use LQG waste generation as an input (incremental costs and benefits for LQGs under the rule are not dependent on waste quantities), the choice of using the mean or median has no impact on the estimated costs and benefits of the rule.

EXHIBIT 2-5: LQG HAZARDOUS WASTE QUANTITIES AND NUMBER OF WASTE STREAMS GENERATED BY STATE<sup>1</sup> (2013)

STATE [A]	NUMBER OF FACILITIES IN BR DATA [B]	TOTAL HAZARDOUS WASTE GENERATED (TONS) [C]	PERCENTAGE OF TOTAL HAZARDOUS WASTE [D]	HAZARDOUS WASTE GENERATED PER FACILITY (TONS) [E=C/B]	AVERAGE NUMBER OF WASTE STREAMS PER FACILITY [F]
Alabama	386	708,436	2.0%	1,835	13
Alaska	27	2,272	0.0%	84	20
Arizona	210	73,948	0.2%	352	17
Arkansas	101	405,592	1.2%	4,016	27
California	2,775	1,519,549	4.3%	548	13
Colorado	108	37,000	0.1%	343	60
Connecticut	416	19,666	0.1%	47	12
Delaware	60	14,886	0.0%	248	40
District of Columbia	36	551	0.0%	15	8
Florida	386	107,387	0.3%	278	16
Georgia	517	280,866	0.8%	543	11
Guam	9	165	0.0%	18	70
Hawaii	23	466,293	1.3%	20,274	35
Idaho	23	4,624	0.0%	201	28
Illinois	836	613,053	1.7%	733	10
Indiana	710	1,026,708	2.9%	1,446	13
Iowa	144	51,095	0.1%	355	9
Kansas	213	1,349,985	3.8%	6,338	9
Kentucky	297	194,945	0.6%	656	27
Louisiana	368	4,789,750	13.6%	13,016	11
Maine	87	3,048	0.0%	35	8
Maryland	469	47,995	0.1%	102	9
Massachusetts	415	29,285	0.1%	71	14
Michigan	493	627,889	1.8%	1,274	17
Minnesota	340	349,886	1.0%	1,029	9
Mississippi	164	1,590,017	4.5%	9,695	7
Missouri	330	281,820	0.8%	854	11
Montana	62	7,065	0.0%	114	9
Navajo Nation	1	3	0.0%	3	4
Nebraska	69	29,225	0.1%	424	22
Nevada	94	14,688	0.0%	156	13
New Hampshire	134	3,293	0.0%	25	42
New Jersey	711	396,104	1.1%	557	48
New Mexico	41	889,256	2.5%	21,689	87
New York	3,095	234,378	0.7%	76	4
North Carolina	675	77,163	0.2%	114	22
North Dakota	26	375,751	1.1%	14,452	6
Northern Marianas	0	0	0.0%	0	0
Ohio	975	1,539,561	4.4%	1,579	16
Oklahoma	170	100,331	0.3%	590	7
Oregon	210	56,930	0.2%	271	10
Pennsylvania	1,004	257,716	0.7%	257	8
Puerto Rico	94	35,902	0.1%	382	22
Rhode Island	103	6,083	0.0%	59	17
South Carolina	386	176,950	0.5%	458	8
South Dakota	31	1,460	0.0%	47	7
Tennessee	363	97,020	0.3%	267	6
Texas	970	15,624,473	44.4%	16,108	7
Trust Territories	0	0	0.0%	0	0
Utah	127	40,359	0.1%	318	28

**EXHIBIT 2-5: LQG HAZARDOUS WASTE QUANTITIES AND NUMBER OF WASTE STREAMS GENERATED BY STATE<sup>1</sup> (2013)**

STATE [A]	NUMBER OF FACILITIES IN BR DATA [B]	TOTAL HAZARDOUS WASTE GENERATED (TONS) [C]	PERCENTAGE OF TOTAL HAZARDOUS WASTE [D]	HAZARDOUS WASTE GENERATED PER FACILITY (TONS) [E=C/B]	AVERAGE NUMBER OF WASTE STREAMS PER FACILITY [F]
Vermont	43	3,323	0.0%	77	12
Virgin Islands	1	10,064	0.0%	10,064	17
Virginia	397	58,641	0.2%	148	12
Washington	456	258,975	0.7%	568	16
West Virginia	144	52,027	0.1%	361	10
Wisconsin	424	204,520	0.6%	482	9
Wyoming	22	3,493	0.0%	159	13
<b>TOTAL<sup>2</sup></b>	<b>20,771</b>	<b>35,151,466</b>	<b>100.0%</b>	<b>1,692</b>	<b>13</b>

**Notes:**

1. Data from U.S. EPA, National Biennial RCRA Hazardous Waste Report (based on analysis of 2013 BR flat files). Documents and data are available at [ftp://ftp.epa.gov/rcrainfodata/br\\_2013/](ftp://ftp.epa.gov/rcrainfodata/br_2013/).
2. The values in Columns E and F are calculated on a per facility basis as the sum of values across all generators divided by the total number of generators from Column B.

EXHIBIT 2-6: LQG HAZARDOUS WASTE QUANTITIES AND NUMBER OF WASTE STREAMS GENERATED BY INDUSTRY<sup>1</sup> (2013)

NAICS [A]	NAICS DESCRIPTION [B]	NUMBER OF FACILITIES IN BR DATA [C]	TOTAL HAZARDOUS WASTE GENERATED <sup>1</sup> (TONS) [D]	PERCENTAGE OF TOTAL HAZARDOUS WASTE [E]	HAZARDOUS WASTE GENERATED PER FACILITY (TONS) [F=D/C]	AVERAGE NUMBER OF WASTE STREAMS PER FACILITY <sup>1</sup> [G]
325	Chemical manufacturing	2,239	18,590,532	52.9%	8,303	13
324	Petroleum and coal products manufacturing	192	5,848,566	16.6%	30,461	24
562	Waste management and remediation services	620	4,811,348	13.7%	7,760	145
331	Primary metal manufacturing	585	2,805,538	8.0%	4,796	7
212	Mining (except oil and gas)	40	1,261,538	3.6%	31,538	13
332	Fabricated metal product manufacturing	1,779	349,226	1.0%	196	6
493	Warehousing and storage	301	222,186	0.6%	738	8
336	Transportation equipment, appliance, and component manufacturing	867	147,618	0.4%	170	11
335	Electrical equipment, appliance, and component manufacturing	212	130,662	0.4%	616	9
333	Machinery manufacturing	371	127,663	0.4%	344	8
334	Computer and electronic product manufacturing	561	97,012	0.3%	173	13
488	Support activities for transportation	268	79,648	0.2%	297	5
326	Plastics and rubber products manufacturing	383	56,468	0.2%	147	7
221	Utilities	1,825	52,270	0.1%	29	3
928	National security and international affairs	212	48,564	0.1%	229	72
561	Administrative and support services	29	47,033	0.1%	1,622	9
327	Nonmetallic mineral product manufacturing	148	46,374	0.1%	313	6
811	Repair and maintenance	101	43,222	0.1%	428	6
423	Merchant wholesalers, durable goods	84	42,764	0.1%	509	4
424	Merchant wholesalers, nondurable goods	378	33,519	0.1%	89	8
339	Miscellaneous manufacturing	261	28,299	0.1%	108	9
237	Heavy and civil engineering construction	159	25,920	0.1%	163	2
712	Museums, historical sites, and similar institutions	11	23,072	0.1%	2,097	6
323	Printing and related support activities	242	21,182	0.1%	88	4
541	Professional, scientific, and technical services	539	21,171	0.1%	39	20
531	Real estate	42	16,309	0.0%	388	5
236	Construction of buildings	31	13,870	0.0%	447	1
611	Educational services	377	13,263	0.0%	35	21
211	Oil and gas extraction	69	12,074	0.0%	175	7
322	Paper manufacturing	138	11,332	0.0%	82	6
924	Administration of environmental quality programs	19	10,746	0.0%	566	21
337	Furniture and related product manufacturing	152	9,992	0.0%	66	3
311	Food manufacturing	78	9,239	0.0%	118	8
321	Wood product manufacturing	156	8,612	0.0%	55	3
482	Rail transportation	36	8,301	0.0%	231	4

EXHIBIT 2-6: LQG HAZARDOUS WASTE QUANTITIES AND NUMBER OF WASTE STREAMS GENERATED BY INDUSTRY<sup>1</sup> (2013)

NAICS [A]	NAICS DESCRIPTION [B]	NUMBER OF FACILITIES IN BR DATA [C]	TOTAL HAZARDOUS WASTE GENERATED <sup>1</sup> (TONS) [D]	PERCENTAGE OF TOTAL HAZARDOUS WASTE [E]	HAZARDOUS WASTE GENERATED PER FACILITY (TONS) [F=D/C]	AVERAGE NUMBER OF WASTE STREAMS PER FACILITY <sup>1</sup> [G]
486	Pipeline transportation	177	7,569	0.0%	43	3
622	Hospitals	470	6,347	0.0%	14	10
425	Wholesale electronic markets and agents and brokers	4	6,085	0.0%	1,521	3
621	Ambulatory health care services	184	5,372	0.0%	29	8
922	Justice, public order, and safety activities	19	4,921	0.0%	259	7
213	Support activities for mining	47	4,871	0.0%	104	5
313	Textile mills	47	4,790	0.0%	102	7
532	Rental and leasing services	16	4,569	0.0%	286	6
812	Personal and laundry services	228	4,205	0.0%	18	6
483	Water transportation	36	3,355	0.0%	93	8
238	Specialty trade contractors	59	3,332	0.0%	56	2
481	Air transportation	33	2,823	0.0%	86	14
446	Health and personal care stores	4,448	2,245	0.0%	1	7
921	Executive, legislative, and other general government support	30	2,140	0.0%	71	12
713	Amusement, gambling, and recreation industries	17	2,066	0.0%	122	6
485	Transit and ground passenger transportation	71	1,974	0.0%	28	3
711	Performing arts, spectator sports, and related industries	5	1,429	0.0%	286	3
927	Space research and technology	12	1,340	0.0%	112	30
484	Truck transportation	49	1,155	0.0%	24	13
312	Beverage and tobacco product manufacturing	17	941	0.0%	55	12
452	General merchandise stores	868	866	0.0%	1	9
926	Administration of economic programs	51	804	0.0%	16	2
454	Non-store retailers	10	496	0.0%	50	7
115	Crop production	25	457	0.0%	18	3
447	Support activities for agriculture and forestry	10	336	0.0%	34	2
444	Building material and garden equipment and supplies dealers	67	317	0.0%	5	3
492	Couriers and messengers	27	235	0.0%	9	10
316	Leather and allied product manufacturing	22	200	0.0%	9	22
512	Motion picture and sound recording industries	4	161	0.0%	40	7
721	Accommodation	6	132	0.0%	22	9
315	Apparel manufacturing	3	98	0.0%	33	1
551	Management of companies and enterprises	2	96	0.0%	48	2
314	Textile product mills	6	83	0.0%	14	9
441	Motor vehicle and parts dealers	9	81	0.0%	9	3
517	Telecommunications	8	76	0.0%	9	3
		10	71	0.0%	7	1

EXHIBIT 2-6: LQG HAZARDOUS WASTE QUANTITIES AND NUMBER OF WASTE STREAMS GENERATED BY INDUSTRY<sup>1</sup> (2013)

NAICS [A]	NAICS DESCRIPTION [B]	NUMBER OF FACILITIES IN BR DATA [C]	TOTAL HAZARDOUS WASTE GENERATED <sup>1</sup> (TONS) [D]	PERCENTAGE OF TOTAL HAZARDOUS WASTE [E]	HAZARDOUS WASTE GENERATED PER FACILITY (TONS) [F=D/C]	AVERAGE NUMBER OF WASTE STREAMS PER FACILITY <sup>1</sup> [G]
923	Administration of Human Resource Programs	5	51	0.0%	10	10
511	Publishing industries (except Internet)	6	45	0.0%	7	7
445	Food and beverage stores	101	36	0.0%	0	4
453	Miscellaneous store retailers	19	35	0.0%	2	8
525	Funds, trusts, and other financial vehicles	5	34	0.0%	7	1
813	Religious, grant-making, civic, professional, and similar orgs.	6	31	0.0%	5	2
722	Food services and drinking places	1	15	0.0%	15	2
112	Animal production	2	13	0.0%	7	5
925	Administration of housing programs, urban planning, and community development	3	11	0.0%	4	1
448	Clothing and clothing accessories stores	1	5	0.0%	5	1
623	Nursing and residential care facilities	2	5	0.0%	2	3
522	Credit intermediation and related activities	1	5	0.0%	5	1
491	Postal Service	2	3	0.0%	1	1
451	Sporting goods, hobby, musical instrument, and book stores	2	2	0.0%	1	6
442	Furniture and home furnishings stores	12	2	0.0%	0	10
524	Insurance carriers and related activities	1	1	0.0%	1	2
	<b>TOTAL<sup>2</sup></b>	<b>20,771</b>	<b>35,151,466</b>	<b>100.0%</b>	<b>1,692</b>	<b>13</b>

Notes:

1. Data from U.S. EPA, National Biennial RCRA Hazardous Waste Report (based on analysis of 2013 BR flat files). Documents and data are available at [ftp://ftp.epa.gov/rcrainfodata/br\\_2013/](ftp://ftp.epa.gov/rcrainfodata/br_2013/).
2. The values in Columns F and G are calculated on a per facility basis as the sum of values across all generators divided by the total number of generators from Column C.

**ATTACHMENT 21**

9498.1992(02)

United States Environmental Protection Agency  
Washington, D.C. 20460  
Office of Solid Waste and Emergency Response

December 30, 1992

MEMORANDUM

SUBJECT: Application of the BIF Rule to Heritage  
Environmental Services, Inc., Lemont Illinois

FROM: Sylvia K. Lowrance, Director  
Office of Solid Waste (OS-300)

TO: Karl E. Bremer, Chief  
RCRA Permitting Branch  
Office of RCRA, Region 5 (HRP-8J)

This is in response to your memorandum of November 20, 1992 regarding Heritage Environmental Services, Inc. in Lemont, Illinois, and the burning of a propellant mixture (mostly butane and propane) in the company's boiler. You specifically asked whether the burning of this mixture constitutes burning of a hazardous waste which would require them to comply with the boiler and industrial furnace (BIF) regulations.

Subpart H of 40 CFR Part 266 regulates the burning or processing of hazardous waste in boilers and industrial furnaces. However, before a substance can be classified as a hazardous waste, it must first meet the definition of a solid waste. In determining whether the butane and propane propellants are solid wastes, it must also be decided whether the burning of these materials constitutes the burning for energy recovery of a propellant (is a solid waste), or use as a fuel (is not a solid waste) for the reasons stated below.

As stated in your memo, Heritage plans to recover the materials from the aerosol cans and separate them into three streams: (1) scrap metal (crushed cans), (2) a liquid phase (household chemicals), and (3) a gaseous phase (propellants, mostly butane and propane). Heritage then plans to burn the recovered propellants from the aerosol cans in their on-site boiler for

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energy value.

According to 40 CFR Section 261.2(c)(2)ii regulations, commercial chemical products that are listed in 40 CFR Section 261.33 as well as non-listed commercial chemical products that exhibit hazardous waste characteristics (see attached April 11, 1985 Federal Register notice explaining the regulatory status of non-listed commercial chemical products), are not classified as solid wastes when burned for energy recovery if they are themselves fuels. Since propane and butane are materials that are normally both used as fuels, when unused, they can be burned as fuels without being considered solid wastes.

Therefore, if the aerosol cans are full (not used), or partially full (in which case they would be considered off specification with the remaining propellants in the cans also being unused), then the butane and propane propellants would be classified as commercial chemical products. Since these products are fuels and being burned for energy recovery, they would not fall within the definition of a solid waste and would consequently not be considered a hazardous waste.

For the reasons stated above, Heritage would not be required to comply with the BIF regulations to burn the butane and propane propellants in their on-site boiler. However, this determination assumes that other hazardous constituents have been separated from the butane and propane propellants, and that the butane and propane are indeed being burned for energy recovery rather than to destroy other hazardous constituents contained in the aerosol cans.

If you have any additional questions or would like to discuss this further, please contact Karen Randolph of my staff on (703) 308-8651.

Attachment

cc: Christine Dibble, OSW; Mike Petruska, CAD; Steve Silverman, OGC; Bob Holloway, WMD; Sonya Sasseville, PSPD

bcc: Juana Rojo, Region 5; Waste Combustion Permit Writers' Workshop; Karen Randolph PSPD

RO 11717

**ATTACHMENT 22**

9432.1988(04)

AEROSOL CANS, ON-SITE DEPRESSURIZATION OF  
OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

SEP 1988

Kurt E. Whitman, Project Coordinator  
SWInc.  
P.O. Box B  
Saukville, WI 53080

Dear Mr. Whitman:

This is in response to your July 1, 1988 letter requesting clarification on EPA's current interpretation on whether the depressurization of aerosol cans on-site would be considered treatment, requiring a RCRA permit. You also requested pertinent information on Ril #43 and on whether or not it has been rescinded. I am enclosing per your request a copy of Ril 43 and the 1985 memorandum which I believe is the one you are requesting.

You revealed in a July 26, 1988 telephone conversation with Doreen Sterling of my staff that your main interest in this issue was to determine the requirements for disposal of a wide variety of aerosol cans located at a number of Department of Defense facilities throughout the country.

The Agency is aware that conflicting interpretations have been given by the EPA Regional Offices, EPA Office of Solid Waste, and the RCRA Hotline regarding whether certain aerosol can disposal methods constitute treatment and whether or not a permit is required for this activity. The Agency is currently evaluating this problem and may decide to issue more specific guidance in the future if it is warranted. It is our policy, however, to refer issues of this nature to the Region in which the facility is located since they are normally best able to make a case-by-case determination on whether: (1) the waste in question is hazardous according to our regulations and (2) treatment is occurring.

RO 13225

According to our regulations, cans are hazardous if: (1) they contain a commercial chemical product on the 40 CFR 261.33(e) or (f) lists or exhibit one or more of the hazardous waste characteristics, and are not empty as defined under Sec. 261.7; and/or (2) they exhibit any of the characteristics of hazardous waste identified in Part 261, Subpart C.

Treatment, as defined in 40 CFR 260.10, means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

It should be noted that if any of the aerosol cans are included as part of household waste (i.e., from military housing), those cans are exempt from RCRA Subtitle under Section 261.4(b)(1).

If you have any further questions, you may contact Doreen Sterling of my staff at 202-475-6775.

Sincerely

Original Document signed

Sylvia K Lowrance, Director  
Office of Solid Waste

Enclosures

**ATTACHMENT 23**

PPC 9443.1984(10)

SMALL ARMS AMMUNITION REACTIVITY, OFF SPECIFICATION

30 NOV 1984

MEMORANDUM

SUBJECT: Classification of Small Arms Ammunition  
With Respect to Reactivity

FROM: John H. Skinner, Director  
Office of Solid Waste (WH-562)

TO: David Wagoner, Director  
Air & Waste Management Division  
Region VIII

Recently, a question arose as to the status under RCRA of off-specification small arms ammunition (ball or sporting ammunition of calibers up to and including 0.50) intended for disposal. The issue concerned whether such wastes are "reactive wastes" within the meaning of 40 CFR 261.23(a)(6) and, therefore, subject to RCRA hazardous waste requirements. Because the ammunition contains an ignition source that may be shock and heat sensitive and is designed to generate high pressure during use, it had been our opinion that it is probably "reactive." However, on the basis of information that was received from the Remington Arms Company and the Army, we now conclude that such materials are no "reactive" within the meaning of 40 CFR 261.23(a)(6).

Section 261.23 (a)(6) of Title 40 provides that a solid waste which is "capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement" is "reactive." As discussed in the May 19, 1980, preamble to 40 CFR 261.23, shock and thermal instability are important elements of this definition. While presently there is no Agency guidance regarding these criteria, the Remington Arms Company of Independence, Missouri, and the U.S. Army have provided information which addresses both of these factors.

Remington Arms Company submitted details on the effects of heat and impact to small arms ammunition. There was no explosion

RO 12339

when a box of ammunition was set afire. Small arms, when subjected to the SAAMI (Sporting Arms and Ammunition Manufacturer's Institute) Impact Test, showed no evidence of mass propagation or explosion.

The Department of the Army has a rigorous safety and hazard testing program on all munition items. The tests, which include drop tests from 5, 7, and 40 feet to simulate handling errors and "heating under confinement," 160°F for 48 hours, also showed no evidence of detonation or explosion with respect to small arms ammunition. The tests were performed on both the individual munition and a package containing a prescribed number of items.

As noted above, we feel that results from these tests show that off-specification small caliber ammunition up to and including 0.50 is not "reactive" within the meaning of 40 CFR §261.23(a)(6). We, therefore, believe that the disposal of such ammunition is not subject to Subtitle C hazardous waste requirements.

We appreciate your cooperation. If you have any questions regarding the matter, please call David Friedman or Florence Richardson at FTS 382-4770.

cc: Air & Waste Management Divisions Directors  
Regions I-VI and VIII-X

**ATTACHMENT 24**



B A C K G R O U N D    D O C U M E N T

IDENTIFICATION AND LISTING OF HAZARDOUS WASTE  
UNDER RCRA, SUBTITLE C, SECTION 3001

Reactivity Characteristic  
(40 CFR 261.23)

This document (ms. 1941.25) provides background information  
and support for EPA's hazardous waste regulations

U.S. ENVIRONMENTAL PROTECTION AGENCY  
May 1980

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U.S. DEPARTMENT OF COMMERCE  
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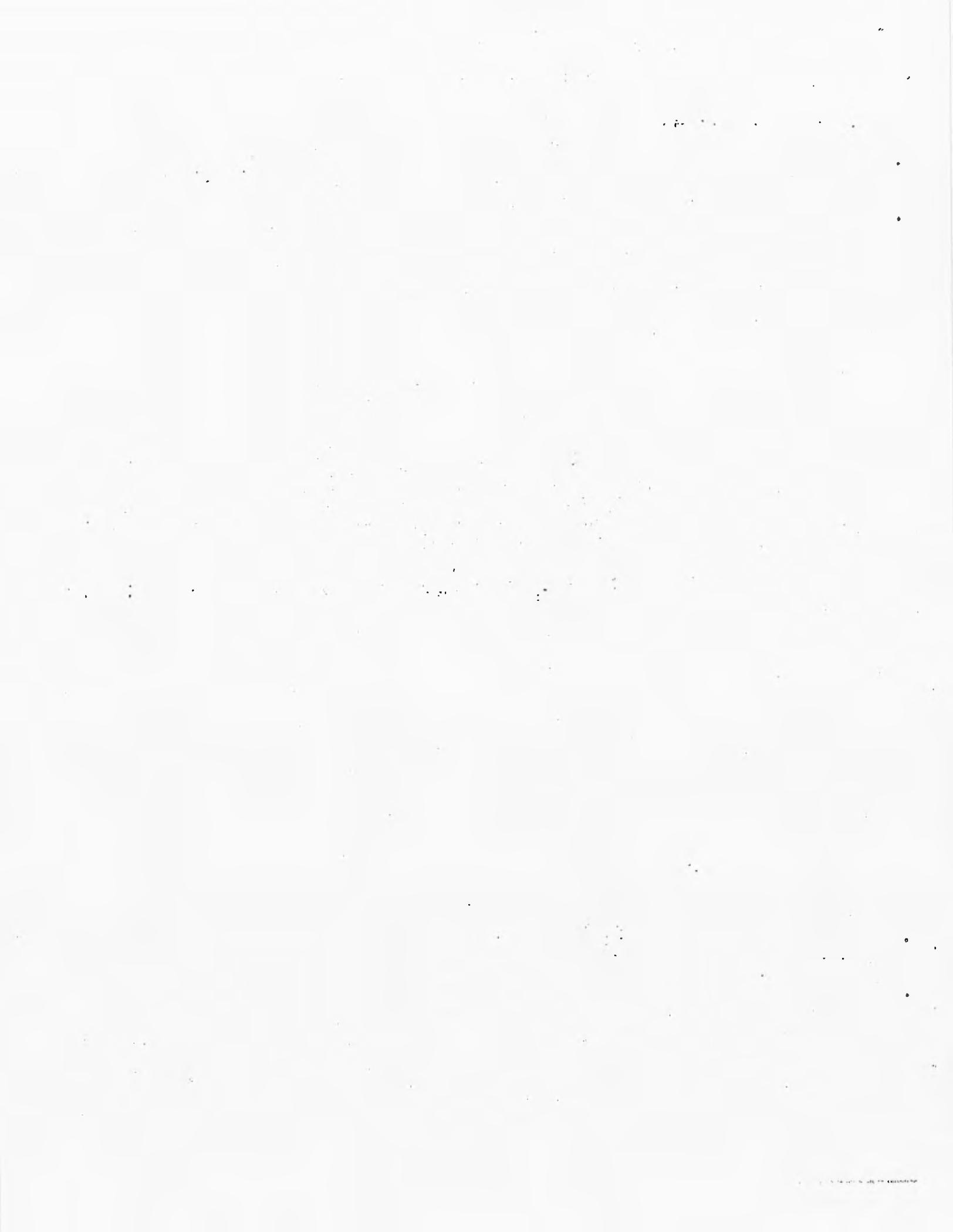
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16. Abstract (Limit: 200 words) This document is one of a series providing support for regulations issued by the U.S. Environmental Protection Agency (EPA) under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The regulations represent the initial effort for nationwide control of hazardous waste from point of generation, through transportation, treatment, and storage, to point of ultimate disposal.  This document explains how EPA identified reactivity as a hazardous waste characteristic.					
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b. Identifiers/Open-Ended Terms Resource Conservation Recovery Act regulations Hazardous waste characteristics Reactive hazardous waste					
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(See ANSI-Z39.18)

See Instructions on Reverse

OPTIONAL FORM 272 (4-77)  
(Formerly NTIS-35)  
Department of Commerce



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## I. Introduction

Subtitle C of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 creates a comprehensive "cradle-to-grave" management control system for the disposal of hazardous waste designed to protect the public health and the environment from the improper disposal of such waste. Section 3001 of that Subtitle requires EPA to identify the characteristics of and list hazardous wastes. Wastes identified or listed as hazardous will be included in the management control system created by Sections 3002-3006 and 3010. Wastes not identified or listed will be subject to the requirements for non-hazardous waste imposed by the States under Subtitle D. The Agency has determined that reactivity is a hazardous characteristic because improperly managed reactive wastes (i.e., explosives, etc.) pose a substantial present or potential danger to human health and the environment. The purpose of this document is to explain the Agency's definition of reactive wastes, to discuss the comments received on the proposed definition of reactive waste (43 FR 58956, December 18, 1978) and the changes subsequently made.

## II. Proposed Regulation

Reactive waste. (1) Definition - A solid waste is a hazardous waste if a representative sample of the waste:

(i) Is normally unstable and readily undergoes violent chemical change without detonating; reacts violently with water, forms potentially explosive mixtures with water, or generates toxic gases, vapors, or fumes when mixed with water;

or is a cyanide or sulfide bearing waste which can generate toxic gases, vapors, or fumes when exposed to mild acidic or basic conditions.

(ii) Is capable of detonation or explosive reaction but requires a strong initiating source or which must be heated under confinement before initiation can take place, or which reacts explosively with water.

(iii) Is readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.

(iv) Is a forbidden explosive as defined in 49 CFR 173.51, a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.58.

NOTE--Such waste includes pyrophoric substances, explosives, autopolymerization material and oxidizing agents. If it is not apparent whether a waste is a hazardous waste using this description, then the methods cited below or equivalent methods can be used to determine if the waste is hazardous waste.

Identification method. (1) Thermally unstable waste can be identified using the Explosion Temperature Test cited in Appendix II of this Subpart (waste for which explosion, ignition, or decomposition occurs at 125°C after 5 minutes is classed as hazardous waste).

(i) Waste unstable to mechanical shock can be identified using the Bureau of Explosives impact apparatus and the tests cited in 49 CFR 173.53 (b), (c), (d), or (f), as appropriate.

### III. Rationale for Proposed Regulation

#### A. Rationale for proposing a reactivity characteristic

Reactivity was chosen as a characteristic of hazardous waste because improperly managed reactive wastes present a danger to human health and the environment. By definition, reactive wastes are those which are capable of violently generating heat and pressure, reacting vigorously with air or water, reacting with water to generate toxic fumes, etc. The dangers which these wastes pose to transporters, waste disposal personnel, and the public are thus for the most part obvious. In the past, there have been a number of incidents of damage to persons or property which have resulted from the improper management of reactive wastes. Some of these damage incidents are listed and discussed in Appendix I.

Because of their acknowledged danger, reactive materials are often controlled by federal and state regulations and suggestions for their safe use or management are often published by public or private organizations. Some of these federal and state regulations and the guidelines for reactive materials prescribed by the National Fire Protection Association (NFPA) are listed and discussed in Appendix II.

#### B. Rationale for proposed reactivity definition

Reactive substances can be described as those which:

- 1) autopolymerize
- 2) are unstable with respect to heat or shock
- 3) are explosive

- 4) are strong oxidizers
- 5) react vigorously with air or water
- 6) react with water to generate toxic fumes

As can be seen from this description, the term "reactivity" encompasses a diverse and somewhat loosely conjoined class of physical properties or effects. These effects are not mutually exclusive and a particular substance might exhibit several of the properties mentioned above. For instance, certain peroxides would fall into four of the above six categories. Additionally, these categories overlap not only with each other, but also with the other characteristics. For example, the difference between flammability (conflagration) and explosiveness (deflagration) is only one of degree -- an illustration of the fact that the properties embraced by the term "reactivity" are, like the term "reactivity" itself, relative properties which have meaning only in a relative sense.

The Agency has attempted where possible to define hazardous waste characteristics in terms of specific, numerically quantified properties measurable by standardized and available testing protocols. This has proven difficult in the case of reactive wastes. The first problem with constructing a numerically quantified definition of reactive wastes arises from the fact that the term "reactivity" embraces a wide variety of different (though overlapping) effects, each of which can be triggered by an equally wide variety of initiating conditions or forces. It would be cumbersome, if not completely impractical, to construct a numerically

quantified definition which included all these different effects and their potential initiating forces. The second problem arises from the fact, as noted above, that the properties embraced by the term reactivity are relative properties. The determination that something "reacts vigorously with air or water" or is "unstable with respect to heat or shock" is a relative determination, not an absolute one. The effects being measured proceed along a continuum. Thus, it is difficult to draw the line at any particular point.

These problems are reflected in the testing methods which might be used to identify reactive substances. These methods suffer from the following generic deficiencies:

1. The available tests are too specific and do not reflect the wide variety of waste management conditions.

The available tests are used to determine how a specific aspect or manifestation of waste reactivity behaves under a special and specific type of stress. For example, DTA (Differential Thermal Analysis) measures how the rate of temperature rise of the waste (one specific aspect of waste reactivity) correlates with the slow input of thermal energy (one special and specific type of stress). This would not indicate how the waste reacts to mechanical shock (a drop test would be necessary to determine that), electrical shock, whether the waste is a strong oxidizer, or even what is producing the rate of temperature change (pressure buildup, toxic or nontoxic fumes, heat of mixing, etc.). The information derived from the available tests, then, is too specialized

and does not reflect the wide variety of stresses and initiating forces likely to be found in a disposal environment.

2. Reactivity of a sample may not reflect reactivity of the whole waste:

In the case of wastes which are thermally unstable, the reactivity of the sample may not adequately reflect the reactivity of the whole waste. The kinetics of reaction are not only a function of the available initiating sources and ambient temperature, but are also a function of the mass, configuration, geometry, etc. of the sample. For a "runaway" reaction to occur, the system must transcend that steady state where the energy (heat) produced by reaction is equal to the energy transferred to the surroundings from the reacting mass. When this critical temperature is reached, the mass experiences catastrophic self-heating. This heat transfer phenomena is a function of sample size, density, and geometry. As demonstrated in equation 1:<sup>5</sup>

$$Cdt/dt = QVp \exp(-E/RT) + hS(T - T_0) \quad (1)$$

C = mc (m=mass and c = specific heat)

T = Temperature of the material

Q = Heat of decomposition

V = Volume

p = Density

E = Activation energy

R = Gas constant

h = Heat transfer coefficient

S = Surface area of the material

As can be seen from this equation the rate of temperature rise will be affected both by the intensive properties of the waste, such as density, and the extensive properties of the waste, such as surface area and geometry. Since the extensive properties of the sample are likely to be different from the extensive properties of the whole waste, the reactivity of the sample may not reflect the reactivity of the whole waste.

3. The test results are in most cases subjective or not directly applicable.

The ideal test to use in a regulatory program is usually one which requires minimal interpretation. The majority of available reactivity testing methods are not of the "pass-fail" type. Rather, these testing methods usually produce test results which consist of a first order differential plotted against time or against a standard, from which relative reactivity can be assessed. When a test of this sort is run, it is not run to determine "reactivity" per se but rather to elicit information concerning how "fast" a material reacts (i.e. kinetic information) or how vigorously it reacts (thermodynamic information). Thus, the decision as to whether a waste is reactive requires subjective interpretation of the test results.

Additionally, the information derived from such tests may not be directly related to reactivity. For example, the test results might provide information on the activation energy - a useful, but potentially misleading bit of information since it reflects the speed of the reaction rather than the

reaction's effects. The inapplicability of some of the test results emphasizes the indefinite meaning of the term "reactivity", a term which draws its meaning from the context of its use. A chemist might think of a "reactive" substance as one with a small activation energy (the energy difference between the reactive substance's initial and transition states), i.e., one which reacts easily. The Agency, however, unlike the hypothetical chemist, is not just interested in things that react "easily" but also in things which react vigorously. It consequently needs to take into account not just the activation energy of a substance but also the heat of reaction, the molecularity of the reaction and other factors - information which the available tests often do not supply. It is, in other words, not really interested in performing a thermodynamic measurement, but rather in observing if a waste behaves in such a way as to pose a danger under normal handling conditions.

4. The standardized methods that do exist were not developed for waste testing.

Use of the available testing methods on waste materials often results in the application of standardized methods to non-standardized samples and the application of standardized methods to samples with physical consistencies the method was not designed for. If such methods are used, the results might be difficult to interpret with certainty.

The available reactivity testing methods are individually

described and evaluated in Appendix 3\*. As is evident from those specific evaluations and from the preceding discussion of the generic shortcomings of the available testing methods, none of these "type" methods are suitable for use to unequivocally determine if a waste presents a reactive hazard. For essentially the same reasons, a numerically quantified definition of reactive waste is not feasible. This is not as big a problem as might be thought on initial reflection. Most generators whose wastes are dangerous because they are reactive are well aware of this property of their waste. Reactive wastes present special problems in handling, storage and transport. Also, reactive wastes are rarely generated from unreactive feed stocks or in processes producing unreactive products or intermediates. Furthermore, the problems posed by reactive wastes appear to be confined to a fairly narrow category of wastes. The damage incidents show that the major problems seem to be the formation of hydrogen sulfide ( $H_2S$ ) from either soluble sulfides or biological degradation of sulfur containing wastes, the formation of hydrogen cyanide (HCN) from soluble cyanides, and the explosion of some

\*These evaluations are taken from "A Second Appraisal of Methods for Estimating Self Reaction Hazards", E. D. Domalski, Report No. DOT/MTB/ORMD-76-6, "Classification of Test Methods for Oxidizing Materials", V.M. Kuchta, A. C. Furno, and A. C. Imof, Bureau of Mines, Report of Investigations 7954 and "Classification of Hazards of Materials-Water Reactive Materials, and Inorganic Peroxides", C. Mason and V. C. Cooper, NTIS No. PB 209-422. The evaluations are slightly modified so as to determine applicability of test methods to waste materials.

"unidentified" waste material. It will thus only be in a rare instance that a generator would be unsure of the reactivity class of the waste, or would be unable to assess whether the waste fits a prose definition, and would require the application of testing protocols to determine the reactivity of this waste. Since the available testing methods are not ideal for identifying those wastes categorized as hazardous due to reactivity, the approach chosen is to prescribe a prose description of reactive waste for self-determination by generators and to list wastes which meet this description and have been identified as reactive.

The prose definition chosen is a paraphrase of the top three of the reactive classes of the National Fire Protection Association (NFPA) reactivity classification system. The other two classes in the NFPA classification scheme are not included since these would include materials which are inert under normal handling conditions. This definition is used because it includes all aspects and types of reactivity which present a danger\* and is already familiar to persons handling reactive materials. The Chemical Manufacturers Association<sup>1</sup> uses this definition to classify reactive wastes in its "Laboratory Waste Disposal Manual". Also, a paraphrase of this classification system is used by the Navy<sup>2</sup> in their hazardous waste disposal guide and is used in other hazardous materials handling guides<sup>3,4</sup> as a classification system.

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\*All wastes which have been identified as having caused damage are identified under this definition as are all commonly defined types of reactivity.

Furthermore, the States of California and Oklahoma use this system to define reactive wastes.

## References

1. "Laboratory Waste Disposal Manual" Chemical Manufacturers Association (1975).
2. "NEPSS Hazardous Waste Disposal Guide", Naval Environmental Protection Support Service (1976).
3. "Handling Guide for Potentially Hazardous Materials", Material Safety Management Inc. (1975).
4. Material Data Safety Sheets.
5. E. J. Domalski, "A Second Appraisal of Methods for Estimating Self-Reaction Hazards", DOT/MTB/OHMO-76/6, G.P.O. (1976).

#### IV. Comments Received on the Proposed Characteristics and the Agency's Response to These Comments

The Agency received approximately forty comment letters addressing reactivity. These letters contained approximately sixty discrete recommendations or comments on the proposed regulation (in some letters more than one point was addressed). Several of the commenters felt that the proposed reactivity definition was adequate and provides desirable flexibility for the generator to use judgement. However, the large majority of comments expressed concern with the Agency's reactivity characteristic. These comments have been categorized by either content or the portion of the regulation addressed. A discussion of these follows:

- A. A large majority of the comments dealt with the asserted lack of specificity and ambiguity of the prose definition.
- ° A number of commenters argued that the prose definition employed by the Agency is, as a general matter, too vague and should be replaced by a numerically quantified definition accompanied by appropriate testing protocols. This comment has been fully addressed in Part III above and need not be addressed further here.
  - ° A number of commenters argued that the inclusion in the definition of wastes which "generate toxic gases, vapors, or fumes when mixed with water" and of "cyanide or sulfide bearing waste[s] which can generate toxic gases, vapors, or fumes when exposed to mild acidic

or basic conditions" needs to be made more specific. Several of the commenters suggested that a phrase such as "in harmful quantities" be inserted into the proposed regulations as follows: "...or generates toxic gases, vapors, or fumes in harmful quantities when mixed with water"; "or is a cyanide or sulfide bearing waste which can generate toxic gases, vapors, or fumes in harmful quantities when exposed to mild acidic or basic conditions." The comments on the cyanide and sulfide bearing wastes all pointed out that everything contains sulfides and most things contain cyanides (albeit in trace amounts) and many of these can generate minute quantities of hydrogen sulfide or hydrogen cyanide under mildly acidic or basic conditions. The Agency is sympathetic to these concerns, and, in anticipation of such problems, had attempted to make clear in the preamble and background documents that the Agency was leaving the determination of reactivity hazard up to the reasonable judgement of the generator based upon the generator's past experience with the waste. Taking this common sense approach, such material as soil or flyash with sulfides contamination (examples of sulfide and cyanide bearing wastes supplied by the commenters) would clearly not meet the reactivity definition. Despite this, the point made by the commenters is certainly valid. Therefore, so that there will be no confusion, the Agency has

changed the final regulation to make it more specific, as follows: "...or generates toxic gases, vapors or fumes: in quantities sufficient to present a danger to public health or the environment when mixed with water; or is a cyanide or sulfide bearing waste which can generate toxic gases, vapors or fumes in quantities sufficient to present a danger to public health or the environment when exposed..." This would certainly better reflect our regulatory intent.

A number of commenters advocated that the Agency specify what is meant by mildly acidic or basic conditions. One commenter specified a pH range (5 to 9), but offered no rationale as to why this particular range should be used. Since a substantial percentage of the commenters found the phrase "mildly acidic or basic" to be rather nebulous, the Agency has decided that a specific pH range should be specified. The pH range chosen is that which is considered non-hazardous by the corrosivity characteristic ( $2 < \text{pH} < 12.5$ ). This range was chosen because any liquid outside the range is hazardous and requires management within the Subtitle C regulations. Only liquid wastes inside this range can be landfilled without regard to the strictures on compatibility imposed by the Subtitle C regulations and co-disposed with wastes containing soluble cyanides or sulfides. These are then the most stringent pH conditions which a waste could be subjected to outside of a Subtitle C facility. (Natural waters are unlikely to be outside this pH range).

- ° Several commenters suggested that the definition of cyanide bearing waste should distinguish between "free cyanide" and ferro cyanide" since the latter would not be available to generate hydrogen cyanide under mild acidic or basic conditions. The Agency beleives that such a clarification is not necessary. If the cyanide is unavailable under the specified acidic or basic conditions then toxic hydrogen cyanide fumes cannot be generated and the wastes containing these unavailable cyanides are not reactive. To specify these as exemptions would be redundant and by implication might lead generators to conclude that other unavailable sulfides or cyanides NOT specifically exempted, do meet the reactivity characteristic.
  
- ° A number of commenters advocated specifying the concentration of sulfide or cyanide needed to make cyanide or sulfide bearing wastes hazardous. As explained above, the identity of wastes which generate toxic gases under the conditions specified in the definition should be obvious to the generator and thus, this level of sophistication is unnecessary.
  
- ° One commenter suggested that the Agency specify a rate of evolution of toxic gas, but included no suggestions as to how to do so. The Agency is unsure of how a laboratory test method measuring gas evolution rate

could be developed which could then be meaningfully related to field conditions. Therefore, an evolution rate of toxic gas will not be included in the final regulations.

° One commenter argued that sulfides and cyanides should not be singled out in the regulations and further stated that all other potential toxic fume generators be included or, alternatively, that no toxic fume generators be included. The Agency disagrees. According to information which the Agency has in its possession (see Appendix I), the primary wastes implicated in the generation of toxic gas are sulfides and cyanides. Thus, the Agency would be remiss if it did not specify these types of wastes. If others are identified, they will be included also.

B. A number of commenters argued that the test protocols proposed in Section 250.13 (c)(2) of the regulations were expensive, unreliable and not specific enough. Additionally, several other commenters had problems with specific test protocols. (For instance, some commenters argued that the 125°C temperature adopted for the Explosion Temperature Test was not a reasonable temperature and that decomposition, as used in this test, needs to be defined.)

As a result of some preliminary work undertaken by the Agency on the Explosion Temperature Test\* and after reviewing

\*Evaluation of Solid Waste Extraction Procedures and Various Hazard Identification Tests (Final Report)", NUS Corporation, September, 1979, (see Appendix IV).

the comments received on these test protocols\* (and in view of the generic problems with such tests, discussed above and in Appendix III), the Agency has decided to remove the test protocols from §261.23 of the regulations. The Agency agrees in general that they are unsuitable in defining a "reactive" waste for RCRA regulatory purposes. The Agency has accordingly removed the designated test protocols from the regulations except to the extent that the Department of Transportation's definition of Class A explosives requires use of the shock instability test. As a result of this decision, the Agency does not believe it is necessary to discuss the individual concerns on the various test protocols.

C. A number of commenters argued that only under landfill conditions will a waste be subjected to strong initiating sources or heated under confinement. Therefore, they stated that since no landfilling of explosive waste is permitted, these conditions will never occur and Section 250.13(c)(1)(ii) is unnecessary.

This argument is completely circular. If Section 250.13(c)(1)(ii) were removed from the regulations, explosive wastes would not be considered hazardous and could be disposed of in a sanitary landfill, thus subjecting the wastes to the very conditions which the commenters contend will cause the waste to explode. In any event, the Agency does not agree that a landfill is the only place in which strong initiating forces

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\*Comments were received from the public on the proposed reactivity test protocols both during the 90-day comment period on the proposed §3001 regulations (43 FR 58956) and in response to the solicitation of comments on the NUS report (Evaluation of Solid Waste Extraction Procedures and Various Hazard Identification Tests) which was noticed in the Federal Register on December 28, 1979 (44 FR 76827-76828)

or heating under pressure can occur. Pressure increase can be caused by confinement (e.g., a drum) together with temperature increase (e.g., caused by mixing) or gas generation (e.g., desolubilization of gases or decomposition into gases).

D. A number of commenters advocated exempting emergency situations (i.e., homemade bombs) from coverage of RCRA so that emergency teams can dispose of these explosive materials as expeditiously as possible without delay (i.e., without requiring a manifest, etc.).

The regulation already makes accommodation for cases of imminent hazard in §263.30. Thus, emergency handling of explosive wastes would be exempted by this section.

#### E. Other Comments

- ° A number of commenters advocated that all the characteristics be made as flexible as the reactivity characteristic.

The Agency disagrees with these comments; the broad meaning and generic character of the reactivity "universe" requires a flexible characteristic. The Agency would have preferred to define reactivity by specific test protocols. However, this is not possible. The other characteristics, (except ignitable solids) can be delineated or gauged by measurement of one (or a few) specific chemical/physical properties; therefore, the Agency will continue to define the ignitable, corrosive, and toxicity characteristic as proposed.

- ° One commenter argued that just because a waste may undergo a violent chemical change with another waste is no reason to consider a waste hazardous. To illustrate this point, the commenter pointed out that an acid and base when mixed will undergo violent chemical change, but that such mixing (neutralization) is a necessary part of many treatment systems and should not be prohibited.

The Agency believes this commenter to be under a misapprehension about the scope of the reactivity definition. The definition of reactivity refers to wastes which undergo violent change in an uncontrolled manner either by themselves, or when mixed with water. Therefore, the example of neutralization given by the commenter is inappropriate, in as much as that example involves the mixing of wastes. Furthermore, the Agency does not believe that the example given by the commenter is a fair representation of the hazards posed by wastes capable of undergoing a violent chemical change. The example given involves the controlled interaction between two wastes which is a treatment technique and thus does not reflect the hazards presented by uncontrolled violent chemical change characteristic of waste management situations.

- ° One commenter suggested that the definition of reactive waste be subdivided into sections which might be later

indexed into a compatibility chart.

The primary purpose of Section 3001 is to identify hazardous wastes, and not to dictate management techniques. Section 3004 will address the various management techniques including incompatible wastes (see §265.17 of the regulations). An appendix to the regulations (Appendix 5 in Part 265) is provided with just such information.

- ° One commenter suggested that the Agency allow a generator to use any test that is believed appropriate for determining reactivity. Similarly, one commenter suggested that Appendix III to this background document be removed because it might discourage use of a suitable test.

This comment must be evaluated in light of the Agency's decision not to prescribe any tests for measuring reactivity. Ordinarily, when the Agency prescribes a specific test for measuring a characteristic, the generator is free to employ a different test if he can demonstrate, in accordance with the equivalency procedures set forth in Subpart E, that his test is equivalent to the Agency-prescribed test. Since the Agency has elected not to prescribe any test protocols for measuring reactivity, the question of equivalent test methods is largely mooted: test results are no longer determinative of whether a waste is reactive and there is nothing against which to measure equivalency.

This is not to say, however, that the use of tests by the generators is precluded. The generator is free to conduct any tests which aid him in assessing whether his waste fits within the prose definition of reactivity. However, the Agency is not bound in any way by these tests and will make its assessment of whether a waste is reactive by reference to the prose definition.

If a generator devises a test method which he believes adequately measures the reactivity of a waste, he should submit that test method to the Agency for evaluation.

One commenter suggested that the Agency address reactivity over time in the definition since a material may undergo physical and chemical changes as it ages and become extremely reactive, whereas it might not be reactive when first generated.

The Agency agrees with the commenter that some materials, such as certain ethers, can become more reactive with time. However, the Agency has no information (such as damage incidents) concerning any wastes which might present this type of problem. Additionally, the Agency is not aware of any testing method by which such wastes might be identified. Therefore, the final regulation will not address reactivity over time per se; as these wastes are identified by the Agency they will be listed in Subpart D of Part 261 of the regulations.

• One commenter objected to the Agency defining as reactive those wastes which are capable of detonation or explosive reaction if subjected to a strong initiating source or heated under confinement. The commenter asserted that many inert, non-reactive materials, including tap water, can be triggered to detonate or explode under confinement when subjected to strong, heat, pressure, or a combination of these and other initiating sources.

The Agency disagrees with this commenter and takes specific issue with the assertion that many relatively inert substances could be made to explode when subjected to extreme heat and pressure. In any event, even if relatively inert substances could be made to explode when subjected to strong heat and pressure, these substances would not be considered reactive under the proposed definition. The Agency is only concerned with substances capable of exploding under reasonable confinement conditions -- i.e., those confinement conditions likely to be encountered in disposal environments.

#### V. Promulgated Regulations

As a result of EPA's review of the comments regarding the reactivity characteristic, EPA is promulgating a reactivity characteristic which significantly differs from the proposed regulations in two aspects: the thermal instability and shock instability test protocols cited in the proposed regulation has been removed and the section relative to generation of toxic gas, hydrogen cyanide and hydrogen sulfide has been

made more specific. The thermal instability test protocol was removed because the Agency determined that its interpretation was too subjective for use in a regulatory program\*. (See Appendix IV).

§261.23 Characteristic of reactivity

(a) A solid waste exhibits the characteristic of reactivity, if a representative sample of the waste has any of the following properties:

- (1) It is normally unstable and readily undergoes violent change without detonating.
- (2) It reacts violently with water.
- (3) It forms potentially explosive mixtures with water.
- (4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present danger to human health or the environment.
- (5) It is a cyanide or sulfide bearing waste which, when exposed to conditions of pH between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present danger to human health or the environment.
- (6) It is capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement.
- (7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

\*"Evaluation of Solid Waste Extraction Procedure and Various Hazard Identification Tests", (Final Report), NUS Corporation, September, 1979, (Appendix IV)

(8) It is a forbidden explosive as defined in 49 CFR 173.51 or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number D003.

**ATTACHMENT 25**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 19 1997

OFFICE OF  
SOLID WASTE AND EMERGENCY  
RESPONSE

T.L. Nebrich, Jr.  
Technical Director  
Waste Technology Services, Inc.  
640 Park Place,  
Niagra Falls, New York, 14301

Dear Mr. Nebrich:

Thank you for your letter of March 5, 1997 in which you request a clarification of the definition of the characteristic of reactivity in 40 CFR 261.23(a)(6) as it pertains to aerosol cans.

Over the past several years we have received numerous questions concerning the regulatory status of used aerosol cans under the Resource Conservation and Recovery Act (RCRA) hazardous waste regulations. We are not at this time able to make a categorical determination as to whether various types of cans that may have contained a wide range of products exhibit the characteristic of reactivity. It remains the responsibility of the generator of any particular waste to make this determination (see 40 CFR 262.11). However, a steel aerosol can that does not contain a significant amount of liquid (e.g., a can that has been punctured and drained) would meet the definition of scrap metal (40 CFR 261.1(c)(6)), and, if it is to be recycled, would be exempt from regulation under 40 CFR 261.6 (a)(3)(iv). Scrap metal that is recycled is exempt from RCRA regulation under this provision even if it is hazardous waste, so generators need not make a hazardous waste determination. Scrap metal that is not recycled, however, is subject to the hazardous waste regulations if it is hazardous, so generators must make a hazardous waste determination.

I hope this information is helpful to you. If you have any further questions, please call Anna Tschursin of my staff at (703) 308-8805.

Sincerely yours,

Elizabeth A. Cotsworth, Acting Director  
Office of Solid Waste

RO 14235

**ATTACHMENT 26**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JULY 13, 1995

Ms. Lynn L. Bergeson  
Weinberg, Sergeson, and Neuman  
1300 Eye Street, N.W.  
Suite 1000 West  
Washington, D.C. 20005

Dear Ms. Bergeson:

Thank you for your letter of October 14, 1994 requesting clarification of the regulatory requirements under the Resource Conservation and Recovery Act (RCRA) applicable to the collection, transportation and recycling of spent antifreeze generated at automobile service centers, in particular, at what point spent antifreeze becomes a solid waste.

This request was posed in order in the context of a spent antifreeze recycling program, wherein spent antifreeze generated from radiator flushes done at automobile service centers (specifically, Valvoline Instant Oil Change stores) is collected, stored and sent for recycling at Union Carbide's Glycol Recovery Unit in Institute, West Virginia. The specific questions you raised relate to the practical difficulties of generating and characterizing spent antifreeze, where one radiator flush may be hazardous and the next flush nonhazardous. Please forgive the delay in responding to your request.

The following discussion of the RCRA regulations applicable to the spent antifreeze recycling program that your clients, Union Carbide Corporation and Ecogard, Inc., plan to establish comes after careful consideration of this recycling program and extensive phone conversations between Tom Ovenden and my staff.

At this time, EPA has not determined what point of generation will be applied to "like wastes" (wastes of a similar composition) through any future Agency rulemakings. As you know, the Agency has solicited comment in its Land Disposal Restriction (LDR) Phase III proposed rule on different options to designating the point of generation for like-wastes. See 60 FR 11702, 11715-11717 (March 2, 1995). The three specific options presented in the preamble would view the collection of many streams as a single waste for purposes of identifying a point of generation.

FaxBack # 14003

As an alternative to designating a point of collection of many streams, the Agency could establish a point of generation for like-wastes upstream of the collection point of like-wastes (e.g., an automotive radiator in the case of spent anti-freeze). However, at least with respect to anti-freeze, we are not certain that this represents the most practical way to approach antifreeze management when anti-freeze is routinely aggregated and collected in drums and tanks and the characteristic of the antifreeze in those containers is the best indicator of potential environmental risks if the material were released to the environment.

Given the facts of the situation, we also realize that it would be impractical to require each individual radiator flush to be tested for a hazardous characteristic. We also realize that assuming that each radiator flush is characteristically hazardous may limit the volume of spent antifreeze that automobile service centers will store and this make available for recycling and, ultimately, may impact on the cost-effectiveness of the overall spent antifreeze recycling program.

Bearing this in mind, even if the Agency were to determine that the point of generation should be at the radiator, we believe that it would be appropriate for a generator to rely on “knowledge” of the waste (as per 40 CFR 262.11(c) (2)) based on studies done to characterize the frequency of “hazardous” spent antifreeze generated (relative to the generation of “nonhazardous” spent antifreeze), in order to characterize the total volume of hazardous waste generated. Study data may also be used to characterize the consolidated volume of spent antifreeze. As you cite in your letter, data collected by various parties indicate that up to 40 % of the spent antifreeze flushed from radiators may be hazardous, primarily due to lead. Thus, the Agency believes that, absent facility-specific data to the contrary, it would be appropriate for a spent antifreeze generator to characterize the total consolidated volume of spent antifreeze generated as being 40% hazardous and 60% nonhazardous. Note, however, that facility-specific data gathered by spent antifreeze generators or authorized regulating agencies could override this 40% presumption and show higher or lower percentages of hazardous wastes.

This use of “knowledge” of the wastestreams, as applied to the total volume of spent antifreeze generated, would be an appropriate alternative to testing the spent antifreeze. And, just to clarify, this approach would be appropriate for determining the volume of hazardous waste generated for the purposes of being eligible for special regulatory provisions for small quantity generators.

We agree with you that commingling “40% hazardous” spent antifreeze with “60% nonhazardous” spent antifreeze in a common tank or container by the generator prior to the recycling of the spent antifreeze (and the subsequent treatment and disposal of the residues from recycling in compliance with Part 268) would not constitute impermissible dilution under 40 CFR 268.3. Given that this mixing would be done to facilitate proper treatment – recycling and subsequent treatment which destroys, removes or immobilizes hazardous constituents before land disposal – the dilution would not be impermissible.

In response to your inquiries regarding the application of the dilution prohibition to the burning of metal-bearing wastes and the burning of the still bottom residues of the spent antifreeze recycling process, the Agency would consider the still bottoms to be newly generated wastes. Assuming that the

still bottoms were hazardous, they could appropriately be burned for energy recovery in a regulated unit provided that they have sufficient BTU value. Therefore, the Agency would not consider the burning of the metal-bearing/high BTU bottoms to be impermissible dilution.

As for your inquiries regarding the applicable notifications and certifications for the purposes of the land disposal restrictions, insofar as the generator mixes hazardous and nonhazardous spent antifreeze such that the resultant mixture is no longer hazardous and meets the applicable treatment standards, the generator must comply with the notification and certification requirements of section 268.9.

In summary, if the Agency were to determine the radiator to be the point of generation for spent anti-freeze, we believe that one possible scenario for the spent antifreeze program is where an automobile service center could commingle each individual radiator flush in a tank or container, assuming (absent facility-specific data to the contrary) for the purposes of waste characterization and quantity of hazardous waste generated that 40% of the total volume generated in a month is hazardous (D008). The generator could also consider the accumulated total volume of spent antifreeze to be nonhazardous.

The generator would comply with the one-time notification and certification requirements of section 268.9(d). And, because the commingled mixture of the spent antifreeze is no longer hazardous, no hazardous waste manifest would be required.

The recycler receiving the nonhazardous spent antifreeze would not require a hazardous waste storage permit or be subject to other hazardous waste management requirements for this wastestream.

The recycler should characterize any residues from the distillation/recycling of spent anti-freeze to determine if they are hazardous wastes. If any of the residuals are hazardous, the recycler must comply with the applicable land disposal restrictions requirements of Part 268 (e.g., notification and certification).

Assuming, as discussed in your letter, that the residues are hazardous metal-bearing/high BTU wastes, these residues may be transported (with a hazardous waste manifest, and land disposal restrictions notification) to a permitted hazardous waste combustion unit for treatment. The final treatment facility would certify compliance with the applicable treatment standards prior to disposal of the residues. You should note, however, that this would be pursuant to the Federal regulatory program. As you know, States that are authorized for RCRA program may have more stringent requirements.

Thank you for your interest in the development of a recycling program to manage a common, and somewhat problematic, wastestream in an environmentally sound manner.

Sincerely,

Michael Shapiro, Director  
Office of Solid Waste

**ATTACHMENT 27**

## Strategy for Addressing the Retail Sector under RCRA's Regulatory Framework September 12, 2016

### I. Introduction

#### A. Background

Regulation of hazardous waste generated by the retail sector under the federal Resource Conservation and Recovery Act (RCRA) presents unique challenges that are not found in more "traditional" RCRA-regulated industries. The retail sector as a whole handles a very large number of diverse products<sup>1</sup>, which change over time and may, in many instances, become regulated as hazardous waste under RCRA when discarded<sup>2</sup>. As a result, retailers are required to make hazardous waste determinations for a variety of products at stores located across the country.

Additionally, the reverse distribution<sup>3</sup> process where retail stores generally send unused goods to reverse logistics centers and rely upon arrangements with suppliers/vendors<sup>4</sup> to determine the ultimate disposition of these goods is a well-established business practice in the retail sector. Nevertheless, how the reverse distribution processes is regulated, or should be regulated, under RCRA has resulted in a number of questions from both retailers and regulators. This issue becomes more complicated for retail chains with store locations in many different states, where states have taken various positions on how RCRA regulations apply.

In 2008, the U.S. Environmental Protection Agency (EPA or Agency) began a review of how RCRA hazardous waste regulations apply to the retail sector in order to better understand challenges in complying with RCRA regulations. EPA's review consisted of discussions with various members of the retail community and states through meetings, conferences and site visits.

On January 11, 2011, President Obama signed Executive Order (EO) 13563 regarding the retrospective review of regulations, which required federal agencies such as EPA to develop a plan to "...determine whether any such regulations should be modified, streamlined, expanded, or repealed so as to make the agency's regulatory program more effective or less burdensome in achieving the regulatory objectives."

EPA published a Notice of Data Availability (NODA) for the Retail Sector, dated February 14, 2014 (79 FR 8926) as part of the Agency's continuing efforts to better understand concerns from all stakeholders regarding RCRA's applicability to the retail sector, as well as to obtain information and feedback on issues affecting the retail sector. The NODA was also intended to satisfy EPA's commitment under this EO to solicit public comment on issues associated with the retail sector. Additional information regarding the NODA is presented in Section II.A.

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<sup>1</sup> Although the terms "products" and "goods" are used and generally described at times as "items" or "materials" in this document, use of these terms is not intended to indicate if or when such items/materials become wastes either at the store or during the reverse distribution process.

<sup>2</sup> The term discarded is defined at 40 CFR 261.2(a)(2). When a material, such as a retail item, is discarded is a key question because, once a decision to discard is made, the material becomes a solid waste and the person making this decision is a generator of solid waste. At such point and time, the generator would be required to make a hazardous waste determination.

<sup>3</sup> EPA is aware that the term "reverse distribution" is often used for pharmaceuticals, whereas "reverse logistics" is used for non-pharmaceuticals); however, the former term appears throughout this document and is intended to apply to all retail items under this process.

<sup>4</sup> The terms "supplier" and "vendor" (latter more commonly used in the retail industry) appear more often in this document, as compared to "manufacturer," since it is more likely the flow of goods/products occurs between retailers and suppliers/vendors (or agents thereof), although suppliers themselves may also be manufacturers or product formulators.

EPA's ongoing outreach efforts, combined with the comments received on the NODA, have improved the Agency's understanding of the challenges arising when managing unused/intact consumer goods that have become unsalable at retail stores and are moving through the reverse distribution system.

## **B. Objective**

EPA's considerable engagement with the retail sector and regulators to date has resulted in development of this strategy, which lays out a cohesive plan to address the unique challenges faced by the retail sector in complying with RCRA regulations while reducing burden and protecting human health and the environment. In crafting this strategy, EPA recognizes that RCRA regulations, which were developed primarily for manufacturing settings, are not necessarily the best fit for the retail sector. EPA is also aware that the Agency has, in the past, made efforts to tailor RCRA regulations to address certain types of unique waste management circumstances (e.g., used oil, universal wastes, spent lead-acid batteries, academic laboratory waste).

EPA further recognizes that there are occasions when unused/intact consumer goods, including customer returns, cannot be sold by the original retailer for a variety of reasons such as mandatory or voluntary recalls, seasonal changes, overstock and expired shelf-life.

Finally, the Agency is taking into account retail sector practices already in place, such as the reverse distribution process, to promote sustainability by ensuring that retail items remain marketable as commodities for donation or liquidation<sup>5</sup>, thus reducing the amount of waste generated and encouraging recycling of wastes that are generated, as opposed to being disposed as solid or hazardous waste.<sup>6</sup>

With this in mind, our strategy consists of a three-pronged approach, which is further discussed in Sections III and IV of this document:

1. Issue Agency policy, guidance and rulemaking to ensure a better fit between RCRA regulations and the retail sector.
2. Research retail hazardous waste management practices and related issues in the area of reverse distribution, universal waste and other challenges.
3. Using the results of our evaluation and research, identify additional approaches to address outstanding RCRA retail sector issues if needed.

## **II. Identification of Retail Sector Issues**

### **A. Retail NODA**

The objectives of the 2014 Retail NODA were to share information EPA had collected and, more importantly, to obtain additional information that would allow the Agency to better understand and address issues encountered by industry and regulators with respect to the application of RCRA regulations, guidance and policy to the retail sector.

In the NODA, EPA requested comment on a series of topics related to retail operations, waste management practices and management of materials that may become hazardous waste when discarded. This specifically included requests for information regarding aerosol cans (e.g., quantity generated, classification and management

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<sup>5</sup> The term "liquidation" (also known as salvage) is used in this document to describe sale of products on the secondary market for use by consumers.

<sup>6</sup> Routine maintenance activities and cleanup of spilled materials, as well as the occurrence of damaged/leaking products no longer considered commodities and "unknowns" (item contents cannot be identified), also result in waste generation.

options, including handling as universal waste), since aerosol cans comprise a large percentage of the retail sector's hazardous waste stream. The NODA comment period closed on May 30, 2014.

EPA received comments from 44 stakeholders, with comments consisting of feedback from: (1) companies consisting primarily of retailers [nine commenters]; (2) industry/trade Associations [nine commenters]; (3) government and related organizations [seven commenters]; (4) recyclers [three commenters]; (5) waste management and treatment, storage and disposal facilities [three commenters]; (6) law firms [three commenters]; (7) reverse logistics provider [one commenter] and (8) anonymous [nine commenters]. The NODA and supporting documents, along with comments on the NODA, are available at <http://www.epa.gov/hwgenerators/hazardous-waste-management-and-retail-sector>.

## **B. Summary of Comments on Retail NODA**

As part of developing this strategy, EPA has reviewed all NODA comments to identify stakeholder issues/concerns, including suggestions on how to better address the retail sector under RCRA. Feedback from NODA commenters reinforced EPA's understanding that the retail sector differs from the industrial/manufacturing sector in the following key respects:

- Large number of stores in many locations handling consumer goods that, in many situations, could become hazardous waste upon discard
- Numerous varieties of goods, which are generally manufactured by someone else and whose ingredients are often not fully known, make hazardous waste determinations difficult
- Unpredictable quantity of waste generation due to episodic generation (e.g., recalls and customer returns)
- Hazardous waste training at the store level is difficult due to high employee turnover
- Use of the reverse distribution process to manage unsalable products – including those that become hazardous waste when discarded

EPA grouped suggestions from NODA commenters into the following major categories (approximate percentage of commenters suggesting a particular approach is shown in parentheses)<sup>7</sup>:

- Address Pharmaceuticals (42%)
  - Remove P-listing for nicotine-containing products (23%)
  - Manage as Universal Wastes (17%)
- Endorse Reverse Distribution Retail Paradigm – encompasses point of generation and waste determination issues (40%)
  - Exclude Retail Goods Managed under the Reverse Distribution Process from the Definition of Solid Waste (15%)
- Expand Universal Waste Regulations to Other Waste Categories
  - Aerosol Cans (35%)
  - Pesticides (19%)
  - Electronics (17%)
  - All Retail Goods<sup>8</sup> (14%)
- Provide Flexibility for Episodic Generation and Hazardous Waste Quantity Determinations (19%)
- Exclude Retail Goods as Household Hazardous Waste/Expand "Household Hazardous Waste" Exemption (10%)
- Revise and Update Satellite Accumulation Area Requirements (9%)

EPA identified the following additional NODA commenter suggestions that did not fall into major categories:

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<sup>7</sup> Universal waste percentages include instances where certain items (pharmaceuticals, aerosol cans, pesticides and electronics) were identified individually and where retail goods as a whole were mentioned.

<sup>8</sup> Assumed to include, but would not necessarily be limited to, pharmaceuticals, aerosol cans, pesticides and electronics.

- Determine the actual extent of the retail sector “universe” in terms of the numbers of retailers, types of retail items handled and amount of wastes generated, as well as accurately designating generator categories (i.e., large quantity, small quantity and conditionally exempt small quantity generators).
- Coordinate with other federal agencies (e.g., Department of Transportation and Food and Drug Administration) when issuing guidance/policy or developing regulations that may affect management of materials/wastes in the retail sector in order to avoid unnecessary conflicts or duplication of effort.
- Clarify the Agency’s position regarding whether aerosol cans are considered a reactive hazardous waste.
- Conduct outreach activities such as identifying/providing opportunities for training and offering compliance assistance.
- Support use of e-Manifest and other electronic means of documenting compliance with RCRA regulations.
- Recognize challenges associated with waste management under differing state regulations.
- Eliminate the requirement for large quantity generators to store ignitable or reactive waste at least fifty feet from the facility’s property line.

To the extent they are not already being addressed through policy, guidance and rulemaking or other EPA actions, the Agency will consider the aforementioned issues as part of implementing this strategy.

### **III. Response to Household Hazardous Waste Exemption NODA Comments**

Some NODA commenters suggested that EPA expand the “household hazardous waste” exclusion at 40 CFR 261.4(b)(1) to include either retail goods as a whole or certain types of retail goods. The Agency has already addressed this issue as part of a previous rulemaking that responded, in part, to a petition from the American Retail Federation (ARF).

As explained in a final November 13, 1984 rule (49 FR 44978), EPA excluded household hazardous waste because the legislative history of RCRA indicated an intent to exclude such wastes and not because these wastes can never pose the risks associated with hazardous wastes. Additionally, consistent with legislative history, EPA determined that it was necessary to establish two criteria that must be met to qualify for this exclusion when evaluating ARF’s petition. First, the waste must be generated by individuals on the premises of a temporary or permanent residence and, second, the waste stream must be composed primarily of materials found in wastes generated by consumers in their homes. In this final rule, EPA denied ARF’s petition to exempt consumer household products from retail sources because these wastes fail to meet both criteria. EPA continues to believe that retail goods, including those that could become wastes when discarded, do not satisfy the criteria for this exclusion.

### **IV. Current EPA Activities to Address Retail RCRA Issues**

Prior to issuing the NODA in 2014, EPA had already begun developing the Pharmaceuticals rule (starting in 2009) and the Generator Improvements rule (starting in 2011), as well as the Definition of Solid Waste (DSW) rule. Because pharmaceutical hazardous waste is a large part of the retail sector’s RCRA concerns, EPA mentioned in the NODA that the Agency was developing a proposed rule for healthcare facility-specific management standards for hazardous waste pharmaceuticals (the Pharmaceuticals rule).

Although, for the most part, it was not possible to address all the feedback received on the NODA in these rulemakings, EPA has tried to incorporate approaches in these rulemakings to address some of the NODA comments in order to ease the burden of managing hazardous wastes in a retail setting. A discussion of these efforts is provided below:

#### **A. DSW Rule**

The final DSW rule, dated January 13, 2015 (80 FR 1694), provides new conditional exclusions for hazardous secondary materials. If these materials are managed according to specified conditions, legitimately recycled and sent to a verified recycler, they would not be regulated as a solid waste. Retailers may be able to use this

exclusion for recycling aerosol cans and possibly other retail items. Additional information on this final rulemaking is available at <http://www.epa.gov/hwgenerators/final-rule-2015-definition-solid-waste-dsw>.

EPA is coordinating with stakeholders and conducting outreach activities in order to implement and monitor effectiveness of the final DSW rule.

### **B. Generator Improvements Rule**

The proposed Generator Improvements rule, dated September 25, 2015 (80 FR 57018), advances approaches for addressing a number of issues facing the hazardous waste generator community, including the following issues relevant to the retail sector:

- Provides flexibility for episodic generators of hazardous waste.
- Allows consolidation of conditionally exempt small quantity generator waste at large quantity generators.
- Permits waiver of the 50-foot buffer requirement for ignitable/reactive wastes under certain conditions.

EPA plans to finalize this rule in fall 2016. Additional information on this rule is available at <http://www.epa.gov/hwgenerators/proposed-rule-hazardous-waste-generator-improvements>.

### **C. Pharmaceuticals Rule**

The proposed Pharmaceuticals rule, dated September 25, 2015 (80 FR 58014), addresses a number of retailer RCRA concerns. The proposed rule:

- Advances an approach so that a healthcare facility, including a retailer with a pharmacy, who generates 1 kg of acute P-listed hazardous waste pharmaceuticals in a calendar month will not become the most stringently regulated generator (a large quantity generator).
- Sets forth a tailored set of management standards specifically designed to reduce the complexity and regulatory burden of the RCRA hazardous waste regulations for the management of hazardous waste pharmaceuticals by health care facilities, including hospitals, clinics and retail stores with pharmacies.
- Provides regulatory clarity on how the reverse distribution of pharmaceuticals is regulated under RCRA.
- Explores two possible approaches in the rule to address concerns with designating nicotine-containing smoking cessation products (e.g., gums, lozenges and patches) and other low-concentration nicotine-containing products as acutely hazardous (P-listed) wastes. For both approaches, EPA requested toxicity data for nicotine (P075). The two regulatory options are: (1) a narrow exemption from the P075 listing for Food and Drug Administration-approved over-the-counter smoking cessation products (patches, gums, and lozenges) and (2) broader, concentration-based approach to listing nicotine (P-listing for high concentrations and U-listing for low concentrations, similar to the approach taken for warfarin).
- Requests comment in the rule preamble on whether e-cigarettes and nicotine-containing liquids for e-cigarettes should be included within the scope of the definition of pharmaceutical and therefore managed as other hazardous waste pharmaceuticals under the pharmaceuticals rule.

Additional information on this rule is available at <http://www.epa.gov/hwgenerators/proposed-rule-management-standards-hazardous-waste-pharmaceuticals>.

Beyond the pharmaceuticals proposed rule, EPA has issued guidance to provide regulatory clarity regarding the following issues:

- In letters dated May 8, 2015, EPA issued separate guidance clarifying that: (1) e-cigarettes are P075 waste due to the attached cartridges of nicotine (RCRA Online 14850) and (2) nicotine patches, gums, lozenges and e-cigarettes are not solid or hazardous waste when sent for nicotine reclamation (RCRA Online 14851).
- In a letter dated October 2, 2015, EPA also issued guidance clarifying that pharmaceutical controlled substances from households can be accepted at Drug Enforcement Agency-authorized collection receptacles, including those established at retail stores with pharmacies (RCRA Online 14853).

## **V. Upcoming EPA Activities to Address Retail RCRA Issues**

EPA is currently focusing the Agency's near-term efforts on finalizing the Pharmaceuticals and Generator Improvements rules. However, we will be undertaking a number of upcoming activities that will also address the RCRA concerns of the retail sector and other stakeholders.

Primarily, these activities include issuing a guide to recycling aerosol cans, proposing to add aerosol cans to the federal universal waste rules, and developing a policy that addresses the reverse distribution process for the retail sector as a whole.

To date, EPA has gathered useful information regarding management of consumer goods in the retail sector and the associated issues encountered during this process.<sup>9</sup> The Agency's strategy calls for continued engagement with the retail sector and other stakeholders, such as industry representatives and state/tribal/local governments, to support our efforts in moving forward to address the reverse distribution process and universal waste management. As necessary, in order to inform future EPA decisions, this outreach/coordination process is expected to involve attending meetings/conferences, conducting site visits and participating in work groups.

Upcoming activities are discussed in more detail below.

### **A. Guide to Recycling Aerosol Cans**

EPA is developing a guide on how to recycle aerosol cans under the existing Subtitle C recycling exclusions, including recycling aerosol cans for scrap metal recovery. EPA anticipates that this guide will assist generators of aerosol cans and recyclers to increase their recycling of this ubiquitous waste stream.

### **B. Role of Universal Waste Regulations**

EPA has been exploring the potential for adding certain retail items, such as aerosol cans, pesticides, and/or electronics, to the federal universal waste regulations by conducting the following activities:

- Obtain additional information regarding state programs currently in place to manage aerosol cans (e.g., California and Colorado) and electronics (e.g., Arkansas, California, Colorado, Connecticut, Louisiana, Michigan, Nebraska and New Jersey) as universal wastes.
- Identify and consult with states that are considering including aerosol cans, electronics or other types of items as categories of universal waste.
- Determine the extent to which states regulate other retail items, including pesticides beyond those recalled, as in suspended or cancelled, under the Federal Insecticide, Fungicide, and Rodenticide Act, as universal wastes.
- Evaluate information received from states, including any advantages/disadvantages and challenges associated with management of retail items as universal wastes.

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<sup>9</sup> Additional information regarding EPA's key observations and particular examples of stakeholder outreach efforts to date is provided in the Appendix to this strategy.

In addition to aforementioned, EPA considers a number of factors, as set forth in federal RCRA regulations, when determining whether a hazardous waste or category of hazardous waste should be included as universal wastes.<sup>10</sup> Taking into account feedback from NODA commenters and other information obtained to date, EPA believes that aerosol cans are likely to be good candidates for management under federal universal waste regulations. Therefore, the Agency is moving forward with plans to develop a proposed rule to address aerosol cans as universal waste.

### C. Policy on Reverse Distribution and RCRA

EPA recognizes that, although there are areas within the program that work well, RCRA regulations may not always be the best fit for the retail sector. This has come to light in terms of the reverse distribution process used in the retail sector, particular as relates to when discard occurs or is intended to occur and the timing of waste determinations.

Therefore, EPA intends to develop a policy that addresses the reverse distribution process for the retail sector as a whole. In doing so, EPA is working from the Agency's understanding regarding the "flow" of consumer goods among different entities, as well as the roles/relationships of retailers, suppliers/vendors, reverse logistics centers and others with respect to unused/intact consumer goods that have become unsalable at retail stores for a variety of reasons and are moving through the reverse distribution system.<sup>11</sup> Unsalable retail items include excess inventory, such as expired or outdated items, seasonal items, overstock, recalled (voluntary or involuntary) products and returned items.

In developing this policy, EPA will take into account key observations made to date (see appendix), with a particular focus on the nature/extent and significance of challenges encountered when managing consumer goods in the retail sector, by considering the following issues:

- Scope of the retail "universe," including the number of individually- or family-owned stores
- Positions of regulators such as EPA regions, states/tribes and, as necessary, local governments on the location of the point of generation
- Extent to which inspections by regulators continue to identify compliance issues in the retail sector, including failure to make hazardous waste determinations
- Extent to which the reverse distribution process results in appropriate management of unsalable consumer goods originating from retail stores, such that the percentage of retail items disposed as solid or hazardous waste is reduced to the maximum extent possible

This policy is not intended to address wastes from routine maintenance activities and cleanup of spilled materials, as well as damaged/leaking products no longer considered commodities and "unknowns" (item contents cannot be identified).

**Contact:** Questions regarding this strategy should be directed to Drew Lausch at [lausch.robert@epa.gov](mailto:lausch.robert@epa.gov) or 703-603-0721 or Kristin Fitzgerald at [fitzgerald.kristin@epa.gov](mailto:fitzgerald.kristin@epa.gov) or 703-308-8286.

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<sup>10</sup> These factors are discussed at 40 CFR 273.81.

<sup>11</sup> A diagram showing the flow of retail items and relationships among various organizations that manage consumer goods and wastes is available at <http://www.epa.gov/hwgenerators/strategy-addressing-retail-sector-under-resource-conservation-and-recovery-act>.

## APPENDIX

### Key Observations to Date

As part of developing this strategy, the Agency has been conducting outreach efforts (meetings, conferences, site visits, etc.) with key stakeholders and, based on these efforts, the following is noted in no particular order of importance:

- When and where hazardous waste determinations are made (i.e., at the store versus at a reverse logistics center) varies from retailer to retailer and from product to product – and may also vary with time.
- Positions of regulators on the location of the point of generation (when a product becomes a waste) vary and inspections of retail stores have identified compliance issues – and inspections are anticipated to occur in the future.
- Certain retail chains use safety data sheet-based scanning systems keyed to universal product codes (UPCs) or stock keeping units (SKUs) to assist in making waste determinations at the store; however, smaller retailers and individually- or family-owned stores may lack this capability and/or may not be fully aware of RCRA obligations.
- Information regarding the chemical content of certain manufacturers' products is sometimes made publicly available or, if it is considered confidential business information, may be selectively shared with others in order to inform appropriate end-of-life management.
- There exists software that relies upon proprietary manufacturers' product information to determine appropriate disposition of unsalable retail items, although how widely this software is utilized across the retail sector is not fully known.
- Retailers are using third parties to ensure proper management of products determined to be hazardous waste at store locations, although the extent to which this occurs across the retail sector is uncertain.
- Reverse logistics centers also use an SDS-based UPC/SKU scanning system, although the extent to which reverse logistics centers as a whole are taking this approach is uncertain.
- Waste determinations typically occur at the reverse logistics centers for some retail goods when it's clear that these items have a high possibility of being donated, liquidated or otherwise recycled.
- Certain non-prescription drugs (e.g., hand sanitizers, multi-symptom cold relievers and sore throat medicines) and supplements such as vitamins are sent to reverse logistics centers where they are disposed as hazardous waste if, for example, the expiration date has passed.
- Protocols or corporate directives are in place that specify how retail stores, reverse logistics centers and suppliers/vendors handle excess inventory, make hazardous waste determinations and decide the ultimate disposition of products, although this seems less likely in the case of individually- or family-owned stores.
- Contracts or other written agreements exist between a retailer and supplier/vendor that specify how the process for returning unsalable items and awarding of credit works, as well as the extent to which particular products are required to be managed a certain way, such as prohibiting donation/liquidation and requiring disposal as hazardous waste due to "branding issues" or other concerns.<sup>12</sup>

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<sup>12</sup> Since EPA is aware that a large percentage of unsalable retail items are "returned to the supplier/vendor," the ultimate disposition of these items is of interest to the Agency.

- Credit is provided to retailers for unsalable consumer goods, which have an inherent value in that they remain potentially marketable as commodities that could be donated or liquidated, which serves as incentive for proper management until such time credit is received.<sup>13</sup>
- Retailers may also be assuming increased responsibility for management and ultimate disposition of unsalable retail items as part of the “Adjustable Rate Policy” process (supplier/vendor or agent not involved).<sup>14</sup>
- Given past experiences or other information, such as agreements between suppliers/vendors and retailers, retailers may know beforehand that certain consumer goods will ultimately be disposed as hazardous waste, including products that are returned to ensure receipt of manufacturer/supplier credit.
- Reverse logistics centers play a key role in the management of consumer goods, performing functions such as data collection, financial reconciliation such as credit verification, recall management, material tracking and material disposition (i.e., reuse, recycling or disposal).
- Reverse logistics centers may also offer benefits such as increasing the likelihood that consumer goods may be donated or liquidated, due to economies of scale, and ensuring that hazardous waste determinations are properly performed.
- The role played by suppliers/vendors in management of retail products under RCRA, including providing credit to retailers, making hazardous waste determinations and influencing ultimate disposition, is critical and represents an area requiring further study.
- Suppliers/vendors play a critical role in management of retail products under RCRA, including providing credit to retailers, making hazardous waste determinations and influencing ultimate disposition.
- Retail items may be repaired/refurbished for ultimate use by consumers but how often and by whom is uncertain.
- Certain unsalable retail items may be returned to the manufacturer for use in preparing products (i.e., blended into existing formulations), although the extent to which this occurs is unknown.
- Feedback from state programs thus far indicates that management of items such as aerosol cans and electronics as universal wastes works well.
- Recycling of aerosol can propellant for use as fuel and the actual container as scrap metal, appear more common than recycling of can contents (product).

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<sup>13</sup> It does not necessarily follow that these items will ultimately be donated or liquidated since they may become a waste in cases where a supplier/vendor requires disposal or where a reverse logistics center determines that disposal is the only remaining management option.

<sup>14</sup> Additional information on the Adjustable Rate Policy and other reimbursement policies for unsalable items can be found in the publication entitled, 2008 Joint Industry Unsaleables Management Study: The Real Causes and Actionable Solutions. This publication is available at <http://www.gmaonline.org/downloads/research-and-reports/UnsaleablesFINAL091108.pdf>.

## Stakeholder Outreach Efforts

Since the close of the NODA comment period, EPA has been reaching out to various stakeholders and engaging in discussions in order to learn more about challenges associated with RCRA and the retail sector. Some examples include:

- EPA participated in the Retail Industry Leaders Association (RILA) conference during September 29-October 2, 2014 in Minneapolis, MN, which accorded an opportunity to network with various industry representatives regarding the Retail NODA and the Agency's retail initiative.
- EPA provided an update regarding the Retail NODA at the annual meeting of the Association of State and Territorial Solid Waste Management Officials on October 30, 2014 in Reston, VA.
- On November 20, 2014, EPA met with the World Floor Covering Association (WFCA) to learn more about WFCA's industry/membership and discuss the Retail NODA and better understand the relevance of Agency's retail initiative and retail strategy development on products manufactured by WFCA members.
- On January 7, 2015, EPA provided regulatory updates to regions and states including a discussion regarding the status of the Pharmaceuticals Rule, Generator Improvement Rule and Definition of Solid Waste Rule, as well as efforts associated with the retail initiative and retail strategy development.
- On January 14, 2015, EPA participated in a regulatory roundtable as part of the Council on Safe Transportation of Hazardous Articles Quarterly Membership meeting in Arlington, VA. Discussions involved Retail NODA comments and development of a strategy to address retailer concerns.
- EPA gave a presentation on the Retail NODA and development of a retail strategy as part of the RILA conference on February 10<sup>th</sup> in Atlanta, GA and Pesticide Stewardship Alliance conference on February 11<sup>th</sup> in Savannah, GA.
- During February 23-26, 2015, the Agency participated in a series of meetings and visits involving EPA Region 9, various levels of government in the State of California (Attorney General's Office, Cal EPA, local District Attorney Offices and counties), and industry representatives. This included tours of an electronics waste facility, retail stores (CVS, COSTCO and Lowes) and a reverse logistics center (Inmar Incorporated).
- During March 16-19, 2015, in support of implementing the EPA's Retail Sector Strategy, the Agency attended the Store Planning, Equipment, Construction and Facilities Services 2015 Annual Conference in Las Vegas, NV – where the Agency gave a presentation on RCRA and the retail strategy and sustainability management – toured a Walmart store and return center, and met with the State of Nevada's Division of Environmental Protection.
- On April 13, 2015, EPA participated in a Retail Waste Workgroup meeting sponsored by the California Department of Toxic Substances Control. This meeting included regulators at federal, state and local levels of government in California, as well as representatives from industry such as retailers and suppliers. EPA gave a presentation on efforts to date to address RCRA and the retail sector.
- On June 9, 2015, EPA provided an overview of the Pharmaceuticals Rule and Generator Improvement Rule, as well as the planned Retail Sector Strategy, at a Northeast Waste Management Officials Association training workshop in Sturbridge, MA.
- During July 7-9, 2015, the Agency participated in a series of meetings and visits involving EPA Region 4, the Alabama Department of Environmental Management and the Georgia Department of Environmental Resource's Environmental Protection Division. This included a meeting with Giant Cement Holding Incorporated representatives and tour of Giant Resource Recovery's aerosol processing/recycling facility.

- EPA participated in the RILA conference during September 14-17, 2015 in Austin, TX, at which time the Agency gave presentations on the proposed Hazardous Waste Pharmaceutical and Hazardous Waste Generator Improvements rules as well as provided an update on the Agency's retail strategy. EPA also met with representatives from the Texas Commission on Environmental Quality.
- EPA participated in the Consumer Products Regulatory Compliance Workshop co-sponsored by the Personal Care Products Council and Consumer Specialty Products Association in Sacramento, CA during September 29-30, 2015. EPA gave a presentation on the Agency's retail strategy and an overview of federal RCRA regulations as they pertain to the retail sector, including the proposed Hazardous Waste Pharmaceutical and Hazardous Waste Generator Improvements rules.
- On November 30, 2015 and December 1, 2015, the Agency participated in facility visits involving the Pennsylvania Department of Environmental Protection and New Jersey Department of Environmental Protection. This included tours of a manufacturer's distribution center (S.C. Johnson), a reverse logistics center (DRS Product Returns) and a pharmaceutical wholesaler (Cardinal Health).
- On February 25, 2016, EPA met with Eli Lilly, Merck, Johnson & Johnson, Pfizer and two other pharmaceutical manufacturers to discuss comments on the proposed pharmaceuticals rule.
- EPA met with representatives of the Consumer Healthcare Products Association on April 21, 2016 to discuss comments on the proposed pharmaceuticals rule.
- During May 11-12, 2016, EPA participated in the Consumer Specialty Products Association mid-year meeting at National Harbor, MD. EPA gave a presentation on the Agency's ongoing efforts to address the retail sector, including a discussion on aerosol cans.
- EPA met with representatives from CVS Pharmacy on May 17, 2016 to discuss comments on the proposed pharmaceuticals rule.
- On May 26, 2016, EPA provided an overview of the proposed pharmaceuticals rule during a Retail Waste Workgroup meeting sponsored by the California Department of Toxic Substances Control.
- EPA participated in the Northeast Waste Management Official's Association annual meeting on June 14, 2016 in Westford, MA. The Agency provided updates on major rulemaking efforts, as well as the retail strategy.
- On June 16, 2016, EPA met with representatives from Integrated Liner Technologies to discuss the proposed pharmaceuticals rule.